

Coming Attractions

Challenges Appearing Soon, Near You

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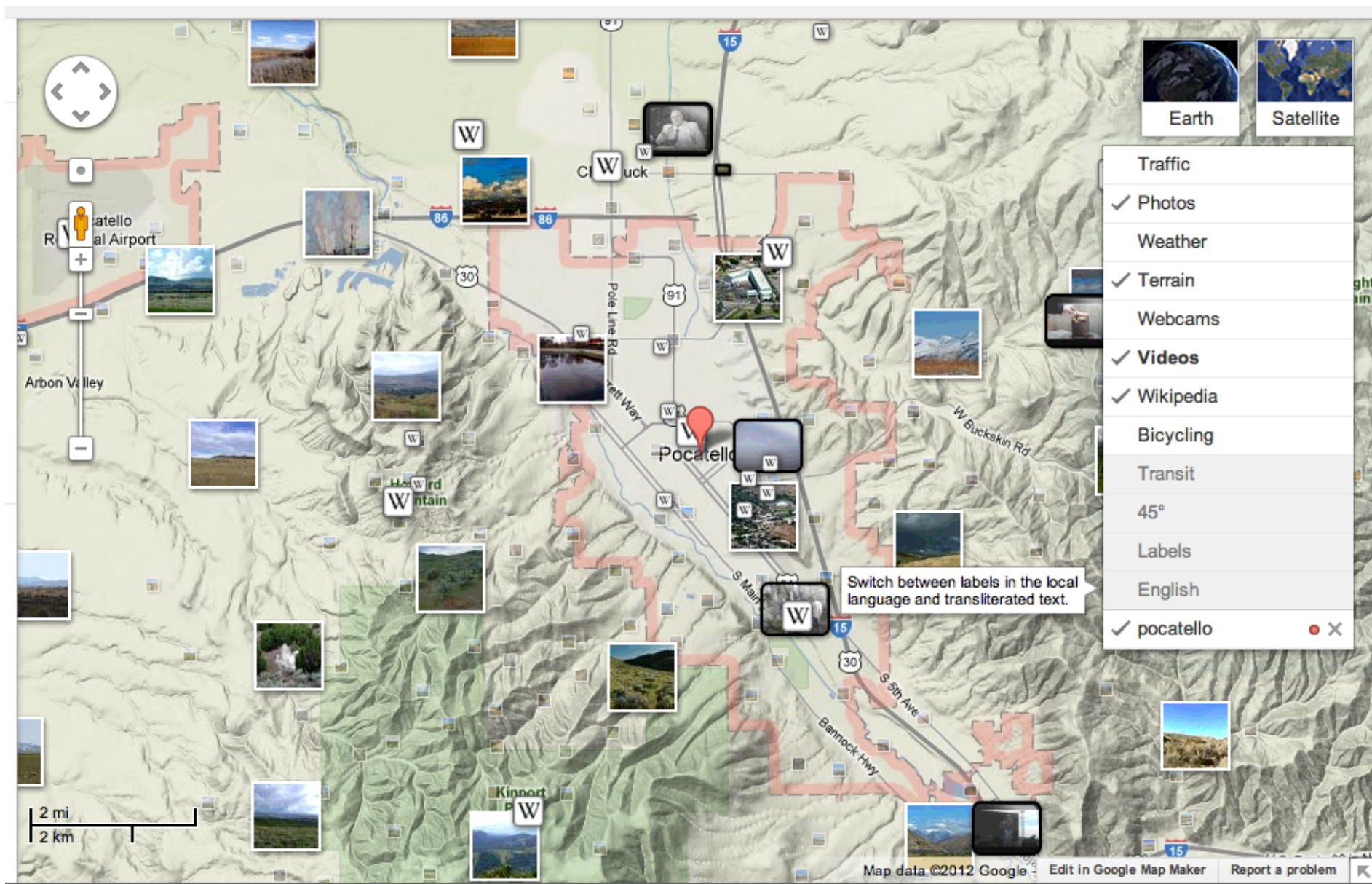
Presentation for the AFCEA C4I Workshop at GMU, May 23, 2012
“Critical Issues in C⁴I”

