Building Partnerships in Clean Tech

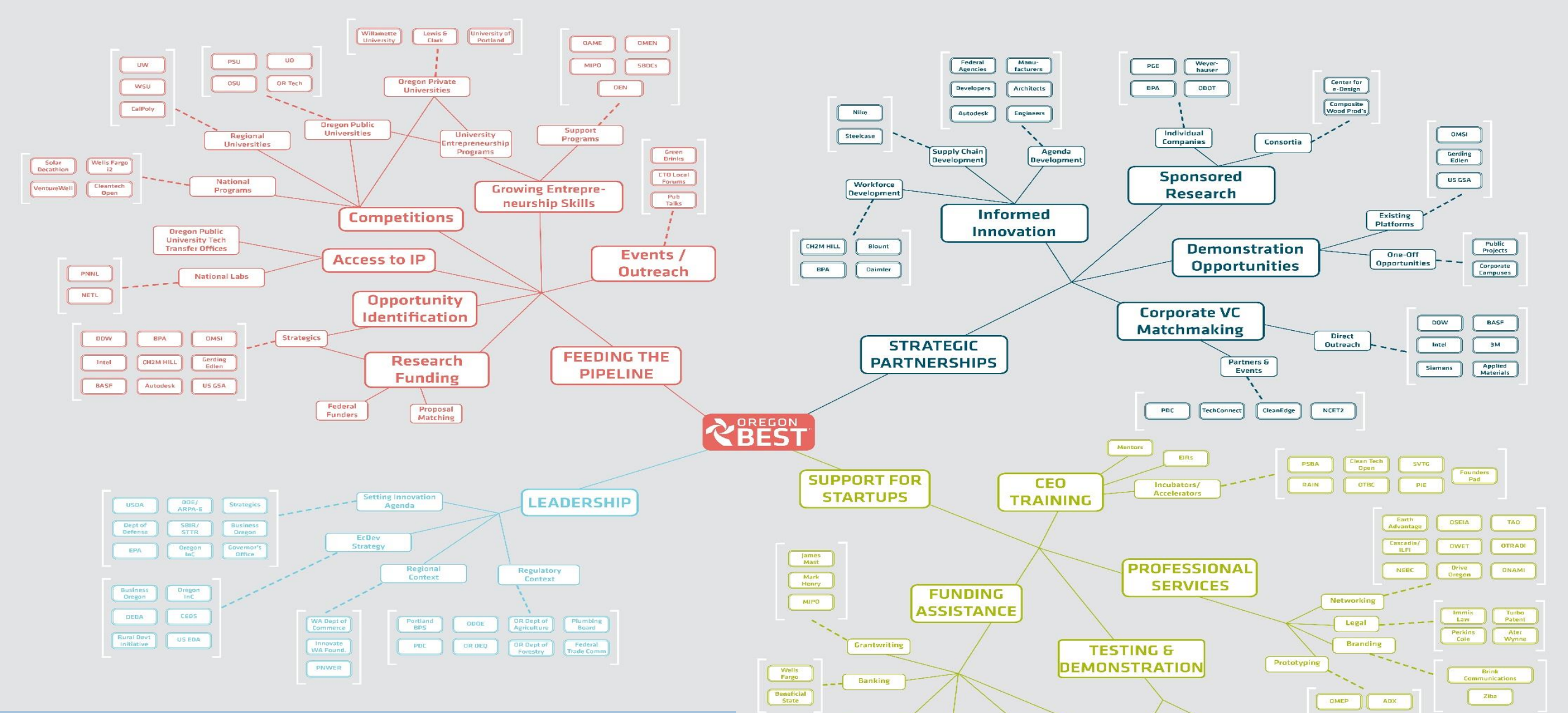
DAVID KENNEY, SCE PIKE, BEN STAPLETON, STEPHANIE YANCHINSKI

Oregon BEST

- Nonprofit supporting cleantech startups in Oregon
- Funding
  - Access to state commercialization funding
  - Assistance pursuing SBIR/STTR funding
  - Connections to angel, VC, corporate, impact investors
- Support
  - Entrepreneur-in-residence coaching
  - Connections to technical resources (expertise & lab equipment)
  - Five month accelerator program (curriculum & mentoring)
  - Manufacturing scale-up assistance
  - Funded internships
  - National event showcasing
- Oregon BEST FEST in September

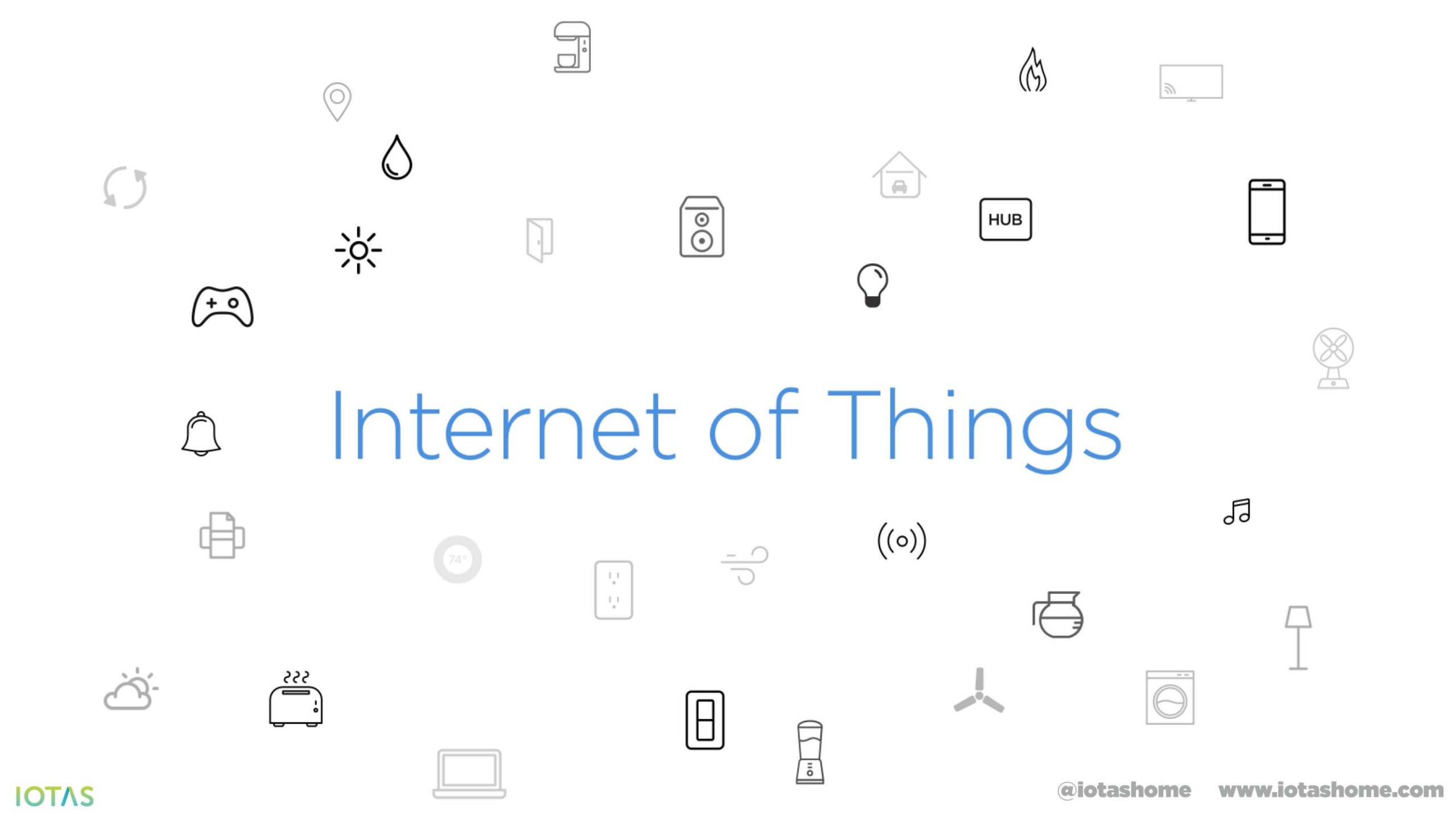
Today's Scope: Cleantech startups and ecosystem partnerships

