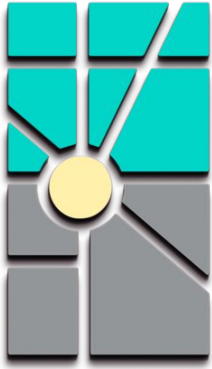


# Smart Cities

-

**Something to aspire to in the New Normal**

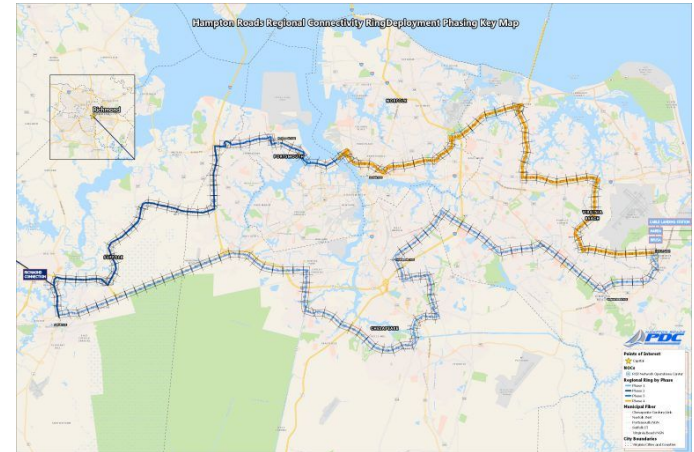




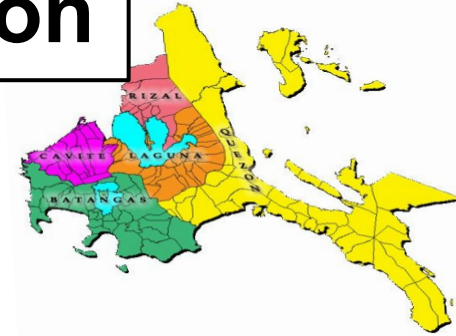
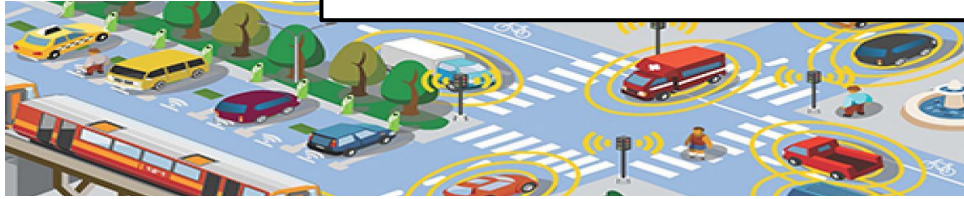
2018 SMART  
INFRASTRUCTURE  
CHALLENGE

## Challenge:

Regional teams are challenged with creating an innovative smart infrastructure vision and planning framework to compete for grant funding, access to project financing, and support resources to pursue the plan. **\*TOP PRIZE: USD 50 million\***



# Smart Transport Calabarzon



## Bringing the best of smart connectivity solutions to Calabarzon's transportation and traffic management professionals

### About Smart Infrastructure

The Institute of Electrical and Electronics Engineers (IEEE) focuses on 6 themes for Smart Infrastructure:

- Economy
- Mobility
- Environment
- People
- Lifestyle
- Governance



Smart Infrastructure uses IoT and connectivity to improve those themes for its citizens

### IEEE - Core Cities

Casablanca, Morocco	<a href="http://www.es-madina.org">http://www.es-madina.org</a>
Guadalajara, Mexico	<a href="http://www.quadalajara.gob.mx">http://www.quadalajara.gob.mx</a>
Kansas City, Missouri, USA	<a href="http://www.kcmo.gov">http://www.kcmo.gov</a>
Trento, Italy	<a href="http://www.comune.trento.it">http://www.comune.trento.it</a>
Wuxi, China	<a href="http://www.wuxi.gov.cn">http://www.wuxi.gov.cn</a>

Also 12 Affiliated Cities - <https://smartholives.com/affiliated-cities.html>

### Venture Smarter & the Smart Infrastructure Challenge



#### Cutting the chaos out of smart city planning

We are streamlining smart and connected efforts for governments, businesses, and universities. Led by government and technology experts coming from The White House, State Department, Senate, Congress, technology startups, and leading enterprise organizations, our people and platform are dedicated to supporting efforts that create better places to live, work, and visit. You can utilize the brain trust for strategic support, connect with new partners within a trusted community, or engage key stakeholders during an upcoming event alternative.

