

Appendix D – Project assignments proposed by customers

D1 Autronica Fire and Security – Ommund Øgaard

Title: Remote Service for Fire Alarm Systems

Customer: Autronica Fire And Security

Address:

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Remote Service for Fire Alarm Systems

Autronica Fire And Security develops, produces and sells advanced fire alarm systems. Service and trouble shooting of systems is also an important part of the business. The project shall define requirements and services and evaluate solutions for a remote service function for our fire alarm systems. We wish a web-based system where we can check status, analyze faults and read out logs from the fire alarm systems. The ability to change configuration and upgrade software remotely should also be explored. The remote service system shall be operated from a centralized service centre.

Some important point in the project will be:

1. To identify user needs and requirements to the system.
2. To analyze both functional and quality requirements, especially those related to safety and security.
3. To define a web-based architecture that meets the requirements.
4. To demonstrate that this can be implemented.

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D2 Iterate / Belief – Simen Fure Jørgensen

Title: Last Planner

Customer: Iterate AS and Belief AS

Address: Bygdøy Allé 21, 0262 Oslo

The consultancies Iterate and Belief are cooperating on the development of software for the building industry. An increasing number of building projects have improved their quality and their ability to deliver on time and budget by using a method called Last Planner. Iterate and Belief are looking at the possibility of using software to support Last Planner.

The software should support tasks like planning and reporting, but must be easy to use. Usability is an important aspect for this application. Based on findings in the early stages of the project, the students will further develop an existing software prototype.

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D3 The Liv Arnesen Foundation – Andreas Krokan

Title: Global Classroom 2011

Customer: The Liv Arnesen Foundation

Address: Trosteveien 6, 1357 Bekkestua

In 2011 Liv Arnesen and Ann Bancroft will embark on a new expedition "In the footsteps of Amundsen, in the spirit of Nansen". The goal is to utilize the expedition as a pedagogical tool in the transfer of knowledge about water and the challenges we face related to this theme, to children and youth in all regions of the world, whilst commemorating the achievements of Amundsen and Nansen.

The expedition aims to support this effort through an efficient utilization of the Internet, by establishing an education- and entertainment- portal on the web, with a goal of reaching 2,5 million classrooms, or 50 million youth.

The project wish for a portal and applications developed on IBM proprietary technology, the WebSphere Portal Serer, utilizing incoming data from the expedition, including GPS coordinates, climate statistics, and third/party database/information. Our wish is for this information to be processed, analysed and displayed in an exciting and informative manner throughout the expedition, as an educational aide for the classroom and common people with an interest in the project.

Further, we also wish to facilitate for the inclusion of future works from another NTNU/LAF collaboration, "EiT", in collaboration with Letizia and Stromme. E.g. new media art and GeoDesign (digital mapping).

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D4 Cyberlab.org – Tor Ivar Eikaas

Title: Object recognition and Augmented Reality for Android and/or iPhone mobiles

Customer: Cyberlab.Org AS

Address: Innovasjonssenter Gløshaugen, Richard Birkelands vei 2B, 7491 Trondheim

Cyberlab is a small company developing games for education and training. We are interested in investigating new and innovative game concepts for mobile applications, and notably for iPhone and Android-based mobile phones. This project assignment is focussing on object recognition and augmented reality for mobile applications, and should work towards developing a sw library for object recognition and augmented reality on android mobile phones together with a proof of concept application.

- a) Present state-of-the-art for object recognition and augmented reality for mobile phones (Android and iPhone), including available commercial and open source solutions.
- b) Development of a library for object recognition and augmented reality on Android phones, building on available solutions where possible.
- c) Develop a prototype pervasive game utilising the developed object recognition and AR library in addition to other available location based services (e.g. GPS) etc where applicable.

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D5 Extend AS – Kjell Husby

Title: Web-based risk management
Customer: Extend AS
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Exercise: Web-based risk management

Extend delivers a quality and process management system, EQS, which is a web-based application for quality management and improvement, in all types of organizations.

EQS consists of several modules, including a module for deviations registration and other data entry, with a corresponding statistics and indicators module.

In a module for risk management, a systematic approach for describing and / or calculating risk should be supported. Risk analysis must be possible based on the likelihood and cause of events and their consequences.