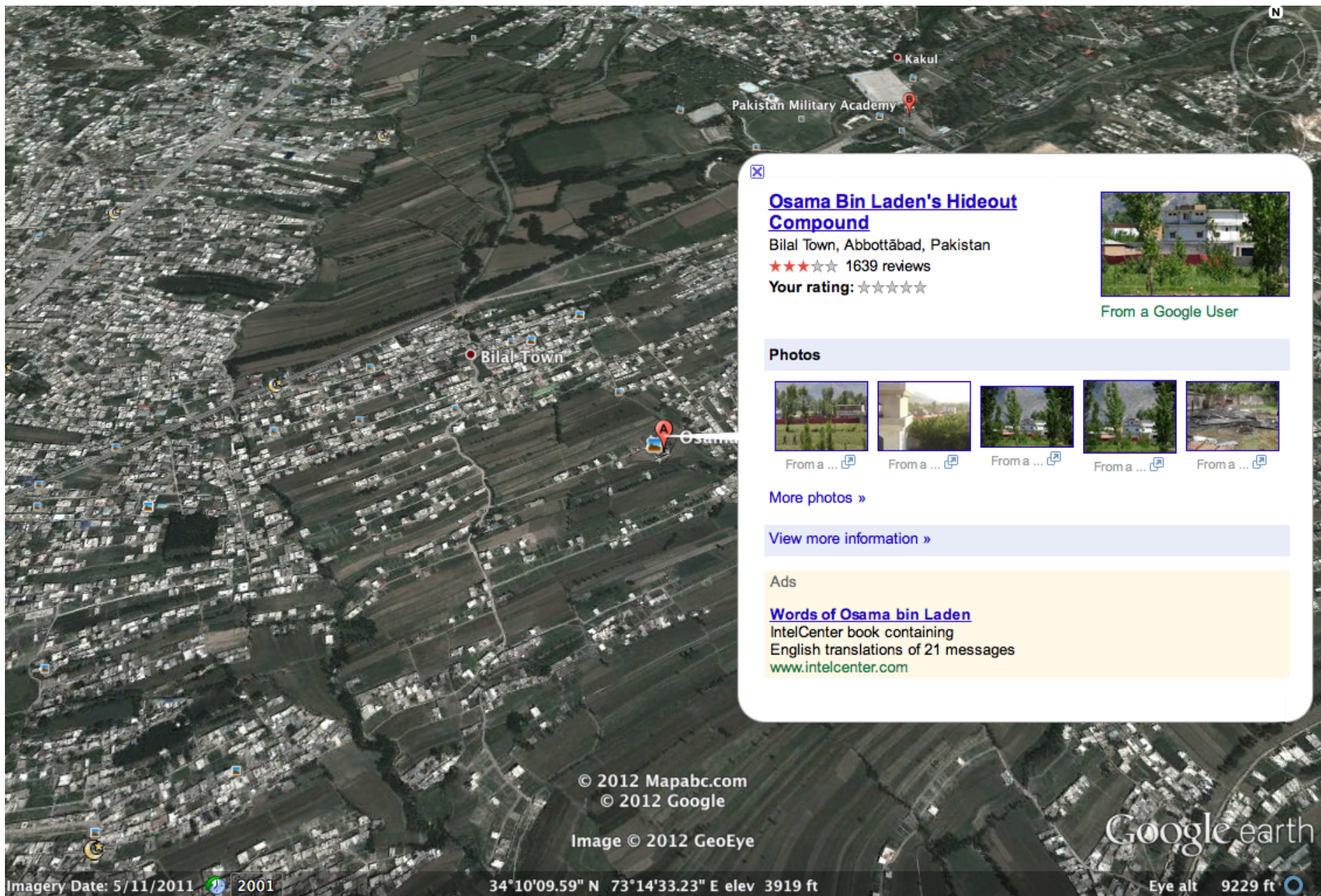
Changes

- My 'favorites'
 - Ubiquitous sensors
 - Commodification of data
 - Big Data
- These change (maybe not) everything
 - But certainly a lot
 - Force protection and OPSEC
 - Force projection

