Understanding Energy Usage for Smart Home Device

Kyle Gardner

Presentation Outline

Project Overview
Objectives/Goals
Data Management
Description and Location
Background
Data Analysis and
Exploration
Issues Discovered
Recommendation

Data Project Overview

Applicability of data analytics for electrical sub-metering and power management.

Data Description Characteristics

- Electric power consumption from 1 household in FRA
  - Estimated 2 million measurements
  - Measurements per date and time
- Timeframe :
  - 2006-2010 (47 months)
- Submeters:
  - Sub1: Main Kitchen Appliances
  - Sub2: Washer/Dryer, Refrigerator
  - Sub3: Water Heater & AC unit
- Power :
  - Watt Hours
  - Global active power (not measured in meters)

- Data Management

Data Security	Extract Data
Transform Data	Load Data
Data Analytics	Reporting Dashboard

- Location of Data :
  - Secured on R MySQL Server
  - Access through R Studio

Objectives/Goals

-Grow business use of sub-meters in housing Market

- Provide homeowners with efficient Smart Homes and increase their understanding and control of their power usage

- Utilize data analytics and visualizations to model patterns of energy usage from electrical sub-meters for residential homes

Background: Smart Homes

Homes equipped with lighting, heating, and/or electrical devices that can be controlled remotely

Application of Smart Homes:
- **Security and Surveillance System**
- **Lighting Schedules**
- **Programmable Thermostat/ Water softener's**

Benefits of Smart Homes to Consumers:
- **Convenience**
- **Control**
- **Savings**
- **Efficiency**

Background: Sub-Meters

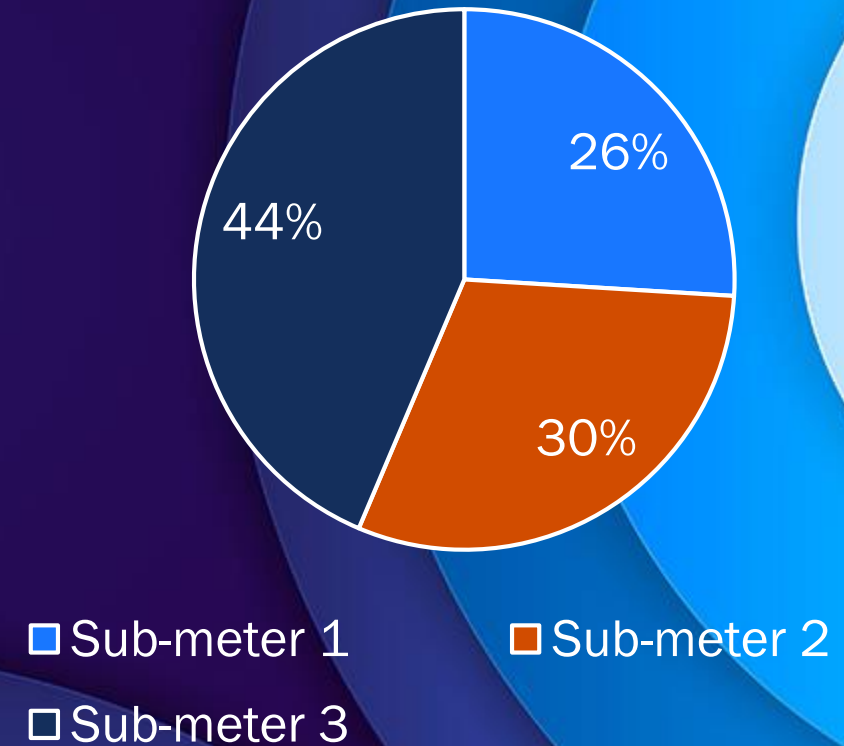Devices that can be used to access, collect, and monitor energy consumption data remotely

What Can be Learned

- Measure a specific location or energy load
- Categorize of energy from different of sources
- Check consistency of power consumption with billing
- Identify where energy efficiency opportunities exist
- Increase understanding of energy usage

Descriptive Statistics

Meter	Min	1st	Median	Mean	3rd	Max
Meter1	0.0	0.0	0.0	1.2	0.0	82.0
Meter2	0.0	0.0	0.0	1.3	1.0	78.0
Meter3	0.0	0.0	1.0	6.2	17.0	31.1

Percentage of Power Consumption (Kwh)

