Introduction to IT

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Agenda

- *Definitions*
  - ✔ *What is IT,*
  - ✔ *What is Software and Software Development*
  - ✔ *What is Project*
  - ✔ *What is Quality, Quality Control*
- *Software Development Life Cycles overview*
- *Keys to effectiveness*
- *Structure of software development company*
- *QCs Career Map*

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Definitions

Information technology

Information technology (IT) is the use of computers and telecommunications equipment to store, retrieve, transmit and manipulate data.

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Software

Software is a collection of computer programs and related data that provides the instructions for telling a computer what to do and how to do it.

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Software Development

Software development is the development of a software product which consists of the next stages:

- Problem analysis
- Market research
- Gathering requirements for the proposed business solution
- Devising a plan or design for the software-based solution
- Implementation of the software
- Testing the software
- Deployment
- Maintenance

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The most popular software types

- Desktop applications
- Web-based applications
- Network solutions
- Firmware
- Multimedia applications
- Web Services
- Mobile applications
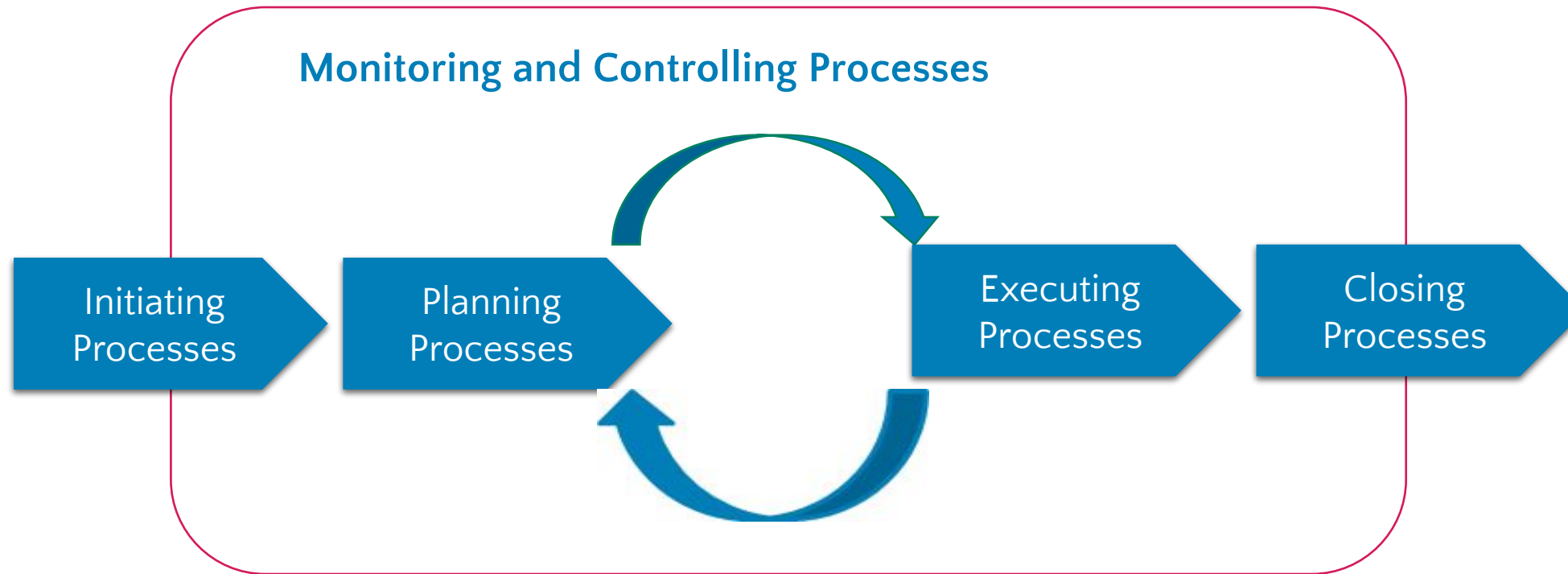
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Project

Project can be further defined as temporary rather than permanent social systems or work systems that are constituted by **teams** within or across organizations to accomplish particular **tasks** under time constraints.