- Partnerships focusing on:
  - Startups
  - Utilities
  - Corporate partners
  - Customers
- Topics for discussion:
  - Value proposition
  - Funding models
  - Tips for successful collaborations
  - Challenges/pitfalls
  - Changing environment (political & otherwise)



Ecosystem Mapping

(an example)



Internet of Things

20 Billion devices will be connected by 2020

IOTAS

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Challenges

Why is IoT a challenging field?

- Software? Hardware? Both?
- A technology that has had setbacks
- Lots of ‘parts’ - it takes a village
- Maintenance
- We have targeted a very specific audience

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IoT in the **Home**

IOTAS

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Opportunities

1. **Save $ on utility bills**
2. **Peace of mind**
3. **Comfort and convenience**
4. **Crowd sourced rules**
5. **Machine learning**

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Social impact when an apartment autosaves energy

Potential energy savings of an IOTAS installed apartment = 6.74 kWh/sq.ft-yr

18M apartments = 17.7B sq.ft

17.7B sq.ft x 6.74kWh = 119,136 GWh/yr or ~$7.3B in Potential Savings

Which is equivalent to:

2,967,957,82

Incandescent lamps switched to LEDs

-or-

79,255,473

acres of U.S. forests in one year

-or-

3,795,855

Garbage trucks of waste recycled instead of landfilled

-or-

Power NYC

Provide power to New York for 1 year

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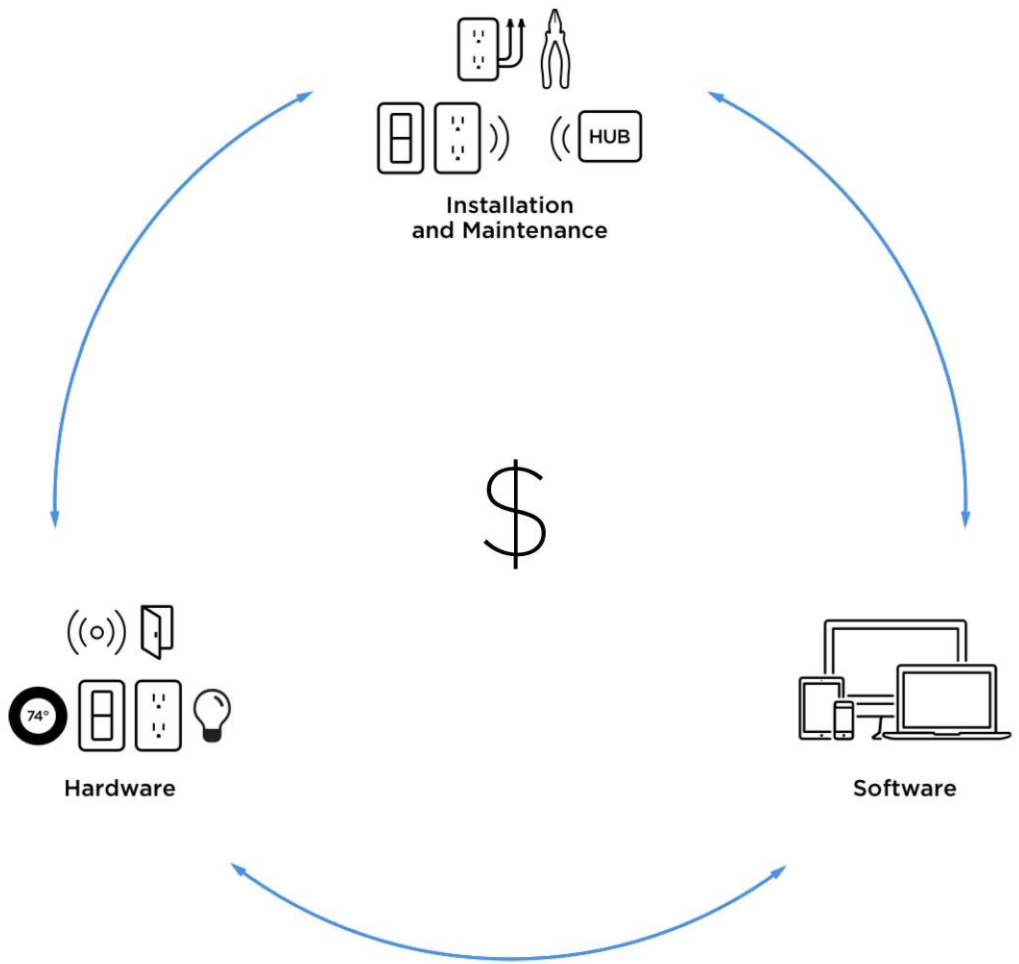
Difficulties of IoT in the Home



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IoT in the **Community**

Opportunities

1. **Public health and safety**
    - Improve emergency services
    - Monitoring street lights
    - Structural safety

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Opportunities

2. Traffic congestion

- Adaptive traffic management
- Smart parking
- Autonomous vehicles

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Opportunities

3. Air & water quality

- Middle to low income countries most effected
- Reduced air pollution
- Water management

