

# Social Computing in the e-Era

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The grass is greener on the other side...

**Be inspired!**

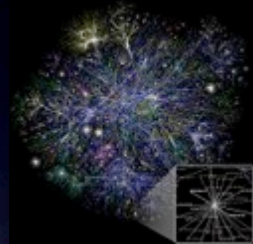
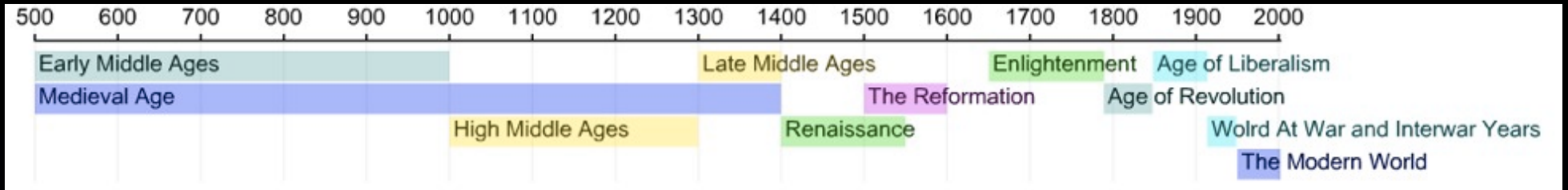
Stories and more stories...

**Be informed!**

The devil is in the details...

**Be challenged!**





Birth of Internet

1750



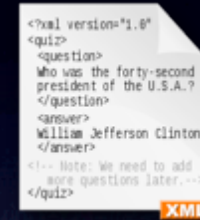
IBM Desktop PC

1945



Apple Macintosh

1969



Birth of XML

1975



Time Magazine  
Person of the Year

1981

1983

1984

1989

1996

2004

2006

**Industrial  
Revolution**

**Information  
Age**

**Internet  
Age**

**www  
Age**

**Attention/Social  
Age**

ENIAC



The MITS Altair  
Apple II



Time Magazine  
Person of the Year



Birth of WWW



Birth of Web 2.0



# O'Reilly's Web 2.0

- The long tail
- Data is the next Intel inside
- Users add value
- Network effects by default
- Some rights reserved
- The perpetual beta
- Cooperate, don't control
- Software above the level of a single device



# O'Reilly's Web 2.0

- The long tail--everyone matters
- Data is the next Intel inside--social information
- Users add value--social monetization
- Network effects by default
- Some rights reserved
- The perpetual beta
- Cooperate, don't control--being organic
- Software above the level of a single device

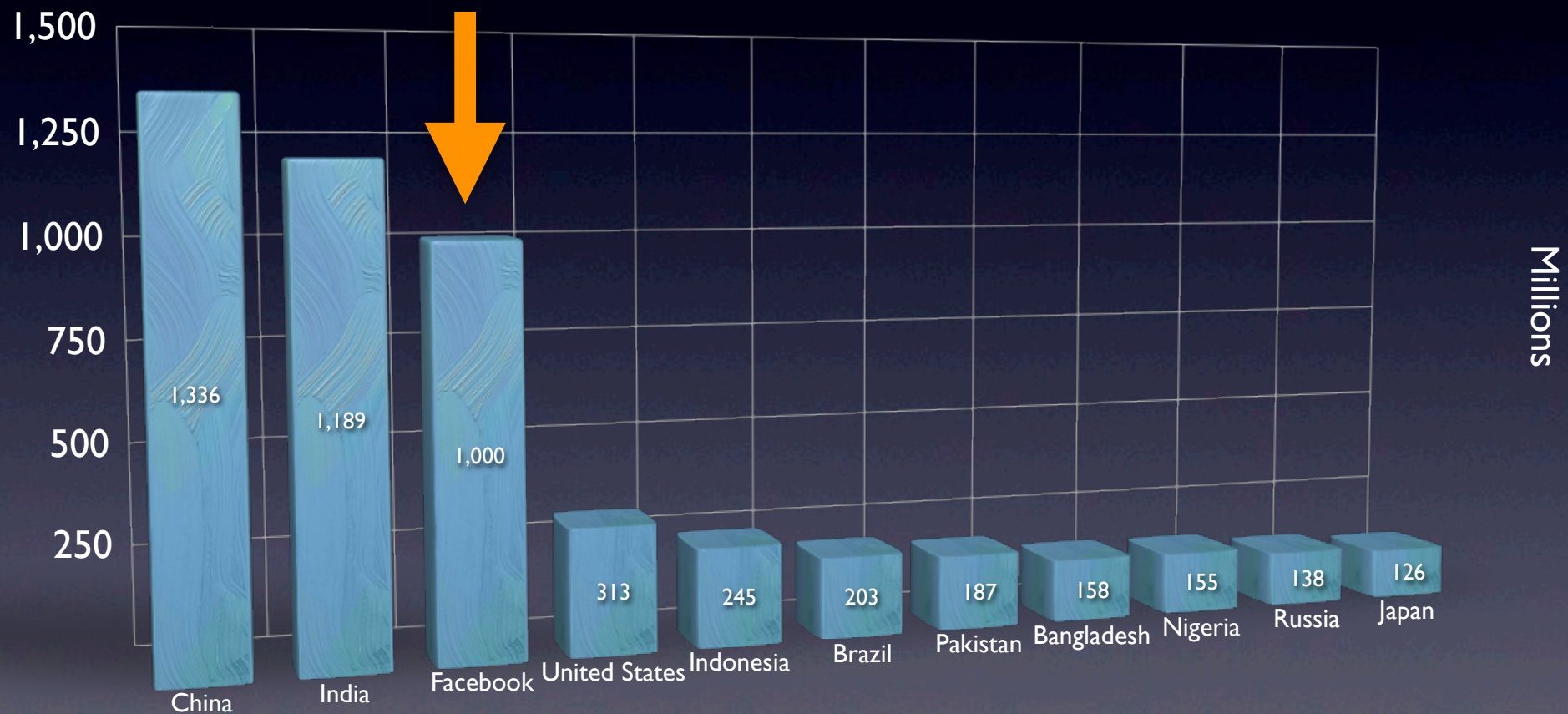


# Web 2.0

- Web as a medium vs. **Web as a platform**
- Read-Only Web vs. **Read-and-Write Web**
- Static vs. **Dynamic**
- Restrictive vs. **Freedom & Empowerment**
- Technology-centric vs. **User-centric**
- Limited vs. **Rich User Experience**
- Individualistic vs. **Group/Collective Behavior**
- Consumer vs. **Producer**
- Transactional vs. **Relational**
- Top-down vs. **Bottom-up**
- People-to-Machine vs. **People-to-People**
- Search & browse vs. **Publish & Subscribe**
- Closed application vs. **Service-oriented Services**
- Functionality vs. **Utility**
- Data vs. **Value**



# Top Ten Most Populated Countries & Facebook



as of September 2012 (Facebook as of October 2012)



