Abstract

A master project in systems engineering using action research or industry as laboratory requires that the student is both researcher and engineer. In this presentation we give guidelines for the execution phase of the project to ensure that the master project student plays both roles. These roles require quite different behavior. Especially the role of researcher is new for most students.
Discuss *way of working* and *expectations* with your *academic supervisor*.

The following slides are valid for supervision by Gerrit.

Other academic supervisors may have other doctrines.
## Recommendations for Project Execution

<table>
<thead>
<tr>
<th>Maintain a project log</th>
<th>Data, findings, documents, references</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep supervisors involved</td>
<td>Regular presentations, regular meetings</td>
</tr>
<tr>
<td>Time box and iterate</td>
<td>Case, system and context, reflection and consolidation</td>
</tr>
<tr>
<td>Early feedback on paper</td>
<td>Start writing early, elicit feedback early, work incremental</td>
</tr>
</tbody>
</table>
## You have Multiple Roles!

<table>
<thead>
<tr>
<th></th>
<th><strong>systems engineer</strong></th>
<th><strong>researcher</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>normal work</td>
<td>elicit needs, specify, design, analyze, integrate, test</td>
<td>observe, experiment, argue, evaluate, write</td>
</tr>
<tr>
<td>attitude</td>
<td>explain, educate, sell</td>
<td>question everything, proof opposite</td>
</tr>
</tbody>
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SERM researcher
Maintain a Detailed Research Logbook

Word or PowerPoint file
take notes continuously!

date/time
  what
  how
  why
  when
  where
  who
references, e.g. URLs; make electronic copy of any relevant material
all "raw" data, e.g. submitted questionnaires
all intermediate data, e.g. spread sheets with version numbers and dates
Discuss Regularly With Company Supervisor

- Shut down valves
- Control temperature and pressure
- Well shut down
- Connect EDP
- Perform workover operations
- Wait for resolution of disruption
- Retract wireline
- Connect EDP
- Continue workover
- Workover operations

Focus first on content, then means and then research approach

**meta^0 system-of-interest**

**meta^1 means**

**meta^2 research**

I think it would be beneficial to use a PUGH-matrix for a small project (less than 1 year), in terms of:
- Effort
- Time
- Quality of the Results

I think it would be beneficial to use a PUGH-matrix for a medium size project (1-2 years), in terms of:
- Effort
- Time
- Quality of the Results

I think it would be beneficial to use a PUGH-matrix for a large project (more than 2 years), in terms of:
- Effort
- Time
- Quality of the Results

Master Project; Execution Phase

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MPP supervisee Meetings
Research is an adventurous journey, be perceptive and see where it goes

Some students in the past called it a rollercoaster….