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Opportunities

4. Improve quality of life

- Lives saved by fewer traffic accidents
- Crime prevention
- Cleaner streets

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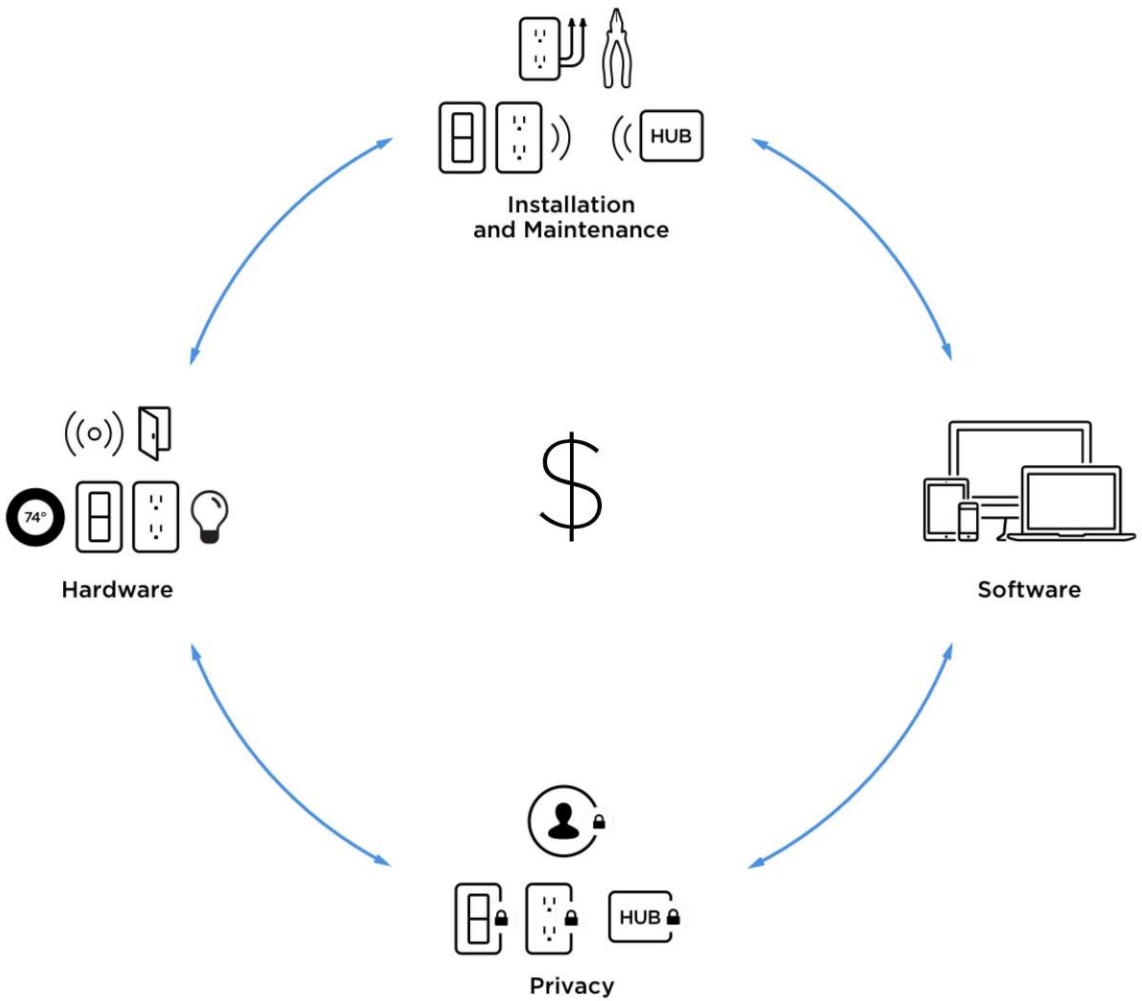
Difficulties of IoT in the Community



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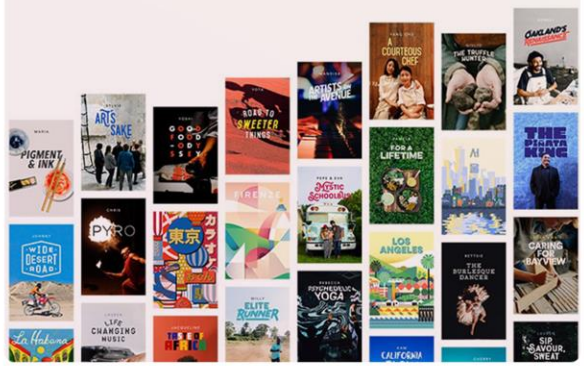
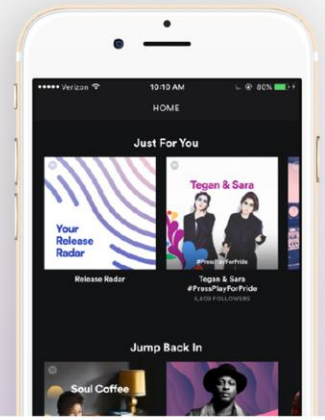
Access to value is more important than ownership.

smart

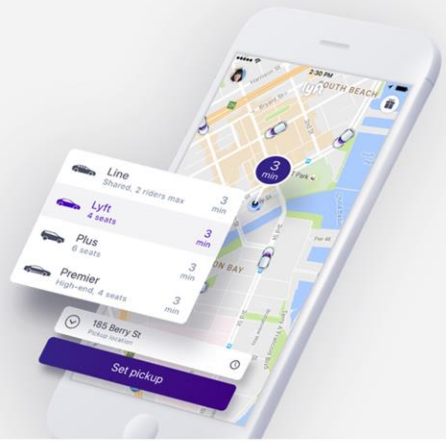
airbnb



Spotify®



lyft



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What do we do?

Smart Apartments/MFDs

- Pre-install all hardware
- Pre-provision all devices
- Provide on going services

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How much?

27% Energy Savings per apartment

(Based on independent 3rd party study)

Research grant with Oregon Best to prove this out

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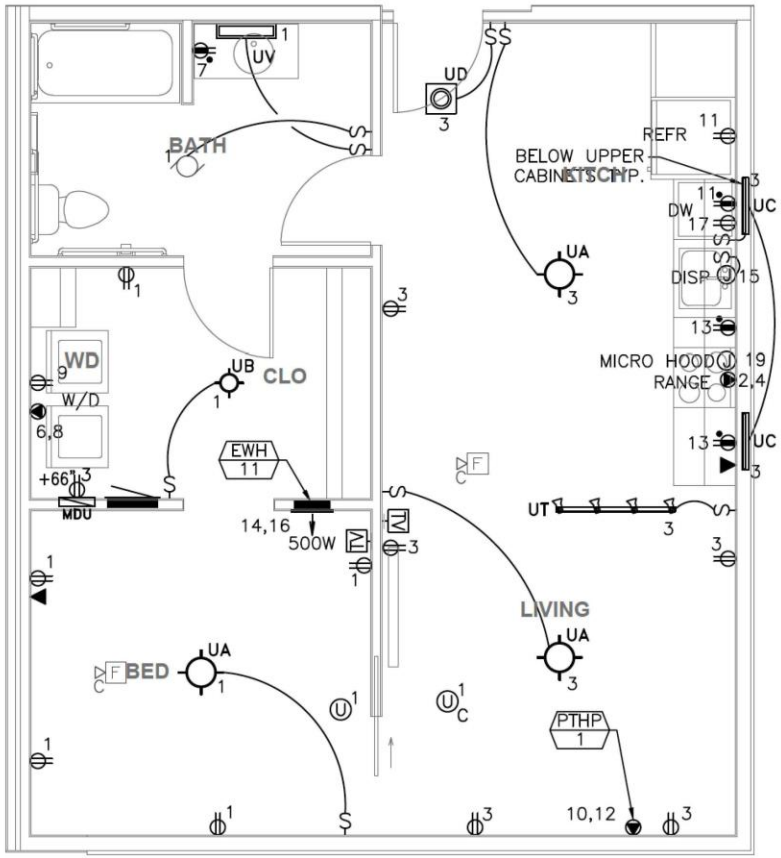
IoT Automation & Data Science Opportunities



