# Information System Project Management Context

Topics of the current lecture

- Overview of IT processes in organization
- System work framework  draft
- Project life cycle
- Project management methodologies

## IT Processes in Organization

In order to explain information system development management context in the organization, it is necessary to create common understanding about IT related processes in organization. I have taken as basis of that understanding IT governance framework exposure draft COBIT 5 from organization named ISACA.

Enterprises exist to create value for their stakeholders, so the governance objective for any enterprise—commercial or not—is value creation. Value creation means realising benefits at an optimal resource cost whilst optimizing risk. Today, more than ever, enterprises need to achieve increased:

- Value creation through enterprise IT
- Business user satisfaction with IT engagement and services
- Compliance with relevant laws, regulations and policies

To create value and to satisfy clients' needs corresponding IT governance and management processes must take place.
Governance is about negotiating and deciding amongst different stakeholders' value interests. A governance system refers to all the means and mechanisms that enable multiple stakeholders in an enterprise to have an organized say in evaluating conditions and options; setting direction; and monitoring compliance, performance and progress against plans, to satisfy specific enterprise objectives. Means and mechanisms include frameworks, principles, policies, sponsorship, structures and decision mechanisms, roles and responsibilities, processes and practices, to set direction and monitor compliance and performance aligned with the overall objectives.
Management in its nature is a means or instrument by which the governance body achieves a result or objective. Management is responsible for execution within the direction set by the guiding body or unit. Management is about planning, building, organizing and controlling operational activities to align with the direction set by the governance body.
Major parties in IT governance and management are presented on the next figure:

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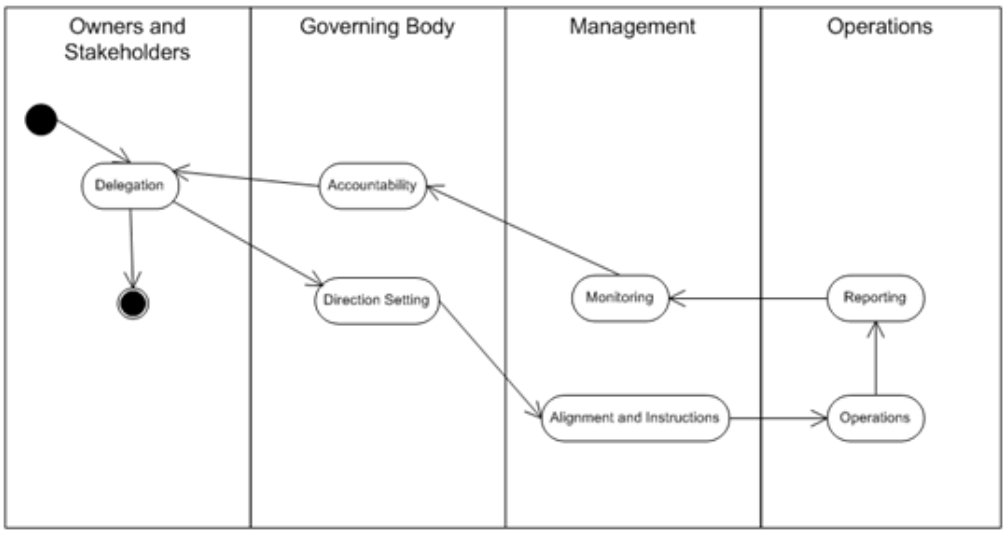



**Figure 1. Major Parties in Government and Management**

IT processes from COBIT 5 are presented on the next figure:

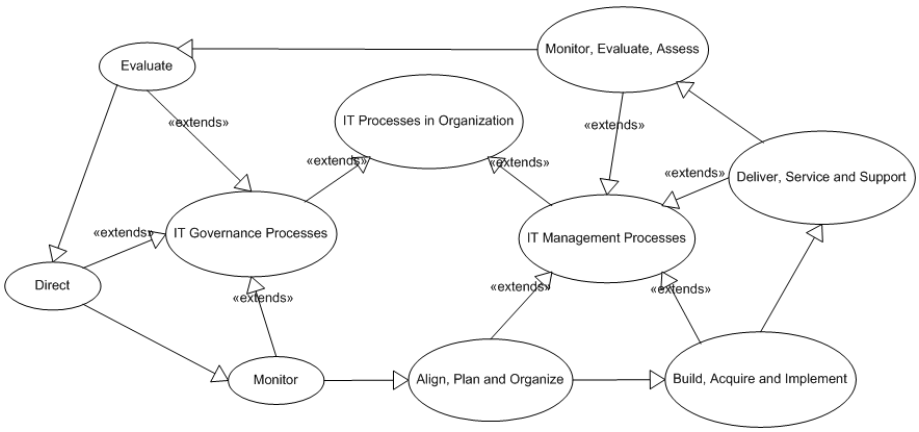



**Figure 2. IT Processes in Organization**

Arrows between processes show that these processes are mutually dependent. IT processes more specifically are presented on the next figure:

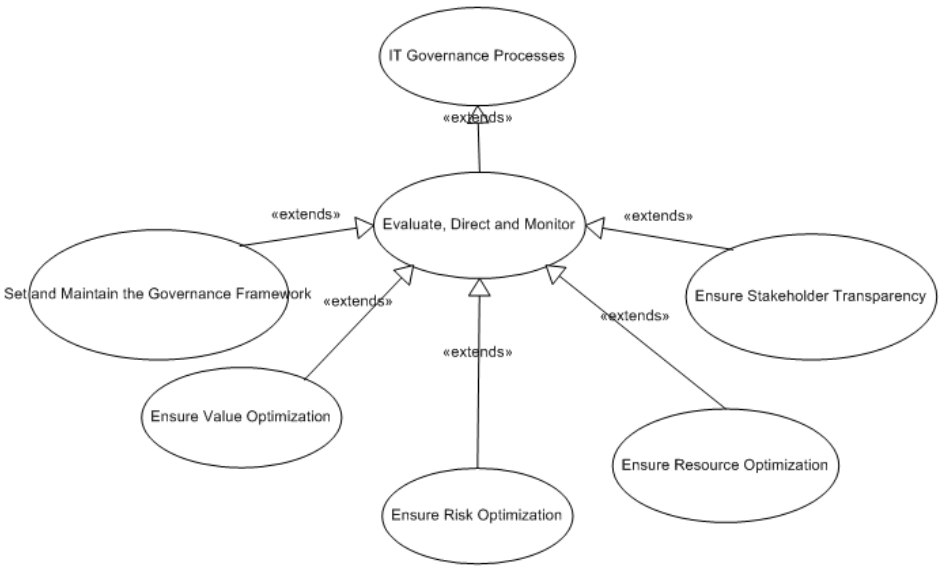



**Figure 3. IT Government Processes**

Aligning, planning, and organizing processes are presented on the next figure:

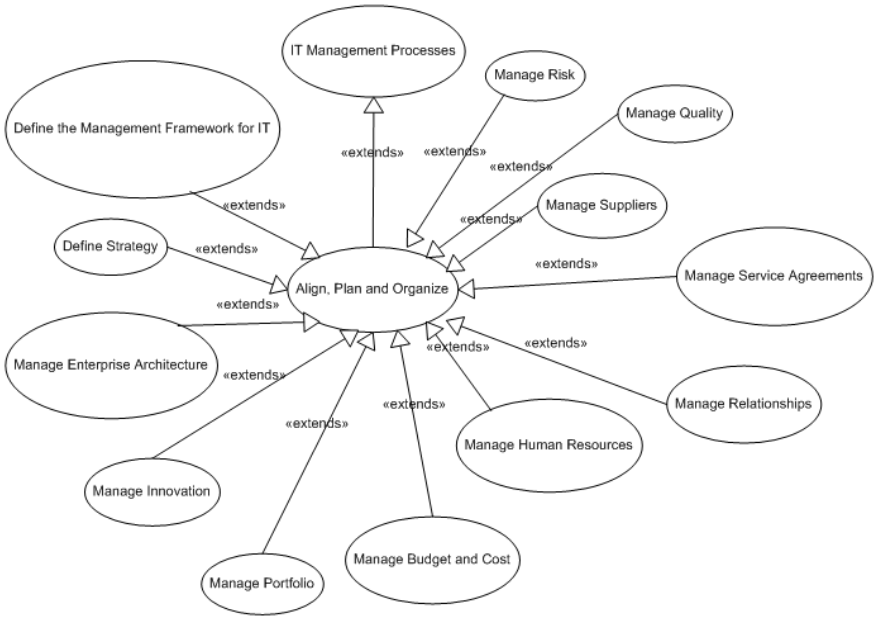



**Figure 4. IT Alignment, Planning, and Organizing Processes**

Building, acquiring, and implementing processes are presented on the next figure:

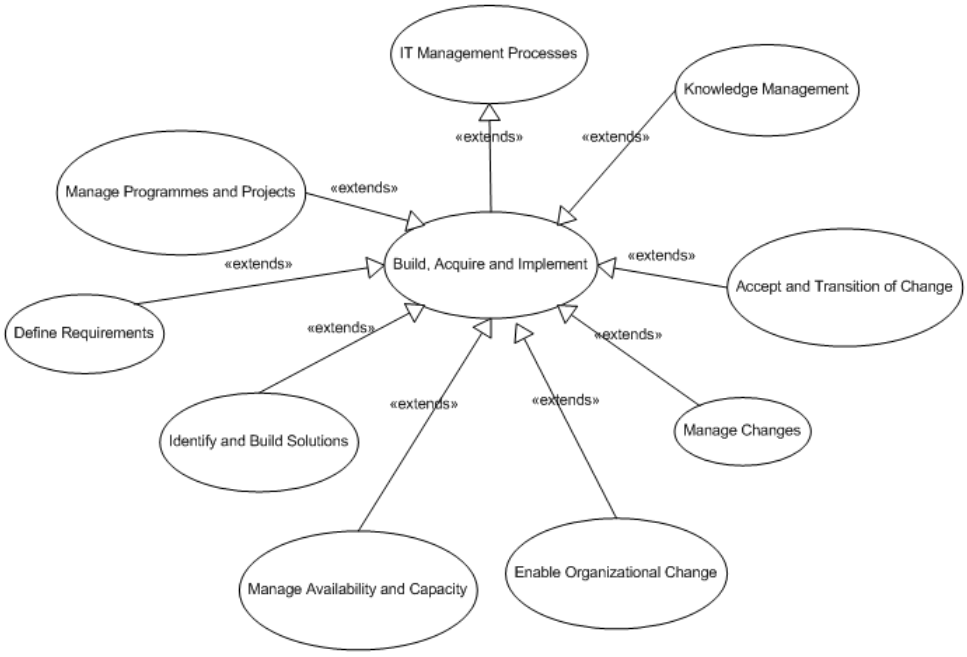



**Figure 5. IT Building, Acquiring, and Implementing Processes**

## System Work Framework Draft

System work (SW) framework draft is based on the information presented on previous figures.

**Table 1. System Work Framework Draft**

| SW layer | Responsibility | Tool | Example |
|---|---|---|---|
| IT government body | Setting the IT governance Directions to deliver value to stakeholder | IT Governance Framework<br>Portfolio management | COBIT, ITIL |
| IT management body | Change management framework and methodology concerning the whole organization<br>Planning of the whole IS development | Strategic planning for IS<br>Enterprise Architecture Framework<br>IS Development (Change) Management Framework<br>Project Management Methodology<br>System Development Methodology | Zachman, TOGAF<br>Balanced Scorecard<br>PMBOK<br>RUP |
| IT/IS project management | Specific goals of changed IS | Project Management Methodology | PMBOK<br>RUP |

| | | | |
|---|---|---|---|
| body | Specific changed part of the IS with specific change methodology with specific management methodology | System Development Methodology | |

