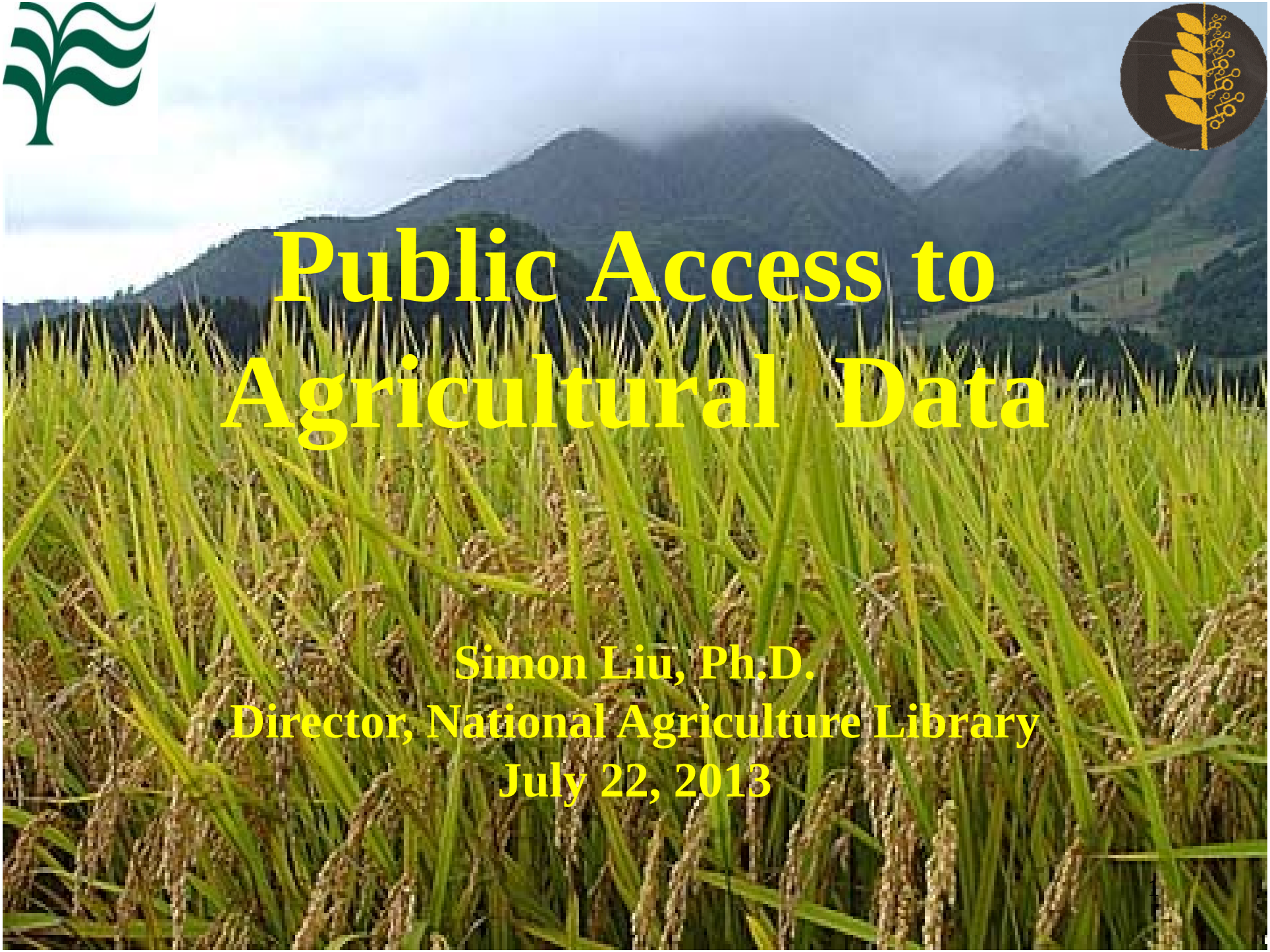


Public Access to Agricultural Data

Simon Liu, Ph.D.
Director, National Agriculture Library
July 22, 2013

Agenda

- Introduction
  - Public Access
  - Trends
- Opportunities & Challenges
- Approach & Strategies
- Action Plans
  - Scholarly Publications
  - Scientific Digital Data
- Q&A

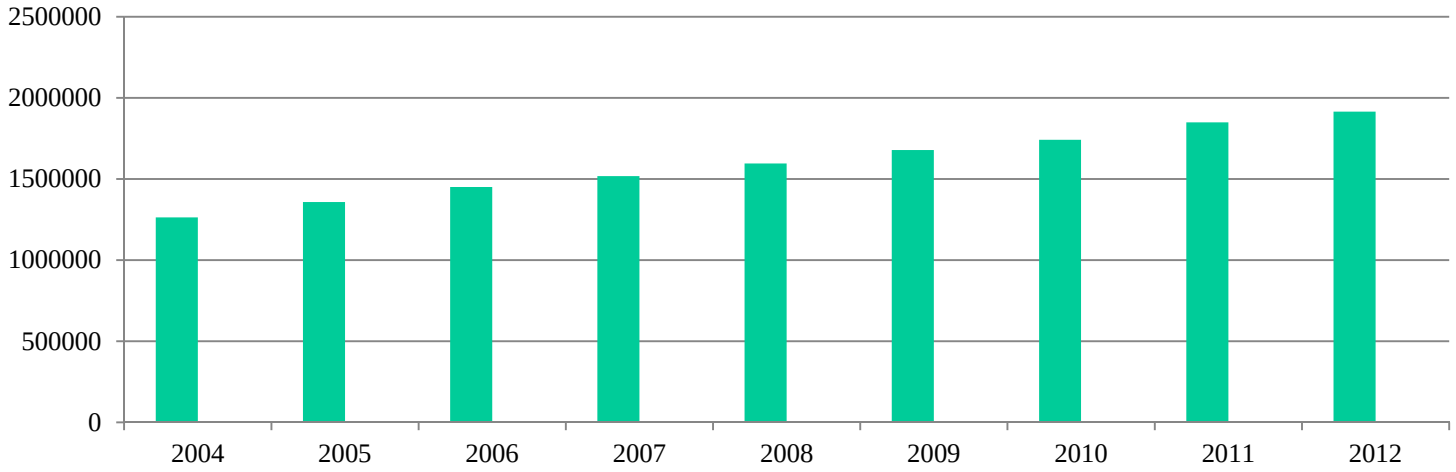
Introduction

- Public access
  - RCUK
  - CISTI
  - Wellcome Trust
- Public access in the US
  - NIH (2008)
  - America COMPETES Reauthorization Act (12/2010)
  - Office of Science & Technology Policy (OSTP) Public Access Memo (02/2013)
  - Fair Access to Science &Technology Research Act (02/2013)
  - Executive Order – Making Open and Machine Readable the New Default for Government Information (05/2013)
- Public access to research results
  - Scholarly publications
  - Scientific digital data

Scholarly Publication Trends

- Growing number
- Multimedia components
- Increasing interactivity & dialogue
- Linkages to content environments
- Mobilization

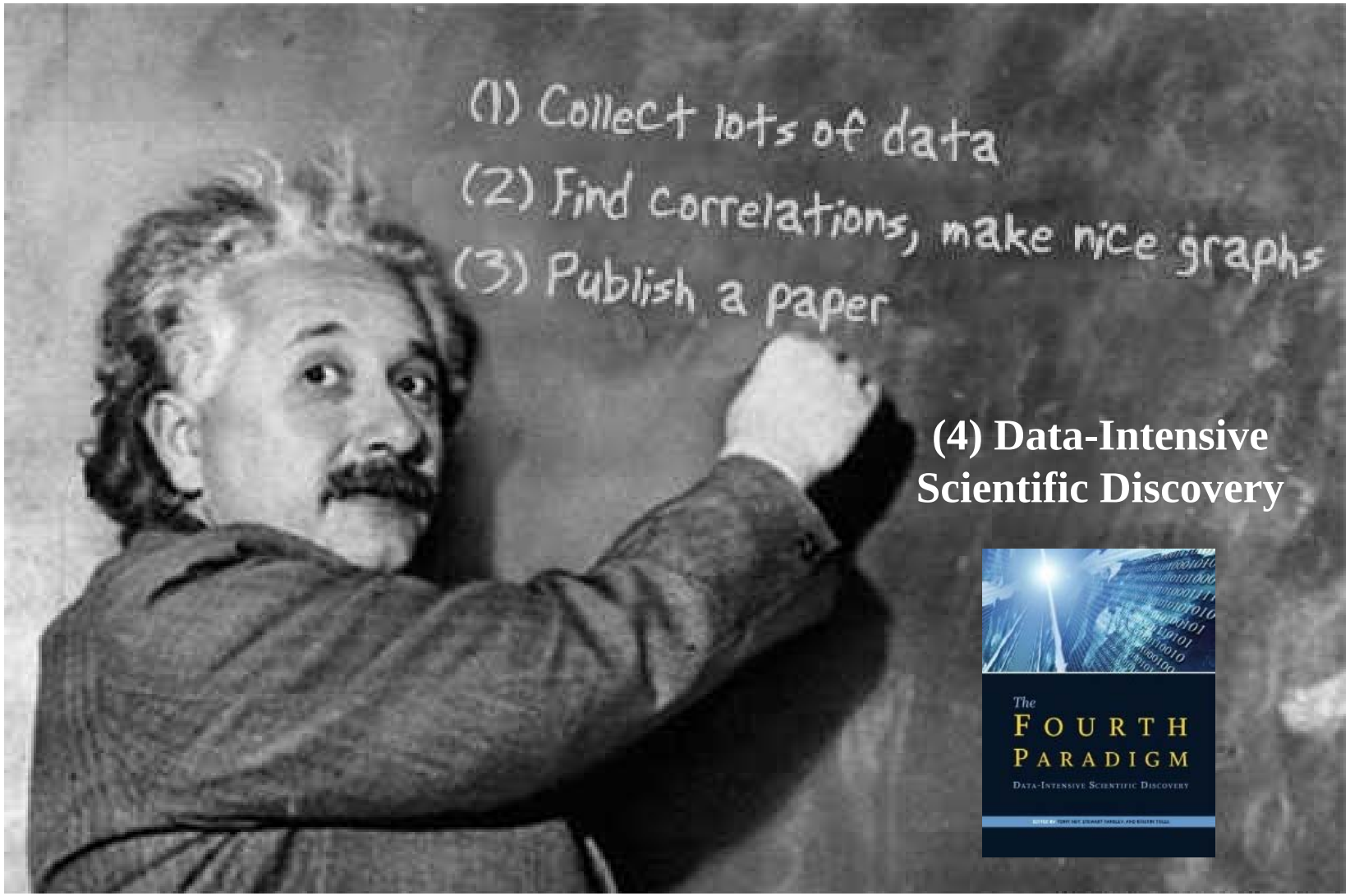
Scholarly Publishing (2004-2012)



Source: Scopus

Scientific Digital Data Trends

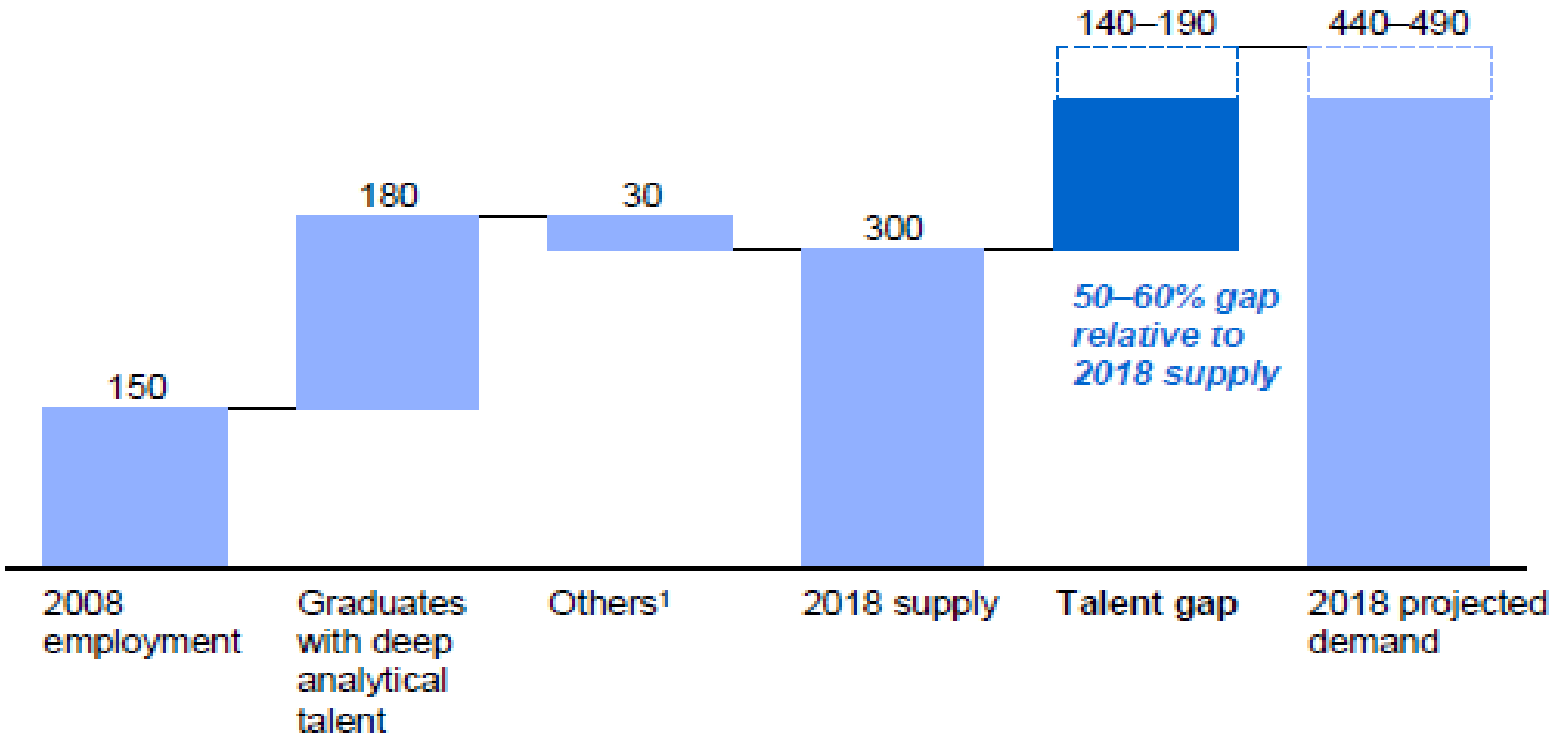
New Research Opportunities



General Talent Shortage

Demand for deep analytical talent in the United States could be 50 to 60 percent greater than its projected supply by 2018

Supply and demand of deep analytical talent by 2018
Thousand people



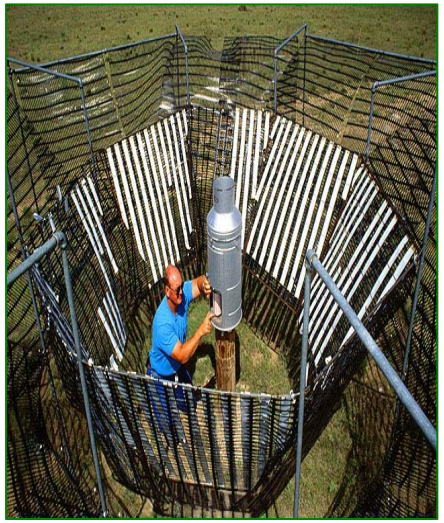
1 Other supply drivers include attrition (-), immigration (+), and reemploying previously unemployed deep analytical talent (+).
SOURCE: US Bureau of Labor Statistics; US Census; Dun & Bradstreet; company interviews; McKinsey Global Institute analysis

Unique Ag Data Challenges

Most agricultural data are generated & managed locally.