2 Unit 1/1-D - ELECTRICAL
1/4" = 1'-0" TYPE A, TYPE B

We analyze in real time the data for continuous improvement

- Lab like controlled environment
- Minimal variables to gather data
- Entire home provides data
- Sec by sec from all connected devices
- Living Profile (lifestyle analysis)

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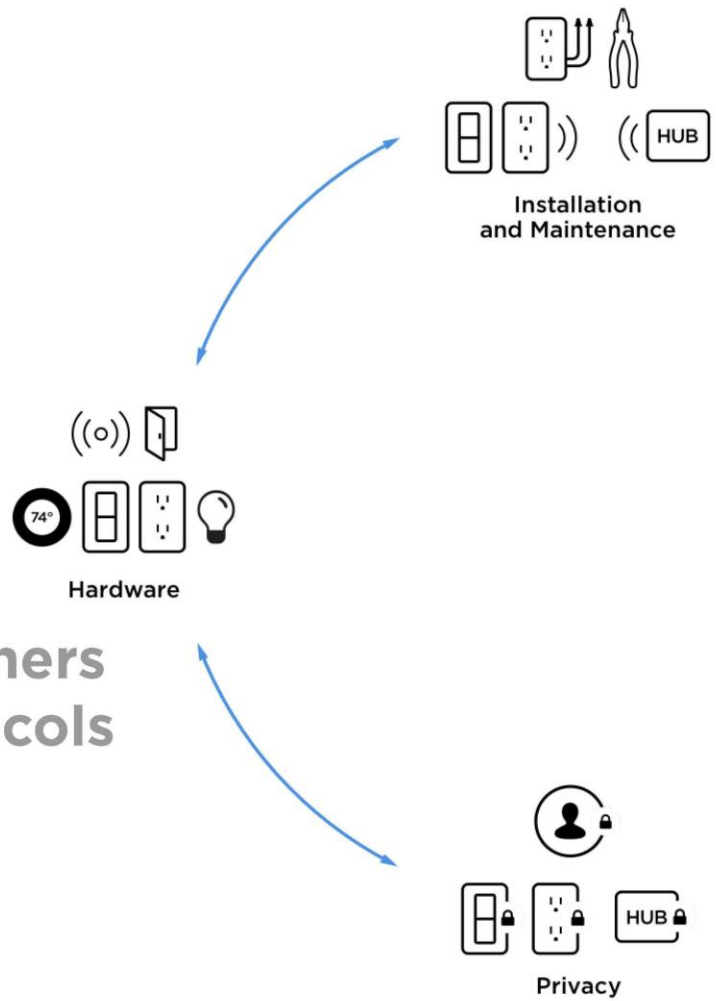
Revisit IoT problems



Work with builders/Provisioning

- Work with builders/owners
- Smart provisioning *(patent pending)*

Tested Devices

- Pre-installed
- Professional Installs
- ‘Certified’ partners
- Standard protocols

Experience

- Open source
- Cross platform
- Minimal common experience

Personal control

- Tiered authentication
- Access controls
- Incident logging/reporting

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Energy Saving Use Case

Vacant Units

- 10% of units vacant
- Security
- Showing
- Emergency notifications

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Potential Water Pipe Leakage
Unit 307 - Mar. 3rd, 7:13am

Motion Sensor Alert in Vacant Unit 282
Alert Maintenance >

Planning a Community Event?
87% of are home on Tuesday evenings between 6pm - 8pm.

Planning Service Repairs?
Mon thru Wed between 11am-3pm is best. Only 11% active residents.

Average indoor temp of 78 deg.
In the last week, avg. outdoor temp

Settings Clear All View All

Occupancy | Energy | Water | Temperature

86%
Occupancy
14%
Vacancy

Occupancy

7pm
8am

Residents Home

10am
3pm

Residents Away

Month

Nov 2015 Feb 2016

Active Units

View Active Units >

Vacant Units

View Vacant Units >

The future

As IoT devices get more ubiquitous, how you use the generated data will be the differentiator

- Apps and continuous improvement
- Living Profile (lifestyle analysis)
- Crowd sourced rules
- Shared profits
- AI

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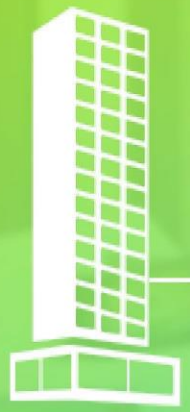
We Upgrade Apartments with Apps, Data & A.I.



Crowd Sourced Rules

- John is saving 12% on energy
- Everyone else is saving only 8%.
- Using John's Living Profile, IOTAS rolls out new rule to save everyone 12%

"Darren, we have a new rule from your neighbor that can save you 12% on energy. Want to try it out?"

Public Transit 3rd Party App

IOTAS integrates with public transit to notify residents when it's time to leave to catch their train or bus.

IOTAS starts blinking the entryway lights to let Darren know he needs to leave now to catch his bus.

Weather 3rd Party App

It's raining outside.

IOTAS starts blinking the closet lights to let Darren know he needs to wear his raincoat.

