# Social Clouds

Creating a research agenda

Andrew Lippman
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October, 2010

# Clouds and Mists: 1$^{st}$ Cloud

Defined by *access*

Familiar as the internet

Result of a nexus:  PC, backbone, ISPs

Web

Opened vast doors to creativity

# Clouds and Mists: 2nd Cloud

Hosting of virtual processes and storage

Enabled by

     -- fine-grained accountability

     -- agency (trust)

Centered around composition and specialization:

Using common resources and standard utilities

Simple cost equation, manageable harder issues

An infinite back-end

# Clouds and Mists: 3<sup>rd</sup> Cloud

Defined by *Interaction*

Bandwidth between people and processes

Result of a nexus:  Sensors, Mobility, lightweight but not flyweight nodes

Portable identity

Social and Public Environment

# Third Cloud

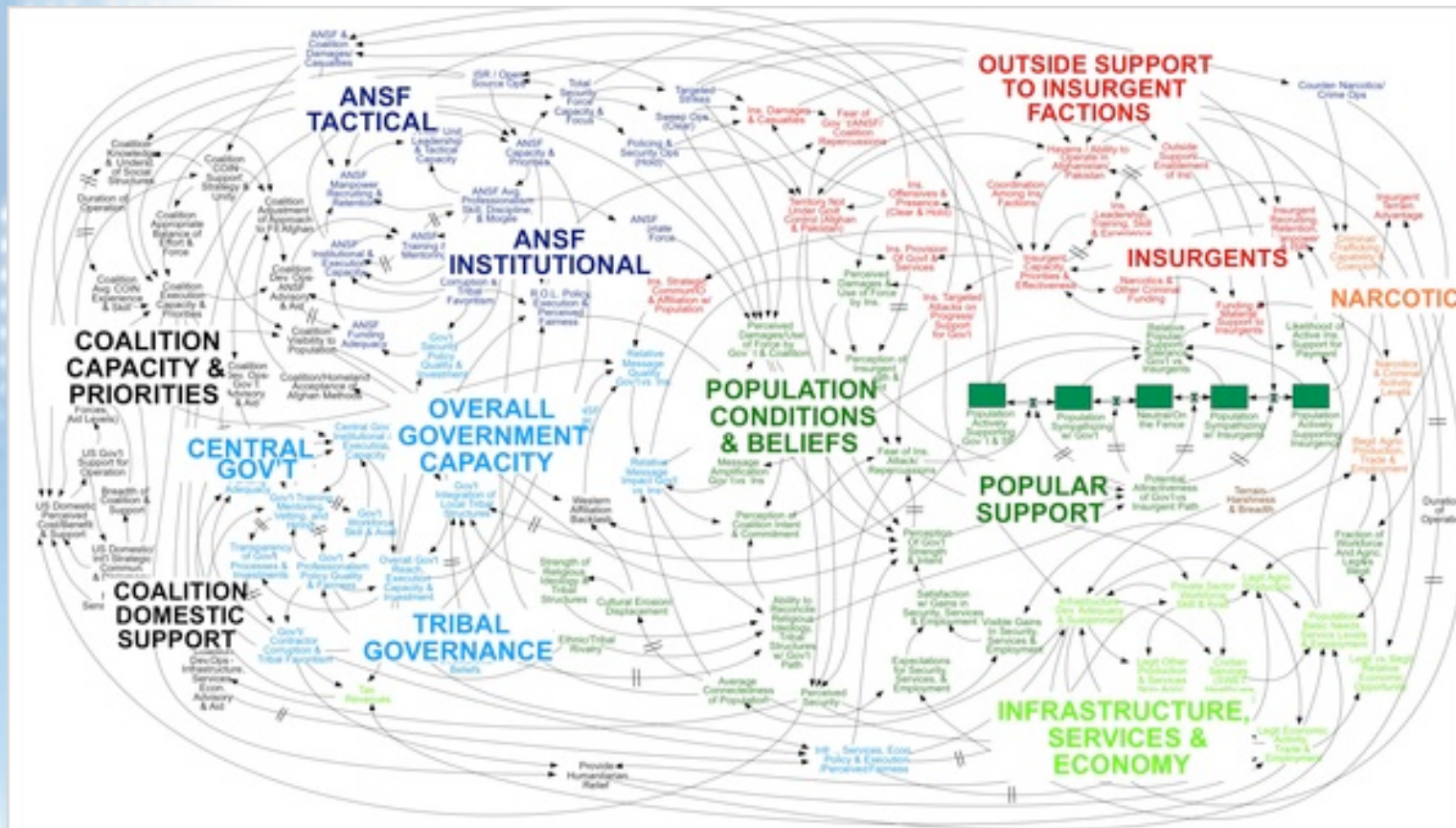Applications built on a model of *relationships*
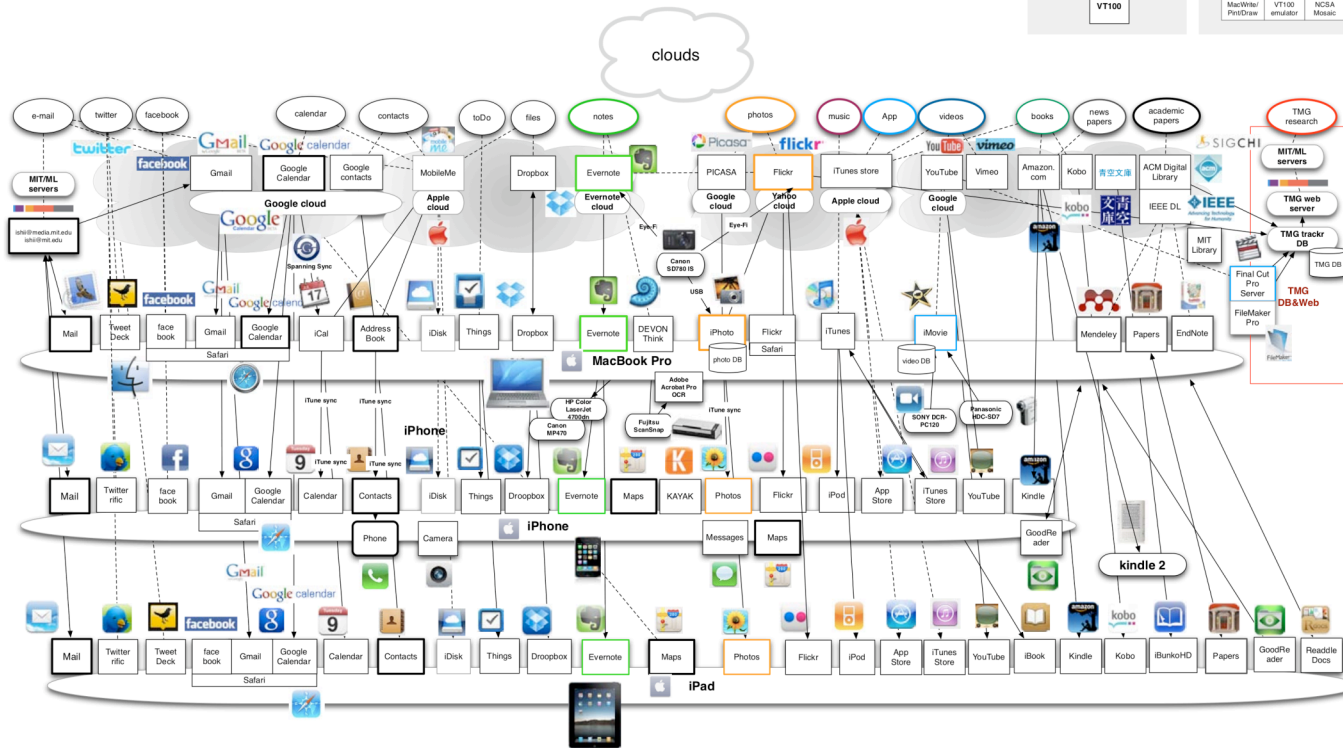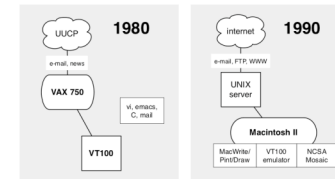
Context-based