Project is a temporary endeavor undertaken to create a unique product, service, or result.

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Project Life Cycle

Projects aim to deliver software to specification

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Quality

Quality: the degree to which a system, component, or process meets:
- specified requirements
- customer or user needs and expectations

Qualitative project means project that has been finished in time, in required scope and within budget

Quality Control

Software Quality Control is the set of procedures used by organizations to:
- ensure that a software product will meet its quality goals at the best value to the customer,
- to continually improve the organization's ability to produce software products in the future.
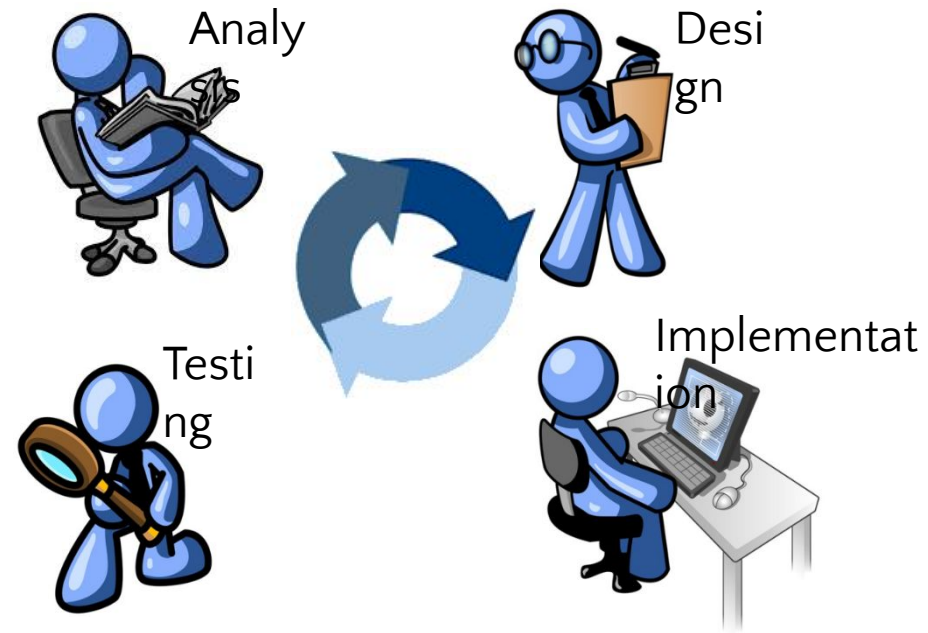
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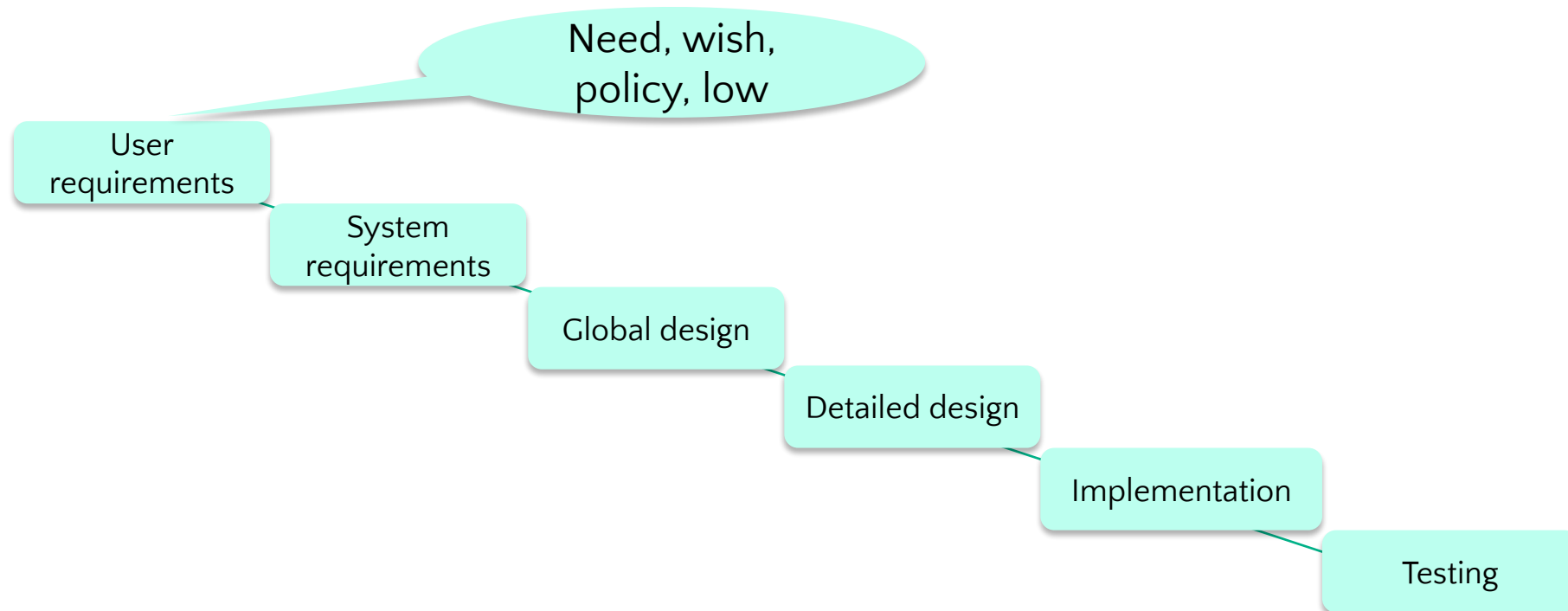# Software Development Life

