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# SCALABLE WEB PROGRAMMING

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CS193S - Jan Jannink - 3/09/10

# Weekly Syllabus

1. Scalability: (*Jan.*)

2. Agile Practices

3. Ecology/Mashups

4. Browser/Client

5. Data/Server: (*Feb.*)

6. Security/Privacy

7. Analytics

8. Cloud/Map-Reduce

9. Publish APIs: (*Mar.*)

**10. Future\***

\* demo lunch this Wed. @ 11:30, Packard 204



# Administrative Stuff

- \* Demo lunch tomorrow Wednesday, 11:30AM-2PM
  - \* Packard 204
- \* 1-2 minute pitch plus walk through the app
- \* Plenty of time for discussion & socializing

# Project Assignment Feedback

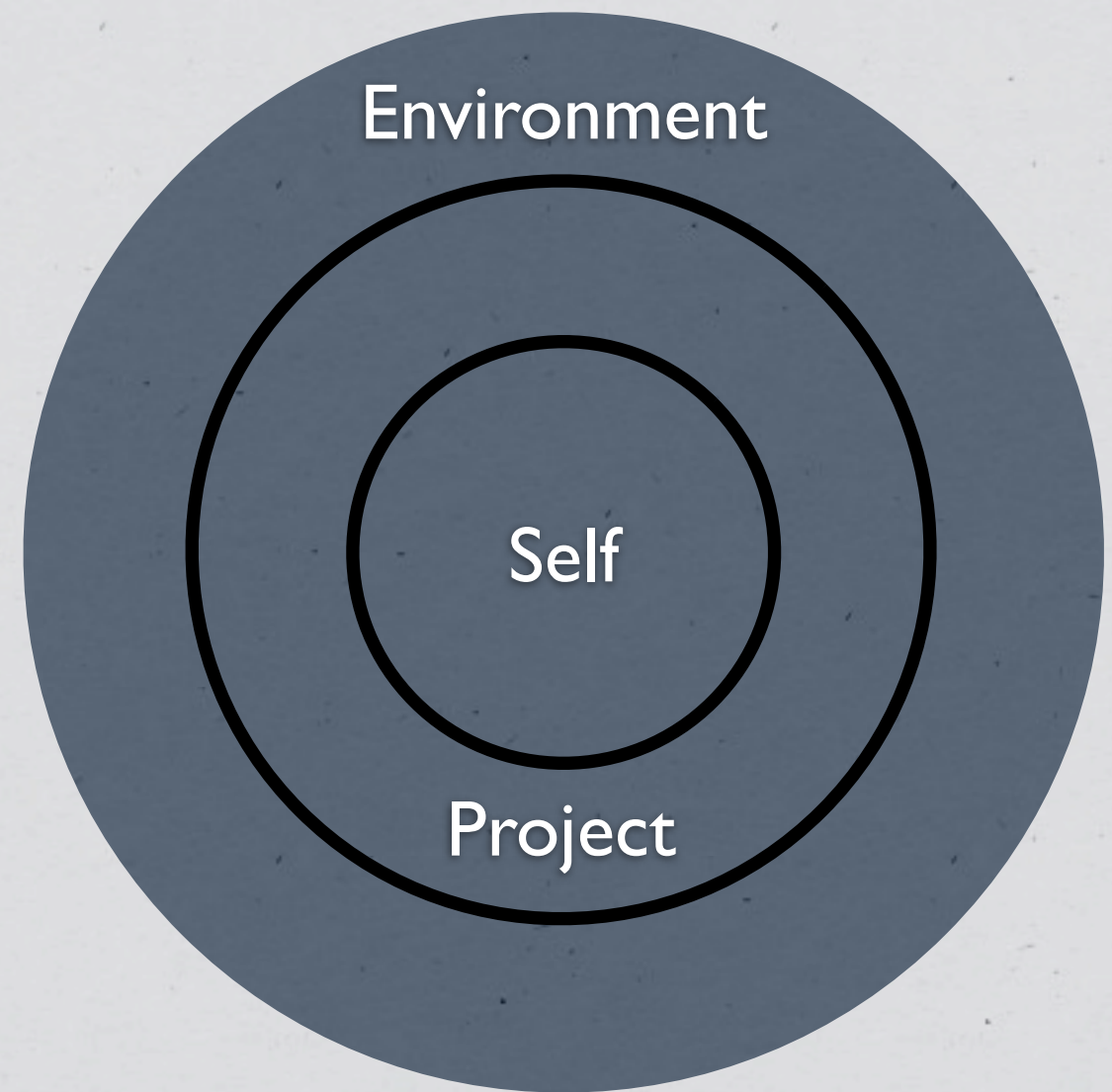
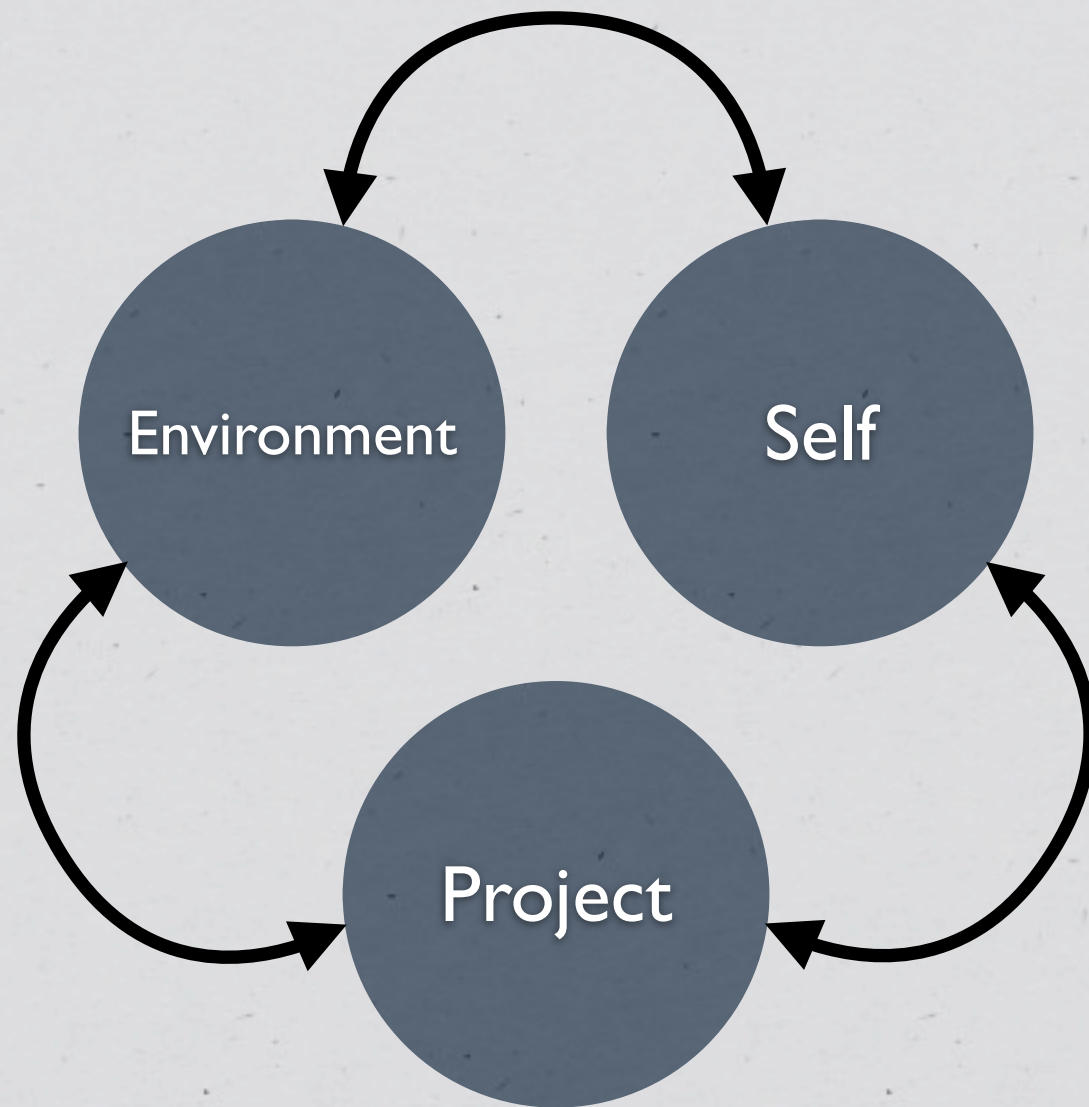
- \* 50% built & ran, 50% needed some adjustment
  - \* README files were quite helpful
- \* Significant functionality improvement all around
- \* We really enjoyed testing the limits of several of them
  - \* rich data made a big usability difference