Unique challenges

- Data dispersion
- Data heterogeneity
- Data sharing



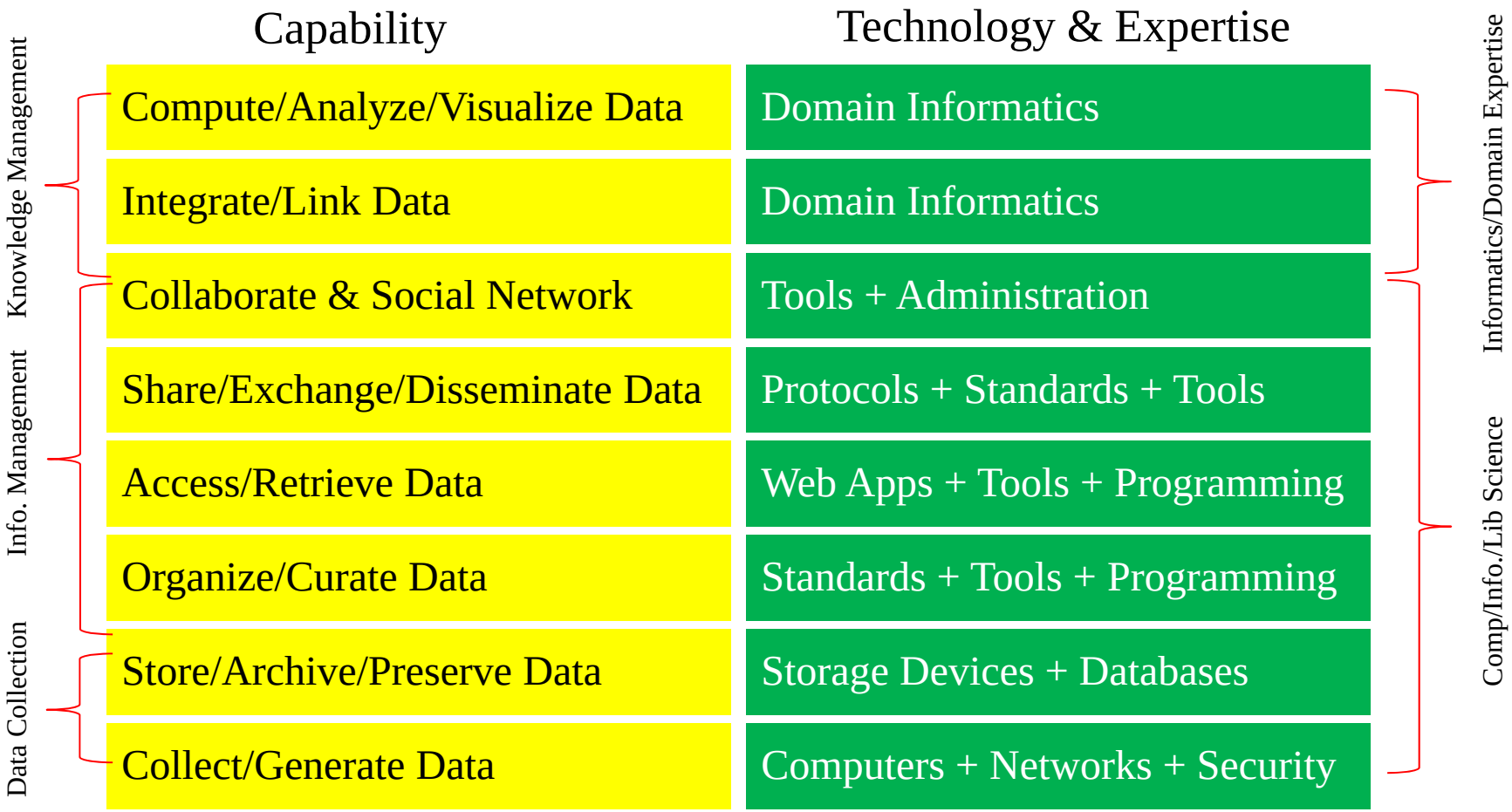
How to Respond?

Business as usual?

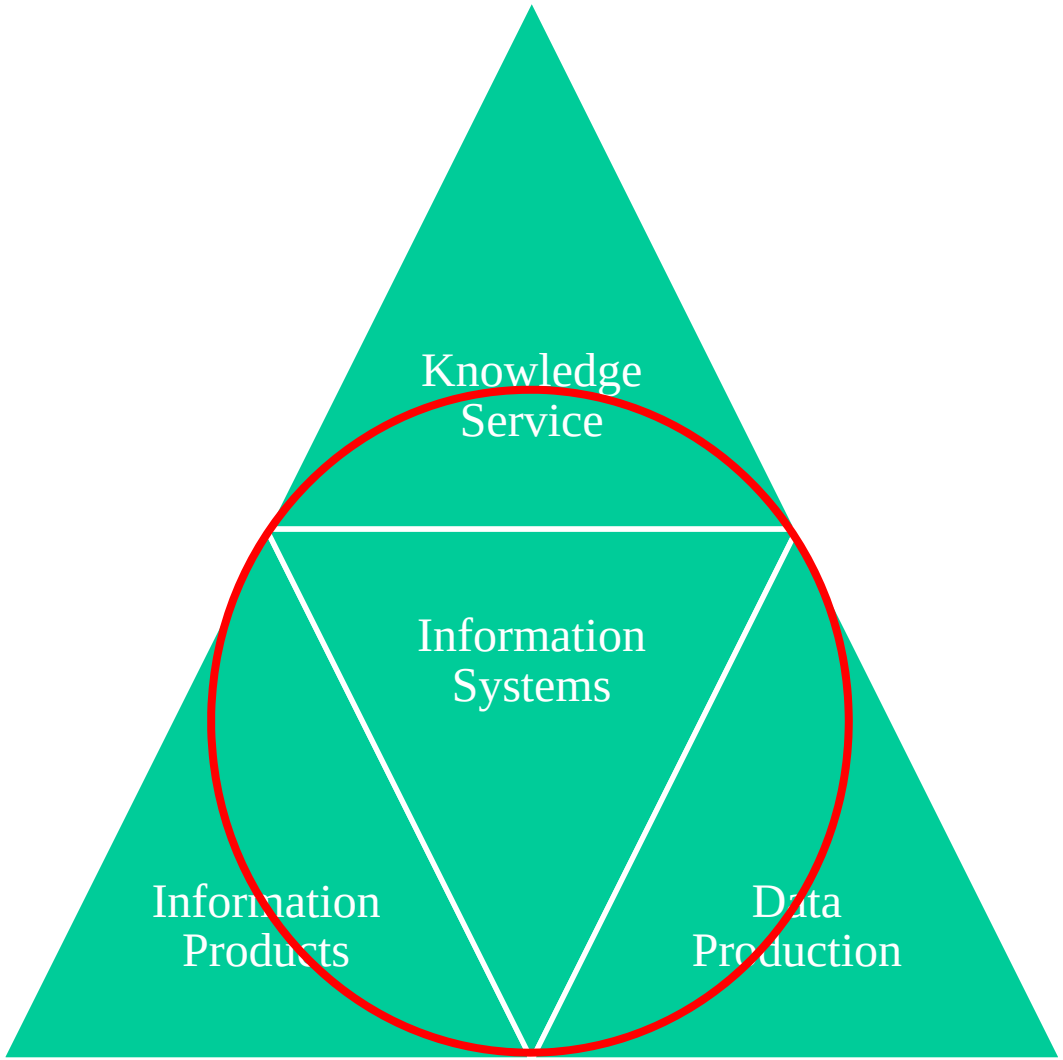
A New Approach

We need something better, Jim !

