CS4050 – WEEK 8: INFORMATION SYSTEMS AUDIT AND CONTROL

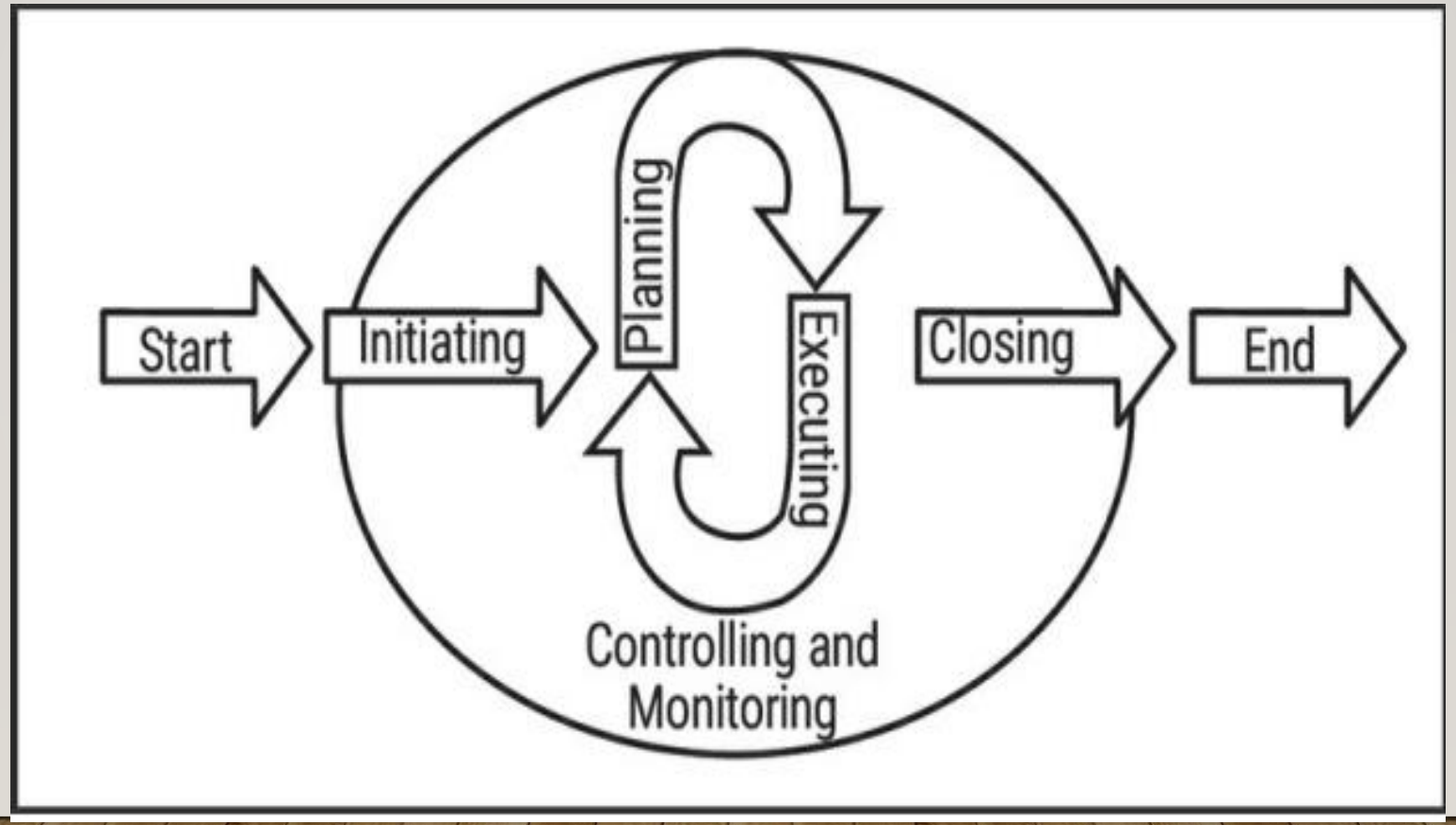
FAST NUCES – SPRING 2024

BS COMPUTER SCIENCE

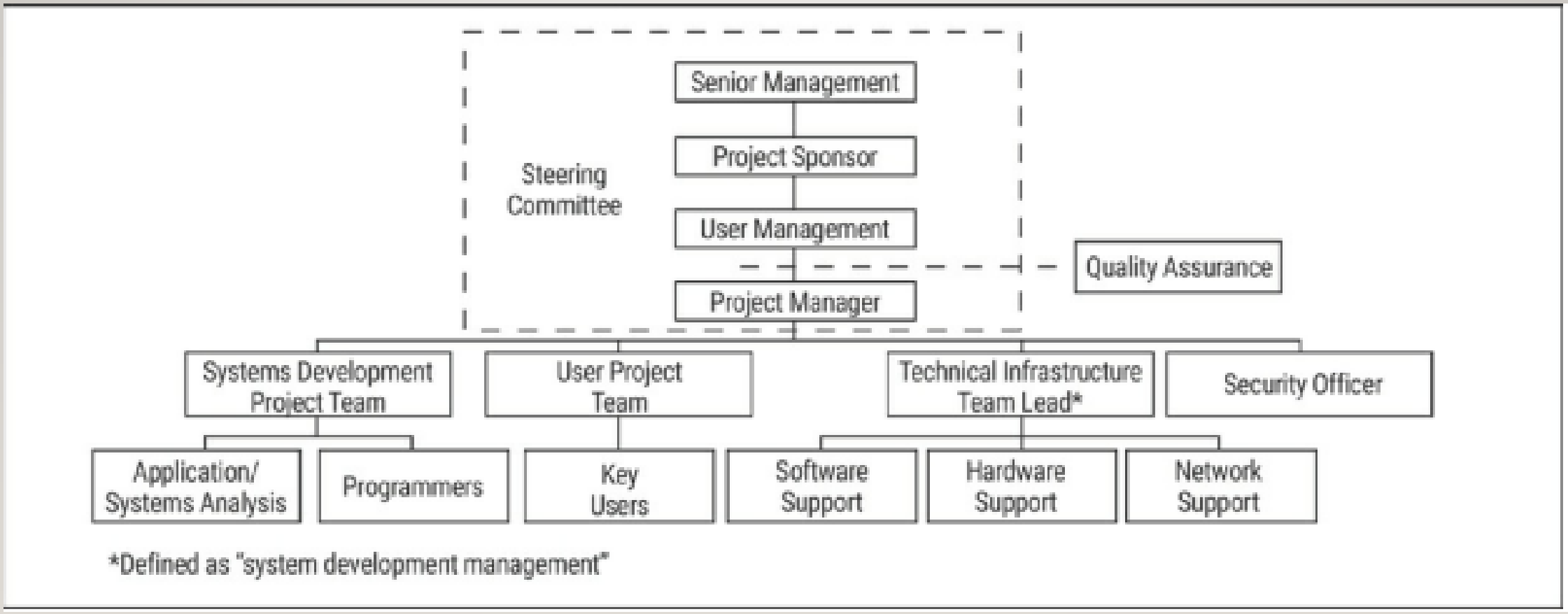
CHAPTER 3: INFORMATION SYSTEMS ACQUISITION, DEVELOPMENT & IMPLEMENTATION

- Part A: Information Systems Acquisition and Development
  - Project Governance and Management
  - Business Case and Feasibility Analysis
  - System Development Methodologies
  - Control Identification and Design
- Part B: Information Systems Implementation
  - Testing Methodologies
  - Configuration and Release Management
  - System Migration, Infrastructure Deployment and Data Conversion
  - Post-implementation Review

PROJECT MANAGEMENT LIFE CYCLE



PART A: PROJECT GOVERNANCE & MANAGEMENT



PORTFOLIO / PROGRAM MANAGEMENT

- A project portfolio is defined as all of the projects being carried out in an organization at a given point in time. A program is a group of projects and tasks that are closely linked together through common strategies, objectives, budgets and schedules. Portfolios, programs and projects are often controlled by a project management office (PMO), which governs the processes of project management but are not typically involved in the management of the content.
- Like projects, programs have a limited time frame (i.e., a defined start and end date) and organizational boundaries. A differentiator is that programs are more complex, usually have a longer duration, a higher budget and higher risk associated with them, and are of higher strategic importance.