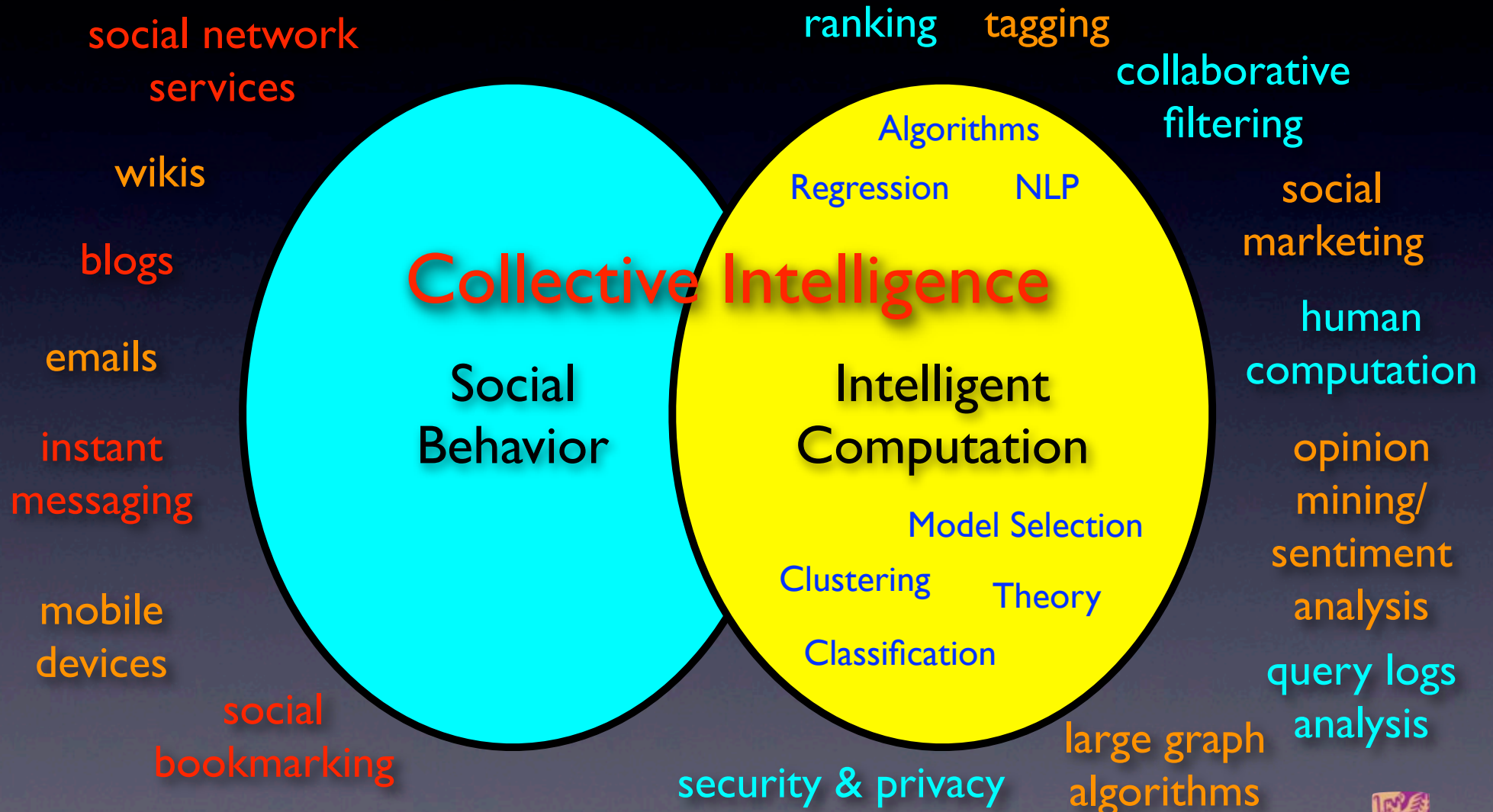
# Global Internet Traffic

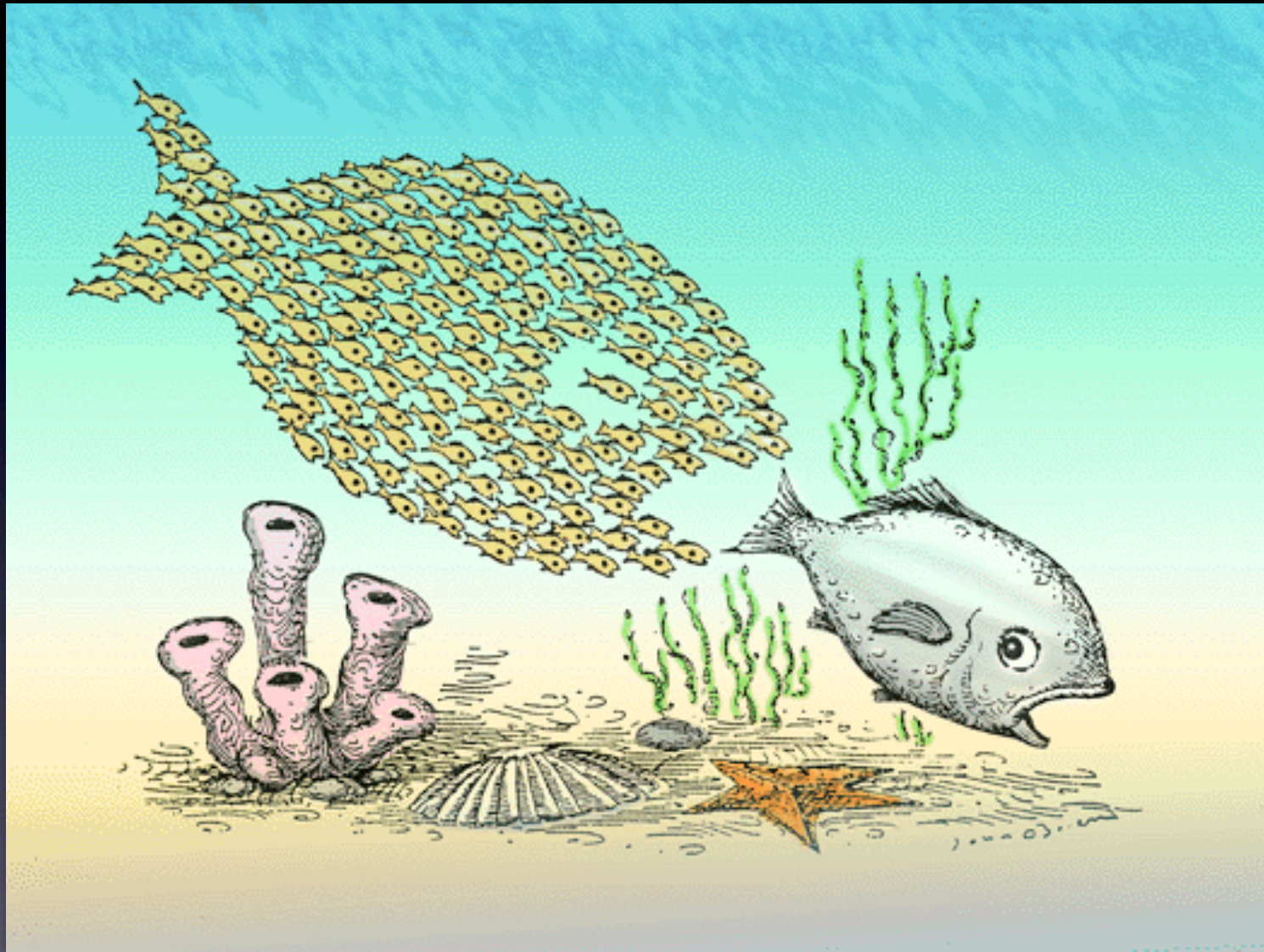
Alexa as of August 2011	China	USA	Japan	India	Brazil	Global
1	Baidu	Google	Yahoo.jp	Google.in	Google.br	Google
2	QQ	Facebook	Google.jp	Google	Google	Facebook
3	Sina	Yahoo!	FC2	Facebook	Facebook	YouTube
4	Taobao	YouTube	YouTube	YouTube	YouTube	Yahoo!
5	Google.hk	Amazon	Google	Yahoo!	Universo Online	Blogger
6	163	Wikipedia	Ameblo.jp	Blogger	Windows Live	Baidu
7	Weibo	Blogger	rakuten	Wikipedia	Globo	Wikipedia
8	Google	Twitter	livdoor	LinkedIn	Orkut.com.br	Windows Live
9	ifeng	eBay	Facebook	Twitter	Yahoo!	Twitter
10	Yahoo	Craigslist	Wikipedia	Rediff	Orkut.com	QQ



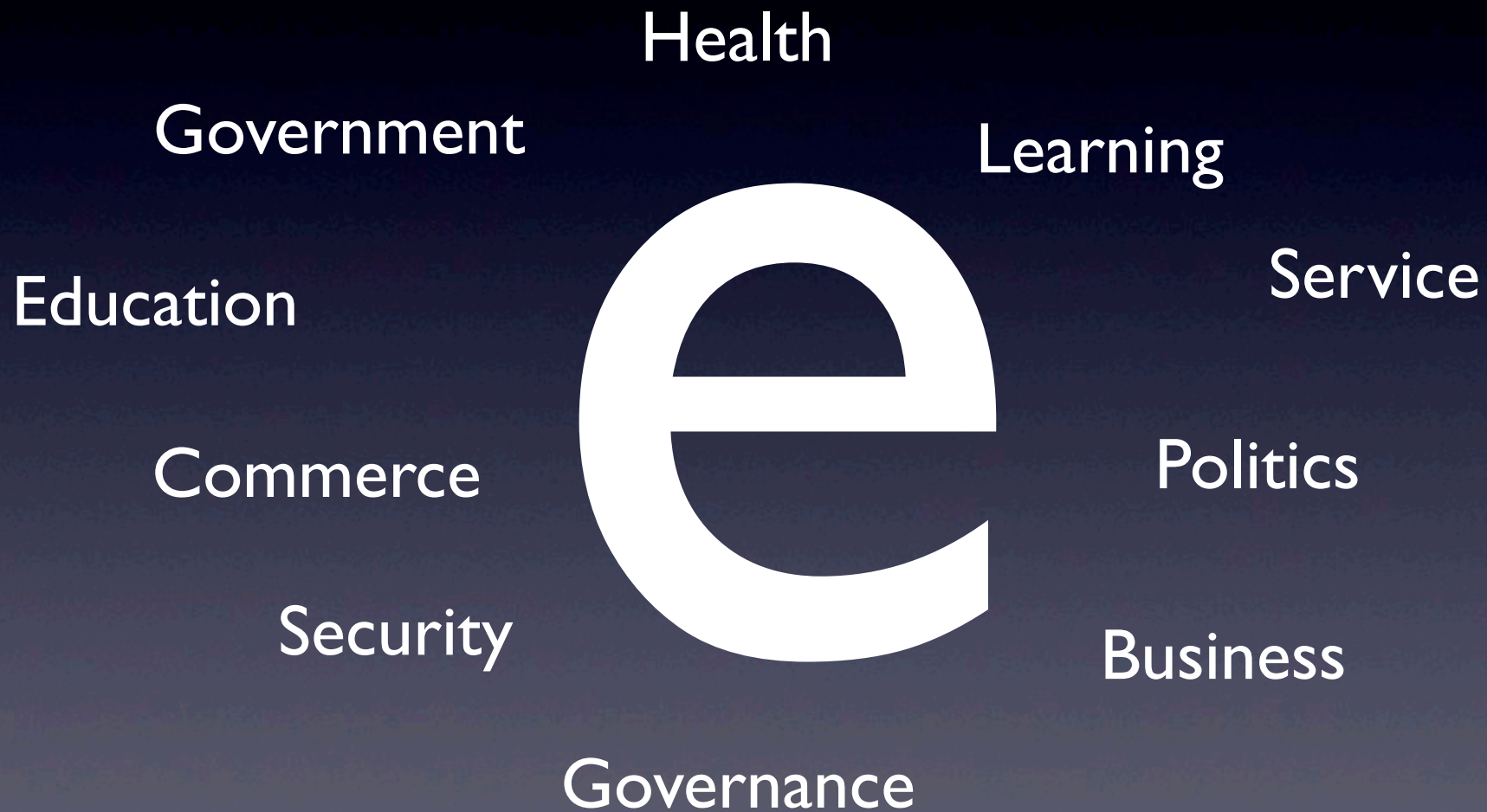


# Social Computing





# The e-Era



# The 2-Era

Government(s)  
Consumer(s)  
Business(es)  
Citizen(s)  
Employee(s)

