Social Computing in the e-Era

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The grass is greener on the other side...

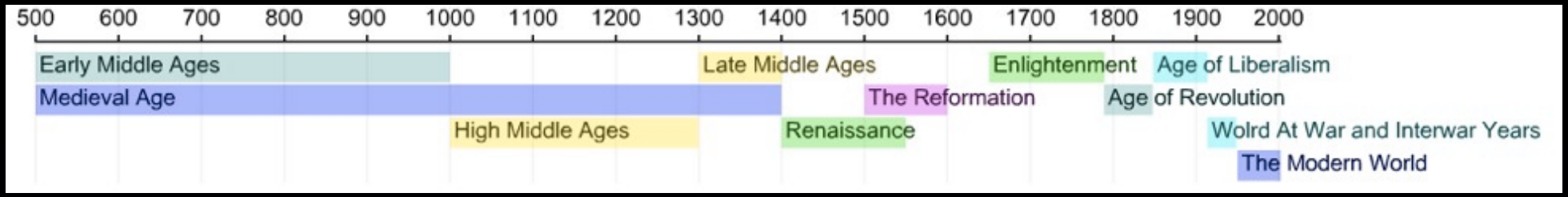
Be inspired!

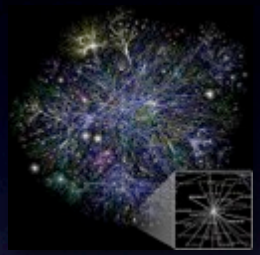
Stories and more stories...

Be informed!

The devil is in the details...

Be challenged!

