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Newsroom Computerization: Hardware-Software Solutions to Speed up Copy Processing

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Declaration

This dissertation is my original work and has not been examined by any other university. It has been submitted for examination with the approval of the university supervisor.

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In a work like this, it cannot be that only one person – the researcher - was involved to make it a success. A lot must happen behind the scenes before the investigation is put together, for instance, questionnaire responses by personnel at Daily Nation and The Standard.

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Abstract

Some of the newsroom computerization requirements are the opposite of the usual office automation. For example, copy download requires – unlike the usual office – lower download speed since it is lighter than the graphic–laden upload.

To solve complications raised by this composite problem, the matter is studied at the following levels: news input devices including the download modem; copy flow in a network of higher speed sensitivity than normal; software quality adding features; noise elimination strategies; and upload to commercial press.

At the centre of the investigation is whether the Macintosh computer retains its traditional stronghold on the newsroom. In other words, is it the machine brand or the software that is dictating choice of newsrooms computerization options?

The comparison of the Daily Nation and The Standard newspapers newsrooms cannot answer this question without overgeneralising. Yet, the fact that Nation recently overhauled the newsroom – getting rid of the Macs – suggests that the software and networking options are overturning long held beliefs.

List of Abbreviations

AGP	Accelerated Graphics Port
ALU	Arithmetic and Logic Unit
AO	Always On (e.g. leased line for any transmission to commercial press)
ATA	Short for attachment drives (up to 15,000 HDD revolutions per second)
ATM	Asynchronous Transfer Mode (DR superfast up to 155 Mbps)
BE	Bleeding Edge (due to unadvised adoption of technology)
BIOS	Basic Input and Output System
BS	Bus Speed (e.g. 100 MHz determines processing speed)
CAR	Computer-Assisted Reporting
CD	Compact Disk
CD-R	Compact Disk Recordable
CD-ROM	Compact Disk Read-only Memory
CD-RW	Compact Disk Read-write
CS	Clock Speed (800 MHz – 2 GHz)
CI	Compute-Intensive (e.g. processing graphics)
CISK	Complex Instruction Set Computer
CPU	Central Processing Unit
DR	Data Rate (of copy transmission)
DTP	Desktop Publishing
DSP	Digital Signal Processor

DVD	Digital Versatile Disk
EPP	Enhanced Parallel Port (DR: 1.5 bps)
FC-AL	Fibre Channel Arbitrated Loop (DR: 100-800 Mbps)
FPU	Floating Point Unit
GB	Gigabyte (1024 megabytes)
GMCH	Graphics Memory Controller Hub
GUI	Graphical User Interface
HDD	Hard Disk
HTML	Hypertext Markup Language
ICH	Input / Output Controller Hub
ISDN	Integrated Services Digital Network (64 Kbps)
ISP	Internet Service Provider
JPEG	Joint Photographic Experts Group
Kbps	Kilobits per second
LAN	Local Area Network
LCD	Liquid Crystal Display
Mac OS	Macintosh's Operating System
MB	Megabyte
Mbps	Megabits per second
MHz	Megahertz
MMX	Thought to stand for multimedia
OS	Operating System
PCI bus	Peripheral Computer Interconnect bus

PCI – Express Peripheral Computer Interconnect Express bus

PDF	Portable Document Format (saves copy going to commercial press)
PC	Personal Computer
RAM	Random Access Memory (faster than sequential)
RISK	Reduced Instruction Set Computer (eg Mac OS)
RIP	Raster Image Processor
ROM	Read Only Memory
SB	South Bridge (also 1/0 controller hub: ICH)
SCSI	Small Computer System Interface (skuzzy)
SIMD	Single Instruction, Multiple Data (e.g. in pixel extractions)
SIMM	Single In-line Memory Module (for packing more memory)
3D	Three Dimension Graphics
USB	Universal Serial Bus
UTP	Unshielded Twisted Pair (cable)
VDU	Visual Display Unit
VPN	Virtual Private Network
WAN	Wide Area Network

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1.0.0 Introduction

Debates on information processing strategy became pervasive with invention of computer. Yet, as long as this innovation remained a 30,000 - ton machine, the extent of the debate was limited. With the miniaturization process that created the mainframe and mini frame, the subject began to stir the minds of information processors - including those in the newsroom.

The issues were: the Accelerated Graphics Port (AGP); being on the bleeding edge (BE) due to malfunctioning adoption of technology; bus speed (BS) to processor; compact disk storage volume (CD capacity); hard disk capacity (HDD capacity); choice of newsroom operating system (OS); document portability formats (eg PDF); input/output devices etc.

What propelled the computer debate to the forefront of every information processing activity was the most innovative miniaturization: the personal computer. Putting the processing power literary on the desktop became a reality – and, probably for the newsroom, the metaphorical desktop was more important than the literal one.

Being able to achieve a near-print quality of the newspaper by doing electronic rather than manual cutting and pasting was revolutionary. But the debates of the best hardware or software for various information processors have never been fully settled.

1.1.1 Background

Whether in a newsroom or elsewhere, the attributes of good quality information remain the same; the differences arise in the kind of computer applications to use to realize the attributes. Therefore, the newsroom gets configured for the attributes becomes a central issue.

To understand better what is meant by information attributes, one can consider what James O'Brien says about this. In Introduction to Information Systems (2003) he has an overview of high quality information for any setting - even processed news fits here.

Time Dimension

Timeless: Information should be provided when it is needed.

Currency: Information should be up-to-date when it is provided.

Frequency: Information should be provided as often as needed

Time period: Information can be provided about past, present, and future time periods.

Content Dimension

Accuracy: Information should be free from errors.

Relevance: Information should be related to the information needs of a specific situation.

Completeness: All the information that is needed should be provided.

Conciseness: Only the information that is needed should be provided.

Scope: Information can reveal performance by measuring activities accomplished, progress made, or resources accumulated.

Form Dimension

Clarity:	Information should be provided in a form that is easy to understand.
Detail:	Information can be provided in detail or summary form.
Order:	Information can be arranged in a predetermined sequence.
Presentation:	Information can be presented in narrative, numeric, graphic or other forms.
Media:	Information can be provided in the form of printed paper document video displays or other media.

Source: James O'Brien Introduction to Information Systems (2003:16).

It is hardly possible to see an attribute in this table that the computer processing power cannot be used to improve. Computer features and human judgment work out as follows to achieve specific copy requirements.

Attribute	**Feature**
timeless	story processing speed
currency	speeding up-date of story processing
frequency	copy at touch of button
time period	archiving, present, and futuristic processing
accuracy	grammar and spell-checkers
relevance	electronic cutting out of irrelevances
completeness	document merging
conciseness	electronic precision
scope	electronic column broad or narrow

performance	electronic throughputs for copy
clarity	photo, font, editing features
details	pixel, story copy fitting, or font metrics
order	cut-and paste features
presentation	narrative, numeric, graphic features
media	print, video etc

But to produce tables or lists of information processing fundamentals is not to answer the questions at the centre of newsroom computerization.

This background assumes that for a newsroom to be computerized, four phases of the project must be first undertaken: investigation, analyzing, design, implementation - maintenance of the system is the fifth.

1.1.2 Operational Definitions

Understanding of how project phases are used to determine newsroom prepress copy processing requirements demands a look at the technical concepts. If a news person is to understand the system underlying the features that produce qualitative attributes, one must define certain operational terms.

At issue is how to ensure that the prepress copy is of acceptable quality – a slow speed to process it would compromise the attribute of timeliness. Therefore, the computerization of the newsroom depends on proper understanding both the hardware and software requirements. As copy flows through the newsroom, it passes through channels – this interferes with speed and quality or facilitates the flow depending on how well they are configured.

The operational terms in the configuration include those below.

Accelerated Graphics Port (AGP) An expansion slot for high speed processing of 3D graphics by the graphics processor. Bypassing the peripheral component interconnect bus (PCI bus) that runs at 33 megahertz, it can deliver bulky data for processing at up to 533 megahertz.

AppleTalk An in-built patent of Apple's Macintosh computers for LAN connections. It runs over serial cable and Internet network because it is independent of the network transport.

Asynchronous Transfer Mode (ATM) A high speed network technology, developed to succeed the Integrated Services Digital Network: ISDN has been meant to replace the analogue telephone system - but it runs at 64 Kilobits per second, 128 Kbps if channel-bonded. Super-fast LANS based on ATM can carry traffic of up to 155 megabits per second - voice, data and video.

bandwidth channel Capacity as the difference between the higher and lowest frequencies (analogue). In digital terms, it is the number of bits per second that a channel can carry.

bus speed A data transmission rate, the bus speed – 33 MHz for a decade and recently 100 MHz - determines the performance of a processor - including copy processors.

cable modem A transmission device that permits data transfer and Internet access through cable TV connections with a speed of between 0.5 and 20 megabits per second; this modem has higher data rates than a telephone modem.

cache An area of fast memory that holds copies of data frequently or recently used for speedy access by the processing device, the Central Processing Unit (CPU). A 32 to 64 Kilobyte cache for megabyte one, cacheing for the main memory - the Random Access Memory (RAM).

CD (Computer Disc) Originally developed to store music but now used for storing other data including moving video images, software programs, and computer data.

CGA (Colour Graphics Adopter) A graphics adapter for the first IBM PC - it displayed 320 x 200 pixels in four colours. Its poor performance helped the Macintosh to become the choice for professional designers and graphical applications before serious competition resumed.

clock speed Measures the speed at which a PC's CPU runs - usually, 800 MHz to 2 GHz - though higher speeds exist. At 100 MHz, the external memory and system bus are slower.

compound document A document with parts made from different programs. For example one containing text and graphics. The best known universal document is HTML-based web page since proprietary concerns defeat uniformity cooperative efforts.

compute-intensive Unlike tasks that use a lot of memory, storage or bandwidth, compute-intensive tasks like 3D graphics use much processor time.

configuration Determining hardware and software computer parameters most suitable for its tasks or establishing the best network environment. Errors in configuration cause failure of applications.

copy fitting Making text and graphics of the right size for the available space when a document - a newspaper or magazine - is being laid out. Font size, character spacing, and leading are used in copy fitting.

desktop publishing (DTP) The use of computer programs that are not word processors to design publication-quality documents by fitting in graphics and typographic attributes more precisely.

Fast Ethernet Originally a 10 Mbps configuration, a 100 Mbps version was developed, and came to be referred to by this name.

file compression Reducing the size of a file by shrinking data using appropriate unshrinking techniques to lessen storage space. How a file is compressed depends on its type. Those with identical pixels require different techniques from the tonally differentiated as pixels, text, sound or pictures.

FireWire A high-speed serial bus for Apple and IBM-compatible PCs with data transfer capacities of 100, 200, or 400 megabytes per second and hot swapping automatic configuration. It facilitates connection of digital cameras and camcorders to PCs at cable length of 4.5 metres supporting 16 of them for a total of 72 metres. Its 6–wire cable can carry up to 60 watts of power to a peripheral.

Graphics accelerator An expansion card or a chip connected to a computer for faster display of diagrammatic or pictorial content. In its 2D form, it increases data transfer speed and shading: the 3D one carries out trigonometric transformation besides shading algorithms.

Indesign A proprietary program developed by Adobe Systems after their popular PageMaker desktop publishing software to gain special accuracy in areas including typographic quality.

LAN (Local Area Network) Connecting computers particularly PCs within the same location (office, building, or firm) - to exchange and share data from processing. The most liked LAN technology is ethernet, with token ring coming second.

Macintosh Apple proprietary models of personal computers now bearing the name of iMac; it popularized personal computing by replacing command-driven menus with a graphical interface.

main memory Central addresses for data location, current program instruction, and where data being processed is loaded. Non-main memory includes the following: processor memory cache memory printer memory, video adapter memory, flash memory, and ROM memory.

network A pool of computers connected together through cables or wireless linking to exchange data for processing or storage. In telecommunications, it refers to cables and switching stations in a region through which subscribers are allowed to communicate by making brief connections.

PDF (Portable Document Format) Invented by Adobe system, it makes it possible to port documents with text and graphics, view and print them in other computer systems regardless of the resolution where they are displayed. With the embedding of the original fonts, a PDF text is editable in a limited manner - these files are not bitmapped.

processor-bound Used for tasks whose processing speed is reduced by the clock rate and not by memory availability or disk storage and retrieval speed e.g graphic – heavy copy.

publication-quality For professional publication, a resolution of about 300 dot per inch or superior is considered sufficient for text, digital photographs, and diagrams.

resolution Fineness in distinguishing between pixels, or ink dots for a computer or a printer respectively. In the former, it is measured in horizontal and vertical rows: for 14", 640 x 480 is recommended. Professional printing requires 300 dots per inch or better for minimum quality.

signal A sign, image electrical, magnetic, or light beam used to send a message from one place to another often by modulating it into a wave pattern which becomes a carrier.

VDU (Visual Display Unit) The monitor or the screen device that makes it possible for the output of a computer to be seen. Size, resolution, colour potential, dot pitch capacity, refresh rate, and similar features determine the quality of a VDU.

Windows Designed by Microsoft, it is the most commonly used operating system in office automation. The graphical user interface features were borrowed form Macintosh to make possible working with several programs simultaneously.

In such a major undertaking as newsroom computerization, the operational definitions presented here would not be sufficient. Therefore, these are supplemented in the glossary at the back of this work.

1.2.0 Statement of the Problem

In the newsroom, how hardware and software is configured for prepress copy processing is the problem: copy processing is compute-intensive: the graphics take a lot of the processor's time. Furthermore, if graphics bearing copy have to be transmitted from one place to another, the bandwidth has to be there to carry them it in the download and upload.

In normal office circumstances, downloads are lighter than uploads - newsrooms are different. Downloads must become graphic-heavy after illustrating and editing; as uploads they need a higher bandwidth as below.

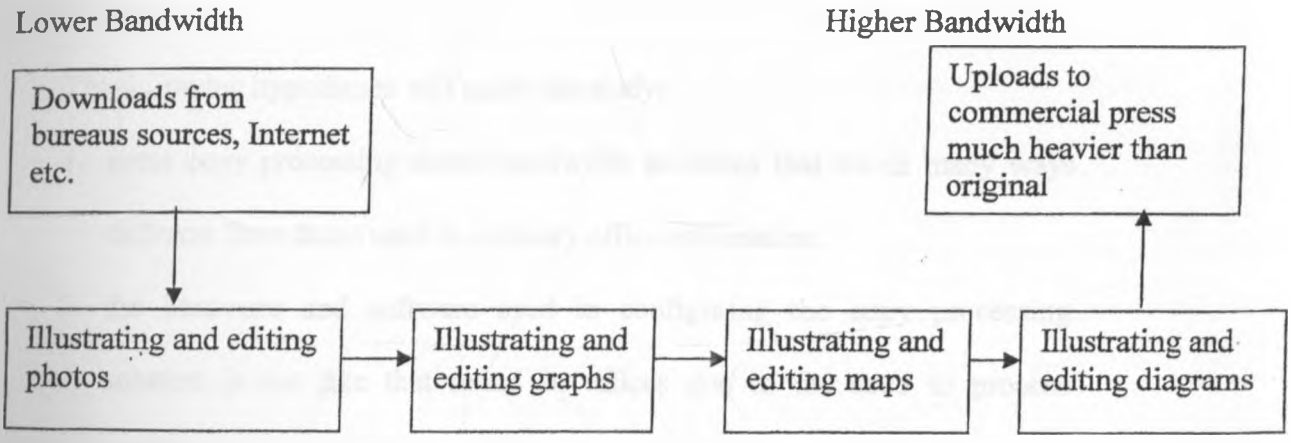

Fig 1: This figure shows how newsroom uploads become heavier than downloads.

Therefore, since the computerization of the newsroom is not like that of the ordinary office, this automation poses a problem. News managers need to understand the basis of this copy flow in the automated newsroom – particularly how it can slow down or interfere with the editing process.. To be able to

communicate effectively with information systems experts, they need to have a grasp of the newsroom automation essentials.

Put another way, the prepress copy is not just disk-bound, requiring only large storage capacity. It is processor-bound - needing speed and bandwidth. The configuration of copy processing features of both hardware and software is the problem that needs sorting out.

1.3.0 Hypotheses

To guide this research, several hypotheses are necessary. It is essential to have to investigate the hardware and software used - along with the way these are configured.

The following hypotheses will guide the study:

1. press copy processing needs bandwidth solutions that are in many ways different from those used in ordinary office automation.
2. the hardware and software used in configuring the copy processing solution is not like that found in offices due to the need to process graphics.
3. the Local Area Network (LAN) in the newsroom is a fast Ethernet server-based one partly for security reasons, and it is able to send prepress copy to the commercial press.
4. without effective control of noise to a minimal level, the prepress copy cannot reach a commercial press print quality.

1.4.0 Objectives

Without a set of objectives to aim at achieving in this investigation, the study runs the risk of being fraught with aimlessness. To keep it in focus, there must be a number of central aims to target.

The objectives to achieve in this investigation include:

1. to give an account of how computer memory, speed, and transmission bandwidth help in meeting the deadlines for prepress copy submission.
2. to assess how the features of a computer meet or fail to meet prepress copy processing needs in the context of the attributes of quality output of information.
3. to increase awareness of how the computer meets the needs of the unusual memory-hungry processing power of the newsroom prepress copy.
4. to explain how connectivity makes it possible for the computer to adapt to the uncommon circumstances of a heavy graphics context.

1.5.0 Justification

Although computer use has been widespread in the last about three decades, there are many things about them – particularly in the newsroom - that are not well understood. The situation is more complex there because of handling of graphics which can complicate configuration quite seriously. To be able to communicate effectively on solutions, editorial management needs to be reasonably conversant with newsroom computerization issues - and with solutions to some of the problems.

Granted that there are specialists in the area, a lot of the configuration can be achieved without recourse to the editorial department. Yet, the quality of any configured system depends on how well the users are represented in the investigation phase.

Prepress copy processing needs to meet the requirements of speed, high memory, elaborate connectivity, and similar ones. How well the editorial department can present these problems determines to a large extent how well they are understood; hence the need for editorial management to be conversant with them.

Application packages can go a long way into solving processing problems. Yet, the transmission systems, the peripheral devices, the memory requirements, and other aspects of the computerization issues can introduce severe bottlenecks. They need to be understood better in the newsroom.

1.6.0 Scope and Limitation

To investigate a newsroom copy processing, a scope must be stated since not everything can get into the study. Constraints of time and space require it: the scope must be narrowed to take in just what must come in. Put another way, the widening should also be done - if too narrow an approach has been taken - to allow what was cut out to be included.

The scope in prepress copy processing includes the following phases: the download of emailed stories, creation of a compound document by intergrating graphics, using text and graphics editing features to prepare copy, and uploading

copy as portable document format (PDF) for transmission to the commercial press.

In ordinary office circumstances, the download bandwidth is wider than the upload - the traffic upstream is lower. But in a newsroom situation, the graphics might mean that the finished copy requires a lot more bandwidth than what was downloaded. This transmission issue - along with the intermediate stages of copy preparation - makes the central problem of research.

Wider issues of the Internet and the finer details of portability into the commercial press lie outside the scope of this work. But the intranet local area network (LAN) is unavoidable if the relevant issue of configuration is to be fully addressed.

1.7.0 Theoretical Framework

At first, the information theory was confined to the Mathematics of transmission. Not any more. Now it is every where. In biology, it is used to explain genetic carriers of information; in physics, how much information-bearing particles can carry, the theory explains.

1.7.1 The Shannon-Weaver Model

In the information communication technology, the bit rate, the frequency, and the bandwidth are central to understanding transmission and information theory. Press copy processing uses all three.

Claud Shannon of Bell Telephone Company developed the Mathematical theory of signal transmission - aiming at maximizing line spacing and minimizing noise (distorts). The diagram below shows, the Shannon-Weaver model of communication. It did not - originally - have the feedback loop.

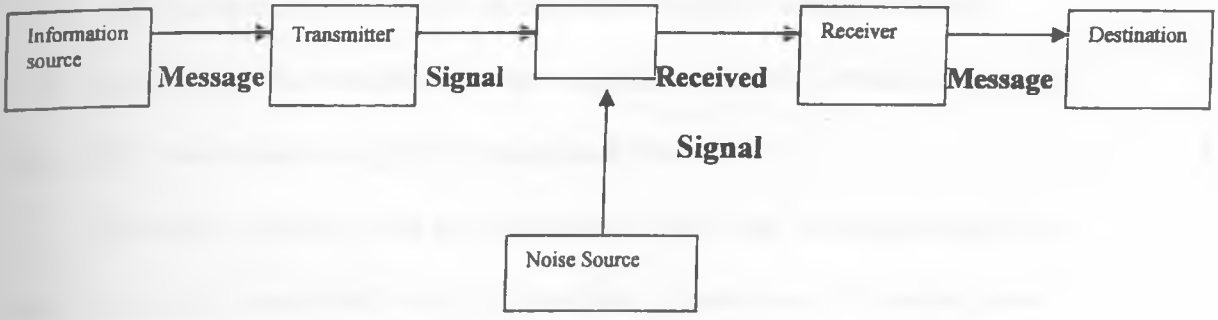

Fig. 2: Shannon and Weaver Model of Communication, A First Look at Communication Theory (2000:37).

In the Shannon model that is the visual representation of the Mathematical or information theory, there is the main threat to information: noise - glitches overloads, cross–talk, static, stray electromagnetism etc. Anything that can interfere with the transmission of the bit is noise.

The bit rate in prepress copy processing is therefore very important. Beating preparation deadlines may make no sense if the copy is going to be stuck between the newsroom and being uploaded - the bottleneck would be bleeding edge one.

A bit is the presence or absence of information–carrying electricity, electromagnetism, or light. The on state indicates a 1 while the off state of the carrier shows a 0. All data is reduced to those two states, referred to as binary notation.

The string of bits that represents a character is called a byte. The on and off states on the computer that will transmit 65 which is A in ASCII is as follows:

Fig.3: The diagram shows how data is transmitted through computer buses.

If the bus were a 4-bit word bus like the original computers it would have to do many serial transmissions to get 64 through and then a 1.

Therefore, the wider the bus, the faster a word can be transmitted. How many bits can be transmitted - say in a download - depends on the modem speed. With a modem of 1,000 kilobits per second, a newsroom almost comes to a stand - still. Shelley, Cashman and Serwatka (2004:2) say millions of bits per second would be more acceptable anywhere in today's standards.

The speed at which the transmission of copy occurs - either as download or upload - depends on the modem speed. In higher speed modems, the frequencies of transmission are higher.

To give an idea of what the speeds are like S.E Hutchison and S.C Sawyer (200:7.8) present a transmission scenario for The Times. The modem used most commonly is the 56 kilobit one: it would download The Times in 25 minutes. In a newsroom situation, those kind of speeds are likely to be found unsatisfactory for handling such a file 10 MB file.

Given that the most widely available channel is twisted pair wire, there is the question of transmission speeds available through it. In general the pair

achieves transmission speeds of 16 -100 Mbps (Hutchison and Sawyer, 2000:7.9). A newsroom can fit its requirements anywhere within this range.

If transmission is not slowed down by frequency, the speed could be limited by bandwidth: the smaller the bandwidth range, the more limited as a carrier. Thus a wider bandwidth will not only carry more data but also increase the transmission speed.

In any type of communication, control or complete elimination of noise is a crucial precaution. Noise interferes with the quality of information received – it introduces unwanted signals in a transmission channel. These cause problems in deciphering the message-carrying signals.

In a newsroom situation, noise could be caused by, for instance, overheated computers. This thermal effect on the conductor of the message would need to be controlled for the message to reach intact.

At the beginning when computers were first invented, one of the biggest noise sources was overheating. The problem is much better contained in the fourth generation computers. Yet, it has never been fully eliminated, and it can resurface in some surprising ways in a newsroom. If proper discipline in the way computers are used is not observed, this could turn out to be - along with others – main source of noise

Although the model is criticized for its pared form, Johnson and Klare (Mcquail and Windals, 1981:12) consider it the most influential. The influence it has exerted has been providing the visual conceptualization of the components of communication, often, other models – no matter how visually original they look –

seem to just reposition or modify the Shannon –Weaver components on one way or the other.

In this 1949 model, communication, for example, copy communication is linear: this is considered a weakness for lack of the feedback loop to say whether copy moves, for instance, from computer to printer. Despite the weakness, the model captures the central components of communication in a clear manner. The clarity has influenced researchers in a wide array of disciplines and subdisciplines: behavioural science linguistic, physical sciences and even biological sciences.

At issue in the central concepts of the model is the signal survival – in this case copy carrying signals with a message for a destination. The information source produces a message which goes through a process with definite results. If the signal survives, communication takes place: if it does not, communication fails.

In chapter four, the study has a section 4.4.0 devoted to the investigation of various threats to the survival of the signal. Of special concern – in the Shannon and Weaver model – is the noise-message ration. The lower the ratio is, the better the communication system: a formula exists for this computation.

But not everyone is comfortable with the model despite its appeal and computation in the physical and biological sciences. Part of the problem is the suspicion that it could get too mechanical to be useful in accounting for linguistic behaviour and communication.

Critical of the Shannon-Weaver model for lack of the feedback loop, DeFluer started reformulating the model in 1966. From 1970 the Defleur model was no longer linear- it had the feedback loop that duplicated the reverse process of the destinations response to a message.

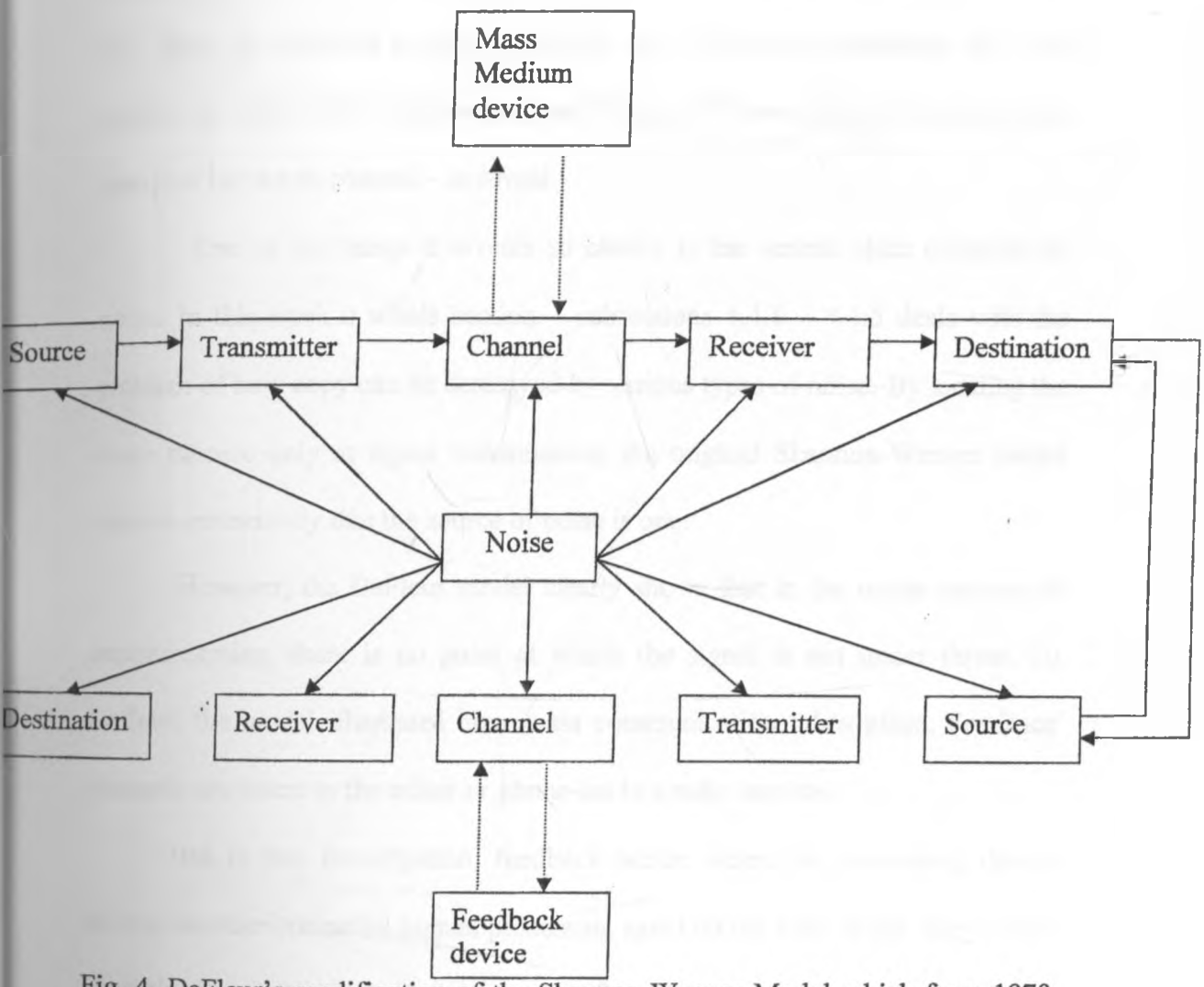

Fig. 4. DeFleur's modification of the Shannon-Weaver Model which from 1970 showed feedback: Communication Models for the Study of Mass Communication, McQuail & Windahl (198:13).