Cycles overview

SDLC models

Software development life cycle is a division of software development work into distinct phases or activities with the intent of better planning and management

- Waterfall
- V-model
- Agile\SCRUM

Analys

Design

Testing

Implementation

SDLC models

The WATERFALL model is a sequential development approach, in which development is seen as flowing steadily downwards through several phases

Need, wish, policy, low

User requirements

System requirements

Global design

Detailed design

Implementation

Testing

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Waterfall

QC in Waterfall

- **Requirements:** requirements that cover all scope are prepared by Requirement Analyst once before Project starts

- **Preparation to Testing:** once before Testing starts for all functionality

- **Testing:** starts after Development phase completing.

  Defects, if found, are logged and feedback provided to the implementation team to enable correction.

  Product documentation, such as a user manual, is prepared, reviewed and published.
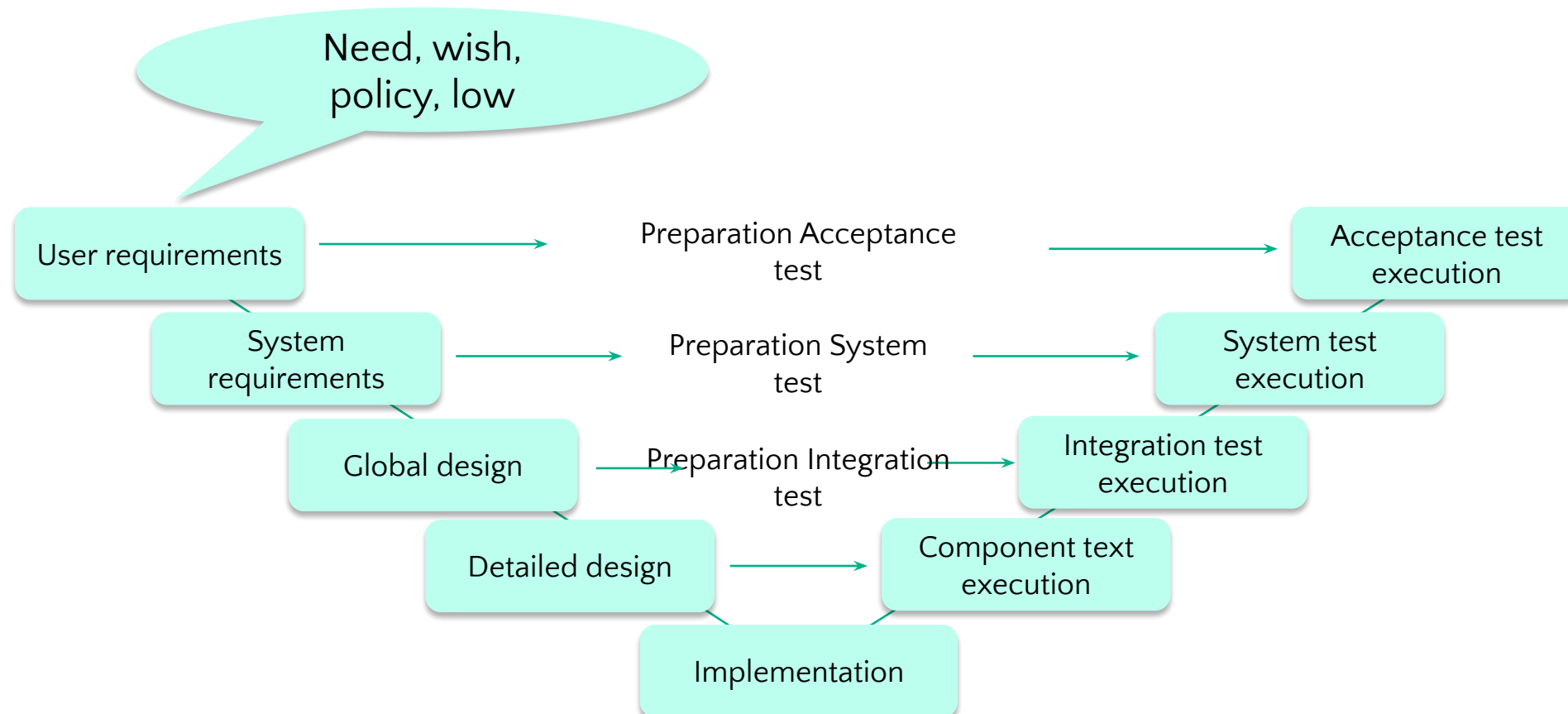
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Waterfall

✔ Time spent early in the software production cycle can lead to greater economy at later stages

✔ Waterfall model places emphasis on documentation

✔ Waterfall model has simple approach and is more disciplined

✔ Easily identifiable milestones and deliverables

✔ Track progress easily due to clear stages

✔ Inflexible: difficult to respond to changing requirements

✔ No working software is produced until late during the life cycle.

✔ Some problems in requirements, deign and coding might be not discovered until system testing

✔ Defects cost is high

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SDLC models

V-MODEL is an extension to the waterfall model

Need, wish, policy, low

User requirements

System requirements

Global design

Detailed design

Implementation

Preparation Acceptance test

Preparation System test

Preparation Integration test

Component text execution

Integration test execution

System test execution

Acceptance test execution

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V-model

QC in V-model

- **Requirements:** requirements that cover all scope are prepared by Requirement Analyst once before Project starts.

  QC validate requirements with respect to user needs, requirements, and business processes conducted.

- **Preparation to Testing:** in parallel with other non-testers activities, such as Design (Global and Detailed) and Implementation (Coding)

- **Testing:** starts after Development phase completing.

  Defects, if found, are logged and feedback provided to the implementation team to enable correction.