#### Challenge:



Regional teams are challenged with creating an innovative smart infrastructure vision and planning framework to compete for grant funding, access to project financing, and support resources to pursue the plan. **\*TOP PRIZE: USD 50 million\***

#### Smart Regions

In Belgium, the "Smart Flanders" program supports 13 central cities in the Flanders region in their development into smart cities, including the port city of Antwerp. Smart Flanders does this by focusing on real-time open data and shared reference models and aims to stimulate cooperation between cities and actors from the quadruple helix. Leveraging its "learning by doing" approach, Smart Flanders focuses on making data as accessible as possible, with a view to maximum reuse as a basis for smarter services and applications. (Source: [www.cities.com](http://www.cities.com))

Calabarzon municipalities can benefit from this regional data-sharing & reference model approach



### Calabarzon

Population - 14M

Province	Population	Density
Batangas	2,694,335	3,978.30pp density
Cavite	1,574.7	3,035,081
Laguna	1,917.85	1,856,582
Quezon	8,989.39	2,884,227
Rizal	1,101.64	2,400

**We Propose:**  
Develop ~~ref~~ **449,75**  
Models split by **890**  
**3,978.30pp density**

### What Problems are we solving?

- Population growth and increased traffic
- Exclusion of cities within National Capital Region (?) or focus on cities with low population densities
- Sensors are expensive, require expert operation and may only be needed temporarily in the planning process
- A lack of regional scale collaboration and data-sharing can be a barrier to the planning process

- **Transit**: Measure of time for traveling between two or more locations.
- **Intersection count**: Total of vehicular, bicycle, and pedestrian movements.
- **Studies Available**: Roundabout Count - Total sum of turning movements from origin to destination.
- **Road volume data**: Count of vehicle and bicycle volumes on a road segment.
- **Vehicle gap data**: Measure of headway time between vehicles in a queue.
- **Pedestrian & bicycle pathway count**: Count of pedestrians and bicycle volumes on sidewalks, paths, or intersecting paths.
- **Vehicle classifications**: Measure provides full vehicle classification and can provide custom classifications on request.
- **Right-turn on red**: Used the requirements of the 2010 HCM by adding RTOR data to your intersection counts.

### Phase 1 - End of 2018

- Short-term leasing of AI-enabled smart traffic counting technologies for institutions and LGUs
- Provide assistance to smaller LGUs and municipalities with the preparation of Transport Modernization Program
- Data warehousing and custodianship by State Universities for incorporation into regional scale studies and planning
- Regional-scale data-processing and warehousing procedures at State Universities

### State University Contributions

- GIS data compilation and grooming
- Regional to city scale studies on natural hazards and transport
- Next-generation disaster response technologies including the **TOAD** developed by **BSU**

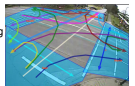
### P3 Partnerships

Public-Private-People Partnerships are a means for generating financing for public infrastructure projects.

- Private equity firms in the Smart-City space have financed projects at ZERO-COST to the cities involved
- Projects can often accommodate the inclusion of safety & environmental projects which are non-revenue

According to Zack Huhn (Venture Smarter, IEEE Smart City Planning Committee):

P3s are particularly important in the USA because our local governments are in gross amounts of debt and lack the resources or capital to move