In the DeFleur model, when the message reaches the destination, that is not the end. A similar process to the original one begins – a feedback response. It has all the components of the message initiation and transmission to the receiver.

In the words, the feedback process is a carbon copy of the original transmission but in the reverse order. Whereas the message initiator receiver is on the right, the feedback receiver is on the left. Enormous advantages are to be gained by this visual clarification; the Shannon-Weaver model becomes more complex but not to conceal – to reveal.

One of the things it reveals so clearly is the central place occupied by noise. In this work a whole section – subsections 4.4.1 – 4.4.5 deals with the problem of how copy can be destroyed by various types of noise. By locating the noise menace only at signal transmission, the original Shannon-Weaver model implies erroneously that the source of noise is one.

However, the DeFleur model clearly shows that in the whole process of communication, there is no point at which the signal is not under threat. To Defleur, the model illustrated how mass communication takes place. Feedback channels are letters to the editor or phone-ins in a radio service.

But in this investigation, feedback occurs when the processing device informs another one or the human processing agent on the state of the copy. If for example, one sent a photo to the computer from the camera, the computer should guide the user in the downloading process. Similarly, when a page is submitted to the commercial press, the press should acknowledge receipt of the page. If the page is not in PDF format, it should say it cannot display it due to wrong format.

One main problems with the Shannon-Weaver DeFleur model is the issue of meaning. Fearing that it is too mechanical, other models attempt to address how meaning is best communicated and its effects on recipients. An example is Gerbner's formula, for the most part meant to address the issue of meaning (MacQuail and Rwndahl (1981:18):

1. someone
2. perceives an event
3. and reacts
4. in a situation
5. through some means
6. to make available materials
7. in some form
8. and context
9. conveying content
10. with some consequences

As can be clearly seen here, this research is anchored in step 6: making available materials – not the events themselves and their mediated consequences.

Therefore, it cannot be argued that since the focus is on one of these steps reach and the concern is with machines – that this research is not about communication. The importance of technology in communication needs more attention since the coming of DTP. Preoccupation with meaning can draw too much attention from the means of producing and transmitting the meaning: the machines that prepare copy.

1.7.2 Roger's Innovation Adoption Model

To some extent, this investigation is about adoption of technological solutions. If the methodology had targeted quantitative data, the figures would have shown which of the many newsrooms were using which solution. However, the focus is not that kind. What is important is the description of computing power. How the leading newsrooms adopt it for their networks, computers, storage and other needs is the issue of investigation. The Roger model of innovation diffusion is relevant here.

Adoption of innovations is an area of substantial interest in communication-technological solutions not the least. The need to replace old ways of doing things with new ones got attention in the newsroom. As an institution, the newsroom cannot avoid this scrutiny. If it does not report its adoption of technology, there are enough interested parties to research and make public the research findings.

In the Roger-shoemaker model, there are four main steps in innovation diffusion. The assumption here is that the behavior of the individual mirrors that of the newsroom. Benefit from an innovation the model (McQuail and Windahl 1981:52) Says that here are main stages in the adoption.

1. knowledge
2. persuasion
3. decision
4. confirmation

First, a newsroom becomes aware of an innovation, for example, digital photography and understands how it could be used. Due to favourable and unfavorable attitude to this new technology, newsroom personnel need persuasion. If a decision to adopt the technology follows, there is the need to get confirmation to avoid reverting to the older solutions. When as is unavoidable the teething problems of the new technology start causing problems.

Below is a diagram of the model that captures the complexities of innovation diffusion.

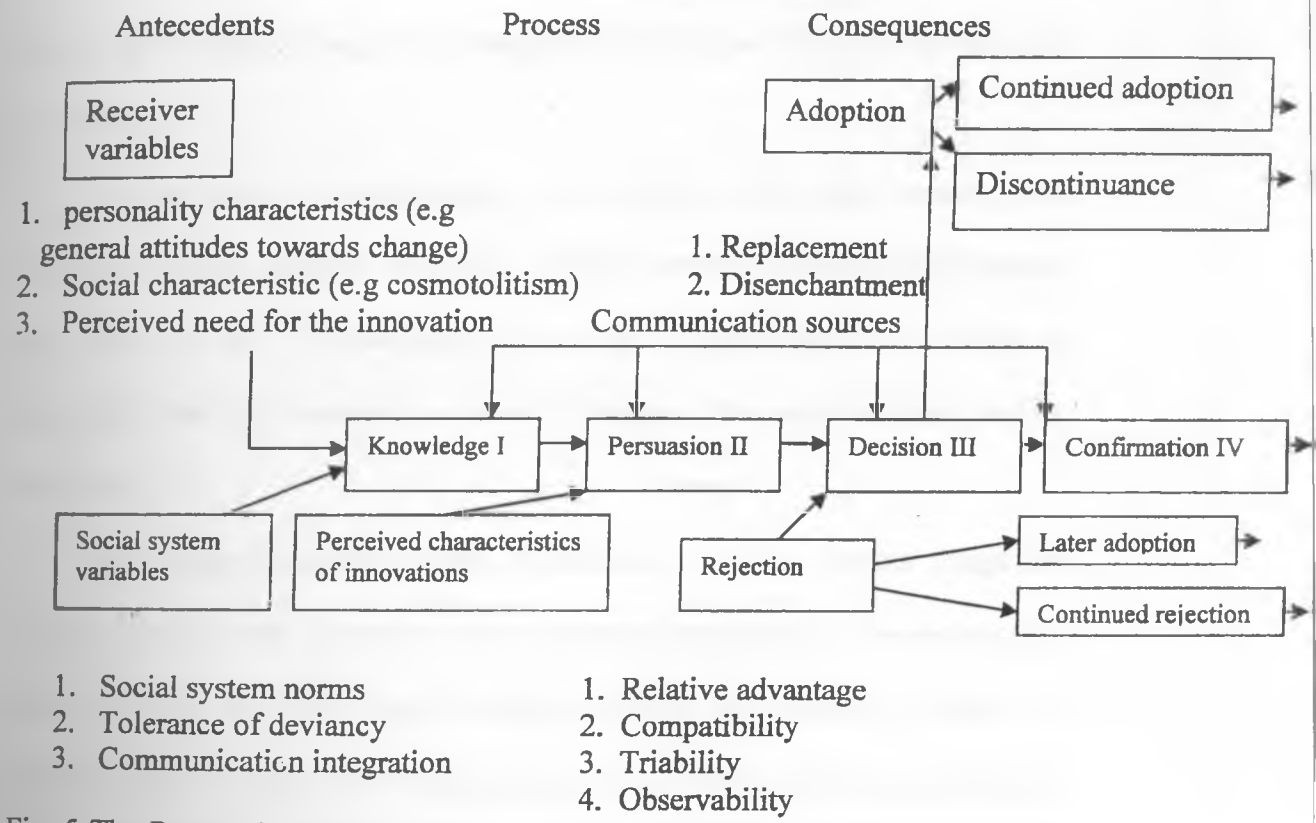

Fig. 5 The Roger-Shoemaker model of innovation decision process showing the four steps in adoption, Communication Models for the Study of Mass Communications (1981.53).

The steps of knowledge, persuasion, decision, and confirmation can be clearly seen. Against the continuum of time is shown below them, the direction of change and likely outcomes are indicated.

To start with, adoption is not possible without antecedents (MacQuail and Windahl, (1981:53). Antecedent includes exposure of individuals in a decision-making position to information about technological innovation availability of new DTP program, for instance. Learning is essential to attitude change.

But the decision to adopt new technology will not simply take place because one has heard about it in superficial way. Furthermore, if one is not well-disposed to change, adoption is not likely to happen. For the newsroom to adopt a new way of copy processing, willingness to change must play a part diffusion can then start occurring.

In the stage of consequences, the adoption will either remain, or a reverting to earlier solutions will occur. This depends on whether reinforcement takes place or not. If deadlines still cannot be met despite there being an innovation that had potential to make it happen, the adoption may not be confirmed.

The Roger-Shoemaker Model is criticized for taking several things for granted. To start with, it argues a case for events organized by innovators; yet, offers an event will not change anything without the requisite a degree of attention to it. No matter how important an event, it will only influence through paying head to the message.

Furthermore, emergency events are more likely to create fast-tracked change – ordinary events will not. The definition of the event must take into account not just persuasion but negative experience which favours adoption. In a

newsroom context, competition can become an emergency – a crisis that breaks down resistance.

In other words uncertainty may produce better consequences than certainty. Therefore, diffusion may occur much more rapidly anchored in a negative experience than when there is positive, promoting of it. Active seeking of technology and adopting it can be spurred on by an event which was not meant to have that kind of effect.

Whatever the triggering event may be, the model it usually illustrated in communication as reflecting certain statistical aggregates.

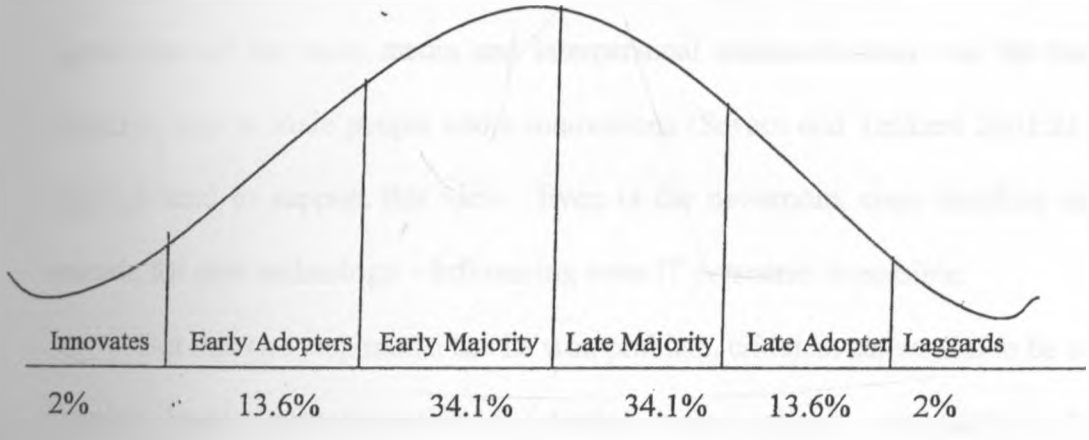

Fig. 6 The Roger adopter types statistically modeled, Communication. Theories: Origins. Methods and Use in the Mass media 5th ed (Severn and Tankard and 2001:210).

As pointed out before, the Shannon-Weaver Model has a linear approach. Rejecting this linearity, Roger goes for information exchange. In a looped feedback conceptualization of communication, roger sees the exchange as offering an alternative idea, practice or object. Newsroom innovations can accommodate all three – technological ideas, copy processing practice, and

programmes or software objects. What determines whether these innovations are accepted depends on several things: relative advantage, compatibility, complexity, friability and observability (Severn and Tankard 2001) But the competition is unpredictable, offering the most difficult problem to any adopter wanting a focus.

Technophobia is not problem the media house is immune to though perhaps more adoptive than other institutions. The assumption in this work is that a change agent an IT professional person – is the opinion leader who like most times initiates technological change in the newsroom. News diffusion is affected by the editorial department.

In an earlier work, Rogers and Shoemaker (1971) had argued that a joint application of the mass media and interpersonal communication was the most effective way to male people adopt innovations (Severn and Tankard 2001:212) findings tend to support this view. Even in the newsroom, copy handlers can crusade for new technology – influencing even IT personnel is possible.

But this two step model has its won problem, criticism shows this to be so. Opinion leader operationzation for testing lacks uniform methodology for verification. In the newsroom, the agent of adoption of institutionalized in the IT Department. Although in a less fluid context that influences who may be debatable in the newsroom, it seems fairly well settled.

The implication that opinion leaders rely on the media would not be accurate in the newsroom context. By policy and daily practice, IT officials are there to mediate between the world of copy processing and technological innovation for this purpose. They influence, rather than be influenced.

2.0.0 Literature Review

To undertake a literature review, a gap needs to be identified. Only then can one show the relevance of the authoritative representative texts surveyed as useful - they must help seal the gap in knowledge. In other words, they can be used to investigate the problem proposed for analysis - a cluster grouping of the sources may be the best review strategy. But first, the gap this study hopes to fill in is that no study has addressed the issue of what computerization strategy best fits the newsroom for prepress copy processing. Yet, it is common knowledge that information technology has permeated every type of data processing: including copy preparation in the newsroom before transmission to the commercial press.

2.1.0 Shortcomings of Computer-Assisted Reporting Literature

The literature on computer-assisted reporting is inadequate to fully inform an investigation of newsroom computerization. To interpret this to mean that it doe not meet the needs it was intended to address would be erroneous. Rather, this should be understood to mean that CAR literature focuses on lot on digital data formats as sources of stories. This is innovative; yet, it does not deal enough with issues of hardware and software-hence the need to use but not make them central in this work.

Brant Houston's Computer-Assisted reporting: A practical Guide (2004) is in this category. Since CAR has become a widespread approach in reporting, the book is useful. With a focus on data collection and data analysis it provides a practical resource for improving stories: database search.

In other words, the book deals with software at the preprocessing stage – newsroom copy processing is the concern of this study. How to use applications to get the copy to input for processing is the central issue of Brant Houston's book. It argues that the preprocessing copy will be found in several applications or formats: Microsoft Excel, Access, or even in databases that the Explorer browser can help view.

The book's chapter two illustrates the differences of approach. Although it focuses on research and downloading, the bandwidth of the graphics-heavy table downloads is not its concern. The closes Brant Houston comes to addressing the issue of the wide bandwidth needed in the newsroom is when he says, "A journalist can transfer data to his or her own computer … [a process] (known as downloading)" (2004:22).

Between pp 33 and 47, Hauston demonstrates how to download files. But in newsroom computerization the point of departure is that the bandwidth carrying the download is what must be addressed to find out what is adequate for the newsroom-and what is not.

As a source to show what consumes bandwidth in the newsroom, Houston's book (2004:33 -47) is very good: tables are heavy graphics. But as a source on how the newsroom copes with the demand for bandwidth the book is inadequate. It needs complementing with computer books- those that address the issue directly as is clearly shown in chapter four.

Furthermore, Houston explains how to create a personal database for use in reporting. But where and how the data is to be stored, in the context of the

computerization of newsroom, these issues must be addressed in Section 4.1.7. it is only the storage capacity that is at issue: so is the bandwidth to carry that traffic.

The book discusses choosing the hardware and software in a brief appendix (2004:207-208). But this is the central matter in the issues of computerization. This direct discussion of hardware and software presents the newsroom laptop in half a page as having the following specifications (2004:208):

20- gigabyte hard drive

1.8- gigahertz

256 megabytes of random access memory

14.5'' screen

DVD- ROM reader

3.5'' floppy drive

Ethernet card

56K modem

Instead of giving it brief attention, Section 4.1.3 is devoted to the discussion of the laptop as a newsroom input device.

In addition, the Ethernet card mentioned here in passing is treated in context in Section 4.2.3. It is not considered to be informed enough to know that a laptop must have a card for data transfer. The network through which that information passes from it to the PC for copy processing needs addressing. Houston's book on CAR does not address such issues.

Another section of the book's appendix is devoted to the software for crunching number – stories need figures. However, the statistical software the author discusses is outside the scope of this work. the more relevant literature is that which deals with how to format the tables once they are in the DTP. Although Roger Parker's book on DTP has quite a bit to do with publishing on the Web, its software discussion is more relevant for this investigation.

Another useful book with better scope though not addressing all issues of newsroom computerization is Bruce Garrison's Successful Strategies for Computer-Assisted Reporting (1996). Its central theme is how to make computing relevant to journalism. Given when it was written, some of those were issues then: not any more. Because adoption has already taken place – to a large extent – the focus now is more on efficiency of hardware and software rather than relevance.

Bruce Garrison observes (1996:92) that smaller newsrooms tend to prefer the Macintosh systems. This is investigated in chapter four. He does not explain why this is the case: to do so would require him to discuss networking – not his main concern. However, discussing networking in detail makes it possible for the obstacles around the use of the Macintosh's Apple Talk to be examined.

But the book does not imply that the Mac is defective – neither does this investigation. Chapter four partly sets out to establish the fact that the Mac remains a viable newsroom computer. The information on this is not available in a CAR book like Bruce Garrison's. that is the reason for bringing in other types of material that are not CAR-related.

The list that Garrison makes on successful newsroom hardware configuration (1996:94) looks faily up to date – even more than a decade later. Yet, there are items there which the more up to date newsroom are not likely to have:

1) 16 MB minimum random memory
2) 28.8 kbps modem
3) optical drive storage system

Using other books than CAR sources is essential in order to explain why some of these specifications will not do in an average newsroom today.

Although the 1.44 MB 3.5 inch floppy drive is not on that list, it features in Bruce Garrison's discussion (1996:95). Yet, this storage medium is now almost obsolete – replaced by flash disk. In an investigation of newsroom Computerization, the issues of storage must be addressed in terms of retrieval speeds as in chapter four. Therefore, Garrison's book goes only part of the way in furnishing this information-hence the need to look at the materials that cover computer communication in a more detailed way.

Bruce Garrison's book discuses newsroom operating systems using Windows 95 as the point of departure. This is the reason why the sections below on computer communications and how computers work are essential. By covering ground that Garrison does not, the books clarify the points that are not clear from CAR perspectives.

In his second book Computer assisted reporting (198) Bruce Garrison generally takes approach to the first one. More involved statistics make the

difference. The figures reflect the newsroom adoption of the following by brand name: processors, spreadsheets, data managers and analytical mapping. In each case, the figures clarify the issues.

However, this study to a large extent is about the badwidth these brands consume and how the copy in the DTP software moves at a speed to ensure deadline compliance. Again, it needs to be remembered that by the time copy reaches DPT, it has already gone through some processing. This investigation is not about pre-processing – the processing itself is the issue.

The use of databases and online searches which the main issues in CAR are not the central concerns in newsroom computerization. Therefore a book like The World Wide Web: A Mass Communication Perspective is invaluable copy web positing. But newsroom computerization focuses on copy processing before it leaves the newsroom for the commercial press.

2.2.0 Literature on Computer Communications

The first cluster of sources should be that of how information is communicated in computers. How this communication suits or fails to suit a graphics-heavy copy is a central issue - news copy is compute-intensive rather than disk– bound.

One of the starting points in this review could be Sarah Hutchinson and Stacey Sawyer's Computers, Communications and Information: A users Introduction (2000). It points out that 90% of the operating systems market is controlled by Intel chips (200:2.17). Yet, the preferred chip for business computers has not traditionally suited the newsroom computerization

requirements. The features of the Motorolla processor that isolated it from this common market and made it the general preference for handling copy are part of the subject of the study. But the PC Intel processor is also invading the newsroom.

Hutchinson and Sawyer (2000) have sections on the features of these processors. These show how they would compare in the main non-newsroom contexts. The Hutchinson -Sawyer tables on page 2.18 do this comparison fairy well and provide evidence in Section 4.2.5 that tries to resolve processor speed. They should be useful in doing an analysis of the copy speeds required for prepress processing before transmission to the commercial press - processor speed and copy deadlines must match.

Furthermore, the Hutchinson and Sawyer text has a chapter on operating systems - chapter 5.3. It has an easy-to-follow presentation of what makes each OS stand out from the rest informing the understanding of each in this research. In this section is information on these operating systems which is supplemented with other sources to explain why Windows or the Mac either operating system would be preferred at Nation and The Standard respectively.

An operating system on its own cannot create a print quality copy. This is why the features of application software discussed in Hutchinson and Sawyer (200:6.4-6.6) and document creation (2000:6.9) become important. The sections are useful in bringing to light how the compound document of the prepress copy is created is the newsroom.

Without copy illustration, it would not be possible to present reading that meets the needs of news communication. How imaging systems handle images in

the computer is explained in 3.14 – there is a section on the digital camera on 3.18. The facts given here are of use in dealing with graphical information in general, and photographic images in particular.

Speed in the newsroom is crucial. That is why in chapter 4 of Hutchinson and Sawyer (2000) – a section dealing with CD-ROM data transfer speeds - is crucial. If photographs happened to be stored in CDs, it would be necessary to get them processed for copy illustration. Therefore, the table of CD-ROM data transfer speeds (200:4.20) is important in explaining processing speeds as shown in Section 4.1.5 on digital camera data transfers..

However, speed without clarity is inadequate: this raises the question of screen quality as part of the processing devices. Options exist in the choice of screen quality. In the first place, why would flat-panel displays not be suitable in newsroom computerization? A part of chapter 3 in the Hutchinson – Sawyer text explains this and more informing making the handling of screen resolution noise in Section 4.4.1.

The output medium gets what to display from some storage: permanent or volatile. In the text, this media is explained. From this information are facts to help analyse the most suitable ways of preserving newsroom data, for the record or for use. Disk capacity is one of the issues – access speed is probably even more important.

From the beginning of computing, one aspect of it has received favourable reception: networking. The issue is usually not whether to network or not - rather,

what kind of network to configure. The Hutchnson-Sawyer book has a section on the advantages of networking. How these fit the newsroom is the issue.

Transmissions and networks cannot be avoided in the investigation of newsroom prepress copy processing. Thus the advantages of networking have to be understood: only then is it possible to justify an investigation of the topology a newsroom might prefer. In Computers, Communications Information (Hutchinson and Sawyer, 2000), there is material for Local Area Network components. It enables the analysis of copy in the LAN in section 4.2.2 dealing with the kind of topologies preferred in both the newsrooms at Nation and The Standard. The Hutchinson-Sawyer material backgrounds for 4.2.3 where I discuss the fast Ethernet solution.

Together with the sections on parts (2.21) and expansion cards (2.23 – 2.25), this information illuminates what happens in computerization in a general context and is adaptable in the particular situation of newsroom computerization for copy processing. One main advantage of networking is the sharing or resources - particularly printers. The Hutchinson-Sawyer text has sections dealing with printers. Although not in a networking situation. This text and the Clifton – Sutcliffe source inform the printer analysis done in 4.5.1

H.D. Clifton and A.G. Sutcliffe in Business Information Systems (1995) also discuss computer printer options. They present an illuminating diagram (1995:119) that helps show in an-easy–to–understand manner the main computer printer families and their subfamilies. In terms of putting the newsroom prepress printer in context, the diagram matches the task.

But this is not the only useful information that the book provides. It has a section on word processing features. With supplements from other sources, it helps fill in the lack of information on this important aspect of document preparation. Before the printing options, the document must be ready – the section shows the features used in improving prepress copy before transmission to the commercial press.

Also, considered in the Clifton-Sutcliffe text are features of the visual display unit (VDU). Their contribution to improving the attributes of good information is not in doubt. What could be taken for granted is their invention there - they were central to revolutionizing the popularity of computers.

Of particular interest is the category of these features concerned with one major issue in news copy: graphics. The actual algorithmic details of how graphics are handled by computers lies outside the scope of this work. However, it is useful to note that the book does not take for granted features like the handling of graphics.

In addition to these VDU features, the text also has useful information on operating systems; not so much their differences but the general functions. This part of the book helps capture in a nutshell what the subject of the entire text is. From this summary, supplementing is done with other texts that help illuminate the issue further.

2.3.0 Further Literature on How Computers Work

To understand how computers work - individually or in a network – one needs to be well acquainted with the literature in this area. It is also this approach that has the potential to show the difference in newsroom preferences – between the Intel PC and the Macintosh.

Originally, the latter was the preferred machine of newsroom computerization: not any more. The PC technology has among other things adopted enough of the graphical uses interface (GUI) of the Mac to compete beyond its usual realms of office automation.

One of the most authoritative texts on how the Wintel computer works is Ron White's How Computers Work, 8th ed. White advises – and I agree - that anyone interested in the Mac (2006:xiii) to consult John Rizzo's How the Mac Works. There are enough differences between the two computers to warrant two different books. However, there are also enough similarities – or they would not be both computers.

Ron White's book on Wintel PCs starts with computer parts providing very useful information for chapter four. This section is handy for checking details on how the computer is put together using separate components. As a work with very good colour illustration of computer and its components, it is handy for ascertaining what parts do which work in copy processing in the newsroom.

After showing the whole computer (2006:12-13) Ron White displays the motherboard configuration (2006:16-17). What could not be seen from outside is now clearly visible. Of particular interest are the following, through which copy

passes for processing: the bus, PCI-E – rivalling and replacing the accelerated graphics port (AGP); the FireWire port with high bandwidth capacity; and the expansion slot which solve the newsroom problem of memory-hungry processing environment.

The North Bridge and the South Bridge come only second to the CPU in importance. Responsible for handling traffic such as copy into the CPU for processing, the NB is strategically positioned near the CPU. Reflecting less urgency, SB is further away form where it handles all other less urgent data transmission – to the disk drive, for example. It does not deal with super input/output: SIO does that.

As this section on the motherboard shows, the Ron White's book shows with clear illustrations how various components and peripherals work. These authoritatively handled issues include the following:

1. PCI- Express (Peripheral Computer Interconnect-Express)
2. registers (to hold preprocessed and processed part of copy)
3. data rate speeds for accessing RAM e.g. copy data in RAM
4. MMX and SIMD for graphics
5. overclocking and overcooling
6. file compression techniques (e.g graphics in copy)
7. how available bandwidth moves data
8. power supply issues and UPS (for handling noise)
9. flickering and CRT screen problem
10. digital photography

The reason for listing these is that their direct connection with copy processing can be easily seen as chapter four demonstrates. Sections of the book which do not have a very direct relationship with copy are also useful in providing background information.

For example, although the section "How Hardware and Software Work Together" (2006:30-31) does not seem important in copy processing, it is. The central concept in it is 'shadowed' basic input and output system (BIOS). To save copy, BIOS must be involved – yet, it is stored in EPROM (erasable programmable read-only memory) which takes long to access.

To show how to increase the saving speed - and therefore the processing time - the section describes how the BIOS and device driver sets of code are both loaded shadowed into RAM which is faster than EPROM. Once the operating system has done that, it leaves the work of saving the document to BIOS and hard disk driver or floppy disk driver - depending on what the save command stated.

