

A photograph of a modern brick building with a sign that says "Digital World". The building has a mix of brick and horizontal siding. There are trees and bushes in the foreground and background. The sky is blue with some clouds.

# **Knowledge-based Society: How Far Are We from Access for All?**

**PANEL ICDS/eKNOW/eLmL  
Digital World, Nice, 27 February 2013**

## Panelists

- **Tomomi Kobayashi**
- **Hazeline Asuncion**
- **Stephen White**
- **Michelle Marquard**
- **Andranik Tangian**
- **Liette Lapointe**

## What makes sense?

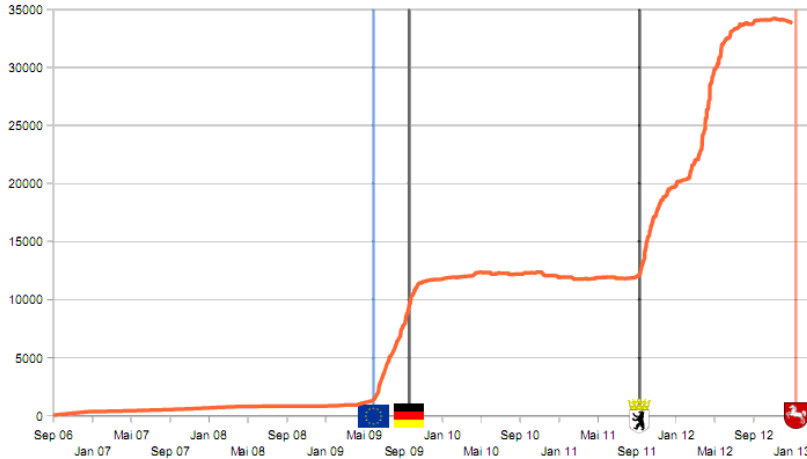


- The One Laptop Per Child (OLPC) initiative gave tablets to illiterate children in Ethiopia to see if illiterate kids **with no previous exposure to written words** can learn how to read all by themselves, by experimenting with the tablet and its preloaded alphabet-training games, e-books, movies, cartoons, paintings, and other programs.
- Within four minutes, one kid not only opened the box, found the on-off switch, powered it up. Within five days, they were using 47 apps per child, per day. Within two weeks, they were singing ABC songs in the village, and within five months, they had hacked Android (able to change the desktop, even though OLPC installed a software to avoid this).



**Does it help the children to learn reading? – or is it just marketing?**

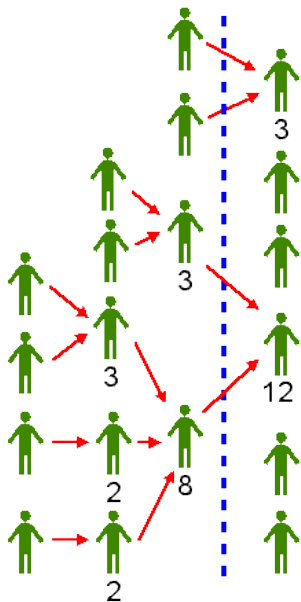
# Are we mature enough?



## DIGITAL REVOLUTION



Jahr	Bundes-tag	Landesparlamente														Europa-parlament		
		BY	BE	BB	HB	HH	HE	MV	NI	NW	RP	SL	SN	ST	SH		TH	
2008		n. a.				0,2	0,3		n. a.									
2009	2,0			n. a.			0,5					1,6	n. a.	1,9		1,8	n. a.	0,9
2010																		
2011		2,1		8,9		1,9	2,1		1,9			1,6			1,4			
2012												7,8		7,4		8,2		
2013										2,1								



# 2%

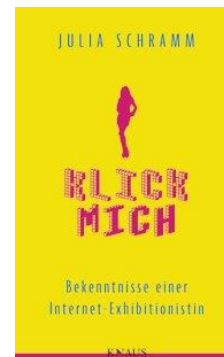


Kevin Barth

@kevosarth

Folgen

ok. ich bin also antisemit weil ich die israelische kackpolitik und den juden an sich unsympatisch finde weil er einen sinnlosen krieg führt



Dear Dropbox User:

We have received a notification under the Digital Millennium Copyright Act ("DMCA") from [Julia Schramm Autorin der Verlagsgruppe Random House](#) that the following material is claimed to be infringing:

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# Is this Reality or Illusion ?

**Knowledge-based Society: How Far Are We from Access for All?**

Panel Discussion

2013.2.27

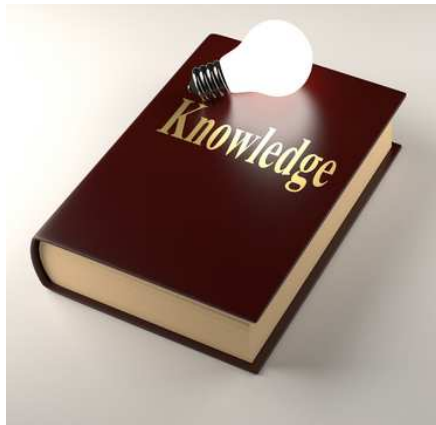
Tomomi Kobayashi

# "Knowledge Base" has changed

- What kind of changes have been met about the necessary knowledge in our society?

Past

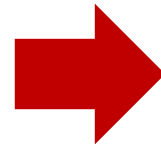
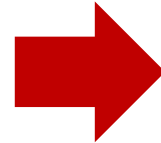
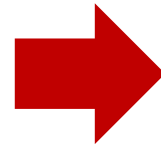
Now



Explicit

Organizational

Technics



Tacit

Individual

Wisdom



Become obsolete rapidly

Become more important

# Changing Knowledge Accesses

- Can we smoothly access such kinds of new knowledge?

