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FIT2101- Software Engineering Process and Management

Guide to Project Management

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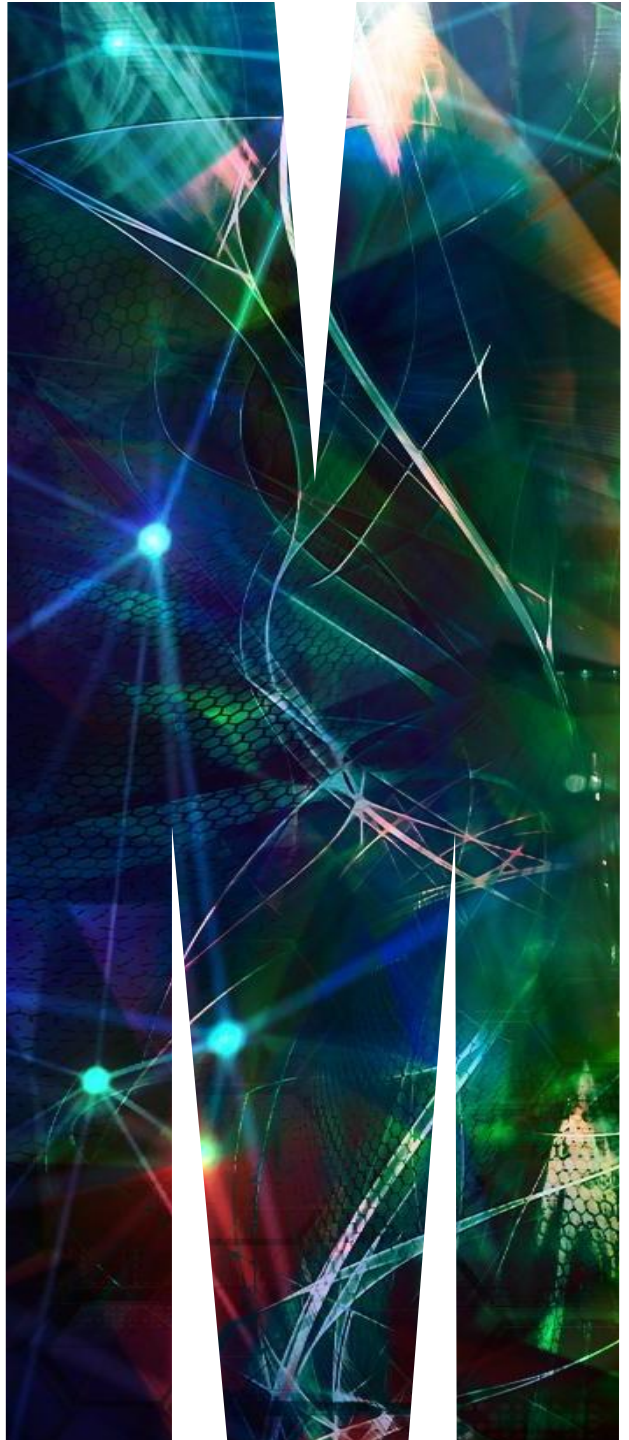

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Project Plan

Project Plan

- Document that contains (or links to) the information your team needs to manage itself

- Usually an internal document
  - written for the team itself
  - not usually given to clients
  - contains policies to be followed by everyone
  - developed during project inception; controls the rest of the project
  - good document to hand to a new starter

- Used in both Agile and traditional projects

What's in a Project Plan?

- Info about the project
  - what it is, who it's for, what needs to be delivered and when
  - other systems it needs to work with
  - who to talk to in other organizations (e.g. client, vendors, etc.) and who's responsible for talking to them

- Info about the team
  - who's on it
  - roles, responsibilities, who's in charge of what (if applicable)
  - contact info

What's in a Project Plan? (cont'd)

- Info about the process
  - what process model is being used? (e.g. Scrum? Spiral? Unified? how long are iterations/sprints?)
  - policies for keeping everyone informed – meetings? written reports?
  - how will we allocate tasks to people? how will we keep track of the amount of time they are spending?