## IS Development (Change) Management Framework

With next topics we can answer questions concerning information system change in organization:

- IT Governance in Organization – Why to change? - IT Governance Framework
- Change Content - What to change? - Enterprise Architecture Framework
- Change Processes – How to change? - IS Development Methodology
- Management of change processes – How to manage change? - Project Management Methodology

## IT Governance

It is the responsibility of the board of directors and executive management and is an integral part of enterprise governance. It consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategies and objectives. IT governance is concerned about two things - IT's delivery of value to the business and mitigation of IT risks. The first is driven by strategic alignment of IT with the business. The second is driven by embedding accountability into the enterprise
Both need to be supported by adequate resources and measured to ensure that the results are obtained. Five main focus areas for IT governance, all driven by stakeholder value. Two of them are outcomes: value delivery and risk management. Three of them are drivers: strategic alignment, resource management (which overlays them all) and performance measurement.

Examples of IT Governance Frameworks:

- Control Objectives for Information and related Technology (COBIT)
- Information Technology Infrastructure Library (ITIL)
- Information Technology — Code of Practice for Information Security Management (ISO 17799)

## Enterprise Architecture Framework (EAF)

EAF establishes the organization´s roadmap to achieve its mission through optimal performance of its core business processes within an efficient IT environment. Enterprise architectures are "blueprints" for systematically and completely defining an organization´s current (baseline) or desired (target) environment. They are essential for evolving information systems and developing new systems that optimize their mission value.
This is accomplished in:

- logical or business terms (e.g., mission, business functions, information flows, and systems environments)
- technical terms (e.g., software, hardware, communications)

EAF includes also a Sequencing Plan for transitioning from the baseline environment to the target environment

Examples of EAF:

- Enterprise Architecture Body of Knowledge (EABOK)
- Federal Enterprise Architecture (FEAF)
- The Open Group Architecture Framework (TOGAF)
- Generalized Enterprise Reference Architecture and Methodology (GERAM)
- Inspired Enterprise Architecture Frameworks
- Zachman Framework

## Information System Development Methodology

Framework is general; methodology is specific giving concrete values to framework elements. Information system development methodology can be defined as a set of recommended steps, approaches, rules, processes, documents, control procedures, methods, techniques, and tools for the developers, which covers whole life cycle of an information system. Defines **who, when, what, and why should do during the development** of the IS. Methodology covers all substantial elements of the IS:

- People
- Organization procedures
- Data
- SW / HW
- Organization influences
- Economic aspects of IS development and operation
- Documents and control procedures for particular IS development stages

Elements of the framework are effective to all team-based undertakings and are presented on the next figure:

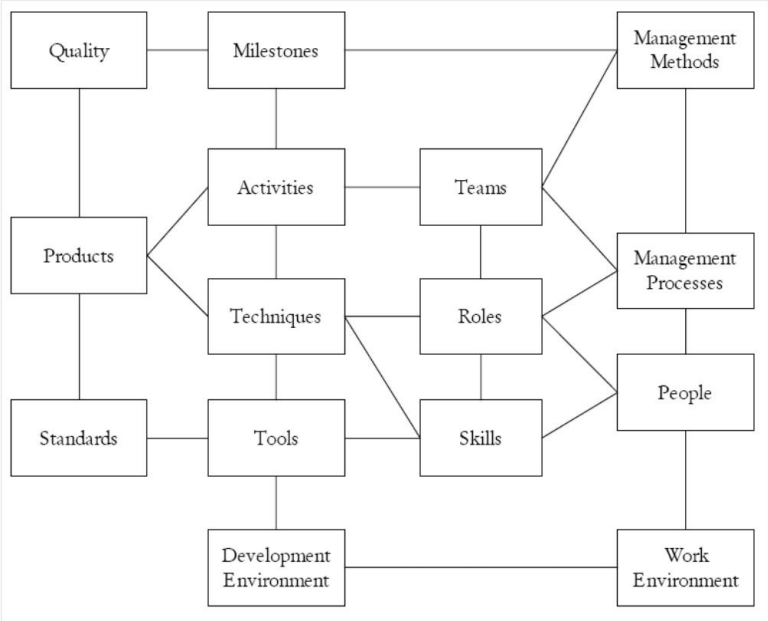



**Figure 6. Elements of the Development Framework**

One more example of framework elements and their values are presented on the next figure:

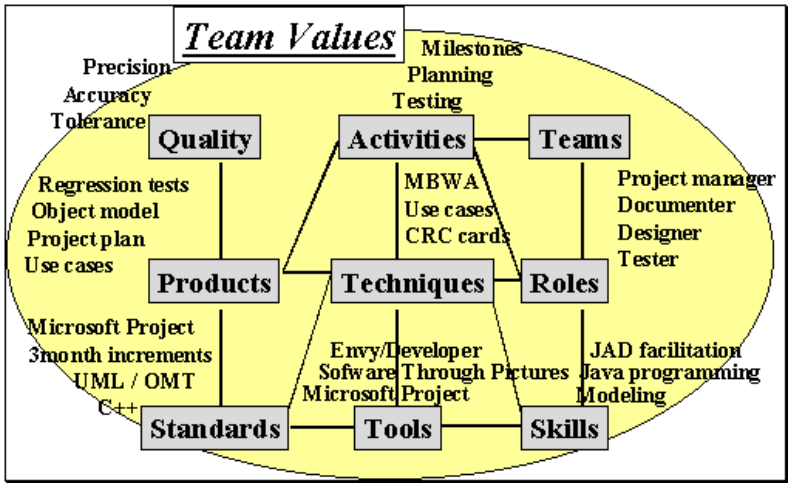



**Figure 7. Framework and Methodology Topics and Samples**

Examples of System Development Methodologies:

- Waterfall
- Spiral
- RAD
- RUP
- XP
- Scrum
- OpenUP
- Kanban

### Criteria for Choosing System Development Methodology

- Nature and scope of system under development
- Project criticality
- Budget
- Team Size
- Used Technology
- Used Tools and Techniques
- Work culture in organization

Criteria for choosing SDM are more explained in the 5. Lecture.

### System Development versus Project Management Methodology

System development methodology deals with system and its creation determining principles for system development. Project management methodology deals with work to be done determining management processes for work outputs and outcomes. Project manager is responsible to ensure that project meets its objectives appropriate system development methodology will help it. Project management doesn´t depend on specific system development methodology but may be restricted from it.

### Project Management Framework (PMF)

PMF gives bases for project management methodology determination and directions to project management activities. Using analogy from Zachman Architecture Framework, PMF is logical structure for categorizing and organizing project management important aspects enabling various parties associated with project to communicate and understand each other. PMF enables get answers to following questions: what? how? where? who? when? why?

While in context of IS project management is directed to IS change management, PMF helps define management aspects - goals, inputs, outputs and processes for system development and its monitoring and control.

Examples of Project Management Frameworks and Methodologies:

- PMI (USA) Project Management Body of Knowledge (PMBOK)
- Association for Project Management (UK) BOK
- Projects IN a Controlled Environment (UK) (Prince2)
- Unified Project Management Methodology (UPMM™)

## Project Life Cycle

Defines project start and end and various milestones between them
Project is divided into small time periods (phases, iterations, sprints etc) and by the end of each time period project status is checked out and decided to continue or not. By each time period an outcome (*deliverable*) is created - “tangible” and verifiable work “product”. It is input to the next time period or another project or to the custom usage

One example of the project life cycle is presented on the next figure:

