Proposals

Writing Introductions and Conclusions

Format

- Summary
- Introduction
- Problem
- Objectives
- Solution
- Methods
- Resources
- Schedule
- Qualifications
- Management
- Costs
- Conclusion
- References

What’s in an introduction?

- What information do you need to provide to let your readers know the subject of your proposal?
- What background information will your readers need or want at the beginning of your proposal?
- Can you help your readers by forecasting the rest of your report?

Example 1

INTRODUCTION

This is a technical scope of work (TSW) between the Fermi National Accelerator Laboratory (Fermilab) and the experimenters of Muon Piston Calorimeter Extension (MPC-EX) Collaboration who have committed to participate in beam tests to be carried out during the 2013-2014 Fermilab Test Beam Facility program.

The TSW is intended primarily for the purpose of recording expectations for budget estimates and work allocations for Fermilab, the funding agencies and the participating institutions. It reflects an arrangement that currently is satisfactory to the parties; however, it is recognized and anticipated that changing circumstances of the evolving research program will necessitate revisions. The parties agree to modify this scope of work to reflect such required adjustments. Actual contractual obligations will be set forth in separate documents.

This TSW fulfills Article 1 (facilities and scope of work) of the User Agreements signed (or still to be signed) by an authorized representative of each institution collaborating on this experiment.

Source: http://inspirehep.net/record/1243020/files/fermilab-proposal-1038.pdf

Description of Detector and Tests:

The MPC-EX detector system consists of a W-Si preshower extension added in front of the existing forward Muon Piston Calorimeters (MPCs) in the PHENIX detector. This system will improve the discrimination between electromagnetic and hadronic showers and provide the separation of high p_T pions and prompt photons in the forward direction in p+A and polarized p+p collisions at RHIC.

The MPC-EX preshower detector has eight sampling layers. Each layer consists of two identical carrier boards attached to the 2 mm thick tungsten absorber plates. The carrier boards are 3 mm deep and contain 12 plug-in modules with silicon sensors and readout ASICs. The 62x62 mm^2 silicon sensors consist of 34x4 1.8x15 mm^2 minipads. The minipad orientation alternates between X and Y in sequential layers resulting in a two-layer granularity of about 2x2 mm^2. The signal from each minipad is split with a ratio of 30:1 with individual copies sent to two independent SVX4 chips. The total depth of the preshower ($\sim 4X_0$) allows both photons from neutral pion decay to convert and be reliably measured in at least two X and two Y sampling layers. [1]

The MPC detector consists of PbWO4 crystals with Hamamatsu avalanche photodiodes (APDs – model S8664-5) attached to the front of the crystals. The APDs convert the scintillation light produced in the crystals into charge signals. The MPC crystals were donated by the Kurchatov Institute and were developed for the PHOS detector in ALICE. [2]

Source: http://inspirehep.net/record/1243020/files/fermilab-proposal-1038.pdf

The experimenters propose two short experiments. First the experimenters will test the nuclear counter effect on the APD response by using 32 GeV pions from the Fermilab test beam to generate a MIP in the crystals and compare the signal response for tracks traveling through the APDs and those not. Second, the experimenters will use the 2-32 GeV electron beam to test the response from a MPC-EX prototype placed in front of the APDs and crystals. These tests will provide important information for the simulation and implementation of the combined MPC-EX system and the construction of the new preshower detector.

Source: http://inspirehep.net/record/1243020/files/fermilab-proposal-1038.pdf

Example 2

This is a Technical Scope of Work (TSW) between the Fermi National Accelerator Laboratory (Fermilab) and the experimenters of the CMS Pixel group, which consists of individuals from the Bristol University, CERN, Fermilab, Rutherford Laboratory (UK), and National Taiwan University who have committed to participate in beam tests to be carried out during the 2013 – 2014 Fermilab Test Beam Facility program.

The TSW is intended solely for the purpose of recording expectations for budget estimates and work allocations for Fermilab, the funding agencies and the participating institutions. It reflects an arrangement that currently is satisfactory to the parties; however, it is recognized and anticipated that changing circumstances of the evolving research program will necessitate revisions. The parties agree to modify this TSW to reflect such required adjustments. Actual contractual obligations will be set forth in separate documents.