Ubiquitous Sensors

- 20 years ago (1992) vs. today
 - Overhead imagery
 - Relationships data
 - Street view
- Embedded and wearable computers
- Increasingly networked “phones”
 - Enabled by the cloud





Osama Bin Laden's Hideout Compound

Bilal Town, Abbottabad, Pakistan

★★★★★ 1639 reviews

Your rating: ★★★★★

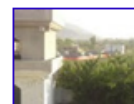


From a Google User

Photos



From a ...



From a ...



From a ...



From a ...



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Ads

[Words of Osama bin Laden](#)

IntelCenter book containing
English translations of 21 messages
www.intelcenter.com

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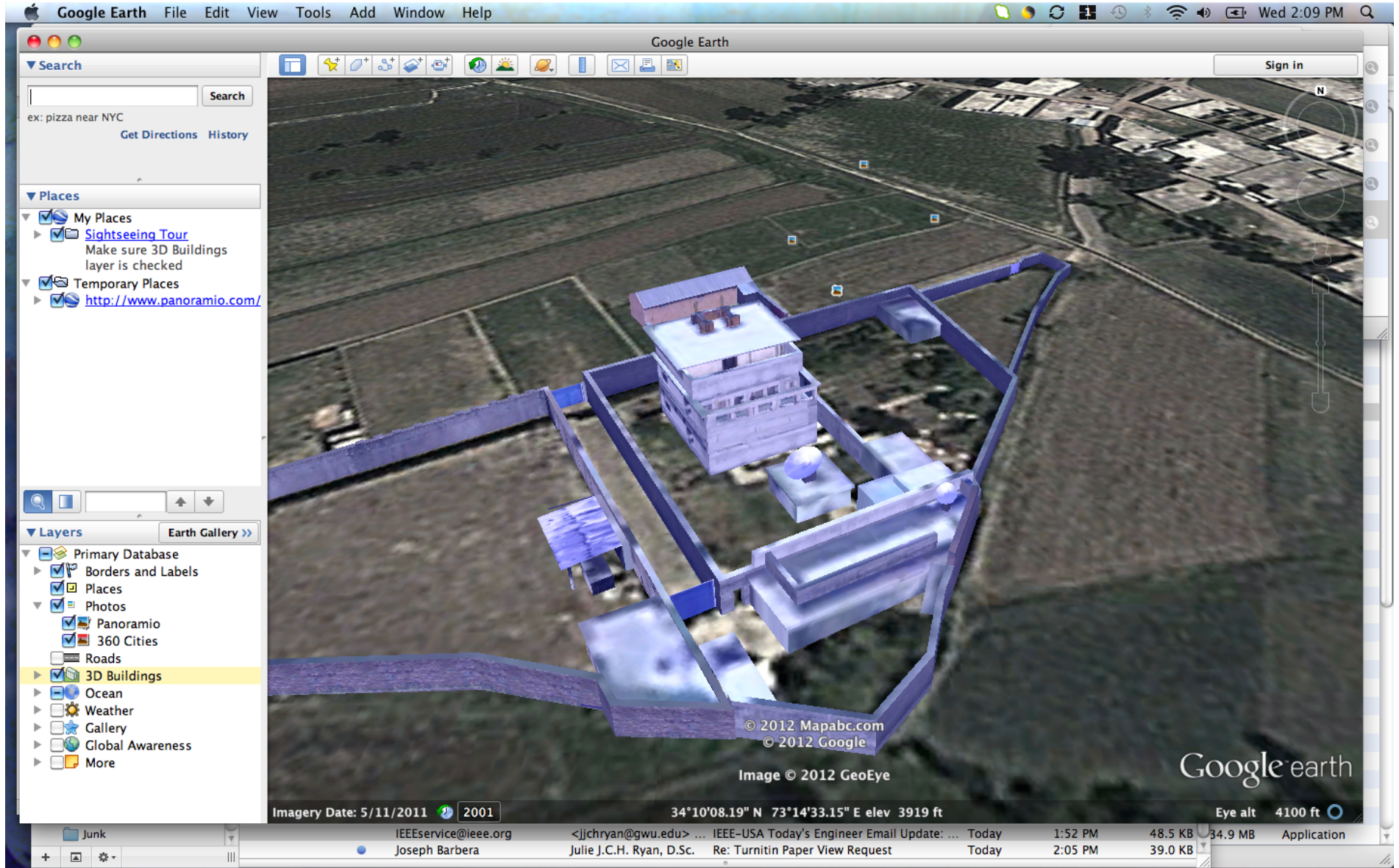
Image © 2012 GeoEye