Thus in copy processing, if there are slow events, they bog down he output of fast devices. Hence, a section in Ron White's How Computers Work might at first not appear relevant to speeding up copy processing. Yet, a closer look shows the opposite to be so.

Another section that may not seem to have direct relevance to speedy copy processing is "How Hardware Interrupts Tell the CPU What to Do" (2006:32-33). Nevertheless, this interrupts part is one of the most important parts of the book. It shows how the CPU frees itself to attend to processing tasks. If it worked by the polling option, it would go round the devices checking on tasks reserved for it - a

time wasting approach. This is very useful background for the analysis of field data in chapter four.

By adopting an interrupt approach, the CPU can go on with processing – copy processing in this case-until an interrupt for say 'out of memory' arrives from the memory management unit. The OS would then output on the screen the message to close some of the open programs overstretching the memory resources – and wait for this dialogue message to be obeyed. After the closing of the windows and freeing memory, the CPU would resume copy processing.

John Rizzo and Daniel Clark's How the Mac Works: Millennium Edition has a section on the Power Mac (200:8-11). It describes how this Mac differs from the iMac (2000:4-7) – also from the Power Book and iBook (200:12-15).

This description clarifies things about the choice of the Power Mac as the newsroom computer. To find out the actual details of the processing power, the questionnaire is unavoidable. But the book prepares one to understand the Mac that used to be best suited for heavy graphic processing. The Mac brand has had a reputation for capacity for compute-intensive processing like those of prepress copy preparation.

Yet, without a text like this, it would not be easy to get to know just which Mac is used in the newsroom. More important, however, are the machine specifications which the text discusses. Unlike the other Macs, these have the fastest processors, an inbuilt graphics system, the biggest hard drives among the Macs, the most RAM, the most storage, and the best expansion options (200:9).

But an investigation of this kind should have more specific information than this by raising issues as below:

1. Is the HDD installed in the Mac AT 33, AT 66 or AT 100?
2. What is the speed of the Power Mac processor?
3. How wide is the bandwidth of the graphics system?

These questions illustrate one major point - that books cannot keep up with the speed of innovations in technology.

To avoid making the book outdated before it is hardly out of the press, writers like Rizzo and Clark (2000) understandably leave out specifics. In this situation, the speed and bandwidth specifications are stated in their work in generalities rather than details. For comparison with other Mac versions, the generalities serve the purpose. But for copy speed analysis in 4.2.5 generalities have given way to the specifics of processor speeds.

However, in terms of the needs study of the newsrooms, the generalities can be only useful if supplemented. The supplementation has to elicit more specific details of the kind that would show how the newsroom requirements of processing power are met - or fail to be fully met. Without taking this approach, the computer - intensive view of newsroom needs would not be addressed.

As a distinguishing component, the operating system is perhaps unequalled in explaining the differences between PCs. That is why the operating system section (Rizzo and Clark 200:17-35) is very important. Even ten years after the writing of the Mac operating system code, it had no proper name (2000:18).

Tracing the operating system through this evolution, Rizzo and Clark examine both its components and function. They provide easy-to-digest colour illustrations which if handled without graphic content would be hard to understand. Illustrated explanations simplify the material and make it more understandable in terms of how – in this case - it would help process copy.

In particular, the authors show that what is considered system software cannot be one thing. The Mac system software consists of the following: managers, system resources, system extension and a feature called pre-emptive multitasking (2000:27). Therefore, the text raises the issue of the futility of attempting to separate operating system and other software – arguing that it is more illuminating to accept some features of applications as extensions of the system. As chapter four shows, the hardware and software must work together for any speed gains to be made.

More unsettling for the researcher than this may be the disappearing distinctions between the Mac and the Wintel operating system. Reading the chapters on the processor and memory raises the issue more than those on the operating system. However, a closer examination of these can highlight the differences as well as the similarities.

To check facts on copy processing, one needs to look at the following chapters in Rizzo and Clark (2000):

Chapter 7: Binary Numbers and Transistors

Chapter 8: How the Processor Works

Chapter 9: How RAM Works

Chapter 10: How Virtual Memory Works

Chapter 11: How a Cashe Works

Chapter 12: How a RAM Disk Works

But the differences and similarities between these chapters and what is contained in Ron Whites How Computers Work (2006) can be misleading as chapter four clearly shows in Section 4.2.5.

Needing to be heeded in the analysis is this caution: "Clock rate is **not** horsepower" (Rizzo and Clark, 2000:53) – at a casual glance, the Pentium processor seems more powerful - but is this the case? Would that be the reason for the apparent invasion of the newsroom by the Wintel operating system: this argument that the literature raises requires a closer scrutiny in the main analysis in chapter 4.

From chapter 13 -15 (Rizzo and Clark, 2000), the storage media is discussed. It is a useful section of the book for looking up how this media can increase or lower the copy processing speed. However, the speed given as AT 720 cannot be taken as definitive of the newsroom HDD: cross-checking is needed.

Similarly, the AT 36 given for floppy disks is not to be taken at face value. As a prevailing newsroom rate, this would be considered slow because of constant innovations. Yet, there is another issue to consider – whether the newsroom still using the floppy drive is an issue.

With six chapters devoted to the Mac input-output devices, the subject is clearly explained. This information on I/0 devices is available as follows:

Chapter 16: How USB Works

Chapter 17: How Firewire Works

Chapter 18: How the keyboard, Mouse, and Trackpad work

Chapter19: How SCSI Works

Chapter20: How Expansion Slots Work

Chapter 21: How Multimedia Works

In this last chapter, the concern is with the graphic aspect of multimedia communication - this work's scope does not include video and music. But the other chapters are useful in explaining how to analyze newsroom computing power in chapter four.

Yet, the book devotes most of the section to these two: only pages 146-147 deals with graphics -- hence, the need for supplementation of material. There is sufficient information on this in Ron White's How Computer Work (2006). Part 6 of How the Mac Works, deals with display various types of this component. Of particular interest is the PDF format used in transmitting processed copy to the commercial press. The information on pages 162-163 can help in explaining why the vector option rather than the pixel equivalent for display is preferred.

Although the investigation does not deal with what happens at the commercial press, it is crucial to ensure certain things. Among them is the fact of what displays better on the receiving end; the production end. It is an end that does not change copy; yet, the display that will print well is to be preferred to a poor one treating documents as pixels rather than objects.

3.0.0 Methodology

In the methodology for this study, two things stand out: the components to be configured for copy processing are one of the issues. On the other hand, there is the question of the questionnaire methods used to get information on this configuration. Such a double-pronged approach is used here in the investigation of how the newsroom technology is fitted for its purpose. This solves the problem of ascertaining prepress copy quality before transmission to the commercial press.

3.1.0 Judgmental Sampling

According to Earl Babbie (1989) In the Practice of Social Research, non-probability sampling includes the method used in this research. The sample of newsrooms did not involve many of them. In choosing the trend setters – Daily Nation and The Standard – the methodological assumption was that some lead; others follow. This sampling approach is called judgmental.

Babbie says that a researcher could decide to study student leaders to uncover the causes of student protest. This would be acceptable in that what the leaders know is what the rest also understand as the basis of conflict. Critical in a issue like this is aspect of protest: the visibility of the leaders (Babbie 1989:2004). Nation and Standard are media leaders. In other words, the researcher uses conscious sampling. Once it gets to the level of consciousness, it can no longer be random sampling or any other method but judgmental. The basis of this intuition.

Intuition in human thinking is as valid as any other way of thinking. James Anderson, (1987:167) argues that this kind of logical reasoning leads to

judgement sampling. In effect, it can achieve one of these three things: identify pure types, represent diversity, or to eliminate sources of variation. No need to identify a pure newsroom exists – or eliminates variants.

The reason for including or second newsroom – when one would have been sufficient – was to meet the requirement of diversity. If an extra newsroom is included, it is sufficient – was to meet the requirement of diversity. If an extra newsroom is included, it is sufficient caution against the following fallacies: oversimplification, appeal to one copy processing computing tradition, hasty generalization, and bandwagonising for a single for a single viewpoint.

3.2.0 Data Collection and Data Analysis

Starting with the classification of quantitative research is a viable point. The research aims to quantify the processing power, of the components of – Daily Nation and The Standard -two newsrooms by gathering data on components including the following:

1. hard drives
2. external drives
3. storage devices
4. PCL-Express
5. modems
6. printers
7. monitors
8. registers

9. caches
10. network cables
11. RAM
12. laptop capacities
13. LAN loads
14. bus speeds
15. FireWire
16. Font metrics and shapes
17. processors
18. cameras
19. scanners
20. virus scanners

Only with a clear statement of the processing power and options available can a newsroom's capacity for copy processing be understood. The processing power must be stated in electronic units.

The subclassifications of evaluative research are needs assessment, formative evaluation, and summative evaluation. Since the newsroom of study – Daily Nation and The Standard – have already been computerized, this is not a needs assessment research. The needs were assessed – and solutions found.

If the computerization were still on-going, this work could be said to be formative. Evaluation of that kind is used to determine where a project is going – scope limits or where there are short-comings. It can then be used to put it on

course for the envisaged solutions to work. In other words, summative research is corrective in nature.

Placing this research in the summative subclassification is the most appropriate given the options. In a summative evaluation, the effort is geared towards assessing how well a completed project meets the needs earlier identified. Unless this evaluation takes place, there can be misguided complacency about what was achieved. Yet, having new technology in place can be worse than before.

For the computerization project to be unequivocally justified, a post-evaluation is essential. That is to say that the time the computer project team commissions the use must not be the end of scrutinizing it. Rather it is the end of formative evaluation and the beginning of summative assessment. It is not waste of time: it is ascertaining efficiency.

From one perspective, the utility of the technologies and solutions being adopted must be determined. Adoption must not be encouraged for the sake of it – there is the BE (bleeding edge) rather than the cutting edge of technology. What one ends up with is determined by the amount of evaluation that is encouraged. Competitive utility must be determined for the hardware-software solutions.

It is possible to belong to the 2% innovators of technology and yet – not be far from where the 2% laggards (Severin and Tankard 2001:210) in Rogers adopter types are. How to get out of that is clear: evaluation. At first glance, Summative evaluation does not appear necessary. Yet, it is not enough to just have a working system: how well it works is the issue –and the pivotal point in this investigation.

This kind of evaluation ensures that the hardware-software solutions being adopted function not only efficiently but also accurately. Accuracy must be determined by the summative evaluation. If for instance, modders were allowed to tamper with processor speeds, computers would continue to function efficiently but not produce accurate copy.

In other words, classifying this research by the criterion of purpose is the most fruitful approach. From the four categories – basic research, applied research, action research and evaluation research – doing this is not too complex. Since the research involves complexities of melding components for the best effects, it is not basic. It is not action research because no action will result from it in any direct manner.

Again it is not applied research since the approach is theoretical and it does not test any model in a very direct way. The arguments are logical but not applied to solving a problem in a newsroom by implementing an applied model.

Thus the purpose of this research is basically evaluative: assessing the most suitable computing power for copy processing in a middle range newsroom. Although Daily Nation and The Standard are the biggest in the region, they are medium-sized by world standards.

In terms of the methods of data analysis the research is obviously not one of discovering cause-effect relationships. Neither is the approach correlational in a quantitative manner. By getting only two respondents – the approach adopted here the possibility of ending up with correlations is foreclosed.

Furthermore, the research does not use a survey, the observation, or experimentation. Part of the reason is this: since it aims at a scientific statement of electronic quantities, the way they are read by one person is exactly the way another will read them. A computer manual that states that the monitor screen is 17 inches will read that way no matter how many respondents respond to the question in the questionnaire.

No single formula can work to describe configuration appropriateness. But the starting point is the same - whether for office automation or for more complex designs. This start involves understanding of the components available for configuration.

In the first place is the question of the processor. It is probably common knowledge that the computer of choice for heavy graphic processing has traditionally been the Macintosh. Yet, it may not be obvious that Apple abandoned the previous standard. Motorolla 6800 was sidelined in favour of adopting PowerPC technology - in which case, the question of the processor most appropriate for the newsroom must be raised.

To answer that question, two things must be settled. The model's speed, and the amount of data the cashe can hold not to slow down this speed. For example, the pre-pentium Intels – 733, 850, and 1,000 - all have cashes of 128 Kb, as any sales adverts will easily show. How sufficient would this processing be in preparing prepress copy?

But the same question could be asked for the early Pentiums - all they did was double the cashe capacity. In terms of what cashe capacities were at the time,

this was a feat. Yet, in an area where nothing remains the same for long, this too would not prove adequate. The question is, what would be sufficient? This is what the questionnaire is about.

As far as motherboards are concerned, the pre-Intel IV had their own inadequacies. However, market adverts show that they are still in stock. Would newsrooms want them configured for prepress copy processing? The Random Access Memory (RAM) adequate for newsroom use raises another question of components. No matter how fast the processor is, if the memory cannot hold enough data for processing, little will be achieved.

The list is not exhaustive; it could include a number of other components of interest in newsroom computerization – the questionnaire is more exhaustive.

In some newsrooms, an anti-glare screen may not be considered a necessary. Yet in others, this would be a must. This is the reason that the above list should not be considered exhaustive. Peripherals and components that are not needed in one newsroom could in another turn out mandatory.

3.3.0 Research Instruments

One of the most useful parts of the Clifton–Sutcliffe book is the section on needs investigation before a system is put in place. It presents useful ideas on how to structure a questionnaire – besides doing an actual interviewing. Although this work is not a needs investigation, it has a lot in common with that phase in system planning. The reason is that it seeks to unravel the choices made in system design; also, to consider how well the choices serve the purpose.

That useful section is not without its shortcomings. On the continuum of choices in the questionnaire design, it gives an example (1995:482) that is not the best since it has a midpoint choice of 4 between 1 and 7:

"How important is if for you to have spell checking in a word processor?"

1 2 3 4 5 6 7

Not important very important

According to VanAlstyne and Merrill (2002:180) midpoints are to be avoided – they attract an inordinate number of respondents. In this particular case, they would be opting for the apparent neutrality of 4.

In spite of such shortcomings, the book is useful. An inadequacy like that can be made up for by another source - the VanAlstyne-Merril that is handy in this respect. The latter source does not deal with general issues without particular attention to detail in the type of questions to construct.

Yet, no matter how well structured the questions are, they do not always meet the needs of obtaining all information: interviewing may be is necessary. The Clifton-Sutcliffe book (1995) has a section on guidelines to interviewing where it presents the interview as a complement of the questionnaire. It shows the interviewer how to prepare for the task.

To interview well it argues - the interviewer must thoroughly prepare on the subject matter; in this case, how computers work in the newsroom. It arms the researcher with the choice of both structured and unstructured interviewing. For a structured one, a plan must be worked out in advance on the kind of questions to ask.

The book assumes that the interviews are primary – and should therefore come before the questionnaire. If one sees the interviews as useful for clarifying issues not well responded to in questionnaire, one might consider having them after the filling in of responses.

All that aside, the section is useful in helping one learn how to do the following:

1. determine if the interview will be structured or not
2. get in touch with respondents early enough for them to check - up facts and arrange to spare a bit time off work for the interview
3. make the interviewed at ease if recording
4. listen more than talk to be able to take written notes as memory is unreliable
5. avoid interviewing supervisors and workers together as this could compromise viewpoints
6. not to cover too much ground in a single interview or digress as this results in time loss
7. sum up for verification of facts that might need cross-checking.

This is a brief summary of the information in Clifton and Sutcliffe (1995:278-279).

If the assumption made in this investigation – that the questionnaire is adequate turns out wrong –the interview complement might feature prominently. Otherwise, the description of the newsroom computer system should be fully captured in the responses of the questionnaire.

To supplement information on what kind of need analysis takes place – before a system is implemented – System Analysis and Design Methods is a very good text. The chapter on information system building blocks (chapter 2) is a useful one for clarifying the fundamentals of system requirements.

Chapter 6 is on requirements, discovery. In terms of sharpening such focus, that source is authoritative. Even chapter 9 can meet the same need as it is on the feasibility of a system and system proposal.

Of these chapters, the requirements one may be the most important in terms of relevance to the study; yet, since this investigation is about newsroom and not office automation, the chapter may not be useful in a very direct way. But it offers insight such as the fact that if error in requirements analysis is discovered very late in the implementation, the cost ends up being 1,000 times more than in the earliest phase (2002:217).

Understanding of this bleeding edge (BE) problem in computerization helps shape the questions to ask. To elicit the most important information – such as modem and hard disk speeds-one can see clearly the BE implications should the system fail to achieve speedy downloads or loading into RAM.

Another source that could help one prepare for interviewing is Principles of Information Systems: A Managerial Approach 5th ed. (Stair and Reynolds 2001). Among the chapters with general information is chapter 2 on information systems in organizations. But as mentioned before, office automation is different from newsroom automation – in terms of processing needs, a heavy graphics content creates the difference.

Due to matters of systems investigation and analysis to discover needs – whatever the context – chapter 12 is more directly related to preparing for the interview. Yet textual information from any source has to be adapted to fit the newsroom circumstances. Business systems and copy processing systems are not exactly alike.

But no amount of reading can become a substitute for knowing what to ask: questions must be on target to elicit the facts to analyze.

3.4.0 Examples of Copy Processing Questions

According to Judith VanAlstyne & Tritt Merril (200:179), there are about six conventional ways of asking questions in a questionnaire. Each type of question has its advantages and disadvantages – it is the joint sealing up of loopholes that make the questionnaire a useful tool of gathering facts for analysis. Dual alternatives seem to have the easiest type of data to analyze. The response required in this type of question is yes or no - or their equivalents.

Example: Do the AppleTalk layers of newsroom computers conform to the open systems interconnection reference model (OSI Reference Model)?

Yes _____ No_____

In the multiple choice type of question, alternatives are supplied to capture a fact, preference, or opinion. A processor speed is a fact; whether or not a 60 GB hard disk is sufficient for newsroom needs is an opinion; and which computer is in the newsroom is a preference.

Example: The operating system used in your newsroom computers for prepress copy processing is:

Type		Model
Windows	☐	_____
Unix	☐	_____
Mac OS	☐	_____
Linux	☐	_____

As can be seen here, it is possible to have double combinations of the six types of questions. In this question, multiple choice is combined with the type called completion.

A pure completion question would be like the one that follows.

Example: If AppleTalk is used in your newsroom LAN, state the following:

a) The maximum number of computers possible in the network_____

b) The highest speed the prepress transmission can reach_____

c) The longest possible distance between the processing devices_____

The rank ordering question format asks the respondent to rank a listed number of items according to some stated criterion or criteria. As the example below shows, it is possible to use the same question to elicit more facts without too much risk of information elicitation overload.

Example: Please rank the following sources of copy processing first in terms of the highest frequency and then according to the most serious damage: impulse

noise(e.g. thunder), and white noise, attenuation, crosstalk, delay distortion, and line failure. The ranking is from the highest to the lowest.

Frequency	Damage
1. _____	1. _____
2. _____	2. _____
1. _____	3. _____
4 _____	4. _____
5. _____	5. _____
6 _____	6. _____
7. _____	7. _____

Since the same kind of information is needed to do the ranking, the question does not overtax the respondent. If anything, the juxtaposition helps in the processing of the ranking.

Continuum scales are somewhat like rank ordering only that the ordering is within a range of gradations.

Example: Indicate the response which best shows the occurrence of down time system failure in prepress copy processing.

☐ often ☐ sometimes ☐ seldom ☐ never

The reason for the use of four choices is that if they are five or seven five, there is a middle score. It attracts an inordinate number of respondents.

The essay response requires respondents to fully state opinions or facts. Unless a question cannot be put in any other format, it should not be asked in essay form - restructured responses have clearer focus than unstructured ones.

Example: Provide any other information on the operating system in the prepress copy processing LAN that clarifies information the components raised in this questionnaire._____

_____

_____

Free responses to questions like this one do not guarantee relevance; yet, they may be the only way of getting information that could be overlooked by a questionnaire.

There is need to cross-check lists in Business Information Systems (H.D. Clifton & A.G. Sutcliffe: 1994: 280-281). Some of the requirements include the following: explanation of the purpose of the questionnaire; keeping questions short, unambiguous, and unbiased; grouping questions by topics; giving instructions on how to respond etc.

In its design, the questionnaire in the appendix whose sample questions have been reproduced here follows these guidelines. Although the instructions were meant to help elicit facts of use in designing a system, the same ones are needed to discover what was done in a system already in place.

3.5.0 Questionnaire Serving Logistics

Before the Daily Nation and the Standard responses to the questionnaires, there is need to understand a number of things concerning the research. The work does not involve any trade secrets that could put the careers of the informants in

jeopardy. However, the precaution of keeping them anonymous – the approach taken here-may be best.

For them to be able to follow the questionnaire items easily, there is need to understand the research background. As pointed out before, the research is not a needs assessment or a formative one. These have already taken place in the newsroom otherwise the computer systems would not be in place for copy processing.

In a summative research like this one, the pivotal issue is to evaluate the efficiency of the computer system in place. The two respondents'need to understand this purpose and objectives of the study is crucial. How effective the solutions of copy processing are in the newsroom is the focus of the study – hence, the need for respondents to state the computing power of each electronic component in the questionnaire.

To ensure greater accuracy – particularly in what could be overlooked – pretesting the instruments is essential. How comprehensive the questionnaire becomes depends on the correction of the weaknesses observed during pretesting. It is one of the best ways to ensure completeness, accuracy, and representativeness of the items included.

But pretesting or administering a questionnaire without first establishing a rapport is risk taking. One of the reasons to get reasonably well-acquainted with the respondent is to avoid suspicions. Nevertheless, appearing over-inquisitive can increase rather than decrease them. In Introduction to Information Systems (2003:42) O'Brien raises the question of competitive strategies for businesses – a

potential area for suspicions. These would be at the level of cost leadership, differentiation, innovation, growth secrets, alliance creation etc.

Being one of the most visible competitive grounds, technological innovations can look vulnerable. Too many questions especially comparing media houses can introduce complications for research like this. Circumspection is expected in this area for any meaningful results.

Therefore, rapport-building is essential in a meeting or talk with respondents or their friends. The suspicions that cannot be eliminated directly can be dealt with indirectly through mutual friends. If contacts with the respondents are not forthcoming, going through such friends could be as effective.

The idea is to ensure that the investigation does not raise suspicions which could jeopardize responses. Voluntary, informed consent created through trust is the only way of ensuring that the instrument is valid and reliable.

3.6.0 Validity Checks for Accuracy

This research - to a large extent – is not subject to the usual problems that interfere with the validity of results. In Section 3.5.0 it has been shown how lack of a proper rapport in a competitive business environment can lead to research failure. The nature of this research requires honest statements of, IT officials of the computing power of components: variables that do not change. By reading manuals or other documentation, they can fill in questionnaire items with little or no threat to validity on the sense of Campbell and Stanley (1963) or Mason and Bramble (1997).

For this reason validity need depends more on rapport than any other factor. The usual internal and external threats to validity that can sometimes plague a social science research are not likely to occur here. Validity problems usually arise in pre-experimental, experimental and quasi-experimental circumstances – all these through variable change.

In such research the possible threats include the following classical factors: historical change of variable in the subject, maturation through for example are demand of the investigators; statistical regression of extreme scores; experimental mortality through research dropouts, and the joint operation of all those. Quantification of the computing power of components is not study to most of these. Unless someone got deceased or a similar thing happened, most of these do not apply.

It is the same for the postclassical threats in the sense of Mason and Bramble (1997). These include the following: diffusion when the subjects and the control group lose salient distinctions through contact; the control group's gaining against the subjects through compensatory activities, and multiple serial treatment interference that makes it difficult to differentiate which treatment is responsible for which results. Again, these cannot apply to a subject using documentation to fill in a questionnaire.

If there are sections in this work that deal with conceptual validity, it is 4.3.2 and 4.3.3. The conceptual validity here is copy quality – a very difficult term to define. Yet, it cannot be ignored since that is what computing power in copy processing is meant to achieve. But instead of focusing on the concept to

define its aesthetics, the sections concentrate on how computing power can achieve it.

This is how the pitfall of getting over-involved in aesthetics during the study of newsroom computerization is avoided. In this approach, the shortcuts to typographic and graphic features that enhance readability and communication through formatting and editing become the theme not the concept of quality. As a conceptual construct, quality has the kind of validity that controls the analysis from the background rather than the foreground.

Throughout the study, construct validity is taken care of by one of the most powerful tools of analysis: definition starting with operational definitions that inform the early parts of the work. The analysis brings in many more – so many that a glossary becomes necessary. There are no other known ways of keeping the constructs being studied under sharp focus; operational definitions and glossary create the sharpness.

Another aspect of validity that could cause problems is the criterion related validy in determining computing power. The controversy about the processing power of the PC and the Mac can illustrate this. The megahertz rating of a PC Intel processor can be double that of a Mac. To respond to this, Mac fans would say that an idle processor is no asset.

If the PC - unlike the Mac – has no way of speeding data into the processor, that is not computing power.

In other words, anyone with common sence would agree that how fast a vehicle can go in a rally depends more on the driver than its factory

specifications. The Mac has drivers to rush data for processing: the PC does not. Considering the interior of the processor power, the PC and the Mac can therefore easily equalize since what one has the other does not. The criterion–related validity is applicable. But in some cases, it is applied more through personal judgment rather than by clear-cut scientific facts about computing power.

Nevertheless, in most circumstances, unlike what is true about lack of lawlike statements in social sciences (James Anderson, 1987:80) laws can be stated about computing power. It is not all the time that there is indefinite evidence; If a camera of 1.3 mega pixels (MP) of resolution is expected to produce 24 shots, that is a law. Hardly anything about it is debatable. The 24 will be there – their quality, as was said before is another issue.

4.0.0 Technology Adaptation Options in Newsroom Computerization

At every point – in the computerization of the newsroom – decisions must be made about the best option in adopting each generation of technology. It is no longer the case that any one standard of computer brand, component, or peripheral dominates. In such a fluid and competitive situation, one word captures the array of issues to be tackled before a choice is made: options. At the both Daily Nation and The Standard, this is what counts. The penalty for laggards (Roger, 2001:20) is severe: losing a job.

Yet, what needs noting in that no two newsrooms may choose among the options in exactly the same way. And, the factors influencing the choices are diverse: costs, traditions, integration problems, security, central management system accounting etc.

4.1.1 Operating Systems and Copy Input Devices

It is not possible to separate operating systems from the copy input devices: they manage them. The basic input/output system (BIOS) supervises the loading of the operating system during booting. However, once the computer is running, the operating system runs the BIOS routines. As they copy and store data for dispatch, they do so under the supervision of OS: hence, it is called the supervisor (Hutchinson and Sawyer 2000:5.4).

In terms of which operating system to choose for the newsrooms the alternatives are many. Hutchinson and Sawyer have the following as the available ones in the field of computing: DOS and windows 3x; Windows 9x, i.e Windows 95 or 98. Windows 2000, previously named windows NT (New Technology) version 5; OS/2 warp; UNIX; Linux; Mac OS; and Netware (2000.5.14).

At Nation the operating system in place is Windows 2000. The decision to phase out the Macs was caused by many problems – among them costs. Nation was unable to justify the cost of the Macs which went for as much as three times what a PC cost. It seemed more like resistance to change than anything else. Not to replace Macs with PCs was unadvisable.

Managing the Macs from a central management of passwords and accounts was not proving very easy. One major issue mattered significantly: security. Even the latest version of Mac OS – OS X – was not providing a good enough platform for resolving such issues. If other options could come into play, the situation might improve.