### Project Co-ordinator

Allan Gray  
Director Product Development/R&D - sunEtrike



### Academic Engagement Lead

Eng Albertson Amante  
VP R&D/Extension - Batangas State University



### Government Engagement Lead

JR Fajardo  
Chairman - Binhi Producer's Cooperative



### Transport Industry Engagement Lead

Edmund Araga  
VP - Electric Vehicle Association of the Philippines



### For enquiries:





# IEEE Smart Cities Conference

## IEEE Core Cities

Casablanca, Morocco

Guadalajara, Mexico

Kansas City, Missouri, USA

Trento, Italy

Wuxi, China





# Fog Computing

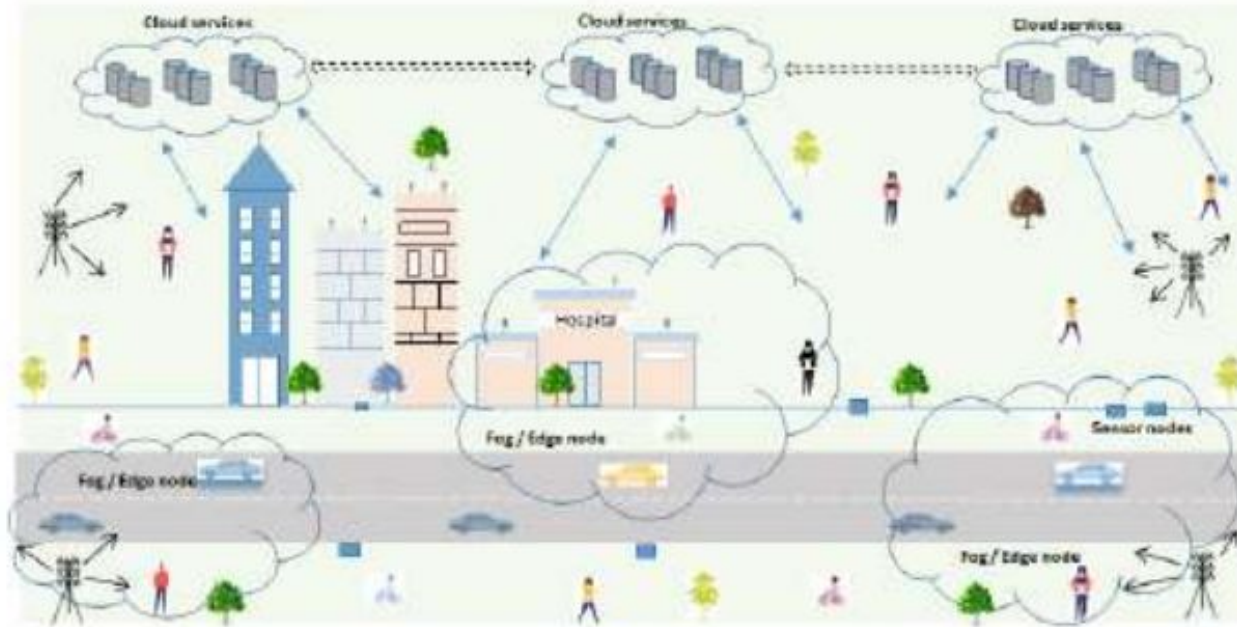


Fig. 1. An illustrative example of a Smart-City-Fog (SCF) model with Fog / Edge nodes and 5G technology.