26%

44%

30%

☐ Sub-meter 1   ☐ Sub-meter 2

☐ Sub-meter 3

Data Analysis and Exploration

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Data Analysis and Exploration

Plan of addressing data security

Security

-Develop website for user

-Cyber Security

-Browser specific

-2 Point Verification

-Access from mobile devices

Management

- Data kept on secure MySQL

- Password protected

- Data warehouse/Data analyst

Issues Discovered

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$25
Billion

$50
Billion

$100
Billion

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Recommendations

There are several factors that would be important to better understand power usage in household

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Business Model

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Market Opportunity

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$12,345

$6,789

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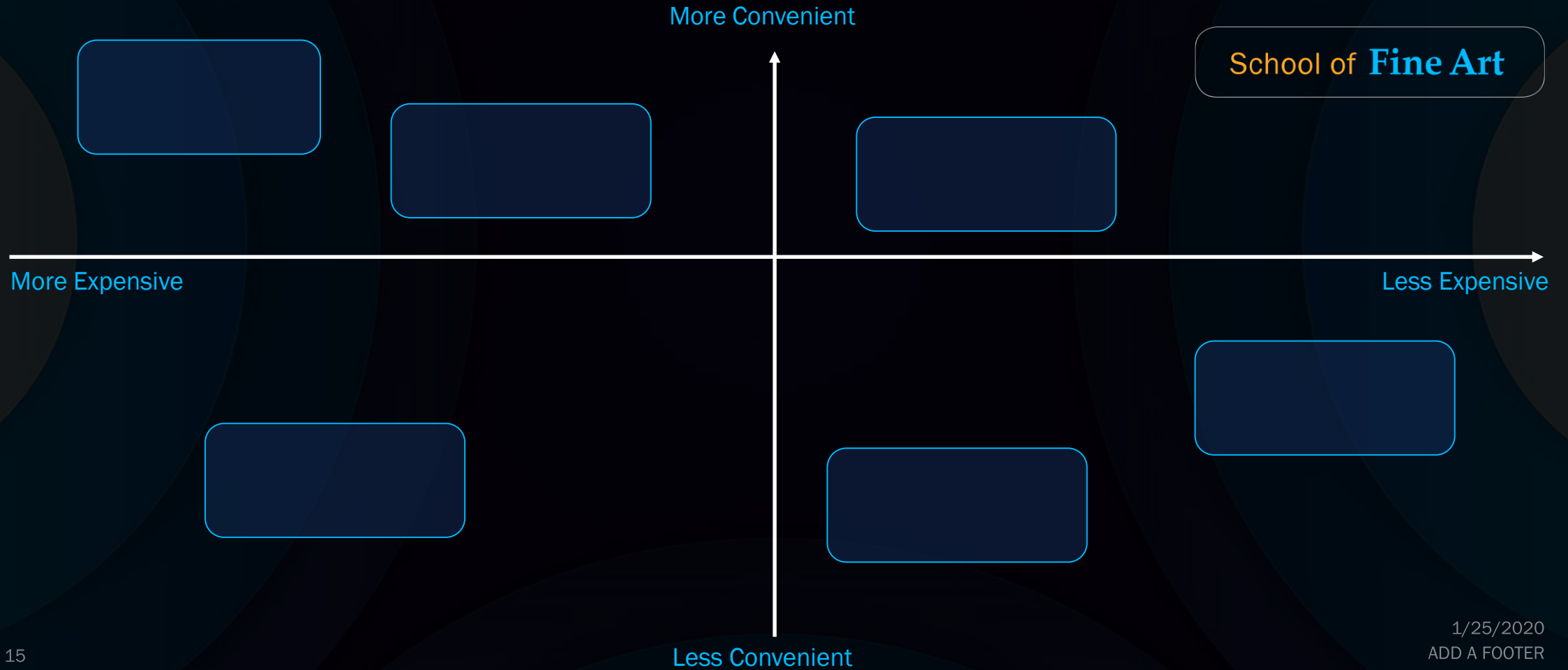
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Competition