Seemless integration of the Macs processing news copy in the Editorial Department and the PCs in the other departments was a major concern. Advertising, Finance, and Production were the other Departments. One solution appeared the best for this problem: getting rid of as many Macs as possible – with a view to phasing them out. To a large extent, this has been achieved.

At another level, the problem was AppleTalk – a protocol i.e a set of rules on which devices should exchange data. Hundreds of protocols exist: TCP/IP, CDMA, TDMA, HTTP, WAP, etc. The TCP/IP protocols the PCs at Nation were

use was Transfer Control Protocol/Internet Protocol (TCP/IP). The Mac AppleTalk was not fitting in well with the PC set of rules.

The reason was that the AppleTalk uses a broadcast transmission: this wastes bandwidth. What this means is that it does not identify the station that requested the information. Copy broadcast would have to go to every computer till it comes by the one in the local area network (LAN) that made the file request. In the process the bandwidth being used for this is needed to transmit more important information than redundancies.

According to Hutchinson and Sawyer (2000:5.20) the Mac – partly because of pricing - has a small market. It is only about 4% of the personal computer market – and 7,000 commercial applications packages compared to 30,000 or more for DOS and Windows. This awareness played part of the decision at Nation to shift from the Mac to the PC. If a quick solution were to be found, it would be in the more prolific area of the PC.

In addition, whereas AppleTalk supports a limited number of computers – about 32 –Windows can take care of large networks. But all this is not to say that there is little good about the Mac.

From the beginning the Mac was recognized as the computer for graphics. If stories had to be illustrated with drawing programs, this computer has always had drawing facilities – as well as graphic processing power.

There are more reasons why at The standard there has been no shift of PCs. For example, it is possible to open the Mac while it is running –a handy feature during troubleshooting (Rizzo and Clark 2000:9).

4.1.2 Downloading by Modem and Satellite Dish

Data on the Internet – from bureaus and other news sources – travels at 45,000,000 bits per second (Paul Gilster 1997:66). As a backbone transmission speed, this is reasonable. This data that moves over a T-3 connection and cannot download in the newsroom at the same speed it travels on the Internet. Smaller connections are needed.

The volume of data to download is much less. Yet, there is a reasonably wide choice of what bandwidth the newsroom might prefer. Some of the choices include the following

Modem	Bandwidth bits per second
28.8 kbps modem	28,800
33.6 kbps modem	33,6000
56 kbps modem (56k)	56,000
128 kbps modem	128,000
256 kbps modem	256,888
T-I modem	1,544,000
Switched Ethernet modem	10,000,000

Among these choices is also that of a software modem.

Although the software modem has the advantage of low cost, it has a serious disadvantage. It runs in the CPU – taking the processor's time to download rather than process data. In situations of little need for processing time, it works. Nevertheless, if a computer has to play the role of the server in a newsroom network, this software cannot cope with download requirements.

But whichever type of modem one uses, the download speeds are not a main newsroom problem since they are not graphic – heavy. As Hutchinson and Sawyer observe, a ten-page, single-spaced letter can be downloaded by a 28-kbps modem in 10 seconds and by a 56-kbps in half this time (2000:7.5).

Unless these specifications are for a very small newsroom with little copy data to handle, they would not be suitable for newsroom downloads. In a medium sized newsroom, like Nation's, the lowest download speed acceptable is 128 kbps. In other words, the requirements of ordinary office download speeds are inadequate in newsroom contexts.

Most offices can cope reasonably well with the modems of 56k and below. But in newsroom this is complicated by two things – daily deadlines, and graphic -heavy content. Such compute-intensive copy processing needs faster download of copy from the upcountry news bureaus and other sources.

At Nation, there are three possible speeds after the 56k: 128 kbps, 200kbps, and 256 kbps. The middle one is found an unnecessary expense. With 128 kbps as minimum and 1256 kbps as maximum, the downloading needs are met reasonably well. Yet, getting the 256 kbps speed is not automatic upon requesting – a thorough requirements investigation has to be conducted for each office.

Bureau data traffic for copy processing is not uniform. Therefore, no assumption can be made that content from a certain bureau needs faster download modems. Before the volume of traffic is spelt out in specific terms, allocation of

the 256k for download needs cannot be undertaken. The maintenance of the system requires review as the needs continue to change.

But this might sound as if it solves every downloading problem in the newsroom. However, Hutchinson and Sawyer (2000:7.8) express the contrary. In certain contexts, the modem can be hopelessly slow. If the whole copy of The Times was needed for some reason the usual download mechanisms would fail to meet the need.

Below is a comparison of the various options possible and how long they would take to download The Times.

Fig. 7: Speed of downloading The Times a file about 10MB. Adapted from Computers, Communications, Information 7th ed. (Hutchinson and Sawyer 2000:7.8)

From this figure, it is quite clear that taking nearly half an hour to get information from sources is not viable. If daily deadlines have to be met, a faster way of prepress preparation must be sought.

But it must also be remembered that there are several issues intertwined: what is viable, what is available, what is affordable, and what has all these combined. The modem suits specifications easily – hence the popularity.

Nevertheless, its speed is not viable in some contexts; it's services have to be supplemented by other copy downloading means.

An Integrated Service Digital Network (ISDN) was developed as a technology to supplement or replace the public telephone network. With a channel capacity of 64 kbps, it was considered faster than the 56k of an ordinary modem. Furthermore, due to channel bonding, it was possible to put two 64 kbps channels and bond them to double the amount of data to 128 kbps.

Nevertheless, this technology did not deliver as much as it promised; hence, the proliferation of satellite dishes. One major advantage of satellite transponders – with both transmitter and receiver – is that they can send signal anywhere on earth; operating at above 10,000 gigahertz, they can reach one-way speeds of about 40 megabits per second. But aerials limit directions to one-way if not meant for business transmission.

Despite its limitations, the satellite dish has offered a better choice than the dial-up modem and ISDN. At Nation, ISDN is not an option except for the telephone. For the quickest delivery of copy, the satellite has proved Nation's best alternative for prepress copy data downloads. Since each of its channels can carry only 64 kbps, and when combined about double (128 kbps) at Nation it is used only for telephones.

Dick Pount in the Concise Dictionary of Computing (2003, ISDN) defines faster ISDN data rates as 23 B channels of 64 kbps each (US and Japan), and 30 B of 64 kbps each (Europe and Australia). The problem is that in general, UK and

US standards have lagged behind – an influence affecting Kenyan newsroom computing.

If faster modems than a single channel or bonded one cannot deliver prepress copy faster than a 256k modem, it does not make sense to have ISDN downloads. Furthermore, ISDN is being overtaken by DSL which can offer broadband. Although broadband ISDN is planned – as a technology of the future to carry 150 Mbps for video phone calls-DSL gets more attention.

Apart from cable modem, the faster technology is the Digital Subscriber Line: a new broadband transmission over the copper wires with data rates of 50 Mbps. These exist in the following varieties, though newsrooms are not using them: ADSL, HDSL, SDSL, and VDSL – normally abbreviated as x DSL. The acronyms stand for Asymmetric Digital Subscriber Line, High – data-rate Digital Subscriber Line, Single-Line Digital Line, and Very-high-data-rate Digital Subscriber Line.

In the US and UK, ADSL is already being implemented. The data rates and ranges of all the xDSL are promising.

version	downstream	upstream	range (ft)
ADSL	1.5 Mbps	16- 640 kbps	18,000
HDSL (two-wire)	2.0 Mbps	2.0 Mbps	12,000
SDSL(single wire)	2.0 Mbps	2.0 Mbps	12,000
VDSL (asymmetric)	13-50 Mbps	2.0 Mbps	1,000

Fig5: Adapted from The Concise Dictionary of Computing Dick Pountain (2003: Digital Subscriber Line xDSL). One reason why this technology is not yet in the

newsroom despite its high capacity – especially VDSL – may be the price. But as will be seen later newsrooms have bandwidth-and-memory hungry operations that are not easily satisfied by the latest innovations for office automation.

4.1.3 Wireless Laptop and Wireless Phone Inputs

Between a wireless laptop and a wireless phone, the journalist will always choose a laptop; some of the reasons for these are obvious, but some may not be. The most plain is the fact that the laptop has a more spacious keyboard to write copy from. Before looking at other reasons for not choosing the mobile phone it is essential to understand the laptop as an input device for prepress processing:

In Computer Science (2004:4.5) C.S. French classifies computers into two categories: special purpose computers, and general purpose computers. Not cast in stone, the distinction allows for overlaps. But special purpose computers include what is found in a rocket, for example – computers with specialized applications.

For general purpose computers where the laptop belongs, the list of designs is long: word processor, home computer, personal computer (PC), desktop computer, work station, and embedded computers. The designs are adapted to the special circumstances in which the particular design is used.

The laptop is particularly suited for field work, for example, where press copy is obtained. In its basic design, the laptop is a portable PC. Its small size and its being light make it fit the circumstances of newsgathering. Instead of transmitting directly like broadcasting using amplitude modulation (AM),

frequency modulation (FM), binary amplitude shift keying (BASK), or phase modulation (PM), the laptop sends copy into the base station (Gralla, 2002:81).

But the mobile switching centre (MSC) which receives copy does not send it to the messaging centre (cf Gralla 2002:97) where the short message service is run from. It transmits it into the network to be accessed by a router – the only way a message can come in or out of a corporate network (cf Gralla, 2002:112).

The laptop copy then is routed to the corporate network server, the link between the news corporation and the eternal world. After it arrives in the mail server, it can be downloaded from any access point subject to the download arrangements in the corporation.

At both Nation and The Standard, the laptop is used for wireless newsgathering. The designs of these do not look radically different.

Feature	Nation	The Standard
dual core (GHZ)	2.4	1.7
display screen (inches)	15	17
RAM	512 (MB)	1 GB (DDRz)
Hard disk (GB)	120	120

The duo core does mean that the laptop can load two processors simultaneously – rather it can simulate, for example, Windows or Unix consecutively, if there is need to.

In both newsrooms, this equipment is similar, except for certain variations. The computers to access the laptop copy must be configured in newsrooms in the same way: they must have wireless cards. If these were not

there, computers would not be able to access the internal network and therefore would not be part of the external network – the Internet. Access points normally have a transmission foot print of about 100 - 200 feet (Gralla 2002:112). Even if a newsroom were a composite one of several floors, access would still be possible. What this means is that copy transmitted over the wireless network can also be downloaded using a wireless communication facility in a computer. If one has a laptop, downloading is possible through access points. One has to be within the LAN to download editable copy.

For purposes of editing, processing must be within the LAN. However, there are times when journalists would like to download copy from outside the LAN to see the type of story they would be expected to edit. Through the Virtual Private Network (VPN) this downloading is possible. This access to copy in the newsroom from the Wide Area Network creates convenience.

But for purposes of changing that copy, one has to edit the download from within a LAN. In other words, changing copy from outside is not possible. This limited access to copy file protects stories from being interfered with by outsiders. One has to gain physical access to a LAN to work on copy. That means that in the WAN, it is downloaded and read as read-only copy.

4.1.4 Scanner Inputs

Image capture is essential in prepress copy processing. It is the production of a digital picture in the memory of a computer. From there, the image can be manipulated to illustrate copy to help readers understand news. This is why

Scanners are newsroom essentials. Both at Scanner are used at both the Daily Nation and The Standard, Scanners are used.

That an image speaks a thousand words is so well known that to some, it might sound like a cliché. Yet, there is no other way of expressing this profound truth. Where a thousand words will labour and not say clearly what needs to be said, a scanned and well processed picture will catch the eye and tell it all.

As an input device, the scanner extracts a digital image from the original and then creates a stream of binary data. What determines the zeros and ones is the intensity of the light reflected by the scan points. Guiding the scanner where to extract the dots that represent the image is a light sensor moving along narrow strips of electronic thinness.

Without the use of a rasterizer (Dick Pountain 2003: raterizer), the scanner cannot display the image on the screen – all it does is create and describe geometrically, the positioning of a font or a 3D object. An inbuilt hardware device then converts the geometric descriptions of dot positioning and dot absence into pixels which can be displayed on the screen.

At Nation both a flat-bed scanner and a drum scanner are used. The resolution of the Nation scanners was reported as 600 dots per inch. On the other hand, the standard reported using only the flat-bed scanner – but with a resolution of 1200 dpi.

The difference between the two types of scanners – flatbed and drum scanner – is the method of traversing the image during a scan. In operation, a flatbed scanner moves its light source and scanning head under a glass sheet

where the original is laid. The dots in the scan strip will either reflect light or fail to – meaning that a bright area will bear more ones of the binary stream and a dark one less.

As the name implies, a hand-held scanner is moved manually by the person doing the scanning. Except for the manual method of traversal, the dot binary recording is the same: bright spots have more ones and darker ones less. Thus its image captures is a geometric description of the dot –absence-of-dot of the bit field.

The drum scanner is considered to produce the clearest image. However, it should not be forgotten that a drum scanner with low resolutions may not be as good as another type with high resolutions. At The Standard, the scanner in use is the flatbed. But since it has a high resolution –1200 dpi – it produces images as good as the drum scanner at Nation.

In performance, a scanner is evaluated by a two-tier parameter: the minutest dot it can sense, and the size of digital samples it extracts. In a newsroom, one would expect scanners to be above small range devices. The need for high resolution images requires it. Medium range devices can distinguish 1200 x 2400 dpi – these, they can pick up in clusters of 36-bit samples (Dick Pountain, 2003: scanner).

4.1.5 Digital Camera Data Transfer

The purpose of a digital camera is to mainly bypass the long studio process and the scanner procedures. If created digitally, the image can be stored as binary data

to be transferred to a computer for further processing. For purposes of illustrating copy the photograph is indispensable: both Daily Nation and The Standard have digital cameras. As input devices in their newsrooms, these have taken a prominent role.

According to "Digital Cameras" (Wikipedia.com, 2007) digital cameras are overtaking film ones in sales. That means that the newsroom has to be prepared for digital processing of images. If these do not come from their media personnel, they might be snapshots from amateurs who are at story scenes as they unfold.

Instead of the photographic analog format of the conventional film – the 35 mm film – the digital camera has a card. It is a removable recording device with a memory for images. If inserted into an adapter on the computer, the contents can be downloaded onto the hard disk for editing. Originally, there was mainly the serial port for downloading the images – using a special type of software.

But according to Wikipedia (2007) the camera has been redesigned to appear as a computer drive: from this drive running downloading software is possible. It uses the USB port for mass storage connection. If this is not used, the alternative of Picture Transfer Protocol (PTP) is available for image transfer.

FireWire is an interface that is also sometimes used to connect the camera and the computer. Although, fireWire is mainly designed to support plug-and-play and hot swapping of peripherals, it is indispensable in the newsroom. Its particular

attraction is its speed bus: it has data transfer rates of 100, 200 or 400 Mbps (Pountain, 2003: FireWire).

Most photographs are likely to be taken by newsroom professionals. But compact digital cameras can be used by non-professionals who might want to capture scenes for newsrooms when stories break out. Transferring data from such cameras is done through USB, PTP, or FireWire. In design, compromising on zoom length for extended depth of field makes them easy to use. The JPEG file compression format they use is lossy but does not compromise the image seriously.

On the shortfall, these cameras are poor input devices – when it comes to shooting motion. Their limited speed features of just 6 or 8 (Wikipedia, 2007), makes it impractical to capture fast moving images: they exit the range of focus before the shot is taken.

Like compact digital cameras, bridge digital cameras are small-sensored input devices. Although much better than compact digital cameras, they are midway designs between these and true digital single lens reflex cameras. They actually look like DSLRs. Light weight is a selling point; so is the very good image they can produce – with scenes composed with LCD for previews or Electronic View Finder (EVF), superzoom lenses, wide angle, or telephoto converters attached to the lens (Wikipedia, 2007). Downloads would be just like that of compact digital cameras.

The digital single lens reflex camera designs are based on film SLR counterparts. For this type to be understood, it is essential to distinguish between

the bulky commercial production version used in studios and the newsroom model. Conversions of cameras to digital back have been a problem.

Only in EFS-1 was the conversion possible. The digital back to replace the film gives the camera 1.3 megapixels (MP) of resolution and 24 shots (Wikipedia 2001). But until EFS -10, A 10 MP camera, the digital back was not fully developed to be distinguished as a separate product. One of the largest sensors – medium format is 35 mm –is p45, a 39 MP imageback with a single image of 224.6 MB.

This enormous image would present no download problem in the FireWire-equipped newsroom that can handle as much as 400 Mbps of data transfer. But in a conventional 56k modem situation, there would be a serious bottleneck. If it would take 25 minutes for a 56k modem to download a 10 MB file of The Times (Hutchinson and Sawyer, 2000:7.8) that means that a 224.6 MB image would take about 8.8 hours to download.

4.1.6 Electronic Keyboard Inputting

The keyboard is an input device for entering data and commands into a computer. Whereas commands are control instructions, data could be numbers, drawings (drawn graphics) or text. In the newsroom, all three types of data are common. About 100 keys are fitted into a shallow tray. The keyboard of the IBM-compatible computers and the Macintoshes is an intelligent device fitted with a microprocessor (Pountain 2003).

In the newsroom, understanding the keyboard layout and key functions is therefore essential. The text input keys are the QWERTY and the related subset of the alphabet – in addition to the punctuation keys: dash, hyphen; colon, semicolon; double quotation mark, single quotation mark, single quotation mark – this is also the possession mark; curly brackets, angled brackets; question mark, forward dash etc.

Since the keyboard is basically inherited from the typewritter, there are keys that carry out exactly the same function they do in typewriting. Such include Shift, Tab, and the Caps lock. The computer has both automatic carriage return and a manual alternative. The automatic return moves the insertion point one line below when it gets to the end of the line.

But if one wants to start a new paragraph or input a command or type a command into the computer, the Enter key is what to use. Together with the cursor movement keys, Enter helps control the input area for insertion, deletion, cut and past transpositions, spelling correction etc.

If a story is phoned in using the mobile phone or the land line, this cannot be listened to in the print media. It has to be written down using the input keys of the computer for the print media. Therefore, the keyboard is the most prominent input device in print media.

As usual in many contexts, stories may have been gathered using shorthand for that obvious reason: speed. Stories cannot be read in shorthand in newspapers. The keyboard must be used to render the story into readable form; hence, the assertion that the keyboard is the most prominent input device in the

print newsroom. Whatever the method of gathering news, copy must pass through the keyboard to be printable.

Sometimes the story may have figures to be processed into graphic form: tables, bar chasts, pie charts, etc. The numeric keypads make this a lot easier. Above the QWUERTY and other characters of the alphabet are numbers for inputting figures. However, these are useful when it is an occasional recourse to a figure in between words. These number keys are too spread out on the keyboard to allow fast input. By bringing the numbers together concentrated in a small space at the numeric keyboard, the keyboard design simplifies finger movement – faster numeric in put is ensured.

In Word 2002 Scott Basham (2002: cover verso) divides his "Handy Reference" into two: editing shortcuts, and formatting shortcuts. These are combinations of keys that help in the processing of documents once the inputting has been done. These will be the subject of a later review when actual processing is discussed.

4.1.7 The Newsroom Backup of Inputs

According to C.S. French (2004:62), the following back-up devices and media are available: magnetic disk, magnetic diskette (floppy disk), optical disk, magnetic tape, magnetic tape cartridges and cassettes, solid state storage devices, and mass storage devices and media. In newsroom computerization, the storage needs are not like those of an ordinary office – the graphic – heavy content requires higher and storage capacity. Both Daily Nation and The Standard use magnetic tapes.

The question is how high to go. In the first place, the floppy disk is unsuitable for the newsroom: even if it was not being replaced by the flash disk. But can then high-capacity flash disk that is making the floppy disk obsolete meet newsroom needs? For personal use in the newsroom that might be the case. Yet, where institutional back-up is concerned, even gigabyte flash disks may fail the test on one account: cost.

In other words, media houses want higher and storage capacities that meet heavy-graphic content back-up without increasing costs. Access speeds also matter. However, these can be compromised to cut costs. As the table below indicates, the most important issues in the back up include: access speed, storage capacity, and transfer rates.

Device and Media	Typical Access Time	Typical Storage Capacities	Typical transfer Rates	Types of Storage SAS or DAS	Where used as primary medium.
1.Floppy disk(Diskette)	260ms	180K bytes to 1.25M bytes	24,000 bps-50,000bps(bytes per second)	DAS	Small micro-computer based systems-otherwise as a back up medium for hard disk.
2.Magnetic disk	20-60ms	60Mbytes-5Gbytes	312,000bps-2,000,000bps	DAS	Minicomputers and mainframes
3.Optical disk	100ms	55Mbytes-10Gbytes	200,000bps	DAS	Minicomputers and mainframes-for archiving or on-line back-up.
4.Magnetic tape(reel-to-reel)	A search is required.	40Mbytes-160Gbytes	160,00bps-1,250,000bps	SAS	Minicomputers and mainframes-mostly as a back-up medium for disk.
5.Magnetic tape cartridge	A search is required.	50Mbytes-10Gbytes	160,000bps-1.6 Mbps	SAS	Microcomputer and minicomputers.
6.Magnetic cassette	A search is required	Up to 145,000 bytes.	10bps-33,000bps	SAS	Small micro-computer system.

Fig 8: Comparative performance of backing storage media and devices, C.S. French, Computer Science 1996:74)

One cannot help the feeling that French's table needs up-dating to including the changes in technology since it was last revised.

However, in the main draft, the table is instructive. Newsrooms choose storage media with high capacity and fast transfer speeds. Thus whereas optical disks are in the topmost storage, (55 MB-10 GB) their slow transfer rates of 200,000 bps would not andear them to newsrooms.

To beat copy processing deadlines, transfer rates must be 5 or 10 times faster than that of optical disks – hence the reel-to-reel magnetic-tape rate of 1,250,000bps. Although serial access may increase the time spent locating copy file in this medium, its fast transfer makes up for lost time. According to C.S French (1996:69, tapes that cannot be read this fast rotate at 30, 45, 75, and 125 inches per second (ips)

This means that the magnetic tape swirls at close to 200 ips where some of the fastest retrieval occur. In ranges much lower than this, reading can only be between 100,000 – 200,000 bytes per second (bps). Optical disks behave this way – it is mainly slow rotations that reduce the read-write speeds.

To understand the use of magnetic tapes in the newsroom, it is essential to remember the following. They are 300, 600, 1,200, 2,400 or 3,600 feet long and ½ inch wide; have recording density of between 200- 6,250 bytes per inch (bpi) furthermore, they are reusable up to 20,000 – 50,000 overwritings; have a write permit ring to prevent accidental overwriting; have a theoretical 40 million bytes recording capacity at 1,600 bpi; but only 20 million is realized due to ¾''

inter Block Gap (IBG) and 20 feet first and last space conventionally not used (French 1996:68-69).

4.2.0 Speed in Prepress Copy Processing

In the first part of this chapter, the main issue was copy input devices: here it is speed. Although all institutions appreciate speedy processing of data, few do so as much as media houses. In computer context, it makes no sense to have fast input devices if the processing phase will be a slow one.

4.2.1 Intranet Speed for Copy Processing Support

First it was the Internet that grew; then it was discovered that its features were applicable to corporate computing. Therefore, the intranet refers to the implementation of Internet solutions to meet the communication needs of corporations which in this case affects copy processing. Intranets have become more acceptable in corporate computing than related technologies: adoption of personal computing, client/server computing, the Internet or even the web. Both the Daily Nation and The Standard have intranets – as expected since these are now almost universal.

According to William Stallings (2005:193) there are advantages of intranets that have propelled it to the forefront of adoption of technologies. These include the ones below and have all worked to support copy processing:

1. allows fast conceptualizing and implementation of new services: results within days or hours

2. can start with minimal adoption and build on it
3. demands little training requirements beyond basic exposure already built up by the Internet users
4. all platforms can fit into an intranet; despite complaints of not achieving full seemless integration, can attain complete interoperability
5. espousing open architecture allows for add-on applications from many platforms
6. enables a range of options to choose from distributor computing architectures (central or distributed servers)
7. supports a range of media: audio, video, office automation
8. can integrate traditional information with electronic counterparts stored in databases, word in databases, word processors and groupware databases
9. requires little investments in hardware or software
10. adding an intranet server would not require configuration of drivers and interfaces or the client machine
11. familiarity with browsers and their being available in all platforms would not call for installation and synchronization
12. being HTML-based, intranet implementation has the advantage of speed for HTML tags allow for fast modification to suit corporate needs
13. flexibility of information presentation, for example, through hierarchical formats allows for ease of movement – from the general to the detail
14. high processing speeds, storage, and high data rates of LANs commend the adoption of web technology.

Yet, at the core of corporate computing, the model of computing is the client/server. The intranet is a useful way of communicating about copy. But the actual processing is done in a client/server environment.

4.2.2 Copy in the Local Area Network Topology

Unless the newsroom is a small one – both the Daily Nation and The Standard are medium – the peer-to-peer network topology will not work fast. This means that for fast processing, getting the topology right is essential. In a peer-to-peer LAN, the network has sufficient speed up to 25 computers (Hutchison and Sawyer 2000.720).

Under heavy exposure to accessing each other's file, the traffic builds up and slows down the network. Inexpensive as this LAN technology may be, it would not be suitable for meeting the newsroom needs. LANtastic by Artisoft), Localtalk (by Apple) and Windows 95/98 all from Microsoft may be more affordable but less capable of meeting speed requirements.

In a newsroom like Nation's with over 300 computers and about 700 combined for print and broadcast at The standard, the peer-to-peer LAN is unlikely to be suitable. This technology is basically suitable for smaller networks in workgroups, office automation, or similar contexts.

From a medium-sized newsroom, the LAN of choice would be the client-server one. To have no LAN is not a viable choice because of the advantages of networking. These include sharing peripheral devices: printers, disk drives, and canners. In addition, sharing of programs and data is also another advantage.

Rather than buy single user programs, organization prefer to purchase network versions –cost cutting dictates this approach. Some of the software in this category is groupware that improve the speed of working in teams.

Through networking, communication about copy is improved. Instead of going to queue at a photocopier waiting for a copy of a story to be made for someone else who needs one, it can be sent over the network. Even when the photocopier is not that busy, this would still be a better way of handling copy – what needs changing can be faster in soft form.

In terms of accessing databases such as the library of copies in a newsroom, the stories are only a click of the button away. Manual newsroom libraries and archives do not have the capacity to provide fast access to needed files. In a networked situation, files in the library or archival resource can be easily retrieved: access to databases makes information processing not only more complete but also faster. They are faster than manual record keeping.

Yet, compared to intranets, client-server applications have always proved difficult to implement for optimum efficiency. William Stallings (2005:196) points out the following difficulties – obviously, they apply to newsrooms:

1. long development period through assessment of needs
2. problems of apportioning load between client and server modules or modifying it when user feedback requires it
3. time, effort, and other exertions to install upgrades in clients
4. difficulty in adjusting servers to meet increased load in a distributed environment

5. an unceasing need to add computing power to desktop machines to meet processing requirements.

In terms of the last of these complications, few office automations would need as much computing power as the newsroom – it being a graphics-heavy environment.

The typical client server design of client-server computing applications is as below. What causes many of the problems discussed above is 6 (c) in the figure below.