  Product documentation, such as a user manual, is prepared, reviewed and published.
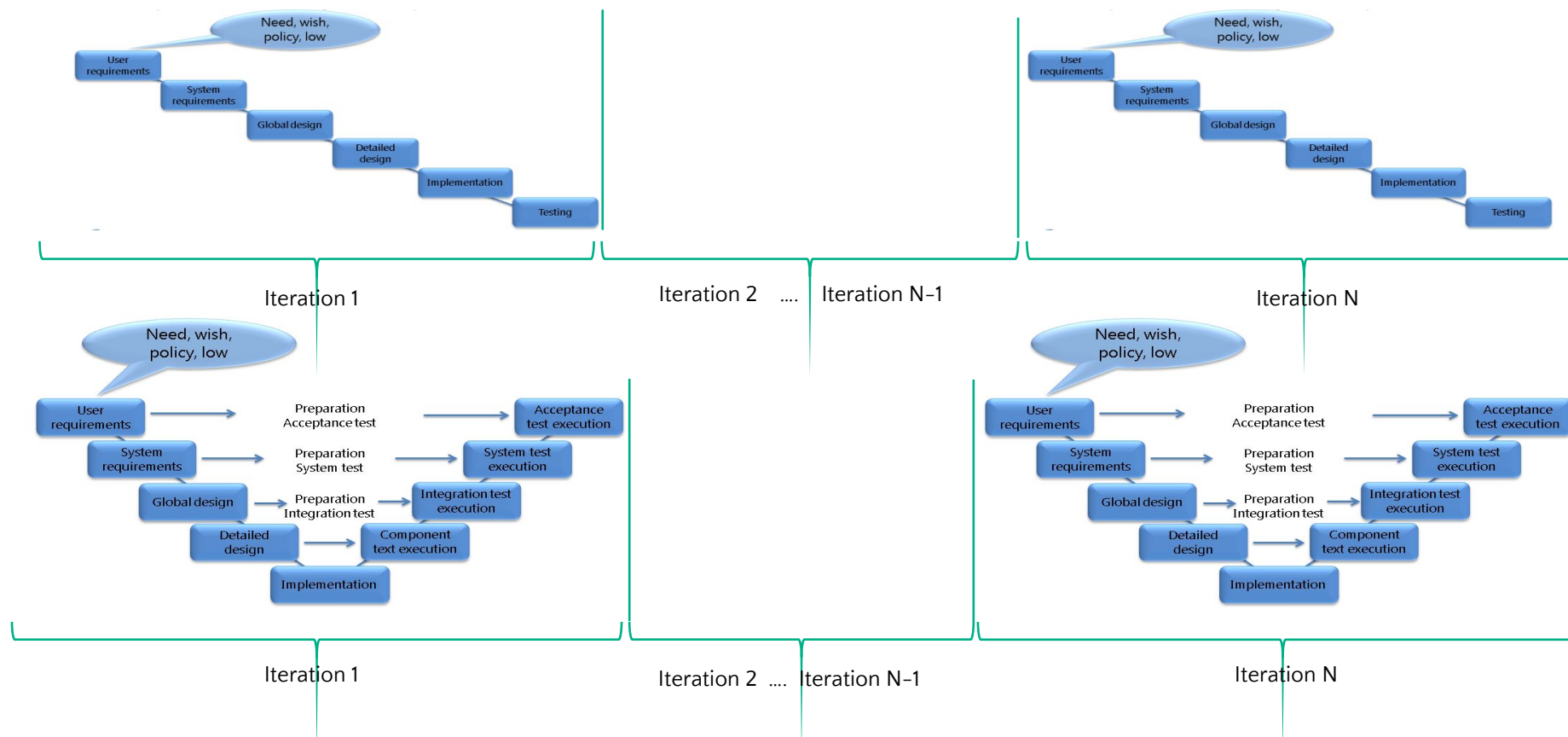
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V-model

✔ Time spent early in the software production cycle can lead to greater economy at later stages

✔ Easily identifiable milestones and deliverables

✔ Testing activities like planning, test designing happens well before coding. This saves a lot of time

✔ Proactive defect tracking – that is defects are found at early stages when they are introduced

✔ Rigid and Inflexible: difficult to respond to changing requirements

✔ If any changes happen mid way, not only the requirements documents but also the test Documentation needs to be updated

✔ No working software is produced until late during the life cycle.

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SDLC models

SCRUM is an iterative and incremental agile software development framework for managing product development.

SCRUM

QC in SCRUM

- **Requirements:** QC with Product Owner and Team work on requirements continuously. Requirements can be not full and change very often.
  QC engineers participate in requirements clarification and change.
  QC engineers help Product Owner to develop better user stories with enhanced acceptance criteria.