Socially-based

Locality-based
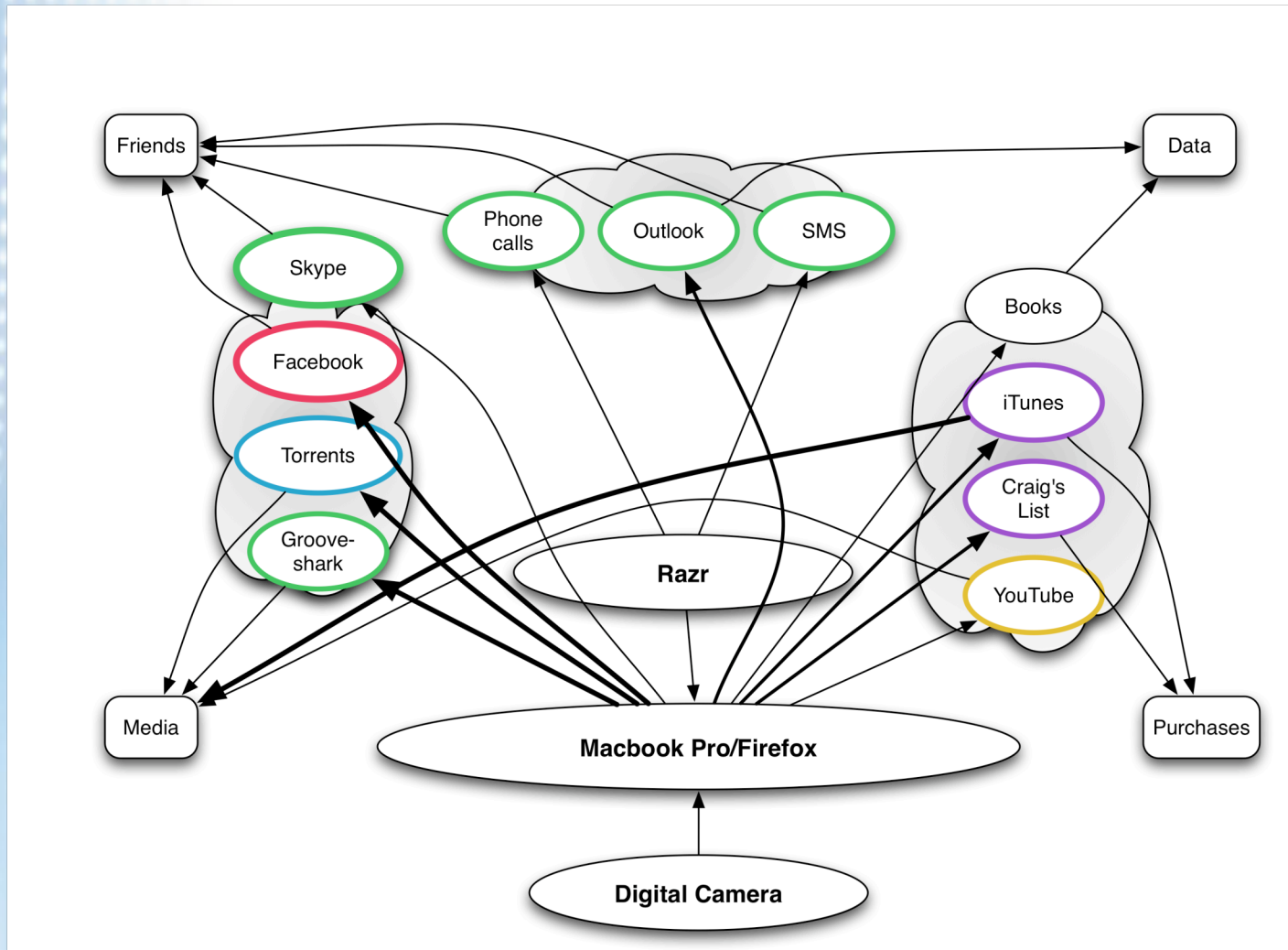
Publish to a space

# Third Cloud

# Third Cloud



Hiroshi ISHII's Digital Life
Information Ecology 2010
June 12, 2010 Tokyo
January 9, 2010 Cambridge MA