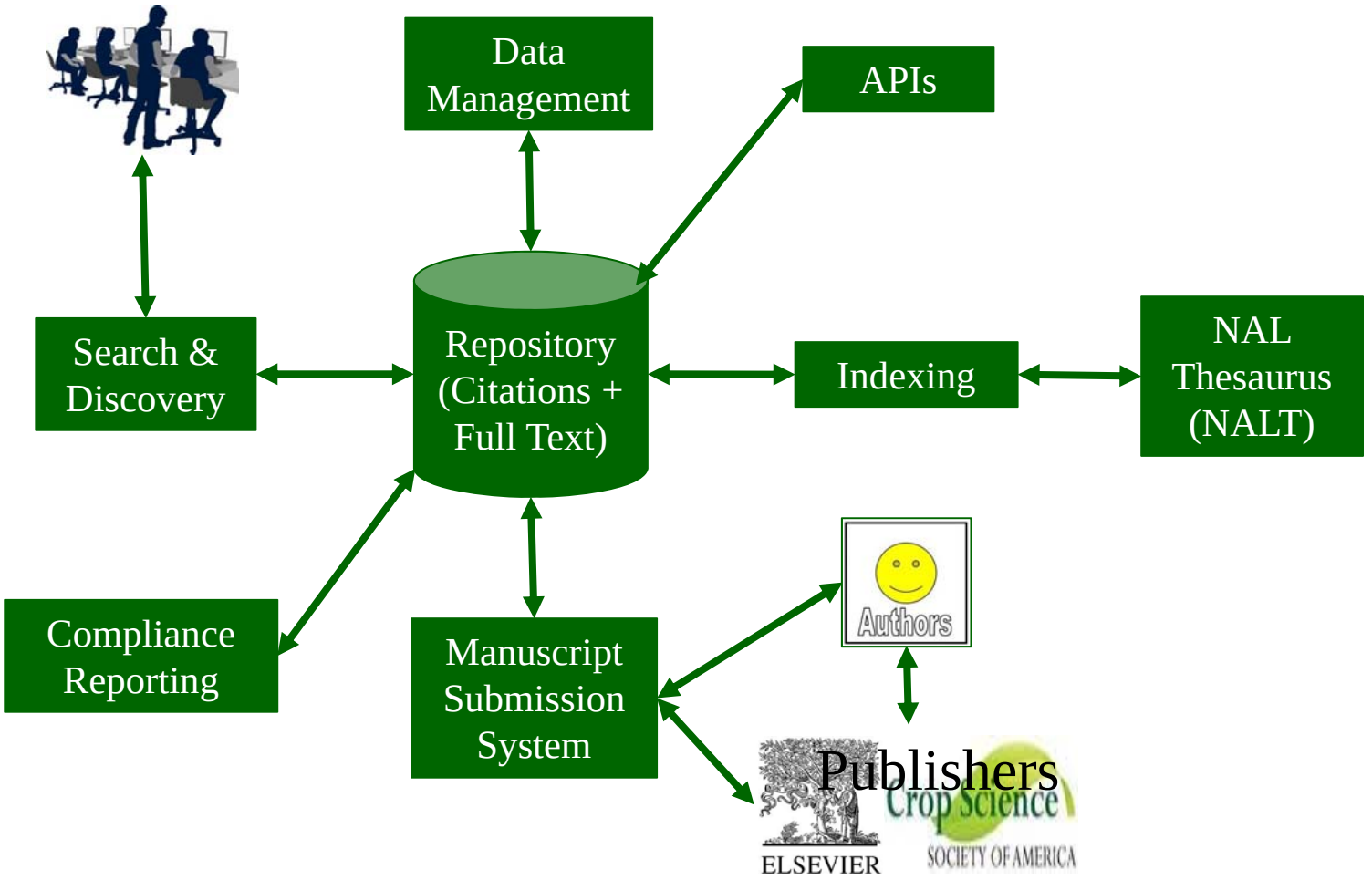
Needs Analysis



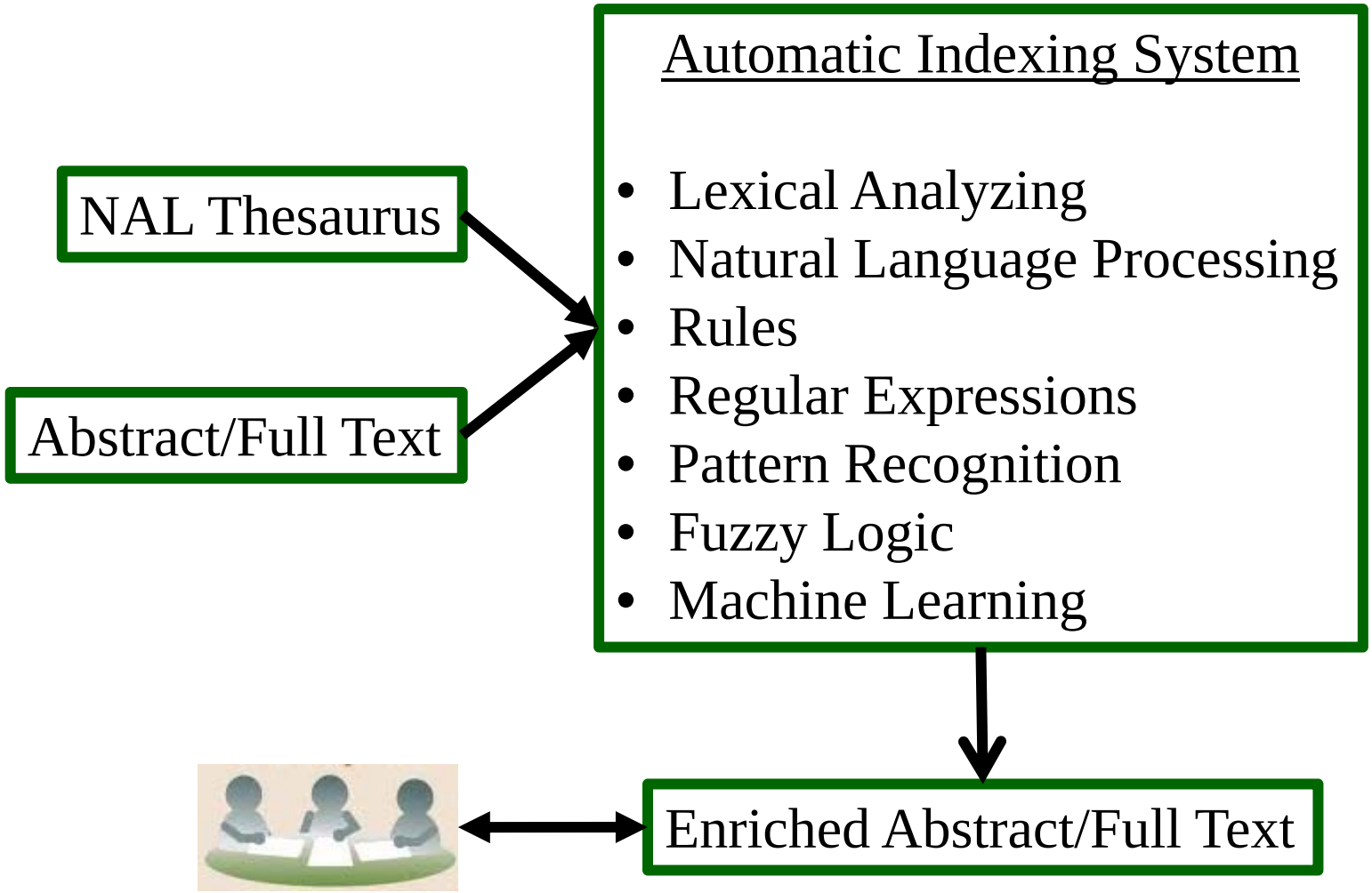
NAL New Organization



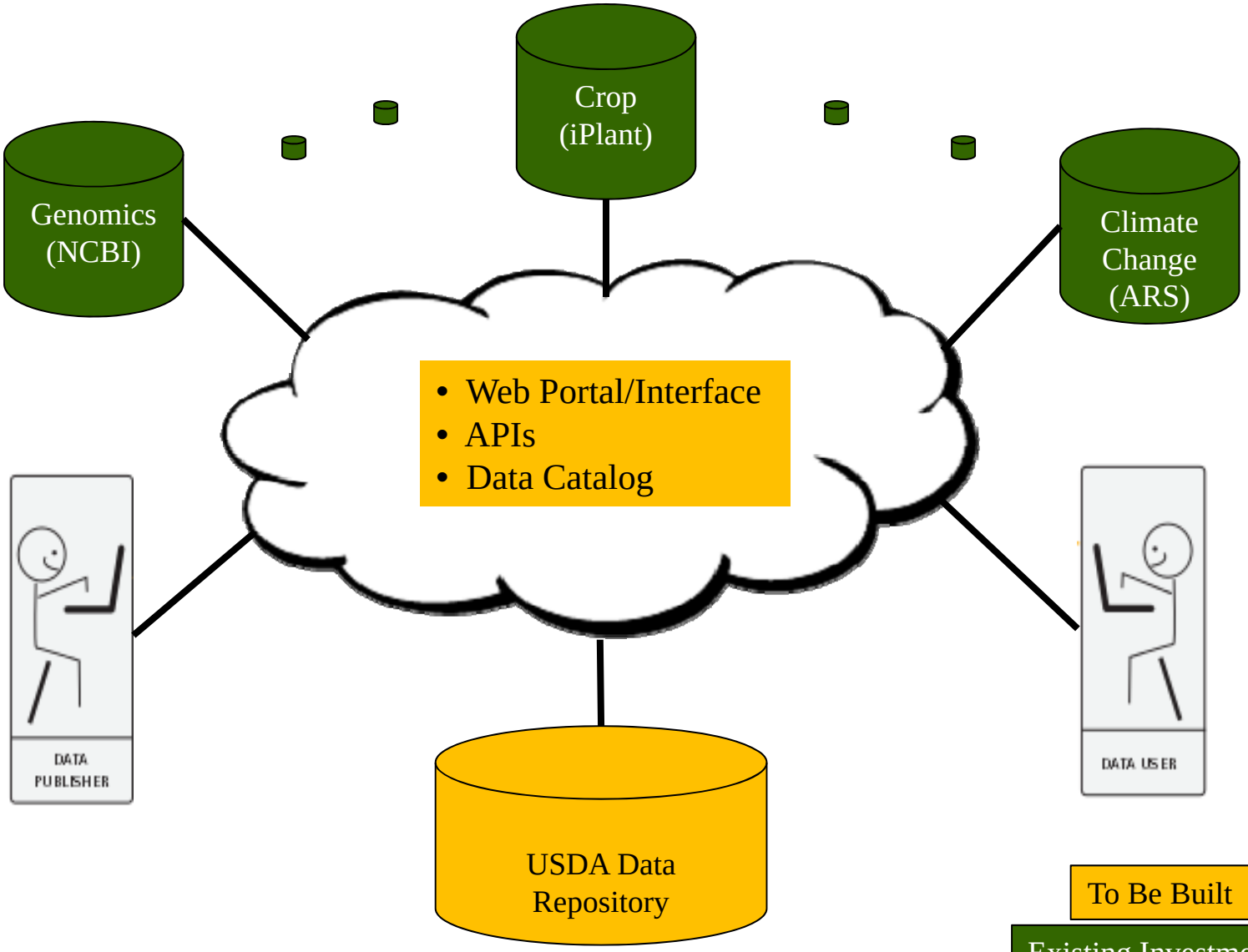
Pub Ag – Scholarly Publications



Automatic Indexing



Ag Data – Scientific Digital Data



A Practical Hybrid Approach

- Investments
  - Existing & new
  - USDA & external
- Centralized & Distributed
  - Centralized data catalog
  - Distributed data sets
- Standardized & Domain Specific
  - Standard data catalog metadata
  - Domain specific data formats
- Access – Centralized & distributed web portals/interfaces

Journey Together – IAALD

Simon Liu
Simon.liu@ars.usda.gov
(301)504-5248

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INYUVESI YAKWAZULU-NATALI

The African Centre for Crop Improvement (ACCI)

INSPIRING GREATNESS

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INYUVESI YAKWAZULU-NATALI

Location of ACCI

- A specialist unit at the University of KwaZulu-Natal, Republic of South Africa

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INYUVESI YAKWAZULU-NATALI

Mission of ACCI

- Est. 2001 with core-funding from the Rockefeller Foundation; now funded by the Alliance for a Green Revolution in Africa (AGRA – a proxy of BMGF)
- Mission – to train PhD level African plant breeders, on African crops, in Africa, on food security crops
- Students from 14 Eastern & Southern African countries
- Mandate to train >80 PhDs in plant breeding at world class level

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INYUVESI YAKWAZULU-NATALI

Vision of ACCI

- To produce world class plant breeders, who will succeed in Africa, despite tough working environments, limited resources
- That all of the graduates will succeed in their home country, at their home research station
- That each student's PhD study is just the start of a much bigger, long-term breeding program, conducted in their home country;

That all of students have to graduate on time & serve

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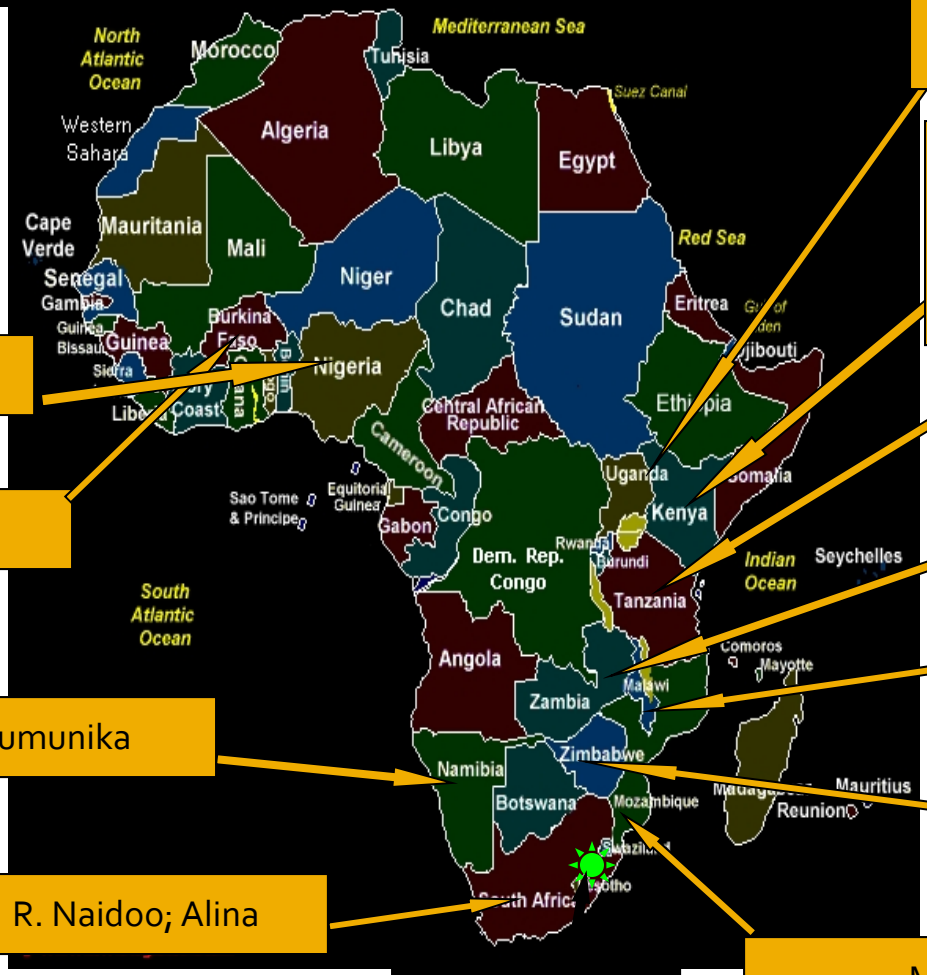
The ACCI program

- Unique structure in South African context
  - Coursework in SA (1/2 years)
  - Research in-country (3 years)
- Unique supervision arrangements
  - Staff full-time supervisors
  - Supervise in RSA and in-country
  - Also In-Country Co-Supervisors
- Broad training as plant breeding leaders, & specialist research tools

Part of the network



ACCI, UKZN

A. Efisue

J. Tignegre

R. Kaumunika

R. Naidoo; Alina

Abalo, Nkalubo, Owere, Asio Orawu, Mukankusi, Robooni Barekye, Kagezi, Lubade, Lamo, Kagoda, Kasozi, Olupot,

Karari, Kamau, Kivuva Munga, Leley, Kwena, Odouri, Ndung'u, Ojwang, Kimani, Gichuru, Murenga

K. Mtunda, A. Mushongi, Killenga, Nyaligwa, Bucheyeke

F. Miti, M. Chiona, M. Mukanga, Chikoti, Abel

Kananji,Muzengeza, Banda, Chintu, Chamango

J. Derera, L. Machida, J. Sibiya, I. Makanda

Mariote, Fato, Chiulele, Chauque, Hilario, Amade

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Support by Mann Library

- Library loan services
- Students conduct literature search
- Then send e-mail request to Mann Library
- Within a day or 2 they get a pdf copy or scanned copy of the paper

CHALLENGES: lack of funding due to budget cuts at AGRA threatens this facility

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INYUVESI YAKWAZULU-NATALI

Support by Cornell

- Coordination of research proposal reviews
- Research proposal review through video conferences – students defend proposals
- Facilitated by Vernon Gracern & Stefan Einarson
- Training students in data bases & Communication by Baseema

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

Support by Cornell

- Research proposals integrate socio-economic with plant breeding research problems
- Research proposal linked with breeding program – providing solutions for Africa
- Research proposals are subjected to rigorous review by international experts
- Independent reviewers selected by Cornel
- Students defend proposals in a Video conference with Panellists sitting at Cornell University

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INYUVESI YAKWAZULU-NATALI

Challenges: publications

- >100 articles published in peer reviewed journals
- The Literature Reviews & Participatory Rural Appraisals by 4 student Cohorts published in an annual yearbook of the ACCI
- >100 abstracts in conference proceedings etc

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Challenges: Access to information

- Lack of suitable/accredited local journals for students to publish “local” African information
- Limited connectivity in many research stations across Africa limit access to e-learning resources
- Situate in South Africa, the ACCI PhD program does not have access to free Teal
- 10% budget cut on library services may reduce access to information data bases & journal subscription

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INYUVESI YAKWAZULU-NATALI

Opportunity for e-learning resources

- The BMG foundation is giving a grant to Iowa State University to develop e-lectures for a new MSc program in commercial plant breeding
- Proposal development still in progress
- New MSc program to be launched at 3 universities – KNUST (Ghana), Makerere (Uganda) & KwaZulu-Natal (South Africa)

Graduation – 50 plant breeders but not assured of continuity; many challenges?

