

Sachons Sourions

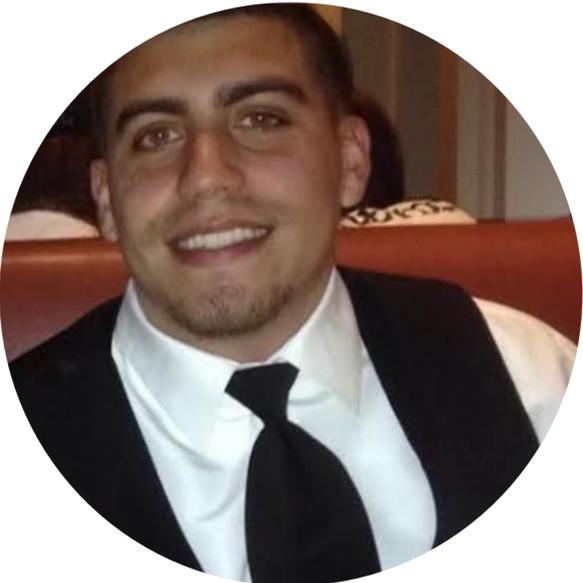


Team Aether

Group 4



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Team Leader



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Interior Design



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Research Lead



Jorge Osorio
Computer Networks



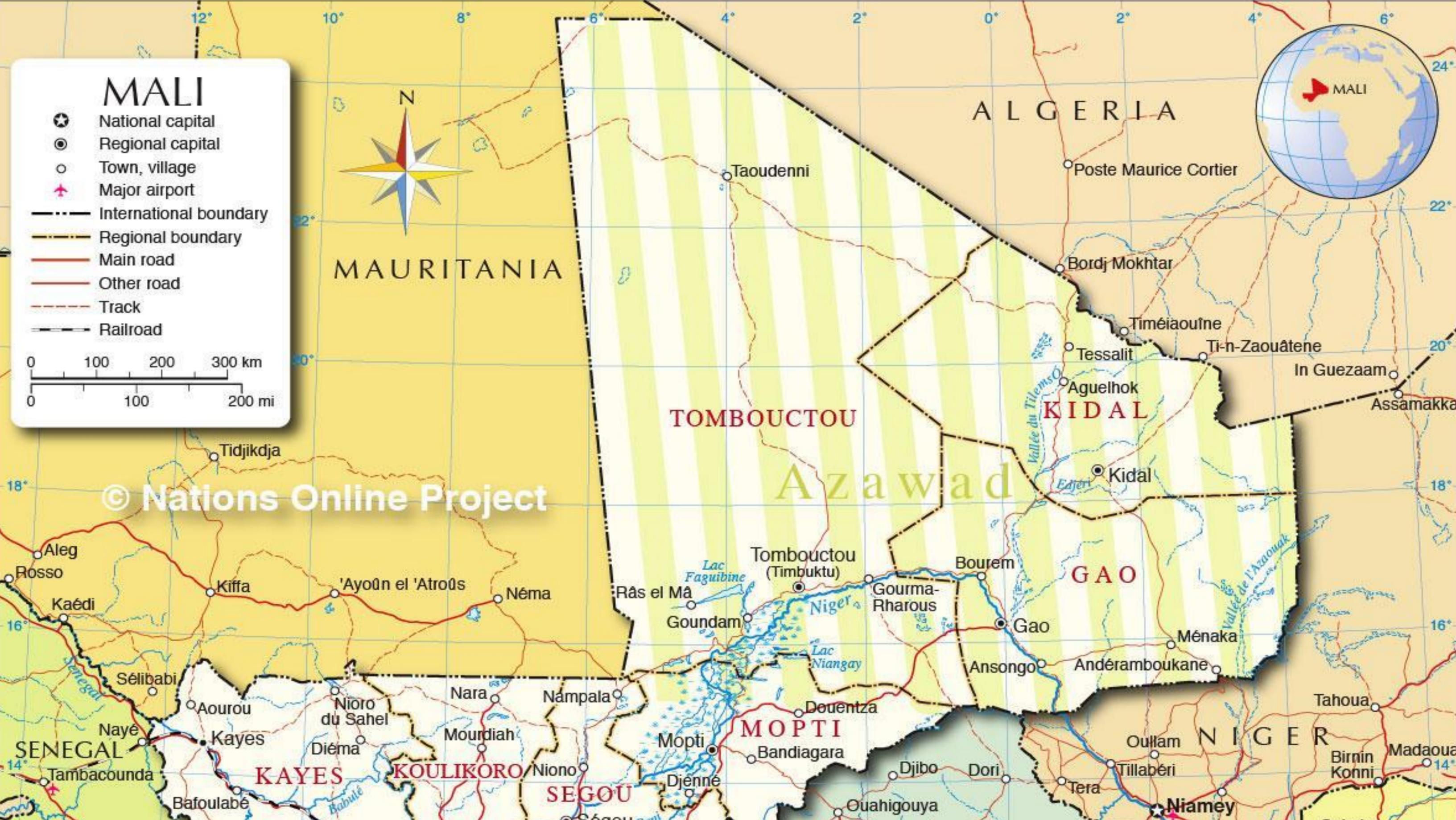
Stillwell Pan
Power Programming



MALI

- ★ National capital
- ⊙ Regional capital
- Town, village
- ✈ Major airport
- International boundary
- - - Regional boundary
- Main road
- Other road
- - - Track
- Railroad

0 100 200 300 km
0 100 200 mi



© Nations Online Project



Our Objective

Overview



-Create a safe, self contained mobile computer lab

-Increase literacy rates in Mali

-Provide students with a quality education



Our Challenge

Problem Statement



Classroom

Our challenge is to create a sustainable, self-contained, and maintenance-free electronic ecosystem while optimizing space usage.



Power

The ultimate test for such an ecosystem is the duration of efficient operation pertained by the rate of battery degradation.

