Masters of Computer and Information Sciences

Software Development Methods 409232
Semester 2, 2015

ASSIGNMENTS 1
Case Study Report
Contribution to final marks: 40%

Due dates:

Final Report Due before Fri Aug 28th 11:59pm.

Submission Requirements:
(Electronic submission only. No hardcopy is required. Save the trees!)

- Please include a completed AUT individual assignment cover sheet as page 1 of the submitted document. Include your name and student ID on this page.
- Please have title page as page 2 of your submitted document. Include the paper number and name, the assessment number and name, your name and student ID, the lecturer's name, your topic.
- Please submit the complete document (including the coversheet) to the correct Turnitin link for this assignment, on AUTOnline.
- Please name your final document for submission *yoursurname_yourfirstname_*ass*assignment number_*v*versionnumber* (for example: buchan_jim_ass1_v2)
- Please use an Arial 11 font with 1 line spacing for the body of your written work
- Please put a footer with your name, studentID and the page number and date
- Please have section numbering and headings as signposts for the reader, where appropriate
- Do NOT have a page border.
- Use APA 6th reference formatting for references in the body of your report and your reference list. (APA_6_AUT in Endnote)

Purpose of Assignment
This assignment relates directly to the following course learning outcomes:

- *Describe the emerging challenges in current software development contexts*
- *Describe emerging trends in software development methods and explain the rationale for some of these*
- *Critically assess, compare and contrast the distinguishing features of a variety of software development approaches and methods*
- *Recommend and justify the selection of development approaches, methods and practices across the full range of development activities for different development contexts*

Aim

To understand the set of practices and supporting tool pipeline used by a software development team "in the wild" and the perceived benefits and challenges. The methods should cover the full development lifecycle from requirements discovery to implementation. This will provide a practical comparison for ideas presented in the course and broaden learning. Your insights from this will form the basis for a FICTIONAL case study you will write that illustrates some critical success factors of software development from the perspective of methods and supporting tools.

Instructions

You should consult with an industry expert to get their opinion on what the important software development methods, practices and tools you should learn about.

You can use your own personal contacts or contact your lecturer who may also have some software developer contacts in industry willing to be consulted.

Please be very careful how you phrase your questions directed at the expert, so that you are not prying into any confidential information, but you are seeking their expert opinions. I have provided some example questions to guide you. Feel free to use these.

The expert's answers may need further probing questions if they are not specific enough to answer the curiosity questions listed below.

DO NOT record the conversation without the explicit consent of the industry expert, who may NOT consent.

Example Questions for the Expert

QUESTION: What important software development methods and practices do you think I should understand to be part of a successful development team?

QUESTION: What roles do you think are are needed in a successful software development team?

QUESTION: I have been told that it is important to treat testing as important as coding through using methods like automated regression tests, automated builds, and a test-first approach. What do you think?

QUESTION: We learn about practices like standup meetings, sprint planning and sprint reviews to keep in touch with other team members and the client in some projects. What would you recommend to keep in touch and get feedback during development?

QUESTION: We have been told that you review the team process in retrospective meetings after every sprint and it's ok to experiment with the process and make changes. This is part of continuous learning for the team. What do you think works well to keep the team learning?

QUESTION: There are lots of tools to help with software development methods, like continuous integration tools. What do you think the important tools are to support development team over the development lifecycle?

QUESTION: What do you think the main success factors are, with respect to methods and tools in developing software?

QUESTION: In your opinion, what are the main challenges related to software development methods and tools I should learn about.

Curiosity Questions you want answers for
By the end of the consultation you should be able to analyse what the expert said to understand the organizational and technical practices and tools that they consider important. The following is a list of the curiosity questions to try to have answers for. You can use this as a checklist while you listening to the answers of the more general questions suggested previously.

