Part 1 peer feedback and self assessment

Software architecture 2018–2019

Instructions

Your team is asked to

1. review a part 1 report of **one other team** (peer feedback)
2. review **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 (at a later time) also

1. receive another team's **feedback on your report**;
2. 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 ...").

Note that this is **not a grading exercise**, and the answers to the questions below will not necessarily be a reflection of the quality, 'correctness' or 'completeness' of the analysis of SIoTIP's non-functional requirements.

Practical

The report you should review can be downloaded from the **File exchange** module of your Toledo group. Start by **numbering** each ASR in the tree from top to bottom, so you can easily refer to them.

You'll also find instructions to obtain a **template** `.txt` file on Toledo, with an entry for each of the numbered questions below and instructions on how to fill it in. At the end, there is an open question in which you can provide more general comments as well. The templates will be **parsed automatically**, so strictly adhere to them.

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 **Wednesday March 20** (noon).

1 Utility tree

Answer the following questions about some ASRs hinted upon in the assignment with `0`: *No (no explanation required)*; `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 an ASR related to failure of an internal component of the Online Service, e.g. a database node (links to Availability)?
- *Q2*: Is there an ASR related to availability of the communication channel between the gateway and the Online Service (links to Availability)?
- *Q3*: Is there an ASR related to failure of a microPnP device (actuator, sensor, mote) (links to Availability)?
- *Q4*: Is there an ASR related to failure/crash of an application (links to Availability, Security)?
- *Q5*: Is there an ASR that exploits the topology relations (e.g. location-based, or property-based) of some sensors/actuators to double-check the correct functioning of sensors or actuator? (links to Availability)?
- *Q6*: Is there an ASR that deals with updated applications and co-existing versions of the same application in the system (links to Usability, Performance, Availability)?

- *Q7*: Is there an ASR related to limited resources on the gateway (links to Performance)?
- *Q8*: Is there an ASR related to end-to-end handling of sensor data (links to Performance)?
- *Q9*: Is there an ASR related to the number of concurrent applications (links to Performance, Scalability)?
- *Q10*: Is there an ASR related to timely delivery of alarm notifications (links to Performance)?
- *Q11*: Is there an ASR that deals with large numbers of devices; i.e. scaling up to many customers, dealing with peaks and is focused at the Online Service (links to Performance, Scalability)?
- *Q12*: Is there an ASR related to getting feedback and support for testing and debugging of applications aimed at the application developer/provider (links to Usability)?
- *Q13*: Is there an ASR related to topology configuration or topology management aimed at the infrastructure provider (links to Usability)?
- *Q14*: Is there an ASR about shielding applications from lower-level device logic (e.g. specific device ids, device failure, device-specific commands) (links to Usability, Portability, Availability)?
- *Q15*: Is there an ASR about shielding applications from communication logic (e.g. finding specific gateways, formatting messages for specific channels, dealing with channel failure) (links to Usability, Portability, Availability)?
- *Q16*: Is there an ASR related to adopting different sensor technology than MicroPnP (links to Interoperability, Modifiability, Portability)?
- *Q17*: Is there an ASR related to supporting new devices with similar capabilities than those already taken into account (e.g. new temperature sensor, measuring in Fahrenheit instead of degrees Celsius) (links to Interoperability, Modifiability, Portability)?
- *Q18*: Is there an ASR related to introducing support for sensors or actuators that are fundamentally different than those already supported (i.e., those listed in Table 1 of the assignment), for example measuring other physical properties, or supporting actuation commands that are not purely binary (links to Modifiability)?
- *Q19*: Is there an ASR related to the architectural impact of testing applications (e.g. isolating applications, sandbox environment, imposing constraints on applications) (links to Testability, Usability, Availability, Security)?
- *Q20*: Is there an ASR related to sensors/actuators that have been tampered with (e.g. spoofing a sensor, adding unknown devices to a mote, or moving devices around deliberately) (links to Security)?
- *Q21*: Is there an ASR related to tampering with the Gateway (links to Security, Availability)?
- *Q22*: Is there an ASR that focuses on confidentiality of data in transit (e.g. between GW and OS, or between application parts) (links to Security)?
- *Q23*: Is there an ASR related to untrusted application code (e.g. an application accessing actuators that it should not access) (links to Security, Availability, Safety)?
- *Q24*: Is there an ASR that deals with competing or conflicting applications, and unstable situations (e.g. two applications issue conflicting commands such as opening the door versus closing doors)? Does it take into account the notion of mission-criticality/priority of an application (links to Security, Availability, Safety)?
- *Q25*: Is there an ASR about working correctly with microPnP technology (links to Interoperability)?
- *Q26*: Is there an ASR about delivery of notifications or alarms through different channels such as SMS, push notifications to mobile devices, etc (links to Interoperability)?
- *Q27*: Is there an ASR about purchasing devices via the platform (links to Usability, Interoperability)?