E-Learning with CTL

Stefan Einarson

Cornell University

1963–2013

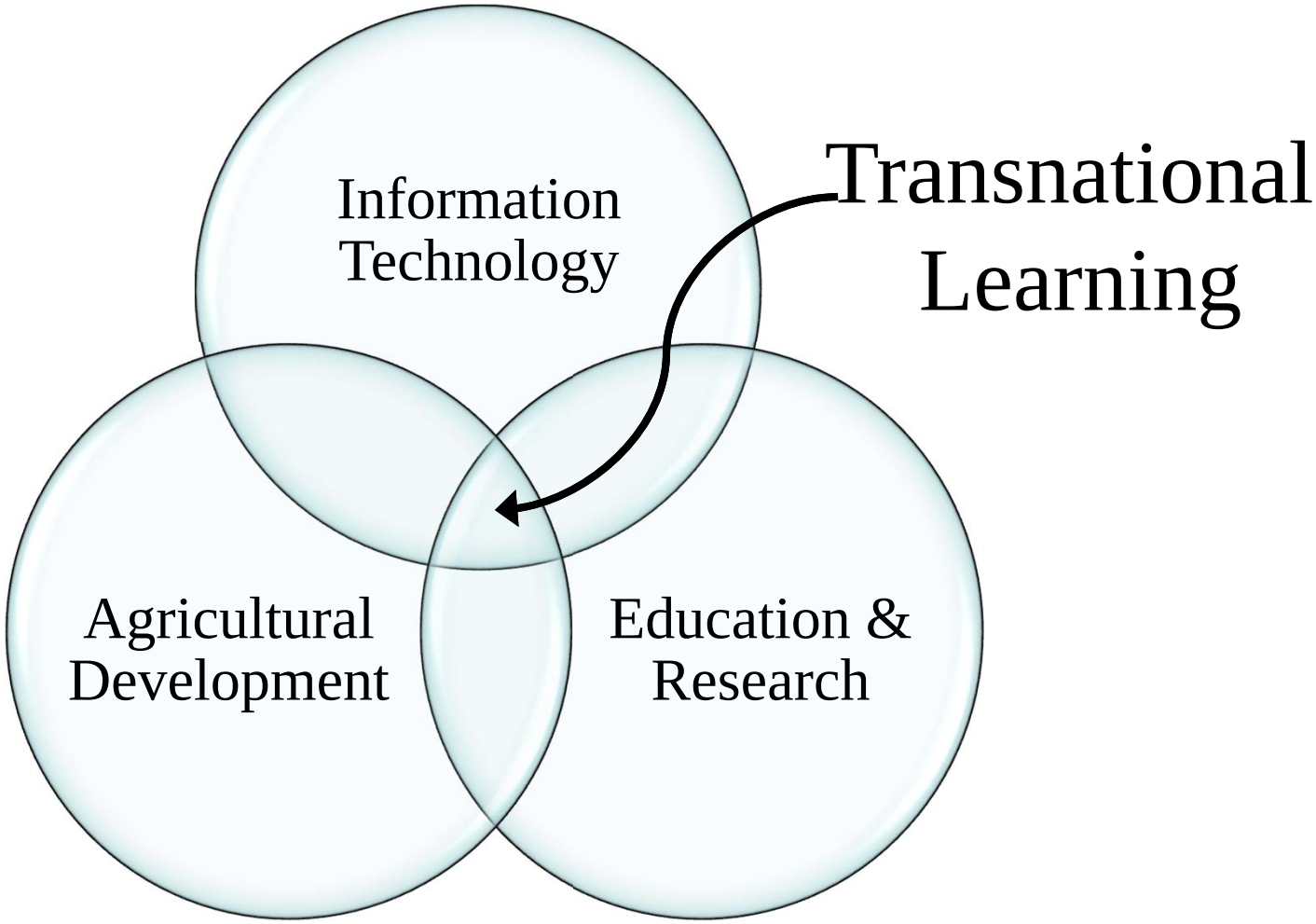
IP•CALS
International Programs
College of Agriculture and Life Sciences

IAALD World Conference
July 2013

Transnational Learning

A program that leverages experience and resources from Cornell University's College of Agriculture and Life Sciences to work with partner institutions, mainly in the developing world, with the aim of increasing food security.

Area of Concentration



Transnational Learning

Three program examples:

- Working with University Partners – to help support their local teaching with e-learning from Cornell
- Working with Peer Organizations – helping them to establish streaming media production platforms
- Providing a Conduit to Cornell's Mann Library – to provide a mechanism for utilizing Mann's extensive resources for partner institutions

Transnational Learning

The project has expanded to providing content and interactions in:

- 11 African countries
- Thailand
- Philippines
- India
- Mexico

Transnational Learning

Selected topics (over 1,000 modules):

- Mendelian, quantitative, and population genetics
- Plant reproductive biology
- Experimental design and statistics
- Molecular genetics, molecular markers, and applied genomics
- Plant pathology, entomology, and IPM
- Cell and tissue culture methods
- Transformation, transgene construction and analysis
- Variety release, registration, IPR, and distribution

Example Digital Class

AIP Project

Establishing e-learning centers at:

- BHU
- AAU
- SVAPUT – Meerut

Teaching them about e-learning

Helping them create e-learning platforms

Help them learn to create e-learning content

AIP Project

Establishing OLAT as a learning platform

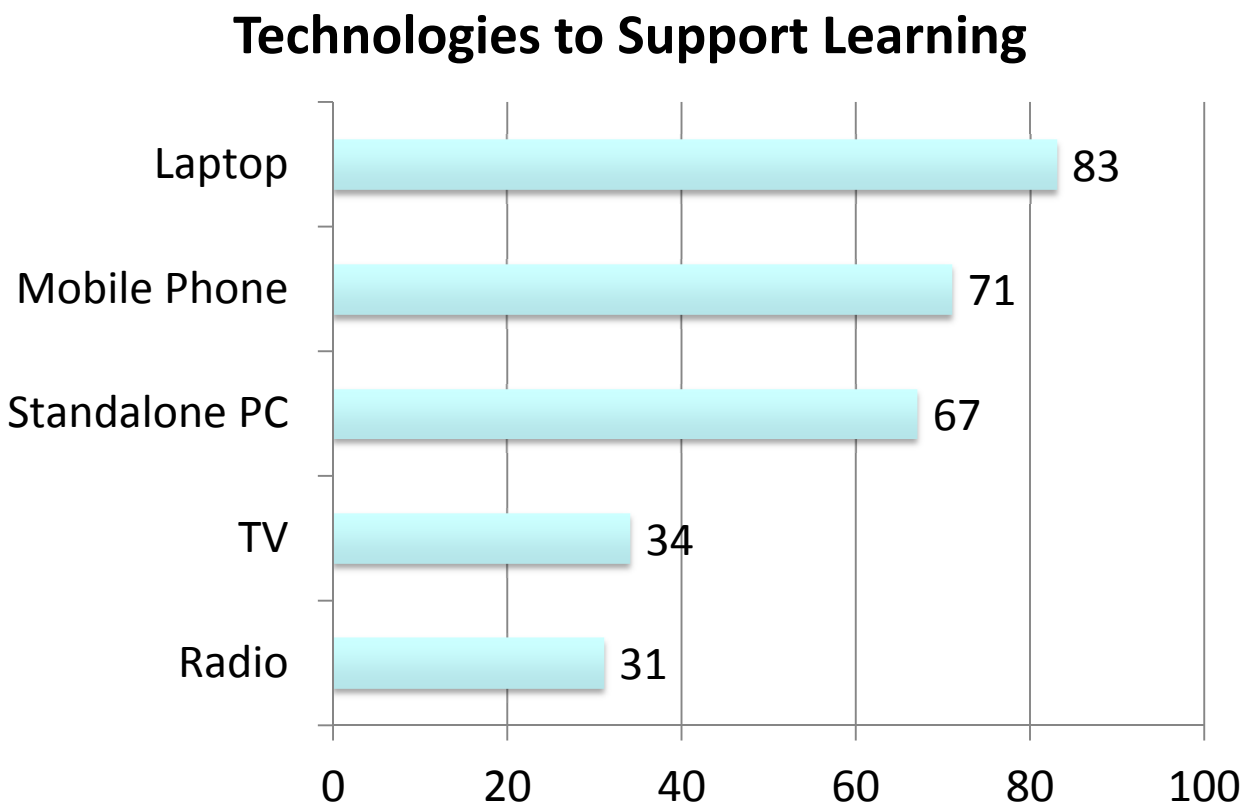
- Assignments
- Readings
- Chat with professors
- Quizzes
- Extra materials for independent learning
- Forum for students to help each other
- Calendar for when things will happen

Summary of E-Learning Africa Report 2013

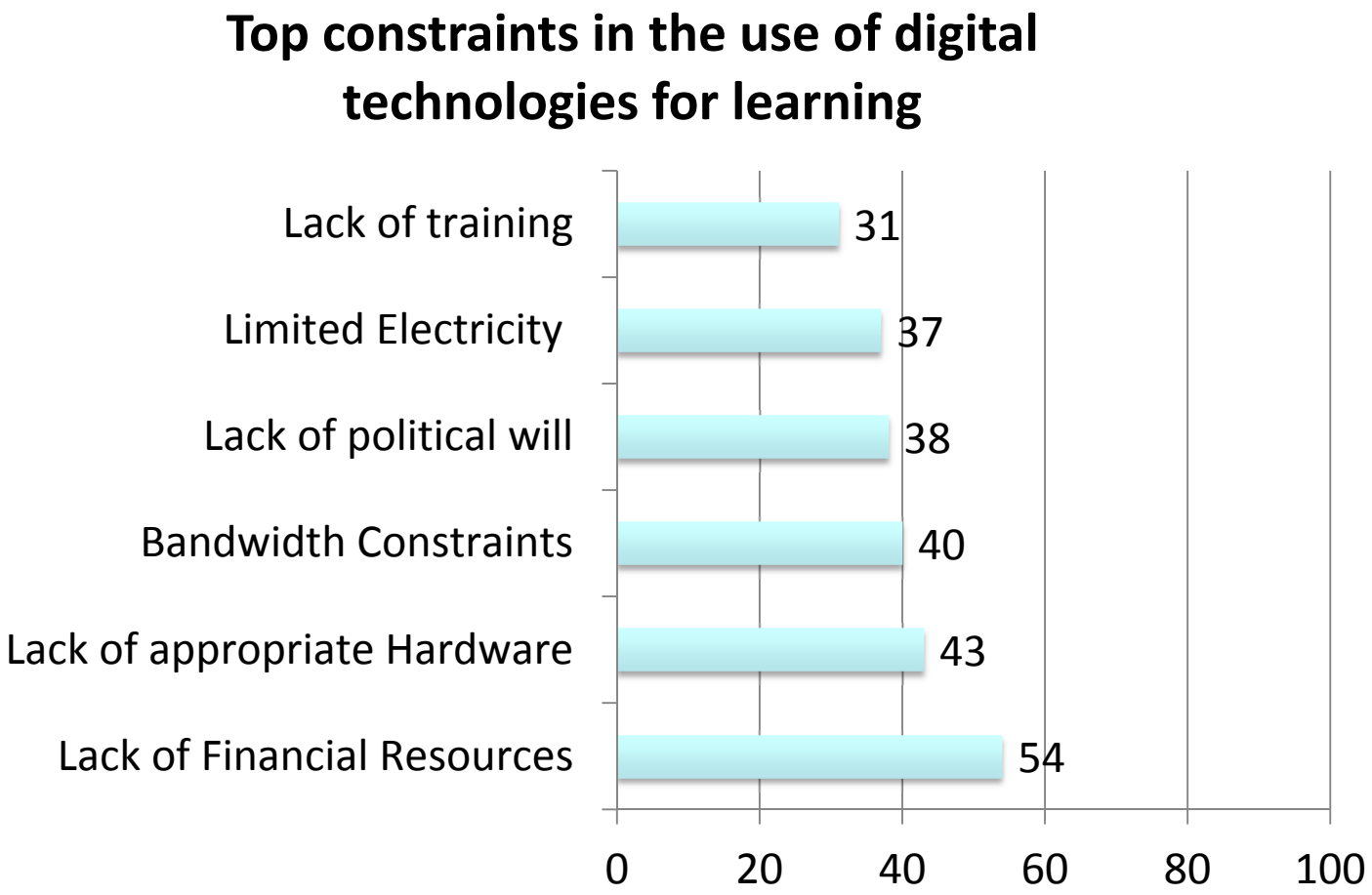
Survey:

- 42 African countries
- 413 respondents
- Targeted at practitioners involved in e-learning