IOTAS

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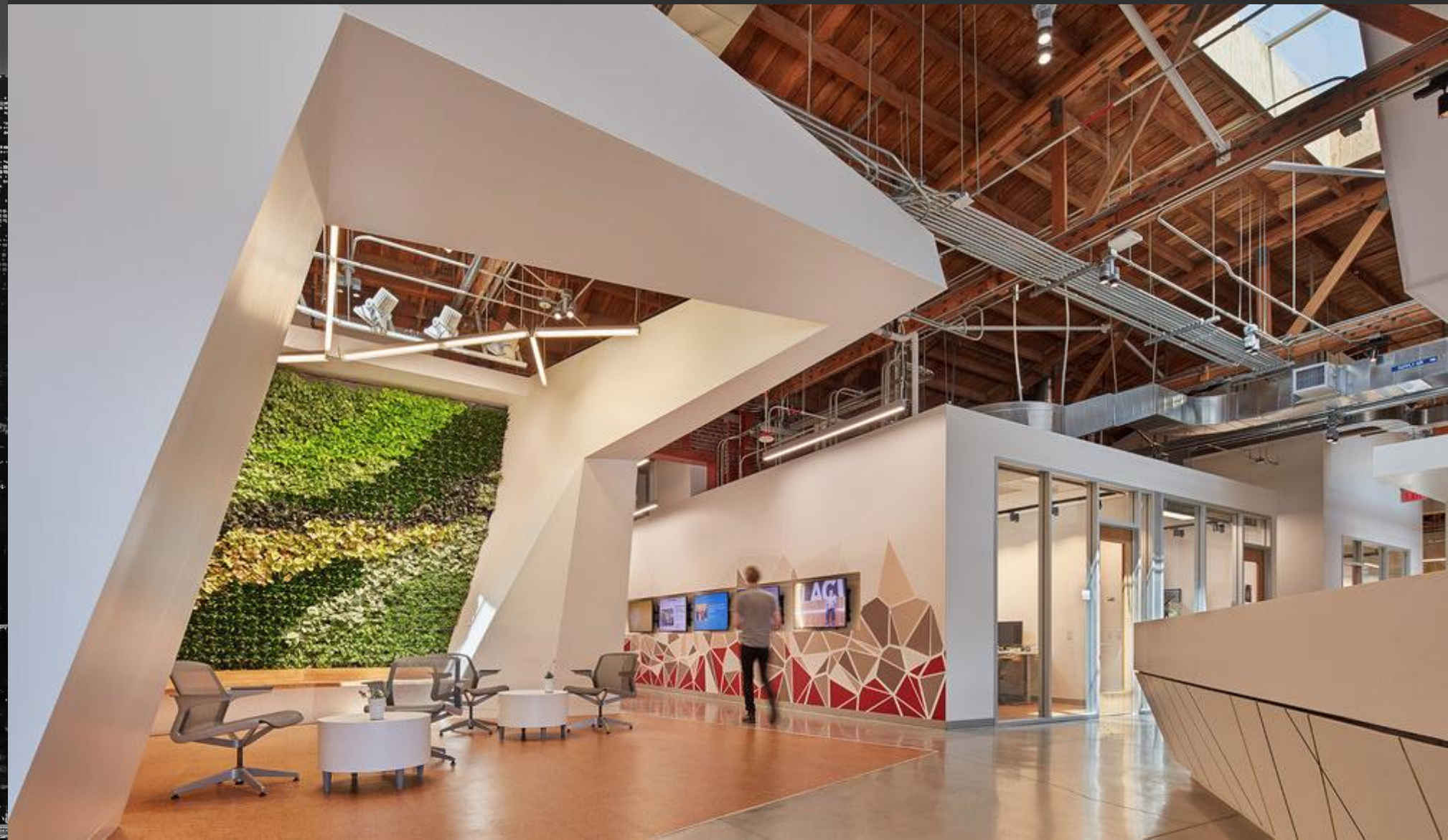
LACI: Partnership Presentation

