II2202: Project plan

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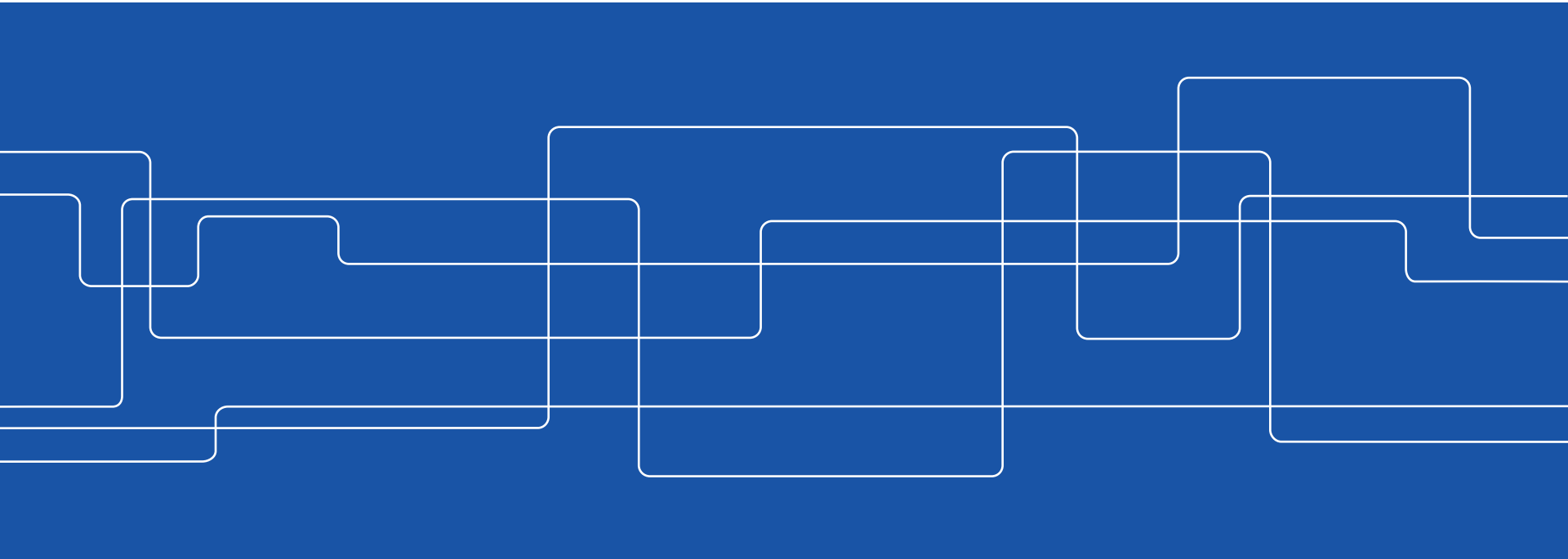

The “Why” of research (from Research Ethics module)

“ethical research begins with a coherent, valid, and sensible **research design**” and the research needs to establish a “worthwhile purpose for the project – the *why* of research”

Heidi A. McKee and James E. Porter in *The ethics of Internet research: a rhetorical, case-based process* [McKee 2009] (pg. 142)

The objective should be to develop new knowledge/understanding, to have some benefit to society/research subjects, and/or gain useful knowledge.

⇒ This means that you need more than personal interest/gain!

[Emphasis added above by GQMJr]

Project plan

The project plan provides the foundation for your "**research design**"

Each project is an iterative series of actions, but each starts with planning.

Project planning process

0. Identify the **authors** – who is going to do the work, their responsibilities, how is the project organized
1. Explore **Background** for the chosen area (set the context of the problem, identify relevant literature, identify open problems)
2. Select **the problem** to be addressed
3. Formulate a purpose, objective(s), goal(s) – identify **why this problem is worth solving**
4. Identify **deliverables** & **outcomes** (preferably an ordered series)
5. Identify needed **resources** (already have versus need to get with costs $\Rightarrow$ budget)
6. Create project **timeline/schedule** with tasks leading to a clear deliverable/outcome

The project plan (first three sections)

1. **Project title**
   - Short, concise, descriptive, accurately reflects the planned work
   - It is the first thing your reader will read ⇒ attract but **not** mislead
2. **Project team + their responsibilities**

   Describes specific responsibilities for each project member
1. **Background** (written in past tense)

   Describe the background for chosen area that is going to be investigated

Writing a good background section

- Focus on your specific problem area, do **not** be too general - set the context of the problem
- Identify relevant literature (both related work and what you need to know to carry out your project)
- Read and summarize related work (reference properly)
- Identify the open problem(s) or problem area

$\Rightarrow$ A good literature review will (1) make your life easier and (2) raise the quality of your work (because you will build on a better base)

$\Rightarrow$ Reading how others evaluated what they did will help you decide upon (1) what **metrics** you should use and (2) what data you need to collect in order to achieve a high quality result.

The project plan (next two sections)

4. **Problem statement** (written in present tense)

   Describe the problem(s) that have been identified in the area described in the background.

5. **Problem** (written in present tense)

   State a clear and concise problem that is going to be investigated.