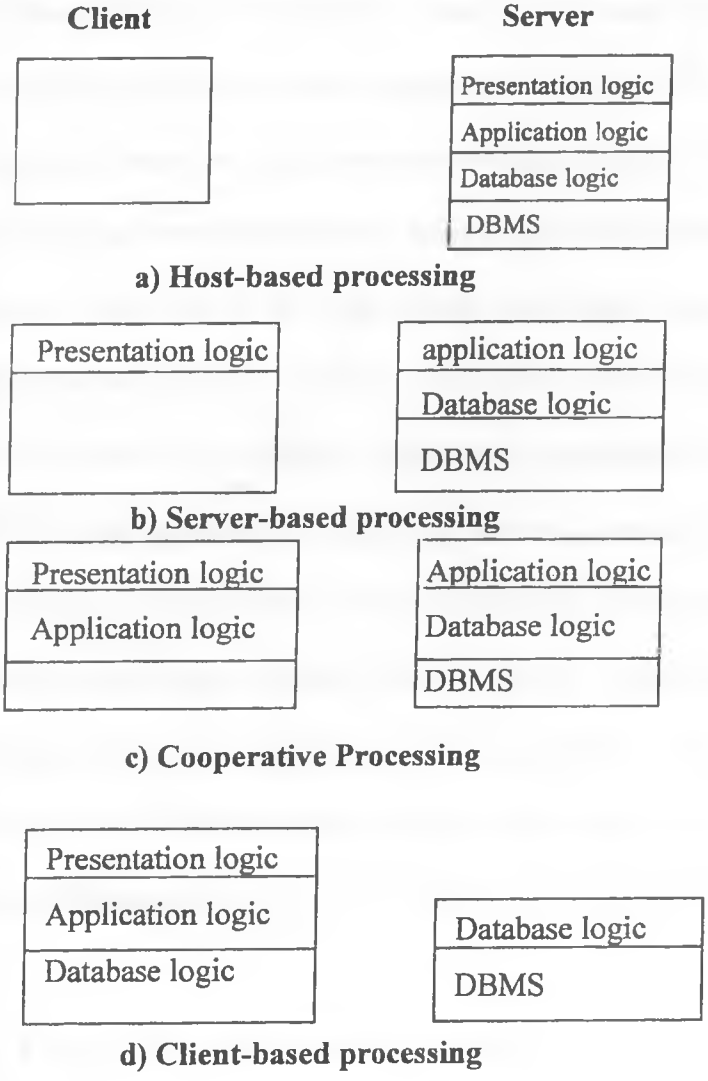

Fig 9. Types of client-server applications from Business Data Communications William Stallings (2005:184).

Because of the problems of not being able to be precise in determining the load in cooperative computing, corporations go for fat clients as in 6 (d). As the most difficult option in networking, it is often avoided.

What this means is that the intranet approach is in the class of alternative 6 (c) – a fat client in the newsroom is unavoidable. In the host context, which is almost the opposite of the client, the server does everything: a dumb terminal displays the result. Because of the need to closely approximate the copy as a final newspaper product, a dumb terminal computing is not viable in the newsroom. Newsroom products must be a what-you-see-is-what-you get: WYSIWYG. The usual flat, screen dumb terminal would not enable such print previews.

Is there a way out of the host versus client-based dichotomy of two somewhat unattractive choices? A three – tier client server architecture is the solution: it moves out of the traditional client-server paradigm. It is a middle-tier applicable server suit between back and data servers, it would be possible to reduce the client into a thin machine. This is exactly what has happened.

To avoid overloading a computer which is already working in a computer-intensive environment because of handling graphics, a middle – tier system can be introduced. This tier performs the tasks of both a server and client. To the client, this is a server: to the back end server, the middle-tier system is a client.

4.2.3 Copy in Fast Ethernet Network

The traditional Ethernet LAN that uses Ethernet cards to transfer data – from laptops, for example has limited speeds – up to 10 Mbps (William Stalling,

2005:242). Of the desktop image processors that have caused the demand for higher transmissions, the newsroom is among the top. To meet this need, desktop storage media have evolved to gigabite capacities – requiring equivalent expansion of transmission carriers.

Although the 10 Mbps transmission carriers have been shown to be inadequate, The Standard keeps this mode. At Daily Nation, it is not used. To give an idea of the capacities of transmission, this is how the standard categories compare.

Untwisted pair Cable	**Maximum Speed**	**Use**
Category 1	1 Mbps	doorbell wiring
Category 2	4 Mbps	4 M Token Ring LAN
Category 3	16 Mbps	10 Base T LAN
Category 4	20 Mbps	16 Base Token Ring LAN
Category 5	100 Mbs	100 Base T, 100 VGA LAN
Category 6	250 Mbs	Broadband

Although Token Ring LANs are not as popular as Ethernet ones, they are the next best – they use category 2 and 4 in LAN installations. The radical incompatibility between the Token Ring LAN and Ethernet is resolvable: through a bridge or a hub.

Both at Daily Nation and The Standard, the 10 Mbps data rate is inadequate. The former has phased it out in favour of the 100 Mbps. Copy flows through category 5 UTP cable, supplemented by a 1000 Base T Gigabit Ethernet.

In other words, Nation is beyond the minimum broadband requirements in meeting copy processing needs.

Broadband ISDN was planned to deliver data rates with a minimum of 150 Mbps, enough for services like video-phone calls. But as the Nation Gigabit Ethernet shows, BISDN may not be able to compete favourably with emerging technologies. At 1000, the Gigabit Ethernet is far beyond BISDN promised delivery.

Also, to be noted is that the data delivery at The Standard which is 100 Mbps is not too far behind the ISDN minimum of 150 Mbps. These high trends seem to be logical outcomes of the 10 Mbps Ethernets and 16 Mbps token rings- now considered inadequate.

At the centre of all this is the need to increase computing power by using less baseband media. Unlike the desired broadband, baseband can only carry a single channel. The roadband system provides the solution to the problem of how to transmit voice calls, videoconferencing, business data, and television – all in the same medium.

By splitting width into many independent channels – using a splitter as in ASDL – broadband can separate voice signals from data signals within the same wire. In the newsroom context, copy comes as digital signals, voice as analogue signals they can share the same medium of transmission.

Unless a newsroom processes a very small news copy, the traditional Ethernet of 10 Mbps cannot meet its transmission needs. Although its bus topology is full-duplex - it propagates in both directions – and the tap connection

allows all stations to receive data, the bandwidth is insufficient. The main problem is not that all stations can transmit at once and block each other: frame transmission solves that. Furthermore, the frame procedure prevents collisions by requiring the following: stations only transmit if the medium is idle, if busy they should listen till it is clear, if a collision occurs they should alert others through a jamming signal, and should have a random time backoff before retransmitting. This procedure is called carrier sense multiple Access/collision. Detect (CSMA/DC) is a low-level arbitration protocol similar to CSMA/CA (Collision Avoidance) used in wireless networks.

Therefore, the central issue in the abandonment of traditional Ethernet – even in newsrooms – is not due to its bus topology or collision potential: it is bandwidth. To give an idea of the kind of bandwidth needed in high speed LANs, Stallings provides the table below.

	Fast Ethernet	Gigabit Ethernet	Fibre Channel	Wireless LAN
Data Rate	100 Mbps	1 Gbps, 10 Gbps	100Mbps–3.2 Gbps	1 Mbps-54 Mbps
Transmission media	UTP, STP, Optical fiber	UTP, shielded cable, STP	Optical fibre coaxial cable, STD	2.4 GHz – 5 GHz microwave
Access Method	CSMA/CD	Switched	Switched	GSMA/Polling
Supporting Standard	IEEE 802.3	IEEE 802.3	Fibre Channel Association	IEEE 802:11

Fig 10: Characteristics of high speed LANs from Business Data Communications, William Stallings (2005:267).

These figures might seem a bit too advanced for the local context. But as will be seen later, newsrooms are usually ahead of ordinary office automation – both in computing power and transmission bandwidth.

In the newsroom for now, fast Ethernet is the way to go. However, for other purposes that are newsroom related – particularly uploads to the commercial press - fast Ethernet may fall far short of the requirements. The problem is the nature of compute-intensive graphics-heavy situation of the newsroom.

If as Stallings observes (2005), the ordinary office has problems with the 10 Mbps Ethernet, how much more the newsroom. He says that a typical page has 200 picture elements (pels) per square inch –totalling 3,740,000 bits (Stalling 2005:242). The graphic-heavy copy is a much greater challenge.

The technology of desktop computing and storage has evolved to take care of these tremendous needs, computing power and storage has had to change – the LAN speeds have not been left behind.

4.2.4 The PCI –Express Graphics Solution

Without internal high computer speeds, processing cannot be fast enough – no matter how fast the LAN hardware becomes. The biggest problem is that the CPU stays idle for a great proportion of processing time: in the newsroom context, such data is from the input devices already examined. The peripheral components with data to be transferred have been mainly cameras and scanners: they are slowed down by use of peripheral component interconnect bus (PCI). Both Daily Nation and The Standard use 32-bit PCI computers.

Yet, the PCI was itself an innovation to speed up graphic processing and plug-and-play applications. Before this was the Industry Standard Architecture bus (ISA bus). Starting as an 8- bit bus, it later becomes a 16-bit expansion bus for data transfer from peripherals into the CPU for processing. This 1981 innovation did not meet the speed requirements of data processing.

Intel made a breakthrough in 1993 when it offered the PCI 32-bit expansion bus – it replaced the two 15A standards of 8 and 16. By bypassing the processor bus, the PCI bus – more of a bridge than a bus – makes it possible for the CPU to run at higher speeds than even its own speed of 33 megahertz (Dick Pountain 2003:PCI bus). Part of the reason for this speed is in the nature of a bridge. It is a passive conveyor which does not repackage the message. Besides, it has reached its data transfer limits.

The fate of the PCI bus has also befallen the alternative solution of accelerated port (AGP). Bypassing the PCI system bus, AGP had reached 533 Mbps in delivering texture maps and similar graphics to the CPU for processing. But such increasing speeds have a threshold barrier.

For both the PCI and the AGP parallel transmissions, the practical limit of 2.134 Gbps has been reached as the threshold (Rom White, 2006:20). To solve the problem, a new bus innovation – using both parallel and serial transmission can now deliver higher loads than the 2.134 Gbps limit of PCI and AGP.

Standing between the North Bridge and the South Bridge but nearer the latter – the PCI-Express is a bus that provides a faster route from the peripherals to the CPU. Ron White (2006:18) is not for the idea of renaming the North Bridge

with the name Graphics Memory controller Hub (GMCH) and South Bridge as 110 controller Hub (ICH).

The concern here is not whether the names are right – it is the fact that North Bridge graphics must move very fast into the CPU nearby. On the way out to the I/0 controller Hub (South Bridge) which deals with storage on the hard disk, transfer to the printer, saving on external media, the same speed is critical. The user could be doing something else as the storage, transfer or saving takes place.

To increase the rate at which North Bridge transfer o the processor memory and south Bridge transmits to input/output devices, the PCI-Express uses peer-to – her communication. In a LAN setting this down the computers if in excess of 25. But to increase processor speed, PCI –Express doubles up as both an internal and peripheral link: it communicates to other computers to relieve the North Bridge and South Bridge of such tasks.

Without the overheards of packet packaging PCI-Express can deliver 200 Mbps, - expanding the expansion slot and adding other lanes can multiply the bandwidth up to 16 times, or 8 Gbps (Ron White, 2006:21). From down at 2.134 Gbps of traditional PCI, this is substantial speeding up of processing - particularly the processing of graphics.

4.2.5 Copy Speed through Caches and Processing

Random access memory is far from the processor. When data has to be accessed repeatedly, this distance slows down the processor. With a cache area usually

between the main memory and the processor, speeds are substantially improved. It has become common practice to have caches as a required industry specification. At the Daily Nation and The Standard computers are cache equipped.

From what C S. French observes (2004:61) the cache does not have to be in the traditional space between the main memory and the processor – some Intel Pentium versions do not have it there. These caches can hold as much as 8,196 bytes of data. Since this is not a lot of memory, old data is overwritten to create space for incoming transmissions. Least frequently used data and least recently used determines erasure.

Much waiting time for a processor needing data to operate on slows it down. At the moment, the standard in solving this problem is Intel Pentium 4. By having levels of caches hold data awaiting loading into registers for processing, and increasing processor circuitry, Pentium 4 has more than 3.6 GHz in speed.

The evolution of speed for both the PC and the Macintosh has come from far as the speed tables of Hutchison and Stacy (2000) show. From lows of 4.77 Mhz, Pentium, 1978 to 3.6 GHz is phenomenal and improvement, not the least for the newsroom.

PC CHIPS

Year	Chip	Architecture	Speed	Word Size (Internal Bus)
1978	Intel 8086 (29 K transistors)	CISC	4.77 MHz	16 bits
1979	Intel 8088	CISC	4.77 MHz	16 bits
1982	Intel 80286 (134 transistors)	CISC	8-20 MHz	16 bits
1985	Intel 80386 (275 transistors)	CISC	16-66 MHz	32 bits
1989	Intel Pentium Classic	CISC	33-100 MHz	64 bits
1993	Intel Pentium Pro	CISC	60-200 MHz	64 bits
1995	Intel Pentium Pro	CISC	133-200 MHz	64 bits
1997	Intel Pentium II (7.5 M transistors)	CISC	233-450 MHz	64 bits
1998	Intel Pentium Celeron	CISC	266-400 MHz	64 bits
1999	Intel Pentium II Katmai (Icode name for the Pentium III)	CISC	450-500 MHz	64 bits
1999	Cyrix II/MX1/Jedi	CISC	350-500 MHz	64 bits
1999	Intel Pentium III	CISC	450-500 MHz	64 bits
2000	Intel Celeron	CISC	500 MHz	64 bits
2000	Intel Merced (10 M transistors)	RISC	800 MHz	64 bits

MAC CHIPS

Year	Chip	Architecture	Speed	Word Size (Internal Bus)
1982	Motorola 68000	CISC	8-12.5 MHz	32 bits
1984	Motorala 68020	CISC	16.7-33.3 MHz	32 bits
1987	Motorala 68030	CISC	20-50MHz	32 bits
1989	Motorala 68030	CISC	25MHz	32 bits
1993	Power PC*601	RISC	50-80 MHz	32 bits
1994	Power PC 603	RISC	100-300MHz	32/64 bits
1994	Power PC 604	RISC	180-360MHz	32/64 bits
1996	Power PC 620	RISC	133 +MHz	64/128 bits
1997+	Power PC 750	RISC	200-400MHz	64 bits

*Power PC chips were made by a joint a joint effort of IBM and Apple.

+Predictions for 2000 include RISC chips operating at 450 MHz and 700 MHz.

Fig 11: Chip speed tables of both the PC and Mac from Computers, Communication and Information, Hutchinson and Stacy (2000:2.18).

At Nation the computer in use is the PC. Though the newsroom is not using the most recent Intel computing power, it has exceeded 3.6 GHz. The machine of use in the newsroom at The Standard is the Mac.

Looked at superficially, it would appear as if the PC is in regions of speed the Mac can never reach. Yet, as John Rizzo and Daniel Clark observe (2000:53), this is a common misconception. The MHz or GHz rating of a processor on its own cannot determine the speed of the machine. These authors liken the misunderstanding to thinking that the speed of a vehicle is the revolutions per minute recorded in its industry specifications.

If a single factor among many were to be used as an example, the 1996 180-360 MHz would suit. How much speed the Mac would reach would not be determined by its MHz record above rating: the word size of the Internal bus would count for a lot. If it used the 128 bit bus, it could double the speed of using the 64-bit bus. How much copy is processed depends on how fast it reaches the processor.

In other words, the PC Pentium II of 1997 a 128-bit bus, had more idle time than its Mac equivalent of the previous year. Although it was 233-450 MHz, its 64-bit bus speed wasted in processing time since the word it delivered could not utilize processing power.

From this, it can now be clearly seen why caches are needed - they reduce the processor's idle time. The fetch-decode unit in Pentium 4 has gets the next instruction from 256 KB or 512 KB level 2 cache that is closer to the CPU than level 1 cache. Reduced into smaller instruction sets, they are faster for the

processor to operate on. Ron white (2006:62) observes that up to 12 KB of the most frequently, used instructions are stored in the execution trace cycle to reduce the processors idle time.

If as in the AMD Athlon Microprocessor, there is a level 1 cache of 128 KB, it would be split into 64 KB instruction cache and a 64 KB data one. The latter are destined for instruction decoders (three x 86 in the Athlon; Ron White, 2006:63). To increase processing speed the Athlon x 86 recorders translate MacroOps as one word– it does not use microps –into the Instruction Control Unit (ICU). It oversees the execution and deletion of all macroOps.

However, in the Pentiums – the machines in Nation and Standard - more distinctions between them is to be found in the cache capacity rather than processor. Industry standards have raised these capacities. But Celeron Pentiums (e.g years 1998, 2000) continue to have the lowest caching. In the upper market, volumes reach as much as 2 MB (Ron White, 2006:55).

4.2.6 Faster Copy by Wider Registers

No matter how fast the LAN is or how many levels of caches there are, or how easily PCI-Express brings in data for processing not much would happen without wide registers. The random access memory (RAM) is not on the same chip as the processor – registers are. To bring closer what should be processed, data is moved from main memory to the Memory Buffer Register MBR (C.S. French 2004:132).

Text and graphics must move to MBR awaiting processing. Data and processing instructions pass in and out of the processor (HDD) through a register

called memory Data Register (MDR) than to memory Buffer Register (MBR). Before this exchange, the source (e.g. camera) or destination (HDD) must be specified. Source or destination locations are recorded in the Memory Address Register (MAR). If I/O units connected to the processor did not have data buffer registers, the data origin, destination, or operation to be performed on it would be unclear.

In an operation cycle, instruction fetch is the processor's reading of the command in memory from, for example keyboard – about an image from a scanner. Then follows the decoding of what is to be done to the image: decoding of what has been placed in an instruction register. Execution is the carrying out of commands that change the input data in a buffered memory into output data i.e information.

The amount of data the processor can work on in a given time depends on how much is in the MBR registers. No claim is being made that MBR and MAR solve all problems. Since they do not, that is why instruction prefetch is done to try and predict the outcome of what is executing.

Nevertheless, wide registers have always helped speed up copy processing since they reduce the processor's idle time. Computers started off with about 8 registers, each one capable of holding a single number in binary form. But just like slow transmission slows down processor speed, so does a narrow register. The bigger the portion of copy it can hold, the faster it can be worked on. The register file where registers are contained has been growing to support quick

operations on data – a big challenge that is caused by graphic-heavy prepress copy.

According to C S French (2004:134) if a location in memory is 8 bits but instructions 32 bits, a 32 – bit register computer can fetch it in a single operation. However, an 8-bit register computer would do it in four fetch operations. Pipelining these instructions on a queue with the destination as the Instruction Register speeds up the fetch-execute cycle by this pre-fetching. The Control unit uses the sequence control Register (SCR) – also called program counter – to determine the queue order.

Before each instruction is fetched what is in SCR is copied in MAR. if the MAR register were a narrow one, this would cause all the bottlenecks. For this reason, registers have been getting wider. Although most computers – even in the Nation and The Standard newsroom – are 32-bit register machines, the industry is beyond this in providing wider registers.

Computers of 64-bit registers, 128-bit registers 256-bit registers, and even 512-bit registers exist. The trend is an admission that the PCI-Express solution handles only one aspect of the bottleneck – at the bus level. What happens to copy after it has left the bus is a matter for thought. If it does bit reach the processor soon enough, nothing will happen: no processing will take place.

In case a 32-bit register sounds too narrow, it needs to be remembered that this is billions (4,294,967, 295 –Ron White, 2006:45). This problem is not so much that the registers are not wide enough. It is that text and especially images

generate an incredible amount of either vector graphics or pixels – depending on the format of extraction.

4.2.7 Copy Speed by MMX and SLMD

Although Ron White (2006:66) observes that MMX does not stand for anything, Dick Pountains computer dictionary differs. It says that MMX stands for two things: Multimedia Extensions or Matrix Maths Extensions. Are these related? Yes – through formation of single instruction/multiple data (SIMD) processing. It depends on graphics matrices to work in copy processing. Because of its advantage, newsrooms cannot ignore this specification that addresses deficiencies of register capacity. Machines at Daily Nation and at The Standard have these specifications.

Of the two units in the processor – the Arithmetic and logic (ALU) unit and the Floating point Unit (FPU) – the latter has wider registers. ALU's are 32 – bits; FPU's 80-bits. If the FPU registers cannot be used in other ways than doing decimal calculations, it is waste of computing power.

To optimize this power in handling graphics the FPU has witnessed an innovation of 57 specialized instructions (Ron White, 2006:57). The target of these instructions is multimedia – a large portion of which the newsroom is copy graphics. After the input of matrix – like data in the FPU - a single instruction can be used to process the graphics: reducing colour, increasing colour, reducing size, increasing size etc.

Therefore, the innovative MMX circuit design speeds up the processing of graphics. Since the circuit is used repetitively, this hard-wired mechanism does not call for complex algorithms to program it. As an advantage to programmers, it cannot be ignored. The innovation makes it possible to retain compatibility with previous software – only 57 commands are added to it.

The only disadvantage is that an MMX operation cannot hyperthread with floating point calculations. But in the newsroom, calculations are not done as in computer aided engineering technology (CAE), for example. Therefore, mutual exclusion of MMX and floating point calculations is not a threat in the processing of graphics.

As it turns out, MMX does not use all the whole floating point register – only a 64-bit wide register is needed. Since colour palettes and similar graphics are made of 8 –bit values, only 8 are needed to deliver a graphics electronic word. These 1-byte values in 8 units end up doubling the computing power of processing graphics because they use 64-bits in the FPU.

If the same processing were to be done in the usual 32-bit register of ordinary computing, the time to it would at least double. The MMX solution is double-pronged: it is an attractive solution because of compatibility with both hardware ad software.

What all this means is that multimedia graphics whether in 8-bit value, 16-bit values, 32-bit values, and 64-bit values can be processed as 8-pixel units. In a single fetch-execute cycle, all can be handled at once. The price for this

acceleration is rewriting programs. MMX-aware compilers must be used to make the software recognize the new use of the FPU.

4.2.8 Hyperthreading and Similar Speed Solutions

Fourty-two million (42,000,000) transistors were used to build Pentium 4 – a major innovation. Yet, there is an emerging problem as the transistors increase the frequency of CPU cycles: overheating. This is unintended noise as opposed to the noise created by carelessness and security-breaching activities. A solution to this problem has been found. Hyperthreading and duo-core processing is that solution. Neither Daily Nation nor The Standard uses this technology, but it deserves attention.

To safeguard processing in overheating environments, cooling is not the answer. Even if it were, too many transistors packed together cause another problem: interference of signals (Ron White, 2006:64). A solution that solves both problems at once is better than one that would remove cooling and leave interference.

Multiple CPUs handling different tasks within one computer is one way of reducing overworking the processor which causes it to overheat. Copy task can be broken into several and handled in parallel processing. This has the advantage of hyperthreading to avoid the slow serial sequential processing in a single processor.

In duo-core processing, two independent CPUs are set on a single chip. If one is printing a document and editing graphics meant to illustrate another, the

two operations can run at the same time. Multi-core processing with cooperative CPUs is Symmetric Multiprocessing (SMP).

But as Ron White observes (2006:64), the speed that is gained can be reduced if the two processors have to communicate. Since they have no direct contact, the communication must happen over the front side bus (FSB).

To solve this down-side of duo-core processing, the Athlon design connects the processors to one another through a System Request Interface, a gateway to a Crossbar Switch (Ron White, 2006:64). Through that switch, a single memory controller serves both processing over a HyperTransport connection. With this access, the two reach all devices on the PC and the peripherals without losing the high speed.

A duo-core like this can be mistaken for a duo-processor technology – two processors in one computer. More involved operations often take place on servers than on clients. Therefore, it is common to find duo-processing systems in servers: not on clients.

As is to be expected, hyperthreading becomes possible because of the CPU's idle time. In any execute cycle, the sequential thread of tasks leaves a part of the CPUs unused. If the CPU were designed to execute several threads at the same time, performance would improve. This is exactly what takes place – except that the software must also be written to hyperthread during an operation.

Substantial speed gains occur especially when hyperthreading is combined with both duo-core technology and duo-processor or technology. A quarter of threads is not the maximum one duo-core chip can process. Given several such

distribution of tasks and subtasks, the multiple simultaneous operations can increase substantially.

For processing as computer- intensive as copy editing, hyperthreading and related technologies can provide attractive options. If speed is as important as copy processors insist, these gains of it cannot be ignored.

4.3.0 Software Speed-Quality Features

As a cardinal principle of copy processing, the speed-quality duo tier ranks highest in the newsroom – InDesign software fits these newsroom requirements. The fact that both Daily Nation and The Standard have computers with this speed-quality software points to the need to meet these daily challenges. Otherwise the newsrooms would still be in the days of the typewriter. What the typewriter and other writing equipment could not do the computer does with ease: through adequate screen display and shortcut keys.

4.3.1 Shortcuts for Editing Features and Tools

In the world of electronics, the jump from the typewriter to the computer is possible – but not logical. Next to the typewriter comes the text editor. If the most familiar version of this were to be sought, it would be the embedded system in the mobile phone. But the features of the text editor allow it only a limited number of things it can do to texts and graphics – text editors in DTP software are not robust.

Without access to a lap-top, the mobile phone is handy in the field: it can write text and integrate it with pictures. But in the newsroom context, such a text

editor is constrained by its features. Few are effects of enhancing copy available in the repertoire of keys – the keyboard's underlying features are lacking in many things.

This is not so with many word processors – whatever shortcomings of the desktop computer software. At a first glance, this does not seem to be the case. In Scott Basham's Word 2002: In Easy Steps (2002), the editing is impressive by typewriter standards; it is sufficient by typesetting. But InDesign is superior mainly due to image processing and fine tuning of typography – Roger Parker (1998:317-318) recommends that news copy be first processed in a word processor using shortcuts keys as below.

Editing	**Shortcut Keys**
Ctrl + Numpad5	Select entire document
Ctrl + Select	Select multiple blocks of text
Alt + Shft +NumPad5	Apply normal (Num Lock off) style
Return	New paragraphs
Shift + Return	New line with paragraph
Ctrl + Return	New page
Ctrl + Shift + Return	New column
Ctrl + shift +*	Display paragraph symbols
Ctrl + Backspace	Delete word to right
Ctrl + Delete	Delete word to right
Ctrl + Shift + C	Copy format
Ctrl + Shift + V	Paste format

Formatting

Ctrl + Shift + P	Enter point size
Ctrl + Shift + F	Enter font
Ctrl + Shift + >	Increase point size
Ctrl + Shift +<	Decrease point size
Ctrl + [	Increase by one point
Ctrl +]	Decrease by one point

Fig 12: Speed editing and formatting table, adapted from Scott Basham Word 2002: In Easy Steps (2002: cover verso).

For day-to-day office needs, these editing shortcuts would do, and as when supplemented by an even longer formatting table, they are reasonably inadequate. Although it has been said earlier that word and InDesign have similar features they are not identical even at this level. A newsroom software needs fine formatting features. PageMaker has been the software of choice, but it seems to be losing ground to InDesign, particularly in newsrooms.

Since speed-quality is the deciding factor, InDesign is proving more versatile at both Daily Nation and The Standard. Part of this is because of the way it integrates easily with the databases, the library, and the archives. But to see how well endowed in speed editing and saving shortcuts, here is a list.

