

# The Computing Community Consortium and You

---

Ed Lazowska

Bill & Melinda Gates Chair in  
Computer Science & Engineering  
University of Washington

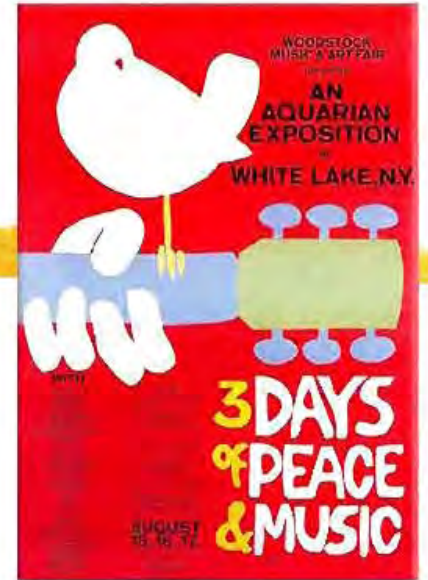
Chair  
Computing Community Consortium

<http://www.cra.org/ccc>

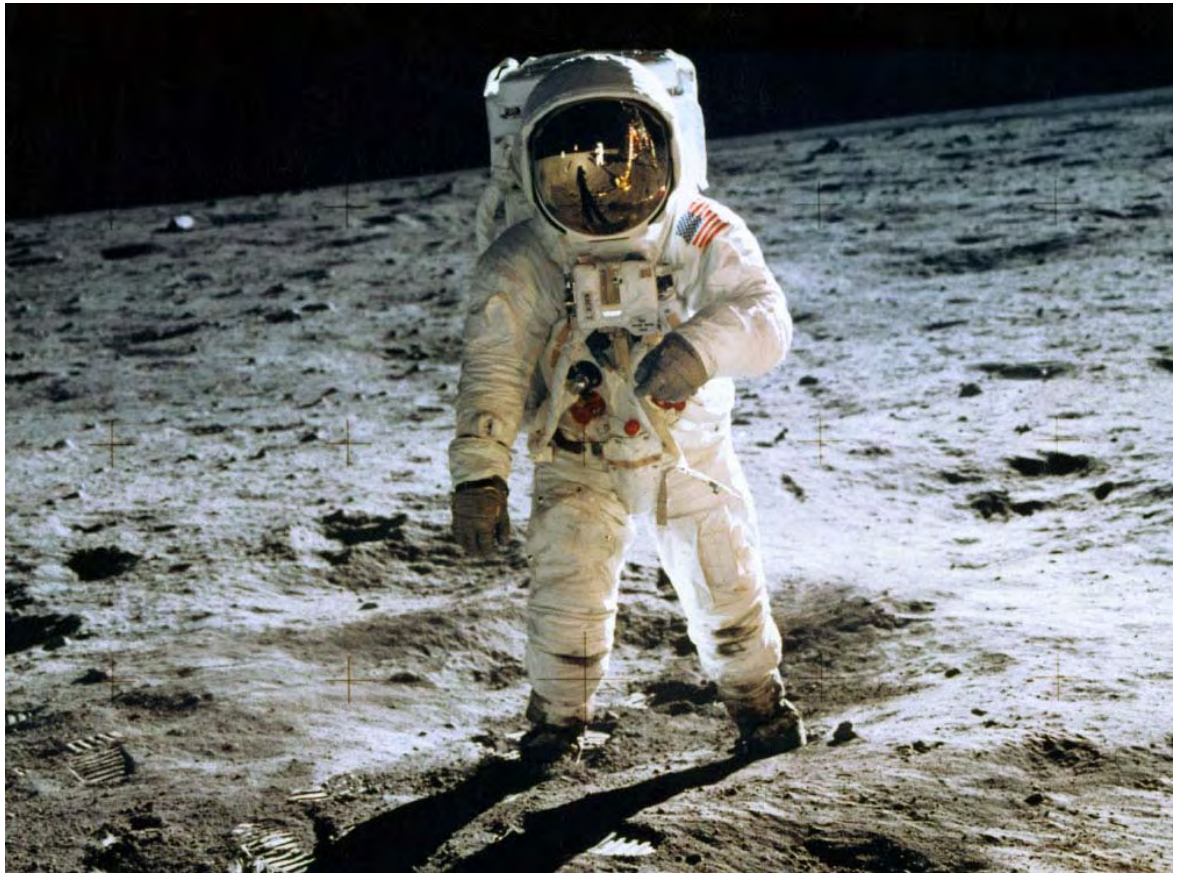


Forty years ago ...

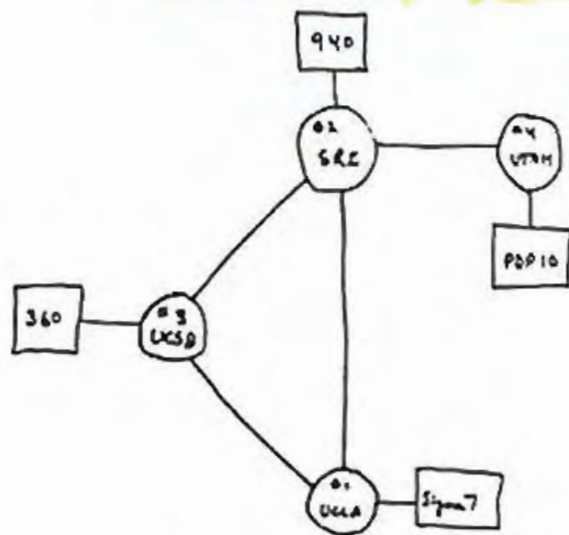








[Peter Lee, DARPA, and Pat Lincoln, SRI]



THE ARPA NETWORK  
DEC 1969  
4 NODES

29 OCT 69	2100	LOADED OP. PROGRAM	CSK
		FOR BEN BARKER	
		BBV	
	22:30	Talked to SRI	CSK
		Host to Host	
		Left op program	CSK
		running after sending	
		a host dead message	
		to imp.	