·  
·  
·

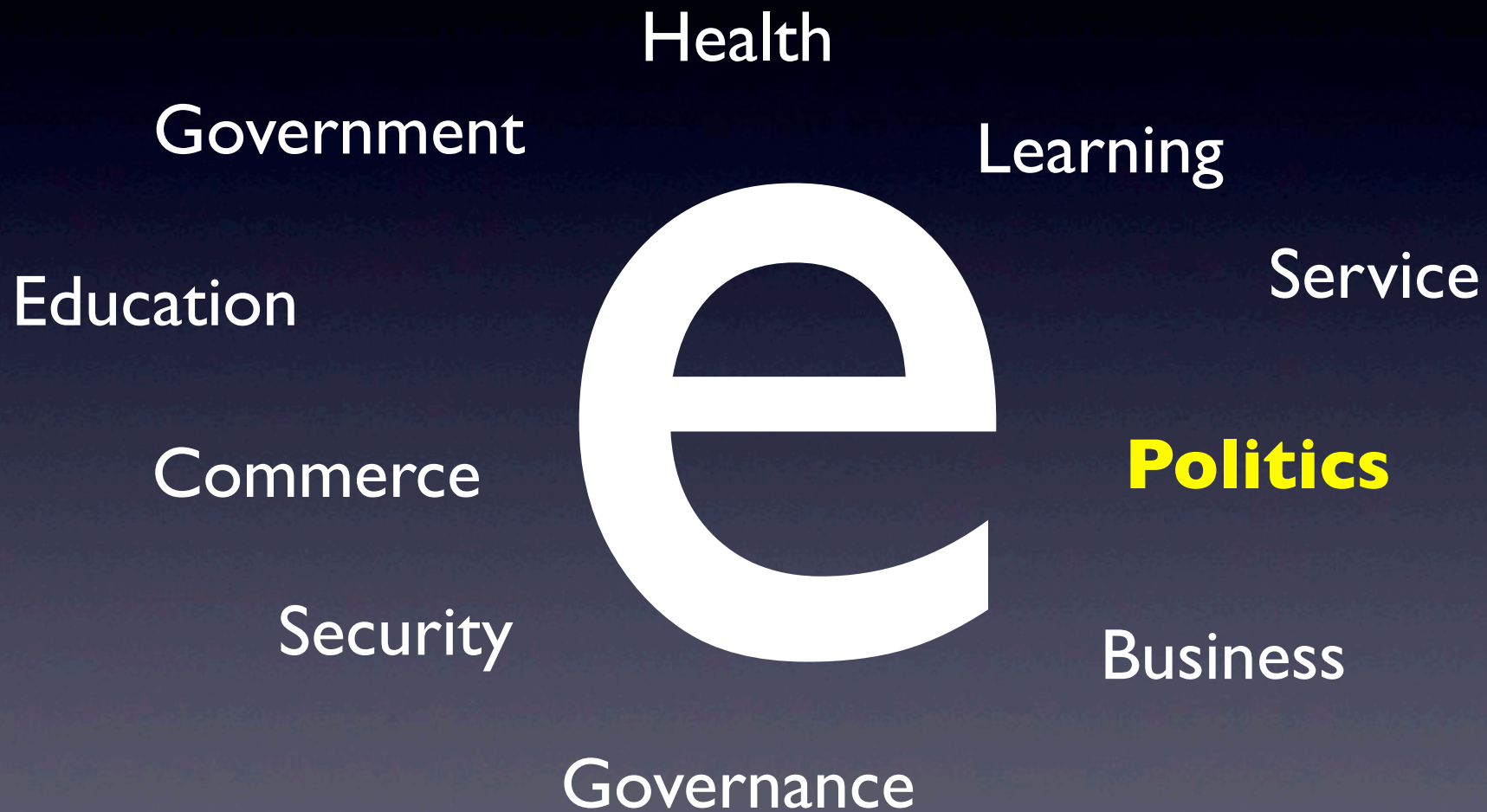
# 2

Government(s)  
Consumer(s)  
Business(es)  
Citizen(s)  
Employee(s)

·  
·  
·



# The e-Era



# The Rise and Fall of an Era in a Nation



Barack Obama



Hosni Mubarak



## The Lede



The New York Times News Blog

June 2, 2009, 7:05 PM

### China's Great Firewall Blocks Twitter

By ROBERT MACKEY



Catherine Henriette/Agence France-Presse — Getty Images

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Search

Previous Post:

← **Bloggers Ponder Last Message From Missing Jet's Computer**

Next Post:

**Punditry From Bin Laden and Zawahiri on Obama's Trip to the Middle East** →

#### Recent Posts

June 18  
(38 comments)

**Latest Updates on Iran's Disputed Election**

To supplement reporting from New York Times correspondents inside Iran on Thursday, The Lede will continue to track the aftermath of Iran's disputed presidential election online.

June 17  
(129 comments)

**Wednesday: Latest Updates on Iran's Disputed Election**

On Wednesday, The Lede will continue to track the aftermath of Iran's disputed presidential election online, to supplement reporting from New York Times correspondents inside Iran.

June 16  
(198 comments)

**Tuesday: Latest Updates on Iran's Disputed Election**

To supplement reporting from New York Times correspondents inside Iran, The Lede



# The Presidential Campaign on Social Media

By JENNA WORTHAM

It's not enough for the presidential candidates Barack Obama and Mitt Romney to kiss babies, shake hands and lunch at small-town diners to win over voters. In 2012, they also need to cozy up to citizens online. Here's a look at how each campaign is making use of the social Web to get its message across and appeal to voters.

OBAMA

ROMNEY

## Tumblr

Followers: Unknown\*



gihound: Sneaking up on Dad. WATCH Obama's full acceptance speech from last night.

Best. (via theatlantic)

posted 3 weeks ago 14,561 notes Tags: DNC 2012, election 2012, gifs gfr

Obama's Tumblr

### ABOUT

This is the Obama 2012 campaign's official home on Tumblr. Have a story, photo, or video you'd like to share here? Go ahead and submit it today.

### GET UPDATES

Sign up to say you're in for 2012.

SIGN UP

### SUPPORT the CAMPAIGN

The other guys have corporate lobbyists and special interests on their side; we've got you.

DONATE

Followers: Unknown\*



Page 1 of 20



"America needs a comeback team - Mitt Romney and Paul Ryan are that team." - Former Denver Broncos Quarterback John Elway

21 hours ago 82 notes 1 share

Romney's Tumblr



FOLLOW ABOUT DONATE GET UPDATES

SHARE YOUR STORY





# Social President

- There is **no "i"** in (the social media) team
- Reach out to **influencers**, including **early adopters**
- **Fight back with class**--and a cheeky photo helps, too
- Treat your social media training like a **marathon**, not a sprint
- Think **mobile**--not just apps, but your website too

## Social-Media Insights Inspired By Barack Obama, America's First Truly Social President

BY AMBER MAC | SEPTEMBER 7, 2012

 Share

No politician in history has leveraged social media to the extent of President Obama. Here's how his administration stays ahead of the curve--and what you can learn about effective social brand-building from the Tweep-in-Chief.



<http://www.fastcompany.com/3001091/social-media-insights-inspired-barack-obama-americas-first-truly-social-president>