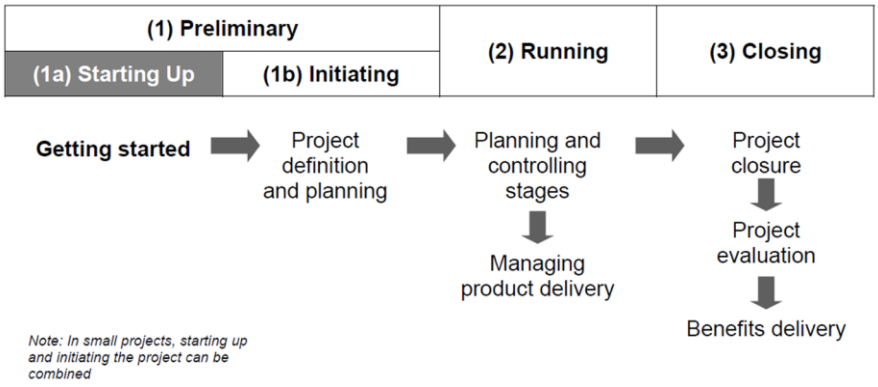



**Figure 8. Project Life Cycle Example**

One more example:

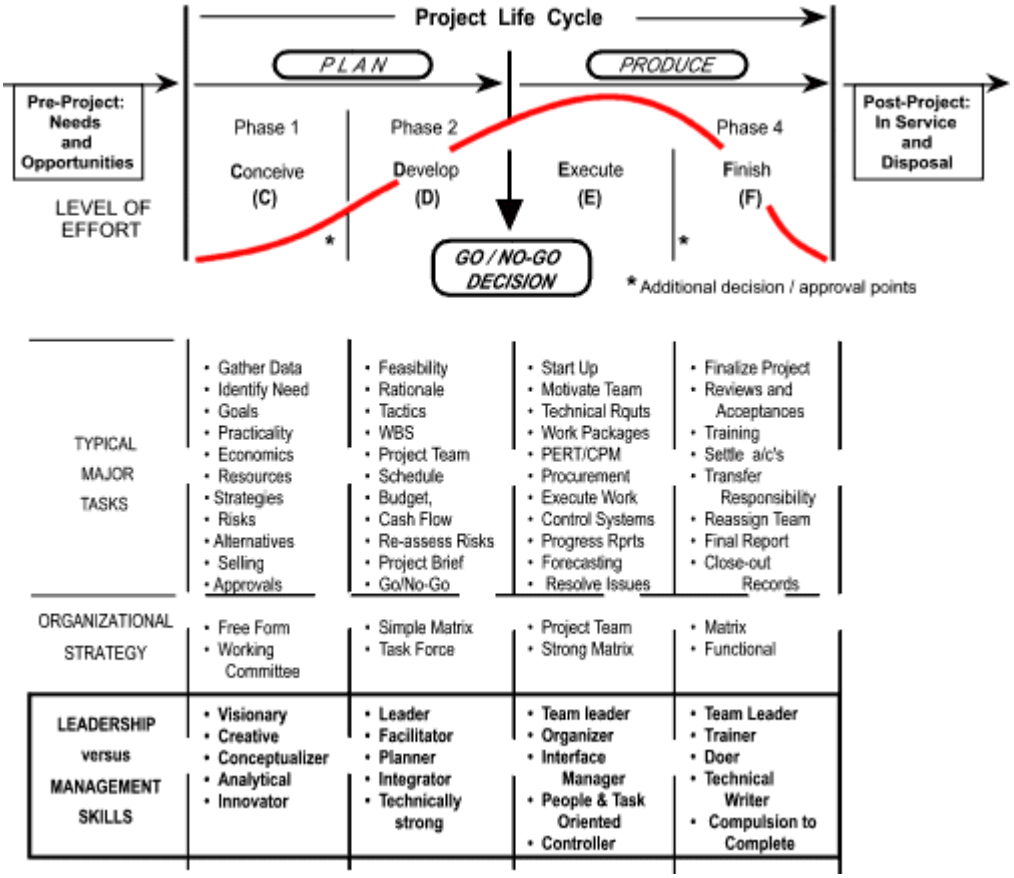



**Figure 9. One More Example of Project Life Cycle**

## Differences in Project/Product Life Cycle

Differences are presented in the next table. As shown from the table, project is aimed to creation of product (or result) and after project end product starts its life cycle.

