E-COMMERCE - project course

1DL350, 10.0 credits

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Agenda for lectures, assignments and e-commerce project

http://www.it.uu.se/edu/course/homepage/ehandelprojekt/vt13/

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Personell (electronic commerce project)

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Preliminary course contents

• Course introduction
  – agenda
  – overview of e-commerce technology

• Lectures on suitable topics from the e-commerce area and web technology or other related topics
  – by me and assistants

• Student presentations

• Assignment
  – introducing technology for project (NetBeans IDE, web server (Apache), database (MySQL), server-side scripting (PHP), client-side scripting (Javascript), etc.)
  – deployment of web application (can be set up in project room in department)

• Group project (forming groups, developing business model, specification, design, development, testing, deployment)
  – i.e. to develop a multi-tiered e-commerce web application
  – project documentation, reporting and demonstration

• Project examination - grades U, 3, 4 & 5.
Homework

• Prepare for your project by:
  – Choosing a group and emailing the names, ssn, emails and skills to the assistant together with info on initial project leader
  – If you cannot find a group send your personal info, listed above, to assistant to get help forming a group
  – Discuss possible ideas for your project. Browsing the web might get you some ideas.
  – Discuss possible business idea in terms of how to earn money, possible advantages/disadvantages with your idea
  – Go to assignment seminar
  – Do assignment
  – Go to project seminar
  – You are ready for project
Resources

• Course web site:
  – Main course page
  – Assignment page
  – Project page
  – You’ll also find
    • links to software required for the assignment
    • links to related material and interesting articles
  – Lecture notes
    • will be made available on the course web site

• Web resources (tools, tutorials, example code, etc)

• Literature
  – Online material on the course web page
  – A book that introduces web technology: Ince (2002) Developing distributed and e-commerce applications, Addison-Wesley, 0-201-73046-4
    • a good overview of web-based systems (not just Java-based), but light on technology
Your E-commerce project

• Develop an e-commerce web application of your choice

• Suggested tools:
  – NetBeans IDE, MySQL, Apache, PHP, Javascript
  – … or possibly choose your own combination

• Important!!!
  – Academic honesty
  – Personal contribution
E-commerce project milestones

- **Week 12**
  - Lecture - course introduction
  - Students should form groups and start to write Business + Project plans

- **Week 13**
  - Initial project meeting (each group [30 min]). Students should bring their Business + Project plans to this meeting for discussion.

- **Week 14**
  - Easter break

- **Week 15**
  - Lecture - intro to web-based systems
  - Tutorial (Netbeans, PHP, JavaScript, MySQL, TDD [1 h])
  - Assignment (Netbeans, PHP, JavaScript, MySQL, TDD [2*4 h])

- **Week 16**
  - SCRUM meeting (each group + TT/ [10 min]). During SCRUM meetings, we might detect the need of a more in-depth discussion of some aspects. Then, the group should agree on a time slot during Office Hours.

- **Week 17**
  - SCRUM meeting (each group [10 min])

- **Week 18**
  - Mid term presentation (each group [30 min])

- **Week 19**
  - Students are expected to continue SCRUM meetings without supervision. Students may request office hours.

- **Week 20**

- **Week 21**
  - First draft of final report due

- **Week 22**
  - final presentation (each group 30 min)
  - final meeting + final report (each group 30 min)
E-commerce project …

• Business & project plan:
  – Description of the business case
    • ”How will you make money?”
    • Pros & cons
  – A system architecture
    • ”How will it work?”
    • Must include: ER diagram, Use cases & Description of user interface
  – An implementation plan
  – Project time plan

• Mid term report:
  – to follow up on your progress

• Final presentation:
  – … of your project and demonstration of a working solution

• Final report:
  – The business case
  – A description of the system
Lecture topics

• My lectures
  – Intro to e-commerce
  – Architectures and web servers
  – Web server frameworks
  – Security
  – (ER modeling, Databases, Relational model, SQL and DB API’s – now a prerequisite)

  – Student presentations
  – Project presentations
Web based technologies ...