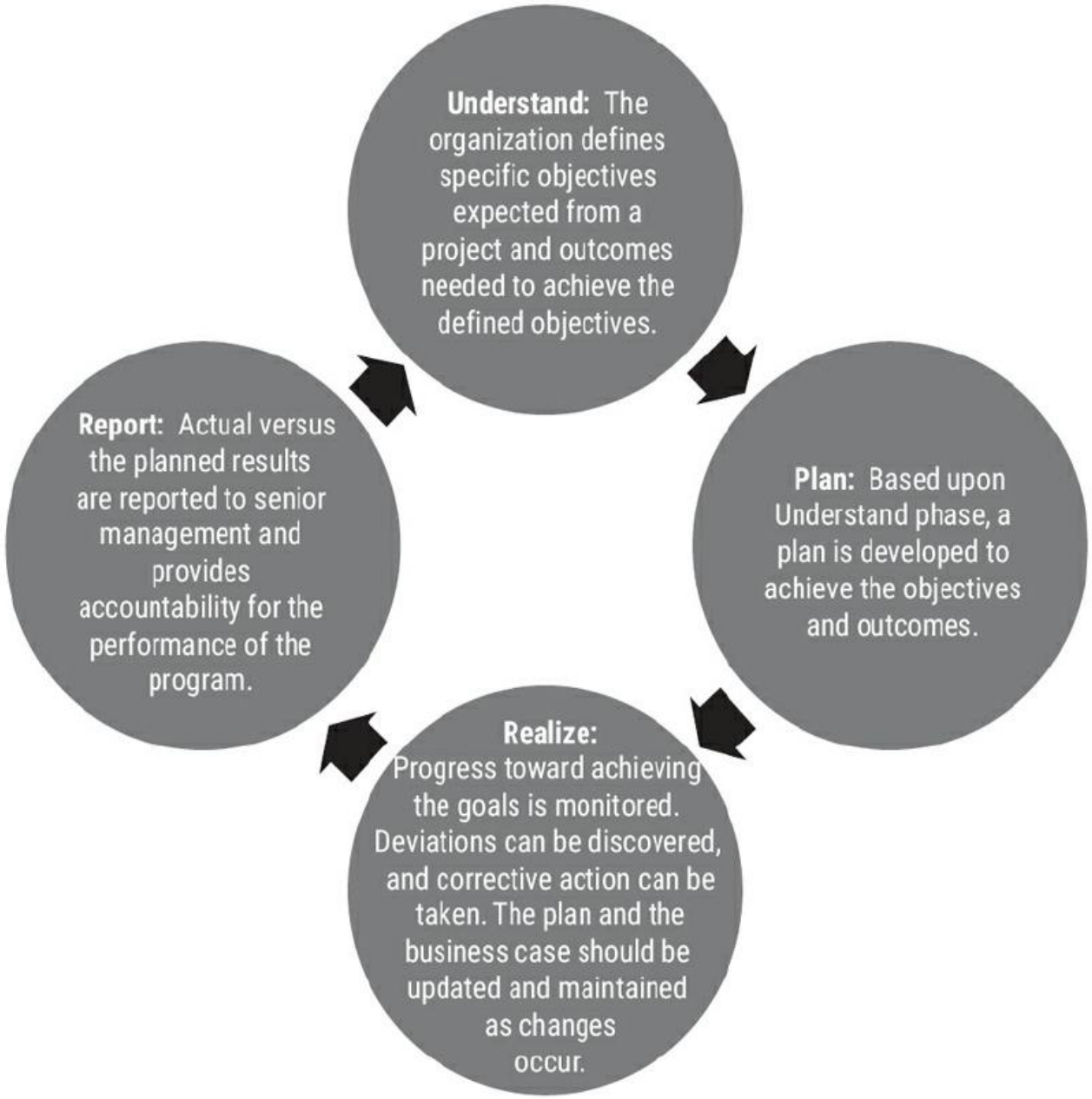
- Objectives:
  - Scope, financials (costs, resources, cash flow, etc.), schedules, objectives and deliverables
  - Context and environment
  - Communication and culture
  - Organization
- Program Office Roles:
  - Program owner
  - Program manager
  - Program team