- Info about the context
  - what other stakeholders are there?
  - what is their interest in the project?
  - how much influence do they have?

Begin with a summary

- Brief description of project: what's it supposed to do? who is it for?
  - careful not to fall into adspeak – remember this document is to be read by your team
  - focus on why the project is being developed, not on how or on its design – those are covered in other sections

List the deliverables

- What are you planning to hand over, and when?
  - if your deadlines change, e.g. because you've renegotiated or because the requirements have changed, make sure you keep this up to date
  - should include both external
  - deliverables (for clients/end users) and internal deliverables (for your team, or other groups in your company)

Explain how the project is organized

- Technical term: project context

- What process model will you use? (e.g. Scrum, Unified Rational Process, Lean, Spiral)
  - are you going to be tailoring it to your own circumstances? if so, how?
  - why did you select this model?
  - give details, e.g. if you're using Scrum, how long will the sprints be?

- What tools and techniques are you going to use?
  - not just for programming, but for all other project activities
  - Analysis, design, testing, integration, etc.

Project context (cont'd)

- How will your team be organized?
  - who is responsible for what?

- What about other groups?
  - other teams in your company who you need to collaborate with
  - clients and end users
  - vendors and suppliers of the software and services you're using
  - need to know who they are, how to contact them, who's responsible for dealing with them

Establish your Vision

- First, you need to figure out what you're building
  - don't want to try to spec out all requirements
  - but do need to know the big picture

- You will be making decisions about requirements later on
  - "should we implement feature, or is it out of scope?"
- Can't make these decisions without having some idea of what the scope is.

- One possible approach: write a brief vision statement or elevator pitch for your product
  - "elevator pitch": something you'd be able to say to an interested venture capitalist/potential client if you bumped into them in an elevator
  - for our purposes, vision statements and elevator pitches are interchangeable
  - they are both used to clarify your project's goals

Vision statements/elevator pitches

- Not the same as a mission statement; those are for the company as a whole
- Keep it brief: ideally, one or two sentences.
- Should be understandable by all stakeholders in the project
    - including senior management and clients, not just the team
- Be precise
    - We will delight our customers…
    - …by doing what?
- Be specific
    - We expect to make a profit
    - this does not differentiate your project from any other project in history
- …But don't be too specific
    - We will use Agile practices to implement a website using HTML5 and React.js over a MySQL back end…
    - apart from being verbose, you might want to change this later

Elevator pitch template

- From Jonathan Rasmusson, The Agile Samurai:

> For [*target customer*]
> who [*statement of need or opportunity*]
> the [*product name*]
> is a [*product category*]
> that [*key benefit, compelling reason to buy*].
> Unlike [*primary competitive alternative*]
> our product [*statement of primary differentiation*].

Elevator pitch example

- From Jonathan Rasmusson, The Agile Samurai:

For *construction managers*
who *need to track what type of work is being done on the construction site*
the *CSWP*
is a *safety work permit system,*
that *creates, tracks and audits safety work permits*.
Unlike *the current paper-based system*
our product *is web based and can be accessed any time from anywhere*.

Roles, responsibilities, and tasks

- Your role is essentially a job title
  - it's possible to perform multiple roles on the same project
  - common on cross-functional teams
- Your responsibilities are the things you're supposed to do, or ensure are done
- Tasks are things that need to be done
- The Project Plan needs to define the role and responsibilities of each team member
  - it *doesn't* need to specify which tasks each team member must do
  - it *does* need to say how tasks will be allocated and tracked

A word about team structure

- Common problem with student teams: lack of structure
  - “we will make decisions by consensus”
- Don’t want to boss other students around
- Don’t want too much to do
- But… don’t have a Scrum Master present to help achieve consensus
  - so this approach doesn’t always work

- Problem: *if everybody’s responsible, then nobody’s responsible*

- Don’t think of it as control, think of it as stepping up and taking responsibility
- Responsibility doesn’t mean you have to do it yourself, just that you have to make sure it’s done

Time and task management

- Time management
  - how will you keep track of what the developers are spending time on?
  - do you have standard working hours? Maximum/minimum commitments?