Summary of E-Learning Africa Report 2013



Summary of E-Learning Africa Report 2013

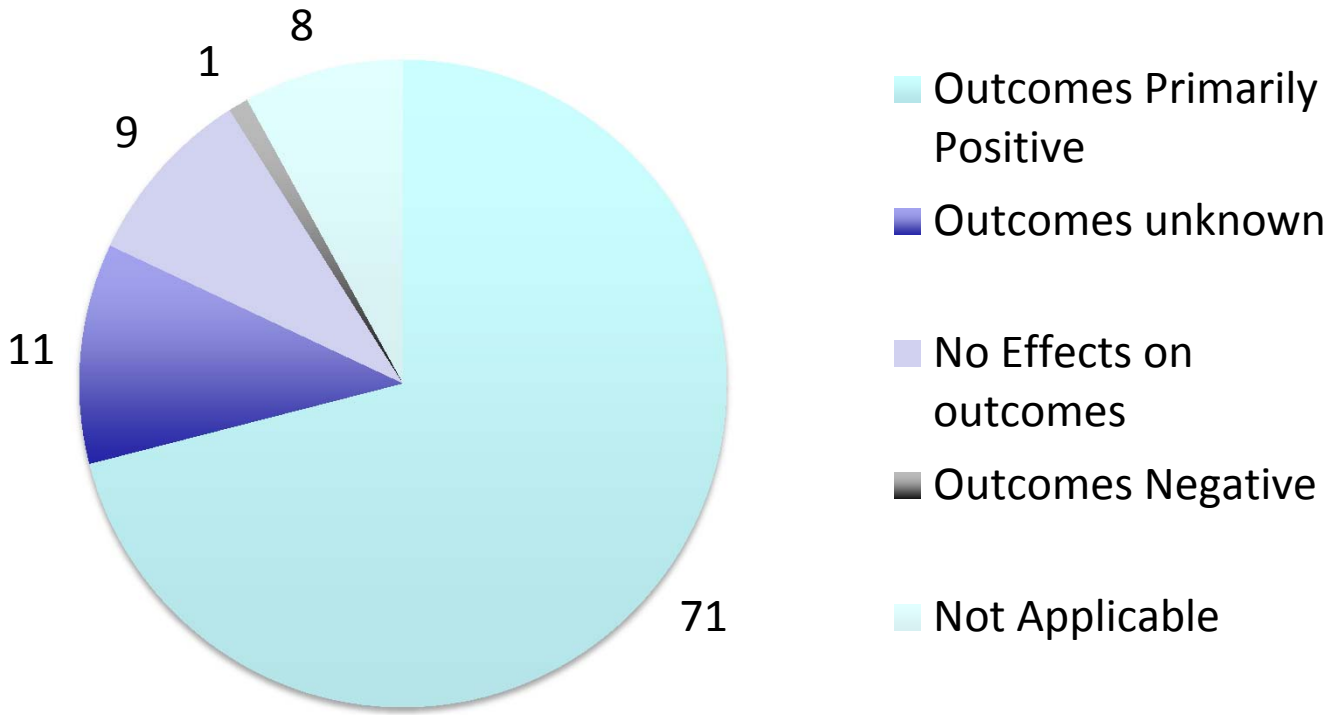


Summary of E-Learning Africa Report 2013

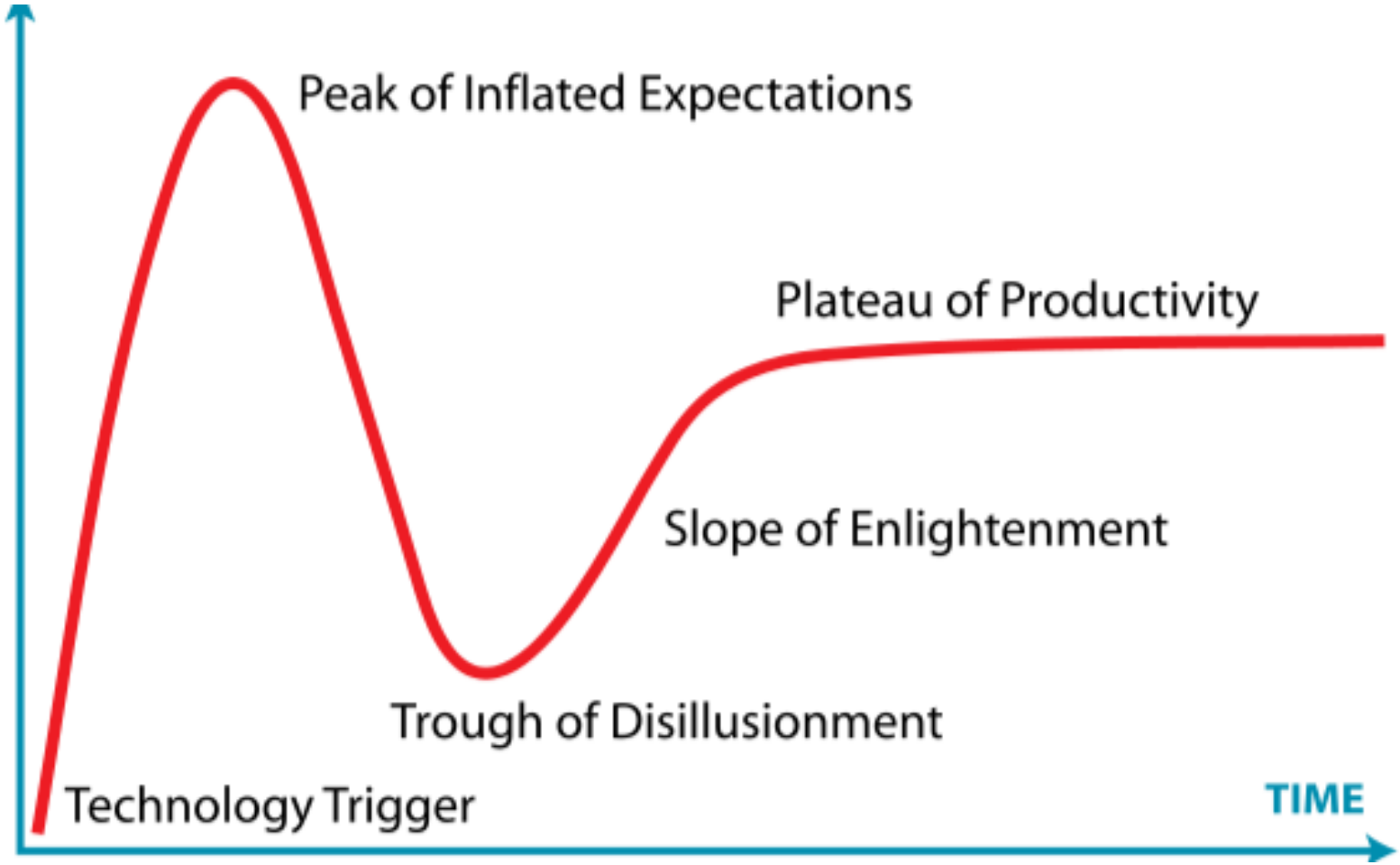
Over 50% said that they had experienced some form of failure with respect to e-learning

Summary of eLearning Africa Report 2013

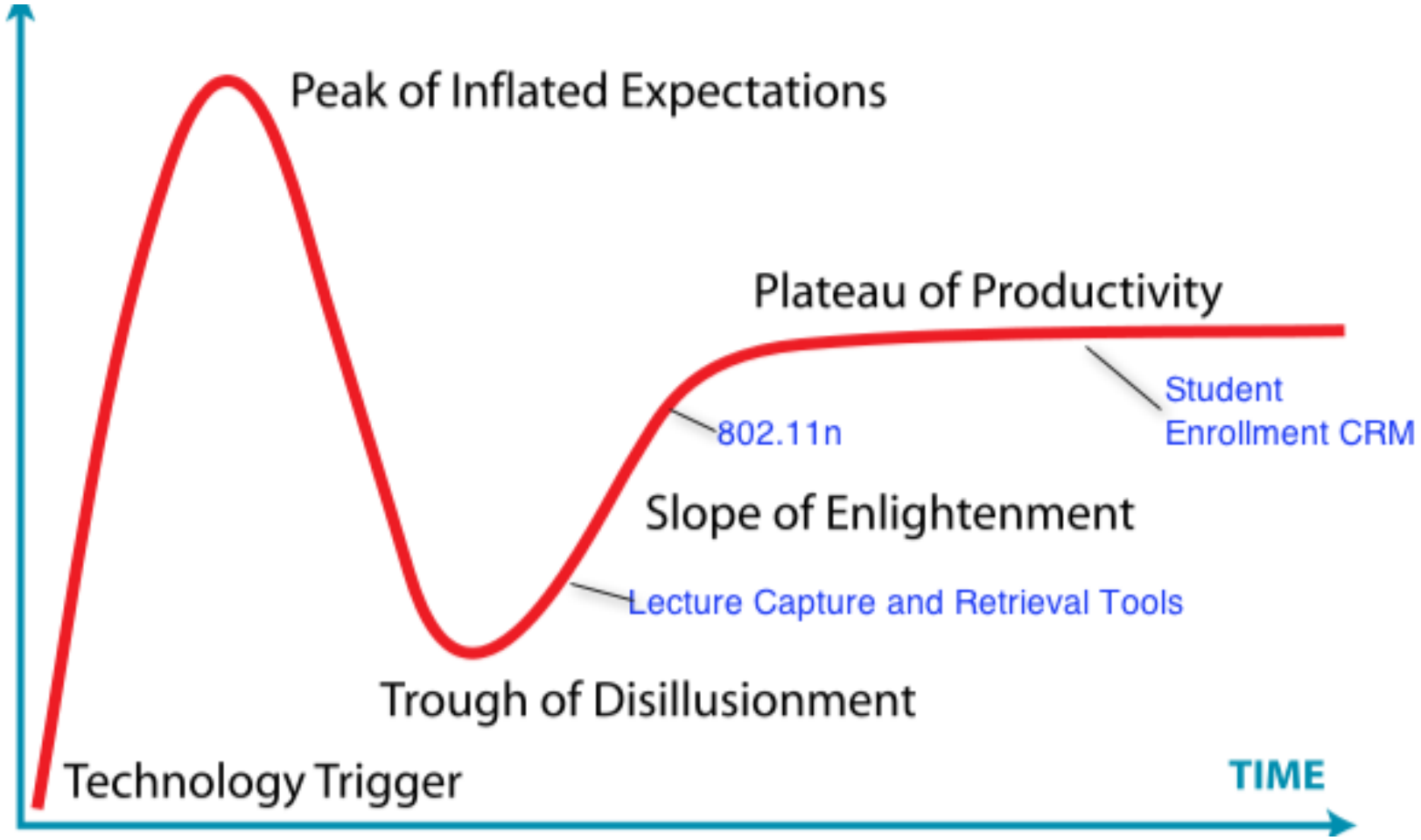
What effects does technology have on learning outcomes



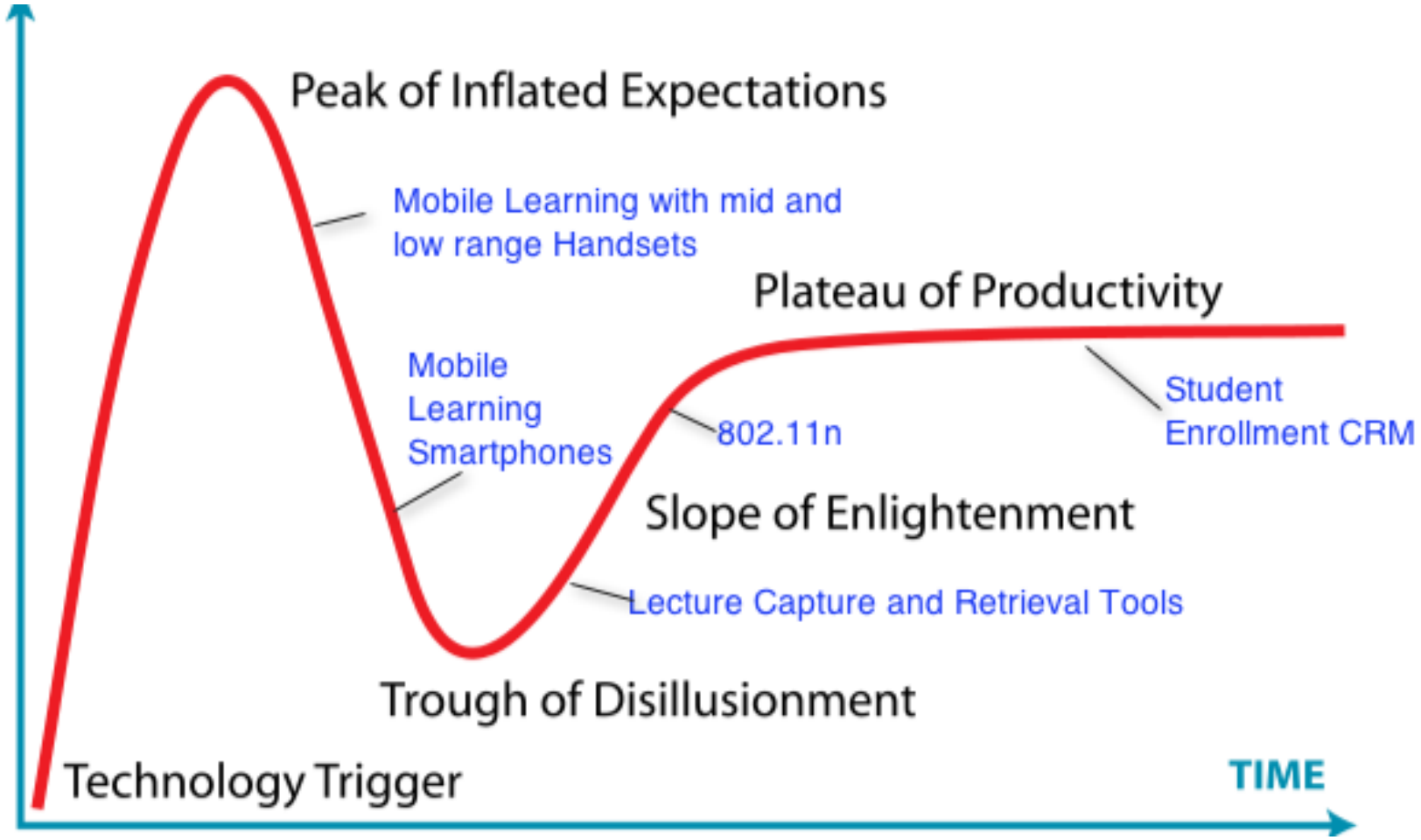
Gartner Group Technology Hype Cycle - Education



