

Successful Projects Proposal to Final Report

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What is success?

Every team and every person has a different level that counts as success for them. One factor is the background of the team. What will count as success for you? Put your ideas on the Jamboard.

Magellan Award - For a team that has persevered despite setbacks.

Choose a past project to review

Past Supercomputing Challenge projects are online. Find a project proposal and project final report from a team that corresponds to your level of success.

Proposals: [https://supercomputingchallenge.org/18-19/proposals/
view_proposals1819.php](https://supercomputingchallenge.org/18-19/proposals/view_proposals1819.php)

Interim Reports: https://supercomputingchallenge.org/18-19/interims/view_interims.php

Final Reports: <https://supercomputingchallenge.org/18-19/finalreports/submitted.php>

Finalist Teams 2018-2019

1st: Team 28 - A Novel Computational Tool to Inform Cost-Effective Nutrition Interventions in Sub-Saharan Africa

2nd: Team 97 - Computer Simulation as a Tool for Risk Assessment of Coastal Areas

3rd: Team 30 - Data-Based Approach to Estimating Ice-Shelf Melt Rates

3rd: Team 4 - Traffic Model

Advancing Frontiers in Supercomputing: Team 29 - Using QAOA to Solve NP-Hard Problems on NISQ Computers

Earth Sciences: Team 32 (middle school) - What is the Radius of the Earth's Core?

Team 56 - Optimizing Flapping-Wing Flight

Awards 2018 - 2019

Newcomer Award: Team 74 (middle school) - Cellular Automata

Community Impact Award: Team 10 (middle school) - Albuquerque Fire Department Wait Times

Magellan Award: Team 85: Learning about NUCS

Crowd Favorite: Team 81 - Mangrove Madness

Agent-based Model using NetLogo: Team 87 - Finding the Battleships

Environmental Modeling: Team 59 - The Mission of Plastic Decomposition: Fungi Edition

Middle School Award: Team 75 (middle school) - Angry Boards

Human - Computer Interaction: Team 80 - Campus Alert System

NMTIE Research Award: Team 20 (middle school) - Glioblastoma

NMTIE Teamwork Award: Team 45 - Turtles vs. Pollution

Creativity and Innovation: Team 46 - Till the Cows Come Home

Technical Poster Award: Team 12 - Human Intelligence vs Machine Logic

New Mexico Network for Women in Science and Engineering: Team 49 - Mustangs of America

Science Rocks: Team 1 - Detecting Developmental Delays

New Frontiers: Team 1006 - Stem Cell Therapy

Medical Aid: Team 83 - Doctors Assistant Program

Food of the Future: Team 1002 - Ready Set Grow!

Water Under Pressure: Team 82 - Moving Water

Proposals (selecting a topic)

<https://supercomputingchallenge.org/21-22/proposals/guidelines.php>

A proposal for the Supercomputing Challenge is a brief (no more than 250 words) description of the computational scientific problem that your team plans to solve. In the proposal, you must clearly state

- what the problem is (the definition of the problem)
- why it is important or what results you hope to get (the purpose of the project)
- how you plan to work on it (plan of action or methods)

Selecting a Topic

My suggestions:

- Needs to be something you that you find interesting
- Should be something that is a current or future challenge for our society
- Should include the programming language(s) that will be used
- Should be narrow enough to be achievable

Look at the proposal you selected. Does the topic meet these guidelines?

Does it meet the proposal guidelines? After reading the proposal what are your suggestions for choosing a topic and writing a proposal?

Brainstorming

Suggest a topic for a Supercomputing Challenge project and enter into the chat. Rules:

- No ideas are rejected
- All topics are added to a Jamboard

Selecting a topic

Rules:

- Each team member gets two green sticky notes that they can use to vote for two topics
- Each team member gets one red sticky note that they can use to veto a project

Write a real or fake name on the sticky notes so they have a label.

Ranking topics

- Throw out the topics with red sticky notes
- Order the remaining topics by the number of green sticky notes
- Start from the highest ranking topic and try to come up with a proposal
 - Is it feasible?
 - Can you think of a computer model to write for this topic?
- If the topic cannot be turned into a proposal select the next highest scoring topic
- Can turn in a proposal with two topics for the reviewers. If the topic of first choice has issues then the reviewers have an option to suggest pursuing the second choice topic.
- Sometimes, especially with a larger team, it may become apparent that splitting the team will make sense (e.g. someone voted against the highest ranking topic)

Facilitation

The process we just demonstrated is an example of facilitation. The facilitator ideally does not vote (not a member of the team) and their only purpose is to guide the process to make sure that the team comes up with a result. The facilitator can be a teacher, mentor or parent.

