BASICS OF PROJECT MANAGEMENT

Subject codes

BMEEPEKT601: theory 2 credits  OR
BMEEPEKK601: theory + practice 4 credits
BMEEPEKK602: practice 2 credits (only together with T601)

Lecturers

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Guest lecturers

Requirements

Two mid-semester tests (30-30 min.) 16.03.2016 and 11.05.2016
Exam
Semester Project (only for 2+2 or 4 credit courses)
1. definitions

A project is a single, complex, unique task, that is limited in costs and time, and has predefined goals, and assigned sources.

E.g. research projects, military projects, etc.

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2 PROJECT

The work of organisations

- operation performed by people
- project has limited resources
- planned - executed - controlled
- ongoing and temporary
- repetitive and unique

2 PROJECT MANAGEMENT

Project management is the application of knowledge, skills, tools and techniques to project activities in order to meet or exceed stakeholder needs and expectations form a project.
PMO = Project Management Office
What is the role of a project manager?

BOSS?
LEADER?
...COORDINATOR?

BRIEF HISTORY OF PROJECT MANAGEMENT

1941 the first PM documentation: Manhattan Engineering District Project


1958 the first PM planning method: US-Navy PERT (Program Evaluation and Review Technique) – part of the Polaris Missile Program

1959 Paul Gaddis uses the expression „project manager” in the Harvard Business Review
BRIEF HISTORY OF PROJECT MANAGEMENT

1960s civil building and oil industry began to use the PM methods of the US-Air Force, US-Navy and NASA PM

↓ ↓ ↓

new independent discipline in universities and business schools

1965 formation of IPMA (International Project Management Association)

1981 APM (Association of Project Management) - publication of the „Body of Knowledge“ PM system

1985 PMI - publication of the „Guide to the Project Management Body of Knowledge“

IPMA – publication of the „International Competence Baseline“

PROJECT MANAGEMENT SYSTEMS

Systems and standards for PM

1. PMBOK Guide by PMI (Project Management Institute)

2. books of the FIDIC (Fédération internationale des ingénieurs-conseils = International Federation of Consulting Engineers)

3. ISO standards
How to divide up the project into phases?

- marking points – milestones - when an output (deliverable) is completed
- feasibility study(s) - Project preparation
- building permission - Planning
- building contract - Preparation of implementation
- handover - Implementation (construction)
- Project end - Project end

**Life-cycle of the project**
Process is a series of actions bringing out a result.

1. project management processes
   - initiating processes
   - planning processes
   - executing processes
   - controlling processes
   - closing processes

2. product-oriented processes

Links about process groups in a phase
**PROJECT MANAGEMENT - PROJECT PHASES**

- **end of a project phase**
  - prepare phase-end reviews
  - check if the project can continue into its next phase
  - detect and correct errors

**PROJECT MANAGEMENT - PROJECT PROCESSES**

Overlap of process groups in phase
PROJECT MANAGEMENT - PROJECT PROCESSES

Processes and phases - sequencing

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PROJECT MANAGEMENT - PROJECT STAKEHOLDERS

Individuals or organisations directly or indirectly involved in the project.

Key stakeholders:

- project manager
- customers/users
- sponsors, clients
- performing organizations
4 PROJECT CONSTRAINTS

Scope

Quality

Cost

Time

classical

advanced

4 PROJECT MANAGEMENT KNOWLEDGE AREAS (PMBOK)

1. Project Integration Management
   4.1 Project Plan Development
   4.2 Project Plan Execution
   4.3 Varied Change Control

2. Project Scope Management
   5.1 Initiation
   5.2 Scope Planning
   5.3 Scope Definition
   5.4 Scope Verification
   5.5 Scope Change Control

3. Project Time Management
   6.1 Activity Definition
   6.2 Activity Sequencing
   6.3 Activity Duration Estimating
   6.4 Schedule Development
   6.5 Schedule Tracking

4. Project Cost Management
   7.1 Resource Planning
   7.2 Cost Estimating
   7.3 Cost Budgeting
   7.4 Cost Control

5. Project Quality Management
   8.1 Quality Planning
   8.2 Quality Assurance
   8.3 Quality Control

6. Project Human Resource Management
   9.1 Organizational Planning
   9.2 Staff Acquiring
   9.3 Team Development

7. Project Communications Management
   10.1 Communication Planning
   10.2 Information Distribution
   10.3 Performance Reporting
   10.4 Administrative Detail

8. Project Risk Management
   11.1 Risk Management Planning
   11.2 Risk Identification
   11.3 Qualitative Risk Analysis
   11.4 Quantitative Risk Analysis
   11.5 Risk Response Planning
   11.6 Risk Monitoring and Control

