Part 1 peer feedback and self assessment

Software architecture 2016–2017

Instructions

Your team is asked to review a part 1 report of **one other team** (peer feedback), as well as **your own** report (self assessment), based on the questions in this document. Your peer feedback will be (anonymously) shared with the team whose report you've reviewed. As a result, you will also receive the feedback of another team on your report. Moreover, you'll also receive the self-assessment of the team you've reviewed (and another team will receive your self-assessment), so you can compare the feedback you've given to your peers with their self-assessment. Your commitment to reviewing the other report, and the reflections on your own report, will influence your **part 1 grade** — positively or negatively.

Keep in mind that reviewing is often subjective; therefore, clearly (but politely) explain your opinion. Be constructive (e.g., "I think a better solution would have been ..."), and also highlight the positive points that you've encountered ("I liked ...").

Practical

The report you should review can be downloaded from the **File exchange** module of your Toledo group. You'll also find a template `.txt` file there, with an entry for each of the numbered questions below and instructions on how to fill it in. At the end, there are some overall rating questions and open questions in which you can provide more general comments as well.

Fill out the template twice (once for the peer report, once for your own) and use the corresponding assignment on Toledo to **submit** both reviews. The deadline for this is **Friday April 21** (noon).

1 Domain model

Use the *domain model, constraints and glossary* to verify whether the following questions can be answered. Respond with one of the following: `0`: *No (no explanation necessary)*; `1`: *Partially (Yes, but...; explain the problem)*; `2`: *Yes (summarize/point to the evidence)*; or `NA`: *Unclear or impossible to assess (explain why)*.

- *Q1*: Is there at least one attribute (e.g., the customer organisation name)?
- *Q2*: Is there a relationship between an infrastructure owner and the customer organizations for which it manages the infrastructure?
- *Q3*: Are devices (gateways, motes, network managers, sensors, actuators, etc) identifiable (e.g. gateway identifier)?
- *Q4*: Are devices (gateways, motes, network managers, sensors, actuators, etc) uniquely identifiable (e.g. by means of a constraint)?
- *Q5*: Is a gateway owned by a single infrastructure owner?
- *Q6*: Is there a distinction between sensors and actuators?
- *Q7*: Is 'measurement data' ('sensor data', 'raw data') produced by a sensor (of a certain type), and do they have a value, measurement unit and a timestamp?
- *Q8*: Are the three distinct types of messages produced by sensors/motes modeled explicitly (data, heartbeat, device (dis)connected)?

- *Q9*: Is it possible to determine whether a device (sensor, actuator, gateway) is installed and active, or still available for purchase (e.g., via the hardware store) and not yet active?
- *Q10*: Are the possible actuation actions/commands supported by an actuator modeled explicitly?
- *Q11*: Can actuators possibly offer more than one or two such actions (e.g. more than toggling)?
- *Q12*: Is it possible to represent specific actuation actions/commands? (is it for example possible to derive when the command was executed, for example, through a timestamp attribute?)
- *Q13*: Does an actuator have state (e.g. is the buzzer on or off?)?
- *Q14*: Does the domain model represent the correlation between an actuator command that was sent and the (expected) state of the actuator? (e.g. command was sent to turn the lights on, lights are actually on)? (This could for example be accomplished with a constraint).
- *Q15*: Is there a logical path from the customer organization and/or infrastructure owner to the installed devices?
- *Q16*: Is the distinction between notifications and alarms made explicitly (e.g. separate domain concepts, importance/urgency attribute)?
- *Q17*: Can notification/alarms be delivered to the end-user via e-mail, SMS, and/or via a mobile app?
- *Q18*: Does an application have a status that is related to development and deployment (e.g., needs testing, pending review, approved, rejected)?
- *Q19*: Does the domain model make clear distinction between a SIoTIP application and a mobile app(lication)?
- *Q20*: Is the relation between these two domain concepts clear (a mobile app is part of a SIoTIP application)?
- *Q21*: Is there a way to represent different subscriptions to (or 'instances' of) a single application, i.e. one for each involved customer organisation (e.g. this could be represented as an application 'configuration', 'subscription' or 'instance')?
- *Q22*: Is it possible to derive the *duration* (or the start date) of such an application subscription (e.g. for billing purposes)?
- *Q23*: Does an application subscription (or 'instance') have a status? (e.g., activated vs. deactivated/suspended)?
- *Q24*: Are there constraints that explain when an application subscription (or 'instance') has to be (de)activated?
- *Q25*: Is there a way to model different versions of the same SIoTIP application?
- *Q26*: Can different customer organizations be subscribed to different versions of the same SIoTIP application (e.g. during an upgrade)?
- *Q27*: Do SIoTIP application requirements include constraints on the topology relations in which those hardware elements are involved (e.g. the door lock or power socket actuator and the smart card reader must be installed at the same door)?
- *Q28*: Are 'topologies' covered in the domain model?
- *Q29*: Is there a way to represent relationships between devices that are based on physical surroundings (e.g. in the same room)?
- *Q30*: Is there a way to model that an appropriate replacement sensor exists for a specific sensor (i.e., a sensor that can take over when that particular sensor fails)?
- *Q31*: Is there a way to derive the entire set of devices that may be used by one specific customer organization (i.e. their own devices, those of the infrastructure owner (via access rights), and (in some cases) those of surrounding customer organizations)?
- *Q32*: Does the report explain (through specialization, instantiation, or explanation in text or the glossary, for example) how at least one concrete application and its relations and constraints fit in the provided abstractions?
- *Q33*: Do the domain constraints refine or strengthen associations between concepts that are actually present in the domain model (in terms of cardinality or conditionality)?