# The e-Era

**Health**

Government

Learning

Education

Service

Commerce

Politics

Security

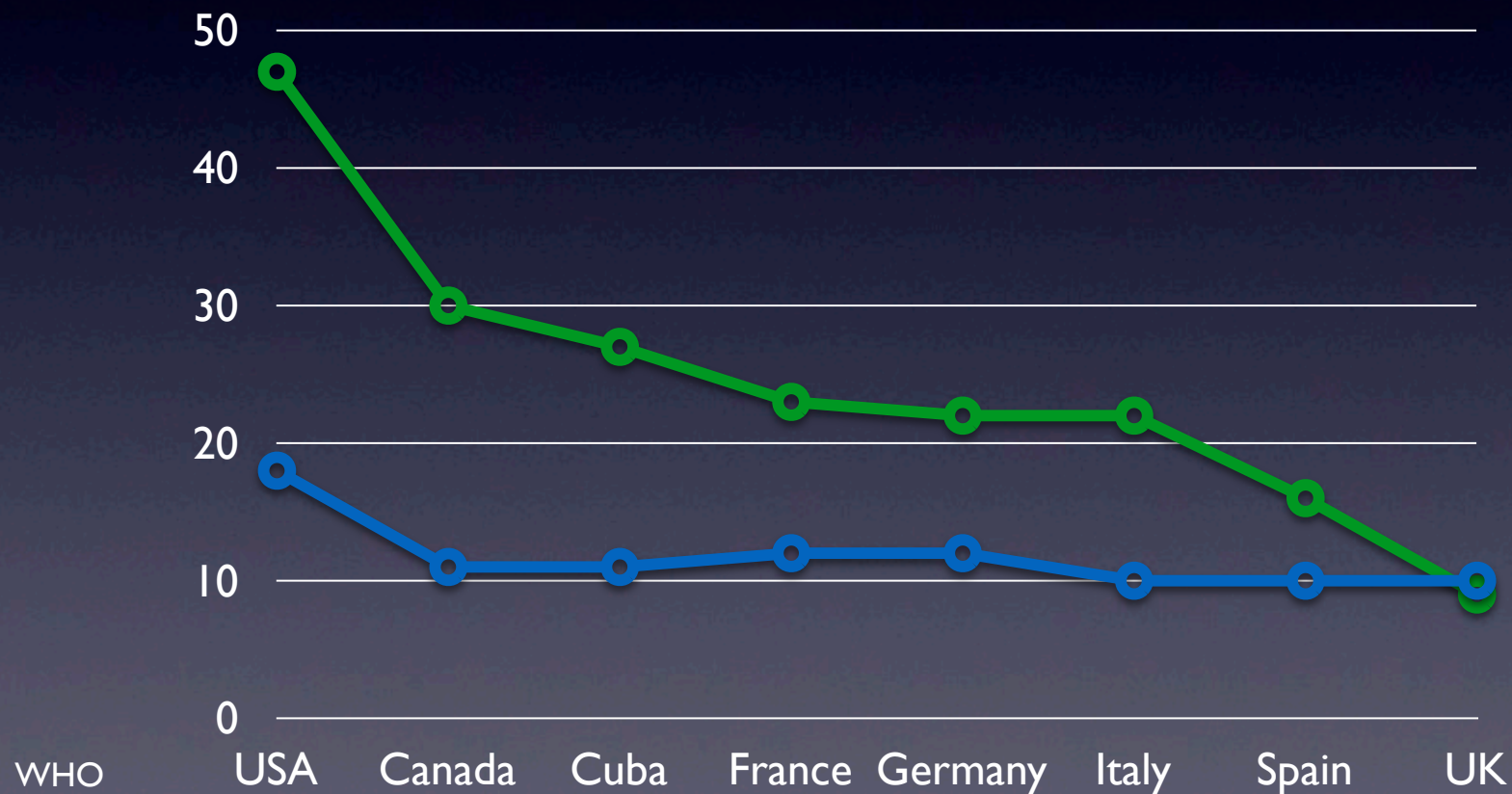
Business

Governance



# Health Spending

- Health spending, % of GDP (2010)
- Private spending, % of health spending (2010)



WHO



# Wisdom of the Crowd

2007–2008 U.S. Flu Activity - Mid-Atlantic Region

ILI percentage

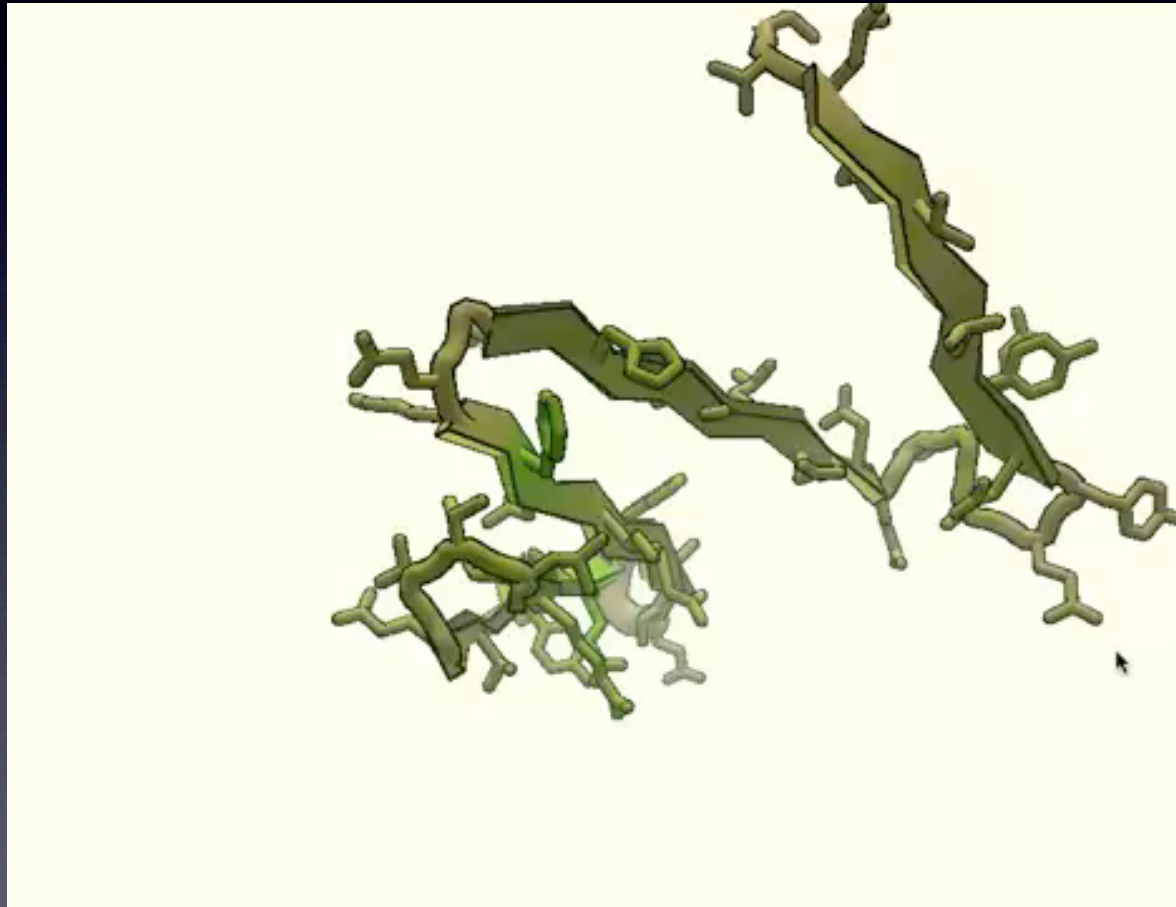


fever sore throat cough cold flu medicine



# Protein-Folding as a Computer Game

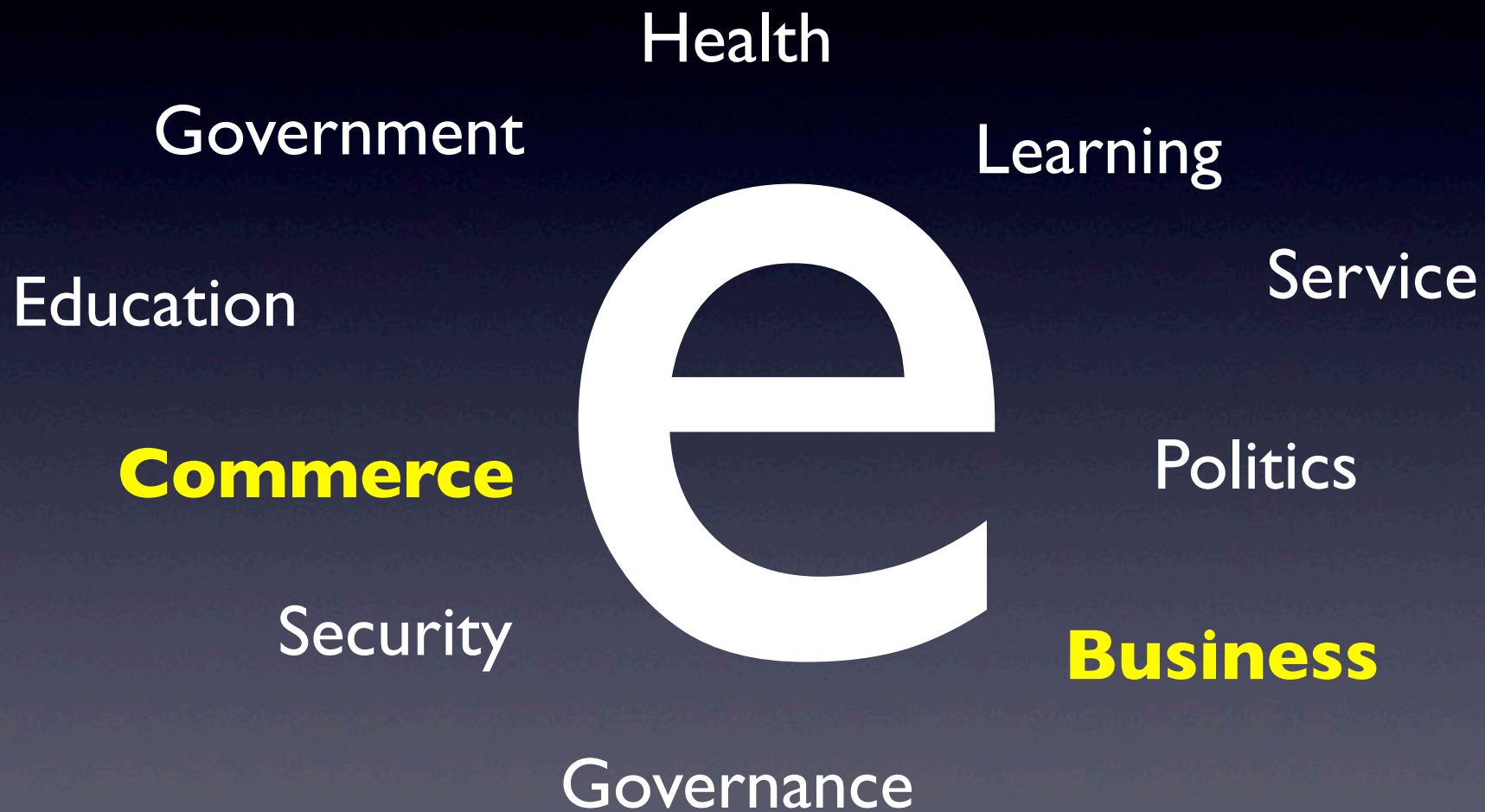
- Foldit
- Complex 3-D structure matching
- HIV-like Mason-Pfizer monkey virus
- HIV/AIDS, cancer, Alzheimer's, etc.