- **Preparation to Testing:** each Sprint for current Sprint.
  Involve the whole Team into process of quality assurance and control.

- **Testing:** starts simultaneously with Development phase.
  Defects, if found, are logged and feedback provided to the implementation team to enable correction.
  Product documentation, such as a user manual, is prepared, reviewed and published.

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SCRUM

✔ Great emphasis on team work

✔ Team learns and contributes throughout the process, team becomes autonomous and strives for excellence

✔ Iterative model leading to a delivery every sprint

✔ Frequent and late changes welcoming

✔ Creates an open environment and encourages immediate feedback

✔ The basic premise that the team is committed to the project. If the team is not committed then process collapses

✔ The size of the team is restricted due to the involvement of all team members

✔ Reliance on experience

✔ The management's comfort level in delegation of tasks

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Keys to effectiveness

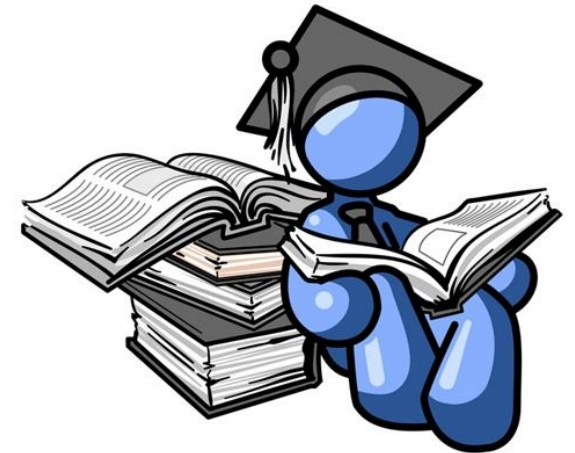softserve

Keys to effectiveness

- Knowledge
- Tools
- Personal qualities

Keys to effectiveness

Knowledge:

- ✔ Testing theory
- ✔ Application and/or Business Domain
- ✔ Technology

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Keys to effectiveness

Tools:
- ✔ Collaboration
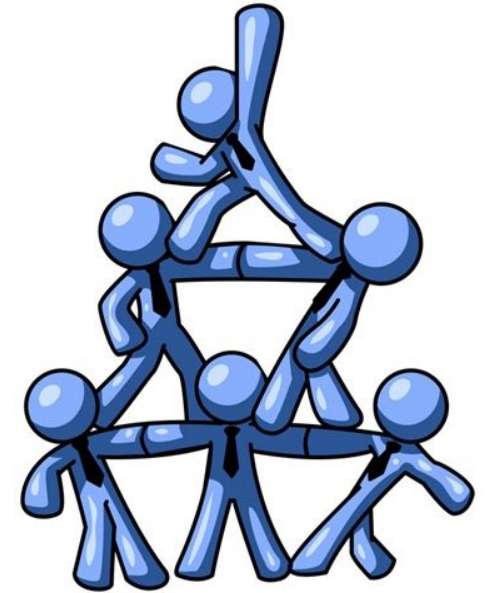- ✔ Project Management and Defect Tracking
- ✔ Test Case Management