Macintosh (*Standard*)	**Windows** (*Nation*)	**Effect of Operation**
Cmd +S	Ctrl + S	Save
Shift + Gmd +S	Shift +Ctrl +S	Save As

Cmd +N	Ctrl +N	New document
Shift +Cmd +A	Ctrl + A	Delete All
Cmd +A	Ctrl +A	Select All
Cmd +Option + S	Ctrl + Alt + S	Save a Copy
Cmd + P	Ctrl + P	Print (hard copy for editing)
Cmd +Z	Ctrl + Z	Undo
Opt + >	Alt + >	Adjust Leading
Cmd + Opt + W	Ctrl + Alt + W	Text Wrap
Cmd + F12	F12	Pages Panel
Cmd + Opt +O	Ctrl +Alt +O	Fit Spread to Window
Cmd + F11	F11	Paragraph Styles
Cmd + F	Ctrl + F	Find / Change
Shift + Cmd +Click	Shift +Ctrl + Alt+L	Override All Master Items

Fig 13: Speed editing and saving shortcuts. Adapted from 16 different pages of Exploring InDesign CS3, Terry Rydberg ([2007] 2008).

This author advice readers to memorize the shortcuts, (2007:4) because of the significant time gains in copy processing. In other words, computer skills at a newsroom are two-layered. The layer at the top involves mastering menus and what they hold. After that, how to get to the menus without using the menus is the real test of fast copy processing.

But the issues of computerization cannot be left at shortcut speed. There is the question of what is offered by the shortcut. As pointed out before, the idea is

to go beyond the limits of text editors and manual editing: keyboard shortcuts and drags are the bedrock of speed processing.

The pages panel of InDesign illustrates what this means. Shortcuts help reach the menu offering text improvement features: they too should provide speedy solutions. In the top global level of the pages panel, any alteration, for example, page numbering, will be reflected an all pages. This access to pagination greatly simplifies copy processing folios i.e page numbering.

In addition, the A-Master helps one view the verso and the recto simultaneously - most word processors may not have the capacity to display facing pages. It is a serious limitation since in term of WYSIWYG, the verso-recto arrangement is a more accurate representation of the final outcome. But the options are not cast in stone: creating four unconnected spreads is possible – if one does not want a 3, 4-5, 6 sequence or a 3-4, 5-6.

Repeated designing creates a list of elements used frequently – a library of these needs creating. It can be viewed as Thumbnail or list mode. In the library could be quotes, full quotes, photos, or similar elements. What happens is that the library makes copies available for dragging to the columns of copy where they are needed.

The Eyedropper Tool in InDesign is even more efficient than the dragging. Although it starts with a menu operation – a double – click – it presents these customizing options (Rydberg, 2007: 193)


Stroke Settings


Fill Settings


Character settings


Paragraph settings


Objects settings

To get the needed option, others have to be deselected. If still white, the Eyedropper cursor icon is unloaded. After it reverses direction and colour – turning black – it means it has sampled the attributes needed for editing. Dragging and highlighting text is now possible.

If the text for editing is little, editing with the Eyedropper tool is best. Yet, for larger blocks of text, the styles tool would be more suitable. The styles can be defined once – for headlines, body text, photo captions, quotes, pullquotes – and applied uniformly throughout the document. Deleting style on a 20-page document and updating them would apply automatically in the rest of the newsroom copy.

Thus getting to paragraph styles through Cmd + F11 in the Mac, or F11 on Windows is part of the speed story. Uniform application of styles throughout the document is the software speed that is unavailable in typewriters or text editors. According to Bradley, Floyd, Ritmann, Sherman, and Mumbuer (1994:33), non-full-featured programs also do not strictly warrant being called DTP software – their paragraph features regardless.


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However, these authors argue (1994:33) things are bound to change. Personal programs including Microsoft Publisher Fitness, Avagio, Express Publishers, GEM Desktop Publisher, and Publish it! Are likely to move towards full-featured varieties, causing the distinction to disappear. The downside of this quality-improving competition – even if it gets to newsroom standard - is that it causes products to become obsolete. Newsrooms cannot avoid the updating challenge.

But no matter how well some programs improve, they are not likely to become true DTP due to the range of features to include. The paragraph style above (fig 8) is an editing feature that is one of the hardiest for quick work. It can be found in non-full-featured programs. Yet, all it does is lift programs from being simple text editors. To reach the level of word processors they need it.

Concerning the editing features one cannot change this software from being word processors to DTP software that can be used in the newsroom.

In this category of programs is Microsoft Word, Microsoft Works, Windows Write, Macrite, WordPerfect, Word Star, Ami Professional, XY Write etc. However, if need be, work can be written on this software – to be transferred into InDesign in the newsroom. These cheaper programs – costing about many times less the price of the full-featured ones-can be used to supplement the DTP software, particularly in the field.

With the risk of sounding exaggerated, Roger Parker (1998:317) observes that the Paragraph Styles will save the user hours of waste effort. During editing, a command such as "keep with next" will subhead text to prevent it from

separations during text movement. Furthermore, specifying the minimum number of lines that must appear together helps get rid of widows or orphans.

Another speed feature is the Pasteboard feature. Few other reasons justify the choice of DTP programs over word processors. By keeping text and graphics on the screen outside the document margins, they become instantly available. Inserting them where they happen to be needed would waste no time. Searching through the folder and files on the hard disk as in word processing is time consuming.

Yet, it must not be forgotten that in some DTP software – InDesign is not exactly one of them – there are text editors and not word processors. In such cases Roger Parker observes (1998:317-318) that doing editing in a word processor may be better because of the following features:

1. a robust spellchecker.
2. a thesaurus to offer replacement for what is edited out
3. word-count availability
4. drag and drop to speed up sentence editing
5. large size uncolumned text to read and edit

In other words, if the InDesign editing tools and features prove inadequate, compared to a more robust word processor, it should be used. The copy can then be imported into InDesign.

Both at Nation and at The Standard, the screen size must be greater than 15." In usual office automation, this is adequate. But in copy editing where speed

and deadlines are stiff, larger screens present better views. The zoom editing feature combines well with big screen sizes.

Theoretically, InDesign has 5% - 4,000% zoom space. And the shortcut keys are as follows

Mac *The Standard*	**Windows** *Nation*	**Function**
Cmd +1	Ctrl +1	View at 100%
Cmd +2	Ctrl +2	View at 200%
Cmd +4	Ctrl +4	View at 400%
Cmd +5	Ctrl +5	View at 50%
Cmd +0	Ctrl + 0	Fit page in window

Fig 14: Keyboard shortcuts for changing zoom percentage, Exploring InDesign CS3, Terry Ridberg ([2007] 2008:19). These combined with other shortcuts should help beat copy deadlines in the newsroom.

4.3.2 Design Typography and Formatting Shortcuts

After doing the editing, it is possible to see how much is for printing - sometimes it is too much. Yet, nothing can be removed. What Roger Parker calls global adjustments (1998:175) would be the answer to the problem. The shortcut for dealing with text from outside itself – throughout design typography and formatting – is available in InDesign. At Daily Nation it is available in the PC; at The standard in the Mac.

The question is how to do consistent adjustments without making any part stand out. If type size point were to be reduced by one-quarter point, would readers notice? Few would spot out the fine tuning of copy. Yet, it is better than the name suggests because of the space it would create for both text and illustrations. Shortcuts for this exist.

Without drawing attention to bad finetuning of headlines and subheading by haphazard alterations, the space above and below them could be reduced. On the page, space is available: the problem is how to reclaim it typographically and what shortcuts to use to save time. Under the pressure of deadlines, shortcuts must prove handy, even indispensable.

Since the headline typography occupies bigger spaces more can be reclaimed from it – half a point instead of a quarter. If it can still achieve what was originally intended without a problem, the reclaimed space can be used to enhance the copy's other attributes. Quality improves – and typographic shortcuts speed up the changes.

If photos cannot be removed – sometimes they can – the space they occupy can be lessened. So would be the area around them. Text that is irreducible can then be fitted in: more can be added if need be. Depending on the circumstances, text may be more needed than photos, for there is no rule without exceptions –even the rule of photos speaking a thousand words.

Paragraph spacing can also be carefully altered to increase space for more text. Sometimes the words would just be right: tampering with them would destroy meaning. Space can be found for them by lessening paragraph spacing. In

some cases, the choice may be between identity or blocking. Shortcuts are available to access these features.

Margins are not a no go area. In situations of space reclamation that is typographically empty space – reclaimable and usable. Captions under the photos can be moved to the margins to making way for text; this way would not cause any design damage. It might even suggest variety, relieving the eye of predictable sameness of caption placement.

Although pullquotes are already in the text, they are not redundant typographically. As a means to highlight crucial facts, they are needed. But when space has to be reclaimed, the reader has to be content with unhighlighted information - most will not notice. What comes into that space is certainly more important than the facts that could have been emphasized through repetition. Typographic changes make this emphasis possible.

But typography works jointly with design. Roger Parker (1998:12) observers that copy set against a poor background can reduce readability from 70% to 3% depending on how dark the hue of grey is. For fear of offending readers, or manufacturers copy – especially in adverts against harmful products – copy gets greyed out. This meets legal requirements but creates illegibility to appease stakeholders. Therefore, shortcuts can be easily accessed, but what is made with them may not always be quality output.

However astonishing positive quality can be made. Roger Parker states(1998: 12) that headline topography can increase readership from 57% to

92% and bad typeface combinations can reduce legibility to 3%. The shortcuts to effect the positive changes are a major asset in the newsroom.

Below are the shortcuts in the software that help design control type and format copy for speedy dispatch.

Macintosh *The Standard*	**Windows** *Nation*	**Speed Function**
Shift +Cmd +>	Shift + Ctrl +>	Increase Type Size
Shift + Cmd +<	Shift + Ctrl +<	Decrease Type Size
Shift + X	Shift + Ctrl	Swap, Stroke & Fill
Cmd + F10	Ctrl + F10	Stroke Panel
Cmd +B	Ctrl + B	Text Frame Options
Shift + Cmd + B	Shift + Ctrl +B	Bold Type Style
Shift +Cmd +1	Shift + Ctrl +1	Italic Type Style
Shift +Cmd +C	Shift + Ctrl +C	Centre Text
Shift + Cmd +>or <	Shift + Ctrl+> of<	Adjust Point Size
Cmd + Opt+1	Ctrl +Alt+1	Hide/show hidden characters
Opt + -	Alt + -	En Dash
Shift + Opt + -	Shift + Alt + -	Em Dash
Cmd + D	Ctrl +D	Place Document
Shift + Cmd + End (release then delete)	Shift + Ctrl + End (release then Delete)	Delete Oversee Text
Opt + □	Alt +□	Track
Shift + Cmd + F11	Shift + F11	Character styles
Shift + Cmd _ F10	Shift + Ctrl + F10	Effects Panel

Shift + Cmd + O	Shift + Ctrl + O	Create outlines

Fig 15: Shortcut features for speedy design and formatting. Adapted from 11 different pages of Exploring InDesign CS3, Terry Rydberg (2007).

These shortcuts help enhance design. Copy without it, would fail to communicate effectively. Pages can be made to come alive by touches of design, typography, and formatting.

Roger Parker points out (1998:11-19) that design does the following: it attracts attention through colour, type, and white space; adds value through with space, border, type, and colour; enhances readership e.g. copy comprehension improving from 12% to 67%; simplifies information by using subheads and graphics; introduces selective emphasis and deemphasis by use of centrepieces and readership jumps from 32% to 67% without textual changes; creates unity and provides corporate identity through colour, type, column design; distinguishes messages from others; speeds up production; and saves money.

All these effects are available through shortcuts. Yet, there is no shortcut to the most important design tool: white space. In the chess board of DTP through use of design, typography and formatting – white space balancing must outweigh all other options but the message itself. One way of creating white space is simplifying the page. By removing unnecessary text and image before getting into typography and formatting, white space is created for the message to be seen without clutter. Shortcuts make space designing tools available.

With the aid of graphic accents, the copy can be improved substantially. Rules and bars belong here. These can be used in an emphatic way to signal the

end of one document and the start of another. In between columns, they can serve as boarders. To create a distinct image of a publication, ornamental elements, text-end marks, asterisks, and similar graphic accents can be used.

Again, to relieve the monotony of an unvarying background, texture backgrounds are recommended design. Nature texture of rock, water, tree and so on can do – fabrics also as man-made objects. Whether or not modernism or journalistic themes should influence the choice is a point of debate (Terry Barret 2000: 150). Copy processing should not succumb to commercialization at the expense of truth: both from and subject are important.

If backgrounds are not solid, they need to reflect graphic accents of smooth transitions: form dark to light, light to dark, and one colour to the next etc. it is important to avoid colour clashing and abrupt jumps from one hue to another, for instance.

As pointed out, before setting out copy against a background screen can reduce comprehension from 70% to 3% (Roger Parker, 1998:12), depending on the greyness. Yet, skillfully used, it can provide a graphic accent to relieve the monotony of page sameness. Screen possibilities include black type against light grey background or white type against light grey background. A completely black background can look like a blackout.

Doing the opposite of what is practiced conventionally in graphic accents is reversing. Black and white can become white and black – white type against a black dark-coloured background. The Swap Stroke & Fill shortcut illustration (Terry Rydberg, 2007:16 -17) shows how this feature is used or misused.

Although more might look on the page like more value, it might not be – it could clutter the layout. A balance is needed. For instance, a combination of more than three typefaces – Roman, bold, italic – in a document throws it off balance. Clutter is made by typeface, rules, boxes, and other graphic elements that clutter rather than communicate.

Therefore, it is not enough to just get the shortcut. What to do with the features within is critical. The shortcuts could, for example, be used to be able to create contrast. But how is contrast created? Choosing between serif and sans serif is a decision on how to use shape. For long texts, serif shapes are recommended; for photos, small and large would contrast; and rectangular, silhouetted ones, or adding borders and backgrounds to create destinations between visual elements

Shortcuts can help deal with size as a feature of contrast – what size means is that the more important the message, the larger it should be. Also, style can be used contrastively but not beyond three forms of it in a document. Colour can speak. In the copy, it can emphasize crucial headlines, short critical texts by positioning it against a background – background contrast.

With access to case, uppercase letters can be used to create contrast. However, they can look jagged and appear to pierce the eyes. Used with care in short passages, they are effective.

Bold draws attention: access - Cmd + B or Ctrl + B. Yet, there are times it is not sufficient for impact. The alternative then is black or heavy weight headlines sans serif. But weight can be a sore, especially if used in place of italics.

Reformatting copy text into formats and graphics is like when a picture speaks a thousand words – text reduces and the graphic contrast takes over to summarize information effectively. It is one of the most powerful ways of communicating.

Once the copy editor gains shortcut access to the headline font, it must increase – beyond even 16 for major articles or they will be overlooked. Light – weight eye-jagging headlines will have no impact: different but text compatible headlines will create contrast and impact. This contrast must not be uppercase contrasted with lower case: title case headlines are better.

Font 18 is probably often contrasted with 10 in the body and will do: so is 24 against 12 in the text but the font designs – those in the headline and those in the text – must not be so different that the difference becomes distracting.

Flush – left headlines frequently catch the eye better than centred ones in articles. Unless the headline must be centred since there are others to go flush-left, it does not have to go there. Furthermore, underlining headlines can cause eyesores as the underline cuts through the descenders. Identifying letters by guessing what the underline cut through and disfigured cannot be a pleasant reading experience. Shortcuts to underline are not unfailing problem solvers: they can create problems.

If the subheads are versions of body type, the effect may be lost. Imitating the headline type makes headline and subheadlines characters contrast those of the copy typeface. Extra spaced subheads create transition by showing the break

with the text above and links with what follows. Graphic accents like rules around subhead can create emphasis.

Hanging subheads may not be effective in introducing copy with many columns – for textbooks, this may do. This is where figures and tables may also be identified. Using margin space can relieve the monotony of expecting this information under the figure. Colour can obscure what is around it; to avoid this font can be increased: shortcuts keys are available for this.

Typeface choice is as important as the shortcut to increase it: a bad choice cannot be improved by shortcut. Stylization draws attention away from the message to the typeface. This choice must be a voided. So must be a stack of hyphens, even though hyphenation as a format is unavailable.

Besides, there is need to separate long passages. Numbering seems to impose a highest-lowest order. Unless the material reflects this numbering option, it should not be used to break up lengthy passages of type. Apart from simpler paragraphs, bulleting would help format the material to increase readability. Another way of relieving this monotony is initial caps: drop, raised, and adjacent caps.

Writing good captions for graphics improves the copy's communication. A rule of thumb is to avoid italics, hyphenation, colour, and long lines of small type. A small typeface distinct from copy would help set captions. Illustrations and photographs summarize information, reducing the need for lengthy copy. But to work well, neat and clear captions must be provided.

Boxing sidebars, screening their background, or setting them in contrasting typeface including italics – are some of the options available. But boxes should be open on the left with the margin serving as the right side rule.

Leading as mentioned elsewhere is best not via the automatic shortcut, regardless- Absolute i.e. adjustable leading is best if combined with the right size of type. Few things in body text decisions will matter as much as this.

Nothing makes reading easier than white space: bleeds, gutters, margins, drop and frames. Bleeds increase the space available for the use by extending into the margins. The violation of convention works: it adds emphasis to the bleeding object. Margins appear on every side. As a visual boundary, they set the limits of where the eye can reach – this emphasizes the content of the page.

Cluttering the headline with a lot of space immediately below fails the design taste. Space is needed before the text to provide relief to the eye and entice it to follow the text: it works well. Between the page top and the first line of type, there is a space: drop, or also called sink. This space separates columns from the upper edges of paper and draws attention to headlines.

In typeface selection, the most important thing is to ensure that the message in print and that in the typeface do not clash. Roger parker (1998:167) has a table that emphasizes the type face inherent qualities.

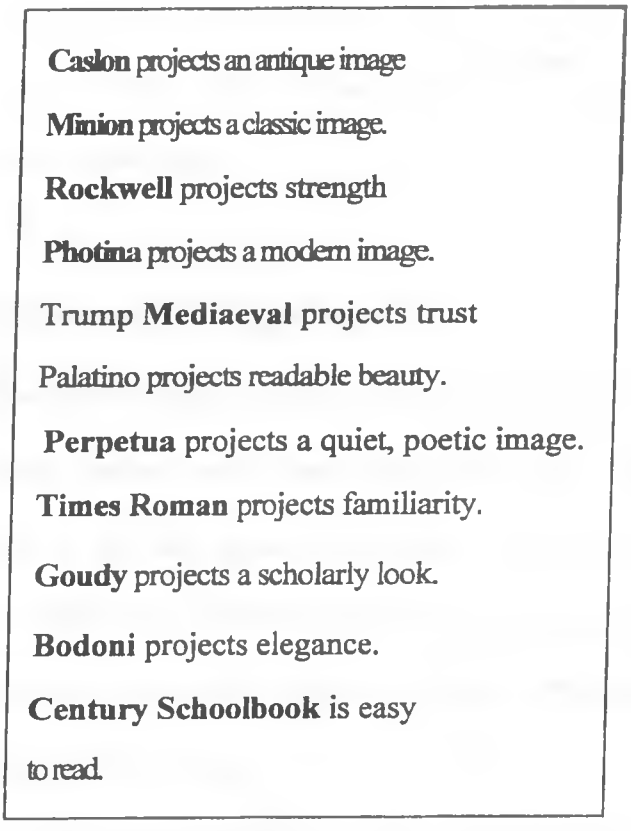

Fig 16: Serif typefaces and what they project, Desktop Publishing & Web Design for Dummies. Roger Parker (1998: 167).

Photina has an exaggerated contrast - difference in the thickness of the strokes. This, Roger Parker observes (1998:166) suggests elegance. Caslon and Garamond are old-style typefaces with low x-heights that project un antique or classic image. Grunge and Smudge have generation X look. Avant Gande and Futura look trendy.

The shortcut to enter font exists. But as stated before, shortcuts without the understanding of what to do when one gets there would not be of much use. For

each choice of typeface made, there in what it communicates to reinforce the message in the conventional meaning of the word – the dictionary meanings. Knowing how to choose what will not contradict this meaning is to let typeface and word speak in one voice.

4.3.3 Shortcuts on Editing Graphics

Copy graphics have the virtue to move information from the realm of 1,000 words to a single visual: picture, graph, chart, table, timeless etc. What having a shortcut means is that fast access is available. However, what to do after the shortcut access with the 1.3 MB of a scanned image (Roger Parker 1998:226) for it to communicate is the issue. If this is not done effectively, the picture will become an image of few words.

One of the biggest problems - a part from photos – is how to present numbers: using visuals is the answer. Software can easily crunch numbers and display them in the visual of choice. For part-whole relationships, pie charts are the most suitable. They can easily capture proportions visually and express them graphically. Their use would serve to reduce text for copy be in a high-impact form.

When time is of vital importance, the visual has to reflect it. Using a vertical column chart where the horizontal values are time and the vertical onces quantities is the way to go. To avoid skews, it is essential for the scale to start at zero in this kind of graphic.

If time is not to be reflected, horizontal bar charts can be used. Here, quantities matter rather than how they change over time.

For comparison, a stalked chart is needed. The layers on the stack easily reveal how the quantities compare. How much each category contributes over time can be clearly seen.

To capture trends, line graphs are among the most suitable – but not if the sets of numbers are many. Line weight should be chosen with care so that the more important a quantity is, the thicker the line. The reader should be able to see all this at a glance.

However, hardly anyone believes that shortcuts to graphics for piechart processing are everything. After getting there, a lot more can be done. When too much detail is included in the graphics, communication effects can fail. That is why Roger Parker, for instance (1998:236) says that real numbers should not be shown – unit, rounded off 100, 1,000, 10,000, 100,000 or 1,000,000 should be presented instead. The problem here is the distinction between readability and legibility: no matter how legible the unestimated, the comprehension is low.

Sharpening perception of figures can be done by graphically showing goals or targets to reach. The reaching or failing to can be easily spotted out when the yardstick is visible.

It would also be important to avoid putting any text sideways in presenting graphics – whenever possible since vertical text is nearly impossible to read, it would be better to use a small font. If the font is too small to read, tilting a bigger one for more space is the way out.

A part from the photo, perhaps the most frequent graphic is the table – formatting it for readability is important. After getting the shortcut, the starting point-should be selecting the typeface and type size. If these do not match the headlines and subheads, a jagged effect that is a hindrance to reading will result.

In the table cells, small sans serif typefaces should be used. They are easier to read than their serif equivalents. Helvettica is probably one of the most well known in this because it is popular in the production of manuals. If documents are not long, its performance is elegant – condensed versions might even be better.

Although white space has a lot of potential to increase legibility and readability, too much of it can produce texture that looks like a few floating ducks in an empty pond. If the idea is to say that the pond is full, let it be seen to be so but in an uncluttered way. White space in columns can cause eye-drifts away from the message.

Instead, shortcut access to typographic elements should be used to create contrast between rows and column headers for the opposite effect. Header information and all content should not be identical typographically. Serif strokes get lost in light gray background – bold san serif reverse with much better legibility.

Overbrown column widths make comparison of values on the table difficult. In other words, shortcuts are there to make it possible to adjust table measurements to desired width – to avoid making some appear more prominent than others as this could be misleading. The software should not be allowed free

reign. Offered options should be carefully tailored to meet effective communication.

What use are the shortcuts to table grids if once there adjustments cannot be made to remove data overflows to the next cell? Software features to set text offset exists: it should be used to maximum effect in extracting data trapped by gridlines.

Combined with column width, text alignment in the table is crucial. Headers must be at the information they label; decimal alignment will tuck the numbers where they belong. Where cell content is concerned, left-alignment appears better than centering which may appear to have no starting point.

Backgrounds can be used to simplify complex information. Plain and shaded backgrounds can organize row and columns through alternated tints – that backgrounds should be for emphasis of important information.

If used to effect borders and gridlines distract attention from the table – the idea is not to decorate. It is to highlight. These graphic accents can distract rather than lead to information absorption – they serve no purpose. Simplicity of table appearance is a virtue in communication. After the shortcuts have helped reach the graphics, the tasks to make them communicate elegantly but not ornately.

Shortcuts to manipulate graphics for maximum effect include those below.

Macintosh *The Standard*	**Windows** *Nation*	**Speed Function**
Cmd +Opt +<or >	Ctrl +Alt +< o r>	Resize Images
Shift +Cmd + Opt+E	Shift + Ctrl + Alt+E	Fit Image to Frame

Cmd+\	Ctrl+\	Ident to Here
Shift+Opt+Cmd+T	Shiftt +Alt+Ctrl+T	Insert Table
Cmd+B	Ctrl+B	Text Frame Option
Cmd+Opt+B	Ctrl+Alt+B	Cell Options
Shift+Cmd+Opt+B	Shift+Ctrl+Alt+B	Table Options
Opt+drag	Alt+drag	Duplicating item
Cmd+Opt+drag	Ctrl+Alt+drag	Duplicating(different tool action)
Shift+F7	Shift +F7	Align Panel
Cmd+L	Ctrl+L	Lock Position
Cmd +Opt +U	Ctrl + Alt +U	Open Step and Repeat
Cmd + [	Ctrl + [	Send to backward
Shift + Cmd + [	Shift +Ctrl + [	Send to Back
Shift +Cmd +]	Shift +Ctrl +]	Bring to Front
Cmd +Click	Ctrl + Click	Select Through Objects
Cmd + Opt +]	Ctrl +Alt +]	Select Next Object Above
Cmd +Opt + [	Ctrl +Alt +[	Select Next Object Below
Cmd + X	Ctrl +X	Cut
Cmd + C	Ctrl +C	Copy
Cmd +V	Ctrl +v	Paste
Shift + Cmd + Opt+V	Shift +Ctrl+Alt+V	Paste in Place
Cmd + Opt +V	Ctrl +Alt =V	Paste Into
Cmd + G	Ctrl +G	Group
Shift + Cmd+G	Shift +Ctrl +G	Ungroup

F 7	F 7	Layers Panel
Cmd + F 7	Ctrl + F 7	Object Styles
Shift + Cmd + D	Shift + Ctrl + D	Links Panel
Cmd + 8	Ctrl + 8	Make Compound Path
Shift + Cmd + 8	Shift +Alt + 8	Release Compound Path

Fig 17. Shortcuts for editing graphics. Adapted from InDesign:An InDepth Introduction to Page Layout and Design with Adobe In Design, Terry Rydberg ([2007] 2008).

As pointed out before, the shortcuts are not of much use unless one knows how to make them work on copy for clear communication. With a mind of copy best options, the shortcuts help add value to what is read.

In the manual resizing of photos, a formula or two have to be applied to work out the proportions. The computerized application is different and the shortcut to resizing is:

Macintosh: *Standard*	**Windows:** *Nation*
Cmd + Opt + < or >	Ctrl +Alt < or >

On the Mac one would apply the first shortcut; on the PC the second. But as pointed out before, effective copy processing must go beyond a working repertoire of shortcuts.

Without knowing the principles of resizing, the shortcut provides speed – but not quality. The shortcut takes one to the central panel. Once there, one must decide whether what the image needs is proportional or disproportional scaling. For most images disproportional scaling will not work. A picture of clouds, for

example will not be distorted by disproportional scaling (Terry Tydberg ([2007] 2008: 100-101). However, elongations or trimmings will have negative consequences on almost all other images – if done disproportionately.

As is to be expected, some graphics will be prepared elsewhere and brought into InDesign to put copy together. Learning this shortcut on how to bring in a table would speed up the processing of copy:

Mac: Standard	Windows: Nation
Shift + Opt +Cmd +T	Shift +Alt + Ctrl +T

Once the table is in, however, other controls – apart from shortcuts must be brought to bear upon the table. The table graphic must be improved through formatting.

To format a table for high-impact communication, the following must be addressed: suitable typeface and type size; keeping columns narrow for easier comparisons; using correct text alignment; fitting text spacing; increasing typographic contrast between rows and columns; making borders and gridlines using a simple-easy-to-follow rule; applying background tints to reduce complexity of data; and being careful to avoid haphazard use of white space (Roger Parker, 1998:232).