**Table 2. Differences in Project and Product Life Cycle**

| | Project Life Cycle | Product Life Cycle | Owner/Actions |
|---|---|---|---|
| Stage 1 | Project conception | Product feasibility | The client organization, assisted by specialists |
| Milestone 1 | Project commitment | High level product requirement produced | The client *commits* to the project and *appoints* a project team |
| Stage 2 | Project execution | Design, development or acquisition | The project team (the prime contractor assisted by subcontractors) |
| Milestone 2 | Project closure | Product created | The project team *delivers* the created product to the client |
| Stage 3 | N/A | Product operation | The client organization, possibly transferred to a customer/user |

## Project Life Cycle in Prince2

Project life cycle processes in PRince2 are presented on the next figure:

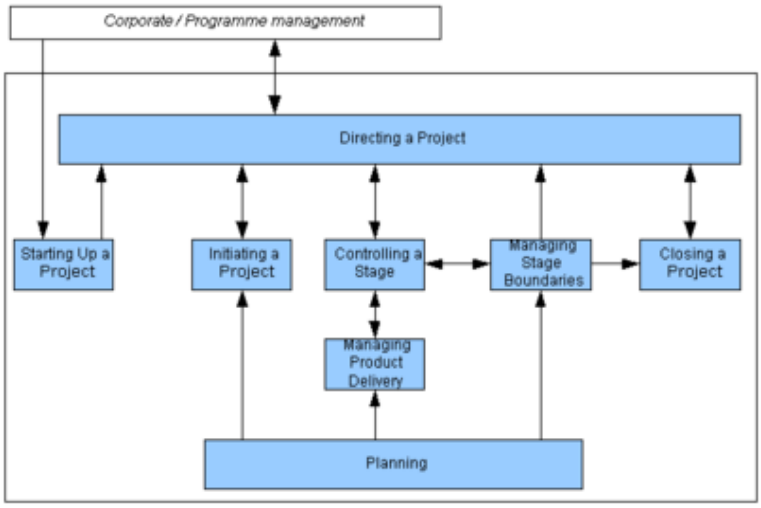



**Figure 10. PRince2 Life Cycle Processes**

## Project Management Process Groups in PMBOK

These process groups are presented on the next figure:

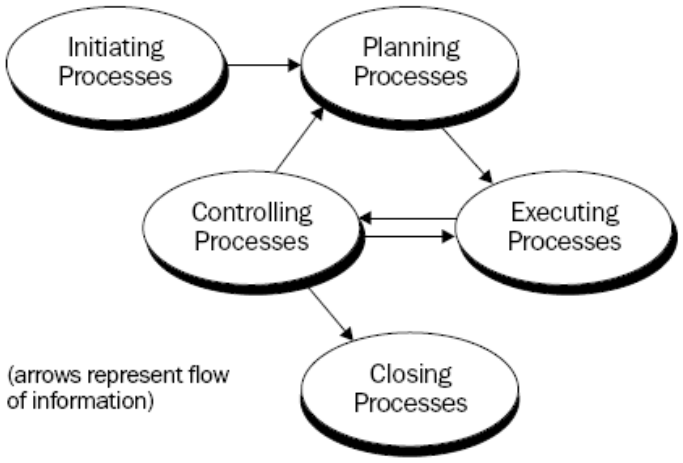
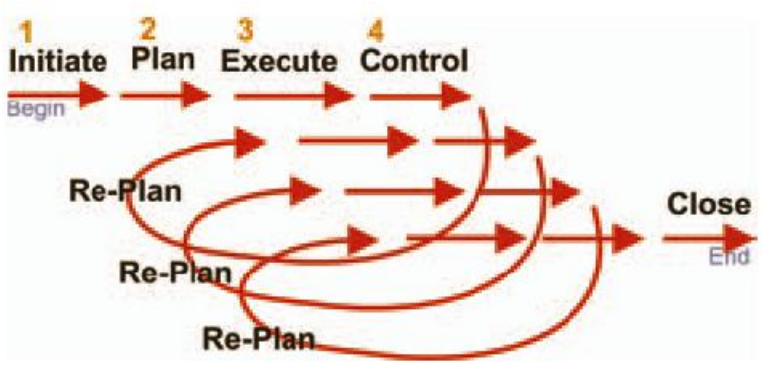



