

Travel Study Course 4 Units

Building Smart Cities Leveraging Open Innovation

Fall 2015 – Course Number IEOR 185 (Sec 2) CCN#41072

(Tentative Syllabus)

Travel Module to India: (Jan 3, 2016 – Jan 15, 2016)

Professor:	Solomon Darwin
Class Hours:	Tue 4:00pm -5:00pm & Thursdays 4pm – 7pm. Class Rooms: Haas C335
Office Hours:	Thursdays 7pm – 8pm in F402J
E-mail Address:	darwin@haas.berkeley.edu
Prerequisite:	Passion for Building & Creating Things
Corporate Advisors:	Tyco, Cisco, IBM, Siemens, Wipro, HCL, GE, Intel, EMC, VMWare & Applied Materials
Textbooks:	Readings assigned by the Instructor as needed

Course Objectives:

1. Learn “The Smart City Architecture in the Making”. Study and evaluate the concepts and ideas behind the design, layout and technology employed in a smart city. We will study the city of Vizag that was sponsored by President Obama and approved by USTDA for US investment in India and serve as a [Model for 100 Smart Cities Plan in India](#).

In September 2015, Diane Farrell, Acting-President of USIBC, led representatives from 25 major U.S. companies, including IBM, Microsoft Cisco, Dow, GE, 3M, AECOM, Applied Materials, CH2MHill, Hospira and United Technologies Corporation, in detailed discussions with State government officials to create a roadmap and advance the goal of developing Visakhapatnam into a smart city as articulated in the joint statement between President Obama and Prime Minister Modi

- <http://www.visakhapatnamsmartcity.com/>
- <https://www.facebook.com/VisakhapatamSmartCity>
- <https://www.facebook.com/vizagsmartcity>

2. Capture the lessons currently being learned in India by the architects, engineers, business partners, investors, city managers, supply chains and the government to formulate your recommendations through interviews and surveys.
3. Evaluate Cost-Benefits of the Public Private Partnership investment at a very high level. Independent return on investment analysis to the stakeholders will be in order.
4. Based on your research and analysis, recommend an Innovative Business Model for Vizag that will lower the operating costs via cost effective technologies and capturing new and enhanced revenue opportunities. Cashflow projections with relevant key assumptions will be in order.
5. Develop an App or platform that curtails costs or enhances revenues while solving issues related to: Safety, Security, Traffic, Waste, Access, Connectivity, Power Usage & Energy Management for Vizag. (one app/group)
6. Provide an independent assessment about the effectiveness of the proposed plans, layout, architecture, design, infrastructure, technologies, resources, and talent employed.
7. Suggest Open Innovation processes and platforms for urban and rural community engagement to drive decision making through public consensus as well as to solicit external ideas and innovations.
8. Group Project: Present your group’s assessment and innovative business model for Vizag that will incorporate all your recommendations to the office of the Chief Minister on January 9th 2016 in Vizag.

Project Phase:

The students are expected to come up with an independent smart city proposal for Vizag by studying smart city model that are under construction or those that already claim to be a smart city. During this phase the students are expected to address the objectives listed on page one.

What is a Smart City?

Definition of a Smart City: There are many opinions on what defines a smart city. For the purpose of this course we simply define a smart city as:

- 1) One that has an innovative and sustainable business model that creates value for its citizens and captures some of that value in revenue streams to meet the growing needs for its citizens while fulfilling its financial and CSR responsibilities.
- 2) One that attracts and retains an Intelligent Community as defined by the Intelligent Community Forum <http://www.intelligentcommunity.org/>



Definition of Each Indicator

- 3) One that uses information technology to solve urban problems. Better Data = Better Decisions.
- 4) One that monitors and manages energy usage, communication systems, traffic flows, water levels, sanitation, waste, recycling, security & safety surveillance in real time with sensors and cost-effective digital tools that are essentially free.
- 5) One that solves issues related Power and Connectivity to promote a dynamic and vibrant community.
- 6) One that manages operating costs of the city resulting in lower taxes and happier citizens.

“Smart cities are not about just e-gov. They use tech to transform core systems to optimize best use of finite resources,” says Rahul Sharma of IBM India.

Travel Phase:

Travel Study program offers an opportunity to combine academic curriculum with an international engagement through travel with a faculty instructor. The program would be comprised of an academic course with an international experience leveraging the Berkeley's Alumni Network. Travel will consist of two weeks during winter break before spring instruction begins. The course ends on January 14th following presentations to Indian governors and corporate executives in India in charge of building the smart city infrastructure. The cultural excursions throughout the trip are meant to foster learning about India's people, culture and relationships between the government, business and educational institutions that foster economic development.

Purpose and Background for the Course

1. **Growth in Urban Population:** Urban population consisted of only 3% in the 1800s and grew exponentially since: 14% in 1900s, 30% in 1950s, and 50% in 2010. It is projected to be at 75% by 2050.
2. **Consumption of Resources:** These growing urban populations, in combination with constrained financial and natural resources, are shaping the requirements for the evolution towards smarter, safer and greener cities – placing pressure on governments and municipalities to invest in sustainable infrastructure, deploy information and communication systems, and deliver services to their citizens and their
3. **Carbon Footprint:** Cities represent three quarters of energy consumption and 80% of CO2 emissions worldwide, and represent the largest of any environmental policy Traffic congestion costs time, money, wasted fuel and the indirect cost passed on to numerous products that depend on transportation.
4. **GDP Growth:** Urban areas generate new opportunities and contribute twice the economic growth when compared to the rural areas.

