

Research Proposals

- Objectives
 - Context and purpose
 - Content
 - Format
- Main references
 - M. Markel, Technical Communication, 9th Ed., Bedford/St. Martin's, 2010.
 - J.G. Paradis and M.L. Zimmerman, The MIT Guide to Science and Engineering Communication, 2nd Ed., MIT, 2002.
 - A.J. Pickard, Research methods in information, Focet Publishing, 2007.

Context for Writing Research Proposals

- When is it needed?
 - PhD qualifying exam (QE).
 - Applying for approval of a R&D project.
 - Applying for research funding.
- The perspective of an MSc student.

Context for Writing Research Proposals (cont)

- Why is it needed?
 - Your time and effort.
 - Time and effort of other participants.
 - Funding involved.
 - Other resources involved.
- Who need it?
 - Decision makers who approve or reject.
 - You self.

Primary Purpose of PhD QE Documents

- You have adequate background knowledge to conduct research in the chosen field.
- You have chosen suitable research questions in terms of novelty and significance.
- You have adequately designed research methods.
- The research objectives are reachable within the time frame of the degree program.

Content of Research Proposals

- In general, cover what, how, and why about the proposed research.
- In particular
 - Title and introduction
 - Literature review
 - Research questions, objectives or hypotheses
 - Research methods
 - Anticipated research outcomes
 - Anticipated constraints
 - Timetable

Format of Research Proposals

- Required format varies with roughly 3 alternatives:
 - A document with multiple sections.
 - A set of forms.
 - A combination of the two.
- Strict word count or page limit is often stipulated.
- It is up to author to take elements of content and translate them into the format required to follow.

Title

- Generality of the issue.
- Title should be precise and concise.
 - The tension between the two.
- Ex “Comparison of Tightly and Loosely Coupled Decision Paradigms in Multiagent Expedition”.

Introduction

- Introduction
 - Brief rationale for the need of the research with evidence from literature.
 - Highlight anticipated contribution.
 - Get the message across - this would be a useful and productive research activity.
 - Not a lot of details.
 - Ex A shortened example [introduction](#).
- An abstract is needed if the proposal is beyond a few pages.
 - Ex An example [abstract](#).

Research Method

- Present your plan of action for the research.
 - Ex [Plan](#) of actions.
- Include major processes and procedures.
 - Can these processes and procedures be changed?
 - Would any processes and procedures do?
- It's insufficient just to say what you intend to do.
 - Ex Complexity of distributed constraint optimization.

Anticipated Constraints and Time Table

- A single research project or program is not going to answer all the relevant questions.
 - Compromises are usual and should be identified.
 - Ex Variable domains in Bayesian networks.
 - Ex Component failures in distributed systems.
- Time is valuable resource.
 - Its allocation needs to be planned.
 - Ex A bar chart [time table](#).

Proposal as a Research Framework

- As the foundation for your research report.
- As the basis for personal reflections.
- Keep you focused:
 - As the research progresses, you will encounter many new avenues.
 - Do not expect to find all the answers.
 - Make sensible choices about following new issues.
 - Use proposal to help you to decide.