The thesis' goal is to specify requirements for a risk management module, in the context of what is described above. A web-based prototype, based on the specified requirements should also be implemented.

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D6 Gridmedia – Ole-Ivar Holthe

Title: GameDev OS for developing computer games

Customer: Gridmedia Technologies AS

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We wish to develop a Web-based system for community-driven development of computer games and related media, such as 3D Models, Textures, Effects, Tools, Source Code, Articles, Know How, etc. Figure 1 illustrates a screenshot of the GameDev OS, which includes: Course catalog for game design and development courses, and Course viewer; Project explorer: List of game development projects. Invite game developers and designers; Project management system (must be easy to use and provide a good user experience); File explorer (with sharing of 3D models, shaders and media); Editor for editing code, XML, effect files, shaders, etc.; Documentation and knowledge base systems; Basic Web tools: Calculator (scientific), Notepad, Settings, etc.; and Advanced Web tools: View 3D models (Flash/Silverlight/GX).



Figure 1. GameDev OS screenshot.

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D7 Sintef Medical Technology – Frank Lindseth

Title: Development of a real-time training simulator for medical ultrasound imaging
Customer: SINTEF
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The introduction of small and inexpensive ultrasound scanners will increase the use of ultrasound within a variety of medical fields. A potential consequence is that users with little experience in acquisition and interpretation of ultrasound images will be operating these scanners. These users will need efficient training. In several clinical applications it is not feasible to use actual patients for large scale training, such as in trauma where ultrasound can be used for detecting internal bleeding. Use of ultrasound training simulators is recognized as an interesting alternative for learning basic skills. An ultrasound simulator uses a model of human anatomy to generate realistic ultrasound images in real-time based on user input.

Methods for ultrasound simulation have been developed in collaboration between several SINTEF departments, NTNU, St. Olav's Hospital and a commercial company. To explore new potential areas and applications for the simulation methods, the objective for this project is to **develop (and implement) a real-time ultrasound simulator as a desktop application, integrating the simulation methods with a force-feedback haptic device**. Because real-time simulation of realistic ultrasound images is computationally demanding, an interesting task would be to investigate the potential of using GPU for efficient processing. In addition to the haptic device, efficient GUIs and visualization of anatomy and images are important. The simulator could serve as a framework for research into new simulation methods, and for demonstration and potential later commercialization in cooperation with other partners.

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D8 Fundator/NTNU – Per Hovde

Title: Open digital learning system (DLS) at NTNU

Customer: Fundator / NTNU

A new intranet, Innsida 2.0, is currently being developed at NTNU. Innsida 2.0 is based on the principles and practices of Web 2.0, and the open source Liferay Portal system. The Learning Management System (LMS) currently in use at NTNU, It's Learning, cannot be integrated with the current intranet. The objectives of this project are to identify the real values of a digital learning system (DLS) to students and professors and to describe how the core functionality of a DLS can be integrated with Innsida 2.0. Among the tasks in this project will be the creation of a prototype illustrating this integration.

The project comprises the following tasks:

1. Draft a requirements specification for the DLS based on interviews with users of such a system, i.e. students and professors, to identify the core functionality of a DLS.
2. Agree on a strategy for realizing the core functionality, as outlined in the requirements specification (ref. 1. above), which addresses how this functionality can be integrated with Innsida 2.0 and Liferay.
3. Create a prototype which realizes (some of) the core functionality, and integrate it with Innsida 2.0.

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D9 Sintef ICT – Anders Kofod-Petersen

Title: Handheld client for heart monitoring

Company: SINTEF ICT

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Remote monitoring of patients suffering from chronic diseases is a fast growing area. We at SINTEF have developed a system for monitoring heart function. As part of this system, we have designed and developed a belt for measuring health data on the patient. This belt is connected (wireless) to a mobile phone, which can gather data and transmit it to a server. The current implementation is on Windows mobile in C#.

This project requires a porting of the C# code to the Android platform. Including development of new, relevant components.

The project is based on knowledge of the following areas:

- Service Oriented Architectures (SOA)
- Web-services
- Android 2.x
- Bluetooth

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