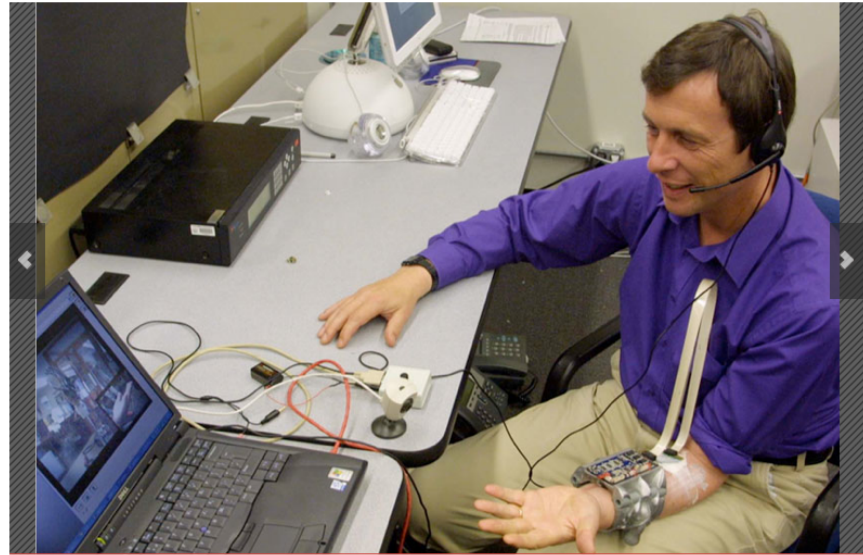
Google earth

Imagery Date: 5/11/2011 2001

34°10'09.59" N 73°14'33.23" E elev 3919 ft

Eye alt 9229 ft





CYBORG Warwick in 2002 successfully wired the nerves of his forearm to a computer. [[Link to this slide](#)]
 Courtesy of the University of Reading



Using palm for dialing a phone number (Photo credit: Sam Ogden)

CLOSE X

**Siri.** Beta

Your wish is its command.

Siri on iPhone 4S lets you use your voice to send messages, schedule meetings, place phone calls, and more. Ask Siri to do things just by talking the way you talk. Siri understands what you say, knows what you mean, and even talks back. Siri is so easy to use and does so much, you'll keep finding more and more ways to use it.



Commodification of Data

- Data is now a commodity
 - Raw data
 - search terms, likes, friends, networks
 - Interpreted data
 - Fused data, sentiment analysis
- Data collection and analysis distributed
 - Crowd sourcing for both
 - Beowulf clusters -- poor man's HPC