PROJECT MANAGEMENT OFFICE

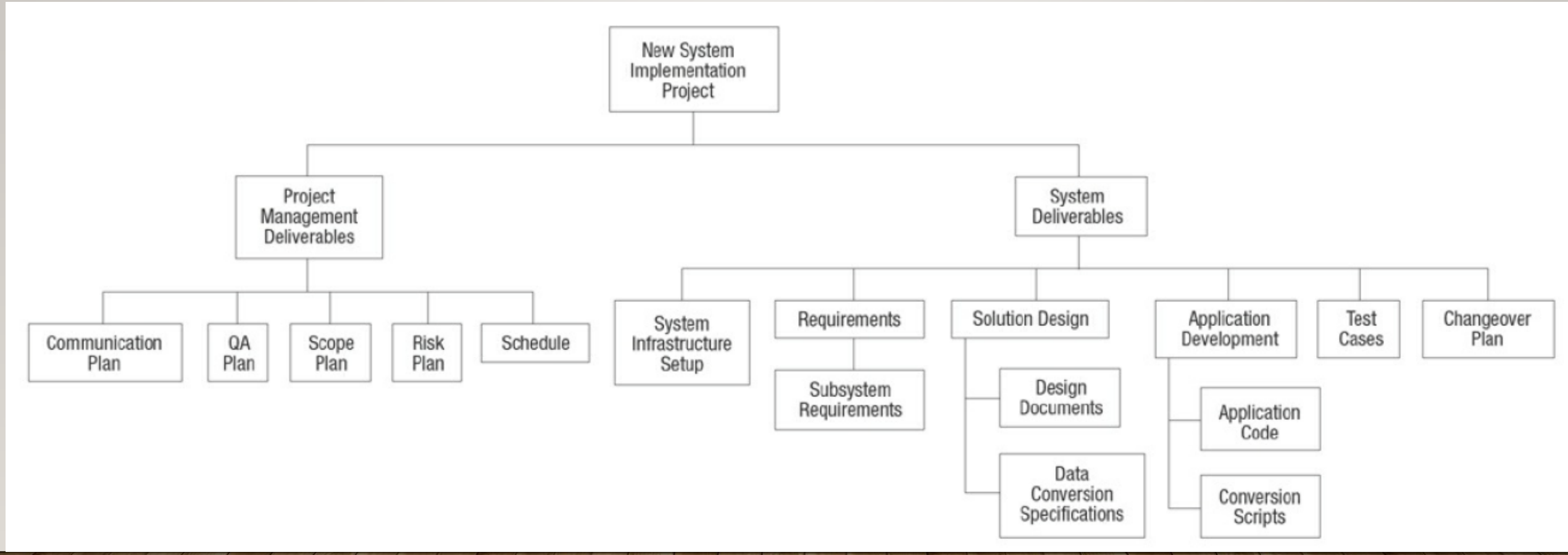
The objectives of project portfolio management are:

- Optimization of the results of the project portfolio (not of the individual projects)
- Prioritizing and scheduling projects
- Resource coordination (internal and external)
- Knowledge transfer throughout the projects

BENEFITS REALIZATION PHASES – PROJECT LEVEL



SAMPLE PM WORK BREAKDOWN STRUCTURE



SOFTWARE DEVELOPMENT METHODS

- Prototyping – Evolutionary Development
- Rapid Application Development
- Agile Development
- Object-Oriented System Development
- Component-based Development
- Web-Based Application Development
- Software Reengineering
- Reverse Engineering
- DevOps

DATA VALIDATION EDITS AND CONTROLS

- Sequence Checks
- Limit Check
- Range Check
- Validity Check
- Reasonableness Check
- Table Lookups
- Existence Checks
- Key Verification
- Check Digit
- Completeness Check
- Duplicate Check
- Logical Relationship Check