# Environment, Project, Self

- \* Our environment, bad and good
- \* Trends and opportunities
- \* Scalable self
- \* Project Execution

# Two Abstract Views





# Future of Scalable Web Programming (eek!)

- \* Company cycle is getting shorter
  - \* less time for development, launch, monetization
- \* VC model is in a state of flux
  - \* patience is short and funding is small
- \* Gaining user attention is getting harder
  - \* hard to show unique value proposition

# Future of Scalable Web Programming (yay!!!)

- \* Coding challenges are becoming easier
  - \* outsourcing is with us like it or not
- \* Incubator and angel models are more workable
  - \* real experts are emerging
- \* Landscape is changing, but somewhat less radically
  - \* web food chain is basically established



# Untapped Markets

- \* Big ideas
  - \* “If X existed, everyone would use it”
  - \* “If we could do it on the web, everyone would do it”
- \* Some big trends lie “submerged”, invisible to current leaders
- \* First mover advantage results in faster growth
  - \* not necessarily better long term niche capture

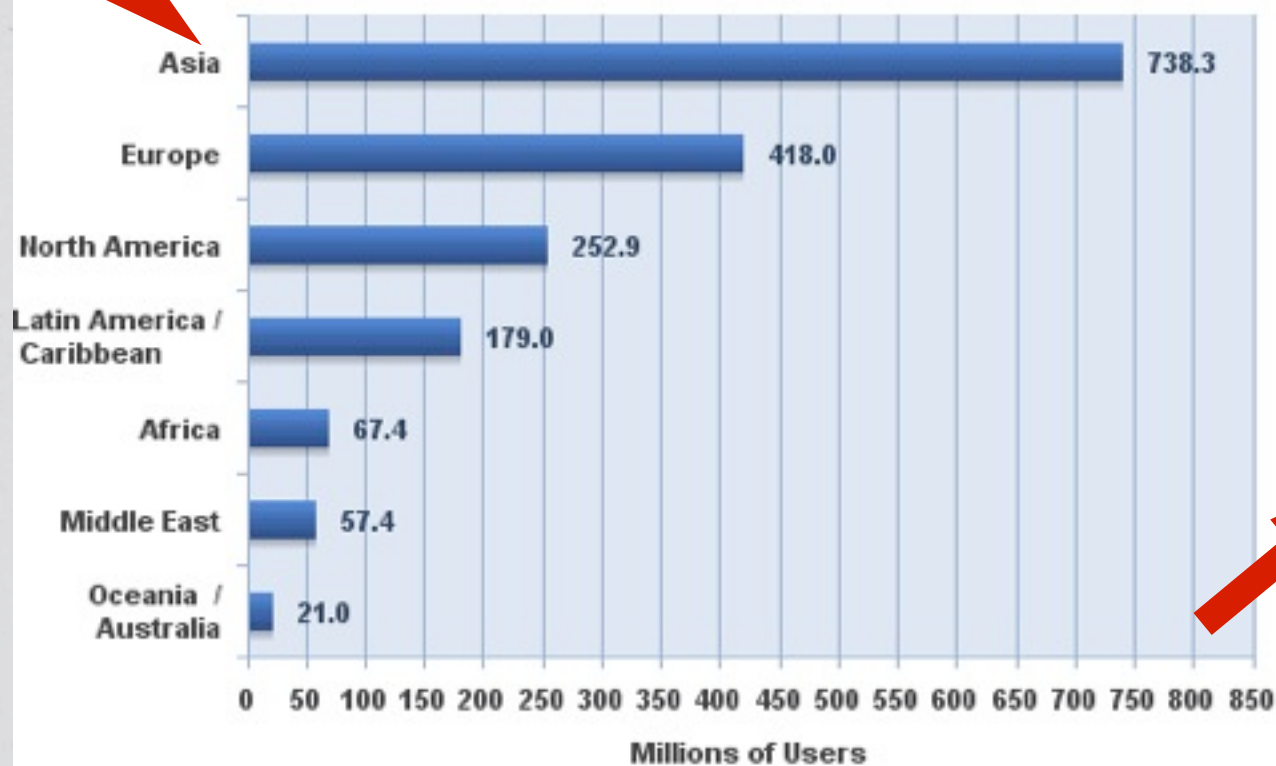
# Web Landscape Trends

- \* Asia
- \* Mobile
- \* Rich Data
- \* Real Time
- \* Augmented Reality



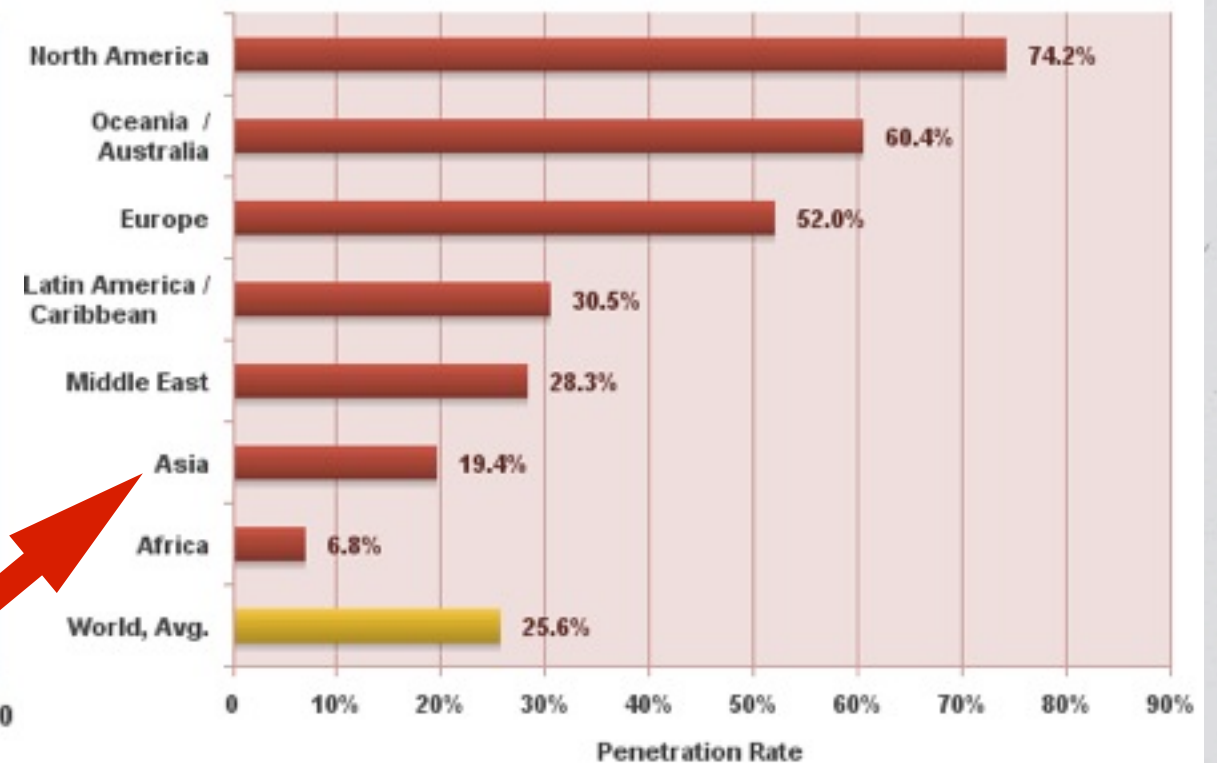
# Asia Scaling

## Internet Users in the World by Geographic Regions



Source: Internet World Stats - [www.internetworldstats.com/stats.htm](http://www.internetworldstats.com/stats.htm)  
Estimated Internet users are 1,733,993,741 for September 30, 2009  
Copyright © 2009, Miniwatts Marketing Group