# With forty years hindsight, which had the greatest impact?

- Unless you're big into Tang and Velcro (or sex and drugs), the answer is clear ...



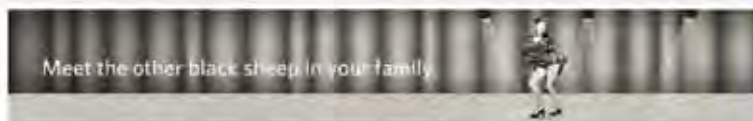
- And so is the reason ...

**EXPONENTIALS  US**

The past thirty years ...







ancestry.com discover

Advertise on NYTimes.com

THE COUNT

Internet, Mobile Phones Named Most Important Inventions

By Peter J. LeVine  
Published March 7, 2008

In response to the shouted-out question, "What are some of the greatest inventions of all time?," nearby office workers in a recent informal survey gave the following answers: the wheel, the engine, the ballpoint pen, diapers and the cheese Danish.

- E-MAIL
- PRINT
- REPRINTS
- SHARE

ARTICLE TOOLS



Life Changers

The top innovations of the last 30 years, according to judges at the Wharton School of the University of Pennsylvania.

- Internet, broadband
- PC and laptop computers
- Mobile phones
- E-mail
- DNA testing and sequencing
- Magnetic resonance imaging
- Microprocessors
- Fiber optics
- Office software
- Laser/robotic surgery
- Open-source software
- Light-emitting diodes
- Liquid crystal display
- GPS devices
- E-commerce and auctions
- Media file compression
- Microfinance
- Photovoltaic solar energy
- Large-scale wind turbines
- Internet social networking

THE NEW YORK TIMES

A panel of eight judges from the Wharton School of the University of Pennsylvania was required to go back only 30 years — not to the dawn of history — when asked a similar question. So its answers, of course, were very different.

In the survey, the Internet was voted the biggest innovation of the last three decades, followed by computers, mobile phones and e-mail. The survey was sponsored by Knowledge@Wharton, the school's business publication, and PBS's "Nightly Business Report."

Good, important choices all, but for classic, long-lasting appeal, they still can't beat the wheel. PHYLLIS KORRICK

Next Article in Business (22 of 29) »

News for Education Professionals

- Colleges Sweet Out Admissions This Year
- Schumer Says Schools and State Will Get Some Stimulus Money This Month
- Distracts: Private School-Closing Plans to Save Money
- Parents See Trustees Over Prep School's Slushbery
- Dedical Candidates Anticipate Hard Times



See To Discover

Smith MBA at Maryland  
Full time, Part time, Executive MBA Top ranked. Four locations.  
www.smithand.edu/mba

Business Admin. School  
Achieve an Administration Degree. Start towards a new career today!  
www.Grantham.edu

Make B-School A Reality  
Full GMAT Prep Online & Guaranteed To Raise Your Score. Get Knowledge!  
www.knewton.com/GMAT

Advertise on NYTimes.com

**The Weekender**  
**FRIDAY. SATURDAY. SUNDAY**  
**ONLY \$3.45 PER WEEK**  
**CLICK TO ORDER**



# Life Changers

## The top innovations of the last 30 years, according to judges at the Wharton School of the University of Pennsylvania.

In response to the shouted-out question, "What are some of the greatest inventions of all time?," nearby office workers in a recent informal survey gave the following answers: the wheel, the engine, the ballpoint pen, diapers and the cheese Danish.

### Life Changers

The top innovations of the last 30 years, according to judges at the Wharton School of the University of Pennsylvania.

1. Internet, broadband
2. PC and laptop computers
3. Mobile phones
4. E-mail
5. DNA testing and sequencing
6. Magnetic resonance imaging
7. Microprocessors
8. Fiber optics
9. Office software
10. Laser/robotic surgery
11. Open-source software
12. Light-emitting diodes
13. Liquid crystal display
14. GPS devices
15. E-commerce and auctions
16. Media file compression
17. Microfinance
18. Photovoltaic solar energy
19. Large-scale wind turbines
20. Internet social networking

THE NEW YORK TIMES

POPULAR TIMES TOPICS

My Account Welcome, lasowska Log Out Help

## Business

Search All NYTimes.com

TECHNOLOGY SCIENCE HEALTH SPORTS OPINION ARTS STYLE TRAVEL JOBS REAL ESTATE AUTOS

Financial Tools

Select a Financial Tool

More in Business »

World Business

Markets

Economy

DealBook

Media & Advertising

Small Business

Your Money

Energy & Environment



ancestry.com discover

Advertise on NYTimes.com

### Named Most Important Inventions

E-MAIL

MP3

REPRINTS

SHARE

ARTICLE PHOTO SPONSORED BY



A panel of eight judges from the Wharton School of the University of Pennsylvania was required to go back only 30 years — not to the dawn of history — when asked a similar question. So its answers, of course, were very different.