LACI
FOR ENTREPRENEURS
BY ENTREPRENEURS

Partnerships: La Kretz Innovation Campus

60,000 FT2 OF WORLD CLASS INNOVATION SPACE

IN THE CENTER OF LOS ANGELES' ARTS AND INNOVATION DISTRICT



LACI
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BY ENTREPRENEURS

Partnerships: La Kretz Innovation Campus

COLLABORATIVE WORKSPACE

CONFERENCE ROOMS

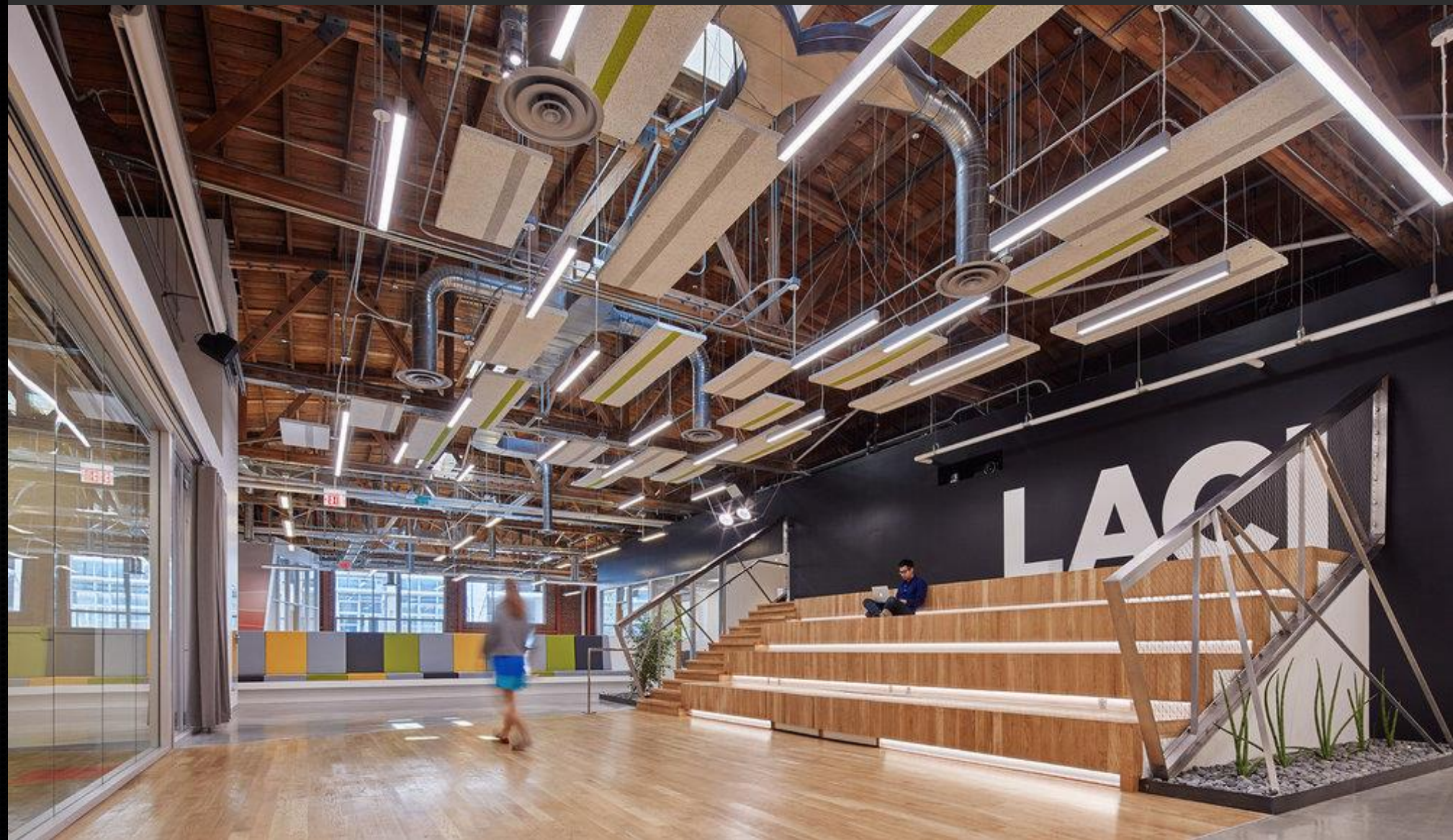
AMPHITHEATER AND EVENT SPACE

PROTOTYPING CENTER

TRAINING CENTER

CUSTOMER ENGAGEMENT LAB

MEDIA LAB



LACI
FOR ENTREPRENEURS
BY ENTREPRENEURS

Partnership: Amplifying Our Story

400 VISITORS EACH WEEK

LACI
FOR ENTREPRENEURS
BY ENTREPRENEURS

Partnerships: La Kretz Innovation Campus

CHEMISTRY “WET” LAB

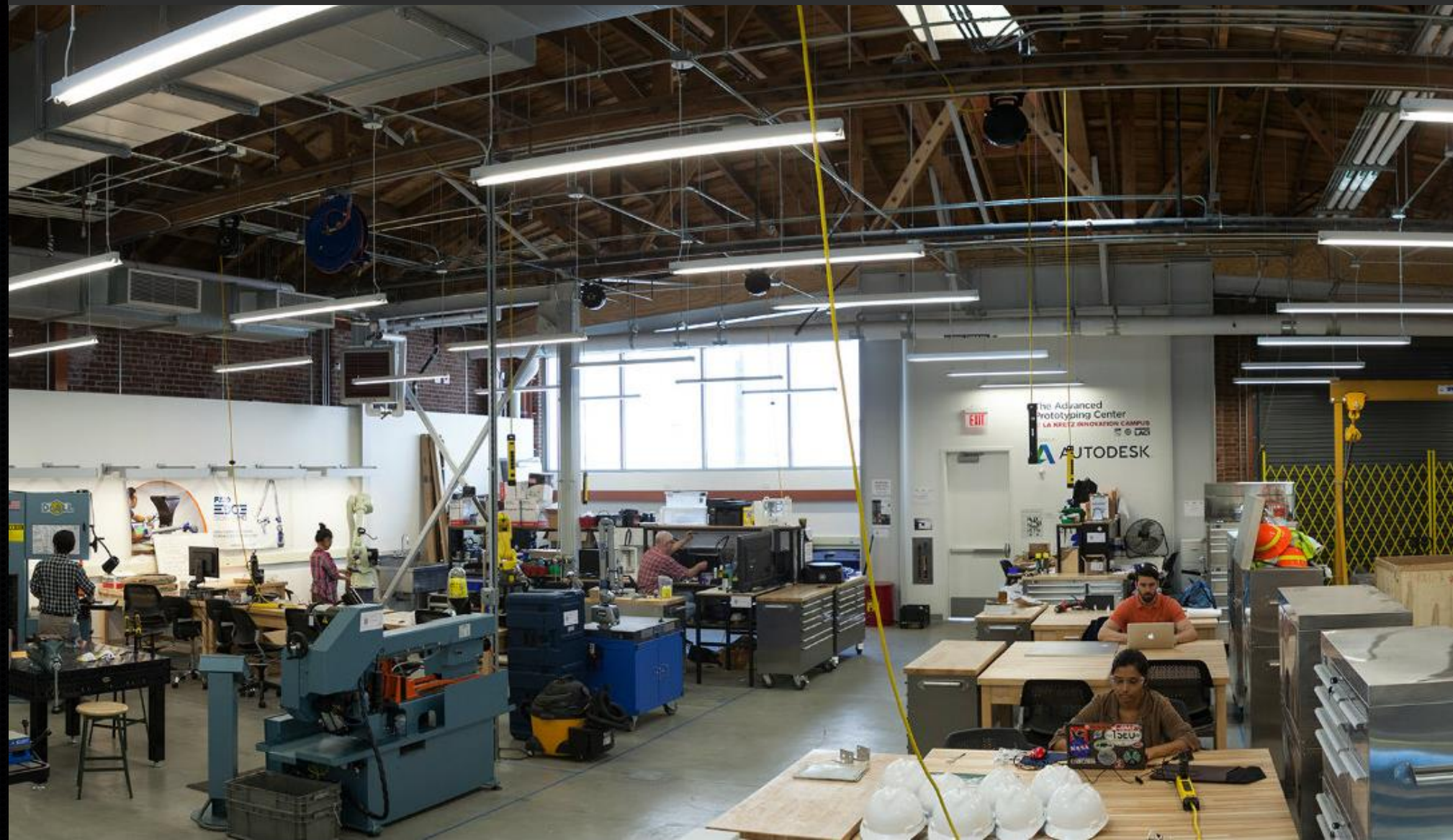
CORE “BIOLOGY” LAB

ELECTRONICS LAB

WELDING SHOP

CUT AND SEW SHOP

MACHINE SHOP



LACI
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BY ENTREPRENEURS

Partnerships: **Programs**

LACI Fundamentals

- Intensive core training - In-person and online
  - Investment Intensive
  - Business Model Design
  - IP Strategy