**Transfer**



**Share**



**Utilize**



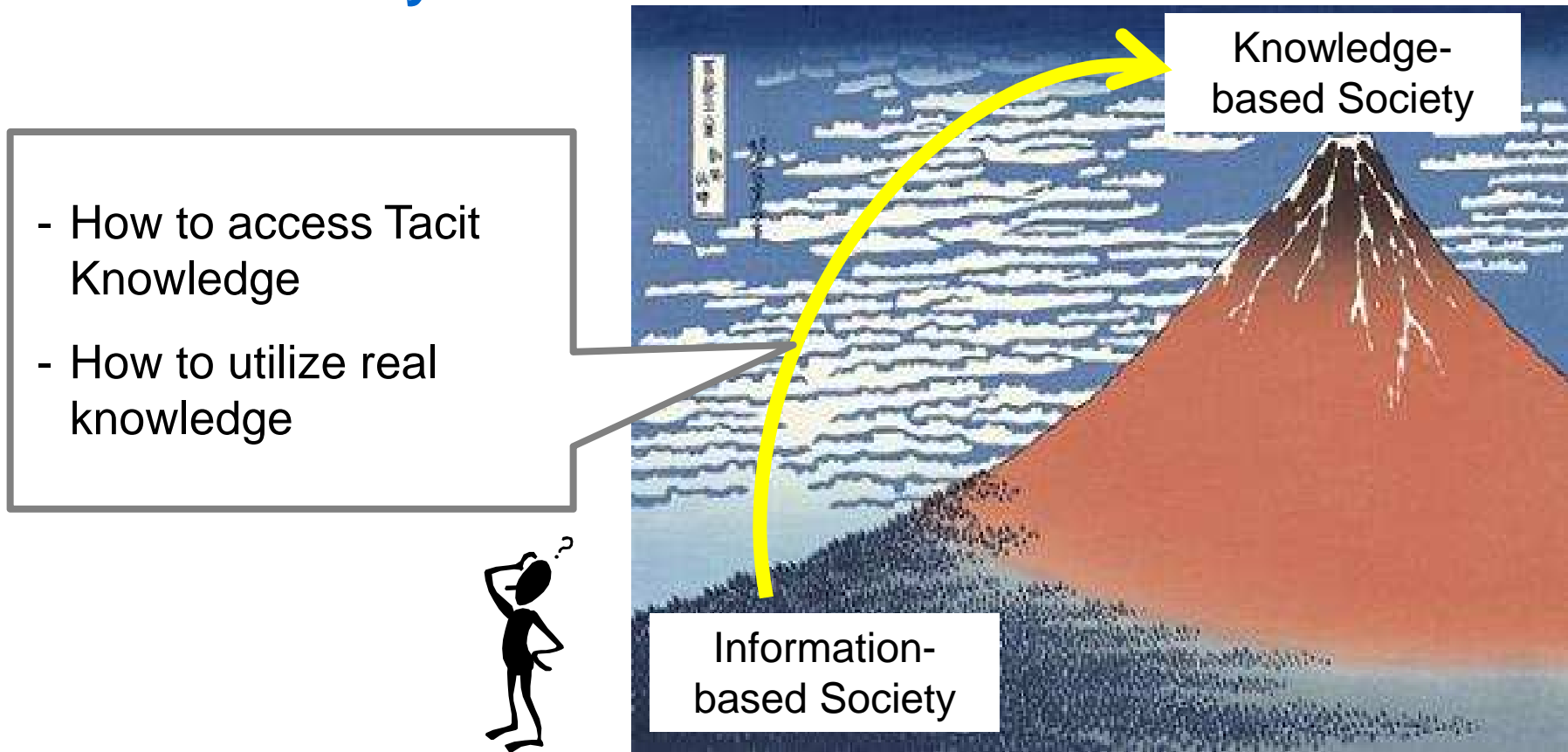
Traditional Society

Information-based Society

Knowledge-based Society

# Two Questions

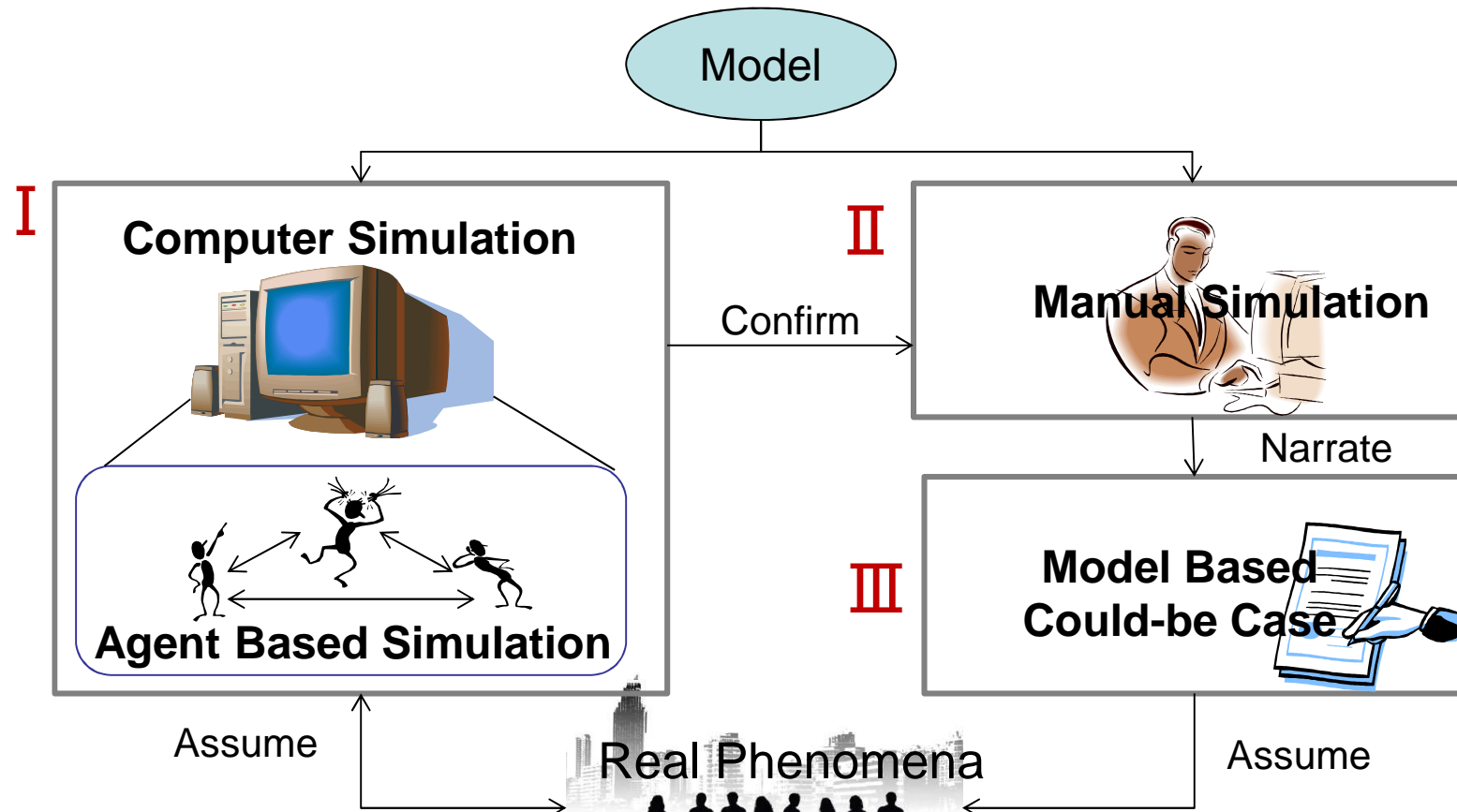
- I. Where are we now and from now on ?
- II. To achieve the 'real' Knowledge-based Society, What do we really need ?





