Task 1 [5 points]

Retrieve and read the following article:

Answer the following questions:
Q-1 [1 point]:
According to SI's managers, what were the shortcomings of Scrum in SI's development context?

**Answer (sketch):**
They “felt that Scrum was too rigid, didn’t scale, and was unsuitable for maintenance tasks. They also feared that the combination of inaccurate estimates and timeboxes gave longer lead times and what they perceived as “waste,” such as Scrum planning meetings, reduced productivity and quality.” (p. 48, 2nd paragraph)

Q-2 [1 point]:
SI used quantitative and qualitative approaches to evaluate whether Kanban is actually better than Scrum. What data was collected for the quantitative evaluation?

**Answer (sketch):**
Process type PT = {Scrum, Kanban}
Type of work item WI = \{Bug, PBI (Project Backlog Item)\}

Time: Year.quarter = \{2009.1, \ldots, 2011.4\}

Churn = Number of lines added + deleted + modified

Lead time: Number of days from “next” state to “ready for release” state on the board

Production: \#WI developed per quarter (often called “throughput”)

Productivity: Production per developer = throughput/developer

Productivity 2: Total churn per developer per quarter

Quality: Number of weighted bugs with weights: blocking (weight 8), critical (4), moderate (2), and minimal (1)

(Cf. contents of Table 1).

Q-3 [2 points]:
SI measured productivity in two different ways. Give precise definitions of all measures that SI used to measure productivity. Did Kanban perform better or worse with regards to productivity?

Answer (sketch):

Two ways of measuring productivity (cf. Table 1):

Productivity: Production per developer,

- with Production = Number of work items developed per quarter,
- with Type of work item = Bug or Project backlog item (PBI)

Productivity 2: Total churn per developer per quarter,

- with Churn = number of code lines added, deleted, or modified
- and Churn induced either by Bug or PBI

What was better?

For measure ‘Productivity’: when using Bugs, Scrum was better than Kanban; when using PBI, Kanban was better than Scrum (cf. ‘blue line’ (=average) in Figure 4)

For measure ‘Productivity 2’: when using Bugs, Scrum was better than Kanban; when using PBI, Kanban was better than Scrum (cf. ‘blue line’ (average) in Figure 5)

For ‘Productivity 2’ the changes were relatively smaller (in both directions) than for ‘Productivity’, i.e., 15.3 down to 12.1 (-21%) versus 0.46 to 0.41 (-11%), and 5.9 to 10.2 (+73%) versus 1.28 to 1.55 (+21%)

Q-4 [1 point]:
What did SI do to evaluate Kanban versus Scrum qualitatively? What do you think is more important: quantitative or qualitative evaluation? Underpin your answer with arguments.
Note: To be able to answer questions Q-1 to Q-4, you don’t need specific knowledge about Scrum and Kanban.

**Answer (sketch):**

The first author of the paper, the professor of Oslo University, conducted interviews with 4 individuals working at SI, including the head of products operations and the CTO, as well as a team leader and a developer. Each of them was asked about their perceptions regarding Scrum and Kanban.

Both quantitative and qualitative evaluations are equally important. Quantitative evaluation helps to get ‘hard facts’. Qualitative evaluation helps interpreting the ‘hard facts’ properly and adding additional information not captured by the ‘hard facts’

**Task 2 [3 points]**

Download a set of issue reports and conduct an exploratory case study. You may either use GHTorrent (download a daily dump of issues) or have a look at the tera-PROMISE web-page: [http://openscience.us/repo/defect/bug-reports/](http://openscience.us/repo/defect/bug-reports/)

*Do the following:*
- Define a research goal and associated research questions
- Retrieve a set of issues
- Analyze the issues with regards to your research goal (i.e., what is the answer to your research question(s))
- Visualize and present your results

**Task 3 [2 points]**

Give a presentation (7-10 min) in the next lab session. Your peers will assess your presentation according to the following criteria:

- Clarity and flow of presentation
  - very bad -- 0 0 0 0 0 -- very good
- Depth of analysis
  - very bad -- 0 0 0 0 0 -- very good
- Appropriateness of visualization
  - very bad -- 0 0 0 0 0 -- very good
- Timing
  - very bad -- 0 0 0 0 0 -- very good

Not giving feedback to your peers will give you a penalty of 1 point.