CEO Spotlight Series

- Monthly series in-person & webinar

Company Showcases

- 2015 = 700+ demonstrations to customers

Investor Connect

- 175+ one-on-one investor sessions
- Angels, VC's, Strategics

LACI
FOR ENTREPRENEURS
BY ENTREPRENEURS

Partnerships: Cleantech Leadership

Over 70 staff, pro bono mentors & partners

Marketing
Accounting
Legal

LACI
FOR ENTREPRENEURS
BY ENTREPRENEURS

Partnership: Amplifying Our Story

CONNECTING WITH AND INFORMING WORLD LEADERS

LACI
FOR ENTREPRENEURS
BY ENTREPRENEURS

Partnership: Technology Scout for Global Ports

PORT TECH
LOS ANGELES

NGIN NETWORK FOR GLOBAL INNOVATION

Partnership: Accelerating Cleantech Innovation

MEMBER COUNTRIES OF MISSION INNOVATION

36 Foremost Cleantech Incubators

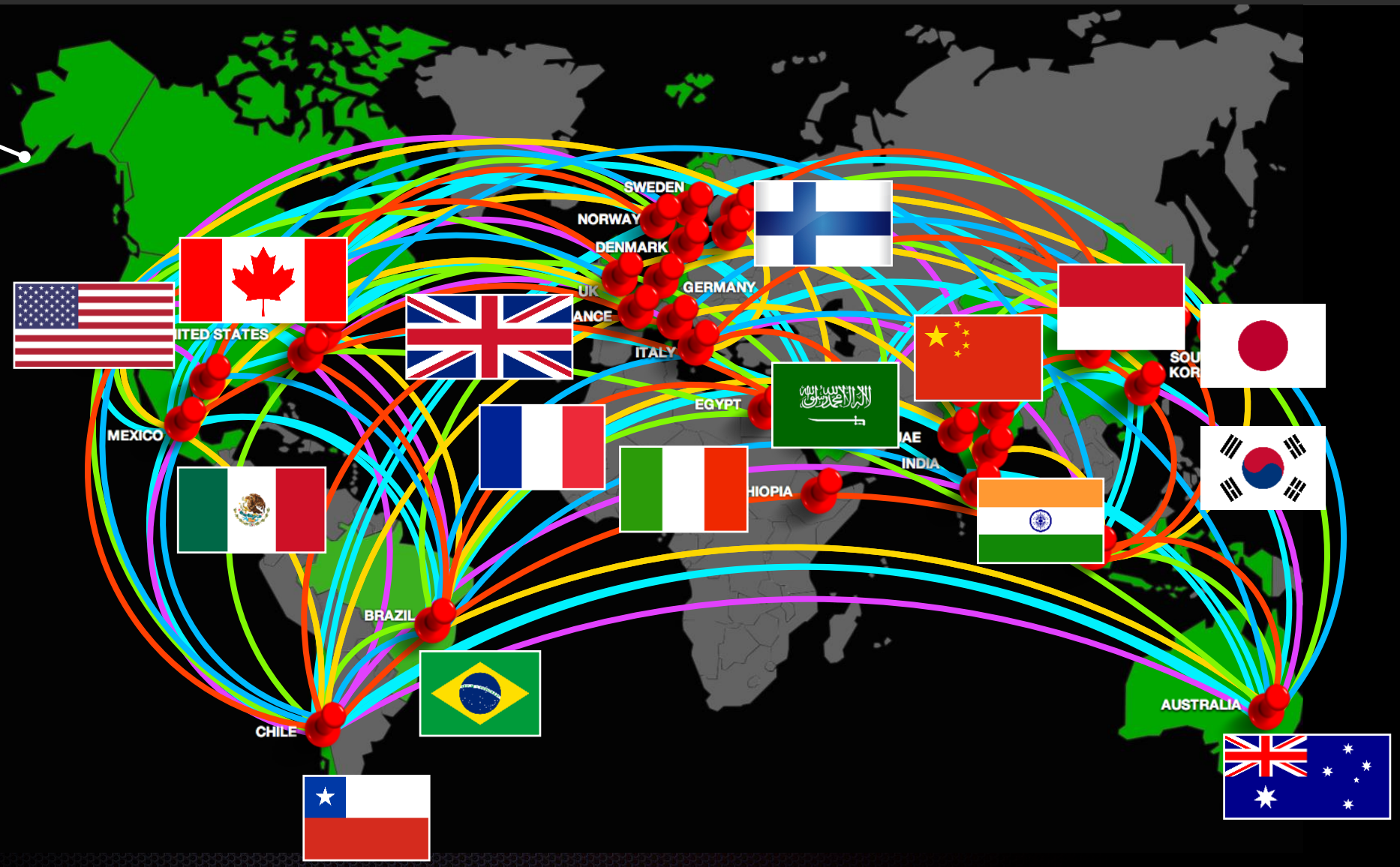
Deployment Partners

A Digital Operations Platform

Systematic Technology Access

Best-practices Curricula and Programs

Low-Cost Funding for Social Impact Acceleration



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BY ENTREPRENEURS

Partnerships: University Collaboration

#3 Global Top University Associated Business Incubator

California State University DOMINGUEZ HILLS

CALIFORNIA STATE UNIVERSITY LONG BEACH

CSUN

JPL

CAL POLY POMONA

CAL STATE LA

Caltech

OTIS

UCLA

USC

LACI
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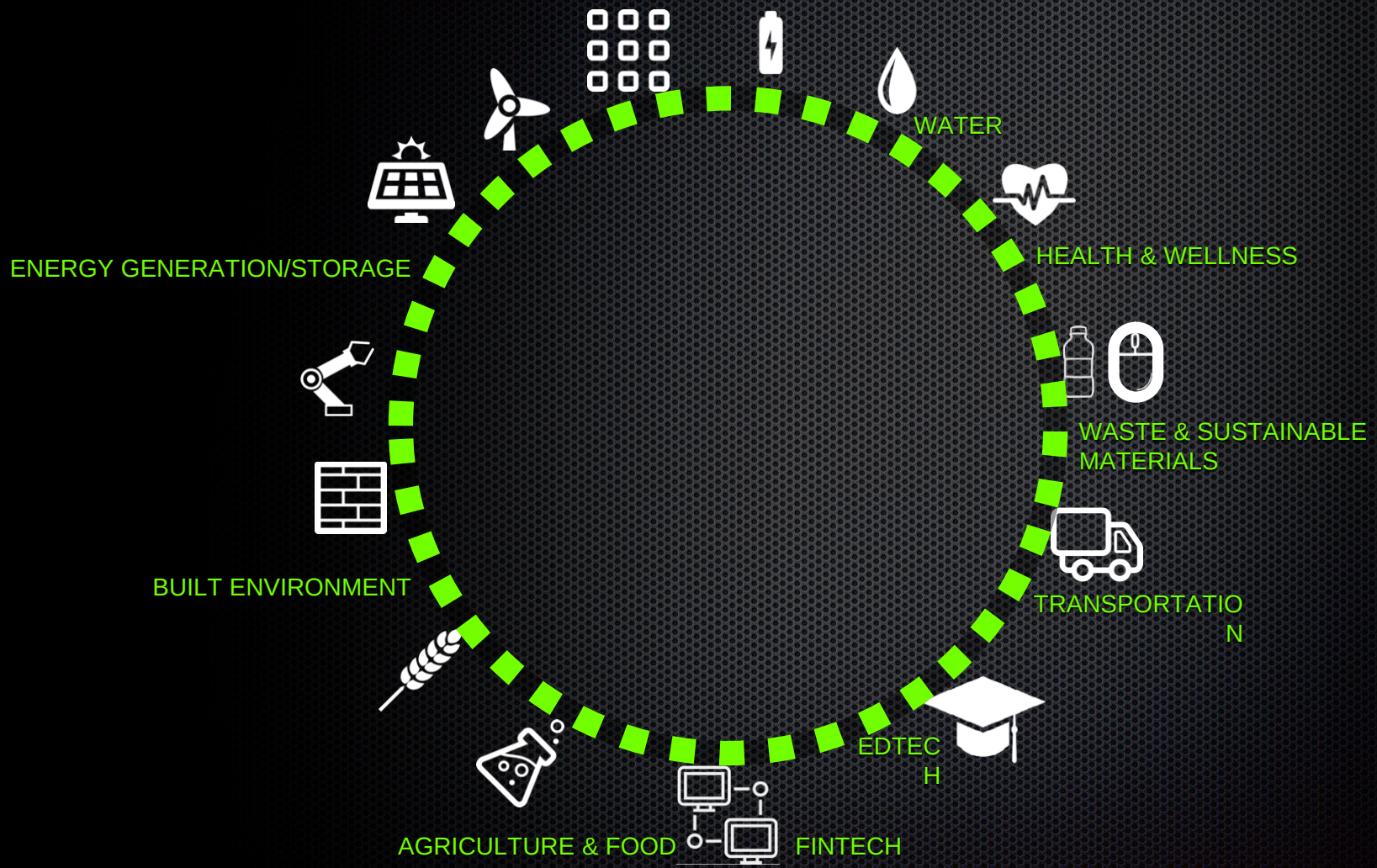
LACI: Broad Based Portfolio