# An Approach for Utilizing Knowledge

- Create future scenario by utilizing our knowledge and experience with multiple methods.



# More chance for participatory democracy in the digital age

Andranik Tangian

Hans-Böckler-Stiftung, Düsseldorf, and  
Karlsruhe Institute of Technology







[andranik-tangian@boeckler.de](mailto:andranik-tangian@boeckler.de)

Nice, IARIA, 2013

# Democratic deficit in the European Union

- Institutions of the European Union lack democratic accountability and legitimacy compared to the national governments of its member states.
- E-democracy technologies together with special devices can help to resolve the problem and to stimulate people's participation as promoted in Articles 10-11 of the Consolidated Lisbon Treaty
- Major problem: Autonomy of representatives
- Ideal: Representatives behave *consistently* and as *well-informed* citizens

# Source data: 32 Y/N-questions (like in Wahl-o-mat)

	Opinions of parties and unions						Question weights 1-5		Survey results, %	
	 CDU 33.8	 SPD 23.0	 FDP 14.6	 Linke 11.9	 Grünen 10.7	 DGB -	1st expert	2nd expert	Protagonists	Antagonists
Minimal wage	No	Yes	No	Yes	Yes	Yes	5	5	52	43
Relax protection against dismissals	No	No	Yes	No	No	No	5	5	17	82
Nationalisation of railways	No	Yes	No	Yes	Yes	Yes	5	3	70	28
Equity holding by government in private banks	Yes	Yes	Yes	No	Yes	Yes	3	3	28	67
No state control over salaries of top managers	Yes	Yes	Yes	No	No	No	4	4	30	67

# Representativeness

Balance of opinions in the society and its representation by party seats in the Bundestag and by the DGB