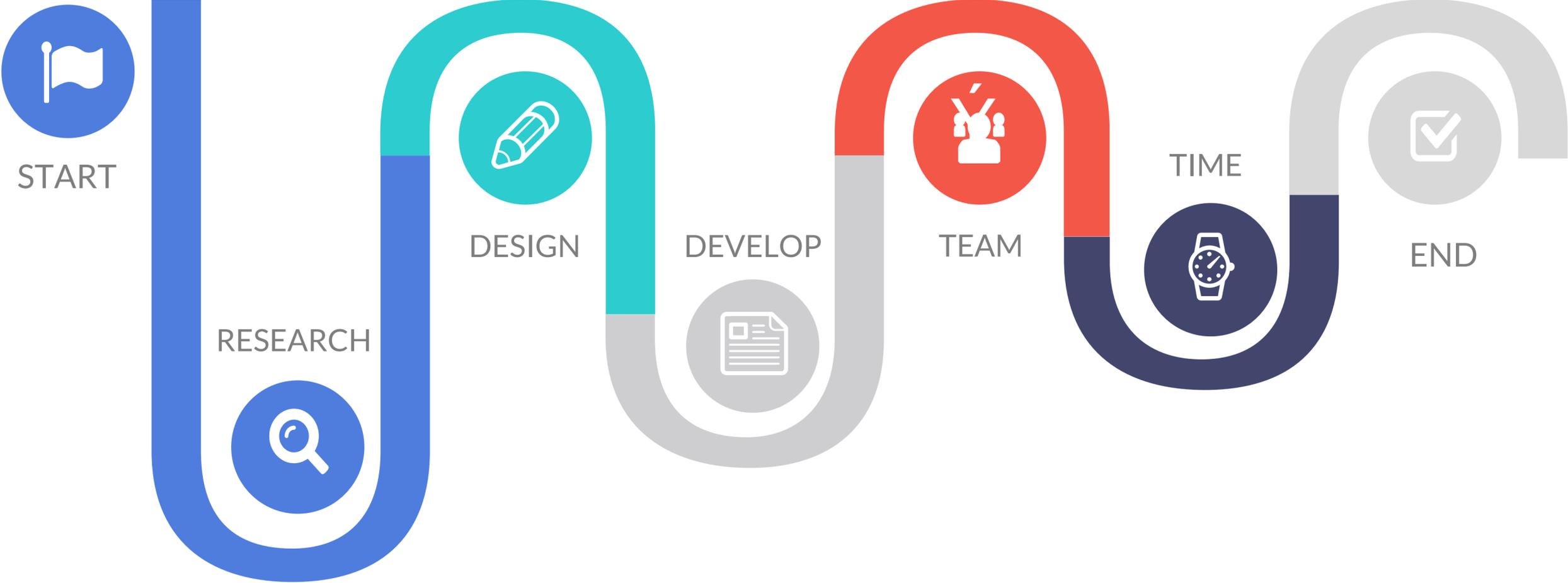


Learning

The team will have to decide what the best teaching solution using computers will be based off what resources we can provide.

