Microgrids are systems of distributed energy resources and loads that can operate either connected to the grid or islanded.

Advantages:

- Strengthen the grid resiliency
- Provide electricity in remote areas
- Increase the penetration of renewable sources

The global potential of microgrids worldwide is large*

- Growth from 3.2 GW to 13.4 GW in 3 years
- Market value of $40B by 2020

*Based on 2015 report from Navigant Research
Microgrids are **hard to build**

To construct a microgrid a specialized and costly development team is needed to:

1. Design the microgrid based on potentially unique site requirements
2. Select and install the elements taking into account potential compatibility issues
3. Test the system to ensure all the elements behave correctly with each other
4. Build a customized control structure
5. Redesign the entire system, in case it needs to be expanded

Every microgrid requires a new customized design. They are NOT replicable.
Presenting

Heila IQ

Named after the Icelandic word for “Brain”, the Heila IQ local controller gives microgrids the ability to:

- Sense
- Communicate
- Control
- Learn

The first product from Heila Technologies, the Heila IQ was designed by MIT students and alumni with expertise on microgrids, control, computer science, and machine learning to make building and managing microgrids easier.
How does Heila IQ work?

Microgrid project managers can use the Heila IQ local controllers as **building blocks** to connect and monitor as many sources as required.

It can **sense** changes in the system’s conditions and **communicate** them to the operator; it can automatically **control** the sources and seamlessly react to the changes; and it **learns** from the long term operation of the microgrid to improve performance.
What makes HEILA different?

1. It is **plug-and-play**

2. It is **compatible** with most industry standard protocols, including: Modbus TCP, Modbus RTU, Lonworks, Bacnet, CAN, and more

3. It has **multiple analog and digital I/O channels** (dry and wet contact capabilities) and incorporated data logging

4. It **standardizes communications** of all elements for the central controller

5. It creates a “**demilitarized zone**” between the central controller and the microgrids elements, protecting the system against cyber attacks

6. It uses **droop control** to enhance the microgrid resilience, allowing it to operate in island mode without the need of any communications

7. It facilitates **seamless integration** of new elements to the system

8. It provides **automatic battery characterization**

9. It provides an **intuitive interface** for the local operator

10. It is **built to last**. Its rugged design allows it to work flawlessly under the harshest conditions
Who are our competitors?
What is the total addressable market?

Estimates based on Navigant Research’s report for 2020

Global microgrid capacity = 41.2 GW
Number of power sources = 206,154
Initial pricing per Heila IQ unit = $10,000

Estimated TAM

$2.1 billion
Who are our **customers** and **partners**?
What are our next steps?

- Development
- Onsite Pilot
- First sale ($95K)
- We are here
- Seed investment ($2M)
- Targeted Marketing
- Limited Production
- Series A ($20M)
- Expanded Production

Year 1

Year 2

Year 3
The team behind HEILA

Jorge Elizondo
MIT EE PhD student

Jorge Elizondo is a 5th year PhD student at the MIT Electrical Engineering Department. His research is focused in control strategies for microgrids, particularly in emergency situations. He has more than 8 years of experience developing technology for power systems.

Francisco Morocz
MIT MechE MS '13

Francisco Morocz has a M.S. in Mechanical Engineering from MIT, where he focused in product design methodologies. He has several years of experience as a consultant and team lead in the field of software development.