Cropping may be the solution to the problem of disproportionate image in InDesign. The parts outside the frame are ghosted (visual 4:31, Terry Rydberg ([2007] 2008:98). Dragging the ghosted parts into the frame makes it possible to crop them out.

Dealing with cells can be managed through a shortcut. This would make it easier to have access to cell contents. This access shortcut is as follows:

Mac *Standard*	**Windows** *Nation*
Cmd + Opt + B	Control +Alt +B

When this applies one is at the cell option of InDesign (Terry Rydberg ([2007] 2008:121). The question is now what to do with these options. If it is not clear how the best communicative effects of cells are formatted, there is a problem.

What cells should be merged and how much column – space should be allocated is all part of the quality issue. Alignment of numbers in the cell – is an important issue. Left alignment is better than centred since it does not prevent the eye from following the griding line. Where cell contents begin is very important.

If one has finished working on one object and wants it in the background and the vice versa, the shortcuts are as follows:

Mac Standard	**Windows** Nation
Shift +Cmd +[	Shift +Ctrl +[
Shift + Cmd +]	Shift + Ctrl +]

These two shortcuts simplify the work of managing objects on the screen. But this is on the assumption that quality is being added as the objects on copy are being shoved back and forth.

By mastering other object – moving shortcuts including the following adding quality is made easier: Select through objects, Select Next Object Above, Select Next Object Below, Paste Into Place etc. These create on the screen voluminous space where to work and increase copy quality.

4.4.0 Noise Elimination in Copy Processing

As the Shannon and Weaver model of communication predicts in A First Look at Communication Theory (200:37), noise is unavoidable. But it can be reduced to minimal proportions – once its sources are identified. In copy processing noise comes from computer screen noise, viruses, and could even result from overclocking. At Daily Nation and The Standard most of these sources of noise have been known to exist Ways of resolving them have been found.

4.4.1 Resolving Computer Screen Noise

From the earliest computers, how to display information once processed has been an issue. Two main areas of concern are usually addressed: the display resolution and the screen size and shape. If any of this is not well addressed, it constitutes noise – this interferes with communication.

In the case of copy processing, the noise would interfere with clarity and therefore the quality of copy. According to David Karlins (2003:32), computer screens display at between 72 and 92 dpi. At such low resolutions, the screen becomes grainy. The grainer it is, the harder it becomes to read – particularly small fonts.

What this means is that resolutions on the low end must be avoided. Compared to other resolutions, the minimum resolutions are very low since standard print requirements are 300 dpi. This equivalent range for laser and inkjet printers is actually between 300 dpi and 600 dpi (Karlins 2003:32).

Therefore, the claim that Web books are displacing printed ones is misguided. With the serious discomfort of reading Web texts – just as in the newsroom – due to low screen resolutions this takeover of the Web is unlikely until screen resolutions match those of the printed page.

In the meantime, there is evidence that it is not only the writing but also image quality that is threatened. Not substantially different, image display is between 75-100 dpi, on a web page, for instance. What this means is that even web page copy will in the end not be as popular as expected.

The newsroom is sensitive to these noise issues – both screen resolutions, sizes and shapes have to be user-friendly. In both newsrooms, the screen size is not less than 15''. The monitor must be also a CRT, not a flat screen display.

With flat screen displays arise problems of seeing blurrings of type and image at the edges. These flat screens may be useful as dumb end terminals. Where fine grain resolutions are needed – for example, in editing copy and photos for print – better screen shapes are provided.

When computer resolutions are stated in pixel form, they might look impressive. In pixel form modern computers display at 800 pixel width (Karlins, 2003:65) equivalent to about the 92 dpi. More is not better – 800 is still around 92 if converted to the dpi scale.

4.4.2 Uninterruptible Power Supply

Due to interruptions of power and potential loss of data, a solution has to be found to make work safe. In uninterruptible power supply, there is a partial answer to

this. The device comes as a peripheral safeguard – both Daily Nation and The Standard have them.

Interruption is noise that is serious enough to destroy copy. What this means is that it must be safeguarded against potential destruction. One reason that a UPS is a partial answer is that the device does not support continued processing once the problem has started. It only helps secure the data against erasure since RAM memory is volatile.

If the charge that commonly leaks from the UPS is not constantly replaced (Ron White, 2006: 204) the device would not function. To counter the menace of interruptions, there is a microprocessor in the offline UPS. It monitors the power into the computer for a drop in voltage. When power fails, an inverter changes direction of current power into an alternating current and sends it into the computer.

In an online UPS configuration – power failure or not – the device supplies current into the computer. When there is disruption, the power reserve in the inverter continues to supply the computer with power. Unlike the offline solution the AC-to-DC converter has already done the conversion when trouble strikes (Ron White, 2006:205).

About five minutes is available for sorting and saving documents before the power reserves dwindle. In some UPS designs, a connection to the computer triggers activation of software to do automatic saving when there is no human being to do it.

4.4.3 Surge Protector for Copy

In the newsroom – or anywhere – it cannot be guaranteed that onlythe ideal current will be in supply throughout the processing: noise penetration unlike the interruption does not cut off the power: it makes it irregular and potentially dangerous to processing devices. If as at Daily Nation and The Standard there are UPS units, surge protectors are within as inbuilt.

But as Ron White observes (2006:207), it is ill-advised to expect surge protectors to secure data and computers against closely lightning storms. As a resistor, the fuse gets hot and melts when too much current comes through. But it makes no sense to abandon copy processing machines in newsrooms to fight the storm with fuses. Disconnecting them till the surge is over is a better solution in the management of copy processing.

What is called a shunt mode works like a fuse. A metal-oxide varisot (MOV) between the power line and the neutral or ground line serves to direct the surge from the processing components. In the process, it is destroyed – but unlike the fuse – without melting.

Where do power surges come from? Turning on other machines, near lightning strikes, and similar electrical events can trigger power sags, and general electrical noise: avoiding overloading the electrical system is therefore advisable as newsroom precaution.

4.4.4 Virus Scanning and Firewall Security

Among the forms of noise that can destroy data is the virus: noise control through scanning is the solution. Both Daily Nation and The Standard have ways of addressing this menace to copy processing. In both newsrooms, the vice was acknowledged to exist; hence, the need for scanning and security alerts to secure copy.

At Nation the virus menace was rated first, then followed denial of service, and the worm. Given that The Standard made it second, it competes for the top. But in terms of the damage caused by viruses, the ranking was low. In both newsrooms, line failure was considered the most threatening occurrence.

The functions set at modern gateways to deal with viruses include the following: firewall, router, switch, risks filtering, and URL filtering (Frank Derfler Jr and Les Freed 2005:216). Through an Internet connection, the antivirus software reads the central library to update its virus-pattern alerts. To recognize them it must have read in preparation to make a library of viruses and worms.

On the other hand, the firewall works differently. By inspecting incoming data, it can block requests that suggest unauthorized access or actions. Since the router guides data to specifically addressed LAN components, it can discard suspicious data. Modern gateways have protection or wired LANs but not wireless LANs for which they also provide access – without any filtering. It is assumed that filtering is done at the wireless level of passwords and encryptions.

The antivirus software inspects the master boot record, program files and macro code searching for viruses (Ron White, 2006:388). Signature scanners survey the same areas in search of sections identical or similar to virus profiles.

Yet, all these measures are not foolproof. Supplementing these with heuristic detectors is an inbuilt mechanism for increasing security. For damage triggered by date events, or time heuristics, detectors work better. They search operations that bypass the operating system – .COM, .EXE files, and disk writers (Ron White, 2006: 388) – where normal antivirus operates from.

But alerts would be incomplete without memory resident antivirus software. Events like downloading, operating directly from the Internet and remaining in memory after execution are associated with virus carriers. Memory-resident anti-virus software inspects these to spot out suspicious code for deletion.

4.4.5 Overclocking and Overheating

Both at Daily Nation and The Standard, the overclocking – a noise problem was reported not to exist. This involves resetting CPU clock speeds by those impatient with industry settings that are said to be conservative (Ron White 2006:68). Although overclocking causes over heating, this can result from other causes – damaging copy may be the consequence.

Due to the assumption that computers will overheat-overclocked or not – manufacturers prepare preventive ways to counter overheating. To fully grasp overheating, starting with overclocking heips. The problem is so common in the

West that those who engage in it have a name – modders (Ron White, 2006:68). It can be assumed that they get into newsrooms as copy editors.

What makes overclocking possible is the imprecise manufacturing standard that allows a safe range of speeds. Yet, since the standards do not apply uniformly, some chip sets have less heat tolerance. An 800 MHz computer system of 200 MHz may have in the specification a multiplier of when in fact it is 5. If further adjusted by a modder, it will go to 6 instead of 5 – and then overheat and malfunction: causing damage to the system and copy in the newsroom.

Fans are installed in computers as preventive measures just in case a chip overheats – not necessarily from overlocking. Inbuilt are also heat sinks; left on their own, processors could run enough heat to melt. In the same way, the fan must be functioning to cool the internal components.

A heat sink has a thermal fan attached at the top to blow heat off from the CPU. It is conducted away from the CPU by air, which is then blown out of the system case. In liquid cooling, there is a water pump and tubes to carry cold water to the CPU and other components. As water runs though radiator channels next to the CPU, there is transfer away of heat by conduction that cools off the CPU.

These ways make copy processing safe, otherwise the graphics-heavy environment would overtax CPUs causing them to overheat. The cooling system prevents overheating in the normal function of computers.

4.5.0 Copy Output and Upload

To ensure that there is a WYSIWYG quality of copy, it is printed in the newsroom for study. The printer must be of very high quality. At Daily Nation and at The Standard the printer of choice is the laser printer.

4.5.1 The LAN Printer

There is need to set up a LAN economical to run. Furthermore, the idea is to have high quality dpi to see how the actual copy will print. A wide choice exits. But the Nation and Standard similarity of choice is not a coincidence.

First of all printers are divided into three groups: line, serial, and page printers. Within the first and last category, the choices are between drum, chain and electrostic or, laser, electrostatic magnetic, and ion deposition printers.

Serial printers in the middle of these two are either impact or non-impact. The former are divided into dot matrix, daisy wheel, and thimble; the latter are thermal and ink-jet. Below is a diagram that shows the printer models from which Nation and Standard chose. Since the Hutchinson-Sawyer text (2000) is not as comprehensive Clifton and Sutcliffe (1994), the diagram is from the more detailed source.

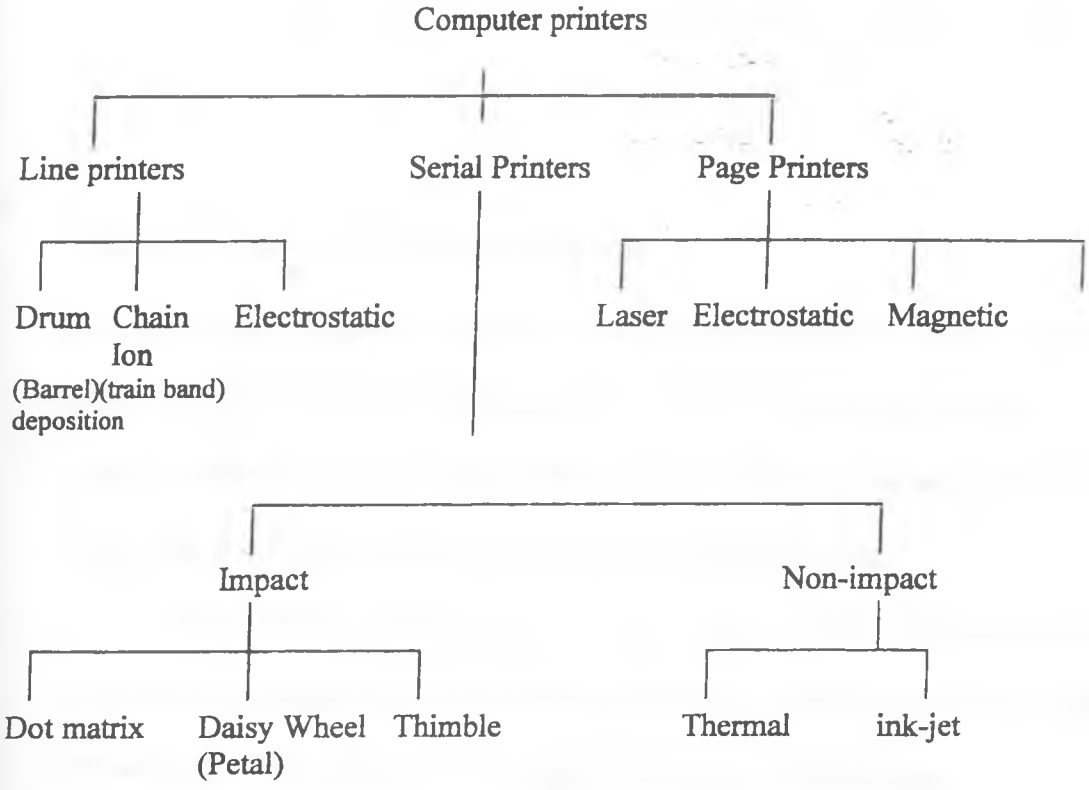

Fig 18. Classification of computer printers, Business Information Systems 5th ed. H D Clifton and A.G. Sutcliffe (1994:119).

As said before the printer of Nation and Standard is the laser printer. Why this particular one?

It uses a laser beam to create a high-quality image of page by producing microscope dots on the photoconductive surface of a revolving drum. Then toner is sprayed on the sensitized parts. If the paper comes into contact with the drum, the image gets transferred and fused on the surface. Cleaning off the drum prepares it for the message of the page that follows.

In short, the laser printer is an attractive one because of the type of image it produces. If this were not the case, the unclear page would be interpreted as

noise and rejected in the newsroom. Copy not endorsed by those who know the standards would not be likely to attract readers out there.

4.5.2 Uploads to Commercial Press

As output devices there is the printer - and then the upload. For the commercial press to get copy to print, it must receive it from the newsroom upload. This is what presents one of the biggest problems in newsroom computerization. Both Daily Nation and The Standard upload to the commercial press.

The problem is that unlike in the ordinary office automation, the newsroom is the opposite of bandwidth requirement. In ordinary offices download rates are higher than uploads – the opposite is the case in newsrooms.

According to Nation the upload need is at high level of 2 MB. Compared to ordinary offices where downloads can be lower than 56 K, 2 MB is very high.

Plans are under way at Nation to start a wireless transmission – Wi-Max- to transmit in Ggbts. Such requirements can be expected, but only in bandwidth hungry processing like that of newsrooms.

Copy is sent out as a PDF file which can easily print whatever commercial printer choices are made.

Conclusion

In the investigation of the issues of computerization of the newsroom a number of issues have come to the fore concerning the adoption of technology newsroom in the. The conclusions in these matters concern both the hardware and the software. How these are configured determines the efficiency of the newsroom – besides copy quality: both in print and graphics.

The reason why newsrooms at both Daily Nation and The Standard have not acquired 64-bit registers is because there are alternatives: in built MMX and SIMD. Expanding register capacity is made much easier by these technologies that supplement the work of registers. Without high capacity registers, processors stay idle waiting for copy. Slow input devices slow down processors.

Similarly, even GB processors are not much use without caches, hyperthreading, PCI-Express or fast LANs. Since what is processed must reach fast for processors not to be idle, technologies that improve the speed into the CPU are of great value to newsrooms.

Daily Nation seems to have a processor of much higher speed than The Standard. This is not the case since speed is determined by how fast the CPU is fed with data by other in-built mechanisms – not the factory speed specifications. For this reason, newsrooms should aim for Category 6 wiring for broadband – it can take voice, data and anything else simultaneously. By improving LAN speed, processors will be less idle.

The table below does tow things. First, it provides a neat summary of what newsrooms need to be aware of Moreover in terms of the generational evolution

of both hardware and software. But as the table shows the solutions of yesterday will not work today.

	First Generation	Second Generation	Third Generation	Fourth Generation	Fifth Generation
SIZE (Typical computer	Room Size mainframe	Closet Size mainframe	Desk-Size minicomputer	Desktop and Laptop Microcomputers	Networked Computers Of all sizes
NETWORKING	None	Mainframe-Based Network of video terminals	Mainframe and minicomputer-Based Networks	Local Area Client/Server	The Internet, Intranets, and Extranets
CIRCUITRY	Vacuum tubes	Transistors	Integrated Semi-conductor circuits	Large scale integrated (LSI) semiconductor circuits	Very-large scale Integrated (VSLI) Semiconductors circuit
DENSITY (Circuits per component)	one	Hundreds	Thousands	Hundreds of thousands	Millions
SPEED (Instructions/Second)	Hundreds	Thousands	Millions	Tens of Millions	Billions
RELIABILITY (Failure of circuit)	Hour	Days	Weeks	Months	Years
MEMORY (Capacity in characters)	Thousands	Tens of Thousands	Hundreds of Thousand	Millions	Billions
COST (Per million instructions)	$10	$1.00	$.10	$.001	$.0001

Fig 19. Adaptation of major trends in computer system capabilities; An Introduction to Information Systems: Essentials for the Business Enterprise 11th ed., James O'Brien (2003:73).

Not only does the table summarizes the major trends in the evolution of computing power but also raises pertinent wider issues.

Will the newsroom of tomorrow be prepared to meet the competitive requirements? Among these issues is the question of the technological avoidance of obsolescence. The newsroom of that time might be expected to use the fifth generation technology. The requirements will include computer size and capacity, the network sophistication, the circuitry through which to transmit, the density per circuit, the speed of instruction processing, the demands of reliability, and the memory capacity as stated in characters.

Above all things whether or not they survive will depend on one thing: cost. Nothing of all these major requirements is for free – the better it gets, the more expensive. Until mass production makes it widely available and affordable, technology is an expensive competitive factor. If there is a fifth generation computing power underway - evidence does not point to the contrary – major financing of technology will be indispensable.

In software, the main accelerator of speed is shortcut keys. As shown, Rudberg ([2007] 2008) observes that how fast copy can be processed can go into hours faster than non-shortcut processing. Although the Mac shortcuts (Standard) might look different from those of Windows (Nation), the main difference is one. Mac has Cmd where Windows has Ctrl – the other one is opt in Mac for Alt in Windows. The shortcuts are otherwise almost identical.

When newsrooms insist on the learning of shortcuts, it should be shown that it is not to replace knowledge of text formatting and image processing. Without this ability, shortcuts will take the user to the features of copy processing – but will not add quality to copy.

In both hardware and software, news copy processing has need for much higher processing power than ordinary offices. Uploads of copy consume so much bandwidth that Nation is considering building a wireless transmission to its commercial press. It is bound to be economical since within certain distances corporations can transmit wirelessly for free.

Glossary

Accelerated Graphics Port (AGP) An expansion slot for high speed processing of 3D graphics by the graphics processor. Bypassing the peripheral component interconnect but (PCI bus) that runs at 33 megahertz, it can deliver bulky data for processing at up to 533 megahertz.

accelerator Any device in hardware or software that speeds up the processing of data - a coprocessor, graphics accelerator or keyboard shortcuts.

access permission Read-only or write status that the operating system allows for users of a file.

Always On (AO) On the Internet, the non-dial up connections that remain connected throughout; for example, a leased line or modem computers with AO connections need a firewall to screen out unauthorized access.

Apple II The computer introduced in 1977 by Steve Jobs and Steve Wozniak that started the popular use of the personal computers.

AppleTalk An inbuilt patent of Apple's Macintosh computers for LAN connections. It runs over serial cable and Internet network because it is independent of the network transport.

Asynchronous Transfer Mode (ATM) A highspeed to network technology, developed to succeed the Integrated services Digital Network: ISDN has been meant to replace the analogue telephone system - but it runs at 64 Kilobits per second, 128 kbps if channel-bonded. Super-fast LANS based on ATM can carry traffic of up to 155 megabits per second - voice, data and video.

autoflow A feature of desktop publishing programs that lays out imported text in the appropriate columns, pages, embedded pictures and box-outs.

bandwidth Channel capacity either as the difference between the higher and lowest frequencies (analogue). In digital terms, it is the number of bits per second that a channel can carry.

bitmap editor Refers to any program that manipulates images stored as collection of individual pixels and not as geometric descriptions. It can handle single pixels or masses of them.

bleeding edge Unadvised adoption of substandard technology causes high costs resulting in opposite of leading edges: bleeding edge.

broadband A medium like ATM, ADSL, and cable TV which can be divided into many independent channels to carry television signals, video conferencing data, and voice calls. Baseband carries a single channel, and ISDN also fails the test.

bus locking An early type of bus design. It appeared in some Apple Macintosh computers in applications that are permitted to have exclusive use of successive bus cycles while other devices are locked out.

bus speed A data transmission rate, the bus speed – 33 MHz for a decade and recently 100 MHz - determines the performance of a processor.

byte Eight bits make one byte; on binary form these are 00000000 to 11111111 or 0 to 255 in decimal. Pixels, for example are transmitted as bytes of 8, 32, or 128 bit packs.

cable modem A transmission device that permits data transfer and Internet access through cable TV connections with a speed of between 0.5 and 20 megabits per second; this modem has higher data rates than a telephone modem.

callback Response to name and password in which the connection hangs up for an auto-dial modem to call the telephone number of the user for authentication. This prevents breach of security.

cache An area of fast memory that holds copies of data frequently or recently used for speed access by the processing device, the Central Processing Unit (CPU). A 32 to 64 kilobyte cashe for megabyte one, casheing for the main memory - the Random Access Memory (RAM).

CD (Computer Disc) Originally developed to store music but now used for storing other data including computer data, moving video images, software programs, and computer data.

CD-R (Compact Disk Recordable) A version of the CD-ROM disk used to write once for storing computer data or copying music CDs. Frequently referred to as burning it, the recording requires a special drive known as a CD Writer. Data stored thus is deletable but cannot be removed or changed.

CD-ROM (Computer Disk Read-Only Memory) Using the same format as a CD, CD-ROMs are optical disks that cannot be written by a computer: they are pressed from a master copy and read from a separate drive. Their around 640 megabytes of storage makes them the most appropriate medium for distributing software.

CD-RW (Computer Disk Read-Write) A storage disk using the same format as the CD-ROM; it can be written to and erased and written to again and again. Though readable from most modern CD-ROM drives, they can only be altered and written to by special drives using a laser beam that is more powerful than the one that reads it.

CGA (Colour Graphics Adopter) A graphics adapter for the first IBM PC - it displayed 320 x 200 pixels in four colours. Its poor performance helped the Macintosh to become the choice for professional designers and graphical applications before serious competition resumed.

channel bonding Uniting two 64 kilobits per second channels to double the capacity to 128 kbps; for instance, to create fast link in Internet service. The calling modem and server modem must support bonding for it to work.

clock speed Measures the speed at which a PC's CPU runs - usually, 800 MHz to 2 GHz - though higher speeds exist. Running at 100 MHz, the external memory and system bus are slower.

component In hardware or software, any unit that is part of the system.

compound document A document with parts made from different programs - for example one containing text and graphics. The best known universal document is HTML-based web page since proprietary concerns defeat cooperation efforts.

compression Reducing the size of data to fit storage medium or for faster transmission. Lossless methods preserve all information. But lossy ones like JPEG and MPEG are best with end users to avoid their accumulated losses.

compute-intensive Unlike tasks that use a lot of memory, storage or bandwidth, compute-intensive tasks like 3D graphics use much processor time.

configuration Determining hardware and software computer parameters most suitable for its tasks or establishing the best network environment. Errors in configuration cause failure of applications.

copy The text and graphics containing stories and illustrations which is processed in a computer and printed as a newspaper or magazine.

copy fitting Making text and graphics of the right size for the available space when a document - a newspaper or magazine - is being laid out. Font size, character spacing, and leading are used in copy fitting.

CPU (Central Processing Unit) As the most important unit of the computer, the CPU executes programs including the operating system and transmits data between memory and storage –example include Intel Pentium and Power PC.

database Organized information stored in a computer to be retrieved; files containing records and fields from which the content may be accessed for use.

data rate The speed at which data is transferred between two storage devices. In parallel transmission, it is usually measured in kilobytes or megabytes per second, and in kilobits and megabits per second in serial data streams.

desktop publishing The use of computer programs that are not word processors to design publication-quality documents by fitting in graphics and typographic attributes more precisely.

digital camera An image recording device that uses a chip rather than a film to store bitmaps of data that can be processed to produce photographs.

digital signal processor A microprocessor chip for processing continuously transmitted data rather than disk - bound data. It is used in devices including the following: modems, laser printers, mobile telephones, and television.

disk-bound The rate of processing as set by how fast reading and writing of data from storage takes place. Processor-bound computation is determined by the speed of the CPU.

Disk-storage Used to refer to rotating media with a drive on the computer-removable or fixed – from which data may be read or to which it may be written.

DVD (Digital Versatile Disk) A 12cm read-only storage medium with an equal diameter as a CD-ROM but much higher data capacity. At the moment, it can hold 4.7 gigabytes; a double layer holds 8.5 gigabytes and double-sided 9.4 (GB) respectively. DVD is 9 times faster in data transfer than CD-ROM.

email virus A malicious program hidden in email attachment to auto-execute and destroy data once the mail is opened. It erases hard disk data or send copies of themselves to all the victim's address book.

Enhanced Parallel Port (EPP) A connection of up to 64 peripherals by linking a parallel port to an expansion bus. It achieves a data rate 1.5 Mbps both ways using a 25 pin connector.

Fast Ethernet Originally a 10 Mbps configuration, a 100 Mbps version was developed, and came to be referred to by this name.

fatbits Of image magnified to permit one-by-one editing of each pixel.

Fibre Channel Arbitrated Loop (FC-AL) A serial bus, faster than Small Computer System Interface (SCSI) with speeds of 100 to 500 Mbps and double

the amount in dual-port throughputs. In coaxial cable, data can reach 30 metres, but in optical fibre, this is enhanced to 10 kilometers, and 127 devices per port.

file The data structure most frequently used to save data for reloading into main memory (opening) for editing. To allocate file sectors in a disk, the operating system's file system records the file name, data access permissions, data of creation etc. in a directory or folder. Different file formats make it impossible to open files created by other applications. The closest application to a universal file is a text file.

file conversion Altering the format of a file for processing in a different application. File conversion facilities are now in-built, and plug-in converters exist.

file compression Reducing the size of a file by shrinking data using appropriate shrinking techniques to lessen storage space and unshrinking display formats. How a file is compressed depends on its type. Those with identical pixels require different techniques from those tonally differentiated by pixels, text, sound or pictures.

firewall A gateway server which scrutinizes traffic between a LAN in an organization's premises and the outside world to detect breaching of security. It relaxes security measures within except for certain access permission – but tightens alerts on an organization's private data. A Linux or Unix firewall software in a PC does the inspection of email attachments.

