Glossary

ACRONYMS

ADT	Admission, delivery, and transfer
ACR	American College of Radiology
AHP	Analytic Hierarchy Process
AQM	Active Queue Management
AS/NZS	Australian and New Zealand
ATM	Asynchronous Transfer Mode
BCP	Business Continuity Plan
BSI	British Standards Institution
CAS	Computer Assisted Surgery
CD	Compact Disk ROM
CIA	Confidentiality, Integrity, Availability
CT	Computed Tomography
DDL	Digital Driving Level
DF	Digital fluorography
DICOM	Digital Imaging and Communications in Medicine
DIN/PACS	Digital Imaging Network and Picture Archiving and Communication System

DLT	Digital Linear Tape
DMAIC	Define, Measure, Analysis, Improve and Control
DT	Drop Tail
ePR	electronic Patient Record
FBD	Functional Block Diagram
FMEA	Failure Mode and Effects Analysis
GSDF	Grayscale Standard Display Function
HFE	Human factors engineering
HIS	Hospital Information System
HL7	Health Level 7
HOQ	House of Quality
HTML	hypertext markup language
HTTP	hypertext transfer protocol
IDV	Individualism
ISMS	Information Security Management System
ISO	International Organization for Standardization
IT	Information Technology
ITU	International Telecommunication Union
JCAHO	Joint Commission on Accreditation of Healthcare Organizations
JND	Just Noticeable Differences
LAN	Local Area Network
LCD	Liquid Crystals Displays
LTO tape	Linear Tape-Open
LTO	Long-Term Orientation
MCL	Multiple Congested Links
MCSP	Multiple Computer Single Processor
MRI	Magnetic resonance imaging
NAS	Network Attached Storage
NEMA	National Electrical Manufacturers Association
NM	Nuclear Medicine
OD	Optical Disk
ODJ	Optical Disk Jukebox
OSI	Open Systems Interconnection
OTTFP	One Time Two Factor Password
PACS	Picture Archiving and Communications System
PDCA	Plan, Do, Check, Act
PDI	Power Distance Index
PET	Positron Emission Tomography
QA	Quality Assurance

QC	Quality Control
RAID	Redundant Array of Inexpensive Disks
RED	Random Early Detection
RFP	Request For Proposal
RIS	Radiology Information System
RPN	Risk Priority Numbers
RTT	Round Trip Times
SAN	storage area network
SCMP	Single Computer Multiple Processors
SoA	Statement of Applicability
SPC	Statistical Process Control
SQL	Structured Query Language
SRD	Short-range Dependent
TCP/IP	Transmission Control Protocol/Internet Protocol
TD	Tail-Drop
TQM	Total Quality Management
TRIZ	The Theory of Inventive Problem Solving (Russian acronym)
UAI	Uncertainty Avoidance Index
UR	User Requirements
US	Ultrasound
VOC	The Voice of the Customer
WAN	Wide Area Network

GLOSSARY

Active Queue Management (AQM): In Internet routers, Active Queue Management is a technique that consists in dropping or marking packets before a router's queue is full. Typically they operate by maintaining one or more drop/mark probabilities, and probabilistically dropping or marking packets even when the queue is short. This technique is intended to achieve high link utilization with a low queuing delay.

Concurrent Engineering: Concurrent engineering is a business strategy which replaces the traditional product development process with one in which tasks are done in parallel and there is an early consideration for every aspect of a product's development process. This strategy focuses on the optimization and distribution of a firm's resources in the design and development process to ensure effective and efficient product development process.

Congestion: A state occurring in part of a network when the message traffic is so heavy that it slows down network response time.

Cracker: A cracker is a hacker who uses their proficiency for personal gains outside of the law. Example: stealing data, changing bank accounts, distributing viruses etc.

Critical to Quality (CTQ): The key measurable characteristics of a product or process whose performance standards or specification limits must be met in order to satisfy the customer. They align improvement or design efforts with customer requirements. CTQs represent the product or service characteristics that are defined by the customer (internal or external). They may include the upper and lower specification limits or any other factors related to the product or service. A CTQ usually must be interpreted from a qualitative customer statement to an actionable, quantitative business specification.