CDU/CSU , SPD , FDP , Linke , Gruenen , DGB , Opinions in public surveys

## Labour market

2. Introduce nation-wide minimal wage

17. Relax protection against dismissals

## Economy and taxes

24. Exclusive governmental ownership of railways

10. Equity holding by government in private banks has to be temporary

5. No state control over top-management salaries\*

13. Decrease corporate taxes

28. Reintroduce a wealth tax\*

## Environment

1. Prolong the operation time of nuclear power plants

19. Introduce a general speed limit on Autobahnen (German motorways)

9. Unexceptionally ban experiments on animals

26. Authorize production of genetically modified food\*

22. More subsidies for eco-farming

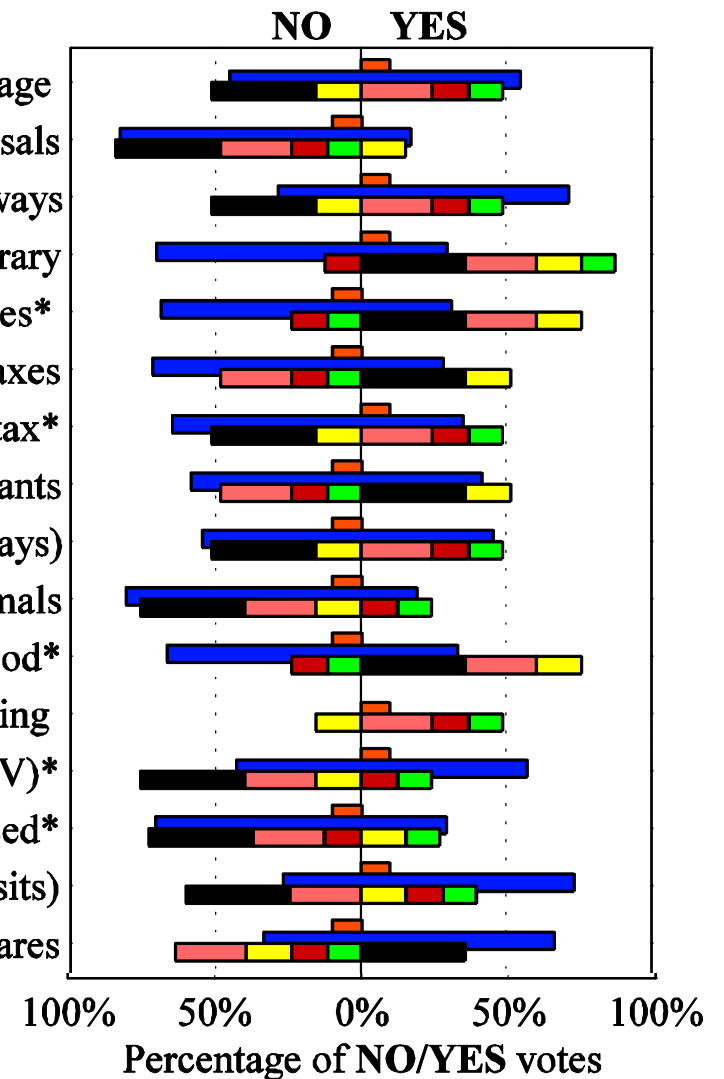
## Social policy

36. Increase significantly unemployment benefits (Hartz IV)\*

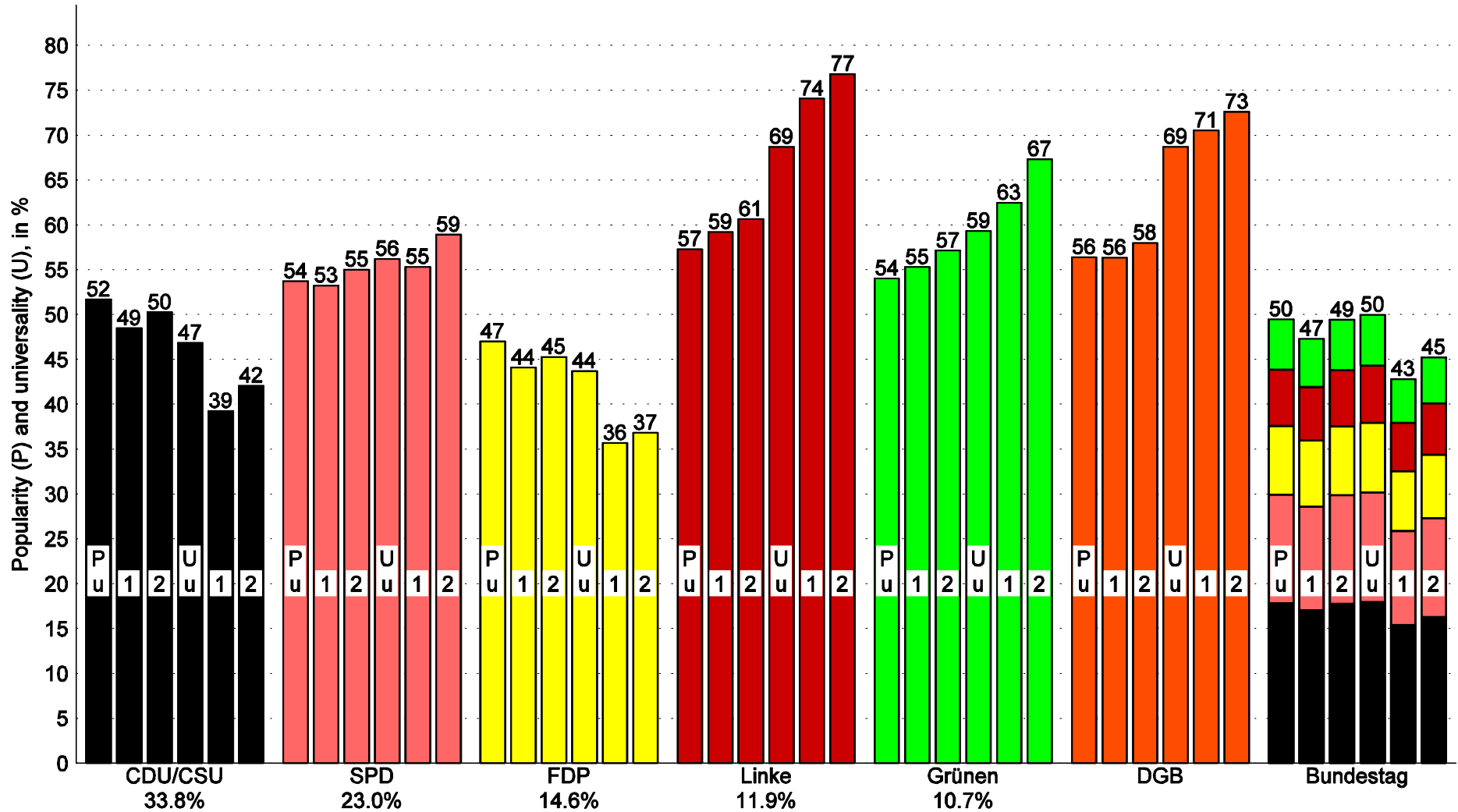
32. If wages decrease, pensions can be reduced\*

31. No Praxisgebuehr (quarterly fee for medical visits)

15. Compensation to parents who use no public daycares



# Indices of the parties



# Reform proposal: Third vote for party manifestos (Drittstimme)

Actual trend in job recruitment: anonymized applications and the focus on job-relevant merits rather than on personal information

Similarly, *the third vote* in the form of 'sample referenda' with voters' Y/N opinions on several important issues from party manifestos. It meets the existing logic of the German two-vote system: the first vote for a person, the second vote for a party, and the third vote for party profiles, so that the considerations are getting to be more conceptual and less personified

# Conclusions

German Bundestag elections 2009 show that voters are little consistent with their own political profiles, disregard party manifestos, and are likely driven by political traditions, even if outdated, or by personal images of politicians

Possible explanation: the spectrum of political landscape has shifted to the right, whereas voters still believe that the parties represent the same values as a few decades ago

Result of 'voting errors': the two governing parties are the least representative among the five leading ones, and the governing coalition CDU/CSU/FDP is the least representative among all imaginable coalitions

Effect: discrepancy between the electorate and the government elected (Stuttgart 21, Castor Transport)

Election reform proposal: 3rd vote

**Information society paves way to new direct democracy**



# Sources

- Tangian A. (2012) *Statistical Test for the Mathematical Theory of Democracy*. WSI-Diskussionspapier 179, Düsseldorf, Hans-Böckler-Stiftung (February 2012)
- Tangian A. (2013) German parliamentary elections 2009 from the viewpoint of direct democracy. *Social Choice and Welfare* 40 (3), 833-869
- Tangian A. (2013) *Mathematical Theory of Democracy*. Berlin, Springer (forthcoming)