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Competition Slide

School of **Fine Art**

More Convenient

More Expensive

Less Expensive

Less Convenient

15

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Growth Strategy

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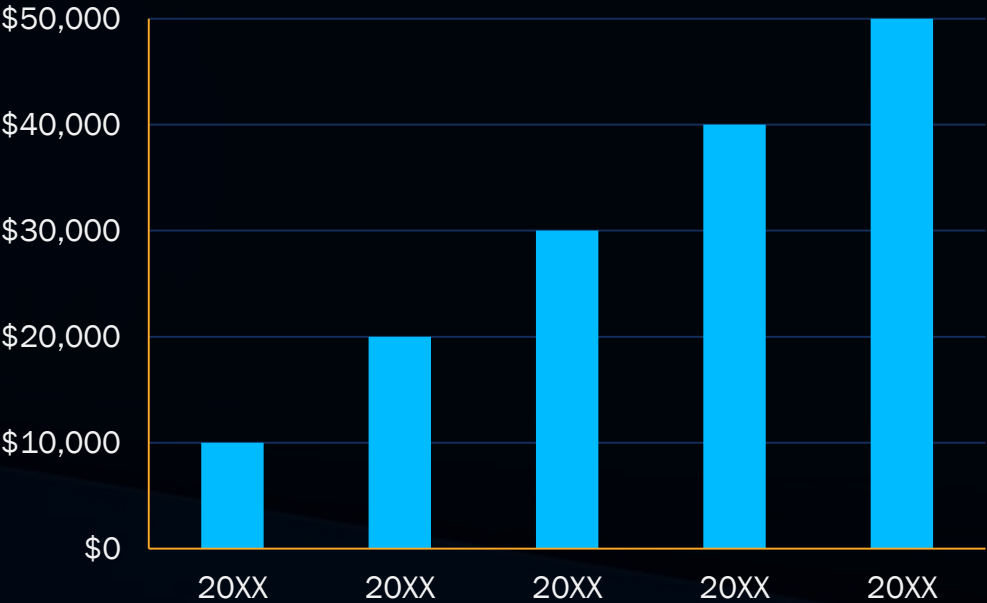## SECTION 1 TITLE

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Traction

Key Metrics

	Clients	Orders	Gross Revenue	Net Revenue
20XX	10	1100	$10,000	$7,000
20XX	20	200	$20,000	$16,000
20XX	30	300	$30,000	$25,000
20XX	40	400	$40,000	$30,000
20XX	50	500	$50,000	$40,000

Revenue by Year

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Timeline

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20XX
Month

20XX
Month

20XX
Month

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Financials

	20XX	20XX	20XX	
Users	50,000	400,000	1,600,000	
Jobs	500,000	4,000,000	16,000,000	
Average price per job	75	80	90	
COMPANY REVENUE @15%	5,625,000	48,000,000	216,000,000	
- Cost of Revenue	0	0	0	
Gross Profit	5,625,000	48,000,000	216,000,000	
OPEX				
- Sales & Marketing	5,062,500	38,400,000	151,200,000	70%
- Customer Service	1,687,500	9,600,000	21,600,000	10%
- Product Development	562,500	2,400,000	10,800,000	5%
- Misc.	281,250	2,400,000	4,320,000	2%
TOTAL OPEX	7,596,750	52,800,000	187,920,000	
EBIT	-1,968,750	-4,800,000	28,080,000	13%

Team

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Person 1 Title

Team Member Title

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Person 2 Title

Team Member Title

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Person 3 Title

Team Member Title

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Our Team

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Person 1 Name
Team Member Title