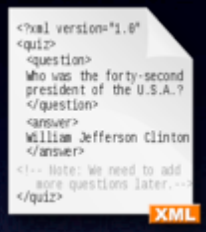




Birth of Internet

IBM Desktop PC

Apple Macintosh



Birth of XML

Time Magazine
Person of the Year

1750 1945 1969 1975 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

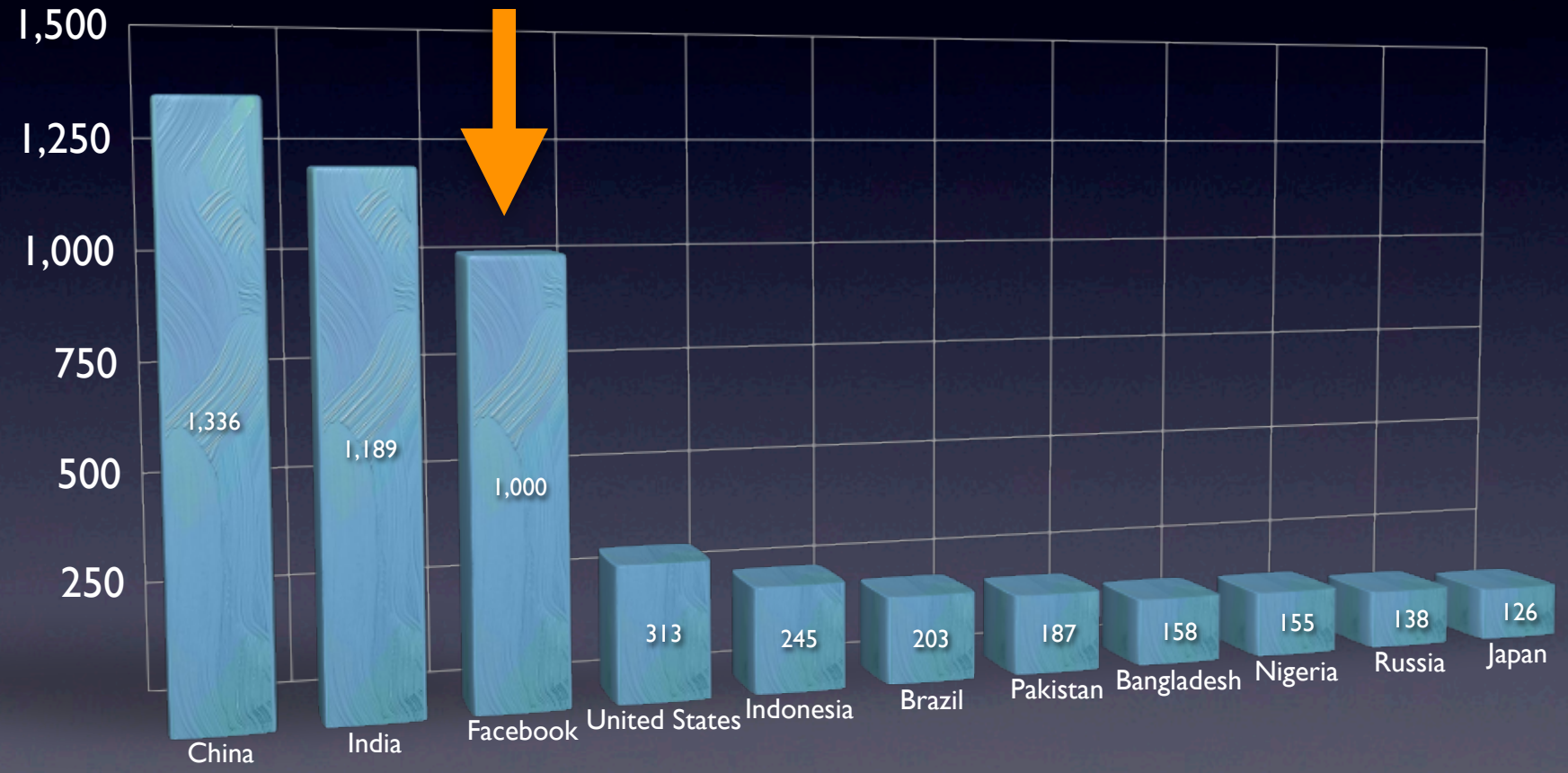
O'Reilly's Web 2.0