FireWire A high-speed serial bus for Apple and IBM-corruptible PCs with data transfer capacities of 100, 200, or 400 megabytes per second and hot swapping automatic configuration. It facilitates connection of digital cameras and camcorders to PCs at cable length of 4.5 metres supporting 16 of them for a total of 72 metres. Its 6 –wire cable can carry up to 60 watts of power to a peripheral.

floppy disk Tape-like recording storage of flexible plastic with a magnetic oxide layer to which data can be written or read at a speed of 300 revolutions per minute compared to a hard disk's of 10,000 or above. Optical technologies including CD-ROM, CD-R, and CD-RW are replacing floppy disks.

font metrics Measures of characters - widths and weight - stored in different file in a font file for font rendering, including during transfer of a document to another computer system.

garbage collection Automatically releasing memory for reuse to prevent a bug called memory leak caused by running out of memory when it is dynamically allocated.

graphical User Interface (GUI) A picture-driven outer layer displayed by computer software for interactive computer control rather than by using text-based operation. Included in the screen object is what can be so operated: icons, windows, pull-down menus, pop-up menus, check-boxes, buttons, button bars, dialogues etc. GUI based systems need 100 to 1,000 times more memory and processing efficiency than command–driven interfaces.

graphics Pictures on a computer display. These include those illustrating the accompanying text, or those created to communicate something on their own.

graphics accelerator An expansion card or a chip connected to a computer for faster display of diagrammatic or pictorial content. In its 2D form, it increases

data transfer speed and shading: the 3D one carries out trigonometric transformation besides shading algorithms.

Graphics adapter As graphic expansion cards for displaying graphical contents they are also graphic accelerators with 24 bit colour shading at 1280 x 1024 pixels or higher quality. Earlier the colour graphics adapters (CGA) were this to 320 x 200 pixels in 4 colours – the enhanced graphic adapter increased this to 640 x 350 in 16 colours.

halftone The image obtained by reducing continuous tone photographs to tiny dots of single colour and fixed intensity. To achieve sharper intensity, more dots are printed. Unlike the grid of tiny dots, pixels vary in colour and intensity and not in size.

HDD Abbreviation of hard disk.

high-resolution Better quality range of image clarity – at the moment 1024 x 728 pixels or higher. Expressed in dots per inch, this is 600 dots or more. High resolution was once 320 x 240 pixels.

hot link Connections in spreadsheets or desktop publishing programs that effect changes on the copy to appear automatically in the original file. Alteration of the original leaves the embedded copy intact.

HTML (Hypertext Markup Language) A language that describes documents for publication on the World Wide Web. By embedding tags in the document that leave instructions for a computer on how to display the content, HTML provides directives for page formatting – yet; not as accurately as desktop publishing programs.

hub A device connecting local area network (LAN) components and transmitting data packets from LAN to LAN or to wide area network (WAN). To route packets effectively, the modern approach is to use a microprocessor, memory and other firmware in the hub.

100baseFX A fast Ethernet standard for 100 megabits per second by use of optical fibre.

100baseTX Fast Ethernet cabling with a speed of 100 megabits per second and the most commonly used standard.

image processing Manipulating and improving diagrammatic or pictorial content sometimes at pixel level. Effects achieved include sharpening, blurring, softening, and colour editing, through use of the bitmap editor such as Photoshop in prepress document processing.

Indesign A proprietary program developed by Adobe systems, includes after their popular PageMaker desktop publishing software to gain special accuracy in areas including typographic quality.

In-place editing Invoking an editor to edit an object within the editor of the document containing it. For instance, the objects menus may replace those of the container for picture editing.

input device Hardware for entering data into a computer for processing or storage: mouse, scanner, keyboard, touch screen, port, bus etc.

Internet An email delivering network of computer networks connecting organizational networks the world over, including those in the public private, and educational or academic domains that makes web pages accessible.

intranet A private network accessible only from within an organization but resembling the Internet in the way it is implemented and accessed.

ISDN (Integrated Services Digital Network) A public network to carry digital data at 64 kilobits per second or 128 through channel bonding. It was meant to replace the analogue telephone system but might be overtaken by Asymmetrical Digital Subscriber Line (ADSL) and cable modems.

ISP (Internet Service Provider) An organization that avails Internet services like web site hosting by connections to the Internet backbone; it shares it for a fee with homes and businesses.

inventory management Planning the hardware and software to be installed during a network configuration and tracking up the upgrading. Automating these processes is becoming necessary for efficiency.

journal An operating system file for recording all transactions for use in recovering data changes during a crash.

JPEG (Joint Photographic Experts Group) The name of a committee which created the image compression solution of the most popular graphics file format for displaying pictorial content on the web.

justify A typographic technique that aligns one or both margins vertically for aesthetics of ease of reading.

kerning Typographic alteration of the space between letters done automatically by an electronic system that reads the right distance from a table of spacings.

Kilobit Unit of measurement equal to 1024 kilobits of data and abbreviated as Kb.

Kilobyte Unit of measuring computer memory equal 1024 bytes and abbreviated as Kb.

Kilohertz (KHz) Unit of measuring frequency - one thousand cycles per second.

LAN (Local Area Network) Connecting computers particularly PCs within the same location (office, building, or firm) - to exchange and share data from processing. The most liked LAN technology is ethernet, with token ring coming second.

laser printer An output device with high resolution that produces a document – simple or compound - using dry powder toner for text and graphics rather than liquid ink.

leading Additional spacing placed in between the lines of a document already typeset.

Level 1 cashe A cashe manufactured on the chip where the processor is located, with 64 kilobytes or more of memory, receiving data from the off-chip level 2 chashe.

Level 2 cashe A cashe not located where the processor is but holding data transmitted to the processor by a level 1 cashe.

Low-level format A byte-by-byte deleting and reconstruction is formatting information on the hard disk through an operating system command. To effect a high-level format, a command simply resets either the directory or the file allocation table addresses leaving the content intact but inaccessible.

Macintosh Apple proprietary models of personal computers now bearing the name of iMac; it popularized personal computing by replacing command-driven menus with a graphical interface.

MacOS Macintosh's operating system - the first to feature graphical - driven instruction rather than command - driven interfaces, making it successfully pioneer personal computing.

mail server A computer used as a stand a lone or in a LAN to store, send, or receive email messages. It helps avoid individual routes to outside networks and usually supports a firewall LAN security.

main memory Central addresses for data location, current program instruction, and where data being processed is loaded. Non-main memory includes the following: processor memory cashe memory printer memory, video adapter memory, flash memory, ROM memory e.t.c.

megabit Unit of measuring data – equal to 1,048,576 bits in communication or computing and abbreviated as Mb or Mbit. Megabits per second (Mbps) is the commonest measure of data throughout in buses or networks.

megabyte Abbreviated to MB, it is 1,048,576 bytes or 1024 kilobytes and is the limit for measuring LAN Random Access memory (RAM) capacity-being replaced by gigabyte.

megahertz (MHZ) A unit of frequency equal to one million cycles per second.

mega pixel Used especially to express resolution in digital cameras and is equal to 1,048,576 pixels.

microprocessor One piece of silicon or ship integrated to include the following components for commercial and other type of computing like copy processing: an instruction fetch unit for getting from non-RAM memory instruments to execute; an arithmetic unit for calculations; a bank of registers to place data being processed and results; cashes for speeding up data supply to the arithmetic unit; and a control unit to manage these operations of the central processing unit (CPU). Conventional microprocessors may include a memory management unit; a bus control unit to regulate transmission; and an interrupt controller to prioritize execution.

modem A clipping of modulator/demodulator. It refers to a converter of signals that enables computers to communicate over public telephones by changing analogue data to digital and the vise versa at up to 56 kilobits per second. Digital telephone networks do not need modems.

Motorolla 68000 A proprietary microprocessor design of Motorolla Corporation that was used in Apple Macintosh but which was abandoned when Apple adopted Power PC technology.

mouse An input devise moved with the hand causing an arrow symbol on the screen to produce equivalent movements. Pressing the mouse button helps select the object at the cursor pointer for processing.

multiprocessor A computer with more than one processor, all of which can run at the same time. Symmetrical multiprocessors are similar in design and processing. Asymmetric processors offer specialized functions - processing text, graphics, audio content etc.

Mutex A software design to manage a resource like a disk to disallow multiple access to the same memory when a multithreaded program is at work. If a thread takes control of the mutex is locks it till it is through with the needed memory.

network A pool of computers connected together through cables or wireless linking to exchange data for processing or storage. In telecommunications, it refers to cables and switching stations in a region through which subscribers are allowed to communicate by making brief connections.

non-volatile RAM (NVRAM) NVRAM does not lose its contents after system power is switched off - category includes CMOS (Complementary Metal Oxide Semiconductor) with memory of record of components installed in a computer; flash memory as storage medium; and BIOS memory (Basic Input/Output System) for conducting (power-on self-test) to a waken the computer and scan their presence and smooth functioning.

operating system (OS) The software that is loaded in a process called booting for it to load all other application programs and to run them. By providing the user's basic interface and controlling all hardware and software, it allocates a section of memory, loads the binary code of a program there and triggers its running. Most operation systems have one CPU that supports multitasking and multithreading. Its services to programs include reading keyboard input, displaying output on a video display unit (VDU), and storing data on disk. An operating system may be a one-megabit running a single program or a 64-megabit one with subsystems for the following: the kernel, a file system, a network system, and device controller system.

optical fibre Plastic fibre carries out hundreds of millions of flashes of light as data-bearing signals. Unlike copper wires, the cables do not allow interference from magnetic or electrical fields. They appear in long distance backbones but not in personal computing.

outline font A typographic shape of computer character that allows many quality different sizes of font type to the realized or generated form the same file due to geometric rather than bitmapped font description.

overclocking Resetting the central processing unit or a graphic processor and running it faster than the manufacturer's settings. Overspeeding introduces errors due to overheating and compromises reliability.

Pagemaker The first quality desktop publishing program invented for Apple Macintosh but later becoming propriatory to Adobe systems and incorporated also into windows.

PCI bus (Peripheral Computer Interconnection bus) A connection to improve data throughput by causing the CPU to run at to much higher speeds than 33 megahertz rate of the CPU. Besides, it makes the configuring of expansion cards possible.

PDF (Portable Document Format) Invented by Adobe system, it makes it possible to port documents with text and graphics, view and print them in other computer systems regardless of the resolution where they are displayed. With the embedding of the original fonts, a PDF text is editable in a limited manner - these files are not bitmapped.

performance The speed of a communication or computer system to transmit and process data. Speedier spindle rotations, for example, decrease latency. Reliability also counts in performance - so does usability since poor interfaces retard processing.

peripheral Any computer component not part of the central processing unit (CPU) or main memory but visible to the operating system if connected through a device driver.

PC (Personal Computer) A computer for individual use different from a mainframe or miniframe used by many users simultaneously.

pixel Acronym from the phrase picture elements; a dot to combine with other dots to create an image on a computer screen. How many dots are needed on a screen is determined by the screen size - a 14 inch screen requires 640 x 480 dots, horizontal and vertical figures respectively.

pixellation If a bitmapped image is magnified beyond its potential limits, this produces a coarse, blocky sight with the name pixellation.

plug-compatible Extent of hardware likeness between computers in such a manner that peripherals and expansion cards can be exchanged and work smoothly. With thousands of IBM PC clones, plug - compatibility is of prime importance.

port Any of the different connection points in the personal computer casing for the operating system to communicate with peripheral or expansion card attached there.

PowerPC A family of computers introduced in the mid 1990s to replace the Motoralla microprocessor of the 68000 Macintosh line. It was a joint venture by IBM, Apple, and Motorolla.

prepress Used for the desktop publishing that prepares a document to make it ready for the commercial press.

printer A peripheral connected to a computer through a serial or parallel port for outputting text and images onto paper i.e. converting soft copy to hard copy. This is done by building images from tiny electronic dots of colour similar to pixels that transfer bitmapped images onto the screen.

print queue List of first-in-first out (FIFO) files kept by an operating system or port server where users send other tasks to await them printing turn rather their waiting till the printer is free.

print server A print sharing regulating computer which connects one or more computers to a network, making it possible for all users to have access to the printers.

processor-bound Used for tasks whose processing speed is reduced by the clock rate and not by memory availability or disk storage and retrieval speed.

processor bus In most cases, the widest and fastest carrier in any system that connects a computer's central processing unit to its memory. The input-output bus that links disk drives and expansion ports to the CPU are not as fast as the processor bus.

proxy-gateway A computer with software transmitting requests for web pages and sending results to users and therefore acting as cashe for faster and less expensive access to pages requested frequently. Besides this, it is a firewall

against hackers' attempts to infiltrate the intranet. To cut down costs, to keep the intranet safe, and to prevent an organization's users from reaching forbidden sites, the proxy gateway provides a solution as a proxy server.

publication-quality For professional publication, a resolution of about 300 dots per inch or superior is considered sufficient for text, digital photographs, and diagrams.

Quick Time Apple Macintosh has a part in its operating system for full motion video and animation called Quick Time whose drives have become common place plug-compatible devices. Quick Time 3D has an extension for 3D graphics.

RAM (Random Access Memory) A non-sequential data storage medium which unlike the magnetic tape or disk allows hundreds of times faster reading or writing of data. Due to improving CPU speeds, the RAM rates have become a hindrance in data processing.

raster image processor (RIP) Used as professional image-setting equipment, it is a microprocessor or a graphics accelator in laser printers to increase the rate of screen rendition of postscript of documents for printing as pixels.

rasterizer It translates geometric descriptions of images like fonts or 3D objects into pixel format for screen rendition or printing.

Register- compatible Congruity at the highest level between different hardware devices containing integrated circuits so that to the software they seem identical in hardware registers at the same addresses. An AMD Atholon register is compatible with Pentium of Intel and therefore can run the same programs.

register file In the CPU, the general-purpose storage area temporarily holding the values being processed currently to cut down on time used to draw data from external memory.

render Converting a geometrically described file to an image that can be displayed on the VDU or printer - by translating location describing numbers holding a model - into pixel coordinates and colour values for an output device.

repeater Signal weakening due to attenuation is corrected by a device between two lengths of cable – a repeater - preferably 100 metres for a LAN that amplifies the transmission back to the original.

resolution Fineness in distinguishing between pixels, or a printer respectively. In the former it is measured in horizontal and vertical rows: for 14", 640 x 480 is recommended. Professional printing requires 300 dots per inch or better for minimum quality.

ROM (Read-only Memory) A kind of memory which cannot be erased once written and is used for storing a programme like BIOS that loads automatically to boot a computer and provide the user interface.

scanner A device that uses a light sensor to convert an image into binary data by digitizing it using narrow strips to extract sample bits of the original according to the intensity of light it reflects. The most important aspects of the scanner are two: its resolution, and the amount of digital samples it creates.

SCSI (Small Computer System Interface: scuzzy) An interface for connecting intelligent devices with a computer regardless of the CPU or operating system design.

security Ascertaining the scrutiny of authentication, obtaining of permission, and cutting out eavesdropping in the use of computer data for it to remain immune to harm.

serial port A single–bit communication channel present in almost all computers for connecting the mouse, modem, printer, and scanner to the system bus to transfer data in and out of the computer.

server Computer that furnishes services to users of other computers in a network context without permitting direct access to its data or resources from the user.

shared-medium network A type of LAN with workstations having in common a single cable to transmit messages through and requiring an arbitration procedure to ascertain when workstations send signals to avoid collision.

shift register An electronic converter of bit-serial to bit-parallel data, or the converse: The bits it stores may be accessed either as a whole word (parallel) or by getting bits from the register one-by-one (serial). For example, the CCD (Charge-Coupled Device) in digital cameras uses shift registers in its operations.

signal A sign, (electrical, magnetic, or light) or a beam used to send a message from one place to another often by modulating it into a wave pattern which becomes a carrier.

Signal-to-noise ratio To measure how much noise appears in a message during its transmission, the approach of determining the information - noise proportion is used. The higher this ratio the poorer the communication.

SIMD (Single-Instruction Multiple Data) In parallel computing architectures, the condition that the same instruction be processed by multiple processors accessing different items of data – for instance, arrays.

SIMM (Single In-line Memory Module-data) A way of packing RAM chips vertically to cram more of them there using a single edge connector to plug the circuit board onto a computer motherboard. The upward area is more than the footprint spread.

specification Description with attention to detail of the needs a system should meet and how to meet them - this is ascertained through testing. It also means features in a computer component - processor speed, RAM, storage size - meant to meet computing needs.

system bus The main electrical pathway through which the CPU reads and writes data to its memory, or communicates with peripheral devices. Because it is slower than the CPU - 100 megahertz – it is sometimes made wider than the size of the processor which can run at ten times this speed. Cashes ultra – wide and ultra- fast graphics systems help reduce the processor's idle time.

system software The operating system device drivers, and other non-application programs that help the computer create user interface, keep its records, and run user applications.

10baseT Used most widely in networking, the 10 megabits per second Ethernet cabling system is a twisted pair that has the largest distance as 100 metres.

text editor A program simpler than a word processor, which supports scrolling, deletion, backspacing, insertion, automated word-wrap but not multiple fonts or complex formatting. In windows, notepad is an example of such a programme, or Emacs in Unix.

token Ring A local area networking technology developed by IBM but not as popular as the radically incompatible as Ethernet - whose basis of transmission is each computer's possession of a circulating software called the token.

unified memory Having within the main memory a region for assembling and manipulating an image instead of designing a separate area for graphics expansion card for speeding up image data processing.

USB A 12 megabits per second channel in PCs and Macintoses the Universal Serial Bus is for bit-by-bit transmission to solve the problems of expansion slots by allowing as many as 127 devices to be attached to a computer. For faster speed requirements, SCSI and FireWire are used.

VDU (Visual Display Unit) The monitor or the screen device that makes it possible for the output of a computer to be seen. Size, resolution, colour potential, dot pitch capacity, refresh rate, and similar features determine the quality of a VDU.

video compression Reducing the volume of data stored in a video for it to be communicated through narrow bandwidth – as in the transmission of computer multimedia, digital television, videoconferencing, and the World Wide Web.

video memory A place for storage of image data for display on the computer screen. A graphics card designed with special video RAM chips is not used in computers with unified memory in which video memory is consists of addresses within main memory.

virtual private network (VPN) A private wide area network (WAN) connecting organizations or other groups over the Internet employing data security to prevent data from being read by users of the Internet. Private tunnelling protocol only allows interaction with the destination gateway.

standards Modem fax and similar device protocols with stated transmitting systems and capacities for data over public telephones.

Windows Designed by Microsoft, it is the most commonly used operating system in office automation. The graphical user interface features were borrowed form Macintosh to make possible working with several programs simultaneously.

XbaseY X takes the place of Ethernet in megabits per second, base is baseband, and Y the kind of cable used (longest permitted distance or wiring type).

Z-buffer A way of making it possible to avoid rendering parts of an image invisible due to the display constraints. The Z-buffer memory stores the X,Y coordinates of the last pixel to be drawn. By comparing the pixel to be drawn with the value in the Z buffer, it is omitted if greater than that value.

Newsroom Computerization Research Questionnaire

The purpose of this questionnaire is to get dissertation writing information with the kind assistance of IT respondents. To finish an MA at the School of Journalism University of Nairobi, one must write a dissertation in an area of value to the School.

Because of an interest in newsgathering and processing technology part of which we covered in class - I chose a topic in information technology.

My topic is:

Newsroom Computerization: Prepress Copy Processing

Institution of research:_____

Telephone contact:_____

Thanks a lot in advance for using your precious time to fill in this questionnaire for me.

Name of researcher: Gideon Nteere Marete

Institution of researcher: University of Nairobi

School enrolled in: School of Journalism

Part I

News Copy in the Local Area Network

1. Please indicate the bit rate of the method for downloading copy from bureaus or the Internet into your newsroom LAN_____

2. The operating system used in your newsroom computers for prepress copy processing is

Type		Model
Windows	☐	_____
Unix	☐	_____
MacOS	☐	_____
Linux	☐	_____

3. Indicate which of the following features or components are to be found in your network:

Always On (e.g. leased in to commercial printer) ☐
Switches ☐
Hubs ☐
Network cards ☐

4. Please show which of the following storage devices are used in your newsroom:

CD ☐
CD-R ☐
CD-ROM ☐
CD-RW ☐
DVD ☐

5 The number of computers interconnected is the newsroom prepress copy processing LAN is: _____

6 Please tick the local area network protocol used in connecting computers to share data or hardware.

X.PC ☐

Ethernet ☐

Token passing ☐

AppleTalk ☐

7 If Ethernet protocol is used, indicate the speed of the protocol:

10 Mbps ☐

Fast Ethernet 100 base X (100Mbps) ☐

Gigabit Ethernet 1000 Base –T (1 Gb) ☐

8 For token passing, which type of protocol is used?

token ring ☐

FDDI ☐

9 Please tick against the speed of the token ring used is in the protocol

4 Mbps ☐

16 Mbps ☐

100Mbps ☐

10 If AppleTalk is used in your newsroom LAN please state the following :

number of computers possible in the network_____

the highest speed the prepress transmission can reach _____

the longest possible distance between the processing devices _____

Do the AppleTalk layers conform to the (OSI Reference model)

Yes _____ No_____

11 The guided medium used in the transmission of the copy data in the newsroom is:

twisted pair wire ☐

coaxial baseband ☐

fibre optic ☐

12 If the twisted pair wire is used , indicate the type of use of the unshielded twisted pair in the newsroom:

UTP Cable	Maximum Speed	Use	Tick
Category 1	1 Mbps	doorbell wiring	☐
Category 2	4 Mbps	4 M Token Ring LAN	☐
Category 3	16 Mbps	10 BaseT LAN	☐
Category 4	20 Mbps	16 Base Token Ring LAN	☐
Category 5	100 Mbps	100 BaseT, 100 VGA LAN	☐
Category 6	250 Mbps	Broadband	☐

13 Please indicate which of the following components your newsroom computers have are connected to or get connected to :

PCI-Express ☐

Level 1 cashe ☐

Level 2 cashe ☐

Hyperthreading ☐

MMX ☐

SIMD ☐

MPEG file compression	☐
32-bit registers	☐
64 bit registers	☐
128-bit register	☐
Gateway	☐
Mail server	☐
Firewall copy protection	☐
Virus scan software	☐
CRT display	☐
Flat screed Display	☐
Scanner	☐
Camera	☐

14 Do you have an overclocking problem in the news room?

Yes _____ No_____

15 If yes, how do you go about solving the problem?

_____

_____

16 Please indicate the non-word software features in your computers and what they do as shown below:

Feature	Function
PDF	better quality object than pixel graphics

Feature	Function
1. _____	_____
2. _____	_____
3. _____	_____

4. _____ _____
5. _____ _____
6. _____ _____
7. _____ _____
8. _____ _____
9. _____ _____
10. _____ _____
11. _____ _____
12. _____ _____

17 The approach taken in setting up the operating system in your newsroom to connect with hardware is the following :

minimum configuration ☐

standard configuration ☐

custom configuration ☐

full package configuration ☐

18 Mention the devices the OS is configured for or write not applicable (NA) against the configuration not used in your newsroom.

minimum configuration _____

_____

_____

standard configuration _____

_____

_____

custom configuration _____

_____

_____

full package configuration_____

_____

_____

19 If coaxial cable is used, indicate the size of the cable in the LAN:

0.405" diametre ☐

0.195" diameter ☐

20 Do the newsroom LAN and the commercial press one belong to the same WAN?

Yes _____ No_____

21 If yes, tick against any interconnecting device used to join the newsroom LAN to the commercial press:

hub also called concentrator ☐

Bridge ☐

Switch ☐

Volter ☐

22 The transmission direction used in configuring the newsroom LAN is:

simplex transmission ☐

half-duplex transmission ☐

full-duplex transmission ☐

23 In terms of the transmission modem, which of these is used in the newsroom?

serial transmission ☐

parallel transmission ☐

both serial and parallel transmission ☐

24 Please rank of the following sources of error first in terms of frequency and then in terms of seriousness of damage: impulse noise (eg under) white noise, attenuation, cross-talk, delay distortion, and line failure. The ranking should be from the highest to the lowest.

Frequency	damage
1	1
2	2
3	3
4	4
5	5
6	6

25 If the newsroom uses a distributed system of prepress copy processing, which distribution type is used?

distribution by location ☐
distribution by function ☐
distribution by processing ☐
distribution by control ☐

26 Which LAN topology is used in configuration the computers for use in the newsroom?

ring topology ☐
bus topology ☐
star topology ☐

27 Indicate the type of network used in configuring the computers in the newsroom:

private branch exchange LAN ☐
peer–to–peer LAN ☐
wireless LAN ☐

28 Which of the following are used to connect the newsroom LAN and the commercial press LAN?

a repeater ☐

a bridge ☐

a router ☐

a gateway ☐

29 Please rank the following in terms of what you consider more frequent and then more dangerous in newsroom computer network security: computer virus, computer worm and denial of service. The ranking needs to be from the highest to the lowest:

Frequency	Damage
1	1
2	2
3	3

30 The kind of firewall installed for newsroom safety is:

packet–level firewall ☐

application- level firewall ☐

31 Indicate the frequency which best shows the occurrence of downtime system failure in prepress copy processing:

often ☐ something ☐ seldom ☐ never ☐

32 Do you have story files with limited access permission for read only or read-write status?

Yes _____ No_____

33 Is there a callback security measure in place in your newsroom?

Yes _____ No _____

34 Provide any other information on the components in the prepress copy processing LAN that clarifies question on the OS raised in this questionnaire.

Part II

Peripheral Devices and Transmission

35 The prepress brand of computer printer in your newsroom is:

inkjet printer ☐
laser printer ☐
dot matrix ☐
dye sublimation printer ☐

36 What special software, if any, is installed to communicate with the operating system about the graphics printer, ports, and colour printing?

_____

37 In prepress activities, the server is of the following type:

modem sized card ☐
an expansion card ☐
a fully specified PC ☐
a service within the Printer ☐

38 The scanner or scanners used to process documents and graphics are of the following kind:

flat-bed scanner ☐
handheld scanner ☐
drum scanner ☐

39 In terms of the resolution achieved by your scanner, the dots it can distinguish per inch is:

300 dps ☐
600 dps ☐
900 dps ☐
1200 dps ☐

Other _____

40 A throughput of the following megabytes of prepress copy is achieved by the SCSI interface in your newsroom:

5 MB per second ☐
10 MB per second ☐
20 MB per second ☐
40 MB per second ☐
80 MB per second ☐
80 MB per second ☐
160 MB per second ☐

41 Indicate the number of devices the SCSI bus is capable of connecting together in your newsroom for prepress copy processing_____

42 The SCSI bus operates in the mode indicated below:

asynchronous ☐
synchronous ☐
both synchronous and a synchronous mode ☐

43 Please indicate any other information about peripheral and transmission devices that I need to know.

_____
_____
_____
_____
_____
_____
_____
_____

Part III

Wireless News Copy Transmission

44 The wireless method used to receive copy from mobile phones and laptops for processing in the newsrooms is:

- amplitude modulation (AM) ☐
- frequency modulation (FM) ☐
- binary amplitude shift keying (BASK) ☐
- phase modulation (PM) ☐

45 Please indicate the specifications for each of the features of the laptop used to send stories by wireless connection into the newsroom:

Features	Capacity / capability
Dual Core	_____ GHz
Display	_____ inches
RAM	_____ MB
Modem Speed	_____ K
Wireless/Wide Fidelity Standard	_____ IEEE

46 The hard disk capacity of the laptop computers used in the field for newsgathering is:

- 40 GB ☐
- 60 GB ☐
- 80 GB ☐
- 120 GB ☐

47 In the newsroom, the standard preferred for wireless connection is:

- IEEE 802.11 ☐
- Bluetooth ☐

48 To receive news copy from the mobile phone or laptop in the field, the wireless card through which messages come to the base station and then the wireless newsroom gateway is:

Personal Computer Memory Card International Association

PCMCIAL ☐

Universal Serial Bus

USB ☐

49 If the networking standard used in the newsroom is IEEE, which version of cabling is installed?

802.11 of 2 Mbps ☐

802.11b of 11 Mbps ☐

802.11 a of 54 Mbps ☐

50 Is the newsroom connected to any satellite for newsgathering purposes?

Please explain:

_____

_____

_____

_____

_____

_____

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