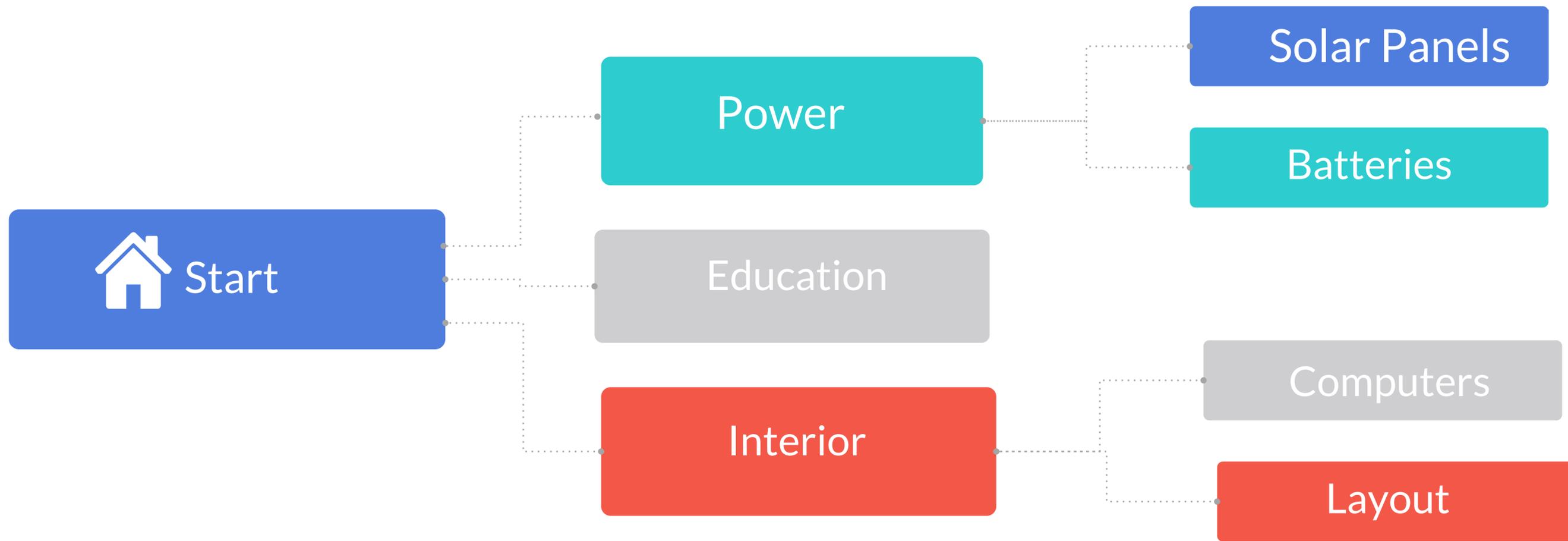
Project Outline

Let us Learn, Let us Smile



Research

Data Collection



Brainstorming

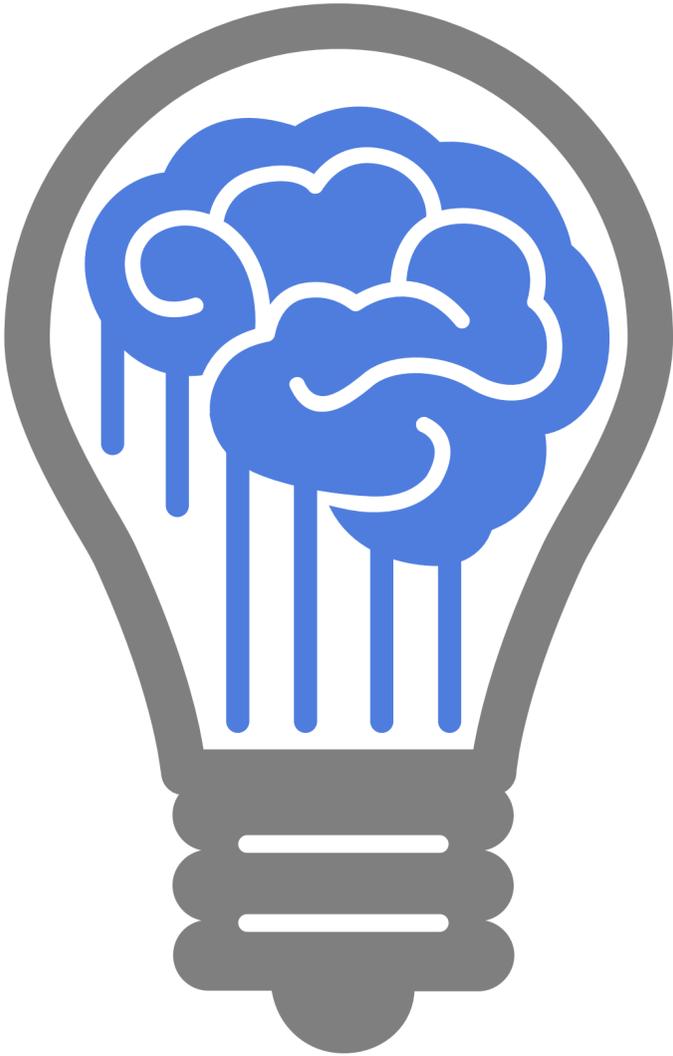
Design Phase



Project build must not go over allotted time