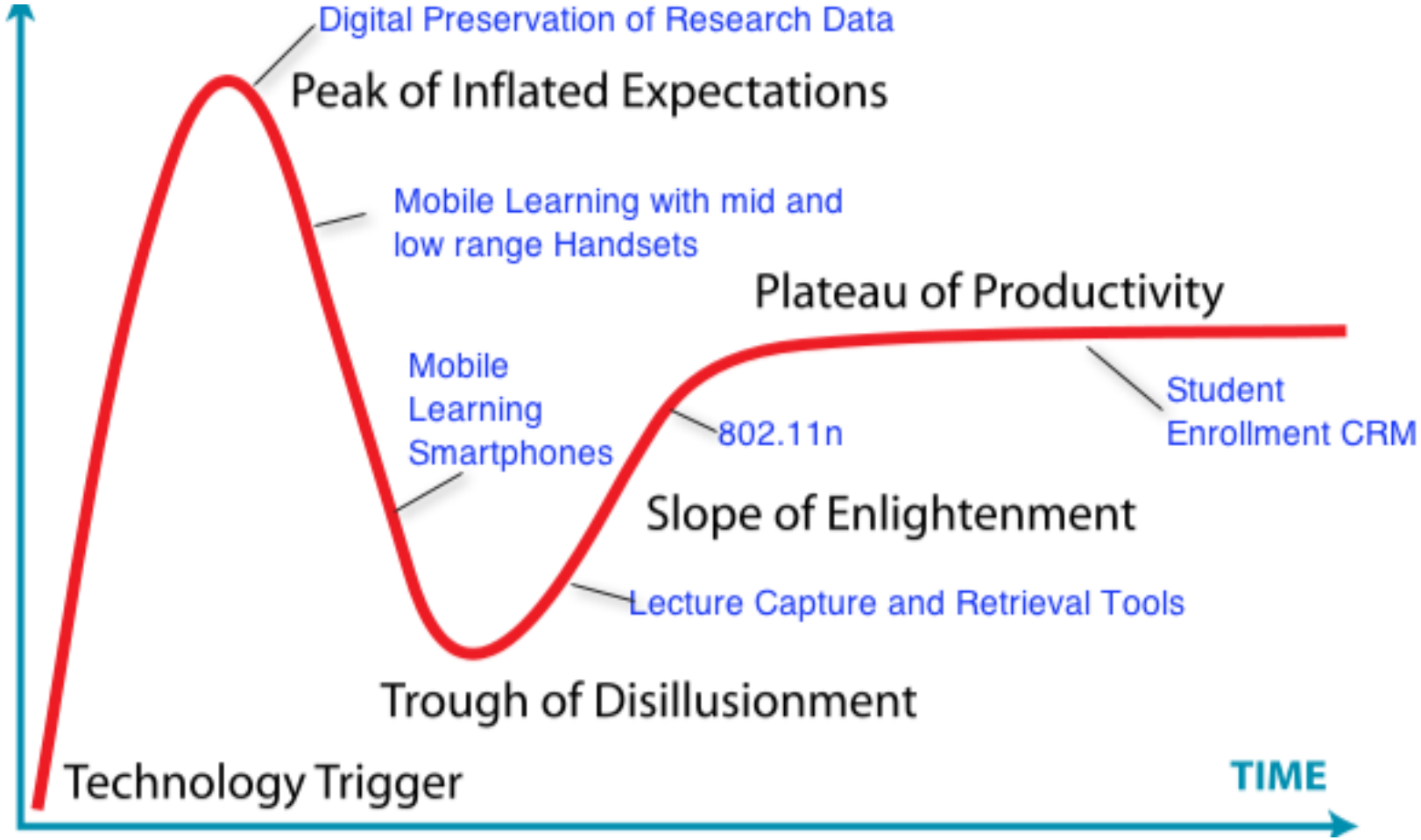
Gartner Group Technology Hype Cycle - Education



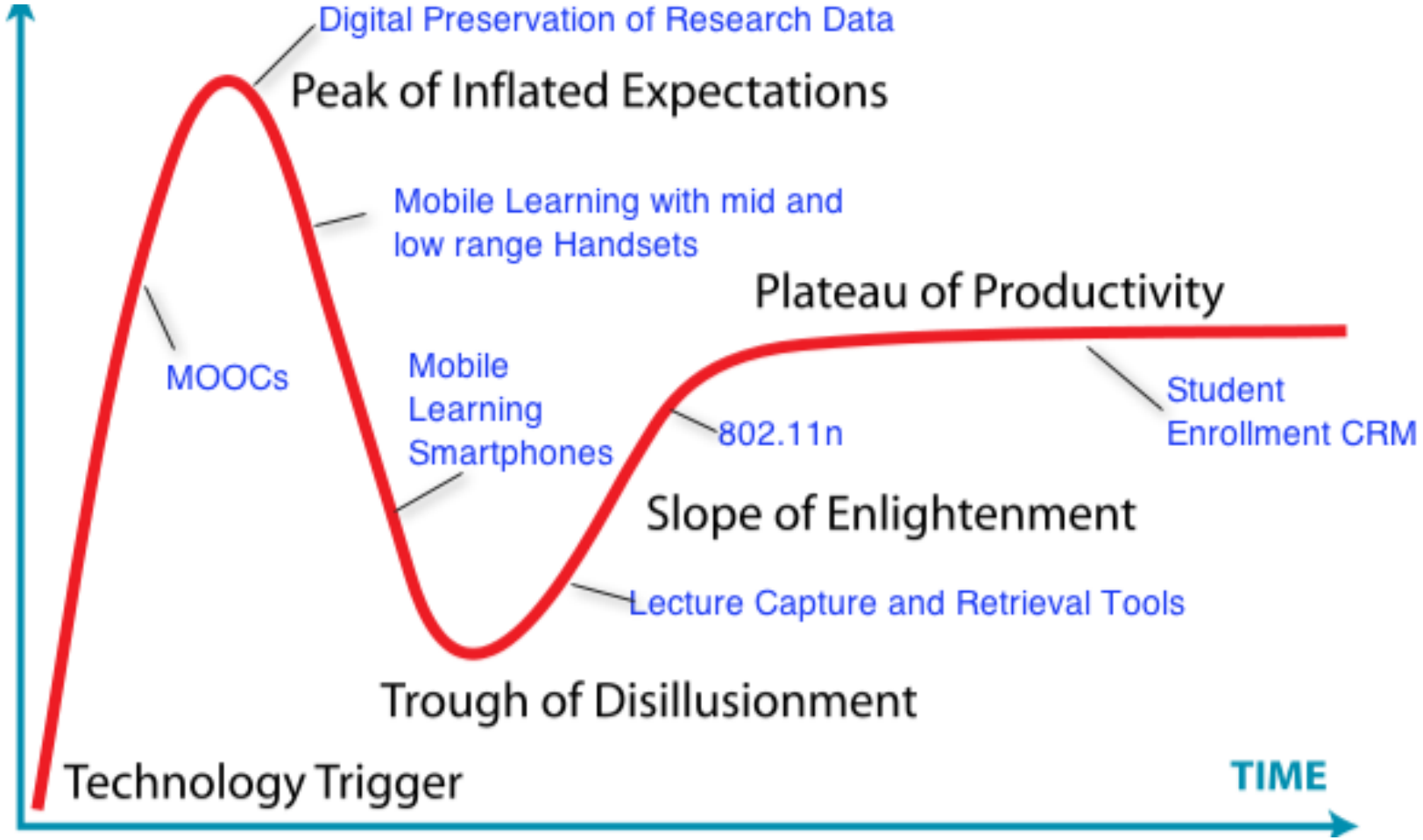
Gartner Group Technology Hype Cycle - Education



Gartner Group Technology Hype Cycle - Education



Gartner Group Technology Hype Cycle - Education



IAALD World Conference
July 2013

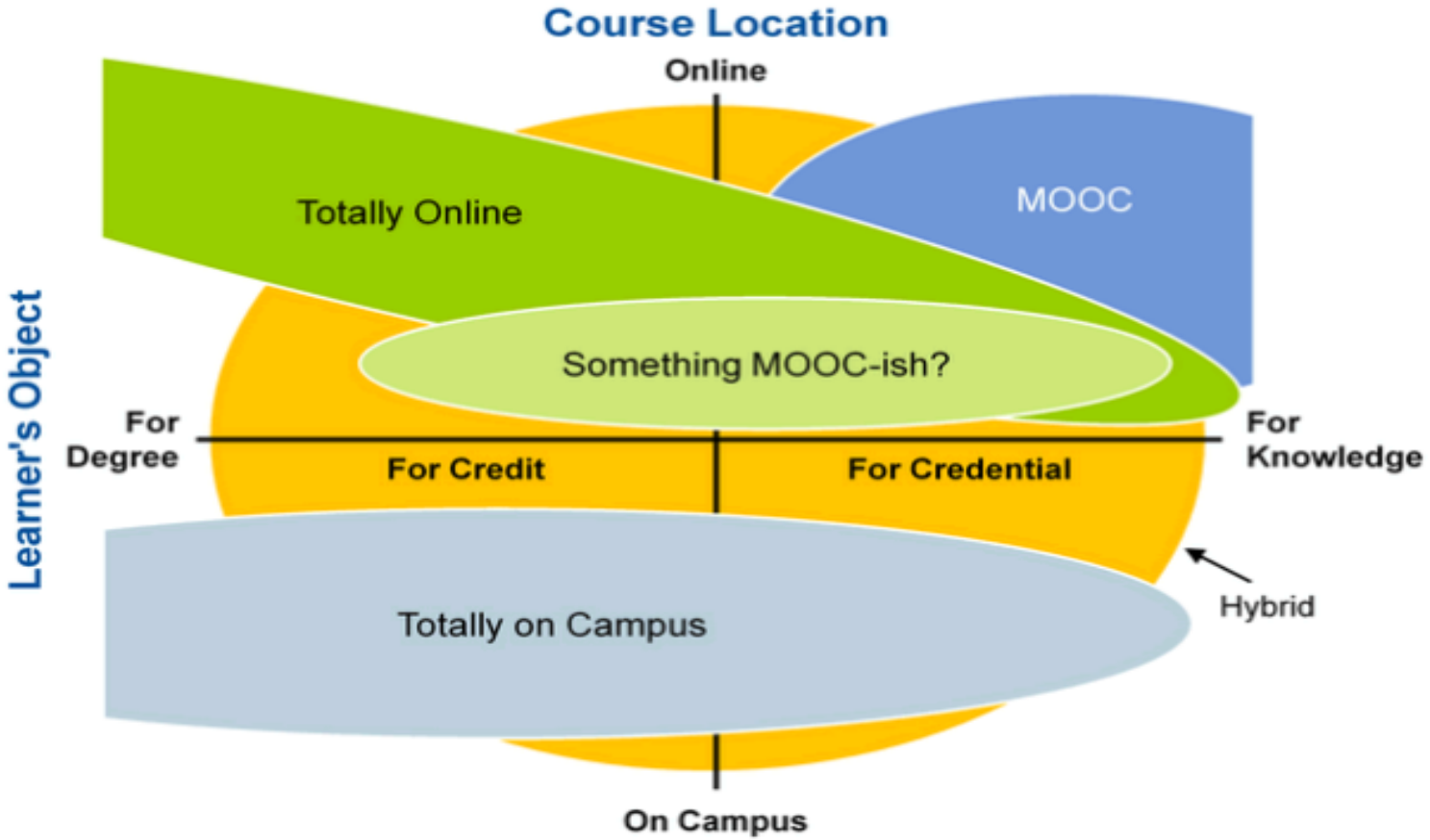
Cornell University

1963–2013

IP•CALS
International Programs
College of Agriculture and Life Sciences

MOOCs

Figure 1: Higher Education Scenario: Learner's Choice



Social Networks for Livelihood Development

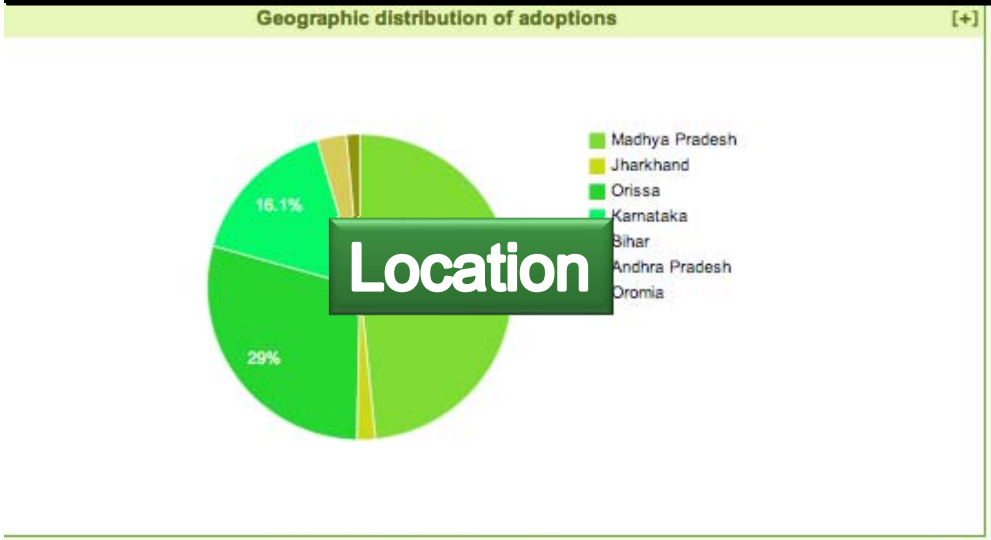
digitalGREEN

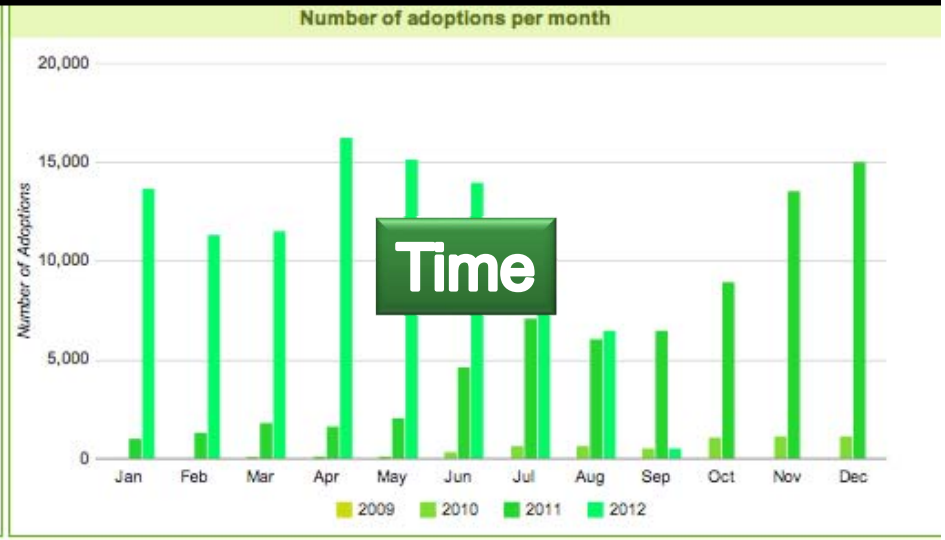
www.digitalgreen.org | @digitalgreenorg

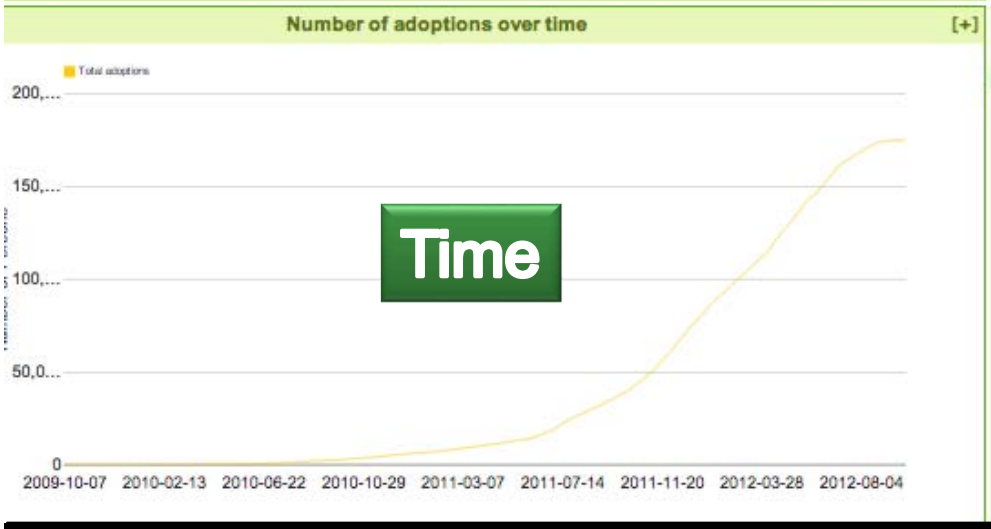
Social Networks: Targeting | Empowering | Connecting