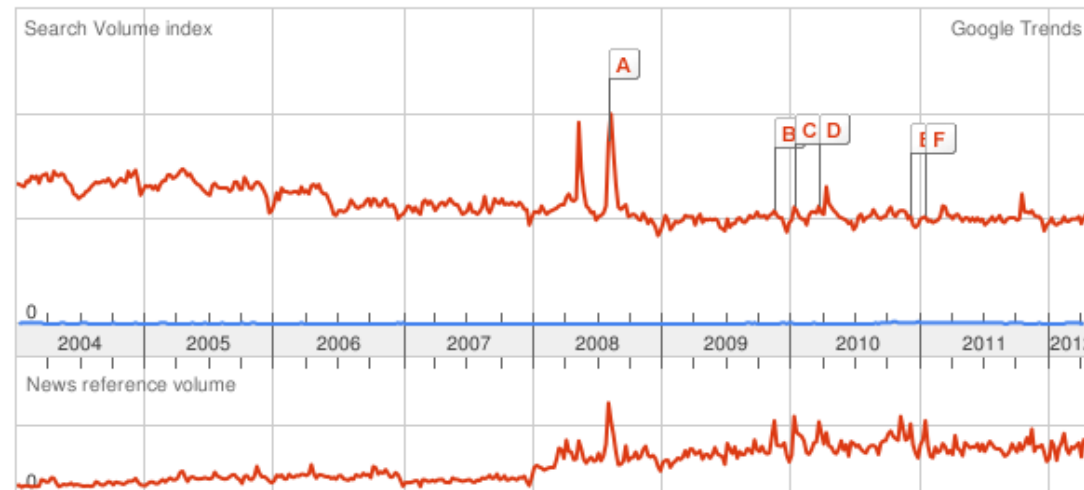
Searches [Websites](#)

All regions

All years

An improvement to our geographical assignment was applied retroactively from 1/1/2011. [Learn more](#)

● "rare earth" ● china



Rank by china

Regions		Cities		Languages	
1. Hong Kong	<div></div>	1. Hong Kong, Hong Kong	<div></div>	1. Chinese	<div></div>
2. Singapore	<div></div>	2. Singapore, Singapore	<div></div>	2. Indonesian	<div></div>
3. Pakistan	<div></div>	3. Shanghai, China	<div></div>	3. English	<div></div>
4. Malaysia	<div></div>	4. Beijing, China	<div></div>	4. Portuguese	<div></div>

- A** [China Arrives!](#)
Washington Post - Aug 8 2008
- B** [Obama arrives in China](#)
Capital FM - Nov 16 2009
- C** [Google and China](#)
Economist - Jan 13 2010
- D** [Google Defies China](#)
Wall Street Journal - Mar 23 2010
- E** [Nobel 'puts China on trial'](#)
Stuff.co.nz - Dec 10 2010
- F** [Christianity in China](#)
Fox News - Jan 20 2011

[More news results »](#)

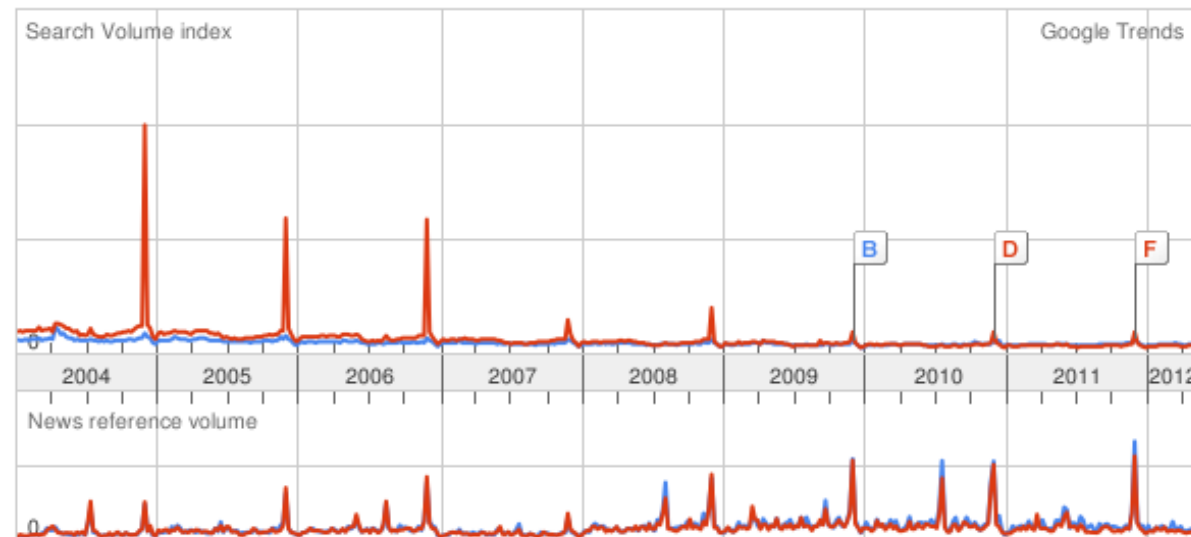
Searches [Websites](#)