**Figure 11. PMBOK Process Groups**

Every process group is in each project time period more or less repeated, pictorially expressing:



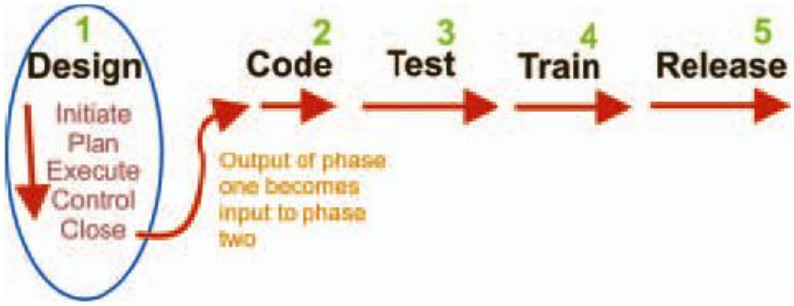




**Figure 12. Iteration of PMBOK Process Groups**

## Knowledge Areas in PMBOK

Management objects or knowledge areas in PMBOK are as follows:

- **Integration** management
- **Scope** management

- **Time** management
- **Cost** management
- **Quality** management
- **Human resource** management
- **Communication** management
- **Risk** management
- **Procurement** management

PMBOK knowledge areas and their management processes in process groups are presented in the next table:

**Table 3. PMBOK Knowledge Areas and Their Management Processes**

| Process Groups / Knowledge Area | Initiating | Planning | Executing | Monitoring and Controlling | Closing |
|---|---|---|---|---|---|
| **4. Project Integration Management** | 4.1 Develop Project Charter | 4.2 Develop Project Management Plan | 4.3 Direct and Manage Project Execution | 4.4 Monitor and Control Project Work<br>4.5 Perform Integrated Change Control | 4.6 Close Project or Phase |
| **5. Project Scope Management** | | 5.1 Collect Requirements<br>5.2 Define Scope<br>5.3 Create WBS | | 5.4 Verify Scope<br>5.5 Control Scope | |
| **6. Project Time Management** | | 6.1 Define Activities<br>6.2 Sequence Activities<br>6.3 Estimate Activity Resources<br>6.4 Estimate Activity Durations<br>6.5 Develop Schedule | | 6.6 Control Schedule | |
| **7. Project Cost Management** | | 7.1 Estimate Costs<br>7.2 Determine Budget | | 7.3 Control Costs | |
| **8. Project Quality management** | | 8.1 Plan Quality | 8.2 Perform Quality Assurance | 8.3 Perform Quality Control | |
| **9. Project Human Resource Management** | | 9.1 Develop Human Resource Plan | 9.2 Acquire Project Team<br>9.3 Develop Project Team<br>9.4 Manage Project Team | | |
| **10. Project Communications Management** | 10.1 Identify Stakeholders | 10.2 Plan Communications | 10.3 Distribute Information<br>10.4 Manage Stakeholder Expectations | 10.5 Report Performance | |
| **11. Project Risk Management** | | 11.1 Plan Risk Management<br>11.2 Identify Risks<br>11.3 Perform Qualitative Risk Analysis<br>11.4 Perform Quantitative Risk Analysis<br>11.5 Plan Risk Responses | | 11.6 Monitor and Control Risks | |
| **12. Project Procurement Management** | | 12.1 Plan Procurements | 12.2 Conduct Procurements | 12.3 Administer Procurements | 12.4 Close Procurements |

Notes Click on steps to see PMBOK v4 to Agile Mapping Notes

## Lecture Summary

Project management methodology defines project life cycle, management processes in life cycle with their inputs and outputs and usable techniques
Usable system development methodology depends on system nature under development, project criticality and usable resources (people, money etc). It is project managers task to agree with stakeholders what kind of project management and system development methodology to apply

## Used Literature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