

Thesis Changes Log

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PhD Program: Engineering Systems

Title of Thesis: A Framework for Architecting Federations of Engineering Systems

Supervisor: Professor Alessandro Golkar

Chair of PhD Defense Jury: Professor Clement Fortin

The thesis document includes the following changes in answer to the external review process.

Reviewer Comment 1) The thesis anticipates that the “sharing economy” would be a centerpiece of the work. This is exemplified in only one of the case studies. The introduction could hence be put into a better context with the rest of the thesis.

Author: Agreed. The introduction has been re-organized to better show the focus of the work.

RW Comment 2) The thesis rightfully acknowledges that the developed framework is applicable to exploratory research trade-off phases. It goes too far though when it states that this framework can also be applied to concept phases aimed at demonstrating system feasibility and more. The number of parameters and the level of depth in such phases most of the time goes substantially beyond the possibilities and methods developed in this PhD thesis.

Author: Agreed – pg. 31 scope reduced

RW Comment 3) The example used to explain trade-offs for Earth remote sensing satellites in Fig 4 on page 38 is not representative and could be misleading. Typical Earth (surface) Observation satellites have a spatial ground resolution range from less than 1 to 20 meters and occasionally to some 100 meters.

Author: The example simply intends to be a demonstrative case of a tradespace and does not intend to represent any real case. To avoid giving any misleading information, the dimensions have been deleted in those figures.

RW Comment 4) There are already a number of R&D and operational remote sensing satellite constellations in Earth orbit, e.g. Copernicus, SSTL, SAR Lupe, Prisma, etc, and several new proposed constellations, e.g. OneWebb, Boeing, SpaceX, Telesat et al. Should they not be mentioned in this thesis, in particular since e.g. the 5 satellite constellation SAR Lupe already uses inter-satellite links?

Author: Surely ISL is an existing technology and indeed this thesis assumes it available. In the literature review, a section about existing ISLs and their technology has been added.

RW Comment 5) It is generally not clear where the cost estimates of this thesis come from and how substantiated they are. Please elaborate and clearly differentiate between cost assumptions and cost which originate from real values; provide the sources for both.

Author: Clarifications added to case study of FSS. References emphasized for table 15, 16, 17. Additional annex II created to clarify the assumptions and models in more depth.

RW Comment 6) The thesis could benefit from a list of abbreviations

Author: Added