

Project plan writing

Tue V. Jensen, Kai Heussen

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This handout describes elements of project planning which you should finish prior to beginning the work proper. The ultimate goal of this exercise is to assist you with executing a larger project.

Project plan submission: 19th November at 17:00 on Peergrade.io

For each part, we show the main sections to be considered in that portion of the project plan. The examples are not exhaustive, but serve to illustrate examples of the topic covered. There are (many) more ways to approach each part!

Part 1: Goals

Narrative: A textual description/story of why and how your idea is useful. This is a project vision, showing relevance and context of your proposal.¹

Example: The goal of this project is to design a system to help farmers save water by watering crops only when they need water. . .

Project goals: These break down how the overall goal is achieved to some extent by your project work - since time is limited, you will probably not manufacture a prototype. You can break the goals down into (sub-)objectives.

Examples:

- Demonstrate ability of Machine Learning system to recognize yellow plastic bags.
- Validate control strategy can handle long droughts

KPIs: A formulation of your goals in terms of things that can be measured² or counted. Can include yes/no questions.

Examples:

- False positive rate of classification below 3%.
- System simulator mockup created (Yes/no)
- Solar power usage increased by 10%% compared to base.

Part 2: System breakdown

Use case/functional description: What is the system able to do?³ What functions are essential? How does your system performance depend on things that are not your system?

Examples:

- Use case diagram for function "Water plants"
- 'A user leaves a trash bag on the street, the robot comes by, sees the trash bag and picks it up.'

¹ A good trick here is to write this section as if your project worked perfectly, and you now have to explain to a buyer why they would pay for it.

² Think metrics

³ Could also be textual description or narrative

Structural description: Which parts is your system made of? What are the structural components of: (1) Your system? (2) The things it controls/interacts with? Which components have 'intelligence'?

Examples: Components of a smart home:

- Temperature and light sensors
- Remote light switches
- Touch-screen displays
- Central HEMS computer
- The house
- Inhabitants
- The outside environment (sun, temperature)

Interface description: How are the main parts of your system connected? Break it down to a level where you can define interfaces.

Examples:

- Touch screen display can send requests for higher temperature to HEMS computer
- HEMS computer can control valve settings for radiators in a room
- House is physically coupled to outside temperature through ventilation

Part 3: Project breakdown and people

Required overall tasks: Is there a need for data, design, modeling, development, integration, or testing? Which parts of the system are affected?⁴

Break down project by system parts and tasks: Is there work that can progress at least partly independently? Where is strong coordination needed?

Project focus: Are some aspects more critical than others? Can you list goals by priority?⁵ Make explicit which of the defined evaluation parameters you will be addressing in the project.

Assign responsibility: Who will be responsible for which part(s) of the project?⁶ Development, software integration, coordination. . .

Part 4: Half-time check

Splitting the work: Which are aspects of your project you *need* to have finished about halfway through the project? ⁷ A bullet list will do; refer to (sub-)goals, system- or project breakdown.

These will shift as you begin the project - they are useful as a guideline, but don't punish yourself if you can't stick strictly to them.

⁴ A table of system parts vs. the tasks required can be helpful here.

⁵ Refer to session #17 slides for inspiration here - you are evaluated on reaching all goals a little or some goals a lot.

⁶ Having responsibility for a part defines where focus will be put in the oral exam. This does not mean that one person should be left alone with that part!

⁷ It's good to have some 'Started on' points, but try to add things that can realistically be finished.