This TSW fulfills Article 1 (facilities and scope of work) of the User Agreements signed (or still to be signed) by an authorized representative of each institution collaborating on this experiment.

Source: http://inspirehep.net/record/1246078/files/fermilab-proposal-1036.pdf

Description of Detector and Tests:

Motivation:

Many modern particle detectors require very high rate tracking capability. One example of this is the CMS tracker, and particularly its silicon pixel detector. The existing detector performs well, but will not continue to perform well as the LHC luminosity is increased. For this reason, the pixel detector will be replaced at least twice. Each new detector will be designed to operate in a higher particle fluence than the one it replaces. Both radiation tolerance and the ability to operate efficiently at high, continuous instantaneous rate are required. It is important to verify the rate capability of the new detectors and readout electronics before they are installed in CMS. The first replacement will happen around end of 2016. A new pixel readout chip was recently produced at the Paul Scherer Institute (Switzerland) to handle the foreseen high luminosity running of the LHC towards the end of the decade. High rate test beam areas are possible both at CERN and at PSI, but the beam at CERN will not be available during the upcoming LHC long shutdown and it is not possible to make precise measurements of pixel detector readout performance in the low energy pion beam at PSI. The experimenters therefore propose to test the high rate tracking capability of the new pixel detectors using the new pixel readout chip in the fall of 2013 at the MT3 High Rate tracking area that is currently being developed at Fermilab. The setup will be composed of two telescopes, each containing 8 single pixel readout-chips. One telescope has the sensors planes perpendicular to the beam and in the second the planes are inclined by 20° and 30° with respect to the beam. The drift angle of the charge carriers in the magnetic field in CMS will be simulated by the 20° angle and the 30° angle corresponds to the inclination of the CMS barrel pixel. The result of these inclinations in the two directions is spreading of the charge across more than one pixel unit and thus obtaining a better position resolution.

The two telescopes will serve to test two different features of the digital chip. In case of the zero-angle telescope version, 80% of events will have a single pixel hit and the time stamp buffer will be saturated before the data buffer at high particles rates. In the inclined version the particles will produce hits in 3-5 pixels and the data buffer will saturate before the time stamp buffer. In both cases the experimenters want to measure independently at which fluence each buffer saturates. The two telescopes will be operated in a cold box in order to maintain a consistent operating temperature and to avoid thermal runaway due to an increased leakage current associated with radiation damage.

A variable beam rate of 400 MHz/cm^2 over $\geq 1\ cm^2$ is required as well as the means to measure the rate. The experimenters will provide all the pixel detectors and associated readout electronics and data acquisition system to perform the tests.

Source: http://inspirehep.net/record/1246078/files/fermilab-proposal-1036.pdf

Example 3

I. INTRODUCTION

Power extracted from the ocean waves has a large potential to contribute with energy to the worlds power production [1]. However, wave power is still in an early stage in the development and only a few projects have tested full scale devices in real sea conditions [2].

This paper studies a Wave Energy Converter (WEC) system consisting of direct driven linear generators and a marine substation. The aim with the paper is to give a description of the electrical system necessary to connect the generators to the grid. Two different substations are presented, one built and developed at Uppsala University and one built and developed by the company Seabased Industry AB.

The result section focuses on experimental results from the Lysekil research site and present experimental results from the first WEC that was installed in March 2006.

Source: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5414903

Example 4

In today's modern society, most people just flip a switch or push a button, and everything we depend on is readily available. Cell phones, computers, televisions, heated water, lights, and so much more, are all the backbone of any modern society's functionality. The electricity powering all these systems is something most people rarely think about until the power is no longer available for use. The extensive system that allows for an instant and near constant supply of conditioned power is referred to as the "grid". This grid is usually supported by government and/or private in developed countries; a government must have enough financial resources to establish and support a significant investment to provide the service of electricity. With this idea in mind, it may be hard to believe that nearly 80% of all people living in third world countries have no access to electricity. That is an estimated 1.5 Billion people with no electricity[7].