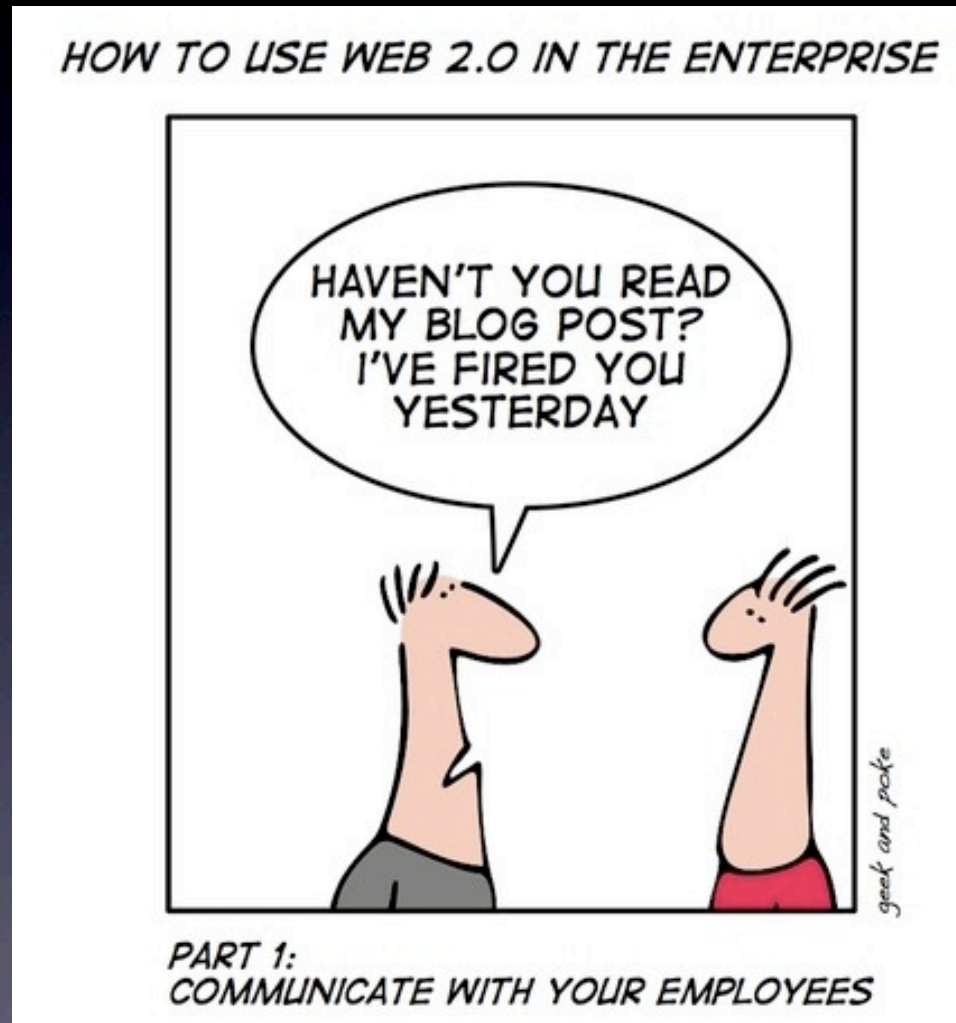
I think you'll be  
delightfully surprised  
by the quality of my work  
on this assignment.  
I crowdsourced it.



# The e-Era



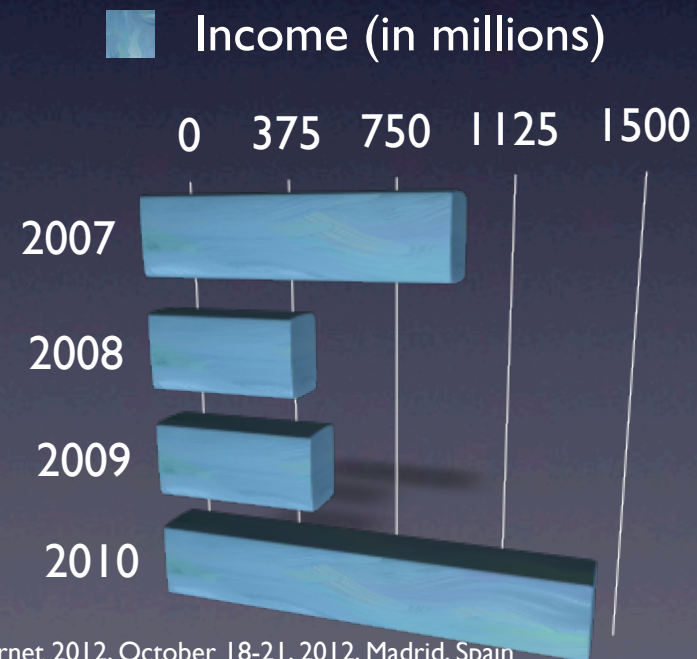
# How NOT to use Web 2.0...





# Social Commerce Case Study

- [mystarbucksideals.com](http://mystarbucksideals.com)
- [facebook.com/starbucks](https://www.facebook.com/starbucks)
- LinkedIn
- Twitter
- YouTube and Flickr



# Enterprise 2.0

- **Procter & Gamble**  
Sells cosmetics on Facebook
- **Disney**  
Could purchase tickets on Facebook
- **Mountain Dew**  
Uses social media for Dewmocracy contests
- **Pepsi**  
Live notification via geolocation product recommendations
- **Levis**  
Friend recommendation on products
- **Wendy's**  
Gift checks on social challenges



# e/Social-Commerce

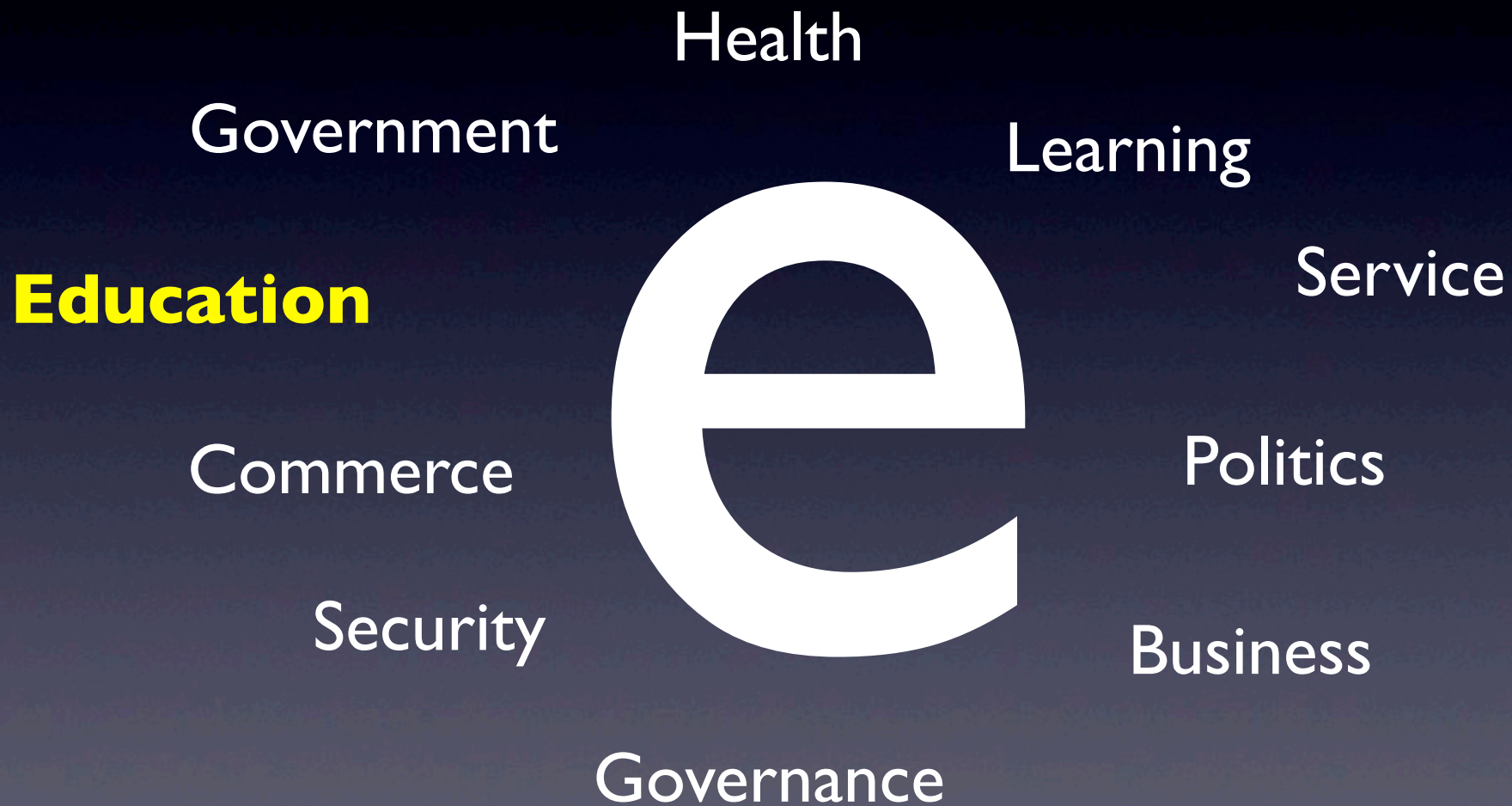
<b>Property</b>	<b>E-Commerce</b>	<b>Social Commerce</b>
Major Objective	Transactions	Social interactions
Major Activity	Publishing	Engagement
Content	Company generated	User generated
Problem Solving	Company experts	Crowdsourcing
Collaboration	Traditional, unified	Web 2.0 tools
Product Information	Product descriptions on websites	Peer product reviews
Marketplace	e-tailers and direct from manufacturers' stores	Social networks (f-commerce)
Targeting	Mass marketing, segmentation	Behavioral targeting
CRM	Seller/manufacturer support	Social support by peers and by vendors and employees
Online Marketing Strategy	Web selling	Multi-channel, Direct at social networks
Integration	System integration	Mashups and system integration
Data Management	Reports and Analytics	Analytics