- Html, Xhtml, XML, HTML5, CSS, Xslt
- JavaScript, Applets and client side programming
- SSI, CGI, SCGI, FastCGI
- JavaServer Pages (JSP), Java Servlets and server side programming
- ASP/ASP.NET
- Perl, PHP, Python, Ruby, Tcl
- JDBC and DB API’s
- Java DB (Derby)
- LAMP (Linux, Apache, MySQL and PHP)
- Apache & Tomcat
Web based technologies cont. …

- Semantic web, Web services, WSDL, SOAP, Document Object Model (DOM)
- Google web toolkit, JavaServer Faces, Struts, Tapestry
- Ruby on Rails, WebObjects, Catalyst, Django
- Web 2.0, Ajax Programming
- Semantic web, Web services, WSDL, SOAP, Document Object Model (DOM)
- NetBeans
- Data persistence, concurrency & transactions
- Architectures & case studies
- Java EE & Enterprise Java Beans, GlassFish, etc.
Preliminary grading of the course

- **Assignment 5%**
- **Project 95%**
  - forming group & providing project idea 5%
  - project plan 10%
  - mid term evaluation 10%
    - Report
    - presentation quality (story from 1st to last)
    - time (compare with plan)
    - Content
    - level of complexity
    - data model
    - use cases
    - test cases
  - final presentation 10%
    - presentation quality
    - technical content
    - effort made
  - final group discussion 10%
    - presentation quality
    - technical content
    - effort made
  - project 40%
    - Report
    - time (compare with plan)
    - technical quality
    - technical content
    - level of complexity
    - data model
    - use cases
    - test cases
  - student presentation 10%
Mid-term project evaluation

- In the midterm evaluation you will present your project and the current status and future plans for finalizing your project. We might ask questions about various topics such as:

1. Presentation of the idea and business case
2. Overall design of the system
3. Data model
4. Use cases
5. Test cases
6. Working prototype
7. User interface
8. Present project status. Compare to project plan.
9. Plan for the rest of the project. Any changes of the initial plan?
10. Talk to us about how you divided the work between each other, how project communication, administration and group work is progressing.
11. Additional technical aspects such as security, error handling, code management and revision control, bug control, etc.
12. Encountered problems?

Note! similar questions will be asked for the final assessment. Hence, being active at the half time assessment is a good way of preparing for the final assessment.
Final project presentation and evaluation

For the final presentation you should focus on:

1. Presentation of the idea and business case
2. Overall design of the system
3. Data model
4. Use cases
5. Test cases
6. Working prototype
7. User interface
8. Additional technical aspects such as security, error handling, code management and revision control, bug control, etc.
9. You can also present how the project was carried out from an administrative perspective, i.e. how was the work divided, how project communication was handled, project administration, etc.
10. Encountered problems?
11. Present project status - compare to project plan.
12. Demo

For the final group discussion we are going to discuss your project a bit more in detail when it comes to:

1. Overall design of the system
2. Data model
3. Use cases
4. Test cases
5. Error handling
6. Security
7. User interface
8. Code management and revision control, bug control, etc.
9. What is missing
10. The project work
11. Administration
12. Final report
13. Lessons learned …
Final e-commerce project report

• In the final evaluation you should hand in a project report.


• The suggested structure cover:

  • Title page
  • Abstract
  • Ch 1: Introduction
  • Ch 2: Background
  • Ch 3: Problem description and statement
  • Ch 4-6: The core of the report (in this case e.g. requirements specification, design, implementation, results, evaluation.
  • Ch 7: Related work
  • Ch 8: Conclusion
Introduction to E-commerce and Web-based systems

Darell Ince, ch 1

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Now – thinking out of the box!
Examples of some successful e-commerce applications (1)
Examples of some successful e-commerce applications (2)
Examples of some successful e-commerce applications (3)
Examples of some successful e-commerce applications (4)
Examples of some successful e-commerce applications (5)
Examples of some successful e-commerce applications (6)
Examples of some successful e-commerce applications (7)
Examples of some successful e-commerce applications (8)
Examples of some successful e-commerce applications (9)
Examples of some successful e-commerce applications (10)
Examples of some successful e-commerce applications (11)
Examples of some successful e-commerce applications (12)

There are more than 15,000 apps on the App Store, and so far iPhone users have downloaded an incredible 500 million, in every category from games to business.
Examples of some successful e-commerce applications (13)
Examples of some successful e-commerce applications (14)
Examples of some successful e-commerce applications (15)
Your e-commerce project constraints
Your e-commerce project constraints

Think Different!
A Quick 5-minute exercise

- Imagine having to build a large e-commerce site such as Amazon or eBay.
- Write down 5 major requirements of any such site.
A Quick 5-minute exercise

- Imagine having to build a large e-commerce site such as Amazon or eBay.
- Write down 5 major requirements of any such site.
  - secure purchase & secure site
  - robust & easy to use
  - fast (enough)
  - scaleable
  - customized experience
  - internationalization and localization (i18n & L10n)
Technical Issues for E-commerce architects

- Security in all its forms
- Transactions & replication
- Coping with stateless HTTP protocol
  - User-tracking
- Dynamic pages
- Speed of development/change
- Division of labour:
  - graphics designers, programmers, business types
- Factoring the processes: tiers
- Support for data warehousing
A question

- Q: What distinguishes an e-commerce system from any other large system deployed on the web?
A question

• Q: What distinguishes an e-commerce system from any other large system deployed on the web?