- 100+ Companies
- Nine Categories
- $198M Revenue
- $123M Investment
- 1,300 Jobs

LACI
FOR ENTREPRENEURS
BY ENTREPRENEURS

Portfolio: Broad Based Companies: 70+

ENERGY GENERATION/STORAGE

pickmysolar · NEVADOS · FREEWIRE TECHNOLOGIES · CALIFORNIA LITHIUM BATTERY · CHAI ENERGY · ENTRADE THE CLEAN ENERGY COMPANY · amperics

BUILT ENVIRONMENT

PRE FRAMING CORP · ecoponex · C · diviningLAB LLC · HIVE BUILT BRIGHT · BK LITEC · Perception ROBOTICS

TRANSPORTATION

HOLLYWOOD ELECTRICS · JUICED · greencommuter · CURRENT THE EV LIFESTYLE STORE CURRENTEVCOM · GRID logistics inc · ADVANCED VEHICLE MANUFACTURING · ZAMASH boards

AGRICULTURE & FOOD

repurpose · GREEN WAY LABORATORIES, INC · LOCAL ROOTS

WASTE & SUSTAINABLE MATERIALS

ISIDORE ELECTRONICS RECYCLING

WATER

VENNA · rain systems · envi · AYYEKA · Water Canary · saya

HEALTH & WELLNESS

FIT + SCRUBS · ivi

EDTECH

ProjectPals

FINTECH

CAGIX California Global Innovation Exchange

LACI
FOR ENTREPRENEURS
BY ENTREPRENEURS

Portfolio: Company/Industry Cluster Partners

ENERGY GENERATION/STORAGE **143**

97 AGRICULTURE & FOOD

BUILT ENVIRONMENT **165**

252 WATER

TRANSPORTATION **102**

57 WASTE & SUSTAINABLE MATERIALS

816

Partnerships: Key 2017 Programs

LACI
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BY ENTREPRENEURS

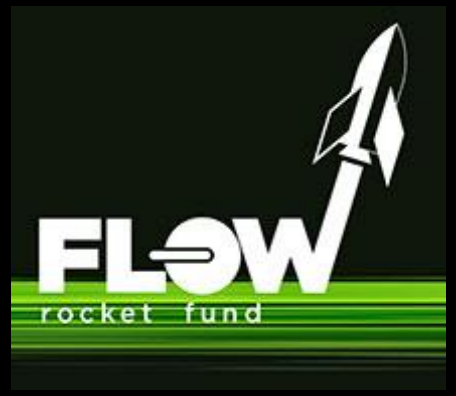
Commercialization

- FASTLinkDTLA
- SoCal Edge
- Regional Energy Innovation Collaborative

LACI
FOR ENTREPRENEURS
BY ENTREPRENEURS

Community Engagement

- Community Tech Garden
- Artist in Residence Program
- Prototyping & Design Training



The Rocket Fund

Founders Vision Aids Integrated Solutions

Pacific Gas and Electric Company · SMUD · SDGE A Sempra Energy utility · Southern California Gas Company · Southern California Edison An Edison International Company · Los Angeles Department of Water & Power · Public Utilities Commission State of California

RESNICK INSTITUTE science + energy + sustainability California Institute of Technology

moxie FOUNDATION

Caltech

The Fund is Unique

Smart, targeted grants $10,000 - $75,000

Funds vital gap: lab prototype to customer pilot

Work closely with utility experts who know incentive programs

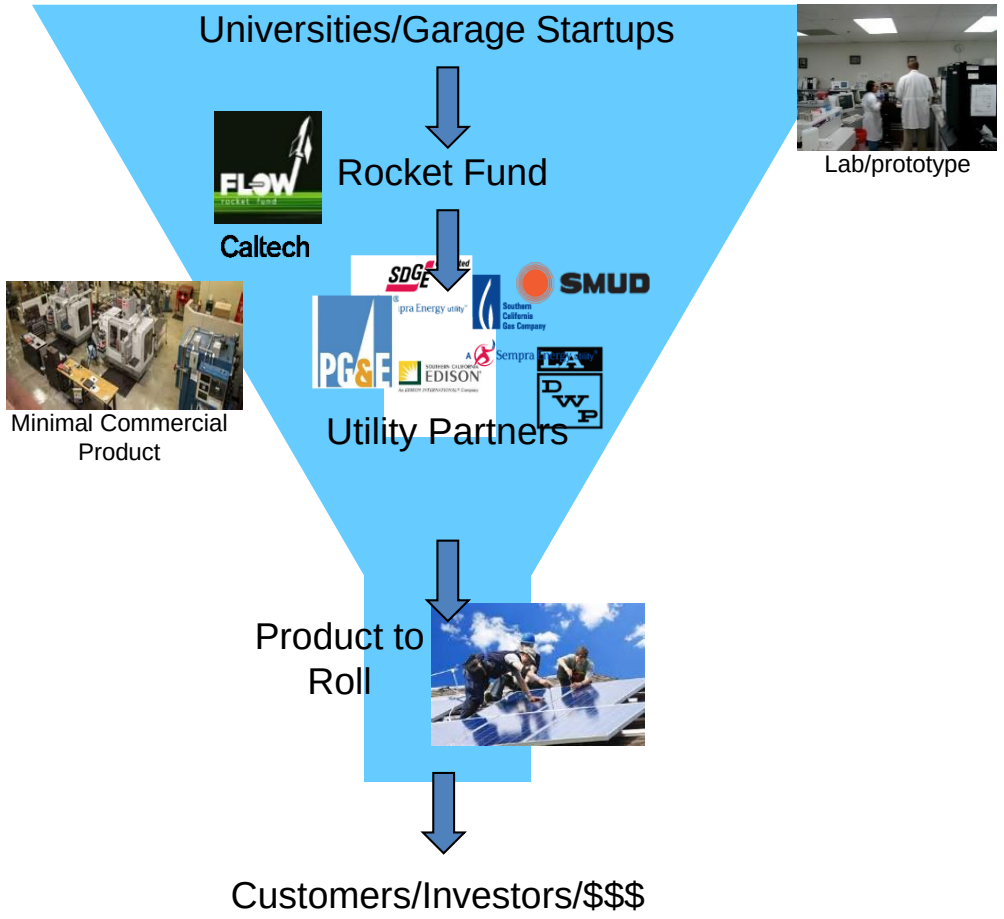
Derisks technology, attracts partners and investors

Grew from FLOW – seeded by DOE

RESNICK INSTITUTE
science + energy + sustainability
CALIFORNIA INSTITUTE OF TECHNOLOGY

Caltech

The Rocket Fund Seeds Successful Companies



A Rocket Fund Awardee

- 2015: FLOW First Prize
- 2015: Rocket Fund
- 2016/17: Pilot with SDG&E, SCE, Whole Foods, Walmart
- 2015: Raised $5 million seed round

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moxie FOUNDATION

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