Cultural Dimensions: Cultural dimensions are the mostly psychological dimensions, or value constructs, which can be used to describe a specific culture.

Data Compression: The process of encoding information using fewer bits (or other information-bearing units) than an unencoded representation would use through use of specific encoding schemes.

Digital Image: A digital image for the purpose of this monograph is defined as a raster, 2-dimentional, rectangular array of static data elements called pixels, intended for display on a computer monitor or projected with a digital data projector. Images may be acquired on traditional film and scanned to an electronic file, or acquired electronically with a digital camera.

Drop Tail (DT) or Tail Drop: A queue management algorithm used by Internet routers to decide when to drop packets. In drop tail all the traffic is not differentiated. Each packet is treated identically. With drop tail, when the queue is filled to its maximum capacity, the newly arriving packets are dropped until the queue has enough room to accept incoming traffic.

Flow Control: In communications, the process of adjusting the flow of data from one device to another to ensure that the receiving device can handle all of the incoming data. This is particularly important where the sending device is capable of sending data much faster than the receiving device can receive it.

Failure Mode and Effects Analysis (FMEA): A systematic method for documenting potential failure modes, determining effects, identifying causes of failures, developing plan, team concurrence, and take action.

Hacker: A hacker is a person who is proficient with computers and/or programming to an elite level where they know all of the in's and out's of a system. There is NO illegality involved with being a hacker.

House of Quality (HOQ): House of Quality is a graphic tool for defining the relationship between customer desires and the firm/product capabilities. It is a part of the Quality Function Deployment (QFD) and it utilizes a planning matrix to relate what the customer wants to how an institution (that provides the healthcare service) is going to meet those wants. It looks like a House with correlation matrix as its roof, customer wants versus service features as the main part, competitor evaluation as the porch etc. It is based on the belief that healthcare service should be designed to reflect customers' desires and preferences.

Human Factors: Human factors are considered in this monograph as the environmental, organizational and job factors, and cultural dimensions that influence behavior at work.

Individualism (IDV): A cultural dimension focuses on the degree to which an organization reinforces individual or collective achievement and interpersonal relationships. If a healthcare institution has a high Individualism score, this indicates that individuality and individual rights are dominant. Individuals in these organizations tend to form relationships with larger numbers of people, but with the relationships being weak. A low Individualism score points to an organization that is more collectivist in nature. In such organizations the ties between individual members are very strong and the staff lean towards collective responsibility.

Local Area Network (LAN): A computer network that spans a relatively small area. Most LANs are confined to a single building or group of buildings. However, one LAN can be connected to other LANs over any distance via telephone lines and radio waves. A system of LANs connected in this way is called a wide-area network (WAN).

Long Term Orientation (LTO): A cultural dimension refers to how much an organization values long-standing - as opposed to short term - traditions and values. In healthcare institutions with a high LTO Index, service delivering on social obligations and avoiding "loss of face" are considered very important.

Kano Customer Satisfaction Model: The Kano model was originally developed in the 80's by Noriaki Kano to classify and recognize the importance of different types of customer needs. It provides insights into the dynamics of customer preferences and the thoroughness of their needs in order to ensure successful products and services. In the present context the main application should be to proactively uncover and classify 3 main categories of needs and take action to effectively integrate all 3 types of these needs into the PACS Services. PACS attributes may be classified as: threshold, performance, and excitement. A competitive service meets basic attributes, maximizes performances attributes, and includes as many excitement attributes as possible at a cost the public can bear.

Metadata: Data about data. Metadata describes how and when and by whom a particular set of data was collected, and how the data is formatted.

Packets: A piece of a message transmitted over a packet-switching network. One of the key features of a packet is that it contains the destination address in addition to the data. In IP networks, packets are often called datagrams.

Packet Switching: Refers to protocols in which messages are divided into packets before they are sent. Each packet is then transmitted individually and can even follow different routes to its destination. Once all the packets forming a message arrive at the destination, they are recompiled into the original message.

Picture Archiving and Communication System (PACS): A system that acquires, transmits, stores, retrieves, and displays digital images and related patient information from a variety of imaging sources and communicates the information over a network.

Pixel Dimensions: The number of pixels along the height and width of a digital image.