All regions

All years

An improvement to our geographical assignment was applied retroactively from 1/1/2011. [Learn more](#)

● hiv ● aids



Rank by

Regions

1. [Kenya](#)
2. [South Africa](#)
3. [Viet Nam](#)
4. [Indonesia](#)
5. [Singapore](#)
6. [United States](#)
7. [Philippines](#)
8. [India](#)

Cities

1. Hanoi, Viet Nam
2. Jakarta, Indonesia
3. New York, NY, USA
4. Washington, DC, USA
5. Atlanta, GA, USA
6. Singapore, Singapore
7. Houston, TX, USA
8. San Francisco, CA, USA

Languages

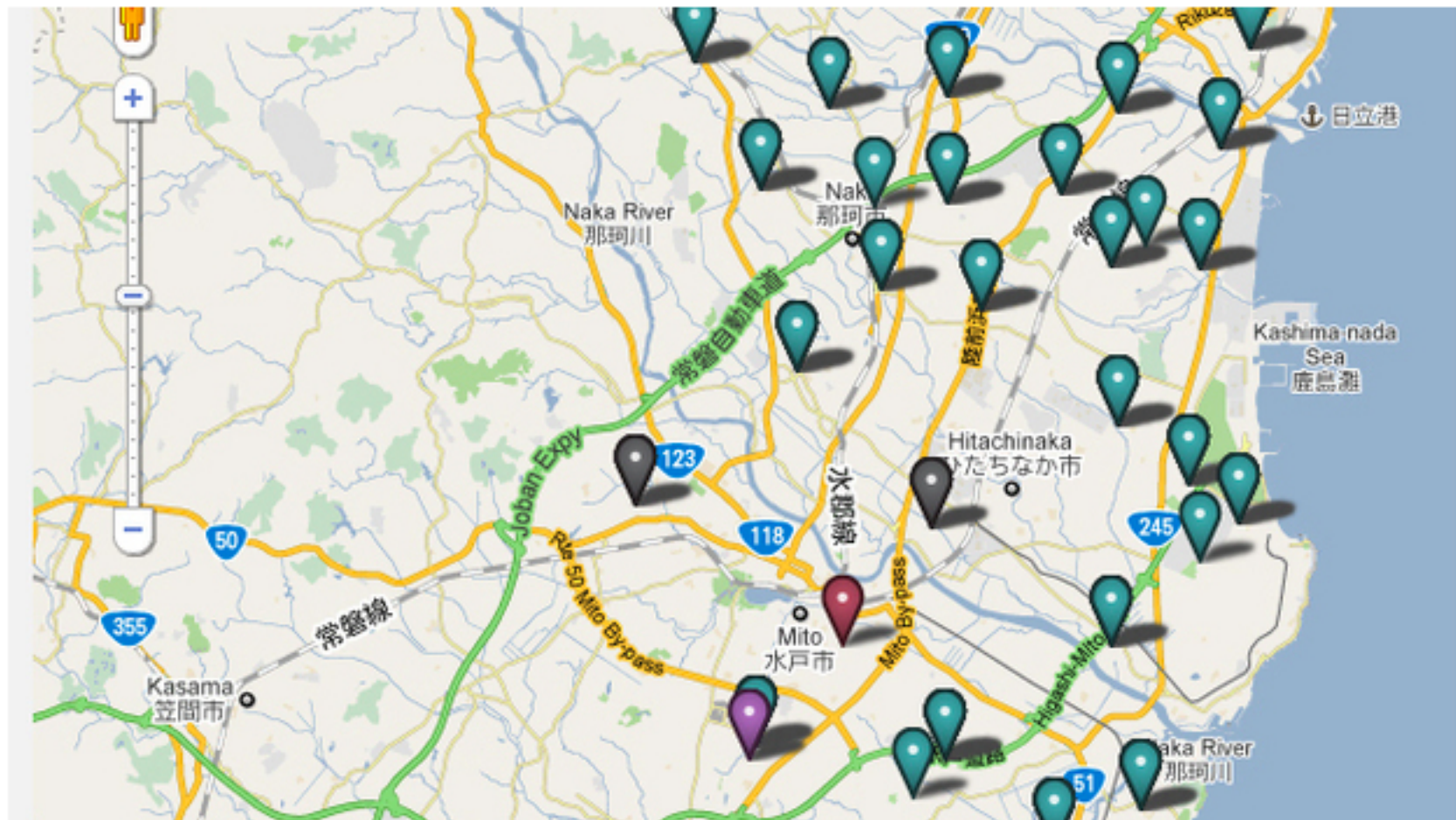
1. Vietnamese
2. Indonesian
3. English
4. Portuguese
5. Swedish
6. Finnish
7. Polish
8. German