In the survey, the Internet was voted the biggest innovation of the last three decades, followed by computers, mobile phones and e-mail. The survey was sponsored by Knowledge@Wharton, the school's business publication, and PBS's "Nightly Business Report."

Good, important choices all, but for classic, long-lasting appeal, they still can't beat the wheel. PHYLLIS KORRKI

Next Article in Business (22 of 29) »

### News for Education Professionals

- Colleges Sweeten Out Admissions This Year
- Schumer Says Schools and State Will Get Some Stimulus Money This Month
- Distracts: Parents School-Closing Plans to Save Money
- Parents See Teachers Over Prep School's Shutdown
- Doctoral Candidates Anticipate Hard Times

LinkedIn

See To Discover

Smith MBA at Maryland Full time, Part time, Executive MBA Top ranked. Four locations. www.fsmithand.edu/mba

Business Admin. School Achieve an Administration Degree. Start towards a new career today! www.Grantham.edu

Make B-School A Reality Full GMAT Prep Online & Guaranteed To Raise Your Score. Get Knowledge! www.knewton.com/GMAT

Advertise on NYTimes.com

The Weekender FRIDAY. SATURDAY. SUNDAY ONLY \$3.45 PER WEEK CLICK TO ORDER

Next Article in Business (22 of 29) »

Click here to enjoy the convenience of home delivery of The Times for less than \$1 a day.



## Life Changers

The top innovations of the last 30 years, according to judges at the Wharton School of the University of Pennsylvania.

1. Internet, broadband
2. PC and laptop computers
3. Mobile phones
4. E-mail
5. DNA testing and sequencing
6. Magnetic resonance imaging
7. Microprocessors
8. Fiber optics
9. Office software
10. Laser/robotic surgery
11. Open-source software
12. Light-emitting diodes
13. Liquid crystal display
14. GPS devices
15. E-commerce and auctions
16. Media file compression
17. Microfinance
18. Photovoltaic solar energy
19. Large-scale wind turbines
20. Internet social networking

THE NEW YORK TIMES


Welcome to TimesPeople Lets You Share and Discover the Best of NYTimes.com 2:35 PM Get Started No Thanks

HOME PAGE TODAY'S PAPER VIDEO MOST POPULAR TIMES TOPICS My Account Welcome, lazowska Log Out Help

The New York Times **Business** Search At NYTimes.com

WORLD U.S. N.Y. / REGION BUSINESS TECHNOLOGY SCIENCE HEALTH SPORTS OPINION ARTS STYLE TRAVEL JOBS REAL ESTATE AUTOS

Search Business Financial Tools More in Business »  
 News, Tools, Facts, Companies Select a Financial Tool World Business Markets Economy DealBook Media & Advertising Small Business Your Money Energy & Environment

Meet the other black sheep in your family.  [ancestry.com](#) discover Advertise on NYTimes.com

THE COUNT  
**Internet, Mobile Phones Named Most Important Inventions**  
By Peter J. LeVine  
 Published March 7, 2010

In response to the shouted-out question, "What are some of the greatest inventions of all time?," nearby office workers in a recent informal survey gave the following answers: the wheel, the engine, the ballpoint pen, diapers and the cheese Danish.

**Life Changers**  
 The top innovations of the last 30 years, according to judges at the Wharton School of the University of Pennsylvania.


1. Internet, broadband
2. PC and laptop computers
3. Mobile phones
4. E-mail
5. DNA testing and sequencing
6. Magnetic resonance imaging
7. Microprocessors
8. Fiber optics
9. Office software
10. Laser/robotic surgery
11. Open-source software
12. Light-emitting diodes
13. Liquid crystal display
14. GPS devices
15. E-commerce and auctions
16. Media file compression
17. Microfinance
18. Photovoltaic solar energy
19. Large-scale wind turbines
20. Internet social networking

THE NEW YORK TIMES

A panel of eight judges from the Wharton School of the University of Pennsylvania was required to go back only 30 years — not to the dawn of history — when asked a similar question. So its answers, of course, were very different.

In the survey, the Internet was voted the biggest innovation of the last three decades, followed by computers, mobile phones and e-mail. The survey was sponsored by Knowledge@Wharton, the school's business publication, and PBS's "Nightly Business Report."

Good, important choices all, but for classic, long-lasting appeal, they still can't beat the wheel. **PHYLLIS KORKKI**

ARTICLE TOOLS  
SPONSORED BY  


Next Article in Business (22 of 29) »

News for Education Professionals FROM NYTIMES.COM Where They? »

- Colleges Sweet Out Admissions This Year
- Schumer Says Schools and State Will Get Some Stimulus Money This Month
- Distracts: Future School-Closing Plans to Save Money
- Parents See Trustees Over Prep School's Status Quo
- Doctoral Candidates Anticipate Hard Times

LinkedIn

See To Discover ADVERTISEMENT

**Smith MBA at Maryland**  
 Full time, Part time, Executive MBA Top ranked. Four locations. [www.fsmithand.edu/mba](#)

**Business Admin. School**  
 Achieve an Administration Degree. Start towards a new career today! [www.Grantam.edu](#)

**Make B-School A Reality**  
 Full GMAT Prep Online & Guaranteed To Raise Your Score. Get Knowledge! [www.knewton.com/GMAT](#)

Advertise on NYTimes.com

© 2010 The New York Times Company. All rights reserved. Next Article in Business (22 of 29) »

Click here to enjoy the convenience of home delivery of The Times for less than \$1 a day.