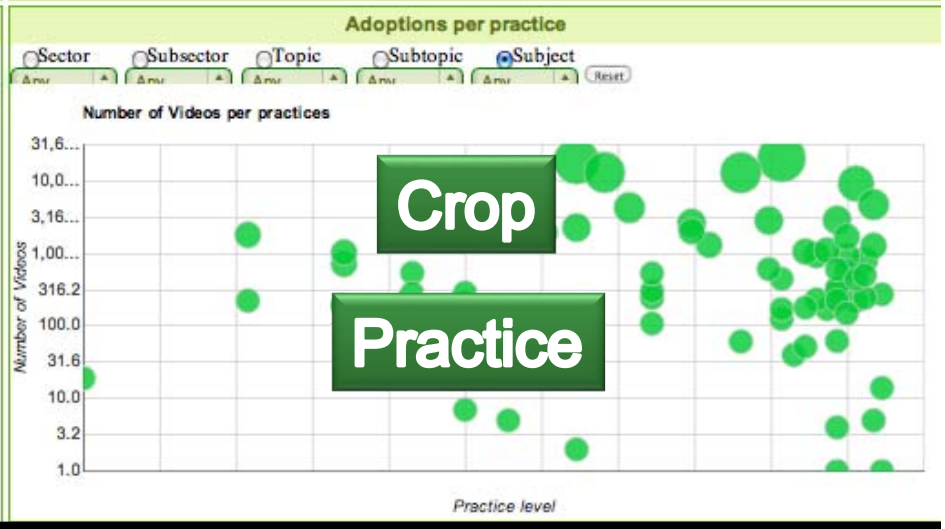
Social Networks: Targeting | Empowering | Connecting

Social Networks: Targeting | Empowering | Connecting









Social Networks: Targeting | Empowering | Connecting

Select District

Select Village

Location

Select Language

Language

Select Seasonality

All Seasons

Months

Time

Select Production Date

From:

To:

Select Sector

5195 viewers | 1391 Adoptions

Harvesting of wheat

Agriculture, Crop Management, Harvesting, Manual, Wheat.

00:08:36 Produced On: 05 Feb 2011

4782 viewers | 1366 Adoptions

Video

Seed extraction from tamarind odia PRAGATI Odisha

Agriculture, Post Harvest Management, Food processing, , Tama

00:10:09 Produced On: 15 Apr 2011

3448 viewers | 1308 Adoptions

Video

Planting technique of Little gourd

00:12:55 Produced On: 12 Feb 2011

6969 viewers | 1191 Adoptions

Video

Local poultry farm Oriya Pragati Odisha

Animal Husbandry, Adult management, , , Chicken.

00:15:32 Produced On: 23 Feb 2011

3825 viewers | 1157 Adoptions

Video

M.B.Plough

Agriculture, Land Management, Land Preparation, Mechanical (Pl ean.

00:09:43 Produced On: 12 Apr 2011

3641 viewers | 1131 Adoptions

Video

Social Networks: Targeting | Empowering | Connecting

Munger, Bihar

SERMILA DEVI | 09 Feb 2 Member Key Super Bag Hawa aur nemi dono se bachata hei
Munger, Bihar

ANJU DEVI | 12 Feb 2012 Member Super Bag Ke Sath ek Dusra bora key dalte hei ?
Munger, Bihar

BINA DEVI | 12 Feb 2012 Member Super Bag keha milta hei ?
Munger, Bihar

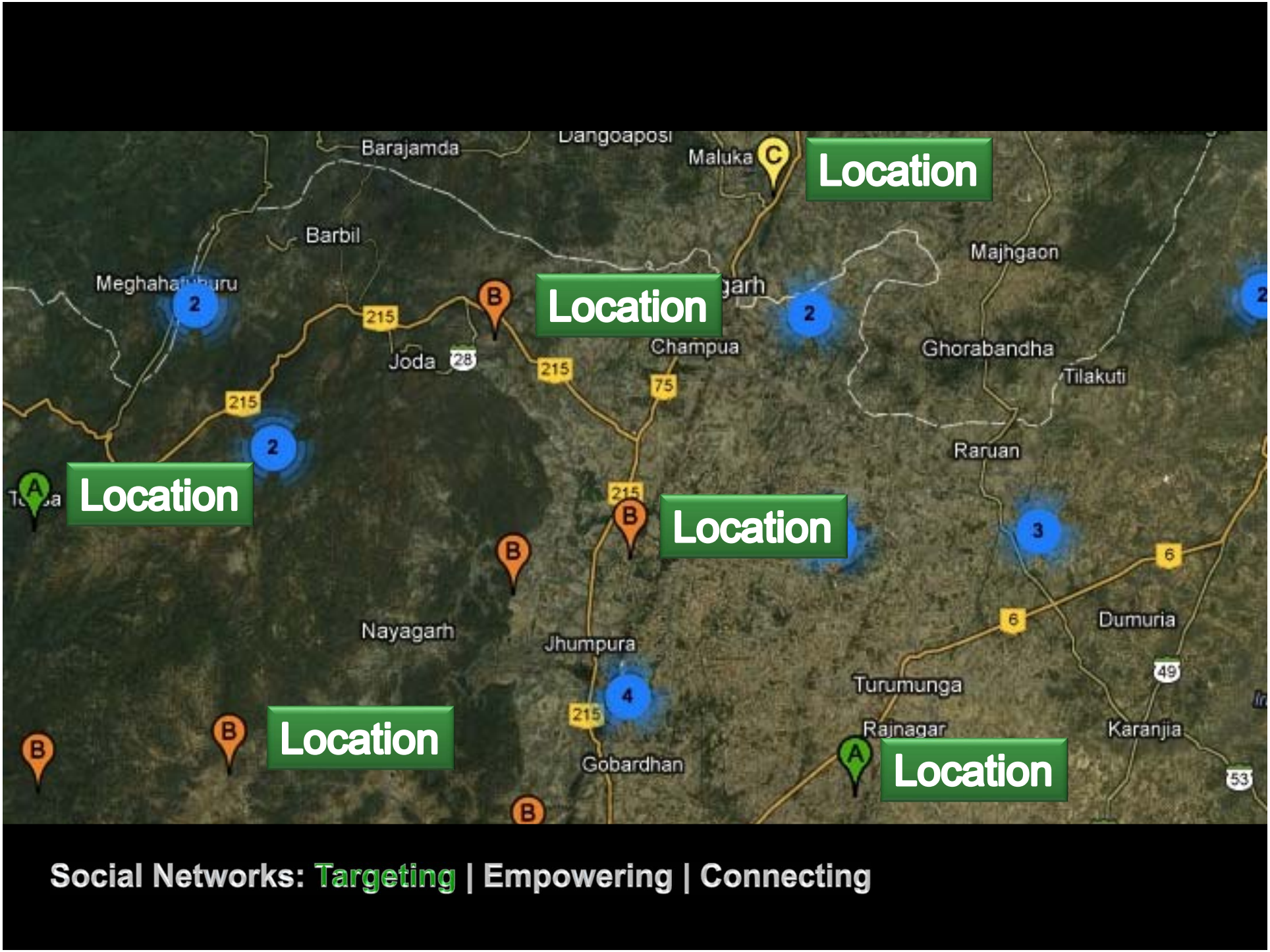
CGHAKKEN SINGH | 17 F Member Conoweeder Kaha milta hei ?
Munger, Bihar

LAXMIKANT SINGH | 04 F Member upar Bag Ko Key Nukila nehi lagana he ?
Munger, Bihar

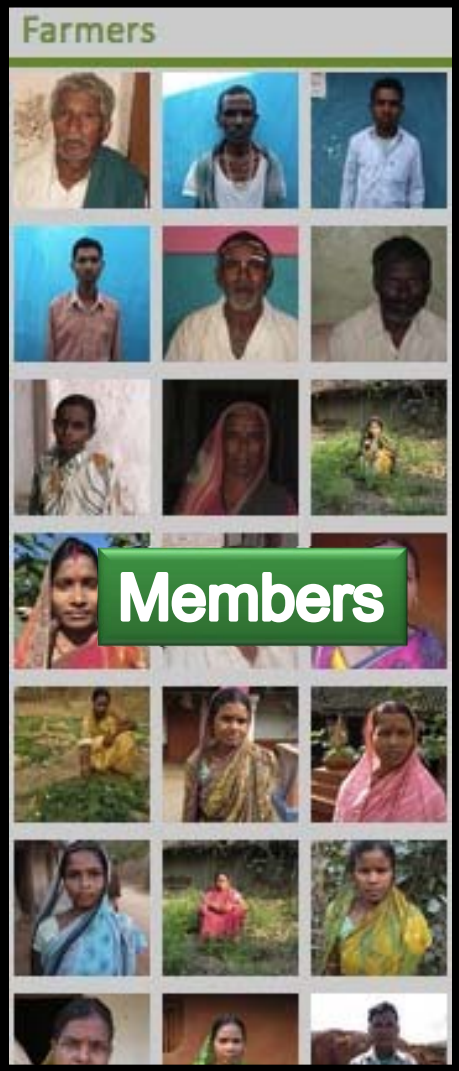
CHOTE LAL SINGH | 06 F Member upar Bag kaha Milta Hei
Munger, Bihar

RENU DEVI | 07 Feb 2012 Member Key uper Bag me Sirf Anag hi Rakhte hei
Munger, Bihar

BHARUW SINGH | 25 Feb 2012 uper Bag me koi v Saman rekh sakte hei key ?



Social Networks: Targeting | Empowering | Connecting



Social Networks: Targeting | Empowering | Connecting

Keonjhar | Orissa

Abanti Sethy

Member

Adoption Rate

52%

Mar 2011	33	17
Joined	Views	Adopted

Questions Asked 5

Service Provider

Deepak Kumar Palei

Partner

Activist

VARRAT

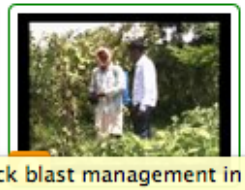
Videos Watched (29)

Wha is time to attack blast management in paddy ?

Management of blast

Video

Time



Aphid management in

Video

Time

Transplanting of

Video

Time

Treatment of brinjal

Video

Time

Benefit -cost analysis

Video

Time

Related

Gahami Sethy

Member

20%

Mar 2011	20	4
Joined	Screenings	Adoptions

Golap Sethy

Member

12%

Mar 2011	17	2
Joined	Screenings	Adoptions

Suryamani Sethy

Member

7%

Mar 2011	27	2
Joined	Screenings	Adoptions

Social Networks: Targeting | Empowering | Connecting

Rikin Gandhi shared a link.
Yesterday at 7:53am via DigitalGreen ·

Me

Farmerbook
Abanti Sethy
Adopted Planting technique of Little gourd on Apr 2011.

Farmer

Like · Comment · Unfollow Post · Share

Dibyajyoti Pal, Shrey Goyal and 2 others like this.