[socialtimes.com/social-commerce-infographic-2\\_b84120](http://socialtimes.com/social-commerce-infographic-2_b84120)

Social Computing in the e-Era, Irwin King, IADIS WWW/Internet 2012, October 18-21, 2012, Madrid, Spain



# The e-Era



# Social Media in Education

- Media sharing
- Media manipulation
- Conversational arenas
- Online games and virtual worlds
- Social networking
- Blogging
- Social bookmarking
- Recommender systems
- Collaborative editing
- Wikis
- Syndication



# Constructivism and Social Computing

- Constructivist Learning Theory--George Hein, 1991
- Social Computing for Constructivism
- Issues and challenges



# Constructivist's Learning Principles

1. Learning is an **active process**--Active Learner
2. Learners **learn to learn** as they learn--learning provides context for other learning
3. The action of constructing meaning is **mental**--engaging the mind
4. Learning involves **language**: the language we use influences learning
5. Learning is a **social** activity



# Constructivist's Learning Principles

6. Learning is **contextual**--a corollary of the idea that learning is active and social
7. One **needs knowledge** to learn--the more we know, the more we can learn
8. It takes **time** to learn--learning is not instantaneous
9. **Motivation** is a key component in learning--it is essential for learning!

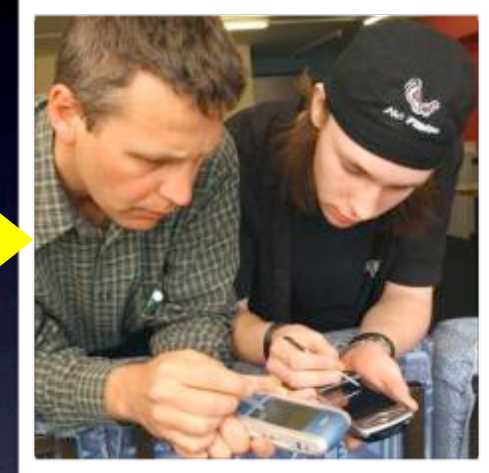




Traditional Classroom	Constructivist Classroom
Curriculum begins with the parts of the whole. Emphasizes <b>basic skills</b> .	Curriculum emphasizes <b>big concepts</b> , beginning with the whole and expanding to include the parts.
Strict adherence to <b>fixed curriculum</b> is highly valued.	Pursuit of student <b>questions and interests</b> is valued.
Materials are primarily <b>textbooks</b> and workbooks.	Materials include primary sources of material and <b>manipulative</b> materials.
Learning is based on <b>repetition</b> .	Learning is <b>interactive</b> , building on what the student already knows.
Teachers <b>disseminate</b> information to students; students are recipients of knowledge.	Teachers have a <b>dialogue</b> with students, helping students construct their own knowledge.
Teacher's role is directive, rooted in <b>authority</b> .	Teacher's role is interactive, rooted in <b>negotiation</b> .
Assessment is through <b>testing</b> , correct answers.	Assessment includes student works, observations, and points of view, as well as tests. <b>Process is as important</b> as product.
Knowledge is seen as <b>inert</b> .	Knowledge is seen as <b>dynamic</b> , ever changing with our experiences.
Students work primarily <b>alone</b> .	Students work primarily in <b>groups</b> .



# Evolution of Education

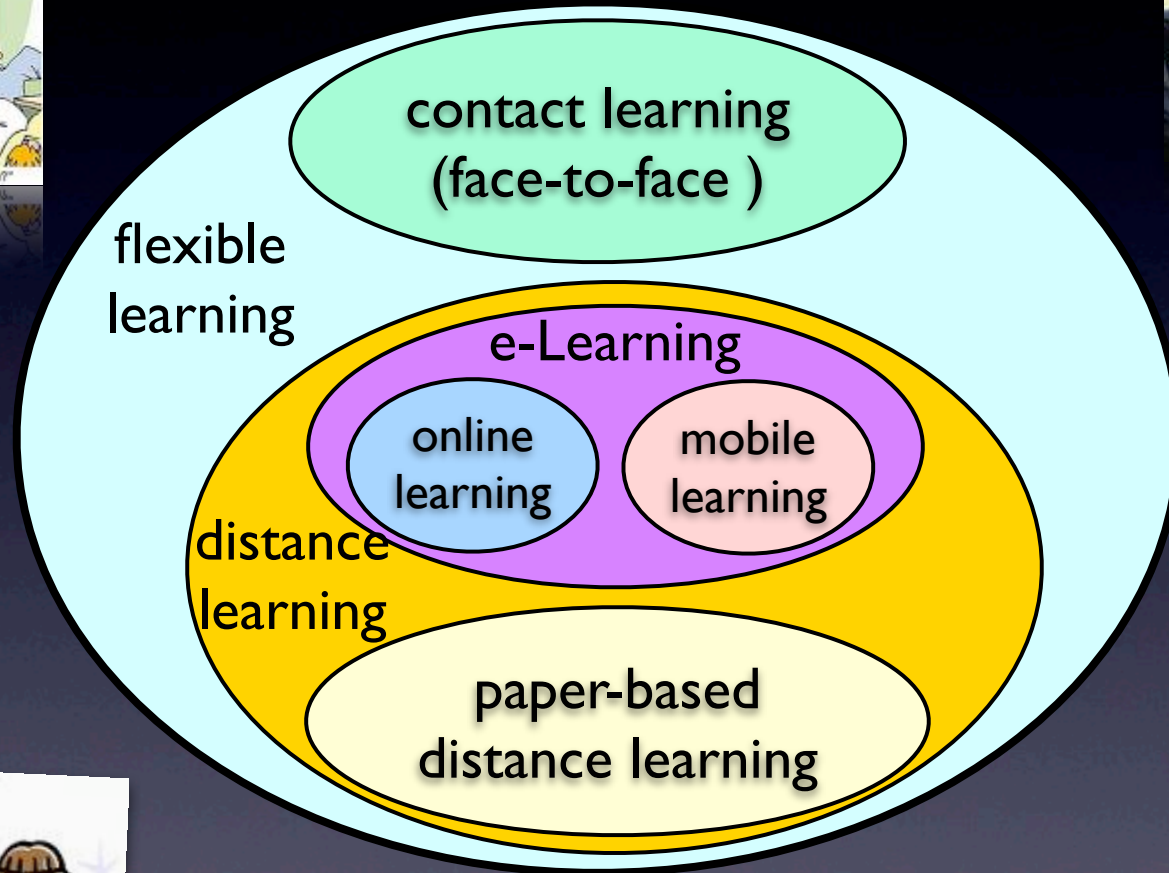


**distance learning**  
d-Learning

**electronic learning**  
e-Learning

**mobile learning**  
m-Learning





# The m-Learning Paradigm

New Learning Paradigms		Mobile Technologies
Individual/Learner centered	↔	Personalized Services
Collaborative learning	↔	Networked/Wireless
Situated learning	↔	Mobile awareness
Contextual learning	↔	Context awareness
Ubiquitous learning	↔	Ubiquitous
Life long	↔	Durable



# Tensions and Areas for Further Research

- Teaching vs. learning
- Walled garden vs. open arena
- Private learning vs. collaborative learning
- Digital native vs. digital immigrant
- Social networking vs. anti-social networking
- Rip-mix-burn vs. cut-tweak-paste
- Transitory marks vs. persistent marks
- Print literacy vs. digital literacy
- Serial processing vs. parallel processing



# Economist Intelligent Unit 2008

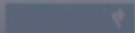
**In what ways do new technologies pose the greatest challenges and risks to colleges and universities? Select up to three.**  
(% of respondents)

Potential increase in student plagiarism

51



Don't know



Other (please specify)



# VeriGuide

- **Similarity text** detection system
- Developed at **CUHK**
- Promote and uphold academic **honesty, integrity, and quality**
- Support **English, Traditional and Simplified Chinese**
- Handle **.doc, .txt, .pdf, .html**, etc. file formats
- Generate detailed **originality report** including **readability**
- Use for **homework assignments, grants, conference and journal papers**, etc.