## World Internet Penetration Rates by Geographic Regions



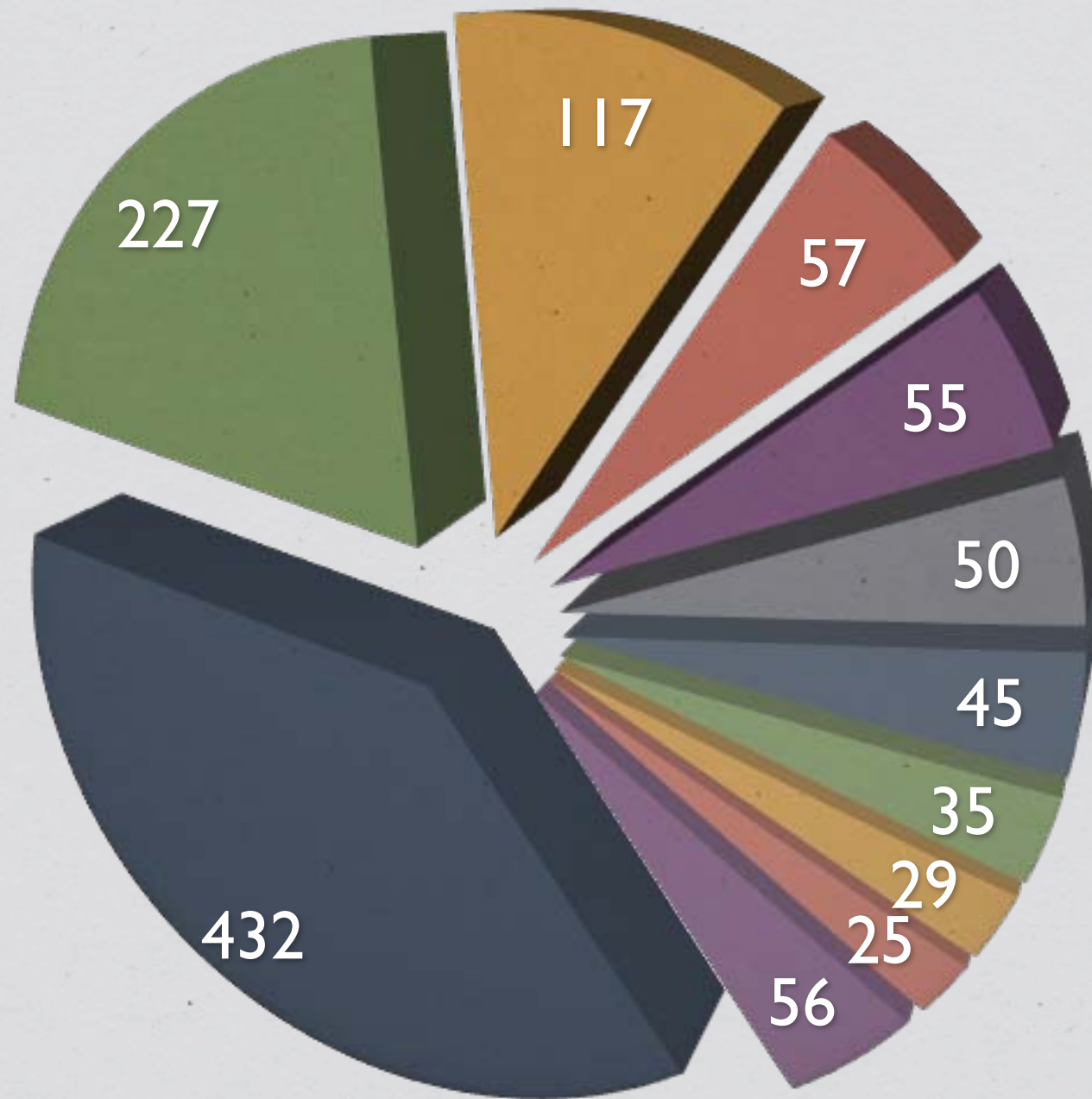
Source: Internet World Stats - [www.internetworldstats.com/stats.htm](http://www.internetworldstats.com/stats.htm)  
Penetration Rates are based on a world population of 6,767,805,208 and 1,733,993,741 estimated Internet users for September 30, 2009.  
Copyright © 2009, Miniwatts Marketing Group