- 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



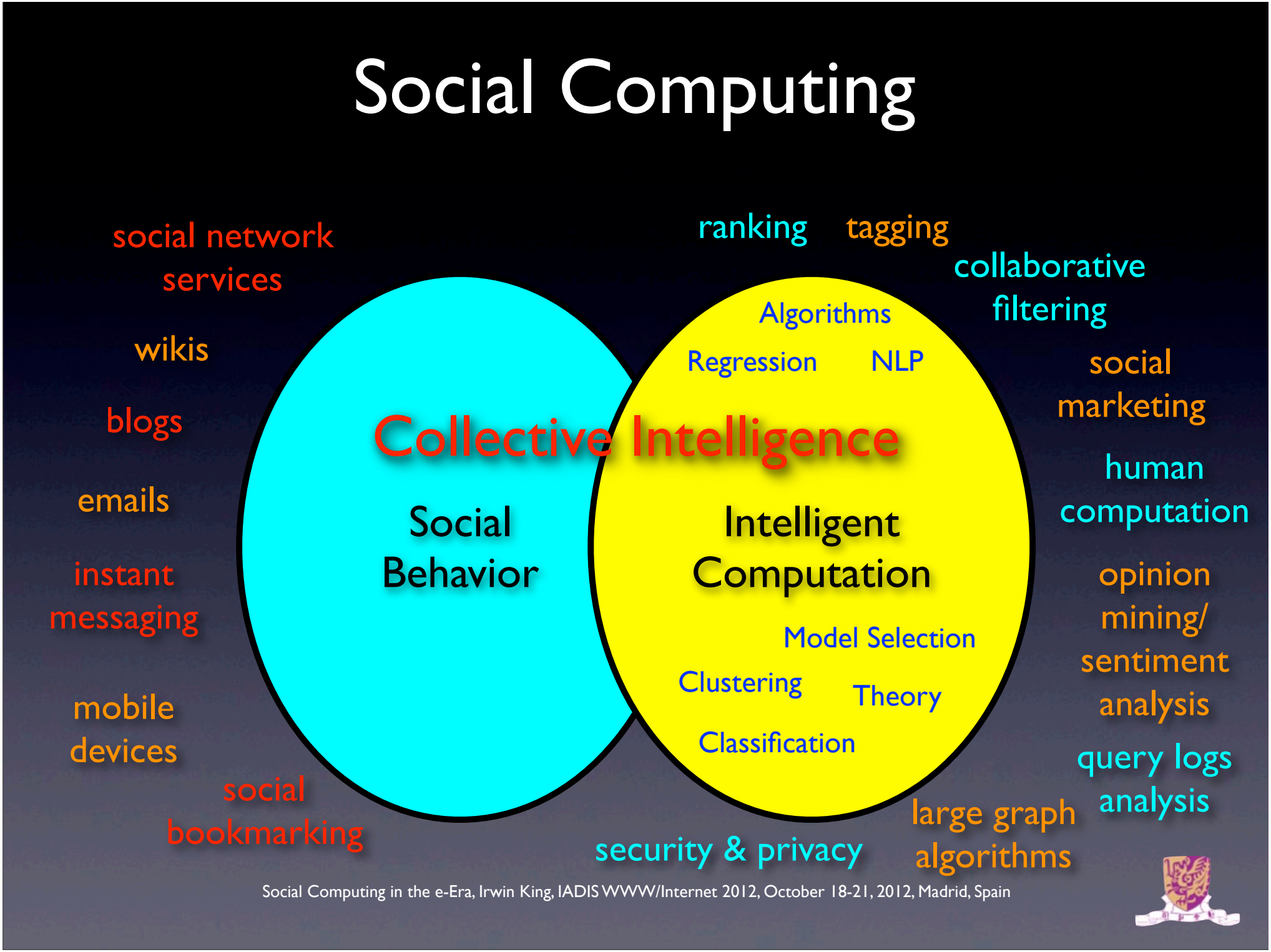
as of September 2012 (Facebook as of October 2012)

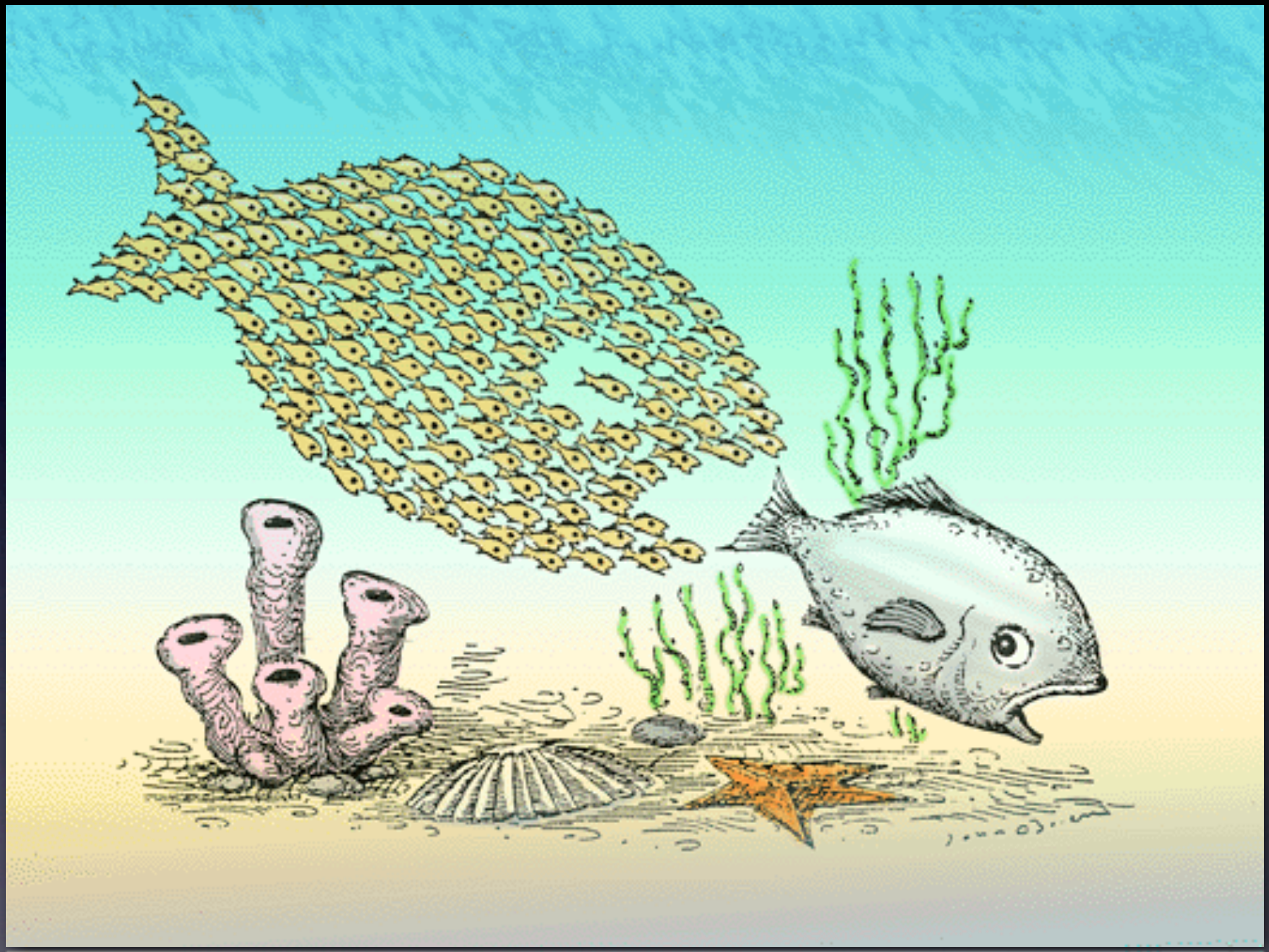
Social Computing in the e-Era, Irwin King, IADIS WWW/Internet 2012, October 18-21, 2012, Madrid, Spain