# Improving the Accessibility of Scientific Data with Data Provenance



Hazeline U. Asuncion

University of Washington, Bothell

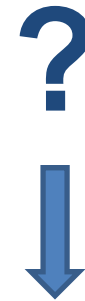
[hazeline@u.washington.edu](mailto:hazeline@u.washington.edu)

February 27, 2013

eKNOW Panel

# Brief Background

- Researchers often use data sets
  - from past experiments or analysis
  - from external sources (published data sets, colleagues, etc.)
- Data Provenance
  - “origin and history of data” [Stevens 2007]
  - “series of transformations applied to an input data” [Cohen 2006]



site_code	State	MSL	obs_date	Alf_val	Alf_unc
WHPA1	WA	46.6244	20000216	-999	-999
WHPA1	WA	46.6244	20000219	-999	-999
WHPA1	WA	46.6244	20000223	-999	-999
WHPA1	WA	46.6244	20000226	-999	-999
WHPA1	WA	46.6244	20000301	-999	-999
WHPA1	WA	46.6244	20000304	0	0
WHPA1	WA	46.6244	20000308	0	0
WHPA1	WA	46.6244	20000311	0	0
WHPA1	WA	46.6244	20000315	-999	-999
WHPA1	WA	46.6244	20000318	0.00725	0.00164
WHPA1	WA	46.6244	20000322	0	0
WHPA1	WA	46.6244	20000325	0.02368	0.00274
WHPA1	WA	46.6244	20000329	0.06372	0.00441
WHPA1	WA	46.6244	20000401	0.07138	0.00528
WHPA1	WA	46.6244	20000405	0	0
WHPA1	WA	46.6244	20000408	0.05216	0.00448

# Benefits of Data Provenance



- Repeatability of experiments or scientific analyses
- Verification of results
- Reusability of data sets

# Current Challenges to Provenance



- Experiments/analysis occurred in the past
  - Recording techniques capture current analysis on the data
- Analysis occurs across multiple tools
  - scripts, analysis tools, etc.
- Provenance capture/analysis require overhead
  - Setting up tool (e.g., creating workflow)
  - Analyzing provenance (e.g., learning query language)

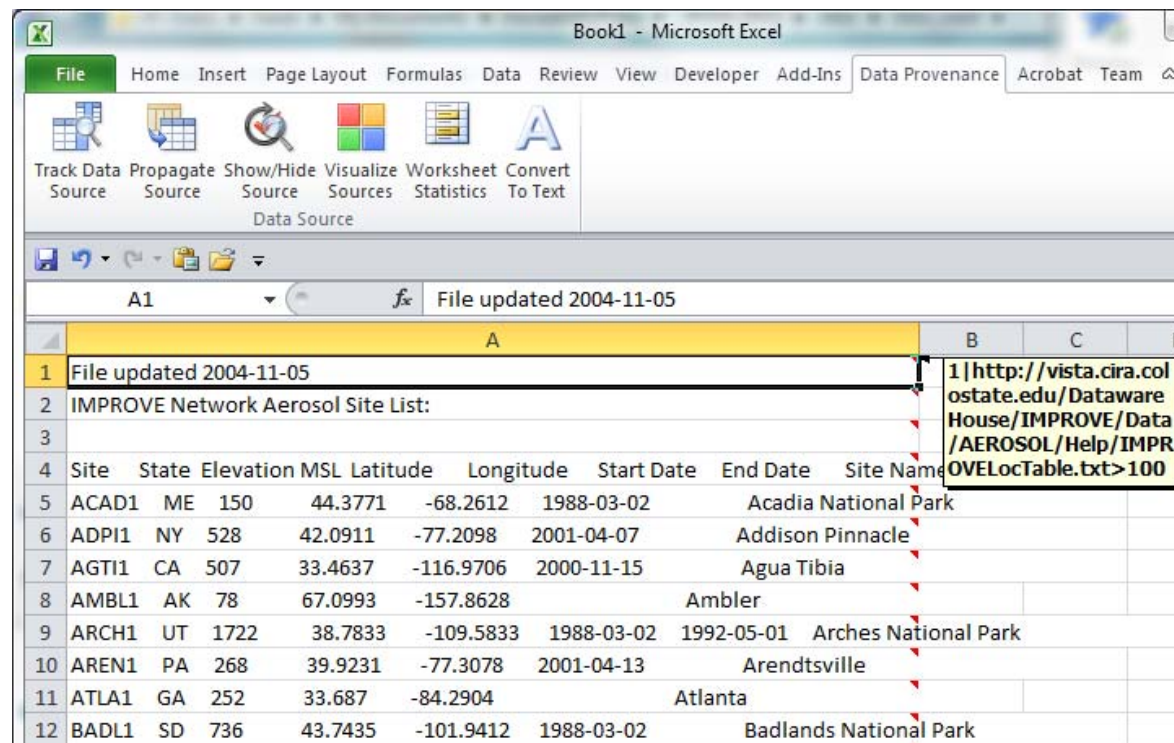
# Current Provenance Techniques



- Automatically record provenance metadata
  - Record workflow execution, OS events, commands [Altintas2006, Braun2006, Bourilkov2005]
- Capture provenance across different tools
  - Chain multiple workflows [Altintas2010]
  - Centralized repository of workflows (ProvManager) [Marinho2010]
  - Events at different levels (Lasagna) [Muniswamy-Reddy2009]
  - Web services (PreServ) [Branco2006]
- Exchange provenance data among different tools (OPM, W3C Prov)
- Capture provenance within analysis tool
  - Track provenance in R [Runnalls2012]

# Addressing Some of the Challenges

- Capture provenance on existing analysis tools
  - Capturing changes in spreadsheet data [Asuncion2011]
  - Capturing sources of spreadsheet data [Asuncion2012]



The screenshot shows a Microsoft Excel spreadsheet titled "Book1 - Microsoft Excel". The ribbon includes "Data Provenance" and "Acrobat". The "Data Source" task pane is visible, showing options like "Track Data Source", "Propagate Source", "Show/Hide Source", "Visualize Sources", "Worksheet Statistics", and "Convert To Text". The spreadsheet content is as follows:

1	File updated 2004-11-05							
2	IMPROVE Network Aerosol Site List:							
3								
4	Site	State	Elevation MSL	Latitude	Longitude	Start Date	End Date	Site Name
5	ACAD1	ME	150	44.3771	-68.2612	1988-03-02		Acadia National Park
6	ADPI1	NY	528	42.0911	-77.2098	2001-04-07		Addison Pinnacle
7	AGTI1	CA	507	33.4637	-116.9706	2000-11-15		Agua Tibia
8	AMBL1	AK	78	67.0993	-157.8628			Ambler
9	ARCH1	UT	1722	38.7833	-109.5833	1988-03-02	1992-05-01	Arches National Park
10	AREN1	PA	268	39.9231	-77.3078	2001-04-13		Arendtsville
11	ATLA1	GA	252	33.687	-84.2904			Atlanta
12	BADL1	SD	736	43.7435	-101.9412	1988-03-02		Badlands National Park

A tooltip is visible over cell B1, displaying the text: "1 | http://vista.cira.colostate.edu/DatawareHouse/IMPROVE/Data/AEROSOL/Help/IMPROVELocTable.txt>100".

Asuncion – 2/27/13

# Addressing Some of the Challenges

- Provenance Recovery
- Lightweight, with minimal setup and training time
  - Experiment Explorer (Lawrence Livermore National Laboratory) [Davis 2013]

Experiment Explorer Search  
Powered by Apache Solr

Click Search to query filled fields

Date: 5/15/2010  
Sample Name  
Purpose of the Experiment  
Notes  
Substrate Preparation  
Coating Type  
Substrate Material  
Surface: exit  
Pulse Width: 10ns  
Pulse Shape: FIT  
Environment  
Average Fluence  
Number of Sites  
Number of Shots  
Site Preparation  
Average Site Separation  
Pre-diagnostic  
Post Diagnostic  
Shot Diagnostic  
Shot Plan  
Location  
Sort by: Number of Shots  
Sort Order: Ascending

Search  
Refresh Index  
Index Description  
Creator

8 Documents Found... of 500009

Purpose: growth rate  
Surface: exit  
Pulse Width: 10ns  
Pulse Shape: FIT  
Environment: vacuum  
Average Fluence: 4.5-6.5 J/cm<sup>2</sup>  
Number of Shots: 8  
Notes: exit growth rate at 10ns, shot on 10/5/2010  
Experiment Location: server/data/damage-group/  
File Location: template\_data/img\_path\_example/FODI\_FIT-22-10.jpeg  
Experiment Link

Purpose: growth rate  
Surface: exit  
Pulse Width: 10ns  
Pulse Shape: FIT  
Environment: vacuum  
Average Fluence: 4.5-6.5 J/cm<sup>2</sup>  
Number of Shots: 8  
Notes: exit growth rate at 10ns, shot on 10/5/2010  
Experiment Location: server/data/damage-group/  
File Location: template\_data/img\_path\_example/FODI\_FIT-22-10.jpeg  
Experiment Link

Purpose: growth rate  
Surface: exit  
Pulse Width: 10ns  
Pulse Shape: FIT  
Environment: vacuum  
Average Fluence: 6-8 J/cm<sup>2</sup>  
Number of Shots: 14  
Notes: exit growth rate at 10ns, shot on 10/5/2010  
Experiment Location: server/data/damage-group/  
File Location: template\_data/img\_path\_example/FODI\_FIT-22-10.jpeg  
Experiment Link

Purpose: prob growth  
Surface: exit  
Pulse Width: 10ns

Firefox  
Document (JPEG Image, 300 x 199 pixels)  
localhost:8080/ExperimentExplorer/Document

la/img\_path\_example/FODI\_FIT-22-10.jpeg





**DESAUTELS**

**Faculty of Management  
Faculté de gestion**

**eTelemed - 2013**

# **Collaborating through Social Media to Create Health Awareness**

**Liette Lapointe**

**Jui Ramaprasad**

**Isabelle Vedel**



# Rationale

- Web 2.0 and the social computing phenomena are creating a new reality in health care.
  - Patients and healthcare professionals are increasingly and jointly using social media (SM) tools.
  - SM has the potential to enable collaboration between individuals and healthcare organizations.
- Social media tools have been used by individuals as a mechanism for organizing dispersed individuals and groups (grassroots community building)

# Findings (1)

- **Posts and comments**
  - Most posts are initiated by the organizations while comments are posted primarily by individual.
  - Individuals are more “active”.
  - Overall, these posts/comments are associated with a large number of likes and are widely shared.
- **SM becomes both an enabler and a tool for collaboration**
- **SM is seen as particularly useful to reach a wider audience**

# Findings (2)

- **Five key activities**
  - Informing and educating
  - Supporting
  - Sharing testimonies
  - Advocating
  - Raising funds

# Discussion and conclusion

- SM enables the creation of communities that truly link individuals and organizations around a common center of interest.
- Some activities have a basic role in creating and shaping the community (bubble of comments); other activities add value above and beyond.
- The role of SM communities seems to be to fill a need that is not addressed by other organizations.
- SM contributes to informed decision making and, ultimately, to patient-centered care.