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Keys to effectiveness
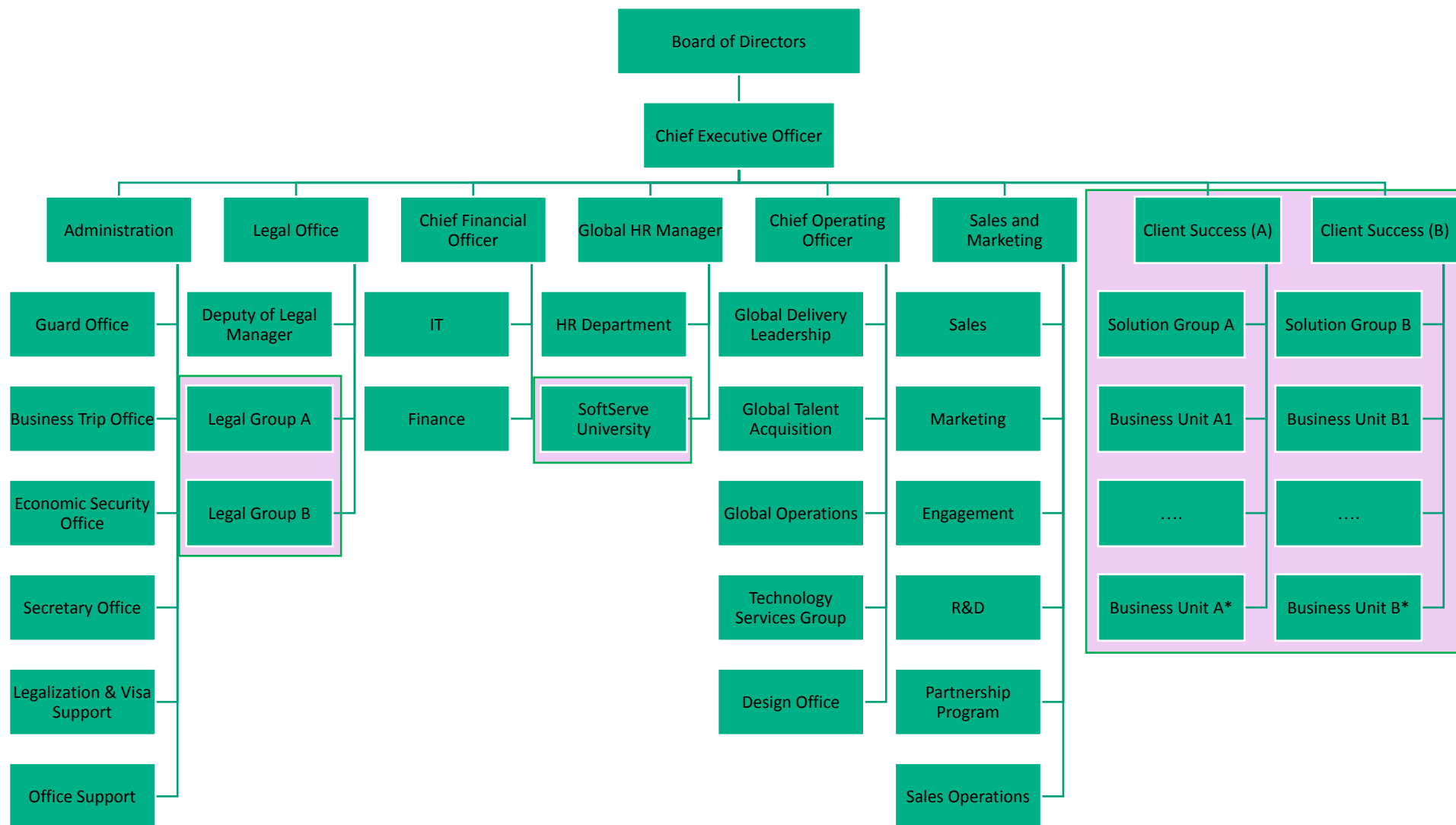
Personal qualities:

- ✔ Good communication
- ✔ Detail orientation and Perseverance
- ✔ Self-education
- ✔ Team player

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Structure of software development company

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Structure of SoftServe company

QC's Career map

QCs Career Map

QMO Director

QC Competence Manager

Abiliton QC Expert

Abiliton™ PRO Lead Test Engineer

Abiliton™ Lead Test Engineer

Abiliton™ PRO Senior Test Engineer

Abiliton™ Senior Test Engineer

Abiliton™ PRO Intermediate Test Engineer

Abiliton™ Intermediate Test Engineer

Abiliton™ PRO Junior Test Engineer

Abiliton™ Junior Test Engineer

Quality Control

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Revision History

Version	Date	Remark	Author
v.1	September, 2016		M. Harasym
v.2	October, 2018	Update according to new ISTQB Standard	V. Ryazhska

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The end

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