2 ASR quality

For each ASR *i* in the Utility Tree, answer the following questions with `0`: *No (Explain what is unclear)*; `1`: *Partially (Yes, but...; explain the problem)*; `2`: *Yes (no explanation required)*; or `NA`: *Unclear or impossible to assess (explain why)*

- *ASR_i_Q1*: Is it clear to you what the ASR is specifically about? Does the ASR summary hint towards a Response (Measure)?
- *ASR_i_Q2*: Is the argumentation on the **business value** clear (is there a link to a business goal?), and do you agree with the assessment?
- *ASR_i_Q3*: Is the argumentation on the **architectural impact** clear, and do you agree with the assessment?

Quality attribute	Appropriate Response measure metrics
Availability	uptime, mean time between failure, etc.
Performance	throughput, latency
Modifiability	time (man hours), economic cost
Usability	tasks/seconds, human errors made
Interoperability	percentage of successful/unsuccessful information exchanges
Security	time to detect attacks, how much of the system was compromised, amount of attacks resisted, amount of data shown vulnerable during attack
Testability	effort to find a fault, to achieve a percentage of state space coverage, probability of faults being revealed by the next test, test time, length of the longest dependency chain in test, time to prepare test environment, reduction in risk exposure.

Table 1: Examples of appropriate Response measure metrics (from SAiP, *not* exhaustive).

3 Quality attribute scenarios

For each QAS *i* (1 to 4), answer the following questions with `0`: *No (Explain what is unclear)*; `1`: *Partially (Yes, but...; explain the problem)*; `2`: *Yes (no explanation required)*; or `NA`: *Unclear or impossible to assess (explain why).*

- *QAS_i_Q1*: Is this scenario sufficiently concrete, i.e., is it clear to you what happens in all elements of the scenario?
- *QAS_i_Q2*: Do the responses make sense, and are they measured with suitable metrics (cf. reminder in Table 1)?
- *QAS_i_Q3*: Are the responses realistic and feasible given the context of the system, (e.g. limited capabilities of the devices)?

Other questions (`0`: *No (no explanation required)*; `1`: *Partially (Yes, but...; explain the problem)*; `2`: *Yes (summarize/point to the evidence)*; or `NA`: *Unclear or impossible to assess (explain why)*):

- *Q28*: Do the Modifiability scenarios (if any; otherwise answer NA) describe future changes to the system itself (code/functionality, deployment, ...), rather than changes to the state of the running system (adding new users, storing new data, ...)?
- *Q29*: Do some QASs (implicitly or explicitly) refer to functionality/use cases (e.g., in the 'Stimulus', 'Response' or 'Response measures')?
- *Q30*: Do some QASs involve architectural decisions that are not self-evident or explicitly stated in the assignment (e.g., 'Response' or 'Response measures')?
- *Q31*: Do some QASs make mistakes against the system context or make unrealistic assumptions about context elements that are beyond our control?
- *Q32*: Do you agree with the selection of the four QASs from the list of ASRs as the most relevant ones?

4 General

Provide general feedback about the report.

- *Q33*: Rate the **overall result** on the following five-point scale, and give a short explanation for your score: `1`: *Problematic*; `2`: *Insufficient*; `3`: *Satisfactory*; `4`: *Good*; `5`: *Excellent*; or `NA`: *Unclear or impossible to assess*
- *Q34*: *(open question)* Do you have other questions, comments or suggestions for the authors of the report?