Systems Development Life Cycle

System request

Evaluation Committee
Proceed with a preliminary investigation ***or reject immediately***

Evaluation Committee
Request meet tests?
Technical?
Operational?
Economic?
Schedule? ***… or reject***

Evaluation Committee
Set priority, schedule and spend on feasibility study. Request IT Dept carry out preliminary feasibility study

IT Department
Does request fit in with strategic plan?
use of which project management tool
Risk management

IT Department
Fact finding
Conduct interviews, research documents, analyse organisational charts, observe operations, user survey

REPORT TO MANAGEMENT

CASE FOR ACTION
or
RECOMMEND REJECT

SYSTEM PLANNING – General points for consideration
Mission Statement ~ strategic plan ~ discretionary ~ non-discretionary ~ committee evaluation ~ TOES analysis ~ priorities ~ tangible benefits ~ intangible benefits ~ critical success factors ~ critical business issues ~ internal constraints ~ external constraints ~ SWOT analysis ~ business case ~ improved service ~ better performance ~ support for new products and services ~ more information ~ stronger controls ~ reduced cost ~ technology ~ existing systems ~ user requests ~ suppliers ~ customers ~ the economy ~ government ~ Case for Action or recommend non-action

SYSTEM REQUIREMENTS DOCUMENTATION

DECISION TO PROCEED

or

REJECT

IT Department !
Present Specification to Management with recommendations
Obtain decision to proceed ~ *or reject*

IT Department
Development Strategy
Internet, outsource, in-house. Cost and Benefits. Complete System Requirements Document (Specification)

IT Department
Data and Process Modelling
Results in logical model with data flow diagrams, data dictionary and process descriptions

IT Department
Consider compatibility with existing systems
Joint Application Development (JAD) or Rapid Application Development (RAD)?

IT Department
Requirements modelling
Develop understanding of business processes and system requirements and estimate total cost of ownership (TCO)

SYSTEM ANALYSIS – General points for consideration
Requirements Modelling *~ RAD/JAD ~ CASE tools ~ UML ~ Functional Decomposition Diagram ~ processes ~ record, evaluate and document*
Data and Process Modelling *– data elements, flows, stores, processes, entities, records and reports*
Development Strategies *~ the impact of the internet ~ make or buy ~ software as a service ~ mission critical – vertical or horizontal applications ~ relationship between logical and physical design ~ prototyping*

IT Department
Output and User Interface Design
Design User Interface
Design screen and print output, User rights

IT Department
Data Design
Normalisation for database, entity relationship diagrams, design of database or web-based database

IT Department
Data Design
Use of codes during database design
Interfaces for related systems.
Data storage and access

IT Department
System Architecture
Servers, clients, middleware, online/batch processing, e-commerce, cost/benefit, Networking

IT Department
System Architecture
Performance management, fault management, backup and disaster recovery.
Security

SYSTEM DESIGN SPECIFICATION

SYSTEM DESIGN – General points for consideration
Output and User Interface Design *~ email ~ audio output ~ automated facsimile systems ~ computer output microfilm ~ computer to laser disk (COLD) ~ digital photographs ~ control breaks ~ detail reports ~ exception reports ~ graphical user interfaces (GUIs) ~ output control and security ~ user rights ~ help access*
Data Design *~ physical plan for data organisation ~ storage and retrieval ~ schema ~ subschema ~ fields ~ records ~ primary key ~ foreign key ~ referential integrity*
System Architecture *~ hardware ~ software ~ data ~ procedures ~ network support ~ security*

DELIVERED

A COMPLETELY FUNCTIONING INFORMATION SYSTEM

FINAL REPORT TO MANAGEMENT

IT Department
Data conversion and security
System changeover, direct, parallel, pilot or phased operation

IT Department
Management approval and training plan

IT Department
Programming and Testing
Documentation of program, system, operations and user testing

IT Department
Create system design
Structured or Object Oriented Application Development

IT Department
Application development
Construct programs and code modules
Complies with ISO?

SYSTEMS IMPLEMENTATION – General points for consideration
Software engineering – international Organisation for Standardisation (ISO) ~ structured application ~ structure charts ~ partitioning ~ modular design ~ data couple ~ condition ~ loop ~ program flowcharts ~ pseudo code ~ integration testing ~ operational and test environments ~ system installation and evaluation ~ vendor training ~ in-house training

IT Department
User training and helpdesk
Maintenance activities: adaptive, corrective, perfective and preventive

IT Department
Managing System Support
Administrator, Analysts and Programmers

IT Department
Managing System Performance
Response time, bandwith and throughput turnaround time, capacity planning

IT Department
System Security
Physical, application and network
Backup and Disaster Recovery

IT Department
Version control
System obsolescence

SYSTEM MAINTAINED, SUPPORTED AND SECURED PROPERLY

OR

SYSTEM OBSOLESCENCE

SYSTEMS OPERATION, SUPPORT AND SECURITY – General points for consideration
User training package ~ information centre ~ virtual classroom ~ operational costs ~ maintenance expenses ~ enhancement ~ software re-engineering ~ synthesis ~ maintenance releases ~ version control ~ functional baseline ~ allocated baseline ~ product baseline ~ benchmark testing ~ response time ~ workload measurements ~ computer room security, notebook computers, server and desktop locks ~ encrypting network traffic ~ Wi-Fi Protected Access (WPA) and Wired Equivalent (WEP) ~ VPN ~ ports and services ~ firewall ~ patches and updates ~ permissions ~ identity management

System obsolescence – submit new system request