Will be able to be transported to desired location without issues



Children can adapt to the classroom easily



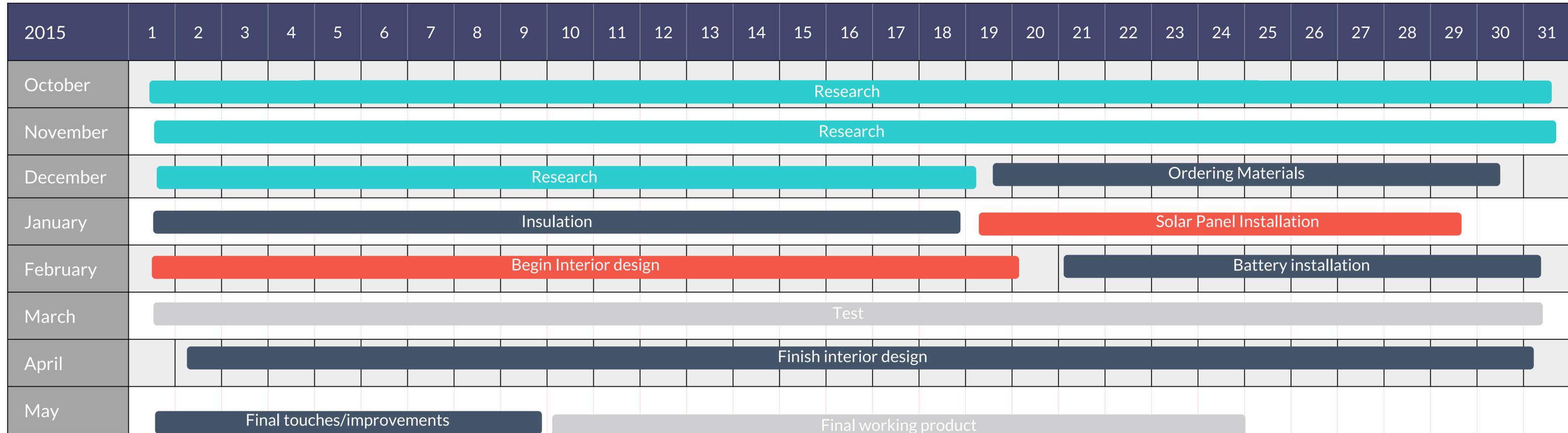
Able to withstand years of weather abuse