**The Weekender**  
 FRIDAY. SATURDAY. SUNDAY  
 ONLY \$3.45 PER WEEK  
 CLICK TO ORDER



## Life Changers

The top innovations of the last 30 years, according to judges at the Wharton School of the University of Pennsylvania.

- 1. Internet, broadband
- 2. PC and laptop computers
- 3. Mobile phones
- 4. E-mail
- 5. DNA testing and sequencing
- 6. Magnetic resonance imaging
- 7. Microprocessors
- 8. Fiber optics
- 9. Office software
- 10. Laser/robotic surgery
- 11. Open-source software
- 12. Light-emitting diodes
- 13. Liquid crystal display
- 14. GPS devices
- 15. E-commerce and auctions
- 16. Media file compression
- 17. Microfinance
- 18. Photovoltaic solar energy
- 19. Large-scale wind turbines
- 20. Internet social networking

THE NEW YORK TIMES

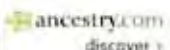

Welcome to TimesPeople Lets You Share and Discover the Best of NYTimes.com 2:35 PM Get Started No Thanks

HOME PAGE TODAY'S PAPER VIDEO MOST POPULAR TIMES TOPICS My Account Welcome, lazowska Log Out Help

The New York Times Business Search At NYTimes.com

WORLD U.S. N.Y. / REGION BUSINESS TECHNOLOGY SCIENCE HEALTH SPORTS OPINION ARTS STYLE TRAVEL JOBS REAL ESTATE AUTOS

Search Business Financial Tools More in Business »  
 Select a Financial Tool World Business Markets Economy DealBook Media & Advertising Small Business Your Money Energy & Environment

Meet the other black sheep in your family.  [ancestry.com](#) discover 

THE COUNT  
**Internet, Mobile Phones Named Most Important Inventions**  
 By Peter L. Jacobson  
 Published: March 7, 2011

In response to the shouted-out question, "What are some of the greatest inventions of all time?," nearby office workers in a recent informal survey gave the following answers: the wheel, the engine, the ballpoint pen, diapers and the cheese Danish.

**Life Changers**  
 The top innovations of the last 30 years, according to judges at the Wharton School of the University of Pennsylvania.


1. Internet, broadband
2. PC and laptop computers
3. Mobile phones
4. E-mail
5. DNA testing and sequencing
6. Magnetic resonance imaging
7. Microprocessors
8. Fiber optics
9. Office software
10. Laser/robotic surgery
11. Open-source software
12. Light-emitting diodes
13. Liquid crystal display
14. GPS devices
15. E-commerce and auctions
16. Media file compression
17. Microfinance
18. Photovoltaic solar energy
19. Large-scale wind turbines
20. Internet social networking

THE NEW YORK TIMES

A panel of eight judges from the Wharton School of the University of Pennsylvania was required to go back only 30 years — not to the dawn of history — when asked a similar question. So its answers, of course, were very different.

In the survey, the Internet was voted the biggest innovation of the last three decades, followed by computers, mobile phones and e-mail. The survey was sponsored by Knowledge@Wharton, the school's business publication, and PBS's "Nightly Business Report."

Good, important choices all, but for classic, long-lasting appeal, they still can't beat the wheel. **PHYLLIS KORKKI**

ARTICLE TOOLS  
 SPONSORED BY  


Next Article in Business (22 of 29) »

News for Education Professionals FROM NYTIMES.COM Where This? »

- Colleges Sweet Out Admissions This Year
- Schlusser Says Schools and State Will Get Some Stimulus Money This Month
- Distracts: Future School-Closing Plans to Save Money
- Parents See Trustees Over Prep School's Status Quo
- Doctoral Candidates Anticipate Hard Times

LinkedIn

See To Discover [smith.mba](#)

**Smith MBA at Maryland**  
 Full time. Part time. Executive MBA. Top ranked. Four locations. [www.smithand.edu](#)

**Business Admin. School**  
 Achieve an Administration Degree. Start towards a new career today! [www.Grantam.edu](#)

**Make B-School A Reality**  
 Full GMAT Prep Online & Guaranteed To Raise Your Score. Get Knowledge! [www.knewton.com/GMAT](#)

Advertisement on NYTimes.com

Next Article in Business (22 of 29) »

Click here to enjoy the convenience of home delivery of The Times for less than \$1 a day.

**The Weekender**  
 FRIDAY. SATURDAY. SUNDAY  
 ONLY \$3.45 PER WEEK  
 CLICK TO ORDER




# The most recent ten years ...

- Search
- Scalability
- Digital media
- Mobility
- eCommerce
- The Cloud
- Social networking and crowd-sourcing

