CITS Seminar

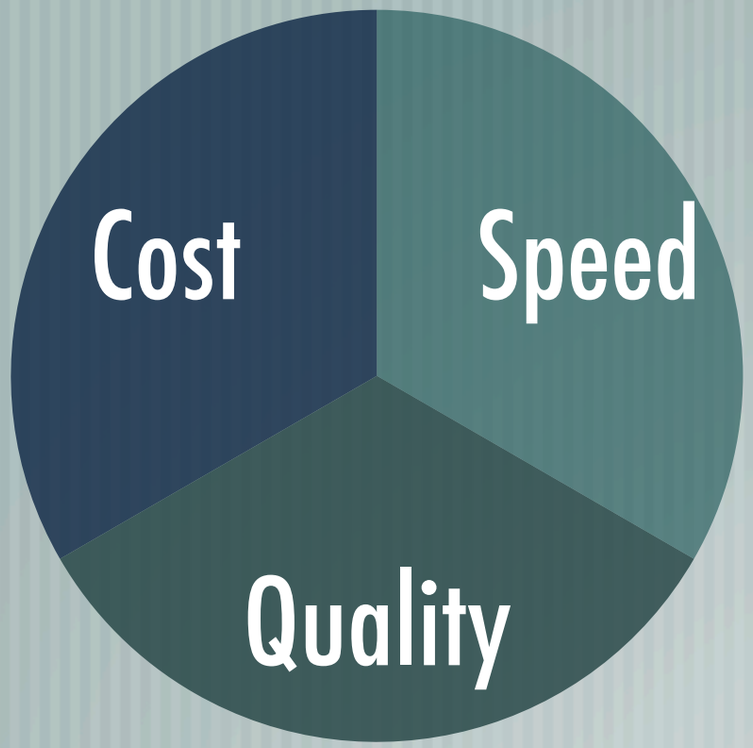
Darren Hardy

October 2005

Agenda

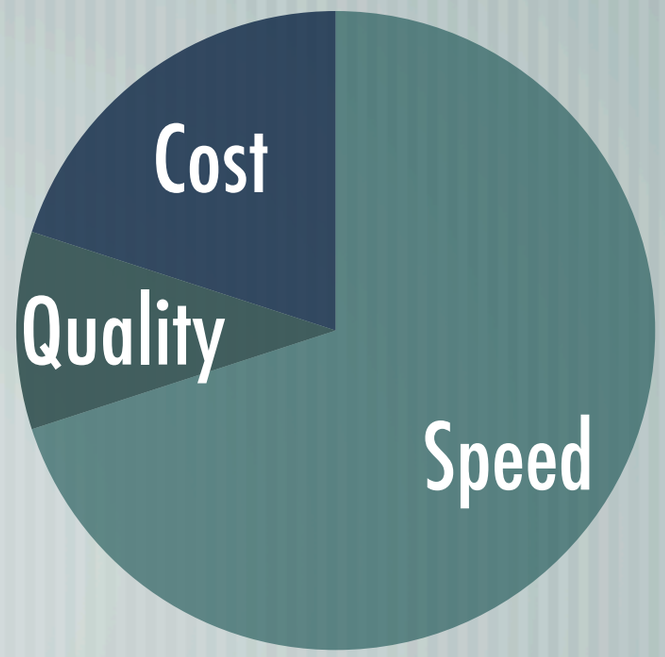
- Technology management
- Environmental policy change
- My research

Trade-offs in Engineering



"Pick Two"

