



# Group Project

## Lecture 3

dr inż. Krzysztof Kaczmarek  
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Wydział Matematyki i Nauk Informacyjnych

## Materiały sponsorowane przez:



Fundusze  
Europejskie  
Wiedza Edukacja Rozwój

**Politechnika  
Warszawska**

Unia Europejska  
Europejski Fundusz Społeczny



Zadanie 10 pn. „Przygotowanie i uruchomienie nowego kierunku studiów na studiach II stopnia – Inżynieria i Analiza Danych (IAD)” realizowane jest w ramach projektu „NERW PW. Nauka — Edukacja — Rozwój — Współpraca” współfinansowanego ze środków Unii Europejskiej w ramach Europejskiego Funduszu Społecznego

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## Goals for today:

- ▶ Get familiar with industrial 'Request' document types
- ▶ Understand FURPS as requirements document
- ▶ Learn what is a good schedule
- ▶ Learn what deliverable is needed for each lab
- ▶ Written assignment done in groups

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## Lecture 3

Documents  
Terms of Reference  
Request For Proposal  
FURPS method  
Schedule

Laboratory Deliverables

Written assignment

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## Terms of Reference

Documents

Introductory document, covering the following conditions:

- ▶ users needs
- ▶ deadline of realization
- ▶ approximate price

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## Example

Terms of Reference<sup>1</sup>

External document presentation.

1. (pol. SIWZ – Specyfikacja Istotnych Warunków Zamówienia)

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## Request For Proposal

Documents

Consists of two parts:

- Terms of Reference (TOR) which outlines the technical scope of the project
- Commercial Terms which specify the content of the proposal submission and the contractor selection procedure

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## Request for ...

Documents

	RFI (Information)	RFP (Proposal)	RFQ (Quotation)
<b>Purpose</b>	Develop strategy Learn more about supplier's capabilities	Determine feasibility of each potential supplier's bid	Compare costs between competing vendors
<b>Effort</b>	Client – Medium Vendor – Medium	Client – High Vendor – High	Client – Low Vendor – Medium
<b>Format</b>	Open-ended	Open-ended but with formal parameters	Closed-ended
<b>Best for</b>	Customized solutions	Customized solutions	Commoditized products

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## Lecture 3

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## FURPS method

Documents

**Functionality** Functional requirements (as given above)

**Usability** Ergonomics, GUI Requirements, Friendliness

**Reliability** Accessibility, Recovery, Stability, Resistance

**Performance** Efficiency, Resources, Speed, Latency

**Supportability** Maintenance, Support, Costs

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Documents

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## Schedule planning

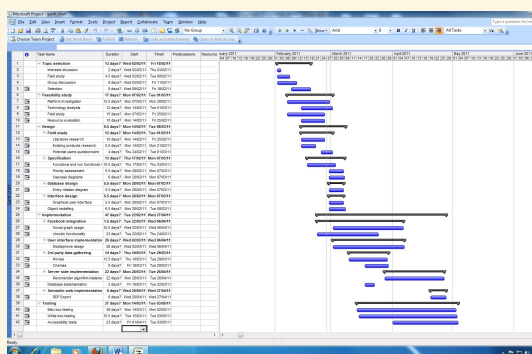
Documents

- The goal is to predict dates of important events and divide work into phases.
- Good schedule helps in progress control and success evaluation.
- Milestones: point on the road separating past and future
- Schedule planning, progress monitoring and updates are done constantly – hence safe time margin is needed.

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## Gantt diagram

Documents



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## Good schedule

Documents

- Predictive** It shows how things fit together and how things may change.
- Dynamic** Make sure there is tracking plus space and possibility to change.
- Reflective** Shows progress in critical paths, milestones to predict dangers.

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## Common mistakes forming a bad schedule

### Documents

- ▶ Hard to understand, using unclear terms and with no visualization.
- ▶ Not Flexible. Life changes. Period.
- ▶ Forced by managers, not accepted by the team.
- ▶ No connection between tasks, no way to rely on results from previous tasks.
- ▶ Uses only relative time measure (work days). No calendar time relationship.
- ▶ No margins before deadlines.
- ▶ No time for retrospection and revision after a review.
- ▶ Assumes that the team will have no additional (disturbing) activities.