Global Internet Traffic

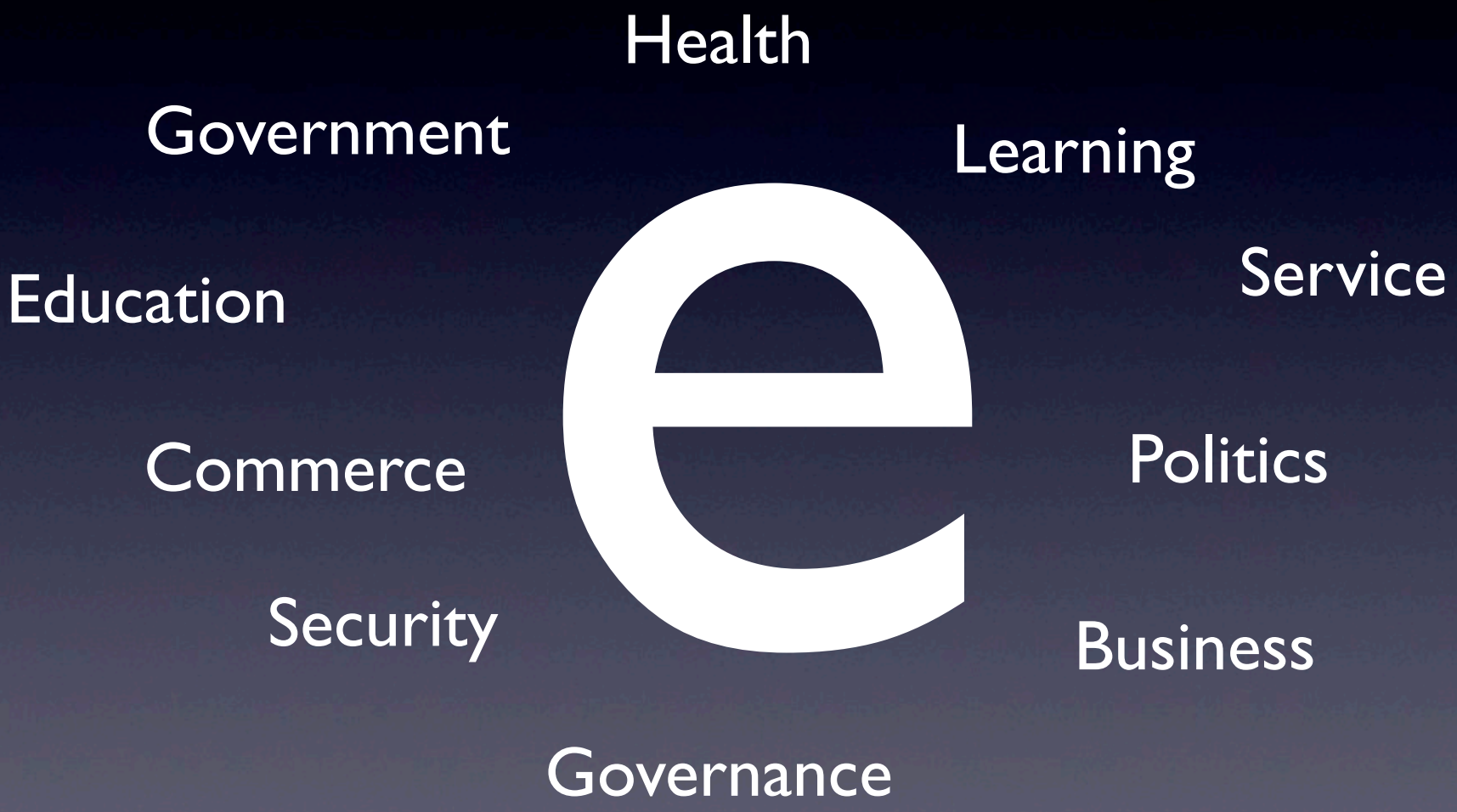
Alexa as of August 2011	China	USA	Japan	India	Brazil	Global
1	Baidu	Google	Yahoo.jp	Google.in	Google.br	Google
2	QQ	Facebook	Google.jp	Google	Google	Facebook
3	Sina	Yahoo!	FC2	Facebook	Facebook	YouTube
4	Taobao	YouTube	YouTube	YouTube	YouTube	Yahoo!
5	Google.hk	Amazon	Google	Yahoo!	Universo Online	Blogger
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


Health
Government
Learning
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Service
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Commerce
Politics
Security
Business
Governance

The 2-Era

Government(s)
Consumer(s)
Business(es)
Citizen(s)
Employee(s)
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2

Government(s)
Consumer(s)
Business(es)
Citizen(s)
Employee(s)
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The e-Era

Health

Government

Learning

Service

Education

Commerce

Politics

Security

Business

Governance

The Rise and Fall of an Era in a Nation

Barack Obama

Hosni Mubarak

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The New York Times
Friday, June 19, 2009

News

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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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Next Post: Punditry From Bin Laden and Zawahiri on Obama's Trip to the Middle East

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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