mobile

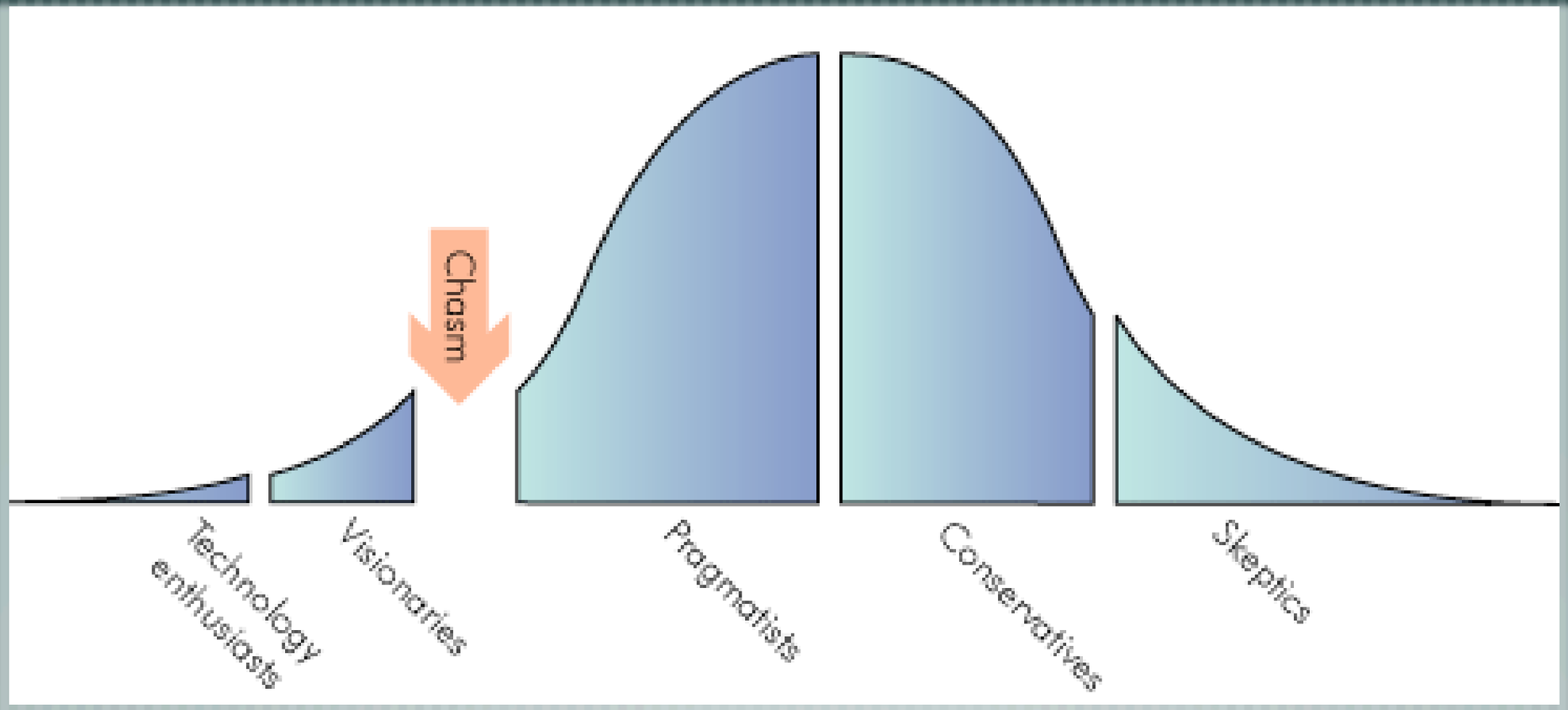


google

Technology Lifecycle

	Music	**Communications**
Bleeding Edge	podcasting	CrowdSurfer
Leading Edge	iPod	BlackBerry
State of the Art	CD	mobile
Dated	cassette	CB
Obsolete	8-track	telegraph