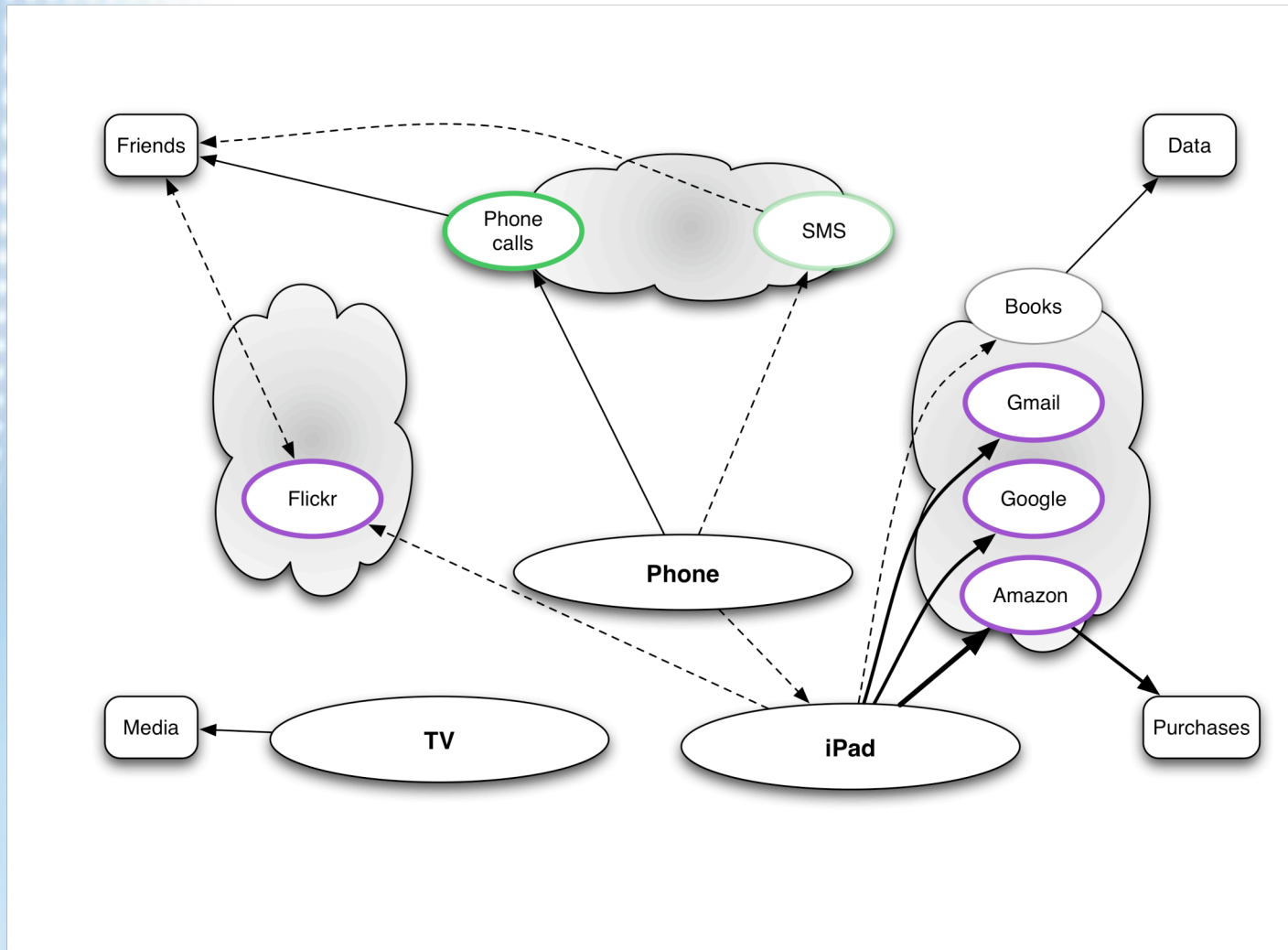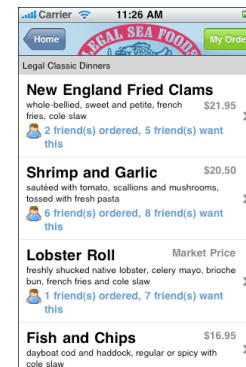
(c) 2010 Hiroshi Ishii (Please do not distribute)
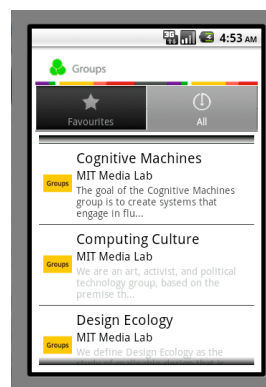
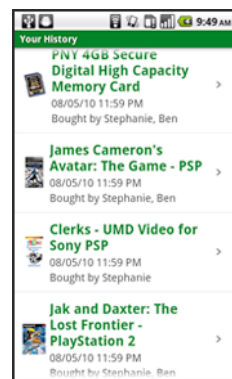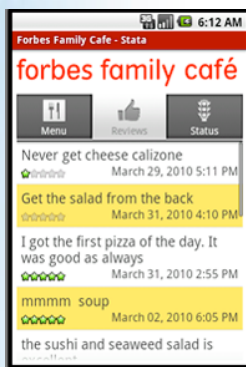# Third Cloud