9. Project Procurement Management
   12.1 Procurement Planning
   12.2 Solicitation Planning
   12.3 Solicitation
   12.4 Source Selection
   12.5 Contract Administration
   12.6 Contract Closeout
1. Project integration management
   • ensures the coordination of the various project elements
   • consists of
     • project plan development
     • project plan execution
     • overall change control

2. Project integration management
   • product description
   • strategic plan
   • project selection criteria
   • historic background
   • project manager
   • constraints
   • assumptions
1. Project scope management

- ensures the project includes all the work required and only the work required for its success
- Consists of
  - initiation
  - scope planning
  - scope definition
  - scope verification
  - scope change control
PROJECT MANAGEMENT - START UP ASSUMPTIONS

Start a project only if

+ anyone is interested
+ there is a necessity
+ it is worth to do
+ it is implementable / viable

Secondary questions:

For whom?
What?
Where?
What kind?
With whom?
How?
4 PROJECT MANAGEMENT - START UP ASSUMPTIONS

Tools and techniques:

- product analyses
- cost/benefit analysis
- alternatives identification

4 PROJECT MANAGEMENT KNOWLEDGE AREAS (PMBOK)
PROJECT MANAGEMENT KNOWLEDGE AREAS (PMBOK)

1. Project time management

- ensures proper time management + finish until deadline
- consists of
  - activity definition
  - activity duration estimating
  - activity sequencing (time sequence)
  - schedule development
  - schedule control
4. Project cost management

- ensures the project to be completed within the approved budget

- consists of
  - resource planning
  - cost estimating
  - cost budgeting
  - cost control
5. Project quality management

- ensures the project to satisfy the needs it has been undertaken for

- consists of
  - quality planning
  - quality assurance
  - quality control
6. Project human resource management

- Ensures the most effective use of professionals in the project

- Consists of
  - Organizational planning
  - Staff acquisition
  - Team development
### PROJECT MANAGEMENT KNOWLEDGE AREAS (PMBOK)

#### Resource diagram

A resource diagram showing the usage of staff hours for Senior Designers over the months of January to May. The vertical axis represents resource usage in staff hours, while the horizontal axis represents the months.

#### Responsibility/assignment matrix

A responsibility/assignment matrix for different phases of the project, including Requirements, Functional, Design, Development, and Testing. The matrix indicates the participant/role for each phase through symbols: P = Participant, A = Accountable, R = Review required, I = Input required, S = Sign-off required.
7. Project communication management

- ensures the right kind of treatment (generation, collection, dissemination, storage, etc.) of the project information
- consists of
  - communication planning
  - information distribution
  - performance reporting
  - administrative closure
8. Project risk management

- identifying, analyzing and responding risks of the project
- consists of
  - risk identification
  - risk quantification
  - risk response development
  - risk response control
9. Project procurement management

- acquiring the required goods and services from outside the performing organization
- consists of
  - procurement planning
  - solicitation planning
  - solicitation
  - source selection
  - contract administration
  - contract close-out
PROJECT MANAGEMENT ISO STANDARDS

General standards
- ISO 9001:2000 - Quality management systems - requirements
- ISO 14001:2004 - Environmental management systems with guidance for use
- OHSAS 18001:2007 - Occupational health and safety management systems

Functional standards
- ISO 19011:2002 - Guidelines for quality and/or environmental management systems auditing

PROJECT MANAGEMENT KNOWLEDGE AREAS AND TOOLS

<table>
<thead>
<tr>
<th>Areas</th>
<th>Tools</th>
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</thead>
<tbody>
<tr>
<td>Integration</td>
<td>quality management, quality control, standards</td>
</tr>
<tr>
<td>Scope</td>
<td>feasibility study</td>
</tr>
<tr>
<td>Time</td>
<td>scheduling, time planning</td>
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<tr>
<td>Cost</td>
<td>cost estimation, budgeting</td>
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<tr>
<td>Quality</td>
<td>monitoring the project</td>
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<tr>
<td>Human resource</td>
<td>professions in construction (roles and responsibilities)</td>
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<tr>
<td>Communication</td>
<td>decision making methods, risk analyses</td>
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<td>Risk</td>
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<td>Procurement</td>
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</tbody>
</table>
CONSTRUCTION PROJECT

- most cases single, unique, project-like investment
- relative high investment costs – from altering financial sources
- high demands on professionals
- predefined quality
- directly (e.g. cultural segment) or indirectly (e.g. industry, agriculture) satisfies social claims
- aiming a well functioning building with low operation cost

REFERENCES

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