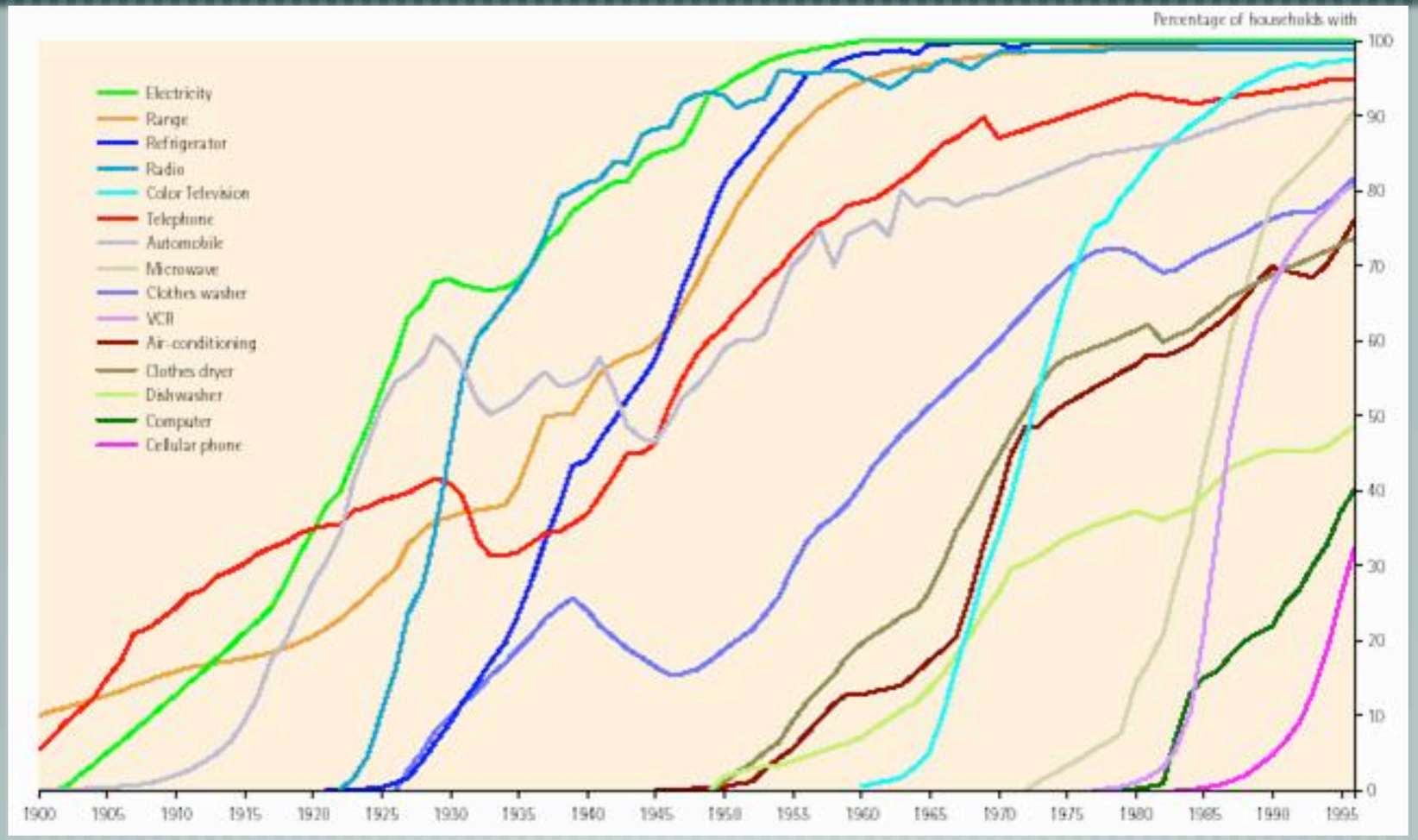
Technology Adoption



wikipedia.org

Moore, 1991. Crossing the Chasm

Technology Diffusion

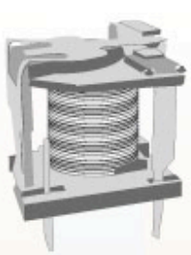


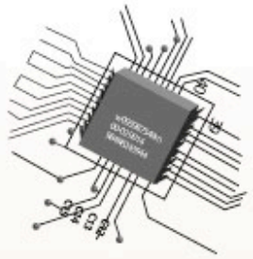
wikipedia.org

- Rodgers, 1962. Diffusion of Innovations.
- Theory: S-curve

Moore's Law

The Fifth Paradigm





Logarithmic Plot

Calculations per Second per $1,000

10^{10}
10^{8}
10^{6}
10^{4}
10^{2}
1
10^{-2}
10^{-4}
10^{-6}

Electromechanical | *Relay* | *Vacuum Tube* | *Transistor* | *Integrated Circuit*

1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000

Year

wikipedia.org

Agenda

- Technology management
- Environmental policy change
- My research

Environmentalism

Scope

Preservation	Conservation	Ecosystem	Post Modern
1890 - 1920 Forest, Parks	1920 - 1960 Use, Pollution	1960 - 1980 NEPA, Air	1980 - 2000 Superfund
Technical Negotiations	Corporate Pressure	Middle-class politics	Participatory democracy