# Federated Computing

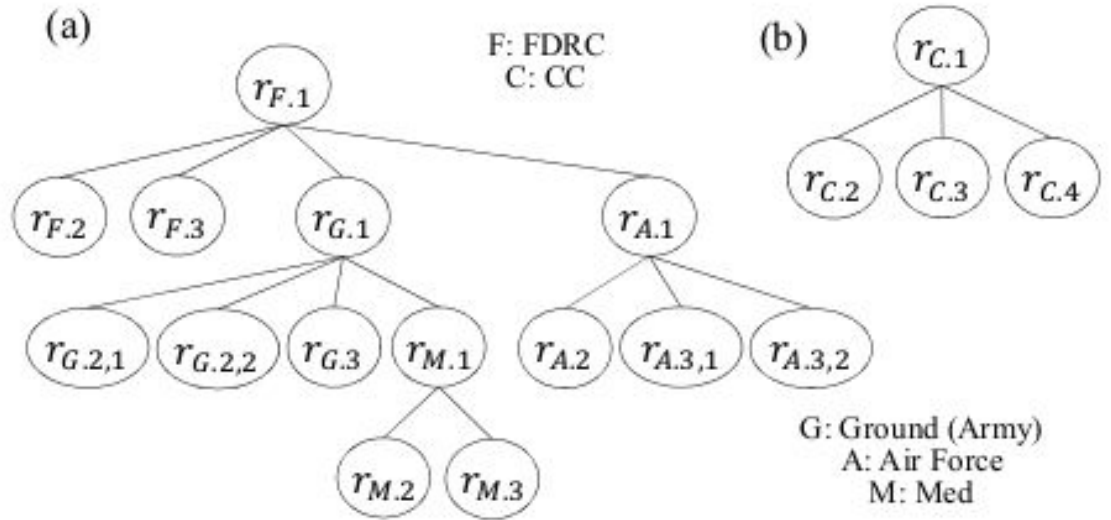
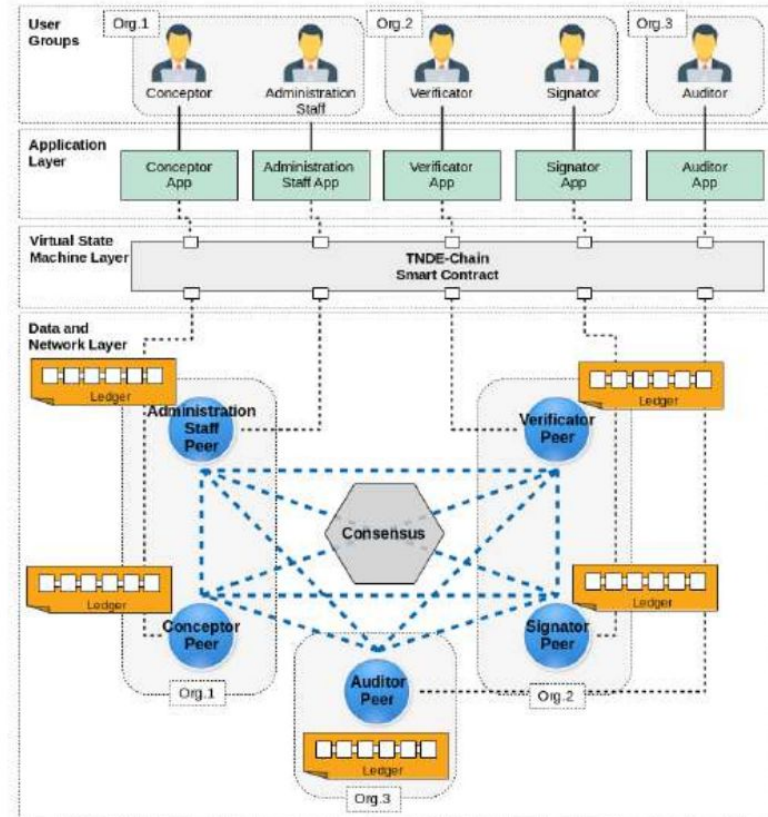


Fig. 3. The role hierarchies of FDRC and CC.

After 20 years of watching the wiki develop and being disappointed in some regards, I think I know what the answer is: what I call a [Federated Wiki](#).