The screenshot shows the VeriGuide website homepage. At the top, there is a navigation menu with links for HOME, SERVICES, NEWS, PARTNERS, ABOUT, REGISTER, and LOGIN. Below the menu is a large banner image of a university campus. The main content area is divided into three columns, each with a green header and a white body. The first column is titled 'Originality' and describes the system's goal to promote academic integrity. The second column is titled 'Readability' and describes the system's ability to assess students' writing ability. The third column is titled 'Accessibility' and describes the system's support for students and educators. Below these columns are three sections: 'VERIGUIDE' with a list of features, 'WHAT'S NEW?' with news updates, and 'RESOURCES' with links to various guides and contact information.



# VeriGuide Free Trial

**IRWIN KING @ WEB INTELLIGENCE & SOCIAL COMPUTING LAB**

Trace: » conference » home  
You are here: home

**NAVIGATION**

- Home
- Profile
- Research Interests & Projects

**ABOUT US**

- Research Group | Presentations
- News | Newsletter
- Collaborators
- Contact Us

**PUBLICATIONS**

1. Conference Papers 2010-Now
2. Conference Papers 2005-2009
3. Journal Articles
4. Books, Edited Books & Proceedings
5. Book Chapters
6. Conference Papers 2000-2004
7. Conference Papers 1994-1999
8. Theses
9. Patents
10. Presentations
11. Datasets

**PROFESSIONAL ACTIVITIES**

1. Professional Achievements
2. Awards and Recognitions
3. Grants
4. Teaching
5. Education Excellence
6. Demos & Software
  - I. Finding Experts Demo
  - II. MEMPM Matlab Toolbox
  - III. My.iApps
7. Conference Activities



**Irwin King, WISC Lab**

"...the truth shall set you free." - Caltech Motto

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- [AT&T Labs AT&T Labs Research](#), San Francisco (2010-2012)

- Book Series Editor, [Social Media and Social Computing](#), Taylor and Francis (CRC Press)
- Associate Editor of ACM Transactions on Knowledge Discovery from Data ([ACM TKDD](#))
- Associate Editor of INNS Natural Intelligence Magazine ([INNS NIM](#))
- Associate Editor of IEEE Transactions on Neural Networks ([IEEE TNN](#))
- Vice-President of Membership, Board Member, Board of Governors, International Neural Network Society ([INNS](#))
- Vice-President and Board Member, Asia Pacific Neural Network Assembly ([APNNA](#))
- Chair, Task Force on the Future Directions of Neural Networks ([IEEE CIS](#))
- Chair, SIG and Regional Chapters Committee for Asia and the Pacific ([INNS](#))
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▪ **Special Issue Guest Editor, [Twitter and Microblogging Services](#), ACM Transactions on Intelligent System and Technology**

<http://irwinking.com>

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# IADIS2012

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## Originality

VeriGuide aims to promote academic integrity with VeriGuide's similarity detection capabilities.

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## Readability

VeriGuide assists educators to assess students' writing ability over time with our readability features.

Learn more

## Accessibility

VeriGuide serves to support and maintain assignment database for students and educators.

Learn more

### What is Plagiarism Detection?

### Partnership with Hong Kong School Net

### New Users?

Want to detect whether the document is plagiarized or not? [Register now!](#)

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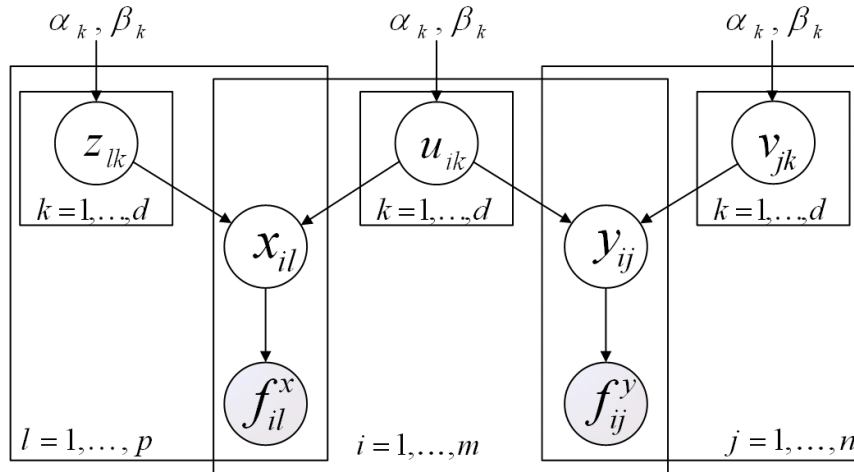


# The Devil is in the details...

- Machine Learning
- Social Computing
- Data Mining
- Kernel methods, large-margin classifiers, etc.
- Semi-supervised, transfer, on-line learning, etc.
- Recommender systems
- Q&A, cQ&A, etc.
- Human computation, crowdsourcing, etc.
- Social network analysis, link analysis, etc.
- Location-based services



# Collective Probabilistic Factor Model



$$\mathcal{L}(U, V, Z; F^x, F^y)$$

$$\begin{aligned} &= \sum_{i=1}^m \sum_{l=1}^p (f_{il}^x \ln x_{il} - x_{il}) + \sum_{i=1}^m \sum_{j=1}^n (f_{ij}^y \ln y_{ij} - y_{ij}) \\ &+ \sum_{i=1}^m \sum_{k=1}^d ((\alpha_k - 1) \ln(u_{ik}/\beta_k) - u_{ik}/\beta_k) \\ &+ \sum_{j=1}^n \sum_{k=1}^d ((\alpha_k - 1) \ln(v_{jk}/\beta_k) - v_{jk}/\beta_k) \\ &+ \sum_{l=1}^p \sum_{k=1}^d ((\alpha_k - 1) \ln(z_{lk}/\beta_k) - z_{lk}/\beta_k) + \text{const.} \end{aligned}$$

$$u_{ik} \leftarrow u_{ik} \frac{\sum_{j=1}^n (f_{ij}^y v_{jk} / y_{ij}) + \sum_{l=1}^p (f_{il}^x z_{lk} / x_{il}) + (\alpha_k - 1) / u_{ik}}{\sum_{j=1}^n v_{jk} + \sum_{l=1}^p z_{lk} + 1 / \beta_k}$$

$$v_{jk} \leftarrow v_{jk} \frac{\sum_{i=1}^m (f_{ij}^y u_{ik} / y_{ij}) + (\alpha_k - 1) / v_{jk}}{\sum_{i=1}^m u_{ik} + 1 / \beta_k},$$

$$z_{lk} \leftarrow z_{lk} \frac{\sum_{i=1}^m (f_{il}^x u_{ik} / x_{il}) + (\alpha_k - 1) / z_{lk}}{\sum_{i=1}^m u_{ik} + 1 / \beta_k}.$$

$$u_{ik} \leftarrow u_{ik} \frac{\theta \sum_{j=1}^n (f_{ij}^y v_{jk} / y_{ij}) + (1 - \theta) \sum_{l=1}^p (f_{il}^x z_{lk} / x_{il}) + (\alpha_k - 1) / u_{ik}}{\theta \sum_{j=1}^n v_{jk} + (1 - \theta) \sum_{l=1}^p z_{lk} + 1 / \beta_k}$$



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- Hongyi Zhang (Ph.D.)
- Chao Zhou (Ph.D.)
- Patrick Lau
- Raymond Yeung
- Ivan Yau
- Sara Fok



# On-Going Research

## Machine Learning

- Can Irrelevant Data Help Semi-supervised Learning, Why and How? ([CIKM'11](#))
- Smooth Optimization for Effective Multiple Kernel Learning ([AAAI'10](#))
- Simple and Efficient Multiple Kernel Learning By Group Lasso ([ICML'10](#))
- Online Learning for Group Lasso ([ICML'10](#))
- Heavy-Tailed Symmetric Stochastic Neighbor Embedding ([NIPS'09](#))
- Adaptive Regularization for Transductive Support Vector Machine ([NIPS'09](#))
- Direct Zero-norm Optimization for Feature Selection ([ICDM'08](#))
- Semi-supervised Learning from General Unlabeled Data ([ICDM'08](#))
- Learning with Consistency between Inductive Functions and Kernels ([NIPS'08](#))
- An Extended Level Method for Efficient Multiple Kernel Learning ([NIPS'08](#))
- Semi-supervised Text Categorization by Active Search ([CIKM'08](#))
- Transductive Support Vector Machine ([NIPS'07](#))
- Global and local learning ([ICML'04](#), [JMLR'04](#))



# On-Going Research

## Web Intelligence/Information Retrieval

- A Data-Driven Approach to Question Subjectivity Identification in Community Question Answering ([AAAI'12](#))
- Question Identification on Twitter ([CIKM'11](#))
- Learning to Suggest Questions in Online Forums ([AAAI'11](#))
- Diversifying Query Suggestion Results ([AAAI'10](#))
- A Generalized Co-HITS Algorithm and Its Application to Bipartite Graphs ([KDD'09](#))
- Entropy-biased Models for Query Representation on the Click Graph ([SIGIR'09](#))
- Effective Latent Space Graph-based Re-ranking Model with Global Consistency ([WSDM'09](#))
- Formal Models for Expert Finding on DBLP Bibliography Data ([ICDM'08](#))
- Learning Latent Semantic Relations from Query Logs for Query Suggestion ([CIKM'08](#))
- RATE: a Review of Reviewers in a Manuscript Review Process ([WI'08](#))
- MatchSim: link-based web page similarity measurements ([WI'07](#))
- Diffusion rank: Ranking web pages based on heat diffusion equations ([SIGIR'07](#))
- Web text classification ([WWW'07](#))