Power

Lester 1995

Public policy

Actors	Institutions	Environmental
Public	Local	SBCC
Interest Groups	State	CEQA
Elite	Federal	Clean Air Act
Policymakers	International	Kyoto
Courts		

Public policy change

- Cyclical thesis
  - fairly predictable pattern: private vs. public remedies
- Backlash
  - major changes based on reaction to prior policies
- Advocacy Coalition Framework
  - conflicting, informed groups responding to events

Lester 1995

Focusing events

- What?
  - Rare, harmful, & sudden
  - Known <u>simultaneously</u> by public & policymakers
- Kinds?
  - Natural Disasters (earthquakes, hurricanes, floods)
  - Unnatural Disasters
    - Three Mile Island (1979); Chernobyl (1986); Exxon Valdez (1989); Kuwati Oil Wells (1991)

Birkland 1997

Agenda

- Technology management
- Environmental policy change
- My research

Wireless Sensors

- Sensor types:
  - movement, light, force, temperature, audio, proximity, humidity
- Examples:
  - DigiClip, eSeal, µParts

(Beigl 2004)

Implications of Wireless

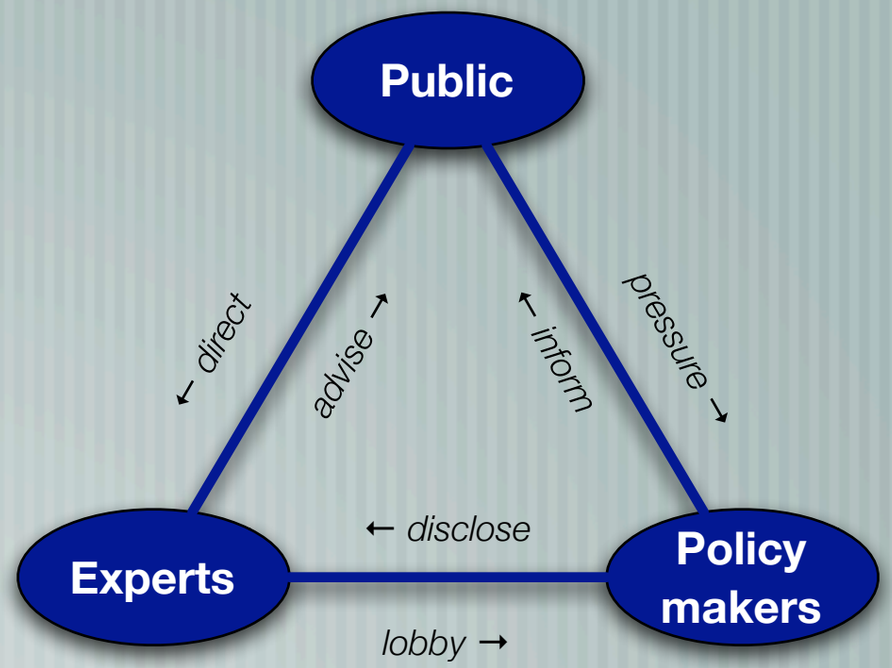
- Sensor networks
  - Massively instrumented environments for monitoring, forecasting, and research
- Ubiquitous computing
  - Reduce barriers to civic participation
  - Facilitate mobilization & information flow

Premise

- Environmental policy domain is largely removed from public
- Advocacy coalitions require evermore resources & expertise
- Large-scale access enables wide participation:
  "Think locally, act globally"
- Networked multimedia content improves outreach potential

Hypothesis

- Increase in participatory democracy would affect environmental policy change positively
- Distributed collaboration technology can improve quality of participation



Example

1. Major environmental disaster occurs
2. Citizen participation → flood of new media content – blogs, images, video, speeches, events, etc.
3. Collaboration network refines into "influential" assets
4. Advocacy coalitions leverage assets in policymaking

Research Questions

- Effectiveness of distributed collaboration framework to facilitate policy change? Better outcomes?
- Collaborative content production yield higher-valued assets?
- Useful types of data to affect environmental policy change? Limiting factors?