# Smart Contracts for Gov't Services





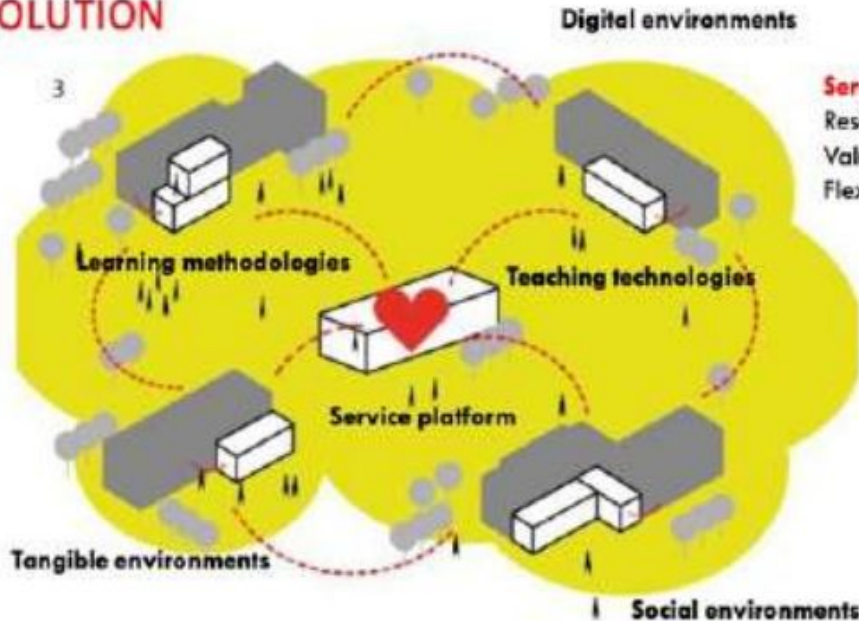
# Online Learning Resources

## SCHOOL AS A SERVICE SYSTEMIC SOLUTION

School is using available shared resources within the community.

Aspects of social learning are important, school is flexible and scalable.

Learning together.



### Group Profile:

Group name: M1

Expirement name: Blinking a led

Course name : Micro-controller and Microprocessor



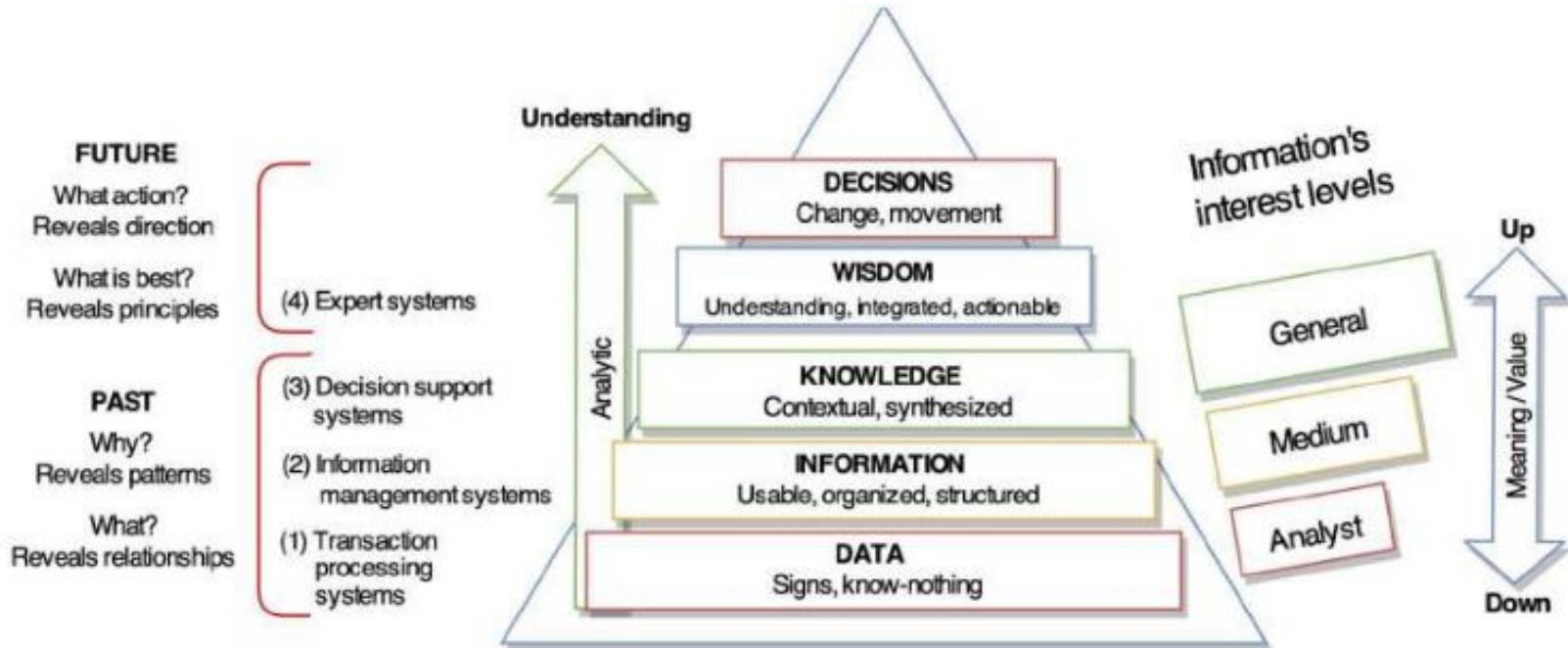
Gallery :