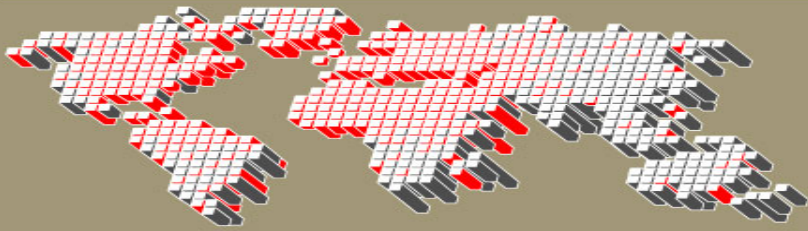
Powered by Cisco Quad

# Digital World 2013

## Knowledge-based Society: How Far Are We from Access for All?

Michelle Marquard, Ed.D.  
Dir., Human Resources LDSG

Cisco System, Inc.  
February 2013

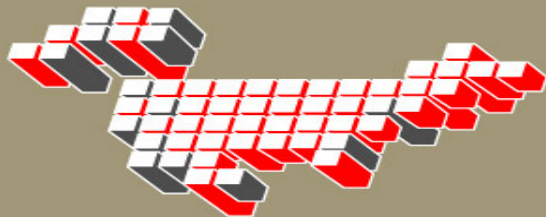


**6.9**  
BILLION  
i

**1.3**  
BILLION  
[Laptop icon]

**5**  
BILLION  
[Mobile phone icon]

**907**  
MILLION  
[Speech bubble icon]



**311**  
MILLION  
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**164**  
MILLION  
[Laptop icon]

**293**  
MILLION  
[Mobile phone icon]

**142**  
MILLION  
[Speech bubble icon]

**NUMBERS**  
**FOUND TODAY**  
**3.9.11**

PEOPLE  
US Census Bureau

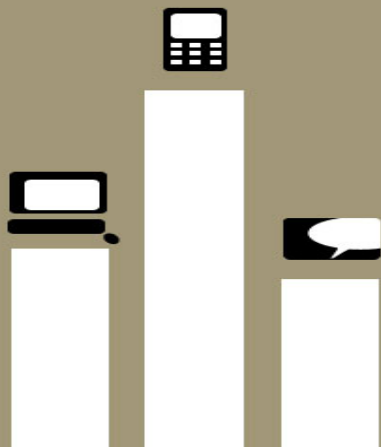
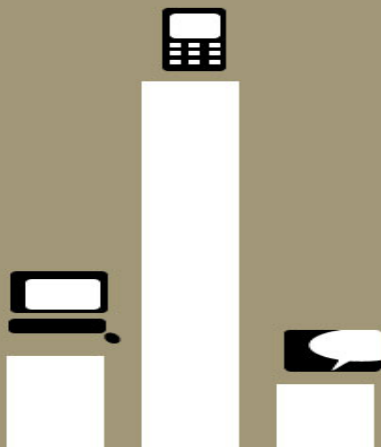
PCS  
Forrester

MOBILE PHONES  
BBC

SOCIAL NETWORK USERS  
Business Wire eMarketer

GLOBAL

US



**2** out of **5**

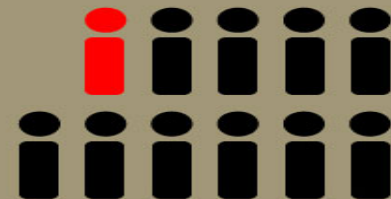
US residents belong to a social network

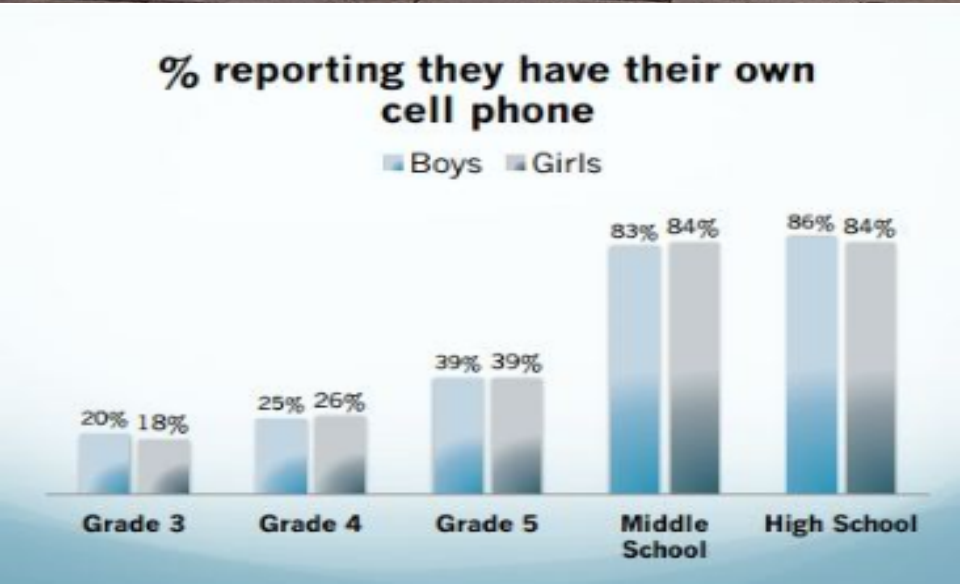
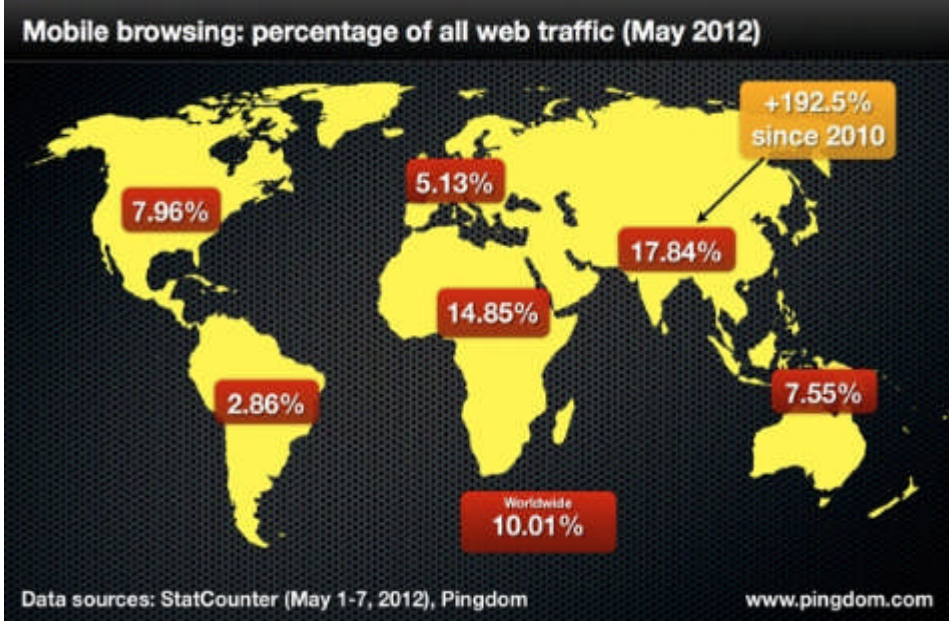