# On-Going Research

## Recommender Systems/Collaborative Filtering

- Fused Matrix Factorization with Geographical and Social Influence in Location-based Social Networks ([AAAI'12](#))
- Probabilistic Factor Models for Web Site Recommendation ([SIGIR'11](#))
- Recommender Systems with Social Regularization ([WSDM'11](#))
- UserRec:A User Recommendation Framework in Social Tagging Systems ([AAAI'10](#))
- Learning to Recommend with Social Trust Ensemble ([SIRIR'09](#))
- Semi-Nonnegative Matrix Factorization with Global Statistical Consistency in Collaborative Filtering ([CIKM'09](#))
- Recommender system: accurate recommendation based on sparse matrix ([SIGIR'07](#))
- SoRec: Social Recommendation Using Probabilistic Matrix Factorization ([CIKM'08](#))

## Human Computation

- A Survey of Human Computation Systems ([SCA'09](#))
- Mathematical Modeling of Social Games ([SIAG'09](#))
- An Analytical Study of Puzzle Selection Strategies for the ESP Game ([WI'08](#))
- An Analytical Approach to Optimizing The Utility of ESP Games ([WI'08](#))



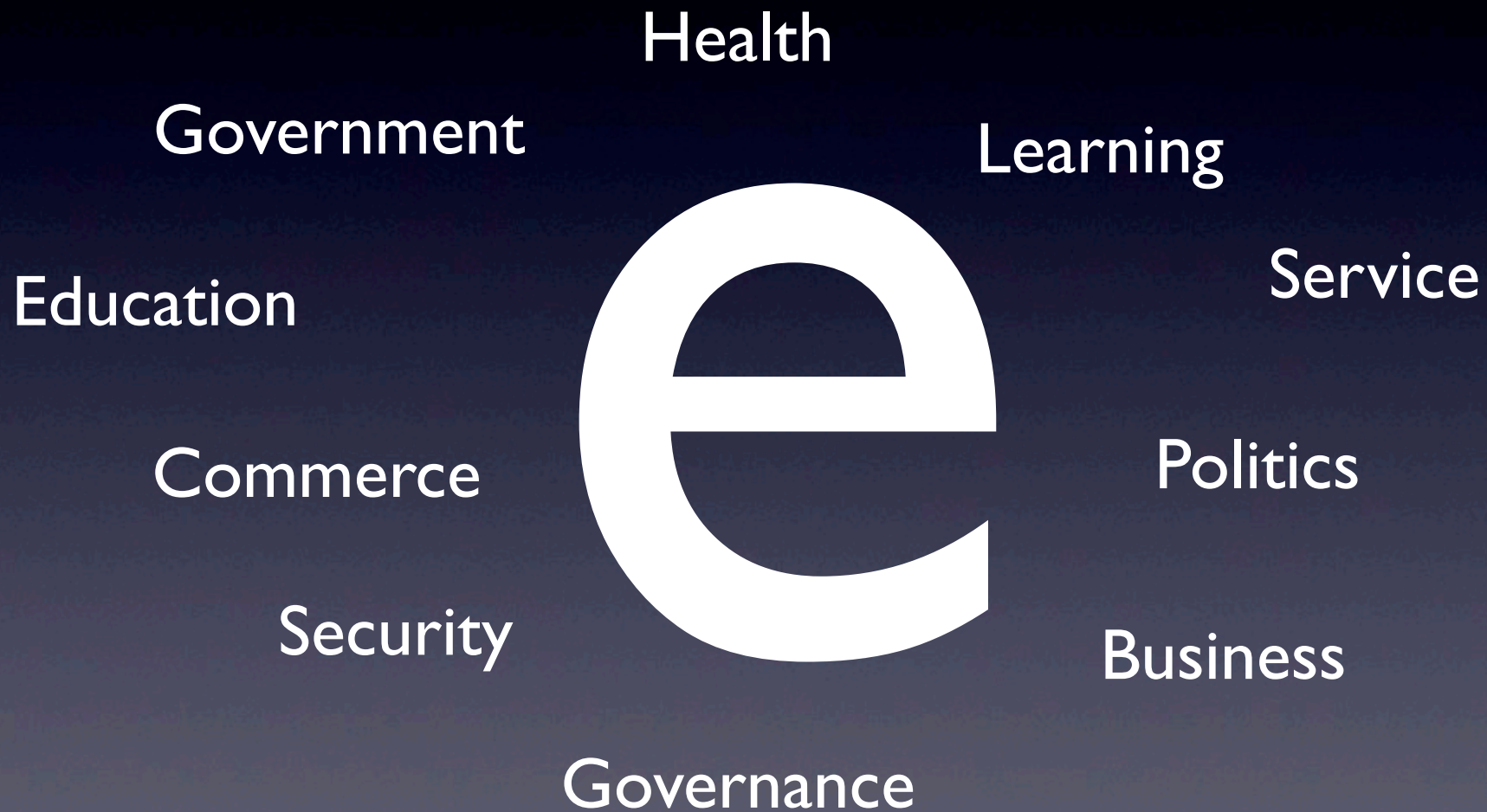
# Final Remarks

- Not everything is rosy: **scalability, data validity, privacy and security**, and many more...
- Don't predict the future--**create it!**
- The grass is indeed **greener...**
- The stories are rather **interesting...**
- Social computing is an **exciting** and **challenging** area for further investigation and exploration...

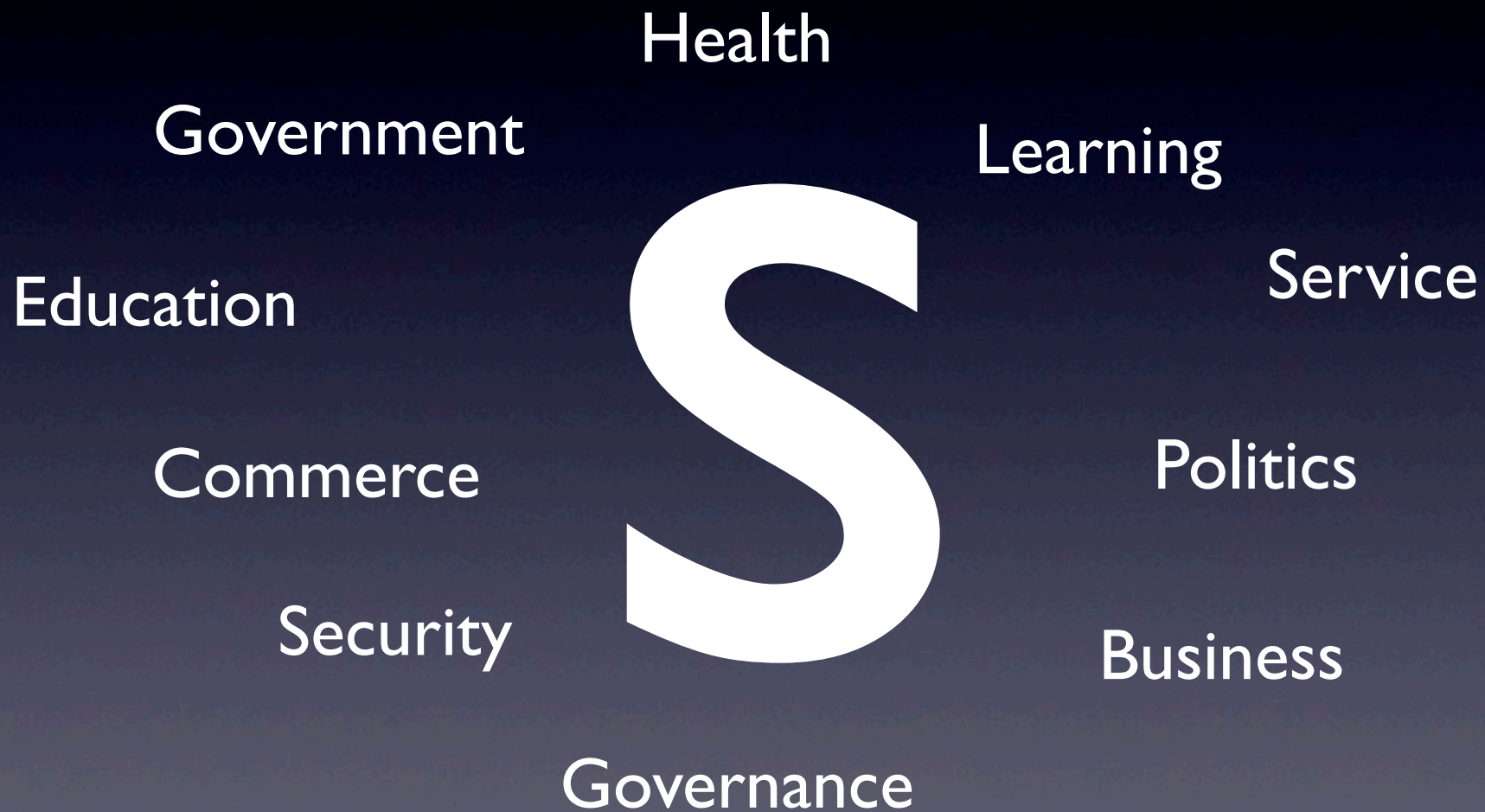




# The e-Era



# The s-Era



# Q & A

Social Computing in the e-Era, Irwin King, IADIS WWW/Internet 2012, October 18-21, 2012, Madrid, Spain