Writing a good Problem statement section

- A detailed description of the problem and major issues
- The problem should be both **real** and a solution should be **realizable** within your planned time period.
- What is your vision for solving it?
- Refer to related work (reference properly)

The problem statement section is going to take the reader from the current state to the desired and future state.

The current state can be described in terms of the questions: **whom** is affected/unaffected by the problem, **what** these effects are, **where** does this problem occur, **how** they are manifest, and **when** is this problem important?

Writing a good Problem section

- *State a clear and concise problem that is going to be investigated.* Answer the question: What is the real problem? - What is the problem or value proposition addressed by the project?
- Ideally one sentence that is very concrete:
  - A question to be answered **or**
  - A statement (perhaps leading to a hypothesis)

The project plan (optional section)

Hypothesis (written in conditional or future tense)

State a hypothesis that you think would be the outcome of your investigation.

Note that the hypothesis must be measurable & concrete in order to be confirmed or falsified.

The project plan (next two sections)

Purpose (written in present tense)

Explain the purpose(s) of your project / investigation (the expected deliverables from the project). Answer the question: **Why do this project?** (purpose/effect, i.e. – the purpose can be to save environment, but the goal is to build a robot that can pick up trash.) Why would **you** carry out the project?

Goal(s) (written in present tense)

Explain the goal(s), objective(s), and/or the result(s) of your investigation. What are the **expected deliverables/outcomes** from the project?

The project plan (next two sections)

Task(s) (written in present tense)

Describe the tasks and sub tasks that are necessary to complete the work. Grouped into a work breakdown structure.

Method(s) (written in present tense)

Describe and explain the research methods that will be used for the project. What research method (or methods) will be used?

Argue for why this is the most appropriate method or methods.

The project plan (next two sections)

Milestone chart (time schedule) (initially written in conditional tense, achieved milestones will be written in past tense)

Give a detailed schedule of how the project will be carried out. What is the project timeline and when will particularly meaningful points, referred to as milestones, be completed? What is the deliverable for each of these milestones?

References

Use a style with DOIs, ISBNs, URLs, …; such as the Zotero style: http://people.kth.se/~maguire/ExampleStyle-with-access.csl

Writing a good Milestone chart/Timeline section

- Milestones represent the completion of key tasks and mark producing some deliverable or observable outcome
- Identify who is responsible for each task
- Achieving a milestone must be measurable
- Each milestone has to be realistic (i.e., both to achieve and with respect to time) and each task must be time bounded
- Do **not** create too many milestones
- Use the chart to **coordinate** your tasks – keep in mind dependencies (as latencies are additive!)

See also Work Breakdown Structure (WBS), Gantt chart, …

Useful tools: Microsoft Project, ProjectLibre, GanttProject, …

Project plans – beyond this course

Common additional sections:

- Risks/Benefits analysis
- Stakeholder analysis
- Intellectual Property policy
- Commercialization Strategy
- Project Costs and Financing plan
- Dissemination plan
- Use of Human Subjects with Institutional review board (IRB) approval
- Data/Material archiving plan
- Evaluation plan/Quality Assurance
- Project Partners, Management, and Roles
- Technical development (what tools will be used or developed)
- Standards (used and developed)
- Sustainability plan
- Exit and embedding plans (ending the project and putting the results to use in the organization)

Relation between research proposal, plan, report (Inspired by table on page 18 of [van Vliet 2010])

Proposal	Plan	Report
Working title + authors	Cover page	Cover page
	(in Outline)	Table of contents
		Preface
		Executive summary
Aims	Aims, Objectives, Goals, Research questions, hypotheses	Introduction
Background and rationale	Background and rationale	
Theory/literature	Theory/literature	Theoretical framework
(in Aims)	(in Aims)	Research questions, hypotheses
Research Methodology	Research Methodology	Research Methodology
	Participants, Procedures, Data collection and analysis	
Expected outcomes	Expected outcomes	Results and Analysis
Timetable	Milestones/schedule, budget	
Risks	Risks	
	Outline	(in Table of Contents)
		Discussion
References	References	References
Appendix/Appendices	Appendix/Appendices	Appendix/Appendices

Written report organization

Introduction, **M**ethods, **R**esults, **a**nd **D**iscussion (often referred to as **IMRaD** of **IMRAD** format)

Widely used journal format, but **not** the only structure.

In some cases “Related work” is placed [Widom 2006]:

- *Early*: before the Introduction or after the Introduction
- *Late*: as part of “Discussion and related work” or just before the Conclusions

References

[McKee 2009] Heidi A. McKee and James E. Porter, *The ethics of Internet research: a rhetorical, case-based process*. New York: Peter Lang, 2009.

[van Vliet 2010] Harry van Vliet, Ed., 'Research Templates: Templates for a Research proposal, a Research plan and a Research report, Version: 1.0.' Hogeschool Utrecht (University of Applied Sciences Utrecht), Research Centre for Communication and Journalism (Crossmedialab), 02-May-2010 [Online]. Available: http://www.crossmedialab.nl/files/Researchtemplates_def10.pdf . [Accessed: 31-Jul-2015]

[Widom 2006] Jennifer Widom, 'Tips for Writing Technical Papers', Jan-2006. [Online]. Available: http://cs.stanford.edu/people/widom/paper-writing.html . [Accessed: 17-Aug-2015]

¿Questions?