2 Use cases

Answer the questions about the *use cases* with one of the following: `0`: *No (no explanation necessary)*; `1`: *Partially (Yes, but...; explain the problem)*; `2`: *Yes (summarize/point to the evidence)*; or `NA`: *Unclear or impossible to assess (explain why)*.

- Is the following behavior covered by a use case (or a subset thereof)? (You may need to do some inference based on the use case titles and summaries to answer this question for use cases that have not been written out in full)
  - *Q34*: Installing a mote
  - *Q35*: Heartbeats being sent to the system
  - *Q36*: Plugging in a new sensor/actuator
  - *Q37*: A customer organization subscribing to a SIoTIP application
  - *Q38*: An infrastructure owner performing topology configuration
  - *Q39*: An infrastructure owner providing access rights to devices
  - *Q40*: A sensor/actuator sending a measurement to the system
  - *Q41*: Actuation commands being sent from an application
  - *Q42*: Changing the configuration of a sensor/actuator
  - *Q43*: The sending of a notification (or alarm) to an end-user
  - *Q44*: Adding/creating a SIoTIP application
  - *Q45*: Upgrading/updating a SIoTIP application
  - *Q46*: Testing a SIoTIP application
- *Q47*: Do you agree with the selection of the most relevant use cases written out in full?
- *Q48*: Did you spot inconsistencies between the textual use cases and the use case diagram (at least the use case name, the involved actors, the role of the system, and use case relationships such as 'includes' or 'extends')?
- *Q49*: Do the textual use cases *insufficiently* describe interactions between an external actor and the system itself (i.e., the system is not involved in the scenario from the beginning until the end)?
- *Q50*: Is the system itself (or one of its subsystems such as the gateway software) wrongly included as an actor in the use case diagram?
- *Q51*: Is an application an actor in the use case diagram? (i.e., is there at least one use case where an application is the primary actor?)
- *Q52*: Is an application developer or application provider an actor in the use case diagram (e.g. for pushing out an upgrade)?
- *Q53*: Is there at least one use case with a failure path (alternate scenario), e.g. describing the degradation behavior after a system failure or a timeout)?
- *Q54*: Are there inconsistencies between the terminology/concepts used in the use cases and the domain model?

3 Quality attribute scenarios

Answer the questions about the *quality attribute scenarios* with `0`: *No (no explanation necessary)*; `1`: *Partially (Yes, but...; explain the problem)*; `2`: *Yes (summarize/point to the evidence)*; or `NA`: *Unclear or impossible to assess (explain why)*.

- *Q55*: Do you agree with the selection of quality attribute scenarios from an external perspective (that is, are these the availability, performance, usability or modifiability scenarios that may have most impact on the business?)
- *Q56*: Are these scenarios sufficiently concrete, i.e., is it clear to you what happens exactly in the scenarios?
- *Q57*: Are explicit references made to some use cases (e.g., in the 'Stimulus', 'Response' or 'Response measures')?

- **Availability**
  - *Q58*: Do the *availability* responses make sense, and are they measured with suitable metrics (e.g., uptime, mean time between failure, etc.)?
  - *Q59*: Is there an availability scenario for at least one of the following issues: (i) failure of an internal component of the Online Service (e.g. a database node), (ii) availability of the communication channel between the gateway and the Online Service, (iii) failure of a microPnP device (actuator, sensor, mote), (iv) application failure/crash.
- **Performance**
  - *Q60*: Do the *performance* responses make sense, and are they measured with suitable metrics (e.g., throughput, latency, etc.)?
  - *Q61*: Is there a performance scenario that is related to at least one of the following issues: (i) limited resources on the gateway, or (ii) handling of sensor data, (iii) number of concurrent applications, (iv) timely delivery of alarm notifications?
- **Modifiability**
  - *Q62*: Do the *modifiability* responses make sense, and are they measured with suitable metrics (e.g., time (man hours), economic cost, etc.)?
  - *Q63*: Do the modifiability scenarios describe changes to the system itself (code/functionality, deployment, ...), rather than changes to the state of the running system (adding new users, storing new data, ...)?
- **Usability**
  - *Q64*: Do the *usability* responses make sense, and are they measured with suitable metrics (e.g., tasks/seconds, human errors made, etc.)?
  - *Q65*: Is one of the usability scenarios focused at the application developer/provider, as a refinement of the high-level goal of *easy development*?

4 General

Provide general feedback about the report. Use the following as five-point scale: `1`: *Problematic*; `2`: *Insufficient*; `3`: *Satisfactory*; `4`: *Good*; `5`: *Excellent*; or `NA`: *Unclear or impossible to assess*, and give a short explanation for your scores.

- *Q66*: Rate the **domain model** as a whole on the five-point scale.
- *Q67*: Rate the **use cases** as a whole on the five-point scale.
- *Q68*: Rate the **quality attribute scenarios** as a whole on the five-point scale.
- *Q69*: Rate the **overall quality of the report** on the five-point scale. Things to take into account are:
  - Is the report easy to read and navigate?
  - Are diagrams easy to read?
  - Does the report only contain important information, i.e., it is no longer than it needs to be?
  - Is the report consistent in its terminology?
- *Q70*: *(open question)* In summary, do you think that this report would be a good starting point for part 2 of the project? That is, do you think it is a good replacement of the textual description? If so: why? If not: what should be improved?
- *Q71*: *(open question)* Do you have other comments or suggestions for the authors of the report?