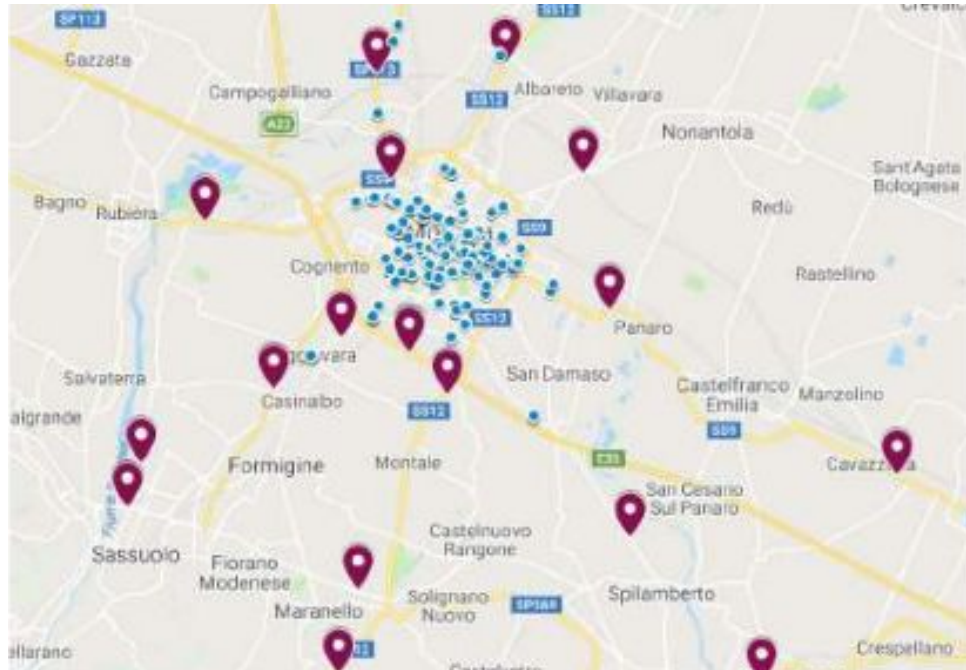
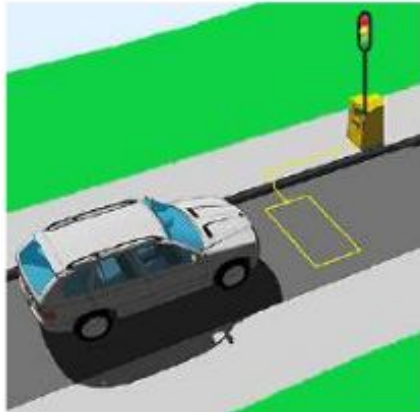
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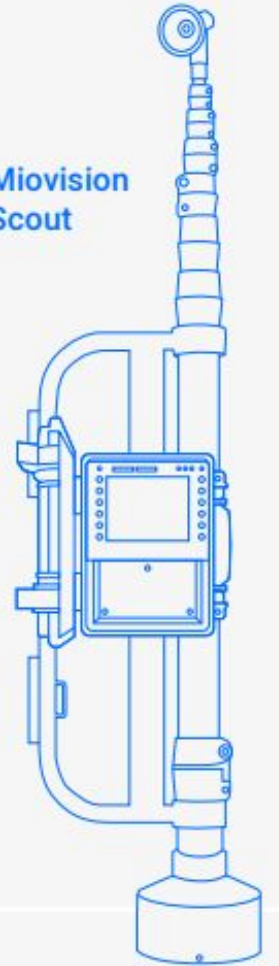
# Data Aggregation for Decision Making