FACEBOOK TWITTER GOOGLE+ E-MAIL SHARE

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*

Obama's Tumblr

Followers: Unknown*

Romney's Tumblr

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

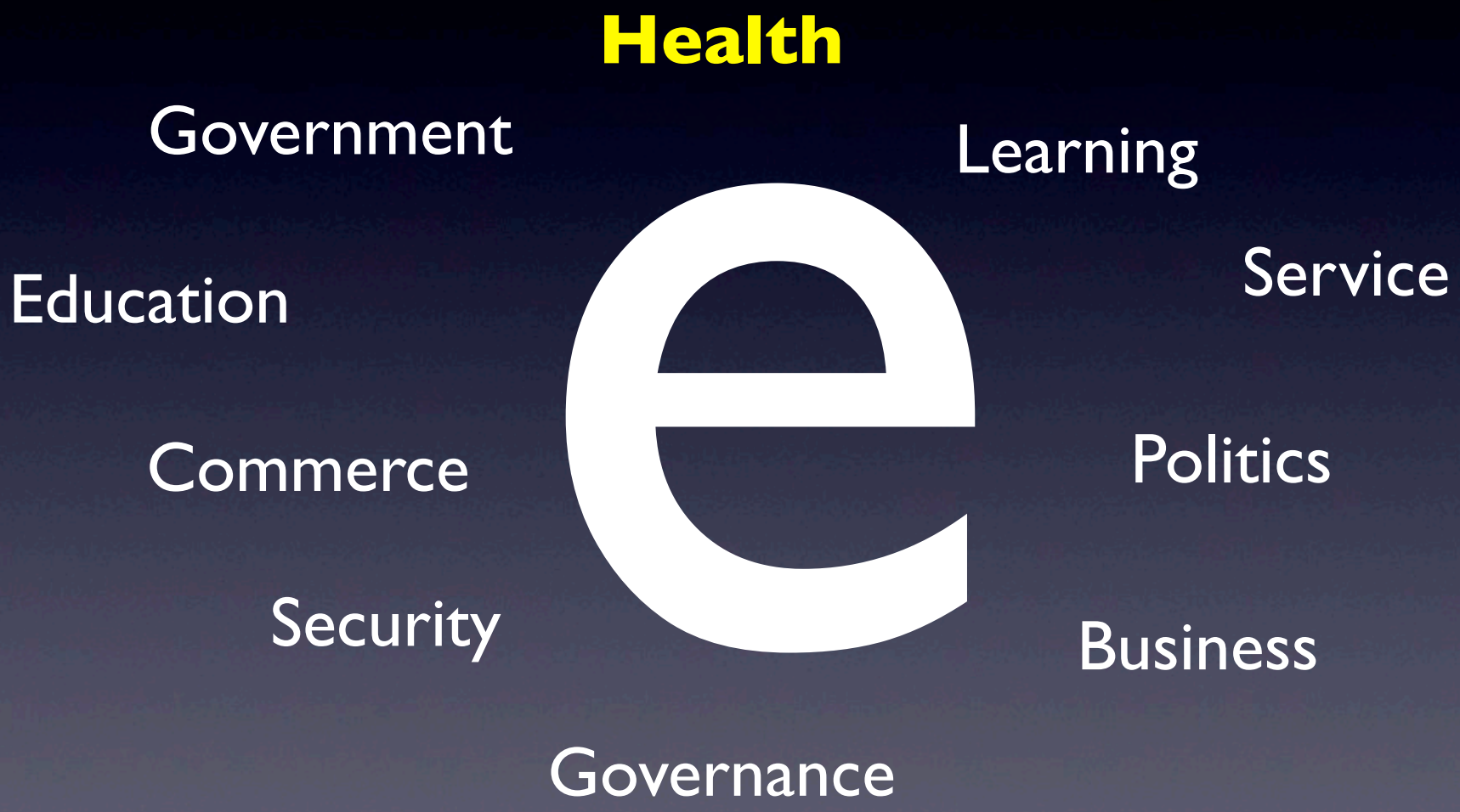
BY AMBER MAC | SEPTEMBER 7, 2012

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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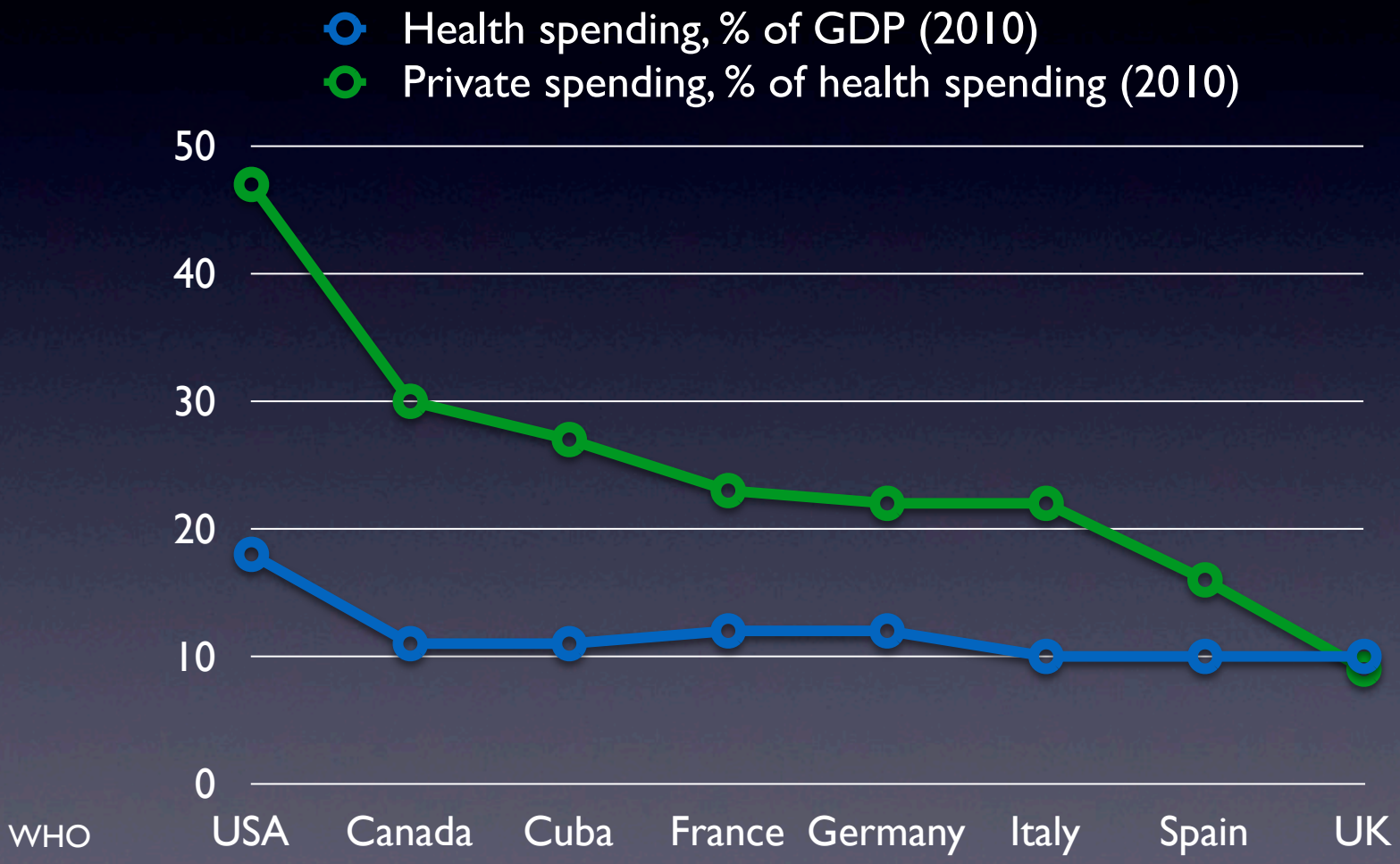
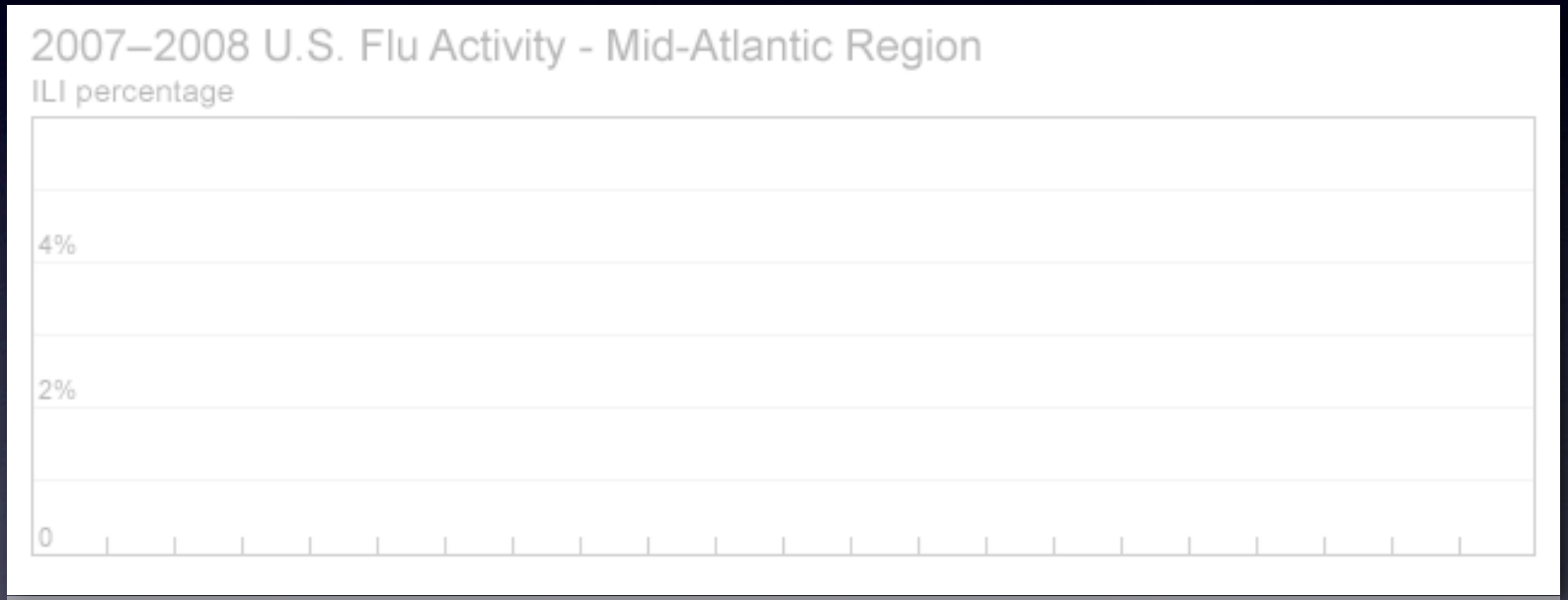
Health Spending



WHO

Wisdom of the Crowd



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.


