



## EXAMINATION IN COURSE TMM4225 CONFIGURATION AND USE OF COLLABORATIVE WORKING ENVIRONMENTS

**Technical contact during the exam:** Professor Ole Ivar Sivertsen

**Phone:** (735) 92541 / 974 72 129

**Date** : 1 December 2008

**Time** : 4 hours

**Weighting** : 7,5

**Aids allowed** : D: No written or handwritten examination support materials are permitted.  
Certain, specified calculator\*\* are permitted.

\*\* "Certain, specified calculator" means a calculator with simple, numerical and trigonometrical functions such as +, -, sine, cosine etc. The type of calculator is to be easy for examination invigilators to recognize.

All tasks are to be answered. Each answer has to be marked with the corresponding task-number and index. The answers must be clearly and nicely written. It will be emphasized that the text is clear and concise. Sketches should be made in such a scale that they are easily understood.

**Language** : English

**Number of pages** : 4 (including appendix)

**Number of appendix** : 1

**All problems have equal weight. Use your time wisely.**

**To be subjected to censorship by 22 December 2008.**

### **Problem 1: Collaborative requirements and business benefits**

Most engineering companies today collaborate extensively within departments, across departments and in extended networks that also includes customers, suppliers and business partners. To an increasing extent, engineering professionals must collaborate over geographical distance, often across different time zones. This represents both a challenge and an opportunity.

Answer the following points:

- A. Provide an overview of collaborative requirements for engineering professionals. Distinguish between basic requirements that apply to most professionals working with knowledge-intensive tasks, and specific engineering requirements that apply to large engineering companies with more than 1000 employees.
- B. Classify different categories of collaboration technologies according to the functionalities they provide.
- C. Explain some possible business benefits companies can realize from improving the way they collaborate internally and with external partners.

### **Problem 2: Concept development**

Oil Solutions Ltd. is an oil service company that delivers high-tech components and software to the oil industry. The company also has an operations centre that provides support services to oil installations (onshore as well as offshore) on a 24 hour continuous basis. The company is soon moving into a new office and has asked you to develop a collaboration concept that includes both new, advanced collaboration rooms and a robust, scalable IT platform that can support collaboration in a range of different contexts; when employees are in the office (both at their desk and in dedicated collaboration rooms), working on the clients' premises and while they are travelling with a laptop (and in certain contexts only with a smart phone / PDA with integrated mobile phone). Consider both synchronous / real time collaboration tools and asynchronous collaboration tools. Refer to the descriptions in Problem 1 where (if) relevant.

Answer the following points:

- A. Describe how you would approach the company to define a set of precise requirements that can be used to develop a solution that is fit for purpose, including how you would collect and analyse the data.
- B. You have also been given the task of proposing some initial ideas about possible solutions. Address this task by describing an overall concept in the form of a matrix that outlines the collaborative requirements you believe the company has and a set of collaborative functionalities you think the

company would benefit from if they include these functionalities in their infrastructure. Use the basic structure provided in the example table in the appendix.

### **Problem 3: Return on Investment and collaboration management**

The company described in Problem 2 is interested in maximising the return on investment (ROI) on their new collaboration solutions, and has asked you to provide an overall framework for ROI evaluation. The company is also interested in how they can manage collaboration better, including both costs and benefits related to collaboration.

Answer the following points:

- A. Provide an overview of technology- and non-technology related factors that should be included in the evaluation.
- B. Provide a list of common cost elements.
- C. Provide a list of common benefit elements and relate these to the cost elements where possible.
- D. Describe a set of success criteria including, but not limited to business trends, social networking preferences for today's young professionals, and human factors. Explain why you have chosen the specific criteria you describe.
- E. Describe factors related to collaboration management, how to organise for collaboration, awareness and training issues and attitude / motivational issues.

### **Problem 4: Reflection exercise**

Reflect on the topic *trust* (Norwegian: *tillit*) in projects. Trust is an important success factor in all teams, and collaboration in dispersed teams (teams where the team members are geographically distributed) implies additional challenges.

Answer the following points:

- A. Describe why trust is an important element in successful collaboration, and problems that may occur in teams that experience low levels of trust.
- B. Consider possible life cycle perspectives for collaboration in projects, in particular how to establish trust in the beginning of a project.
- C. Discuss the potential role of collaboration technologies in enabling higher trust levels in dispersed teams.
- D. Describe a set of non-technology related factors or approaches that can improve the trust level in teams.

GOOD LUCK!

**Appendix: Example table (Problem 2 B)**

Requirements	Collaborative functionalities adapted to different work contexts			
	In office / at desk	In office / collaboration room	At clients' premises	Travelling / mobile
Requirement 1				
Requirement 2				
Requirement ...				
Requirement ...				
Requirement N				