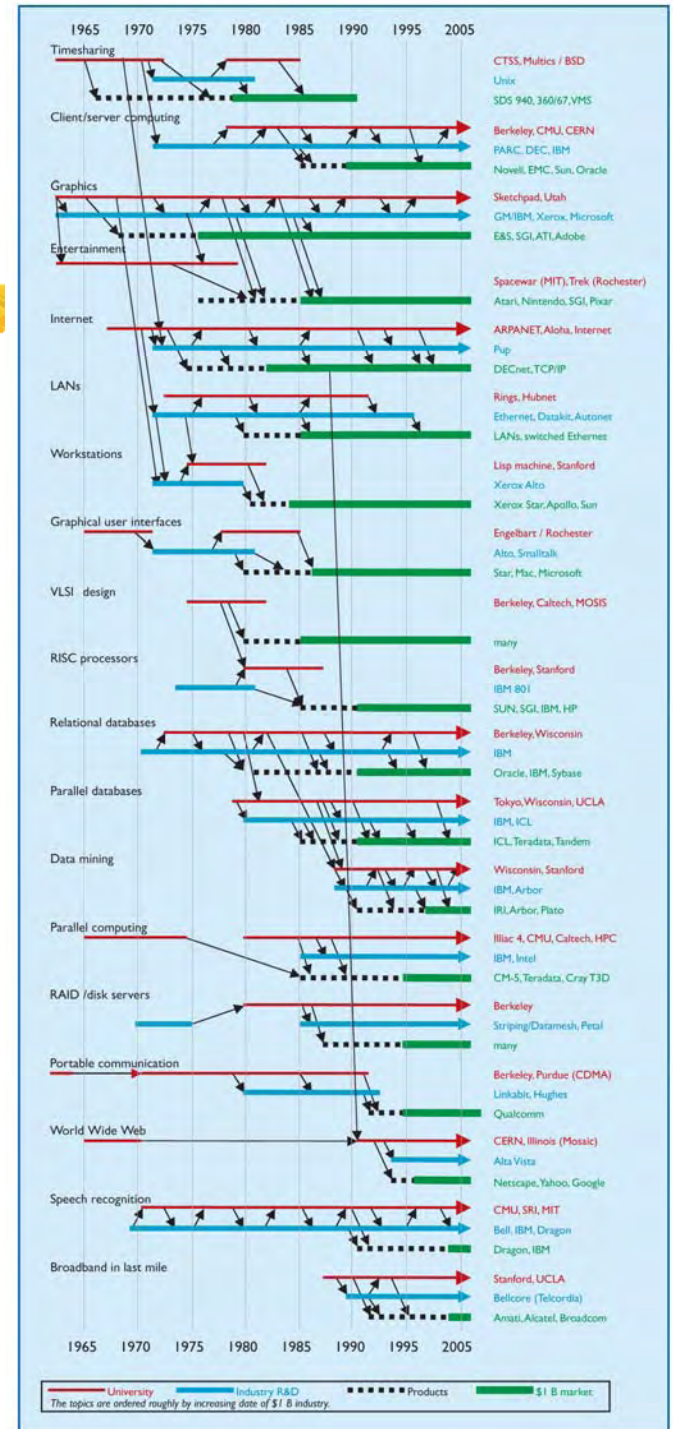
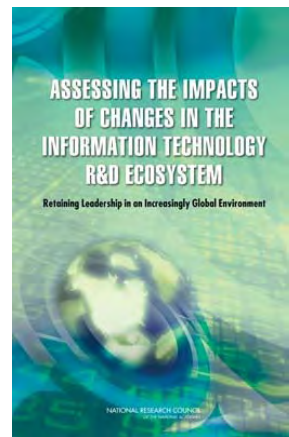
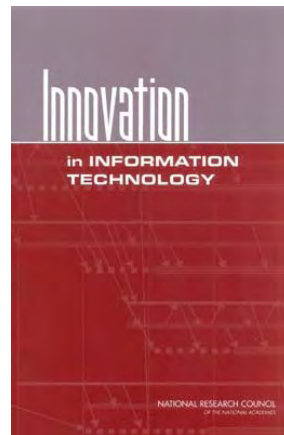
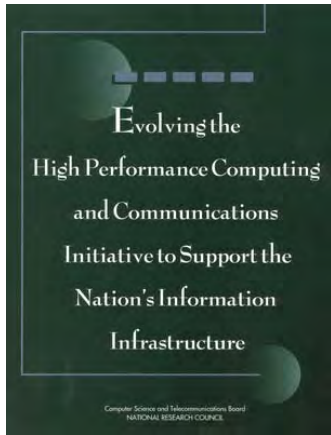


# Our field is unique in its impact and importance



- Computing has a rich intellectual agenda
- Advances in computing accelerate the pace of discovery in nearly all other fields
- Advances in computing drive economic growth
  - Not just through the growth of the IT industry, but through productivity growth across the entire economy
- Advances in computing touch everyone's lives - they change the way we live, work, learn, and communicate
- Advances in computing are inextricably linked to our ability to address our major national challenges
- Advances in computing have major policy implications
  - Ranging from e-voting and identity management to the nature and global spread of democracy

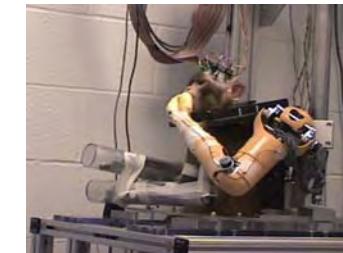
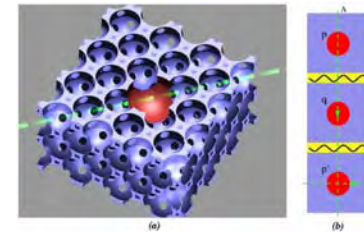
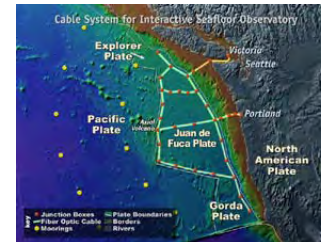
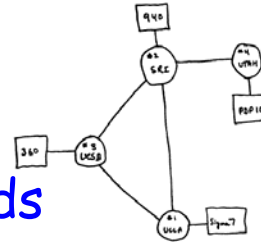
# Research has built the foundation