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

The e-Era

Health

Government

Learning

Education

Service

Commerce

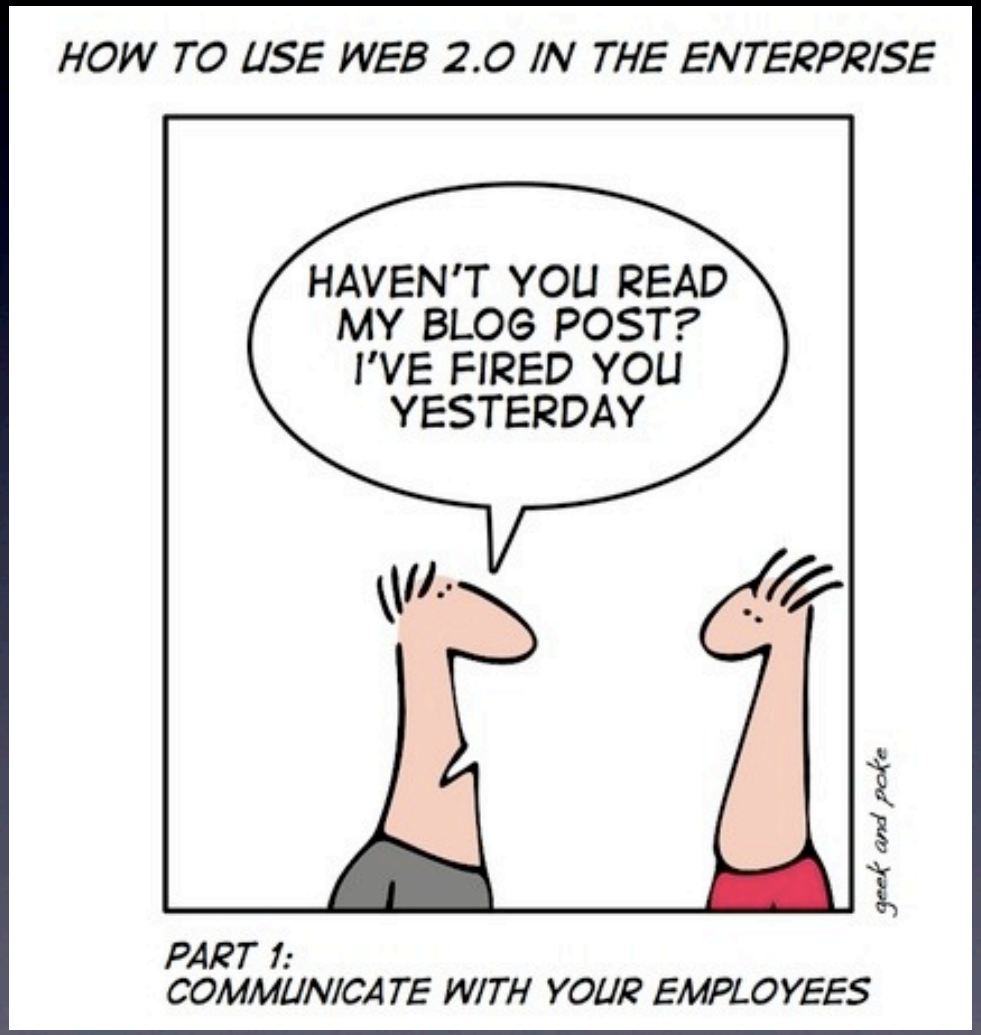
Politics

Security

Business

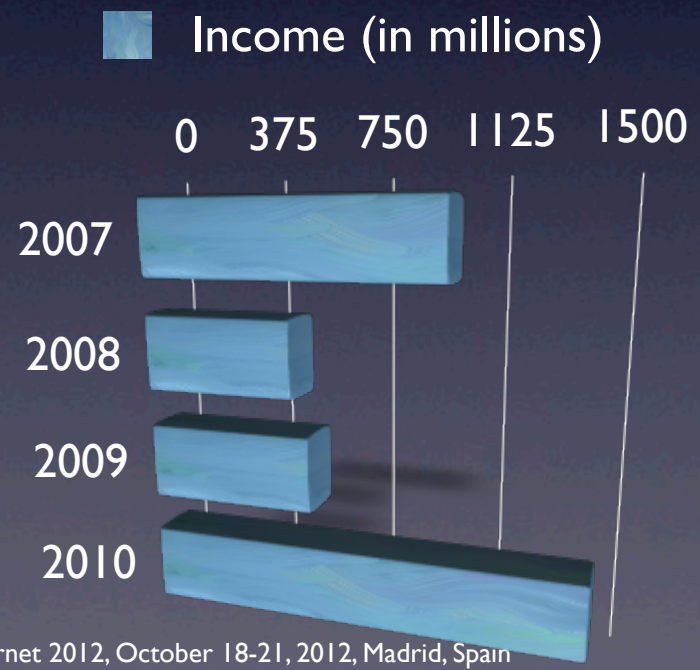
Governance

How NOT to use Web 2.0...



Social Commerce Case Study

- mystarbuckideals.com
- 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

Property	E-Commerce	Social Commerce
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

The e-Era

Health

Government

Learning

Education

Service

e

Commerce

Politics

Security

Business

Governance

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

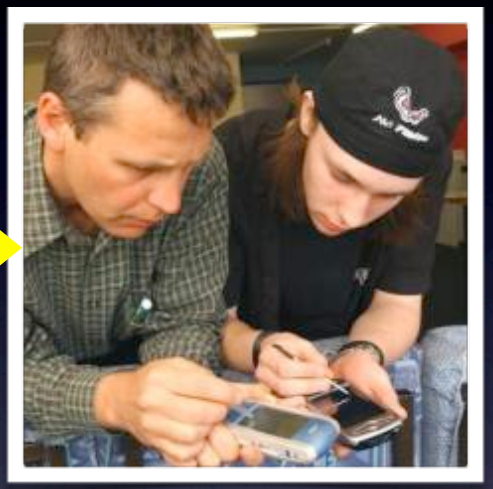
1. Learning is an active process--Active Learner
2. Learners learn to learn as they learn--learning provides context for other learning
3. The action of constructing meaning is mental--engaging the mind
4. Learning involves language: the language we use influences learning
5. Learning is a social activity