# Automated Traffic Monitoring



Miovision Scout





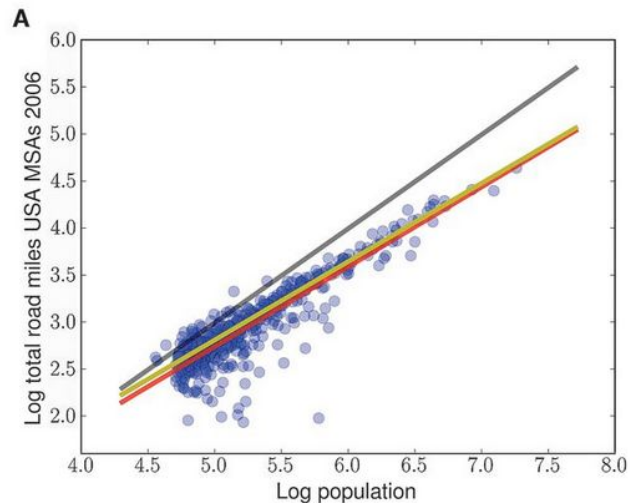
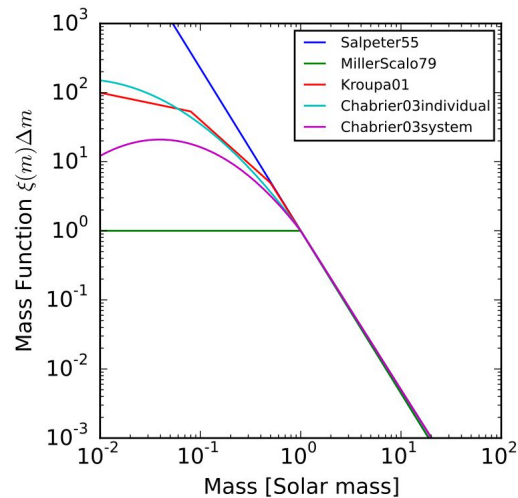
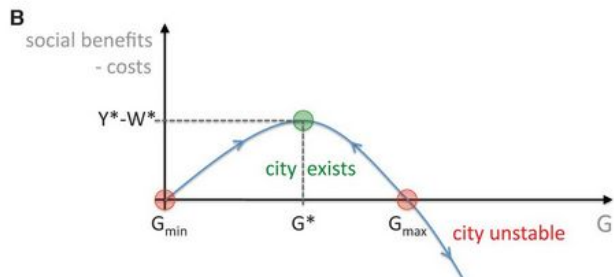
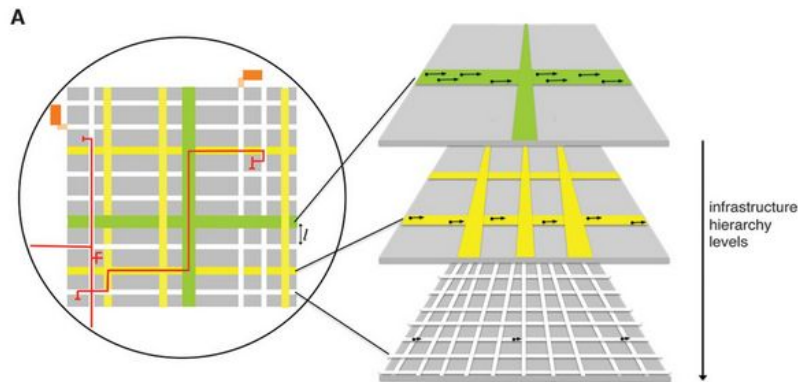
# Towards 'Smart'