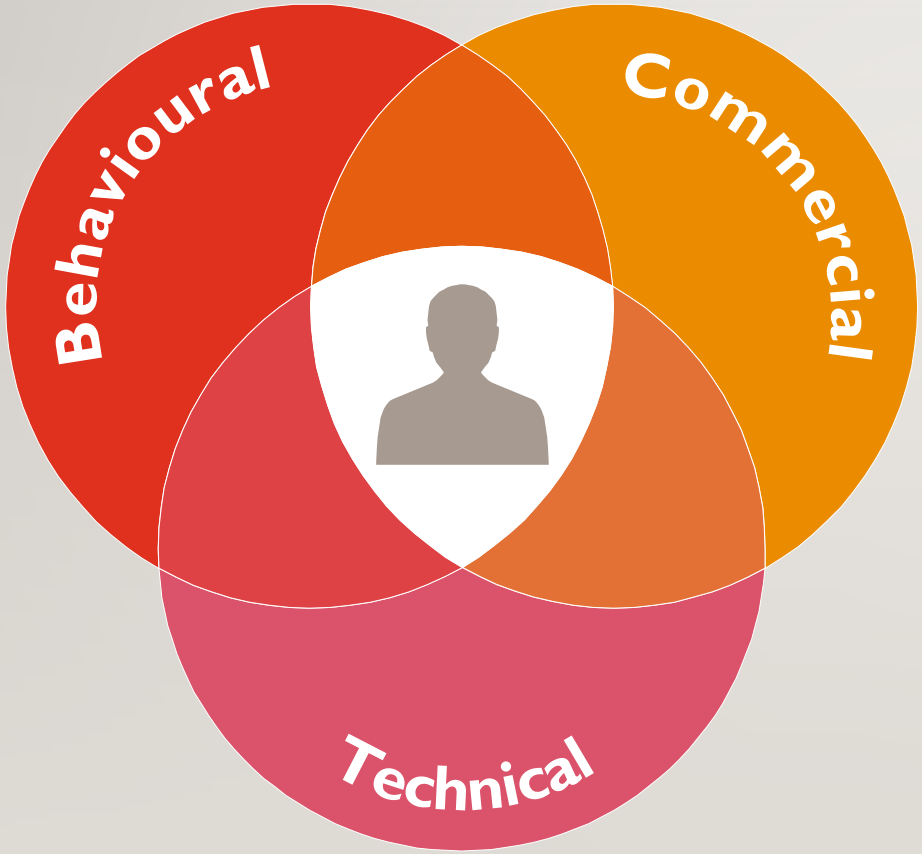
APPLICATION CONTROLS

- Only complete, accurate and valid data are entered and updated in a computer system.
- Processing accomplishes the correct task.
- Processing results meet expectations.
- Data are maintained.

USER PROCEDURES

- SoD
- Authorization of Input
- Balancing
- Error Control and Correction
- Distribution of reports
- Review and testing of access authorizations and capabilities
- Activity Reports
- Validation Reports

