Massachusetts Institute of Technology

Architecture & Systems Engineering

Week 5: System Architect

Project Portfolio

Name

Tomas Mawyin

Instructions

Before you begin, you should save your Project Portfolio on your local drive. We recommend the following format:

Lastname_Firstname_Course1_Week5

Please note: You will not be able to re-download your file after submission; therefore, please keep this file in a central location for future reference.

While you will begin working in groups again this week, the project deliverable is an **individual submission**. A scoring rubric can be downloaded from the course in the Resources/Downloads tab on the top navigation.

Like the previous two weeks, in Week 5 you will be self-assessing your work as well as the work of three peers in the class. If you have any questions, feel free to start a thread in the Discussion Forum. Although work is strictly individual, sharing ideas and concepts with other students is encouraged.

Note: edX has a 10MB file size limit for document submission. If you have selected large image(s), you may need to resize before submitting, OR you may simply include a web URL for the image in the image location. Be sure to submit your assignment at least one hour before the deadline to provide time for troubleshooting.

Once the deadline passes, you will not be able to upload the document and therefore will not be able to submit and complete the assignment.

Peer assessment is limited to 300 characters.

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Week 5 Project

Overview

In the fifth and final project activity of this course, your team will step up and view the system from the role of the architect. The steps to the right will guide you through this process.

Note that some Scratch Pages are included at the end of this document for you to capture any ideas, sketches, etc. that you have as you work through the project. These will not be assessed and you are not required to submit them with your project (but you may do so if you think they offer any additional insight into your thinking process!).

REQUIRED STEPS:

Step 1: Develop the system architecture.

Step 2: Identify sources of ambiguity.

Step 3: Identify deliverables of the architect.

Step 4: Review and submit your project.

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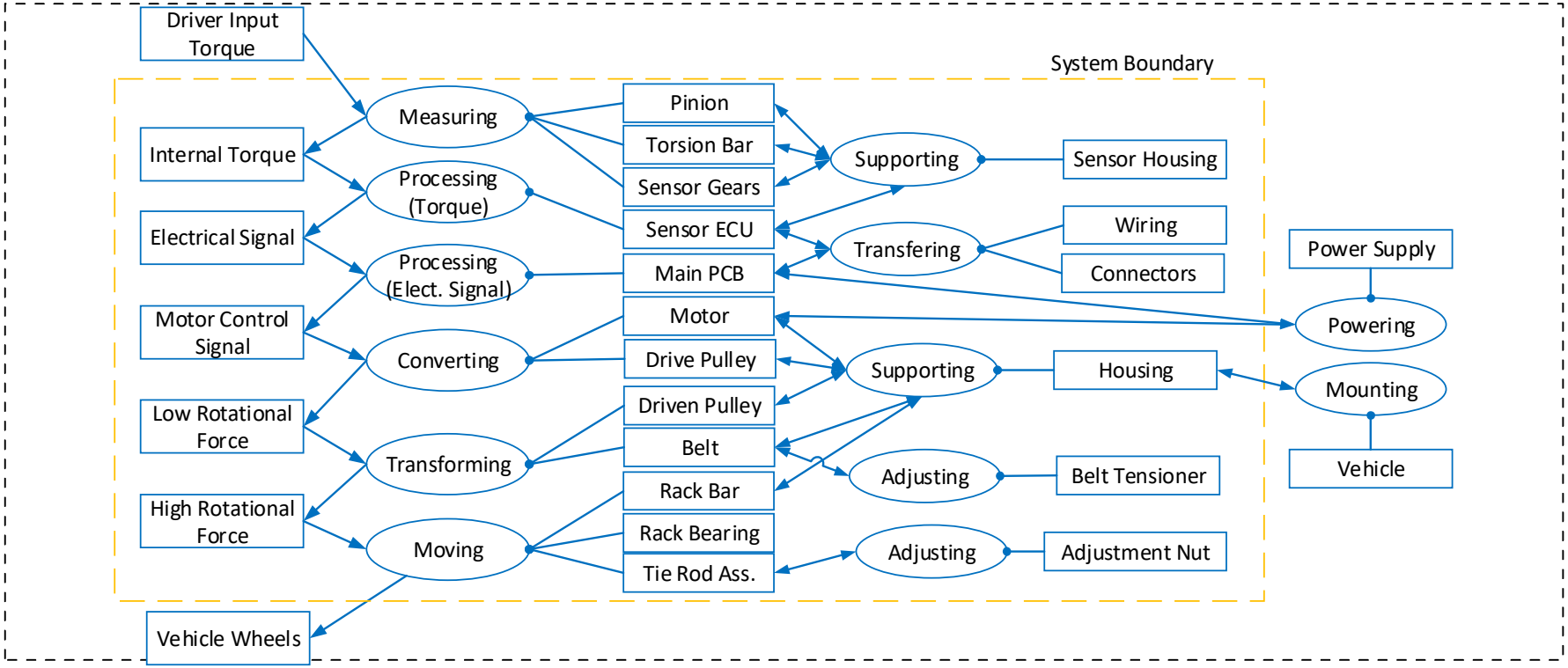
STEP 1: ARCHITECTURAL REPRESENTATION