# Cities as 'Social Reactors'

## The Origins of Scaling in Cities

Luís M. A. Bettencourt, Science 21 Jun 2013



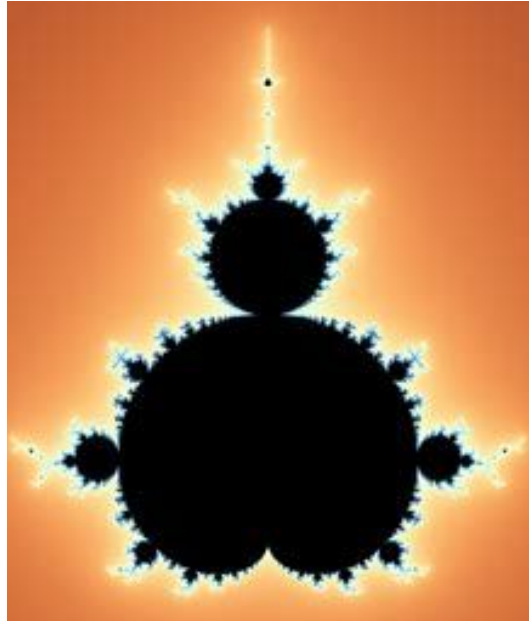
# Cities as fractals

RANDOM.ORG offers *true* random numbers to anyone on the Internet. The randomness comes from atmospheric noise, which for many purposes is better than the pseudo-random number algorithms typically used in computer programs.



[Ron Eglash - The Fractals at the heart of African Designs \(TED Talk\)](#)

[Ba-Ila, Namibia](#)





# Gould's Spandrels



GifA 96063

20cm



<sup>13</sup> And now these three remain: faith, hope and love. But the greatest of these is love. I Corinthians (Just add religion)



# SOLARIMPULSE FOUNDATION

*When I was flying around the world in my solar airplane, I remember looking at the sun that was giving energy to my four electric motors and their huge propellers. There was no noise, no pollution, no fuel... and I could fly forever.”*

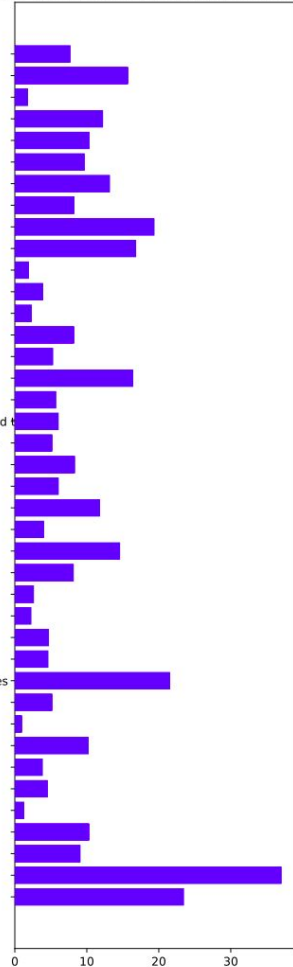
Bertrand Piccard



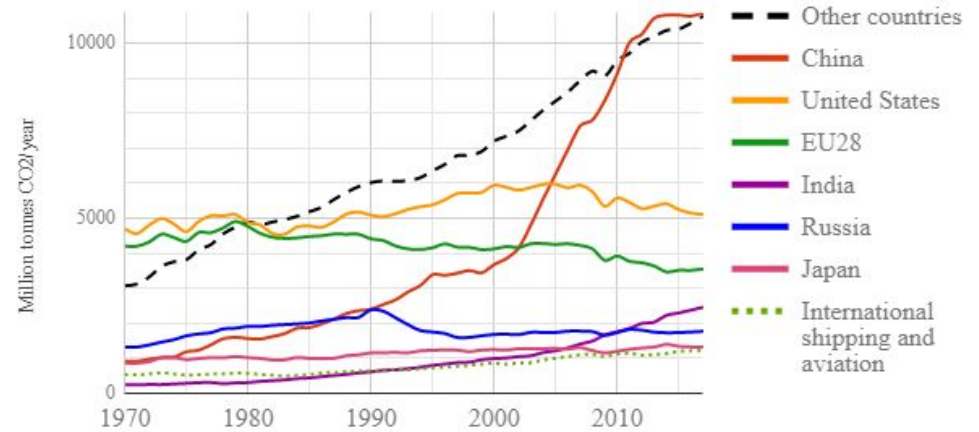
Total CO2 emissions 2017 (gigatons)



2017 CO2 Emissions per person (tons/person)



World fossil carbon dioxide emission 1970-2017



At current consumption, our 'Carbon Budget' runs out sometime before 2030

Led by China, the rest of the world is rapidly improving their quality of life.

China is still 50% per capita emissions of the US (Canada & Saudi are higher)





**Ottmar Edenhofer - IPCC**



***THAT'S ALL FOLKS!***