- Task management
  - how will you decide who does what?
  - how will you keep track of who is working on what?
    - for Scrum: where will your project/sprint backlogs live?

Why track time and tasks

- Make sure everything gets done
- Get a better idea of how long things take you
    - help you improve at time estimation, which is known to be hard
- Get some practice for industry
    - even salaried software engineers often have to fill in timesheets to keep track of which projects they've worked on

- Resolve disputes
    - lets you prove that each team member is pulling their weight
    - gives everyone an incentive to do their fair share
    - in FIT2101, your markers can use your time logs if there's any question about fairness of workload

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Analysis of Alternatives

Architectural decisions

- Once you've decided what you're building, you need to make some important decisions about how you'll do it
- It's not time to do a detailed architectural design yet; you're only just beginning to think about requirements
    - class-level/module-level details will change as you refactor anyway

- Still need to make some high-level decisions
    - what language/s will we use?
    - what tools? will we need a database?
    - what is our platform – mobile, desktop, web application?
- These decisions are very expensive to change during development
    - so need to make them with care

Justifying your decisions

- Should write down your decisions and the reasoning behind them
  - make sure everyone on the team understands them
  - justify any purchasing to senior management
  - if they do need to change later, you can prove to your client or manager that you did make a good decision based on what you knew at the time

- Can use a kind of report called an analysis of alternatives
  - not usually part of your Project Plan
  - for your project, you'll create one at the same time

Analysis of alternatives - structure

- One-page summary (if long)
- Glossary of terms (if needed)
  - or reference/hyperlink to team wiki, Google Doc, etc.
- Terms of reference
  - what factors are you taking into consideration?
  - how important is each one?
  - which options are you considering?
- Body
  - how does each option do against each of the factors?
  - did your investigations uncover anything else?
  - you might want to summarize this in a table
- Recommendations
  - justify your choices by reference to the findings presented in the body

Analysis of alternatives - Terms of reference

- What decision are you trying to support?
  - example: *we want to choose an IDE for all team members to use*
- What options have you identified?
  - example: *Atom, PyCharm, PyDev, Visual Studio*
- What are the criteria on which you will base your recommendations?
  - e.g. if considering which IDE to use, you might consider:
    - *cost*
    - *supported languages (must support Python; JavaScript/HTML nice to have)*
    - *licence must allow commercial development*
    - *Speed*
  - in the body, you evaluate each option against each of these criteria
-
-

Analysis of alternatives - Body

- The body is where you present your evidence for and against each option
- It should list each option systematically and compare relevant features
    - *relevant* means *in the terms of reference*
    - if it's not in the terms of reference, that means you don't care
- Keep the body brief, factual, and to the point
    - if you're offering an opinion rather than fact, make it clear that you are doing so
    - If you've got facts, back them up with sources
- Note that you might need to expand your list of options as you research
    - e.g. PyCharm and Visual Studio both have Professional and Community Editions

Analysis of alternatives - Recommendations

- Here, you tie it all together
  - the terms of reference say what you consider important
  - the body goes through the options and evaluates one each against the criteria established in the terms of reference
  - in the recommendations section, you make it clear which option/s will satisfy the criteria the best
  - sometimes there will be a clear winner, other times there won't
    - if there's no clear winner, you need to help your readers decide

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PO management

External Product Owner Management

- Your clients/POs will be wandering around in the workshops.
  - Ask questions if you are unclear about the requirements given so far.
  - No assumptions for requirements!
- Additionally, you can meet them in PO consultations.

- A good way to finalize the requirements is to put them into a shared document in your shared Google Drive folder.

- You can include the following (but not limited to) in this document.
  - What information would your client like your program to show them?
  - How would they like to be able to access it?
  - What options will they have over how this information is presented, and how should they set these options?

External Product Owner Management (cont'd)

- Remember, this document is going to help you with,
  - Vision statement
  - Most appropriate approach to use during analysis of alternatives
  - Begin creating the product backlog

Happy Project Planning!

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