# Third Cloud
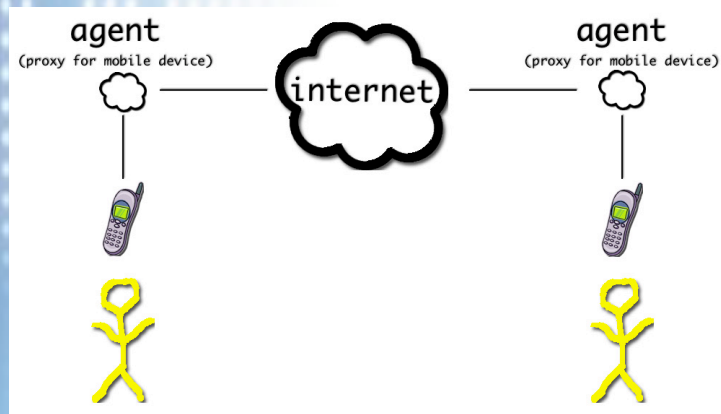
# Third Cloud

# Just-In-Time Social Networks

A mix of present and virtual social influences

- Anonymous, individuals, groups affect people in different ways

- Prototypes developed and experiments deployed via smart phones in restaurant, campus and consumer electronics contexts



Intra-app annotations

# EGO: Agency, locality



What agents do:

- Represent humans and objects
- Run in the cloud
- Form a decentralized architecture
- Act as proxy for your context

Ego powers the "Glass Infrastructure"

# Barter – Incented Exchange

— Barter is a marketplace for exchanging knowledge and creating innovation inside an organizational boundary

**Working markets –**

- iKnow – Question/Answer market

- iDoc – Document exchange

- iDea – Idea market

- iBay – Auction market

- iDesign – Design for self-design market

- Barter is being used by the "Development Ventures" class at the media lab (Joost/Sandy)

- Will be deployed among other organizations & classes

•URLs: http://iknow.mit.edu, http://barter-dv.mit.edu/, http://barter.mit.edu/

Dawei Shen, Marshall Van Alstyne, Andrew Lippman

# Reach: Place, Context, Presence

# Messaging:  An example

SMS:     Runs on all phones
         Foreground operation
         No signup
         Sort-of free

         Wedded to phones
         Requires account
         Gateways to gardens

Accidental success; distilling connections

# Messaging

Twitter:	Device independent
Groups, broadcasts, direct
No phone number
Works with things
Automatic linking via apps
Free