Cost effective and self sufficient

Project Schedule

Time Management



Container



Interior Design

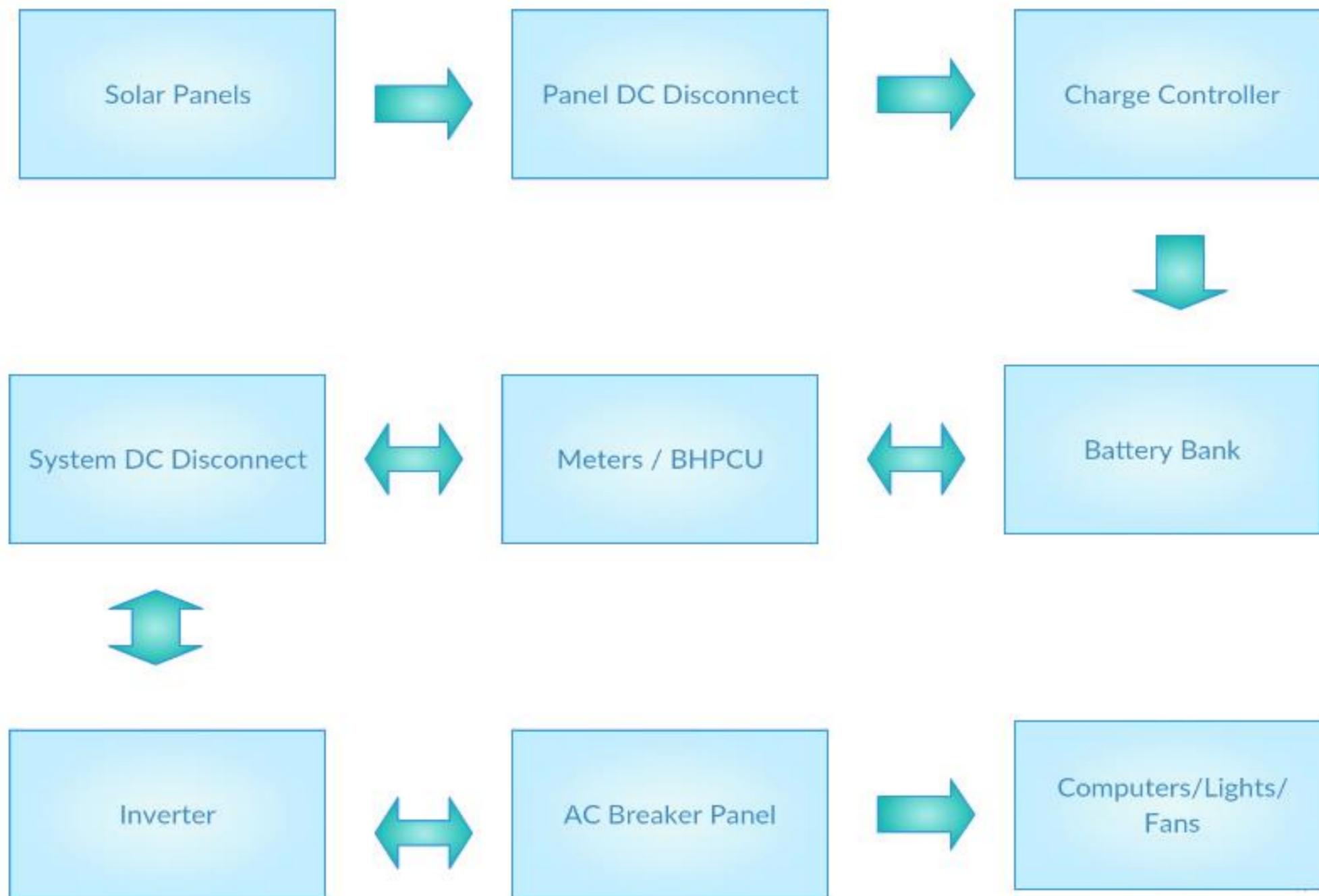
SS Houston

We have decided to design the lab with a conference style setup, which would allow an instructor to easily maneuver through the classroom and assist students without the hassle of squeezing through tight spaces.



Solar Power

Typical Off Grid Setup



Performance Measures

We will be implementing a Battery-Health Preservation Control Unit (BHPCU). This unit will collect and use the following data

