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## **E.1 Introduction**

This document contains supplementary specifications for the system described in the vision, requirement, and system architecture documents.

### **E.1.1 Definitions and abbreviations**

See project dictionary.

## **E.2 Architectural Factors**

This section contains descriptions of the identified architecturally significant requirements and suggested quality measures. We also give the current and expected variability on these factors and prioritize and give an assumed risk/difficulty factor.

Factor	Measures and quality scenarios	Variability (current flexibility and future evolution)	Impact of factor (and its variability) on stakeholders, architecture and other factors	Priority for Success	Difficulty or Risk
<b>Maintainability – Modifiability</b>					
Rapid reconfiguration of display layout	A reconfiguration of display layout should take less than 10 minutes, including system reconfiguration.	Current flexibility - We do not know which layouts will be advantageous and being able to rapidly move things around and display concept to drivers should prove positive.  evolution - Requirements may change over time and usage scenario.	High impact on the large scale design.  Important to be able to rapidly test various layouts during development.  Important for potential owners of system to have an easy way of configuring the system.	H	M
Configuration of sensor calibration without compilation of code.	Calibrating an average sensor should take less than 10 minutes.	Current flexibility - Calibration of sensors might change during project.  evolution - Next years vehicle will most likely be utilizing other sensors.	Positive impact on modularity.  Selling point.	M	H

Factor	Measures and quality scenarios	Variability (current flexibility and future evolution)	Impact of factor (and its variability) on stakeholders, architecture and other factors	Priority for Success	Difficulty or Risk
<b>Maintainability – Testability and Modularity</b>					
Automated unit testing of software components	Software components should have a way of testing their interface functionalities through automated unit testing that reports errors.	Current flexibility - Some software components are difficult to test outside of their runtime environment due to different architectures.  evolution - none	Positive impact on modularity.  Provides implicit documentation of features and makes further development easier.	M	L
<b>Portability – Adaptability</b>					
Only low-level components should require re-programming or replacing for use with different network protocols or other hardware environments.	No reprogramming of high-level systems should be required for changing hardware or connectivity.	Current flexibility - Not an issue during prototype development and testing  evolution - Other vehicles might have different low-level hardware and software requirements.	Positive impact on modularity.  Nice selling point for potential system integrators to be able to swap out technology without having to replace bulks of software components, and to be able to support different sensor networks or voltage requirements.	L	M

Factor	Measures and quality scenarios	Variability (current flexibility and future evolution)	Impact of factor (and its variability) on stakeholders, architecture and other factors	Priority for Success	Difficulty or Risk
<b>Maintainability – Reusability</b>					
Rapid reconfiguration of sensor profiles	Creating a sensor configuration should take less than 2 hours for a complete setup.	Current flexibility - Sensors on the test-vehicle won't change much during project, and for the project this only needs to be configured once, then updated in case of any changes.  evolution - If the system is to be installed to other vehicles this should be a process that doesn't require reprogramming of high-level components.	Impact on the large scale design.  Provide value for next years Revolve team and provide a good platform for further development.  Nice selling point for potential system integrators to have an easy way of configuring the system and assuring them that swapping out technology doesn't disable the system.	M	H
<b>Performance – Time behaviour</b>					
Processing and displaying data with minimal latency	The system shall be able to display acquired data with less than 200ms delays in at least 90% of the time.	Current flexibility - none  evolution - future hardware might allow longer pipelines due to increased computing performance.	High impact on the system design.  System needs to meet performance requirements. Stale data is not interesting.	H	H