• A: Not much.
  
  – Such sites must be secure, robust, scaleable, etc…
Enterprise computing

• Most of the aforementioned concerns apply to the architecture of any enterprise level solution
• Enterprise systems include those for e-commerce, but also denote
  – Internal, web-enabled, systems
  – Systems with no element of “commerce” as it is usually understood
• Technologies discussed in this course applies to enterprise-level systems, not simply those involving e-commerce
What isn’t here

- Design
- Multimedia delivery
- Hosting
- Mobile internet
- Management
- Ethics, as e.g.
  - Is it a good thing that Hotmail has access to the personal messages of 100 million inhabitants of the globe?
  - Is it a good thing that Google have histories of browsing patterns?
  - Is it a good thing that Ebay have access to millions of trading details?
How money is being made on the net

• In principle...
• Caveat!
  – some of the information in the following slides may not be up to date, given the rapid development of the internet
  – exercise: try to find out the latest figures for each technology so you can gauge the rate of change!
Current e-commerce models

- Brokerage
- Advertising
- Infomediary
- Merchant
- Affiliate
- Community
- Subscription
- Utility

– Source: Hardaker & Graham (2001) p22
Brokerage

- Bring buyers and sellers together
  - Can be B2B, B2C or C2C
- Usually charge fee for transaction being brokered
- Many forms:
  - virtual malls
  - portals eg Yahoo
  - auction eg eBay
  - common services eg zShops (Amazon)
  - buyer aggregator
  - reverse auction: “name-your-price”
Example: eBay

- Pioneered auction model in 1995
- 62 millions users
- 10 million unique auctions in progress at any time
- In UK alone, 150m pounds changed hands in Q4 2002
- Est. 40000 given up jobs to become eBay traders
- One of most profitable ecoms
Example: Cybersettle

- Settles disputes online, without lawyers
- Each member of dispute enters 3 settlement bids (high, medium, low) without knowledge of the other party’s bids
- If any pair of bids is within 30%, the mean is paid as settlement
- Continues until settlement
Advertising

• Since the web started as a publishing medium, advertising was the early (and obvious) business model
• Traditional CPM (cost per 1000 model) used in eg TV is becoming redundant
• Focus on narrowcasting via intelligent software agents
Example: hotmail.com

- Pioneer of viral advertising
- Largest web-based email company (launched 96, acquired by M$ in 98)
- Fastest growth of subscriber base of any company in history
- Spent only $500,000 on advertising (5% of competitors’ costs) in 2 years
Infomediary

- Collects and markets information to other businesses (to aid narrowcasting)
- Syndicators: sell capability rather than content eg Amazon zShops use Amazon ordering system

<table>
<thead>
<tr>
<th>Type of site</th>
<th>Information collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommender eg deja.com (now owned by Google), ePinions</td>
<td>Users’ opinions about products</td>
</tr>
<tr>
<td>Free content</td>
<td>Users’ registrations details and site usage patterns</td>
</tr>
</tbody>
</table>
Merchant model

- Selling goods and services online
  - Existing wholesalers and retailers ("e-tailers"): clicks & mortar, sometimes aggregated into malls
  - Virtual merchant eg Amazon
- Shopping trolley technology
  - Standard steps: find, add to trolley, checkout
  - Additional options: track shipping, cancel before dispatch
- E-wallets
Affiliate model

- Site offers financial incentives (usually % of revenue) to affiliates for any sales generated from affiliate sites
  - Pay-per-click
  - Pay-per-lead
  - Pay-per-sale
- Generates estimated 15-18% of sales
- Affiliates typically receive 7-15% commission
- Affiliate solution providers (eg tracking) are infomediaries
  - Linkshare.com
Example: Amazon.com

- Pioneered affiliate model in 1996
  - attempting to patent model
- 900,000 affiliates in 2003
- Pays up to 15%
Subscription model

• Customers pay to access information
  – Wall Street Journal
• Roughly 50% of users say they won’t (ever) pay for content
• Runs counter to most web developments
• Related models
  – subscribe to premium services after hooking users with free, but limited, content
    • e.g. Studyspanish.com
  – Microsubscription
    • e.g. pay for recipe rather than for whole cookery book
Utility model

- Pay-as-you-go (micropayments) as in other utilities such as electricity, phone etc
- Pay by the byte
- Much touted, but not much in evidence yet, apart from free ISPs which receive revenue from phone company for time online
Summary of business models

- Some are novel
  - e.g. affiliate
- New ones appearing all the time
- Behind webfront, business as usual for many companies, but others are purely virtual
- Have there been some less successful web businesses?
  - Boo.com!
  - Sell groceries