- rate of energy collection
- rate of energy usage
- battery charge level
- battery temperature level

From the collected information the BHPCU will first decide if energy being collected is more or less than the energy being used.



Method I

Gigabyte GB Mini Case

- Abundant peripherals
- WiFi and Lab built in

Intel Atom N3510

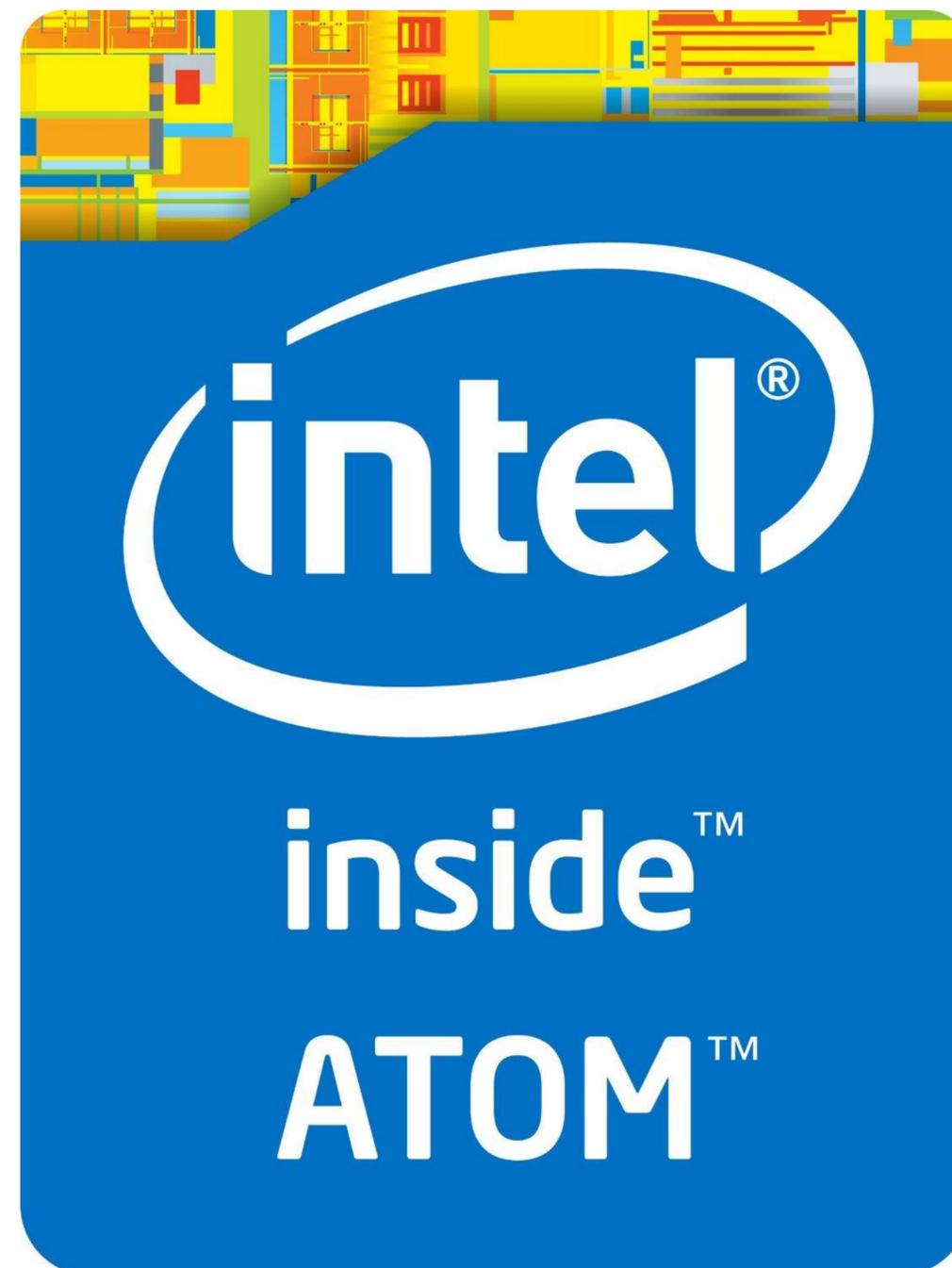
- Quad Core
- Intel HD graphics equivalent to an AMD Radeon HD 6310
- 7.5 Watts Max Power Consumption

