Workshop Reflective Practice; Domain Knowledge

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Abstract

Industry master students work part-time in an engineering company. The Reflective Practice workshops are set-up to stimulate reflection about theory and practice. The workshop Domain Knowledge addresses the questions: What is domain knowledge, what domain knowledge is required for system design, how do I acquire domain knowledge?
Merete Faanes from Buskerud University College created the educational flow *Reflective Practice*. Reflective Practice is a thread throughout the entire master Systems Engineering to stimulate students to relate *Education and Practice*.

These workshops are the result of the cooperation of Merete Faanes and Gerrit Muller
Make an overview of the domain knowledge that you have acquired until now.

Provide a few specific examples of such domain knowledge.

Make a list of domain knowledge that you like to acquire.
9:00 welcome, last workshop, introduction this workshop

9:10 block 1: Business

10:20 block 2: Process and Organization

11:30 block 3: Engineering

12:40 plenary discussion

12:50 pre-assignment next workshop, close
Workshop Ground Rules

+ Start individually for 5 minutes
+ Then discussion in the group
> Let the less experienced participants start with answering
BAPO framework

- Business (B)
  - Market
  - Customers
  - Financials
  - Turnover
  - Profit
  - Cash flow
  - Capital use
  - Value chain
  - Goods flow
  - Life cycle

- Architecture (A)
  - Customer needs
  - Stakeholder concerns
  - Requirements
  - Specification and design
  - Functions
  - Qualities
  - Decompositions
  - Interfaces
  - Technologies

- Process (P)
  - People
  - Processes
  - Roles
  - Responsibilities
  - Relationships
  - Sites/locations

- Organization (O)

From: COPA tutorial; Philips SW conference 2001.
What is the Value Chain in your domain;
Be specific, e.g. Names of customers and suppliers

What are the financial figures of merit
e.g. typical product or project cost, company turnover, material cost

What are timing figures of merit,
project duration, system life time, order lead time

Results on flipover
Make a Scatter Plot

Read the flips of other groups.

Select two figures of merit (f.i. project cost and project duration) and make a scatter plot of all teams for these two figures.

Can you explain the result?

- **A**
- **B**
- **C**
- **D**

**Project duration**

**Project cost**
+ Make an organogram

> be specific e.g. add names

+ What is the product or project process

+ What is your immediate project context

> be specific add names, components/functions and roles

Results on flipover
Core, Key, and Base Technologies

Technology life cycle

- Own value IP
  - Critical for final performance
  - Commodity

make  outsource  buy  refer customer to 3rd party

Partnering

Workshop Reflective Practice; Domain Knowledge
version: 0.6
March 26, 2019
SSScoreKeyBase

Gerrit Muller
+ What are the key performance parameters of the system;
  > be specific with names and numbers
+ Make a list of all involved technologies
+ Classify technologies as Core, Key or Base

results on flipover
Provide the answers to the questions in blocks 1, 2, and 3 of the workshop Domain Knowledge; be specific with names, functions, and numbers in max 4As.

- value chain, financial and timing figures of merit
- organogram, product or project process, immediate project process
- key performance parameters, technologies, classification in core, key, and base

Use the opportunity to ask questions in your organization. This assignment is a good excuse to talk to people that you normally would not speak.

Ask your company supervisor to verify what you have written.

Write a 1 page reflection report, discussing the workshop, the experiences in obtaining answers, and the feedback from your supervisor.
The closer you can stay to your “real” system the more realistic and valuable the learning outcome. NISE staff treats your material as confidential. However, if your system is classified or highly confidential, then take one of the following steps (in order of preference):

- **obfuscate**: make changes to values or features to remove the confidentiality
- **use past system that is similar** (works only if that is not confidential)
- **transpose**: select a similar system in another domain (for example move from missile to drone)
Fill in the pre questionnaire at

http://www.gaudisite.nl/RPHTAquestionnairePre.doc

Add your name to the filename when submitting it by email

We use the results of this questionnaire in anonymous form for research.
Replacing assignment; only after permission of the teacher

- do the pre-assignment and submit this to the teacher (as all other students)
- go through the workshop questions yourself
- discuss the questions and your answers with a local colleague
- write a (max) 2-page document with your answers including examples and rationale behind the answers
- send this 2-page document by mail to another student and ask for comments
- update the 2-page document
- do the post-assignment, include what the feedback of the other student changed in your thinking
- send 2-page document and post-assignment to the teacher