GLOBAL

**1** out of **11**

People global belong to a social network

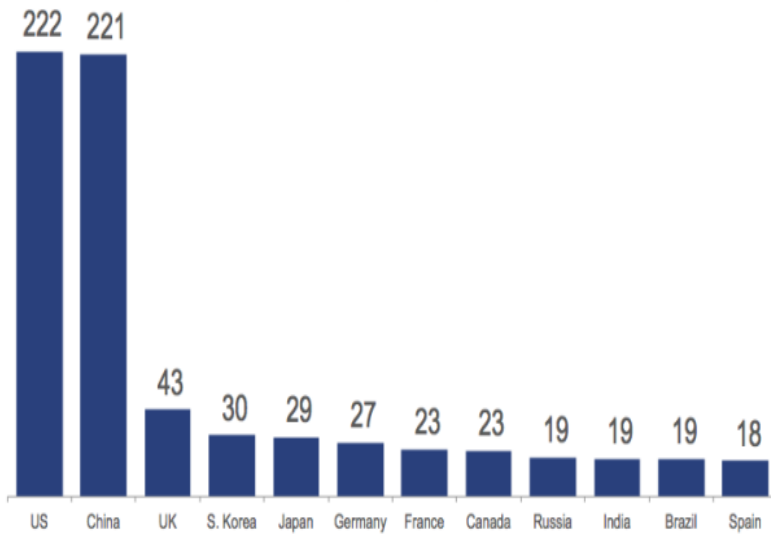






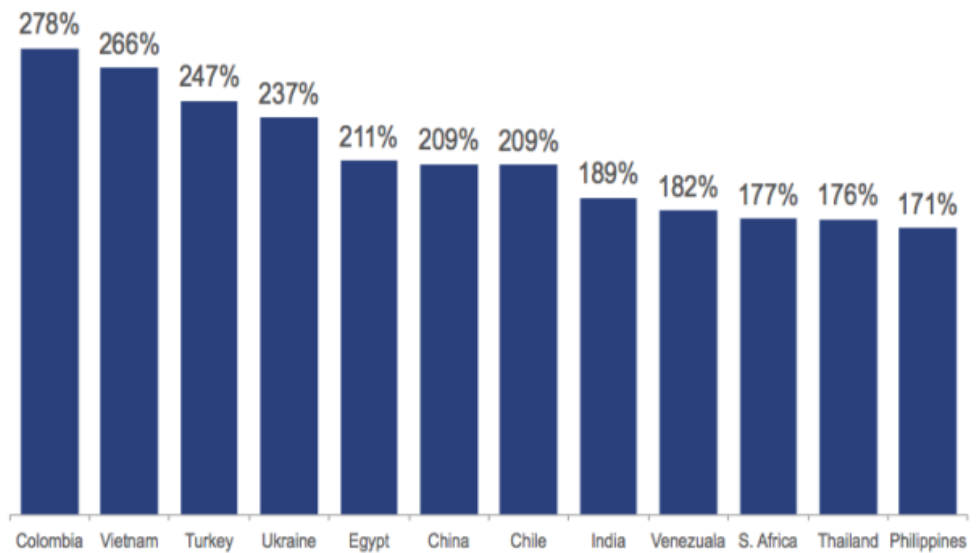
# Current rate of growth doesn't close the gap for ~ 2 technology cycles

Countries with Greatest Number of Active iOS & Android Devices (millions)



Source: Flurry Analytics, Active Devices during January 2013

Fastest Growing iOS & Android Markets by Active Devices (%)



Source: Flurry Analytics, January 2012 – January 2013, countries with at least 500,000 active devices as of January 2012

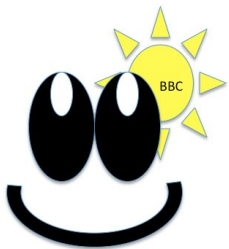
## Digital divide is perpetuated by dollar divide

# **Knowledge-based Society: How Far Are We from Access for All?**

DigitalWorld 2013

eLmL / eKNOW Panel

Stephen White



# Massive Open Online Courses (MOOCs)

- MOOCs represent the latest stage in the evolution of open educational resources.
- They represent a new business model that effectively combines instructional quality, lower cost, and increased access through unlimited scalability

“ College is a place where a professor's lecture notes go straight to the students' lecture notes, without passing through the brains of either. ”

— Mark Twain

- Daphne Koller, (co-founder of Coursera) speaks about the benefits of MOOCs here: <http://on.ted.com/Koller>
- Unsurprisingly she provides a compelling argument that MOOCs are potentially better than traditional courses.
- Good MOOCs follow the best practices of great online learning: active learning, authentic learning, peer-to-peer interactions, peer grading...

# Really a threat?

- A turning point may well occur when a MOOC-based program of study leads to a degree from an accredited institution
- we are already partially there: students can now receive transfer credit toward a degree from an accredited institution for learning not obtained at a college or university
- and feedback from MOOC users has already suggested that having the 'certificate' contributed towards their gaining employment...

# Stimulus for change!

- Georgia Tech's provost, Rafael L. Bras, was careful to communicate to his campus that in joining Coursera, the institution was "not abandoning our central mission of residential undergraduate instruction."
- He describes its involvement as an opportunity to "define the technological research university of the 21st century by exploring new modes of instruction and operation."
- Other colleges have echoed this description of MOOC's as a space for experimentation that may benefit the on-campus experience.

- MOOCs might just be what we have been waiting for?
- A big enough challenge to traditional teaching, to give it the ‘kick up the behind’ that it needs...