Milestones and Dates

- Individuals Register: Sept 1 - 30
- Virtual Kickoff: Oct 9
- **Teams Register: November**
- **Proposals: December 1**
- **Interim Reports: February 1**
- **February Evaluations: Last two Saturdays in February and Monday through Friday between them**
- Scholarship Applications: Feb 28
- **Final Reports: April 6**
- Expo and Awards Ceremony: April 25-26

Final Report

<https://supercomputingchallenge.org/21-22/finalreports/specs.php>

Your report should focus on your project rather than the experiences of your team. The report must show that you conducted a scientific investigation, obtained results, and arrived at some conclusions. Be sure to include the following:

- an executive summary that is shorter than one page
- a statement of the problem that you have investigated
- a description of the method you used to solve your problem
- a discussion of how you verified and validated your model
- the results of your study
- the conclusions you reached by analyzing your results
- the software, references, tables, and other products of your work
- your most significant achievement on the project
- an acknowledgement of the people and organizations that helped you

Final Report

Start reviewing the final report that you chose. Can you find where the essential ideas from the proposal appear in the Final Report? Where does it appear?

Look at the titles of the major sections of the report. Can you paste them into the chat?

It may be difficult to read the entire report during this session but start looking at it while we cover other milestones. How well does it meet the guidelines? Maybe post observations in the chat and we may have time for a couple of people to talk about their impression of the report they are reviewing.

November

Start writing code. It does not have to be for your topic just yet but for beginners, learning the language, and for experienced, learning a new aspect of the language.

- The Supercomputing Challenge will have weekly sessions for Data Science, Machine Learning, Python and Netlogo
- Online courses
- Self study with mentors

Find five references for your topic. Try to get some diversity and not just short online references.

Winter Break

Most projects are going to have a part that requires a block of focused time without worrying about school assignments and other distractions. Usually these are best done between semesters during winter break. The winter break is also midway through the year when the proposal is done and yet not last minute. So identify parts of the project that will need a block of time and find a place in your schedule for doing them.

January

Find someone (or two) in your local community that works in the area of your topic. With Zoom it can even be someone that is not local. Write them an e-mail of about three sentences telling them who you are and the project you are working on and ask them if they know someone in the field that would like to meet with your team.

- Everyone loves to talk about themselves and their work, especially to other people that show interest in the topic and have clearly spent time with it.
- By not asking them directly for a meeting you give them an out of suggesting someone else which is going to have a much better chance of getting a response.
- Networking is an important skill and one that people that are good at writing code often find difficult. And it can get you valuable feedback and help on your project.

Sample email

Dear Dr. Jerome Price,

We are students at Abe Lincoln Middle School in Las Vegas, New Mexico. We are working on a project modeling the spread of the coronavirus and other infectious diseases in prison populations for the Supercomputing Challenge. Do you know somebody in this field that would be willing to meet with us to learn more about this subject and discuss our project?

Mary Todd

Robert Todd

Edward Baker

scteam@abelincoln.edu

Interim Report and February Evaluation

<https://supercomputingchallenge.org/21-22/interims/guidelines.php>

The interim report should include the following information:

- the definition of the problem
- your plan for solving the problem computationally
- a description of the progress you have made up to this time
- the results you expect to get
- and at least five citations of information you have referenced

Interim Report and February Evaluation

If your team has been following the previous slides it should not be difficult to write an interim report.

Common pitfalls:

- No code
- No references

Quite often a team will show excellent progress during the interim report and February evaluation and the reviewers will suggest ways to improve the project. During the review of the final report there is no additional progress and no attempt to incorporate the feedback from the interim report and February evaluation.

Group teamwork

Part of the scoring rubric is demonstrating teamwork. Working together as a team falls into the categories:

- Tools
- Processes
- Actions

Can you think of some examples of working as a group that are used in this session? What category do they fall in? Comment in the chat.