(1) Describe the expert's ideas regarding the importance of team activities and practices and supporting tools (if any) related to organizational aspects of software development:

How requirements are elicited (discovered)
How shared understanding of requirements (elaboration, clarification) is done
What is done for release planning and scheduling
How the order of features to work on (priority) is agreed on
How the expected effort to develop features is estimated for planning (eg planning poker)
How the progress of the development is monitored
How the team is organised – what roles and responsibilities
How the team keeps in touch with each other
How the team keeps in touch with the client (product owner)
What the team's reaction is to changes in features
Do the team experiment with process and practices
Do the team reflecting and continuously learn

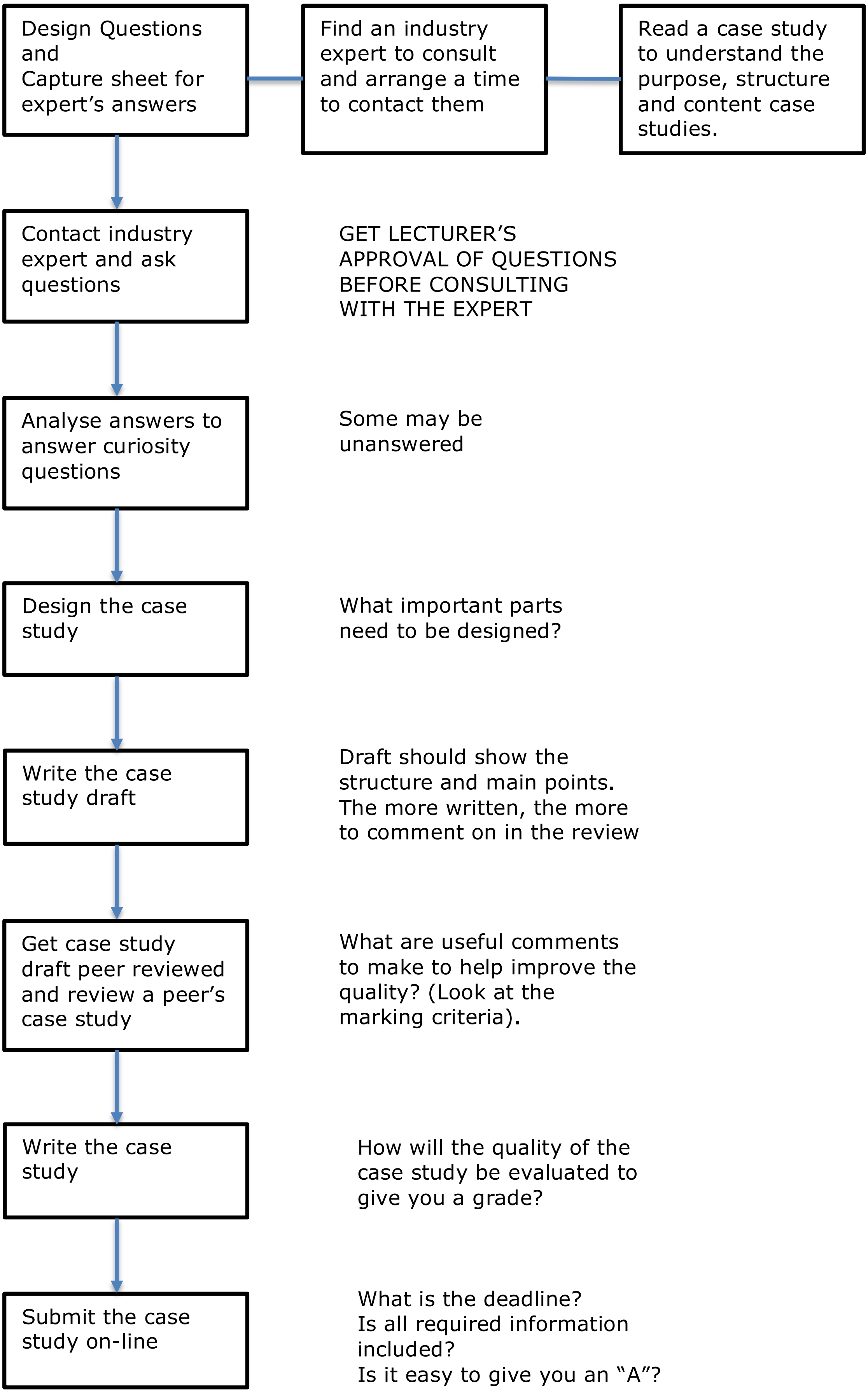
(2) Describe the expert's perceptions of the importance the team activities and practices and supporting tools (if any) related to the technical development tasks:

How iterative and incremental development is done (eg three-week sprints)
How requirements are documented/represented (eg user stories)
How changes to requirements are handled
How testing is done and what levels of testing– unit, regression, integration, acceptance, performance, load. What testing is automated
Is exploratory testing done?
Is test coverage measured
Are any quality metrics (measures) tracked?
Is a test-first approach used?
How is the the build managed– any automation? Frequency of build?
How is Continuous integration achieved?
How are non-functional or quality requirements managed.
What programming languages are used?
Any other important tools?

Figure 1 depicts a plan of the flow of tasks needed to clarify the aim of talking to the expert, capturing the expert's answers, and using insights from those answers to design a FICTIONAL case study to illustrate an important success factor for software development with respect to methods and tools.

It will be useful to add some dates (working backwards from the deadline) as milestones.

You will also find it useful to use Trello (trello.com) to manage this assignment as a project.


Design Questions and Capture sheet for expert's answers
Find an industry expert to consult and arrange a time to contact them
Read a case study to understand the purpose, structure and content case studies.
Contact industry expert and ask questions
Analyse answers to answer curiosity questions
Design the case study
Write the case study draft
Get case study draft peer reviewed and review a peer's case study
Write the case study
Submit the case study on-line

GET LECTURER'S APPROVAL OF QUESTIONS BEFORE CONSULTING WITH THE EXPERT

Some may be unanswered

What important parts need to be designed?

Draft should show the structure and main points. The more written, the more to comment on in the review

What are useful comments to make to help improve the quality? (Look at the marking criteria).

How will the quality of the case study be evaluated to give you a grade?

What is the deadline?
Is all required information included?
Is it easy to give you an "A"?

Figure 1 Suggested Workflow

Deliverable
Write a 5-10 page (A4) FICTIONAL case study (not including the cover pages, reference list and Appendices)

The case study should take into account what the expert said about software development methods and tools and should describe a FICTIONAL software team and the organizational and technical methods and tools used by the team to develop software.

The team should be challenged by some significant aspect of software methods (e.g. regression testing is done manually and takes too long and so is often not done). This should be related to the critical success factors and challenges that your industry expert identified. You should end the case study with recommendations for changes to the team's methods and supporting tools that will address this challenge (e.g. automation of unit testing using Jasmine so regression testing is done automatically with each build).

Table 1 Fictional Case Study Content ans Estimated Relative Effort

Content of the FICTIONAL case study	Approximate **Relative Effort** (Story points)
An ABSTRACT that includes the main findings related to success factors and challenges of your FICTIONAL case (up to 0.5 page)	2
INTRODUCTION and BACKGROUND (1-2 pages)	
The important characteristics of the FICTIONAL organization	2
The nature of the FICTIONAL development team including roles and responsibilities	3
A high-level diagram of the software development process with a brief description	3
THE BODY OF THE REPORT (4-6 pages)	
A description of the methods and supporting tools used throughout the software development process and their purpose. Make the structure of this description very clear.	8
The aspect of software development that the team found challenging and want to address.	5
RECOMMENDATIONS and CONCLUSION (1-2 pages)	
Your recommendation for the team, to address the challenge you identified. Make sure you are convincing in your argument. Reference theory or empirical evidence in literature to support your recommendation.	5
Appendix A Prepared questions you asked the industry expert	3
Appendix B Your industry expert's opinion of the critical success factors and the main challenges in team-based software development	3
Appendix C Your answers to each curiosity question based on the consultaion with the industry expert	5

Fictional Case Study Marking Criteria

Table 2 Marking Criteria

Content (80%)
All aspects of the case study are plausible
The case study relates to the information obtained from consulting the industry expert
Content show some depth of thought, and is more than descriptive
Report represents a reasonable effort
Report covers all content areas required with appropriate depth
Document Presentation (20%)
Document flows well and is well structured, including section headings
Document conforms to the required format and length and is well presented
APA referencing is used throughout the document