Person 2 Name
Team Member Title

Person 3 Name
Team Member Title

Person 4 Name
Team Member Title

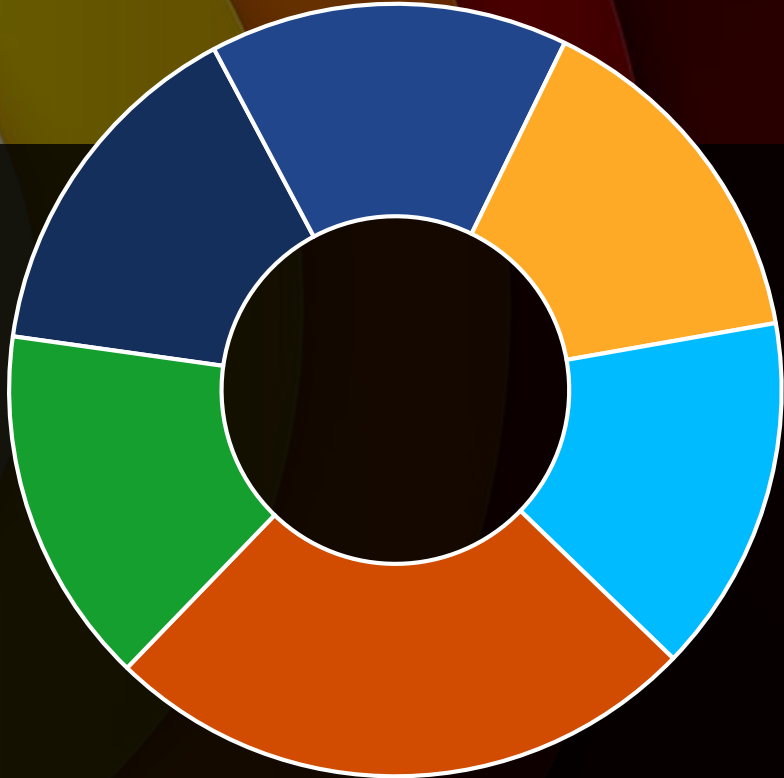### Person 5 Name
Team Member Title

Person 6 Name
Team Member Title

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Funding

$1,500,000
Category Description

$1,500,000
Category Description

$1,500,000
Category Description

$2,500,000
Category Description

$1,500,000
Category Description

$1,500,000
Category Description

School of **Fine Art**

Thank you!

Allan Mattson

Phone:
+1 206 555-0145

Email:
allan@fineartschool.net

Website:
www.fineartschool.net

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Appendix

Testimonials

Person 1 Title

Company, Title

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Person 2 Title

Company, Title

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Case Study

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Mobile version

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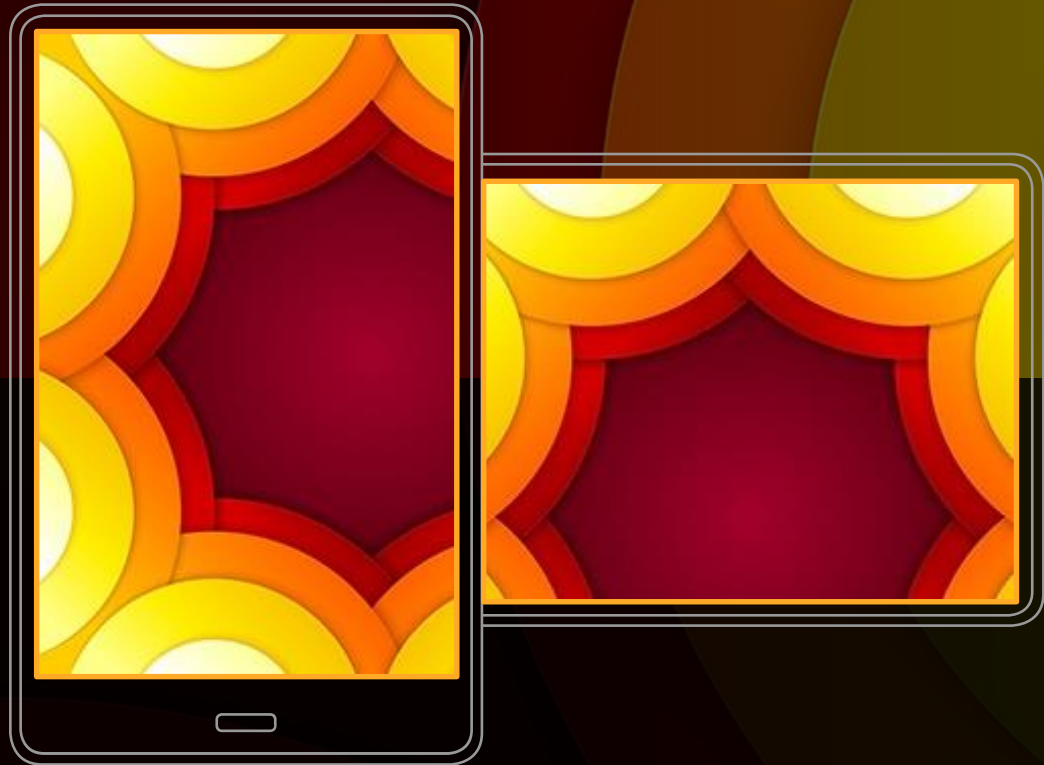
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