64 GB EVO SSD

- Lower power consumption than a standard HDD
- Higher tolerance to heat and vibration

Total power consumption: ~520W

Total cost: ~ \$8000



EdUbuntu



Pre loaded with applications ranging from graphic design to simple addition games.



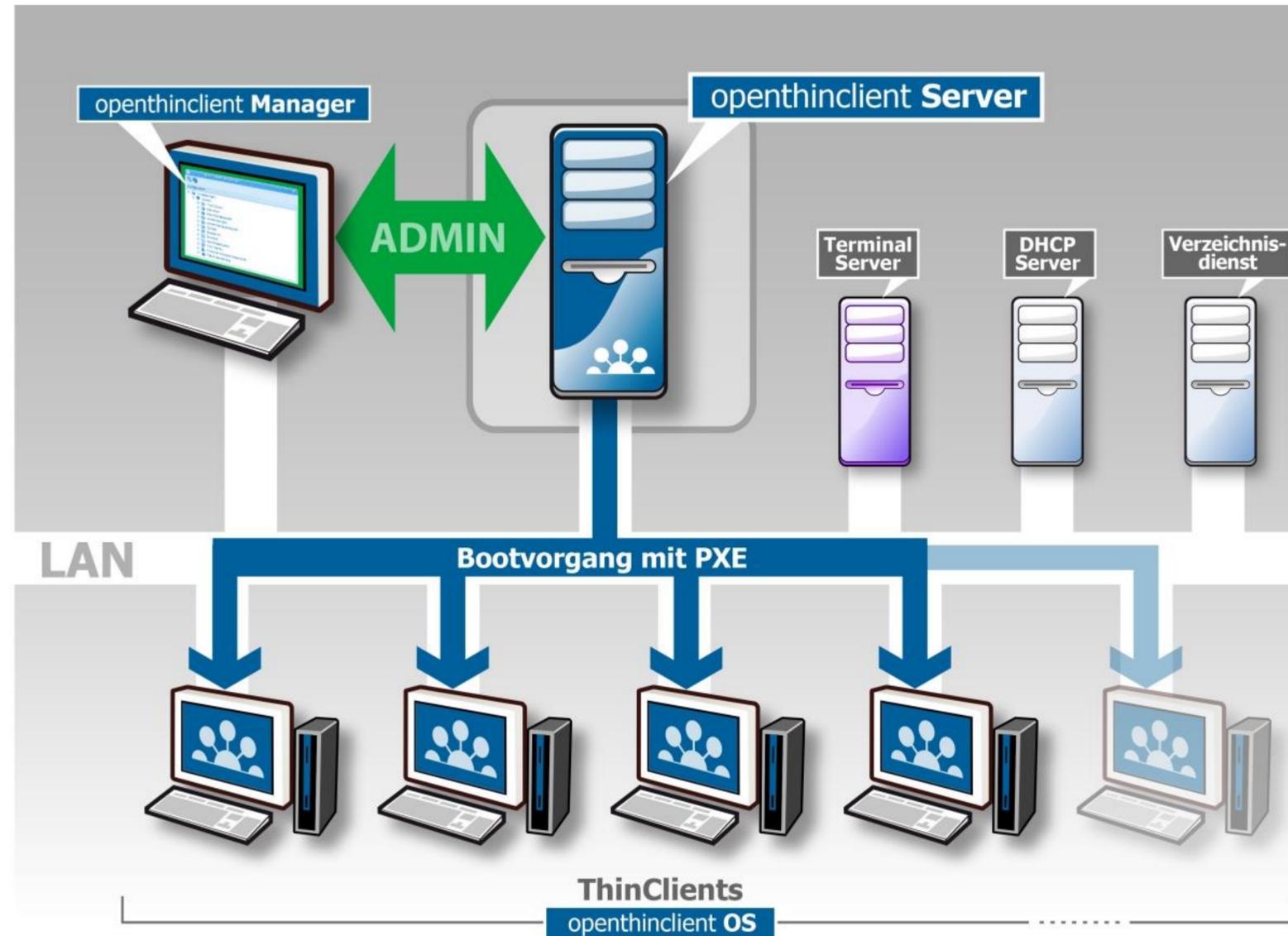
Built in intelligent power management



Low system requirements and optimization ensure a smooth experience even on low power hardware.



openthinclient



Hardware

Hardware:

ThinkServer TS140

- Running Ubuntu 14.04 LTS
- Core i3-4150
- 180 watt max

Thinclients Thinkpad x61s