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

Evolution of Education

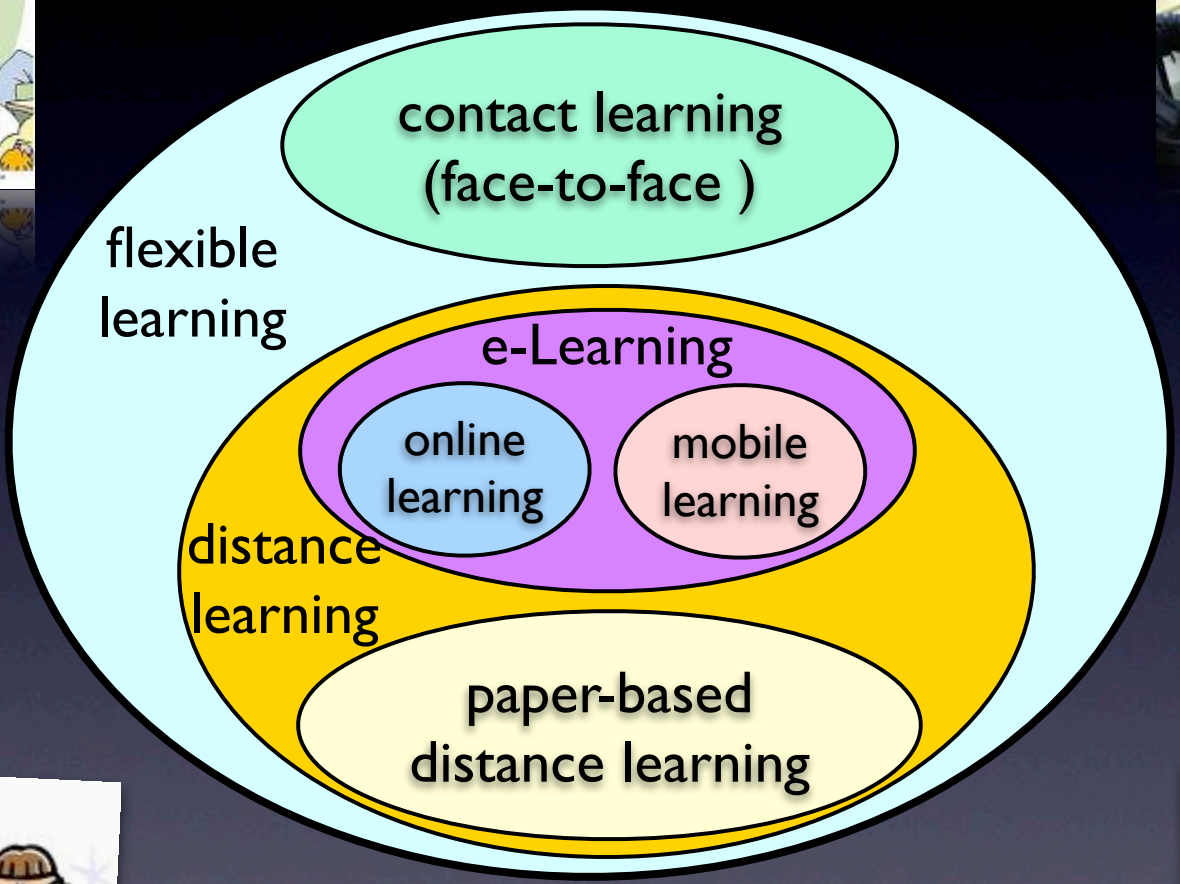


distance learning
d-Learning

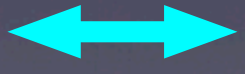
electronic learning
e-Learning

mobile learning
m-Learning


"Am I going too fast for you?"


contact learning
(face-to-face)
flexible
learning
e-Learning
online
learning
mobile
learning
distance
learning
paper-based
distance 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)

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.

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VeriGuide aims to promote academic integrity with VeriGuide's similarity detection capabilities.
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VeriGuide assists educators to assess students' writing ability over time with our readability features.
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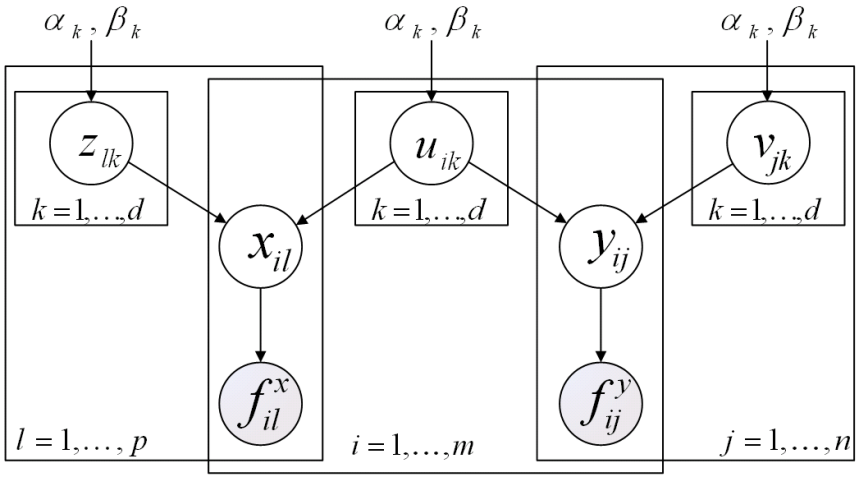
Accessibility
VeriGuide serves to support and maintain assignment database for students and educators.
Learn more
What is Plagiarism Detection?
Partnership with Hong Kong School Net
New Users?
Want to detect whether the document is plagiarized or not? Register now!

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



$$\mathcal{L}(U, V, Z; F^x, F^y)$$
$$= \sum_{i=1}^{m}\sum_{l=1}^{p}(f^x_{il} \ln x_{il} - x_{il}) + \sum_{i=1}^{m}\sum_{j=1}^{n}(f^y_{ij} \ln y_{ij} - y_{ij})$$
$$+ \sum_{i=1}^{m}\sum_{k=1}^{d}((\alpha_k - 1)\ln(u_{ik}/\beta_k) - u_{ik}/\beta_k)$$
$$+ \sum_{j=1}^{n}\sum_{k=1}^{d}((\alpha_k - 1)\ln(v_{jk}/\beta_k) - v_{jk}/\beta_k)$$
$$+ \sum_{l=1}^{p}\sum_{k=1}^{d}((\alpha_k - 1)\ln(z_{lk}/\beta_k) - z_{lk}/\beta_k) + \text{const.}$$

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

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

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

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

Acknowledgments

- Shouyuan Chan (Ph.D.)
- Chen Cheng (Ph.D.)
- Baichuan Li (Ph.D.)
- Guang Ling (Ph.D.)
- Haiqin Yang (Postdoc)
- Connie Yuen (Ph.D.)
- 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

