

EM.413 Opportunity Set 13 - System Architecture
Due Wednesday, February 25, 2026 by 10am EST

*This OS should be completed in your project teams.
Please submit a PDF and note the page limits below.*

Include a cover page with your team number, and the names of team members

1. (10%) Update your list of architectural decisions from OS11, identifying which decisions have already been made, which decisions remain, and any new decisions that may have been identified. Explain each and summarize why your final set of decisions satisfies the problem space (i.e., your SPS). Show your decisions as table (aka morphological matrix) [1 page]
2. (10%) Show three past design solutions (systems that were built and sold) for your problem space, and which options they picked for your architectural decisions. Include, if applicable, the currently available for purchase solution that your system design might improve upon as one of the three. Illustrate each past design solution in the Q1 morphological matrix, to show how the 3 solutions differ based on your architectural decisions. [1 page]
3. (30%) By combining different decision-options, create 5-10 concepts (you can create more, if desired). Choose the two most important metrics (often one type of performance and one type of cost) and create a tradespace (you can keep your cost and performance evaluation high level at this stage, as you will later build a more detailed evaluation model in SE). Explain why you chose these specific metrics to evaluate your concepts. These metrics can be the same or different as the ones you used for sensitivity in OS11. Illustrate the Utopia point and the Pareto Front on your tradespace. Anchor your metrics by grading against the three historical designs from Q2. [2 pages]
4. (25%) Choose one of the concepts generated in Q3. Develop **two different** decompositions of function down to Level 2 (7+/-2 at L1 and ~25-50 at L2). Hint: review the “two down, one up” decomposition approach from SA4 in EM.411). Which decomposition do you prefer, and why? [1 page]
5. (25%) Reflect on the discussion of product platforms as it relates to your project. Do you foresee having to develop a product platform with multiple products (or configurations) to be successful? If so, articulate your platform strategy based on the 8-step framework (the first two columns of the Platform Flight Plan from SA13 and SA14). If not, comment on why one product is more appropriate for your market(s), comment on how the rates of technological change for important technologies used in your system will impact your architectural stability, and how you would approach product / system evolution. [1 page]
6. (0%) Schedule a 30-60 min final briefing with the Sponsor’s organization in May by the time you submit this assignment. The ideal timeline would be before your final

SDM briefing. The intent is to brief more than one person in their organization, and capture their feedback on your recommendations. The briefing can be in person or online. Simply write the date and time of the briefing, as well as the attendees from the sponsor organization, once scheduled, in this OS submission.

References

1. 8 box framework – Lec SA13, slide 19