For your chosen system, develop the system architecture diagram and insert the diagram below. Remember: System Architecture is the embodiment of a concept, the allocation of physical/informational function to the elements of form, and the definition of relationships among the elements and with the surrounding context. Be sure to include all information in a clean and understandable way.

Please remember the file size limit and resize or paste the image URL instead, as needed.

Name of System: Electronic Rack & Pinion Steering System

System Diagram/Schematic



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STEP 2: SOURCES OF AMBIGUITY

One of the primary roles of the architect is to reduce ambiguity. Fill in the first column of the following table with at least five sources of ambiguity, and then note what data, analysis, or representations could be delivered by the architect to reduce ambiguity. Then, mark with an 'X' in the corresponding cell to indicate the type of ambiguity that particular data/analysis point is addressing.

		Types of Ambiguity (Select all that apply)				
Sources of Ambiguity and Open Questions	Data, Analysis, or Representation to Reduce Ambiguity	Fuzziness	Uncertainty	False Information	Unknown Information	Conflicting Information
What are the correct vehicle loads?	Depending on market research determine the type of vehicle. Perform analysis on similar products to identify loads.		X		X	
What is the correct steering "feel" for the vehicle type?	Conduct customer clinics, evaluate similar products from the competition. Need to establish metric to have "best in class" performance	X	X			
What are the correct features to add to the system?	Understand customer needs. Review competitor products. Have a realistic understanding on what features are feasible vs under-construction			X		X
What is the required product development cycle timing and required volumes?	Study of the market with emphasis on forecasting products similar to the system. Cost analysis forecast to determine system volumes		X		X	
Will the system be used in different regions of the world? Under what conditions?	Worldwide market research to determine product acceptability. Require data analysis from different regions to define metrics. Understanding regulations from different regions		X	X	X	

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STEP 3: DELIVERABLES OF THE ARCHITECT

Over Weeks 3-5 of this course, you began to produce some of the deliverables of the architect. As a summary, the following table presents a complete list of an architect's deliverables. Mark the ones that have already been completed for your team's system throughout this course as well as the ones that you think haven't yet been produced. (Note: You are not responsible for completing the deliverables "Not Yet Produced.")

Are there any other additional deliverables you would add?

	Completed	Not Yet Produced
A clear, complete, consistent, and attainable set of goals		X
Description of the broader context in which the system will sit, and the whole product context.	X	
Concept of the system.	X	
Concept of operations for the system, including contingency and emergency operations.		X
Complete functional description of the system, with at least two layers of decomposition, including description of primary and secondary externally delivered function; process flow with internal operands and processes, including non-idealities, supporting processes, and interface processes with a process to ensure that the functional decomposition is followed.	X	
The decomposition of form to two levels of detail, the allocation of function to form, and the structure of form at this level.	X	
Details of all external interfaces and a process for interface control.	X	
A notion of the developmental cost, schedule and risks, and the design and implementation plan.		X
Initial set of performance, safety, and functional requirements		X
Additional Deliverable of the Architect?		

STEP 4: REVIEW & SUBMIT PROJECT

- Submit your completed Week 5 Project Portfolio
- Complete Self-Assessment of Project
- Complete Peer Assessments of Project (Peer assessment is limited to 300 characters)

- Note: The maximum file size that can be submitted is 10MB.
  - A sample project submission and scoring rubric can be downloaded from the course in the Resources/Downloads tab on the top navigation.
  - Please remember that there are three steps to this assignment: Submission, peer assessment, and self assessment. Please provide enough time by each deadline to complete your assignment on time, as it is not possible to submit once the submission window closes.