Power Distance: A cultural dimension relates to the degree of equality/inequality between people in a particular organization. A healthcare institution with a high Power Distance Index (PDI) both accepts and perpetuates inequalities between staff. A low PDI indicates that the institution does not emphasize differences in staff position, power or salary. Equality is seen as the collective aim of the organization and upward mobility is common.

Protocols: An agreed-upon format for transmitting data between two devices. The protocol determines: (a) the type of error checking to be used, (b) data compression method, if any, (c) how the sending device will indicate that it has finished sending a message, and (d) how the receiving device will indicate that it has received a message

Quality Function Deployment (QFD): A method originally developed by Yoji Akao in 1966 when the author combined his work in quality assurance and quality control points with function deployment used in Value Engineering. In the present context QFD may be regarded as a method to transform user demands into design quality, to deploy the functions forming quality, and to deploy methods for achieving the design quality into subsystems and component parts, and ultimately to specific elements of the PACS process. QFD is designed to help planners focus on characteristics of a new or existing product or service from the viewpoints of market segments, company, or technology-development needs. The technique yields graphs and matrices

Reliability Modeling: Reliability modeling is the process of predicting the reliability of a component or system. Two different ways of investigation are common: The physics of failure approach uses an understanding of the failure mechanisms involved, such as crack propagation or material fatigue. The parts stress modeling approach is an empirical method for prediction based on counting the number and type of components of the system, and the stress they undergo during operation. For systems(hardware or software) with a clearly defined failure time, the empirical distribution function of these failure times can be determined.

Redundancy: Redundancy in PACS engineering is the duplication of critical components of a system with the intention of increasing reliability of the system, usually in the case of a backup or fail-safe. Redundancy in PACS software engineering is the number of bits used to transmit a message minus the number of bits of actual information in the message. In other words, it is the amount of wasted space used to transmit certain data. Data compression is a way to reduce or eliminate unwanted redundancy, while checksums are a way of adding desired redundancy for purposes of error detection when communicating over a noisy channel of limited capacity.

Resolution: The resolution of an image is determined by the number of pixels per inch printed on a page.

Radiology Information System (RIS): An information system used by radiology departments to store, manipulate and distribute patient radiological data and imagery. The system generally comprises of patient tracking and scheduling, result reporting and image tracking capabilities.

Routers: Routers are network layer devices used to interconnect different networks. An Internet router typically maintains a set of queues, one per interface, that hold packets scheduled to go out on that interface. Their primary role is to switch packets from input links to output links. In order to do so a router must be able to determine the path that every incoming packet needs to follow, and decide which outgoing link should it be switched to.

Six Sigma: A business management strategy that seeks to identify and remove the causes of defects and errors in manufacturing and business processes. It uses a set of quality management methods, including statistical methods, and creates a special infrastructure of people within the organization ("Black Belts", etc.) who are experts in these methods.

Transmission Control Protocol/Internet Protocol (TCP/IP): The basic communication language or protocol of the Internet. It can also be used as a communications protocol in a private network (either an intranet or an extranet). TCP/IP is a two-layer program. The higher layer, TCP, manages the assembling of a message or file

into smaller packets that are transmitted over the Internet and received by a TCP layer that reassembles the packets into the original message. The lower layer, IP, handles the address part of each packet so that it gets to the right destination. Each gateway computer on the network checks this address to see where to forward the message. Even though some packets from the same message are routed differently than others, they will be reassembled at the destination.

TRIZ: The Russian acronym for the "Theory of Inventive Problem Solving". It is a problem solving method based on logic and data, not intuition, which accelerates the project team's ability to solve these problems creatively. TRIZ also provides repeatability, predictability, and reliability due to its structure and algorithmic approach. More than three million patents have been analyzed to discover the patterns that predict breakthrough solutions to problems.

Uncertainty Avoidance: A cultural dimension concerns the level of acceptance for uncertainty and ambiguity within an organization. A healthcare institution with a high Uncertainty Avoidance Index (UAI) will have a low tolerance towards uncertainty and ambiguity. As a result it is usually a very rule-orientated organization and follows well defined and established institution policy, regulations and controls.

Wide Area Network (WAN): A computer network that spans a relatively large geographical area. Typically, a WAN consists of two or more local-area networks (LANs).