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## Lecture 3

### Documents

Terms of Reference  
Request For Proposal  
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### Laboratory Deliverables

### Written assignment

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## Laboratory 1 Deliverable (CS)

### Requirements Specification Document

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>▶ <b>Title page</b><br/>project title, document title, authors, supervisor, date, version</li><li>▶ <b>Abstract</b><br/>short description of the document content and purpose</li><li>▶ <b>History of changes</b><br/>tabular form with people and scope of modifications</li><li>▶ <b>Table of contents</b></li></ul> | <ol style="list-style-type: none"><li>1. <b>Executive summary</b><br/>description of goals from business's perspective</li><li>2. <b>Vocabulary</b><br/>description of all used notions</li><li>3. <b>Functional requirements</b><br/>Use cases + stories with system response – tests input, explanation</li><li>4. <b>Non-functional requirements</b><br/>Given in a list or a table, numbered</li><li>5. <b>Project schedule</b><br/>table, calendar, Gantt-diagram, dependencies between phases</li><li>6. <b>Risk analysis</b> for example SWOT</li></ol> |
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## Laboratory 2 Deliverable (CS)

### General Design Document

- |   |   |
|---|---|
| <ul style="list-style-type: none"><li>▶ <b>Title page</b><br/>project title, document title, authors, supervisor, date, version</li><li>▶ <b>Abstract</b><br/>short description of the document content and purpose</li><li>▶ <b>History of changes</b><br/>tabular form with people and scope of modifications</li><li>▶ <b>Table of contents</b></li><li>▶ <b>References to deliverable 1</b></li></ul> | <ol style="list-style-type: none"><li>1. <b>System architecture</b><br/>nodes, modules, responsibilities</li><li>2. <b>Modules design</b><br/>interfaces, dependencies, layers</li><li>3. <b>Communication</b><br/>protocols, libraries, network configuration</li><li>4. <b>Main components descr.</b><br/>class, states, activity, events diagrams</li><li>5. <b>User interface vision</b><br/>schedules, plots, drawings</li><li>6. <b>External interfaces</b><br/>standards, file formats, norms</li><li>7. <b>Technology selection</b><br/>languages, libraries, platforms, OS</li></ol> |
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## Laboratory 3 Deliverable (CS)

### Implementation part 1: Code, Repository, Unit tests

- ▶ Code review, tests review
- ▶ Not all modules must be integrated
- ▶ Some functionality working demonstration
- ▶ During meeting: progress report, problems outline, prediction on completion date



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## Laboratory 4 Deliverable (CS)

### Implementation part 2: Increment in Code, Unit tests

- ▶ Alpha tests phase
- ▶ Code review, tests review
- ▶ All modules must be integrated
- ▶ Added functionality working demonstration
- ▶ Working tests demonstration
- ▶ During meeting: progress report, problems outline, prediction on completion date



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## Laboratory 5 – Final Deliverable

### Working Application, Acceptance Tests, Documentation

The application compiles

It passes the acceptance tests

We finished on time

Installation instruction: one A4 page



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## Laboratory 5 – Final Document Content (CS)

### Post-completion Documentation

- |   |  |
|---|--|
| <ul style="list-style-type: none"><li>▶ <b>Title page</b><br/>project title, document title, authors, etc.</li><li>▶ <b>Abstract</b><br/>short description of the document content, etc</li><li>▶ <b>History of changes</b><br/>tabular form with people, etc.</li><li>▶ <b>Table of contents</b></li><li>▶ <b>If needed: errata to Documents 1 and 2</b></li></ul> | <ol style="list-style-type: none"><li>1. <b>Deployment Documentation</b><br/>Requirements, Libraries, Hardware Resources, Configuration</li><li>2. <b>Installation Instruction</b><br/>What steps are needed to get it into production</li><li>3. <b>Technical Documentation</b><br/>Contracts of public interfaces and modules, Protocols</li><li>4. <b>User's Manual</b><br/>How to use the system</li></ol> |
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## Lecture 3

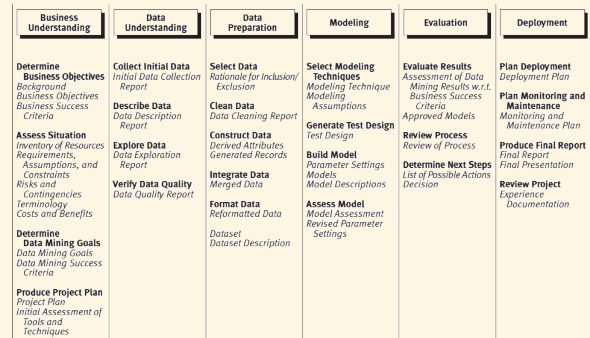
### Documents

Terms of Reference  
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FURPS method  
Schedule