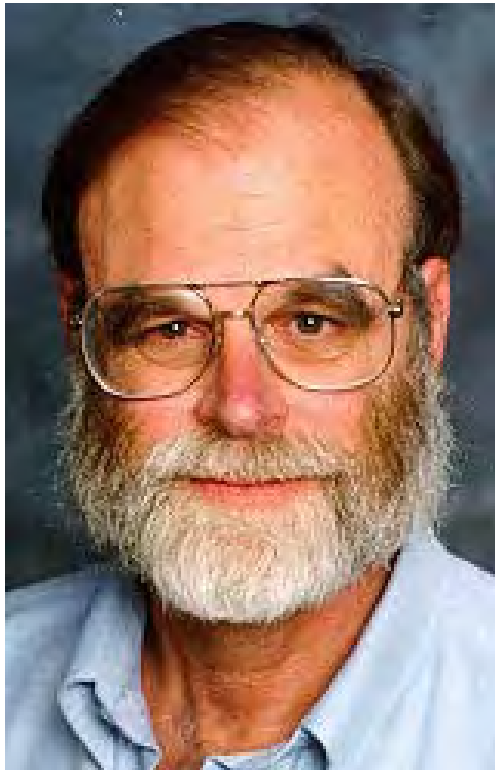


# The future is full of opportunity

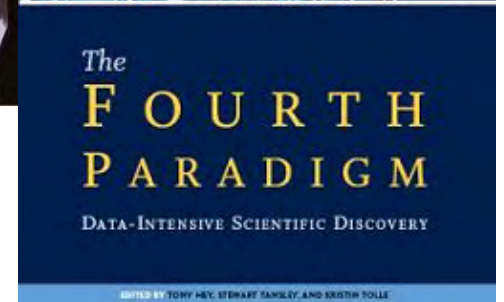
- Creating the future of networking
- Driving advances in all fields of science and engineering
- Revolutionizing transportation
- Personalized education
- The smart grid
- Predictive, preventive, personalized medicine
- Quantum computing
- Empowerment for the developing world
- Personalized health monitoring => quality of life
- Harnessing parallelism
- Neurobotics
- Synthetic biology



# eScience: Sensor-driven (data-driven) science and engineering



Jim Gray



Transforming science (again!)

# Human computation, and the wisdom of crowds



Luis von Ahn

Hours per year, world-wide, spent playing computer solitaire: 9 billion

Hours spent building the Panama Canal: 20 million (less than a day of solitaire)

The screenshot shows the Google Image Labeler interface. At the top, a timer indicates "Time left: 16". Below this, a box contains the word "Google" written in a stylized, handwritten font. A red-bordered box highlights the words "overlooks" and "inquiry" written in a similar style. Below the highlighted words, a yellow box says "Type the two words:" followed by a red "X" and a white "G" icon. The Google logo and "Image Labeler BETA" are visible. The interface includes a "time left" section with a timer at "01:52", a "score" of "0", and "passes" of "0". A "label" and "pass" button are present. A message states "Your partner has suggested 3 labels." Below this is a photograph of a multi-story building. To the right of the photo is a list of "off-limits" labels: "building", "hotel", "car", "cars", and "sky". At the bottom right, there is a "my labels" section and a "zoom out" button.



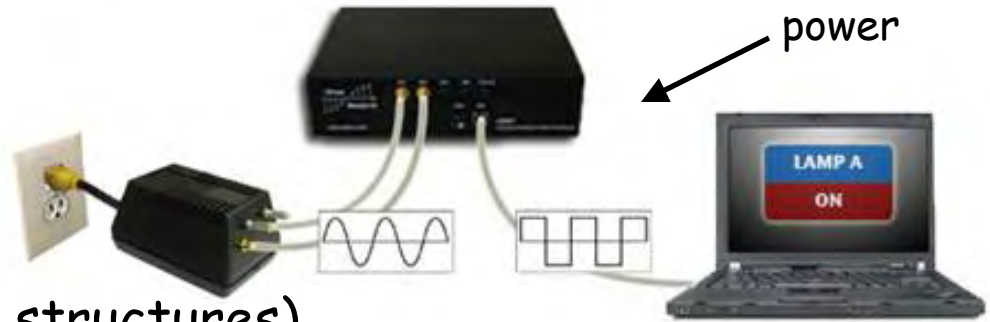
# Revolutionizing transportation



# Revolutionizing energy

## ■ The smart grid

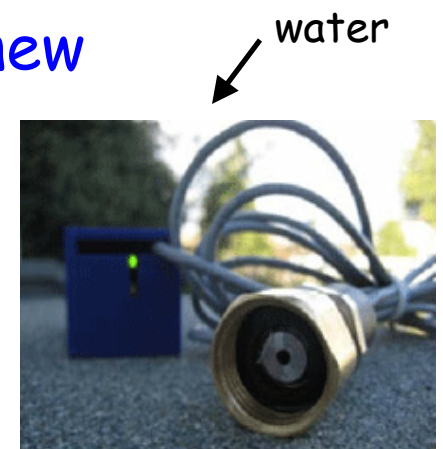
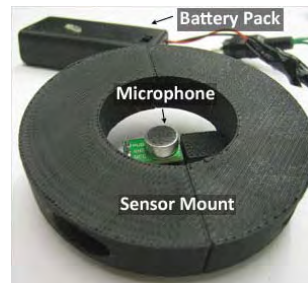
- Engineering
- Control
- Conservation (intelligent structures)