# Asia Scaling

- \* Focus on internationalization
  - \* utf8 encoding of unicode character set 🍏
  - \* place all app text into resources
- \* Cultural differences affect user attitudes towards
  - \* privacy, individuality, society, authority, wealth, celebrity
- \* Possible barriers to assimilation of different cultures



# Mobile Scaling 2009



- Nokia
- Ericsson
- Kyocera
- Apple
- Samsung
- Motorola
- RIM
- Other
- LG
- ZTE
- Sharp

Handsets 1.13 Billion

Smartphones 175 Million

PC Shipments 306 Million

# Mobile Scaling 2009

- \* Mobile web has unique size, input, latency constraints
  - \* web apps can be faster than client apps
  - \* simple, direct data input is critical
- \* New opportunities
  - \* more real world sensors
  - \* mobile peering



# Rich Data Scaling

- \* New YouTube uploads the equivalent of 1200 channels 24/7
- \* About 100 Petabytes of data in the deep web
  - \* web form accessible databases
  - \* ripe for mashups
- \* Google finds data; we also need
  - \* translators, summarizers, converters, visualizers

# Reality Scaling

- \* Live rendering of movie quality CG
  - \* convergence of film and gaming industries
- \* Interactive location enabled search & result rendering
- \* Instant virtual enterprise
  - \* virtual management and leadership skills
- \* Emergence of a kind of global consciousness



# How Do We Get There?

- \* Self Conviction, Passion, Obsession, Stick-to-itiveness
- \* Relentless project execution
  - \* agile and scalable practices
- \* Knowledge arbitrage
  - \* understanding the inefficiencies of information transmission
  - \* best opportunities for growth lie in un(der)-tapped niches

# Personal Example

- \* Runty, hyperkinetic know it all with no social skills
- \* International exposure made me study societies and groups
  - \* my weakest areas when it came to entrepreneurship
- \* Stubbornness allowed me to fail repeatedly without giving up
- \* Conclusion
  - \* don't emulate me, implement a process



# Execution

- \* Understand your group dynamics inside out
- \* Find common direction and purpose
  - \* win win opportunities convert people quickly
- \* Make small frequent adjustments
  - \* measure and adapt to current environment

# Successful Team Practices

- \* Ethics - value integrity
- \* Products - deliver fast
- \* Leadership - focus direction
- \* Execution - reach common goals
- \* Transparency - communicate
- \* Environment - be sustainable



# Agile Practice Review

- \* everything digital and in git repos
- \* quick iteration, throw nothing away
- \* allow for failures, but never repeated
- \* aim for two birds with one stone
- \* parallelize and multitask, don't serialize - (controversial?)
- \* opportunistic effort, not expedient effort
- \* measure and checklist everything

# Worth Checking Out

- \* Internet World Stats

- \* <http://www.internetworldstats.com/stats.htm>

- \* Outsourcing/freelancing

- \* elance, guru, odesk, rentacoder

- \* Switch - Chip Heath & Dan Heath



# Q & A Topics

- \* Predictability horizon has significantly shortened
  - \* can we speak with confidence about the web in 2015?
- \* Radical originality/innovation is more difficult to achieve
  - \* the same concepts are broadly available to many people