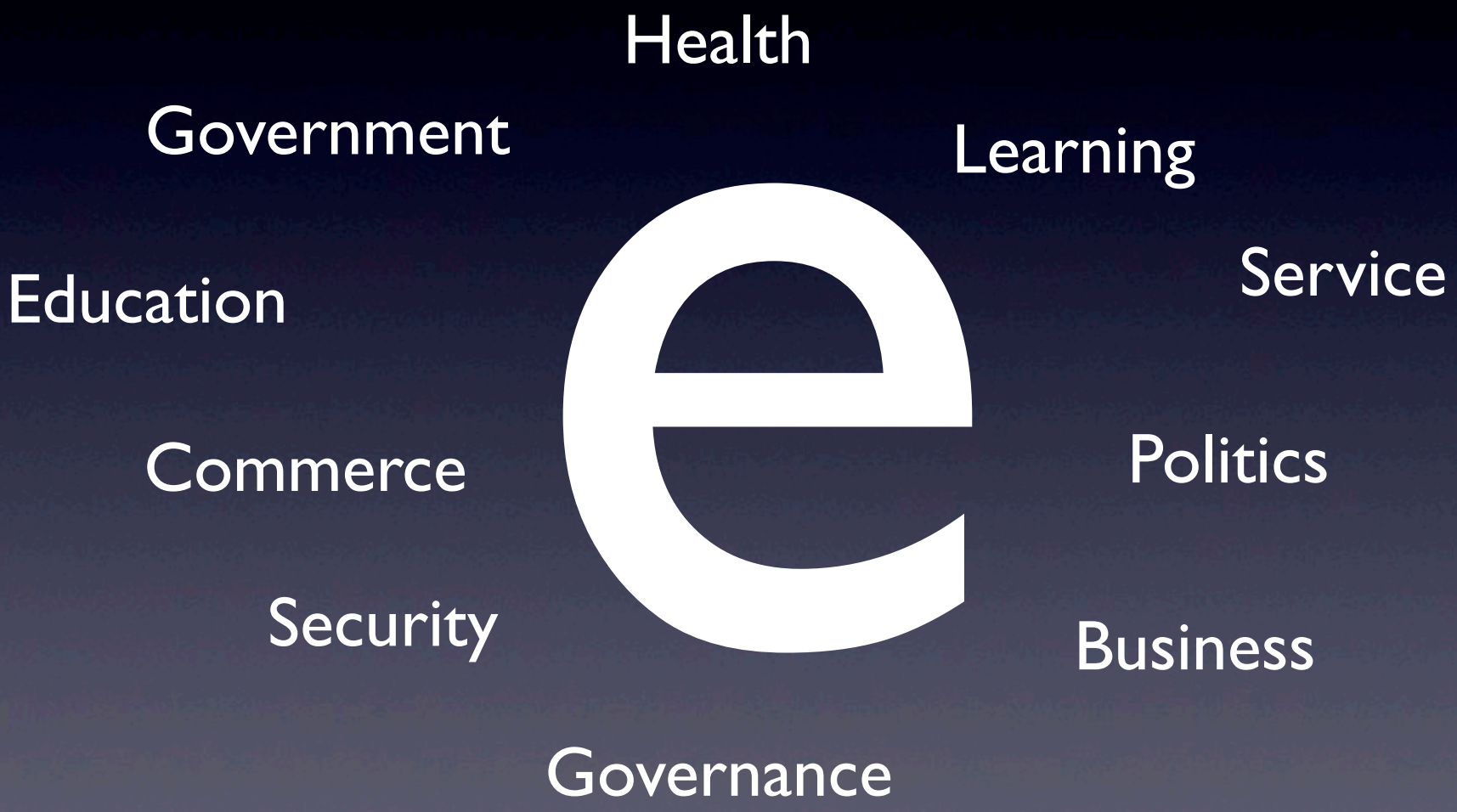
- A Survey of Human Computation Systems (SCA'09)
- Mathematical Modeling of Social Games (SIAG'09)
- An Analytical Study of Puzzle Selection Strategies for the ESP Game (WI'08)
- An Analytical Approach to Optimizing The Utility of ESP Games (WI'08)

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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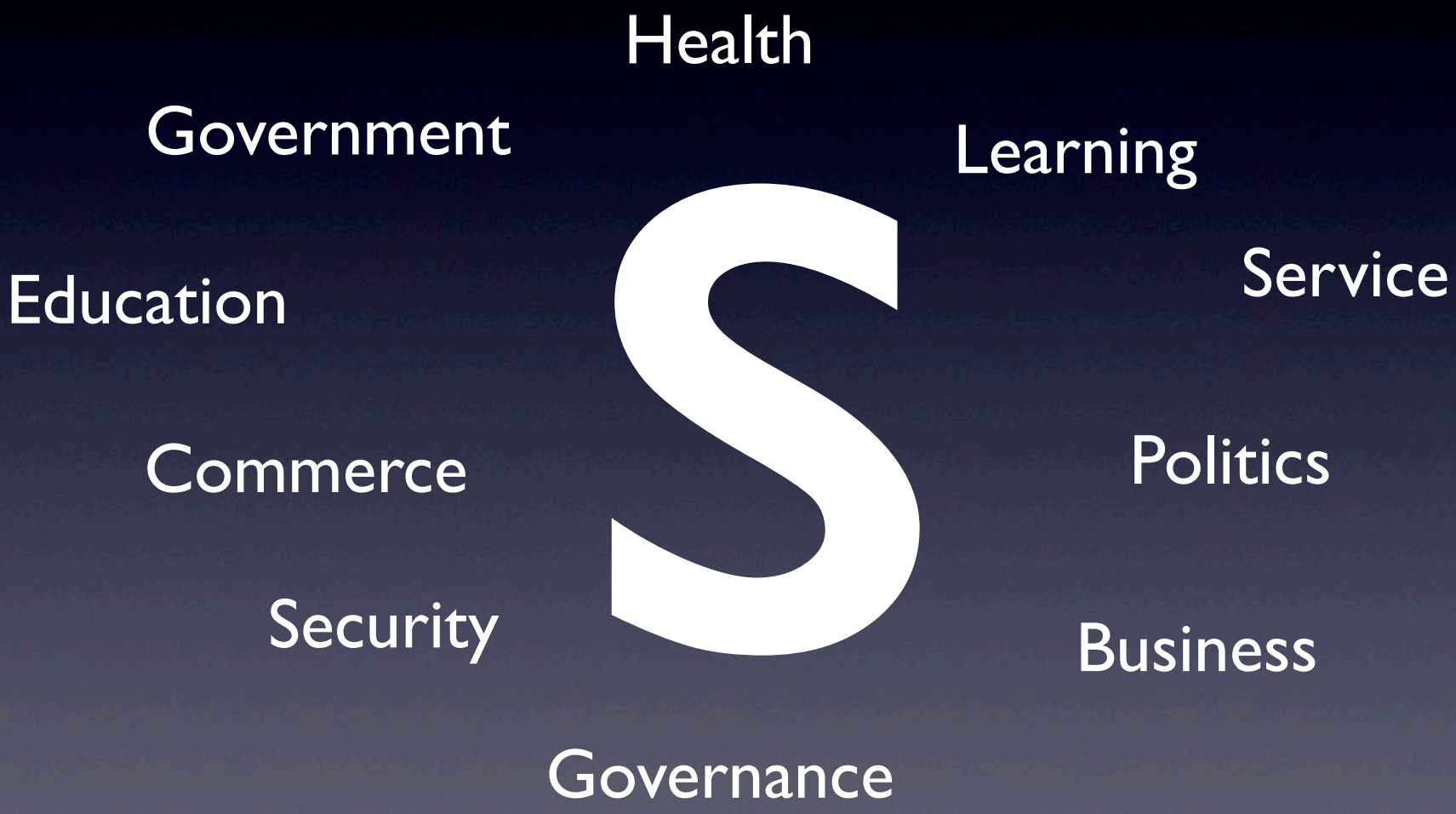
The s-Era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Q & A