- A** [World AIDS Day](#)
Times of India - Dec 1 2009
- B** [S. Africa to treat all HIV-positive babies](#)
Philadelphia Inquirer - Dec 1 2009
- C** [FG to include HIV/AIDS in budget](#)
Vanguard - Dec 1 2010
- D** [World AIDS Day](#)
Washington Post - Dec 1 2010
- E** [Aging & HIV: The New Face of HIV](#)
Huffington Post - Dec 1 2011
- F** [World AIDS Day](#)
Houston Chronicle - Dec 1 2011

[More news results »](#)

'Citizen Scientists' Crowdsource Radiation Measurements In Japan

by RICHARD KNOX



 Enlarge

A cluster of radiation reading mapped by RDTN.org

RDTN.org

Examples of Software

- Weka
 - Open source machine learning software
 - Includes text analysis tools
- Pearl Trees
 - Collaborative fusion platform
- Twitter
 - Real time sensing and reporting

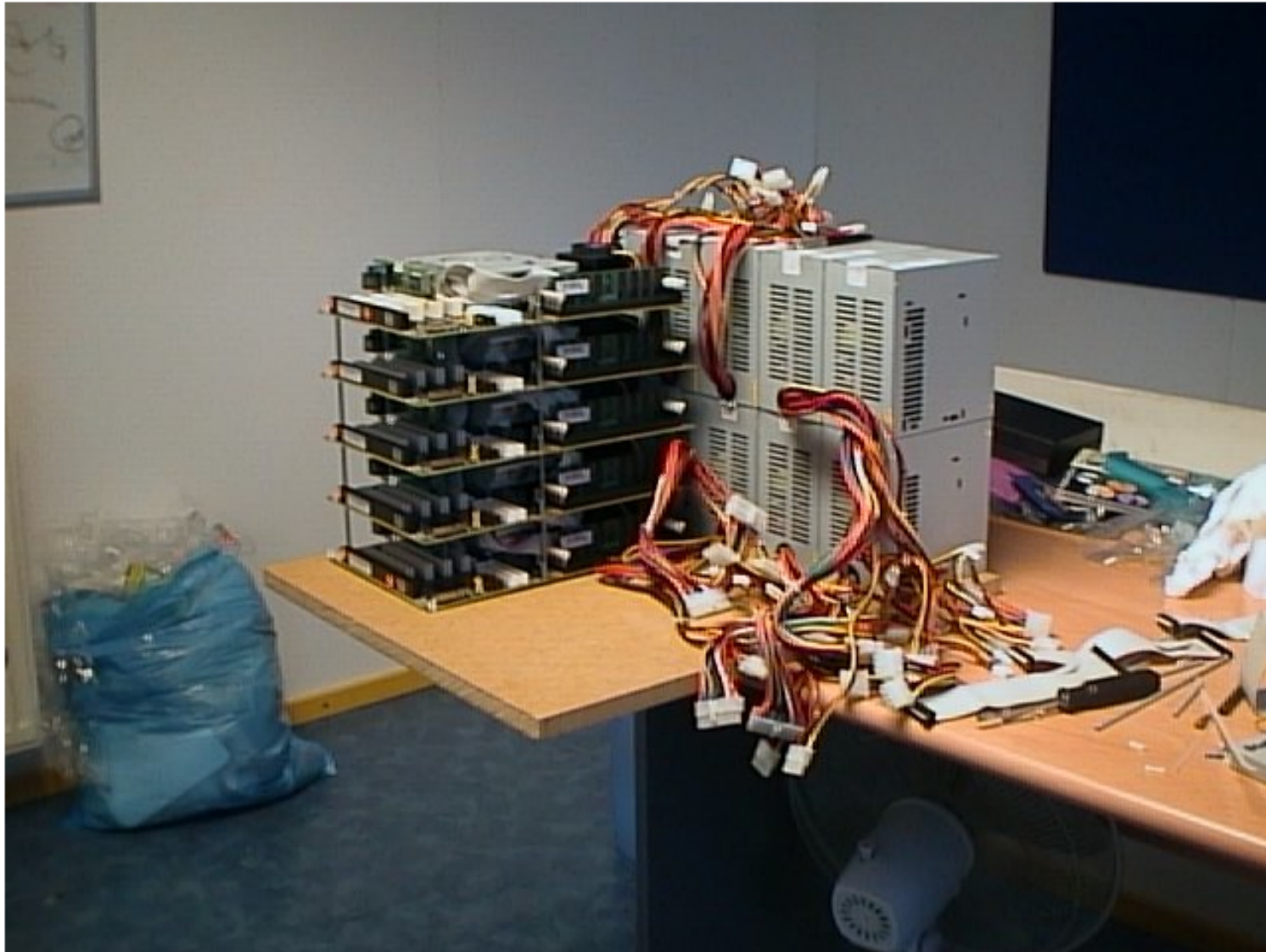
High Performance Computing

- Beowulf clusters
 - Uses ordinary boxes hooked together
 - Parallel processing over Linux
 - Game changer for cost and access

How to build an ultra cheap beowulf cluster

Hi there. This is a bit of documentation on how to put together a very low cost and extremely compact [beowulf cluster](http://www.clustercompute.com/). We needed a beast like that for one of our internal pet research projects, so we decided to see how cheap and how compact we could make the thing. The total material bill came to \$US 4150, for that you get a 10 node 600 MHz PIII 128 MB ram per node cluster. (Prices April 2000).

Each half is 30 cm (12 inches) high.



Power supplies got added and floppy drives were glued in place. (yep, you read that well).

Big Data

- Enormous strides being made
 - Storage: 10 Exabyte currently on offer
 - <http://www.cleversafe.com/news-reviews/press-releases/153-cleversafe-announces-10-exabyte-storage-system-configuration>
 - Processing:
 - Algorithms pushed by logistics and finance
 - Fusion of multiple types of data
 - Audio, video, textual, structured, unstructured

Trends

- Segmentation of computing aspects
 - Some at the front end, some in the cloud, some at the user portal
- Innovation in linking data to individuals
 - And vice versa...
- And, of course, even more ubiquity

Social and Massive

- Social
 - Facebook, Twitter, etc
 - Predictive apps, like Ness
 - Massive
 - World of Warcraft
 - Second Life
-
- Data collection and sensing*
- Strategy/tactics development;
Source recruitment*

Implications

- Death of privacy for individuals
 - But also for official secrets
 - And relationships between individuals
 - Detection of hidden networks
 - Cyber Political Units?
- Ability to project 'force' in unique ways
 - Virtual projection
 - Meme attacks
- A lot needs to change

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