AUDIT AS PROFESSION – ESSENTIAL SKILLS

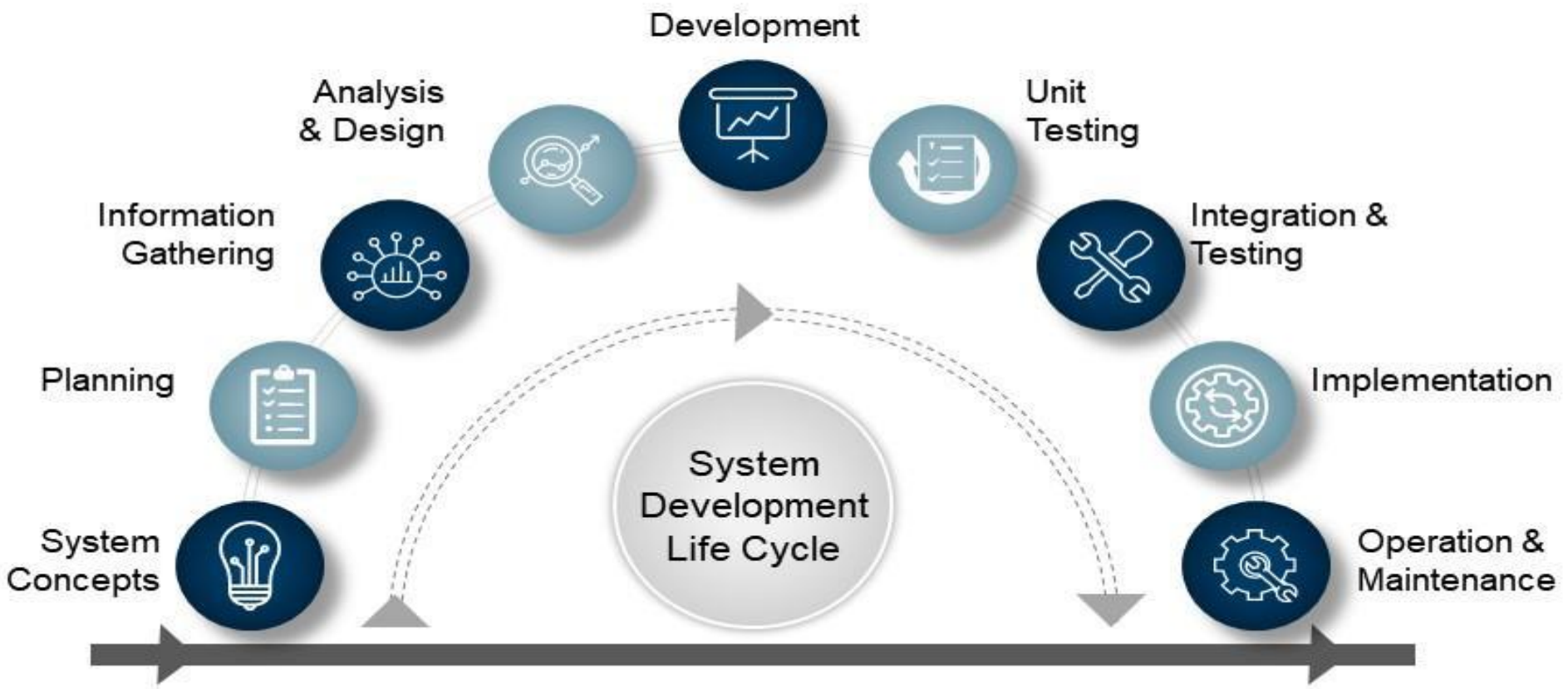


Demonstrating a business perspective, delivering value and insight and communicating with impact and empathy are important foundations for strong client relationships.

PART B: INFORMATION SYSTEMS IMPLEMENTATION

- Testing Methodologies
- Configuration and Release Management
- System Migration, Infrastructure Deployment and Data Conversion
- Post-implementation Review

System Development Life Cycle Best Practices



TESTING METHODOLOGIES

- Testing Classifications (Unit, interface/integration, system, final acceptance testing, QAT/UAT, alpha/beta, pilot, white-box/black-box, function/validation, regression, parallel, sociability)
- Software Testing
- Data integrity testing
- Application systems testing

CONFIGURATION & RELEASE MANAGEMENT

Configuration management tools will support change management and release management through the:

1. Identification of items affected by a proposed change to assist with impact assessment (functional, operational and security)
2. Recording configuration items affected by authorized changes
3. Implementation of changes in accordance with authorization records
4. Registering of configuration item changes when authorized changes and releases are implemented
5. Recording of baselines that are related to releases (with known consequences) to which an organization would revert if an implemented change fails
6. Preparing a release to avoid human errors and resource costs

SYSTEM MIGRATION, INFRASTRUCTURE DEPLOYMENT AND DATA CONVERSION

- Data Migration - the key points to be taken into consideration in a data conversion project are to ensure (i) Completeness of data conversion; (ii) Data integrity; (iii) Storage and security of data under conversion; (iv) Consistency of data; (v) Continuity of data access
- Changeover techniques – (i) parallel; (ii) phased; (iii) abrupt
- Systems Implementation – planning; knowledge transfer plan, training plan;
- System change procedures – critical success factors, end-user training,
- Certifications and Accreditations

POST-IMPLEMENTATION REVIEW

Measurement of Critical Success Factors	
Productivity	Dollars spent per user Number of transactions per month Number of transactions per user
Quality	Number of discrepancies Number of disputes Number of occurrences of fraud/misuse detection
Economic Value	Total processing time reduction Monetary value of administration costs
Customer Service	Turnaround time for customer question handling Frequency of useful communication to users