Why Study the Models in India?

- **Learning from a Major Market:** India is like a real laboratory where we all can learn from.
“We can already anticipate the problems that these cities face and attack them at the source, India has a fantastic opportunity where we can work outside of the shackles of existing technology” said Rahul Sharma, an executive at IBM.
- **Source of Frugal Innovations:** Emerging economies are a great source of frugal innovations as they are birthed in a resource constrained environment surrounded by many Frugal Innovations, first seen or likely to be used first, in the developing world eventually migrate to the industrialized world. The term “Reverse Innovation” refers broadly to the process whereby goods developed as inexpensive models to meet the needs of developing nations, are then repackaged as low-cost innovative goods for Western nations.
- **Commitment at the Top:** Indian Prime Minister Modi wants to build 100 “smart cities” outfitted with high-tech. Gift City; “The Smart City in the Making” is his project that was started in his home town before he became elected as the Prime Minister. The government announced it will be investing over \$1 trillion over the next several years, with more funding coming from private investors and abroad. Watch Modi's City www.youtube.com/watch?v=jOFpWFLSgU
- **India is the future:**
 - Represents future growth - India is growing at 7% faster than China according World Bank.
 - India's Strength: Innovation and Entrepreneurship
 - Source of future talent: largest youth (10-24yrs) population ~400M vs China 269M; US 65M
 - Growing middle class: 50M to 200M by 2020 to 475M by 2030 – more than the US population.

Grading

No laptop and texting in class policy

Attendance:	50
Class Participation (70% for blogging):	100
Group Assignment:	100
Mid-Term (Group Work)	200
Individual Assignment	50
Final Group Project Deliverables	400
Ideas for Peer Groups:	50
Peer Evaluation:	100
Total	1,000

Class Schedule (Tentative)

Tentative Class Schedule

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Week	T/Th	Date	In-Class Activity	Project Phase
1	Th	8/27/2015	Group Exercise: What is a Business Model?	Research
2	T	9/1/2015	Ken Singer: Entrepreneurship & Technology - App development	Research
3	Th	9/3/2015	How organizations leverage the process of Open Innovation?	Research
4	T	9/8/2015	Ken Singer: Entrepreneurship & Technology - App development	Research
5	Th	9/10/2015	Why are ecosystems and communities important for cities?	Research
6	T	9/15/2015	Ken Singer: Entrepreneurship & Technology - App development	Research
7	Th	9/17/2015	How do organizations Manage Innovation?	Research
8	T	9/22/2015	Ken Singer: Entrepreneurship & Technology - App development	Analysis
9	Th	9/24/2015	How do you measure Innovation?	Analysis
10	T	9/29/2015	Ken Singer: Entrepreneurship & Technology - App development	Analysis
11	Th	10/1/2015	Work in groups - Guest Speaker	Formulating
12	T	10/6/2015	Ken Singer: Entrepreneurship & Technology - App development	Formulating
13	Th	10/8/2015	Work in groups - Guest Speaker	Surveys/Interviews
14	T	10/13/2015	Ken Singer: Entrepreneurship & Technology - App development	Surveys/Interviews
15	Th	10/15/2015	Mid-Point Review with Vizag City officials	Surveys/Interviews
16	T	10/20/2015	Ken Singer: Entrepreneurship & Technology - App development	Surveys/Interviews
17	Th	10/22/2015	Pre-Presentation to Other City Officials and Corporate Executives for	Surveys/Interviews
18	T	10/27/2015	Ken Singer: Entrepreneurship & Technology - App development	Surveys/Interviews
19	Th	10/29/2015	Work in groups - incorporating external ideas	Surveys/Interviews
20	T	11/3/2015	Ken Singer: Entrepreneurship & Technology - App development	Testing & Refining
21	Th	11/5/2015	Individual group meetings with Prof. Darwin for final prep.	Testing & Refining
22	T	11/10/2015	Ken Singer: Entrepreneurship & Technology - App development	Testing & Refining
23	Th	11/12/2015	Presentations to Peers for feedback	Testing & Refining
24	T	11/17/2015	Ken Singer: Entrepreneurship & Technology - App development	Testing & Refining
25	Th	11/19/2015	Presentations to Local City Managers/Corporate Officers for input	Course Project Due
26	T	11/24/2015	Ken Singer: Entrepreneurship & Technology - App development	Fine-tuning
27	Th	11/26/2015	Thanksgiving	Fine-tuning
28	T	12/1/2015	Ken Singer: Entrepreneurship & Technology - App development	Fine-tuning
29	Th	12/3/2015	Solomon Darwin's Last Class & Takeways	Fine-tuning
Travel in India Jan 3- 14 Final Presentation to Chief Minister's Cabinet in India -Jan 9th TBD				Final Deliverable