Source: http://www.calpoly.edu/~taufik/dchouse/download/GoguelyHayes.pdf

This power crisis will not be getting better in the future. The U.S. Energy Information Administration stated in their International Energy Outlook Report for 2010 that the world energy consumption will increase by 49 percent, or 1.4 percent per year, from 495 quadrillion Btu in 2007 to 739 quadrillion Btu by 2035, as shown in Figure 1.1. The Organization for Economic Co-operation and Development, OECD for short, is an international organization, which includes a majority of the world's most advanced countries. Historically, OECD member countries have accounted for the largest share of current world energy consumption; however, in 2007—for the first time—energy use among non-OECD nations exceeded that among OECD nations as depicted in Figure 1.2. If any growth in the world's energy supply and infrastructure is to occur in the future, it is likely the majority of this energy will go to these developed countries before any

Source: http://www.calpoly.edu/~taufik/dchouse/download/GoguelyHayes.pdf

developing or third world country. This will only exasperate the needs and deficiency of these developing and third world countries.

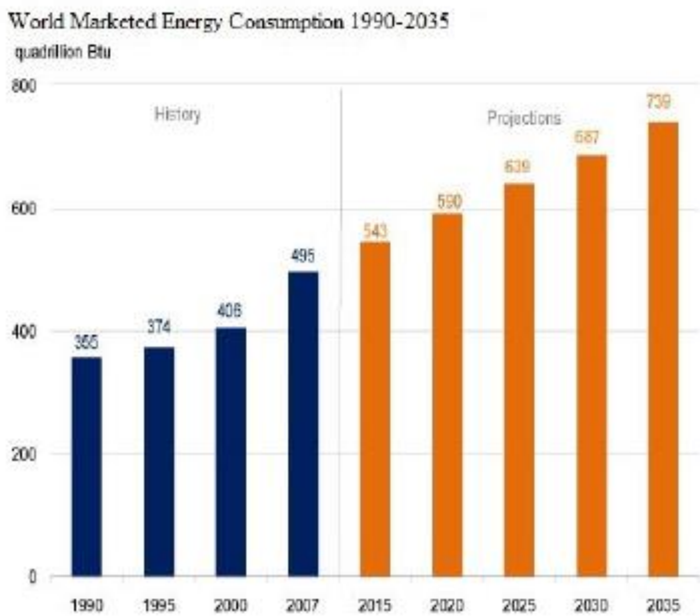

Figure 1.1: Energy Consumption Projections[1]

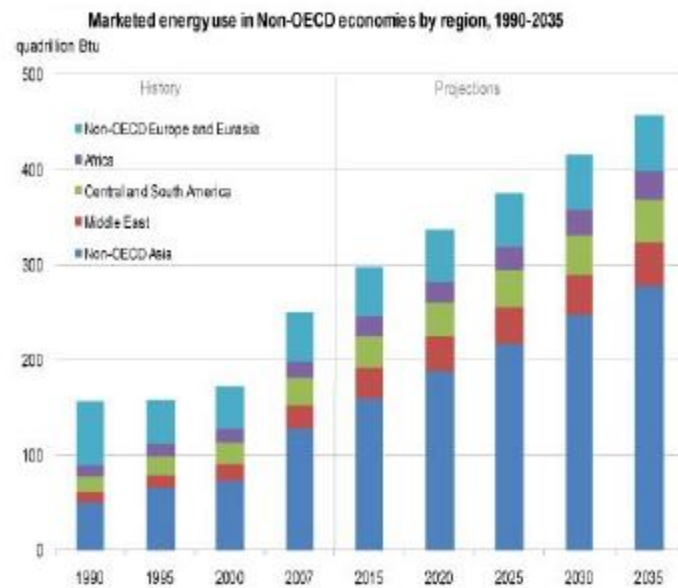

Figure 1.2: Energy Consumption Projections by Non-OECD economies[1]

