

Structure of a proposal

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Objective

In these slides I'll try to analyze the proposal written by Professor Keyes on Computational aeroacoustics, not by the contents, but by how it's written.

What is a proposal?

- Longman Dictionary of contemporary English: A plan or suggestion which is made formally to an official person or group, or the act of making it.
- Or: To sell something that's not there yet.

Components of a proposal

To write a proposal is to organize a collection of components in an organized way. These components to be organized are:

- Situation: What's the current status of the problem?
- Challenge: What's the direction of improvement?
- Value: What value are we offering?
- Methodology: How to make it better?
- Merits: What if we have made it better?

The first two items are the interest, the third part our value, the fourth and fifth part value meets challenge.

Structure of a proposal

A proposal contains the following parts in sequence:

- Summary
- Detail project description
 - ▶ One paragraph for situation
 - ▶ One paragraph for challenge
 - ▶ One paragraph for value as it is and as it is linked to the problem.
 - ▶ Several paragraphs for methodology
 - ▶ One paragraph for merits
- Previous results (for credibility) and references

Part two is an expansion of the summary.

Example

Using Prof Keyes' Proposal on computational aeroacoustics as an example.

- Summary
- Project description
 - ▶ Petascale Computing in Aeroacoustics (status)
 - ▶ Physical Description of Problems (challenge)
 - ▶ Characteristic Physical Scales of Problems: Need for Petascale Computing (value).
 - ▶ Discretization, algorithm and implementation guideline, software tool to use (methodology)
 - ▶ Merits and impact
- Previous results (for credibility) and references

Development: Summary

Summary touches every part in the main body and express them in simple languages. It answers the following questions in brief.

- What's the field and context?
- What's the team and what's the method?
- What's the problem?
- What's the approach?
- What's the objective?
- What's the Merits and impacts?

Development: Status

This part raise a problem to be solved and detail its context.

- Why want it better? Who want it better?
- Is the underlying problem important? Who/which authority said so?
- Is it urgent?
- What has been done? What's the previous results?
- What need to be done?
- What's the obstacle?
- What tools and methods we we have at hand?

Development: Challenge

This part points out a direction of improving and draw link with the problem.

- What's the direction of improving?
- What's the components of the challenge? Divide and conquer.
- Specify objectives: Chevron Nozzles...
- Specify challenges: lots of computing.
- What will we do about it? Mentioned here and detailed in the methodology part.

Development: Value

This part link their interest with our value. Why do they need us?

- Estimation of problem scale
- Make reasonable assumptions
- Break into components and steps
- Compare with similar scenario

Development: Methodology

How are we planning to do it?

- Guidelines? Algorithms?
- Theoretical evidence says that our method will work?
- Similar projects that can validate our method?
- Similar projects that we better.
- What software tool to use?

Development: Merit and Impact

Points out the benefits from different perspectives.

- - ▶ In this field?
 - ▶ In other fields?
- - ▶ Long term impact?
 - ▶ Short term impact?
- - ▶ Academical merit?
 - ▶ Practical merit?