## ■ IT as a substitute for energy-intensive goods and services

## ■ IT as a tool for discovering and designing new energy sources

## ■ Improved energy efficiency in computation



[Shwetak Patel, UW]

# Revolutionizing health



Personalized health monitoring



Evidence-based medicine



Neurobotics



P4 Medicine



# Personalized education



Transforming American Education:  
**Learning**  
Powered by Technology

DRAFT  
National Educational Technology Plan 2010

March 5, 2010

Office of Educational Technology  
U.S. Department of Education

# Empowering the developing world



# Security, privacy, anonymity, selective disclosure



[Yoshi Kohno, UW]

# We will put the "smarts" in ...

- Smart homes
- Smart cars
- Smart bodies
- Smart robots
- Smart science (confronting the data tsunami)
- Smart crowds and human-computer systems
- Smart interaction (virtual and augmented reality)





# NSF asked CRA to create the Computing Community Consortium ...

- to catalyze the computing research community to establish, articulate, build momentum around, and pursue visions for the field
  - Visions that will shape the intellectual future of the field
  - Visions that will catalyze research investment and public support
  - Visions that will attract the best and brightest minds of a new generation



# The Computing Community Consortium is ...

- A standing committee of CRA
- Funded by NSF under a Cooperative Agreement
- Focused on empowering the computing research community to pursue more audacious research visions
- Led by a broad-based Council
- Chaired by Ed Lazowska (Ch.) and Susan Graham (V.Ch.)
- Staffed by CRA (Erwin Gianchandani and Andy Bernat)



# The CCC Council



## ■ Chair

- Ed Lazowska

## ■ Terms ending 2013

- Randy Bryant
- Lance Fortnow
- Hank Korth
- Eric Horvitz
- Beth Mynatt
- Fred Schneider
- Margo Seltzer

## ■ Terms ending 2012

- Stephanie Forrest
- Chris Johnson
- Anita Jones
- Frans Kaashoek
- Ran Libeskind-Hadas
- Robin Murphy

## ■ Terms ending 2011

- Bill Feiereisen
- Susan Graham (v ch)
- Dave Kaeli
- John King
- Bob Sproull

## ■ Ex Officio

- Andy Bernat
- Erwin Gianchandani

## ■ Rotated off

- Dick Karp, 2010
- Andrew McCallum, 2010
- Dave Waltz, 2010
- Greg Andrews, 2009
- Peter Lee, 2009
- Karen Sutherland, 2009



# CCC's activities include ...

- Activities to increase funding of computing research; community-initiated workshops to define new research directions; computing research white papers for the White House and other groups
- Dozens, including the future of robotics, health IT, educational technology, IT for development, broadband infrastructure, the role of large-scale data analysis in all fields, IT and energy/sustainability, ...

CCC Computing Community Consortium  
We support the computing research community in creating compelling research visions and the mechanisms to realize these visions.

HOME YOUR VISION PLANS ACTIVITIES RESOURCES ABOUT CRA GO

## What questions shape our intellectual future?

What attracts the best and brightest minds of a new generation? What are the next big computing ideas, the ones that will define the future of computing, galvanize the very best students, and catalyze research investment and public support? The Computing Community Consortium (CCC) seeks to mobilize the computing research community to answer these questions by identifying major research opportunities for the field.

Click on the tabs below to see some of these activities.

NETSE Cyber Physical Systems Robotics Big Data Computing Theoretical CS  
FOSS Online Education XLayer Global Development ACAR HealthIT

### Computing Research that Changed the World

This invitation only symposium, "Computing Research that Changed the World: Reflections and Perspectives," was organized by the Computing Community Consortium in collaboration with Congressman Bart Gordon (D-TN), Congressman Ralph Hall (R-TX), Congressman Danzell Lujinski (D-IL), Congressman Vern Ehlers (R-MI), Congressman Rush Holt (D-NJ) and Sen. Jay Rockefeller (D-WV). It was held in the Library of Congress on March 25, 2009.

### Highlight of the Week

#### New Search Technique for Images and Videos

University of Washington computer science undergraduates have developed a system that lets up to four students share a single computer to do interactive math problems. Early tests show that students using

CCC Computing Community Consortium  
We support the computing research community in creating compelling research visions and the mechanisms to realize these visions.

HOME YOUR VISION PLANS ACTIVITIES RESOURCES ABOUT CRA GO

### Computing Research Initiatives for the 21st Century

- Fundamental Research in Engineering (Word version)  
(Ed Lazowska, University of Washington and Peter Lee, Carnegie Mellon University)
- Information Technology R&D and U.S. Innovation (Word version)  
(Peter Harsha, Computing Research Association, Ed Lazowska, University of Washington, and Peter Lee, Carnegie Mellon University)
- Re-E envisioning DARPA (Word version)  
(Peter Lee, Carnegie Mellon University and Randy H. Katz, UC Berkeley)
- Unleashing Waves of Innovation: Transformative Broadband for America's Future (Word version)  
(Ed Lazowska, University of Washington, Peter Lee, Carnegie Mellon University, Chip Elliott, BBN Technologies, and Larry Smarr, UCSD)
- Security is Not a Commodity: The Road Forward for Cybersecurity Research (Word version)  
(Stefan Savage, UC San Diego, and Fred B. Schneider, Cornell University)
- Information Technology and America's Energy Future (Word version)  
(David Waltz, Columbia University, and John King, University of Michigan)
- Surface Transportation 3.0 (Word version)  
(Sebastian Thrun, Stanford University, and Henry Kelly, Federation of American Scientists)
- "Smart Grid": R&D for an Intelligent 21st Century Electrical Energy Distribution Infrastructure (Word version)  
(Randy H. Katz, UC Berkeley)
- Synthetic Biology (Word version)  
(Drew Endy, Stanford, and Ed Lazowska, University of Washington)