Sign-up inertia
Critical mass:
Multi-tasking mobile device

Connection-free; there is no *who*

# Messaging

**Tweets**



50,000,000

5,000

2007                    2010
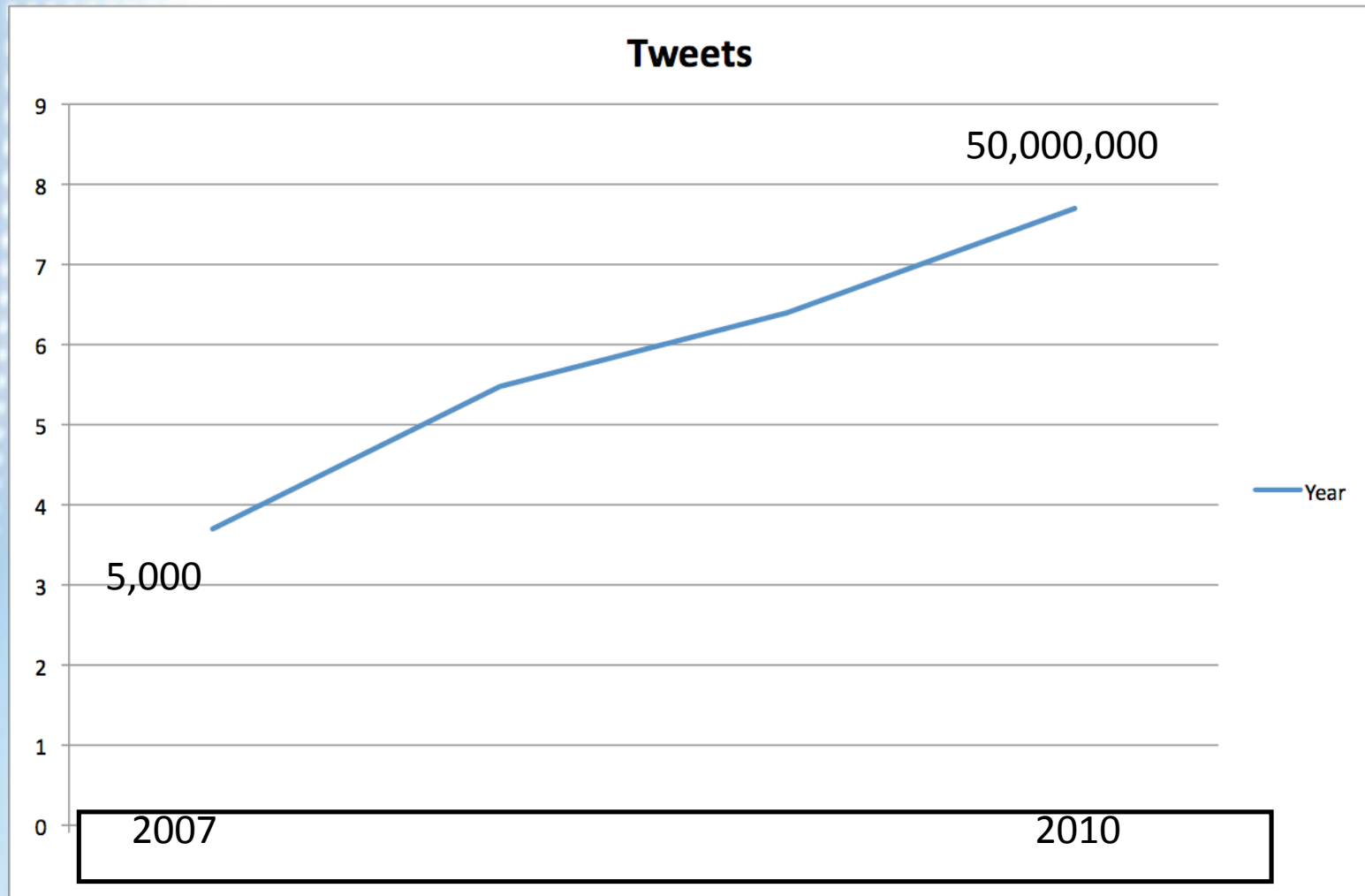
Exponential growth

# Messaging

Twitter or Jabber protocols:

Open architecture admits to open solutions

Receipts and transactions

Beyond NFC

Things

Places

# D-911, An example

Radial impact

Shared obligation or service

Decentralized/inclusive operation

W*e* not *Me* communications

# Clearing the fog

A better taxonomy of clouds that can inform an analysis of the value chain

A discussion of the architecture underneath the services (locality *v.* centralized, addressing…)

A broader definition of what we mean as stakeholders (places, enterprises, media, industries)

A "Networked view" and system dynamics view of who can move where

Applications that push the edge

Edge-core debates revisited

# The Product Space

fishing

oil

fruit

vegetable oils

vegetables

forest products

garments

vehicles

iron/steel

mining

textiles

machinery

electronics

chemicals

animal agriculture

"Think of a product as a tree and the set of all products as a forest. A country is composed of a collection of firms, i.e., of monkeys that live on different trees and exploit those products. The process of growth implies moving from a poorer part of the forest, where trees have little fruit, to better parts of the forest. This implies that monkeys would have to jump distances, that is, redeploy (human, physical, and institutional) capital toward goods that are different from those currently under production. Traditional growth theory assumes there is always a tree within reach; hence, the structure of this forest is unimportant. However, if this forest is heterogeneous, with some dense areas and other more-deserted ones, and if monkeys can jump only limited distances, then monkeys may be unable to move through the forest. If this is the case, the structure of this space and a country's orientation within it become of great importance to the development of countries."

Hidalgo et al. *Science* 317: 482-487

## Patterns of Comparative Advantage

■ Indicate relevant exports (where a region's monkeys are located)

### Industrialized Countries

### East Asia Pacific

### Latin America & the Caribbean

## Node Color
[Learner Classification]

- Petroleum
- Raw Materials
- Forest Products
- Tropical Agriculture
- Animal Agriculture
- Cereals
- Labor Intensive
- Capital Intensive
- Machinery
- Chemicals

### Link Color
[proximity]

Proximity $\phi$ measures the similarity between products based on the number of countries coexporting them. (a.k.a. distance between trees)

- $\phi > 0.65$
- $\phi > 0.55$
- $\phi > 0.4$
- $\phi < 0.4$

### Node Size
[millions of dollars]

0.3  2  8  40  2000

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# Messaging

Cost versus profit center

Resilience versus reliability (eg Google)

Always connected versus not (R&R, again, dropbox)

# Environmental Questions

- "Design motility for a city you want to live in"

- "Design an information system that shows guests the ideas behind the visible work"
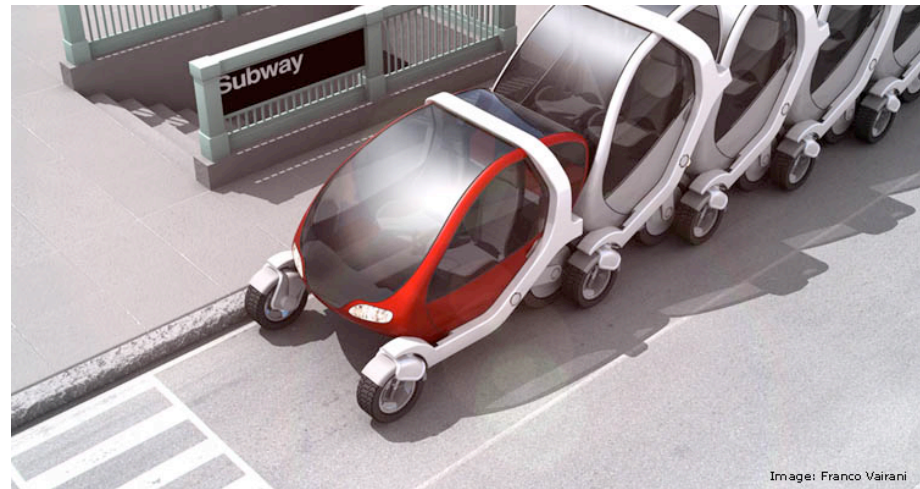
- "Make a phone we want to use…"



Image: Franco Vairani