### Laboratory Deliverables

Written assignment

## Cross-industry standard process for data mining CRISP-DM



What is CRISP-DM? Trisitt Kumar Chatterjee. 2020

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## Laboratory 1 Deliverable (DS)

### Business Understanding Document

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>▶ <b>Title page</b><br/>project title, document title, authors, supervisor, date, version</li><li>▶ <b>Abstract</b><br/>short description of the document content and purpose</li><li>▶ <b>History of changes</b><br/>tabular form with people and scope of modifications</li><li>▶ <b>Table of contents</b></li></ul> | <p>Obligatory:</p> <ol style="list-style-type: none"><li>1. <b>Executive summary</b><br/>background, data mining goals from business's perspective</li><li>2. <b>Vocabulary (Terminology)</b><br/>description of all used notions</li><li>3. <b>Requirements</b><br/>assumptions and constraints, inventory of resources</li><li>4. <b>Project schedule</b><br/>milestones calendar, Gantt-diagram</li><li>5. <b>Risk analysis</b> for example SWOT</li></ol> <p>Optional:</p> <ul style="list-style-type: none"><li>▶ Use cases, Success criteria</li></ul> |
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## Laboratory 2 Deliverable (DS)

### Data Understanding and Preparation Document

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| <ul style="list-style-type: none"><li>▶ <b>Title page</b><br/>project title, document title, authors, supervisor, date, version</li><li>▶ <b>Abstract</b><br/>short description of the document content and purpose</li><li>▶ <b>History of changes</b><br/>tabular form with people and scope of modifications</li><li>▶ <b>References to deliverable 1</b></li></ul> | <p>Obligatory:</p> <ol style="list-style-type: none"><li>1. <b>Solution proposal</b><br/>assessment of tools and techniques, modeling technique assumptions</li><li>2. <b>Data Reports</b><br/>initial exploration and quality</li></ol> <p>Optional:</p> <ul style="list-style-type: none"><li>▶ Modules description</li><li>▶ GUI design</li><li>▶ Initial data preparation</li></ul> |
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## Laboratory 3 Deliverable (DS)

### Modeling Document

- |   |  |
|---|--|
| <ul style="list-style-type: none"><li>▶ <b>Title page</b><br/>project title, document title, authors, supervisor, date, version</li><li>▶ <b>Abstract</b><br/>short description of the document content and purpose</li><li>▶ <b>History of changes</b><br/>tabular form with people and scope of modifications</li><li>▶ <b>References to deliverable 1, 2</b></li></ul> | <p>Obligatory:</p> <ol style="list-style-type: none"><li>1. <b>Modules implementation</b><br/>working code, automation procedures</li><li>2. <b>Build Model</b><br/>parameter settings, model descriptions</li></ol> <p>Optional:</p> <ul style="list-style-type: none"><li>▶ <b>Testing environment</b></li></ul> |
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## Laboratory 4 Deliverable (DS)

### Evaluation Document

- |   |   |
|---|---|
| <ul style="list-style-type: none"><li>▶ <b>Title page</b><br/>project title, document title, authors, supervisor, date, version</li><li>▶ <b>Abstract</b><br/>short description of the document content and purpose</li><li>▶ <b>History of changes</b><br/>tabular form with people and scope of modifications</li><li>▶ <b>References to deliverable 1, 2</b></li></ul> | <p>Obligatory:</p> <ol style="list-style-type: none"><li>1. <b>Unit tests</b><br/>testing customized code, input-output operations</li><li>2. <b>Model tests</b><br/>assessment, revised parameter setting, major results review</li><li>3.</li></ol> <p>Optional:</p> <ul style="list-style-type: none"><li>▶ <b>Usability analysis</b><br/>human-driven tests</li></ul> |
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## Laboratory 5 – Final Document Content (DS)

### Post-completion Documentation

- |   |   |
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## Lecture 3

### Documents

Terms of Reference  
Request For Proposal  
FURPS method  
Schedule

### Laboratory Deliverables

Written assignment

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## Focus groups

Written assignment

### Team work

- ▶ Complete your schedule
- ▶ Finish your functional and non-functional requirements

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Europejskie  
Wiedza Edukacja Rozwój

Politechnika  
Warszawska

Unia Europejska  
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„NERW PW. Nauka — Edukacja — Rozwój — Współpraca”  
współfinansowanego ze środków Unii Europejskiej w ramach  
Europejskiego Funduszu Społecznego

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