## ■ The Computing Innovation Fellows project

- A stimulus-motivated project
- Has placed more than 100 new graduates with postdoctoral mentors in the past 2 years
- "Max 2 rule" ensures broad institutional participation

### Computing Innovation Fellows Project

Home CRA CCC CISE

*The 2009 Computing Innovation Fellows have been selected!*

[View the press release with the names of the 2009 Fellows and their Mentors.](#)

Congratulations to everyone who was selected for a CIFellow award!  
Thank you for your interest in CIFellows. The response has been tremendous!  
[For up-to-the-minute news on the progress of the selection process, check out the forum.](#)

In the light of the response that the CIFellows has received, we have set up a courtesy website where employers can post available positions suitable for new computing PhD's. This site is available at <http://cifellows.org/opportunities>.

An additional courtesy site has been set up for computing PhD's to post their profiles and availability. This website is available at <http://cifellows.org/profiles>. We encourage employers and candidates to make use of these complimentary services.

The Computing Community Consortium (CCC) and the Computing Research Association (CRA), with funding from the National Science Foundation, announce a program for new PhD graduates to obtain one-to-two year postdoctoral positions

- Library of Congress Symposium for policymakers
  - 13 presentations
  - A great set of videos and overview papers for students!





## ■ CCC blog

- Discussion of research-related topics

## ■ Computing Research Highlight of the Week

- Exposure for your research-related press releases!



The screenshot shows the CCC Blog homepage. At the top left is the CCC logo. The main header reads "CCC BLOG" and "THE COMPUTING COMMUNITY CONSORTIUM". Below this is a navigation menu with "HOME", "ABOUT THE CCC", and "ABOUT THIS BLOG". On the left side, there is a "Subscribe in a reader" link and a "Subscribe to this Blog" section with an email input field and "Subscribe" and "Unsubscribe" buttons. Below that is a "Recent Posts" section listing several articles. The main content area features a post titled "Where the jobs are ..." with a date of "JAN 4" and a category of "Uncategorized, pipeline, resources". The post includes two bar charts showing employment growth within the 10 BLS major occupational groups (2008-18) and within the BLS "Professional and related" occupations (2008-2018). The text discusses a ten-year forecast of job growth from the US Bureau of Labor Statistics.



The screenshot shows the "Computing Research Highlight of the Week" page for January 14-21, 2010. The header includes the CCC logo and the text "Computing Community Consortium" and "We support the computing research community in creating compelling research visions and the mechanisms to realize these visions." Below the header is a navigation menu with "HOME", "YOUR VISION", "PLANS", "ACTIVITIES", "RESOURCES", "ABOUT", "CRA", and "GO". The main content area features a post titled "'One Keypad per Child' Lets School Children Share Screen to Learn Math". The post includes a photograph of children using a shared computer system. The text describes how University of Washington computer science undergraduates developed a system that allows up to four students to share a single computer for interactive math problems. A quote from Joyojeet Pal, a lecturer at UW, is included. The post also mentions that the team will test the system, called MultiLearn, with 180 students at two government-run elementary schools in rural India. On the right side, there are "Relevant Links" (Press Release, Project Web Page, Research Papers, Media Contact), "Keywords" (educational technology, information technology for development, University of Washington), and "Buzz" (Facebook, Twitter, LinkedIn, Digg, StumbleUpon, YouTube, RSS, and a SHARE button).



## ■ Landmark Contributions by Students in Computer Science

- Prepared as part of the DARPA leadership transition

### **Landmark Contributions by Students in Computer Science**

Version 11: September 15, 2009

There are many reasons for research funding agencies (DARPA, NSF, etc.) to invest in the education of students. Producing the next generation of innovators is the most obvious one. In addition, though, there are an impressive number of instances in our field in which undergraduate and graduate students have made truly game-changing contributions in the course of their studies.

The inspiring list below was compiled by the following individuals and their colleagues: Bill Bonvillian (MIT), Susan Graham (Berkeley), Anita Jones (University of Virginia), Ed Lazowska (University of Washington), Pat Lincoln (SRI), Fred Schneider (Cornell), and Victor Zue (MIT).

We solicit your suggestions for additional student contributions of comparable impact – post them on the Computing Community Consortium blog, <http://www.cccb.org/2009/08/28/landmark-contributions-by-students-in-computer-science/>, or send them to Ed Lazowska, [lazowska@cs.washington.edu](mailto:lazowska@cs.washington.edu).

# Current initiatives



- Computing research and health care
- Computing research and sustainability / energy / transportation
- From Data to Knowledge to Action:
  - Enabling Evidence-Based Healthcare
  - Enabling the New Biology
  - Enabling 21<sup>st</sup> Century Discovery in Science and Engineering
  - Enabling Advanced Intelligence and Decision Making for America's Security
  - Enabling a Revolution in Transportation
  - Enabling a Transformation of American Education
  - Enabling the Smart Grid





- **PCAST review of federal NITRD program**

- Not a CCC activity!
- But fully consuming CCC Council members Randy Bryant, Susan Graham, Anita Jones, Ed Lazowska, and Bob Sproull, along with 9 others
- An opportunity to recommend new initiatives, through PCAST, to the President



Is this a great time, or what?!?!