- Core 2 duo max TDP of 17 watts
- Gigabit PXE support LAN

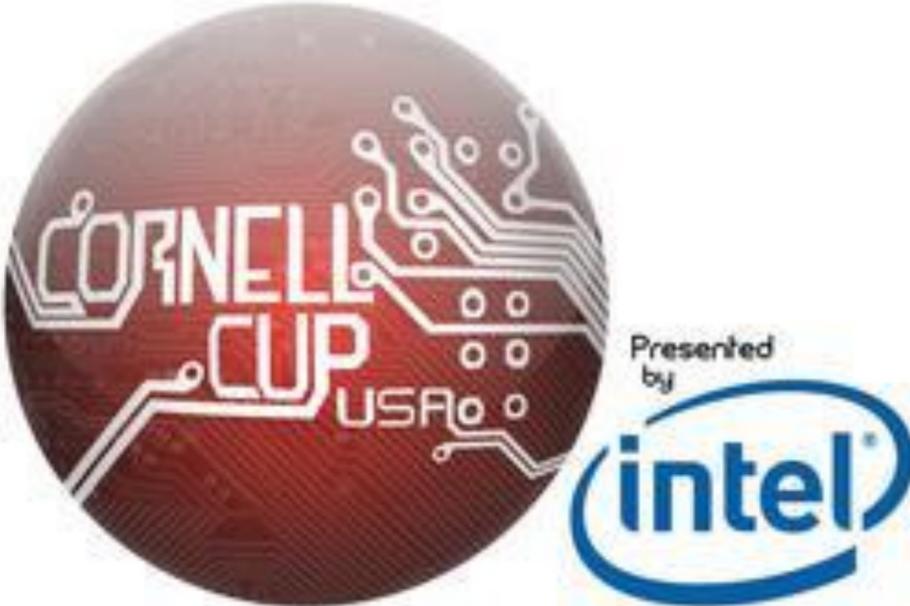
Total power consumption: ~510W

Total cost: ~ \$2500



Cornell Cup

First Round Entry



Acknowledgements

Faculty/Staff



Mequanint
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Sponsor



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Benhaddou

Faculty Advisor



Meghana
Chittajallu

Instructional Assistant



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HOUSTON

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Questions?