Source: http://www.calpoly.edu/~taufik/dchouse/download/GoguelyHayes.pdf

As of today, oil is by far the most used energy product in the world's energy supply, with coal at a distant second. According to the International Energy Agency, oil products make up over 33% of the world's energy supply, while coal products make up around 27% of the world's energy supply.[1] The Middle East and Russia are the top producers of oil in the world, and based on their current trends, will be hitting peak oil production within the next decade.[2] This means the energy demand will continue to increase but the oil supply will not be able to follow the same trend. To make matters worse, the cost of oil worldwide has skyrocketed due to the combination of issues such as the crisises in the Middle East, off shore drilling accidents, and the increasing difficultly for finding and drilling for oil. While coal is still an option for fossil fuels the environmental impact is arguably worse than oil. Per unit of energy, coal is even worse

Source: http://www.calpoly.edu/~taufik/dchouse/download/GoguelyHayes.pdf

There is only one way to create a standalone system, and this is with a generator. The type of generator to select is our main concern. The typical solution is to use a fossil fueled generator that produces AC or DC energy from fossil fuels. This solution is less than ideal as fossil fueled generators are bulky and expensive, plus the ever-rising costs of fossil fuels and the negative impacts on the environment due to emissions. Additionally, more regulations regarding emissions are starting to limit the burning of harsher fuel. Clean energy technology development has increased to combat the cost of rising fuel costs and provide an alternative to fossil fuel. This alternative is to use more sustainable means of power generation. These means include solar, wind, water, and human powered generators that produce clean energy. Not only would the energy be clean and sustainable, but we have only begun to scratch the surface of the amount of energy production possible with renewable energy. This is the option Cal Poly's DC House Project looks to develop.

Source: http://www.calpoly.edu/~taufik/dchouse/download/GoguelyHayes.pdf

Example 5

This is a good project to get started on an understanding of systems engineering. We are making use of a robotic platform controlled by numerous microcontrollers. The robot will interact with two sonar sensors and an electronic compass. The robot will have to not only get to its destination using GPS coordinates and compass information, but do so avoiding collision with obstacles in its path. Our project involves the control of a robot that is making use of feedback from its environment.

What makes this project interesting is that we have to understand many things related to robotic control. We need to know what kind of environment that our robot will be used in. Will the robot receive a good GPS signal? Will it be able to handle rough terrain? Will there be many obstacles and what size will they be? We also need to understand the specifics of how the sensors interact. We need to know the protocol of the GPS and the electronic compass. We also need to know the timing diagram of an LCD display. Is the speed variable? How is it going to turn? These are just samples of many questions we will have to address during our design.

Many of these questions have been answered in our group and by the advising we have had from Dr. Joon Ho Cho. The harder questions lie ahead and so does many ubiquitous technical problems. But by the finish of this project we should have a much better feel for the field of robotics and systems engineering. Our project does not bring any revolutionary ideas to the table, but it lets us build a complex system (robot) that can do something autonomously and has potential applications.

Source: http://www.ecs.umass.edu/ece/sdp/sdp04/cho/PDR.pdf

http://www.youtube.com/watch?v=cpxN5GT7Cio

Provide detailed information about how your proposed project will be carried forward.

- Future funding?
- Future research that will build on yours?
- Used by whom?

What’s in a conclusion?

1. You reach the page limit
2. You run out of time
3. You get hungry
4. None of the above

How do you know it’s time to end a paper?

It is the last thing your reader sees, and is therefore what your reader remembers best.

Why is a conclusion so important?

- stress the importance of the thesis statement.
- give the essay a sense of completeness.
- leave a final impression on the reader.

A conclusion should...

- Focus on your main point(s). This may include your final (and strongest) point that supports your thesis
- Gratify your audience with a memorable twist or phrase.
- End with emotional impact – an ah-ha moment.

Guiding Principles

Restate the solution statement – saying it in a different way keeps the proposal fresh

Focus on your main point

Briefly summarize the main point, like a lawyer’s closing argument.

Refer (don’t repeat them) back to the main points that you want your audience to remember.

Recap

Provide a dramatic or emotional impact in the end – kind of like the punch line of a joke

- A quote to legitimize your theme
- A metaphor that helps your reader understand your point more clearly by creating a mental image.

Save the best for last

Finish your proposal where it began.

Closer