Low Carbon Economy

Solar
- Amonix
- SunEdison

Smart Grid
- Hannon Armstrong
- Trilliant

Wind
- UFWIND SOLUTIONS

Carbon
- APX

Energy Efficiency

Recycling
Data Science for Sustainability @ MissionPoint Capital Partners

Thursday, June 6, 2013
6:30 PM to 9:00 PM

MissionPoint Capital
212 Sutter Street, 2nd Floor, San Francisco, CA (edit map)

ABSTRACT

This interactive meetup will engage participants in identifying new opportunities for data science to bring transformative solutions to sustainability. Adam Rein, Principal at MissionPoint Capital Partners, will give a brief overview on the concept of sustainability and its relationship to the concepts of resiliency, "clean web", and others. Small group discussions will identify where predictive analytics can make breakthroughs across key sustainability sectors, including energy, agriculture, water, and recycling. This will include tangible steps that can be taken to spur innovation by creating a predictive model challenge or locating publicly available data sets. Light refreshments will be served.

SCHEDULE
Energy and Data Landscape

Buildings
- Data Center
- Office
- MUSH
- Homes

Vehicles
- EV
- Route Plans
- Shared Vehicles

Industry
- Agriculture Water
- Steel & Concrete
- Solar/Wind Output
- Finance Trading

Transmission
- Grid Stability
- Demand Response
- Storage

Data
- Center
- Office
- Homes

MUSH
- Homes

Vehicles
- EV
- Route Plans
- Shared Vehicles

Mission
- In-Car
- Car

Operations
- Consumer

Equipment
- Finance

Utility
- ISO

End of Line
- Oil & Gas

Drivers
- Auto OEMs
- Fleet Owners

Farmer
- Project Developer

Utility
- Homeowner
- Building Owner
**Livestock monitored by sensors and phone**

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<thead>
<tr>
<th>Opportunity</th>
<th>Existing Orgs</th>
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| Sensors embedded on livestock provide information on both animal health and broader climate. For nomadic herds, a powerful tool for track broad areas of developing countries | **Sparked**

Cow wireless sensors to monitor when sick or pregnant. Dutch project. |
| **iCow**

Mobile app allows herders to register their cows individually and receive tailored text messages on cattle prices, feeding schedules, veterinary care. |
| **Esoka**

BusyLabs. Africa. Web/SMS tools to quick send info to farmers in the field. George Soros funded. |
| **M-Farm**

Kenya all-female team of developers, allows farmers to group together through mobile phones to offer exporters and retailers bulk crops. |
| **SMART Coops**

MIT Team, Phillipines pilot. Mobile marketplace connects farmers to ag coops, and other stakeholders. Free for farmers, crop buyers pay fee. |
# Sustainability vs Resilience

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<tr>
<th>Goal</th>
<th>Sustainability</th>
<th>Resilience</th>
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<tbody>
<tr>
<td>Optimize reach to equilibrium</td>
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<td>Bounce Back from shocks</td>
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<tr>
<th>Sensors</th>
<th>Measure all variables</th>
<th>Detect sudden changes</th>
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<tbody>
<tr>
<td>Data Analytics</td>
<td>Model how system works</td>
<td>Determine “warning” that shock is about to occur</td>
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<tr>
<td>Outcomes</td>
<td>Improve system efficiency: less inputs, more outputs</td>
<td>Trigger restorative feedback loops or adaptive mechanisms</td>
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<th>Examples</th>
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<td>Continuous Commissioning of Building Energy Use</td>
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<td>Drip irrigation / Hydroponics</td>
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<td>Adaptive Transport Pricing</td>
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<td>Emissions market pricing</td>
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<td>Microgrids to prevent blackouts during shock to electric grid</td>
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<td>Predictive Maintenance</td>
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<td>Infectious disease monitoring</td>
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<td>Crop insurance pricing</td>
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Energy and Data Advice

1. Don’t Follow the Herd and Do the Easy Stuff
- App that shows a homeowner energy use in a chart
- Crowdfunding platforms

2. Find a Customer Who Will Pay
- Service that uses analytics is more valuable than Data in a report
- Utilities are tough customers (the “Opower exception”)

3. Formula: Old Data + Proprietary Data = Analytics
- Climate Corp - Weather forecasting
- Waze - User inputs plus GIS map directions

4. Beware of Hardware
- Requires lots of capital, often commoditized over time (drones)
- Best models use partnership for deployment (pay-as-you-drive)