Friends

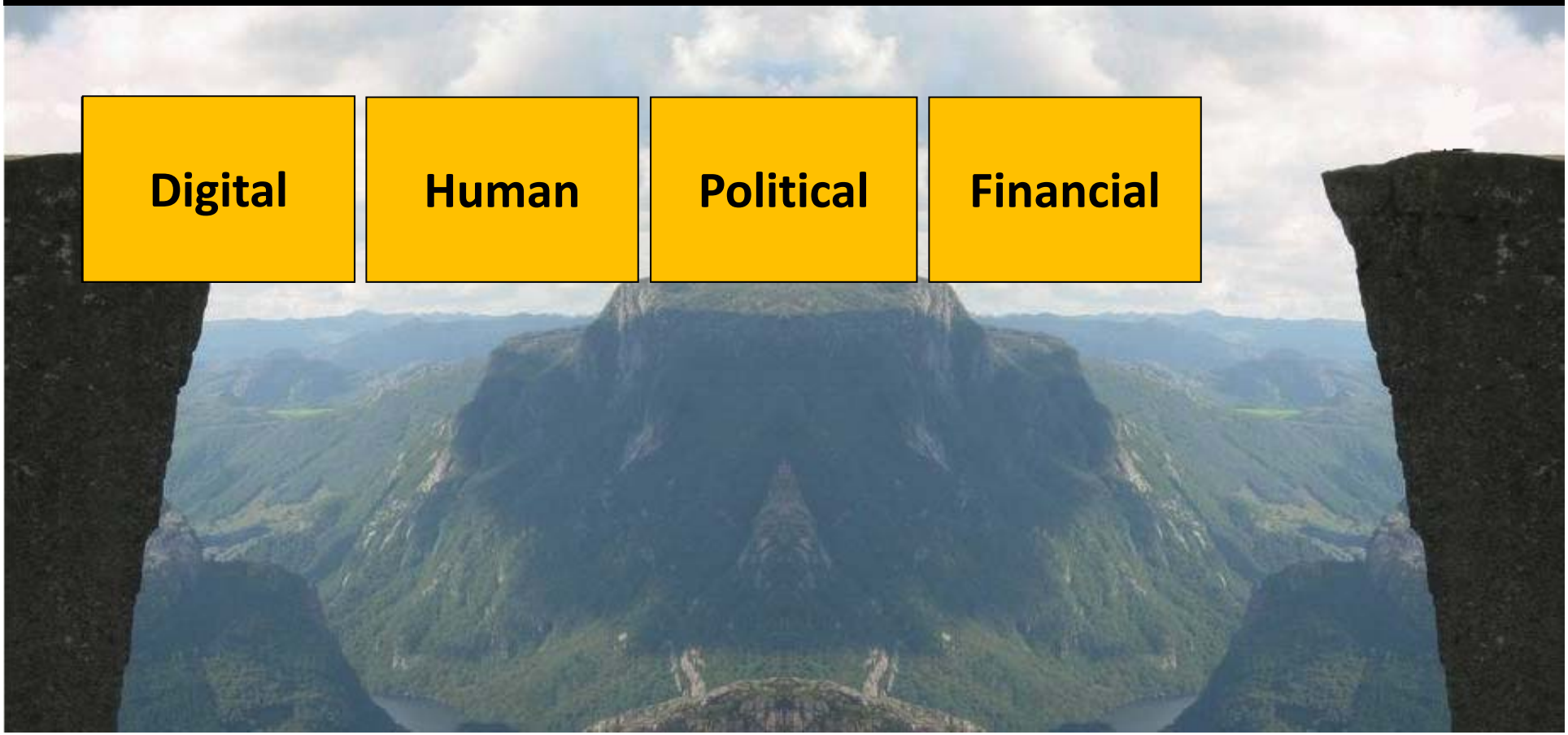
e a comment...

Social Networks: Targeting | Empowering | Connecting

Village Gurus
Village gurus work with you to make industries and buildings run faster
Learn More about this guru
Request Help
Back
Member
218050
17
24
4135
2330
5736
15
Me
Rikin's Village
Population 1590
Vinay
Parth
Murtuza
Praveen
Sreeniv
Vaibhav
Friend
Friend
Friend
Friend
Social Networks: Targeting | Empowering | Connecting

Technology **magnifies** *human intent and capability.*

Successful use of technology require support from well-intentioned, competent people or organizations.



digitalGREEN

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CHALLENGES AND OPPORTUNITIES?

- **THE FUTURE ROLE OF LIBRARIES**
- **THE OPENNING OF ACCESS TO SCIENTIFIC LITERATURE**
- **THE INTENSIVE USE OF ICT FOR AGRICULTURE**

Articulated the Challenges

- CHALLENGE 1: The future of specialized agricultural Libraries.
- CHALLENGE 2: Access to free relevant content, preservation of institutional memories and better agricultural publishing.
- CHALLENGE 3:Better use of Information, Communication and Technology in Agriculture.

IAALD

THE STATE OF INFORMATION LITERACY POLICY: A GLOBAL PRIORITY

Sharon Weiner, EdD, MLS
Professor, W. Wayne Booker Chair in Information Literacy
Purdue University, USA
Vice-President, National Forum on Information Literacy

IAALD, 7/22/2013

Outline

W. Wayne Booker Chair in Information Literacy

The State of IL Policy: A Global Priority:

Developing a Common Understanding
- What is Information Literacy (IL)?
- What is Information Policy?

Information Policy and Global Challenges

International IL Policy

Taking Action: Addressing the Issues!

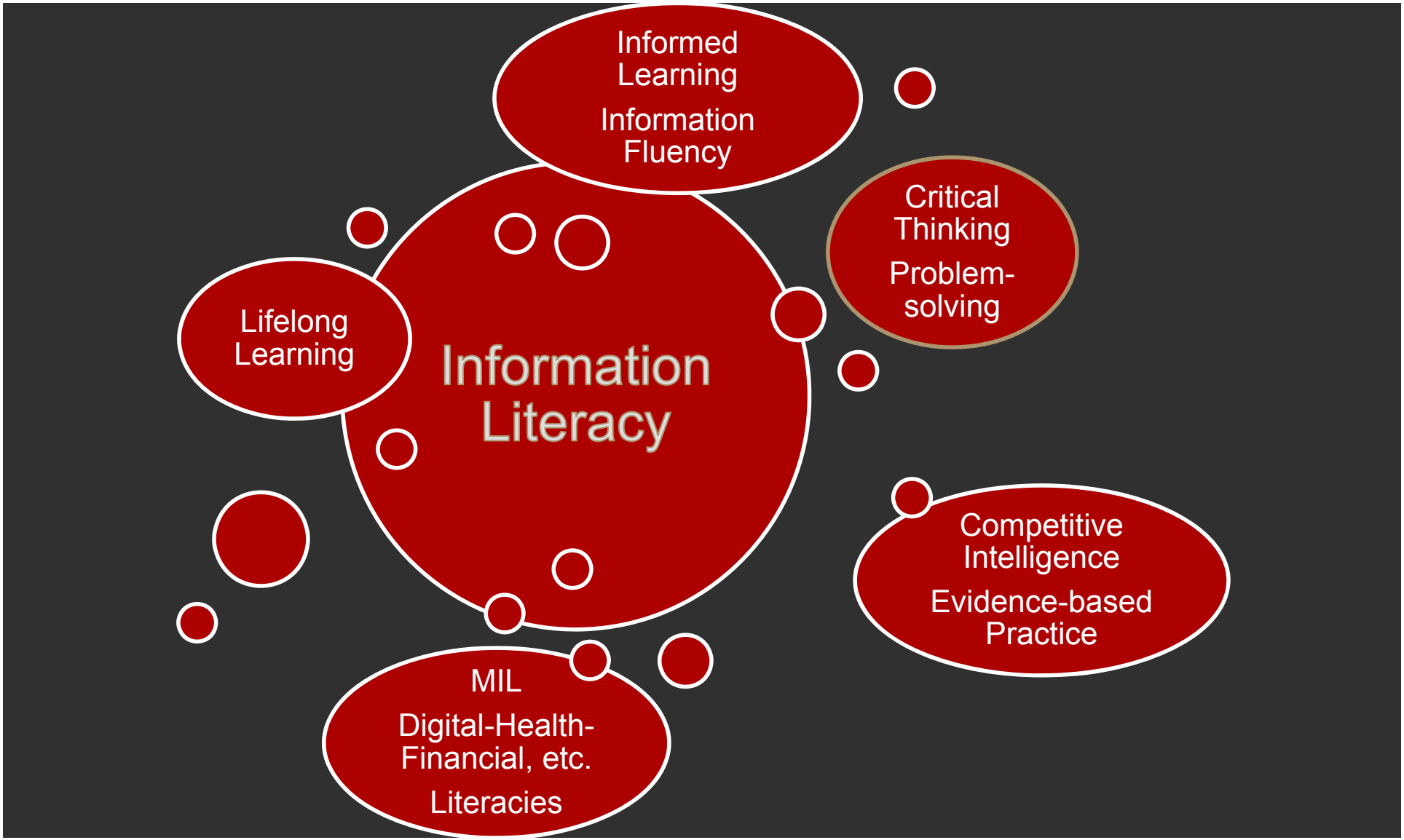
W. Wayne Booker Chair in IL

W. Wayne Booker

Opportunities and challenges…

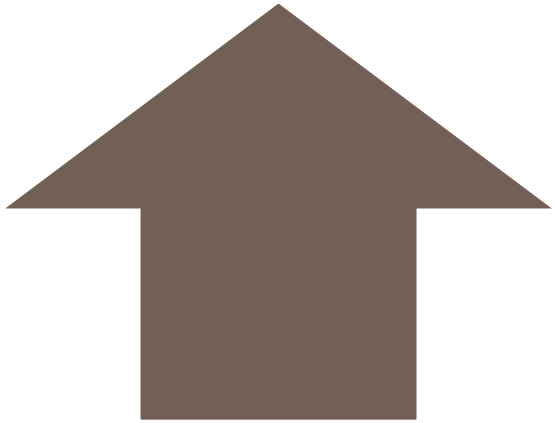
- Advocacy for IL, outside of libraries and academia
- Research on IL, organizational and policy aspects, integration into teaching and curricula, IL outside libraries
- IL Handbook Series (Purdue University Press)
- International collaborations
- Workforce and everyday life
- Mentoring, consulting, writing, program development and assessment

What is IL?


Informed Learning
Information Fluency
Critical Thinking
Problem-solving
Lifelong Learning
Information Literacy
Competitive Intelligence
Evidence-based Practice
MIL
Digital-Health-Financial, etc.
Literacies

What is IL?

NARROW CONCEPTION OR BROAD CONCEPTION?



Teaching skills—
course success

Teaching range of
competencies—life
success

What is IL?

Information literate people are those who have learned how to learn. They know how to learn because they know how knowledge is organized, how to find information, and how to use information…They can always find the information needed for any task or decision at hand.

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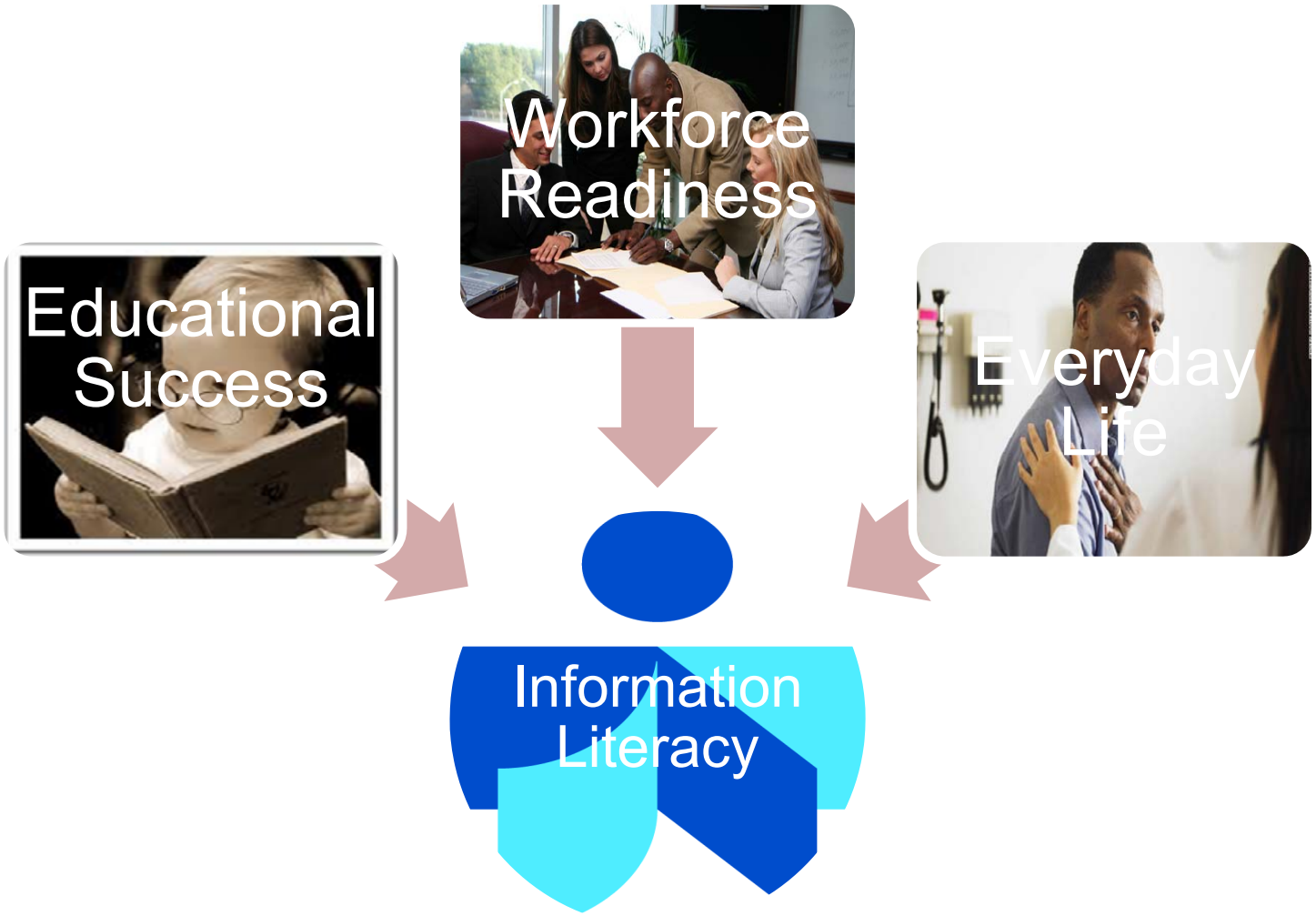
ALA 1989

A critical competency



What is information policy?

Encompasses

- Laws
- Regulations
- Doctrinal positions
- Other societal decisions

Related to

- Info Creation
- Processing
- Flows
- Access
- Use

Information policy

- Involves technology, communications, law, government, medicine, education, business, economics
- Complex and multi-dimensional
- Information policies can facilitate access to and use of information or they can restrict it

Information policy

Weiner's categories…

Information Infrastructure	Information Resources	Information Literacy
• technologies that allow for access to information	• knowledge content • accessibility through open access • legal and ethical use	• competencies to effectively and efficiently find, use, manage, and communicate information for specific purposes

Information policy

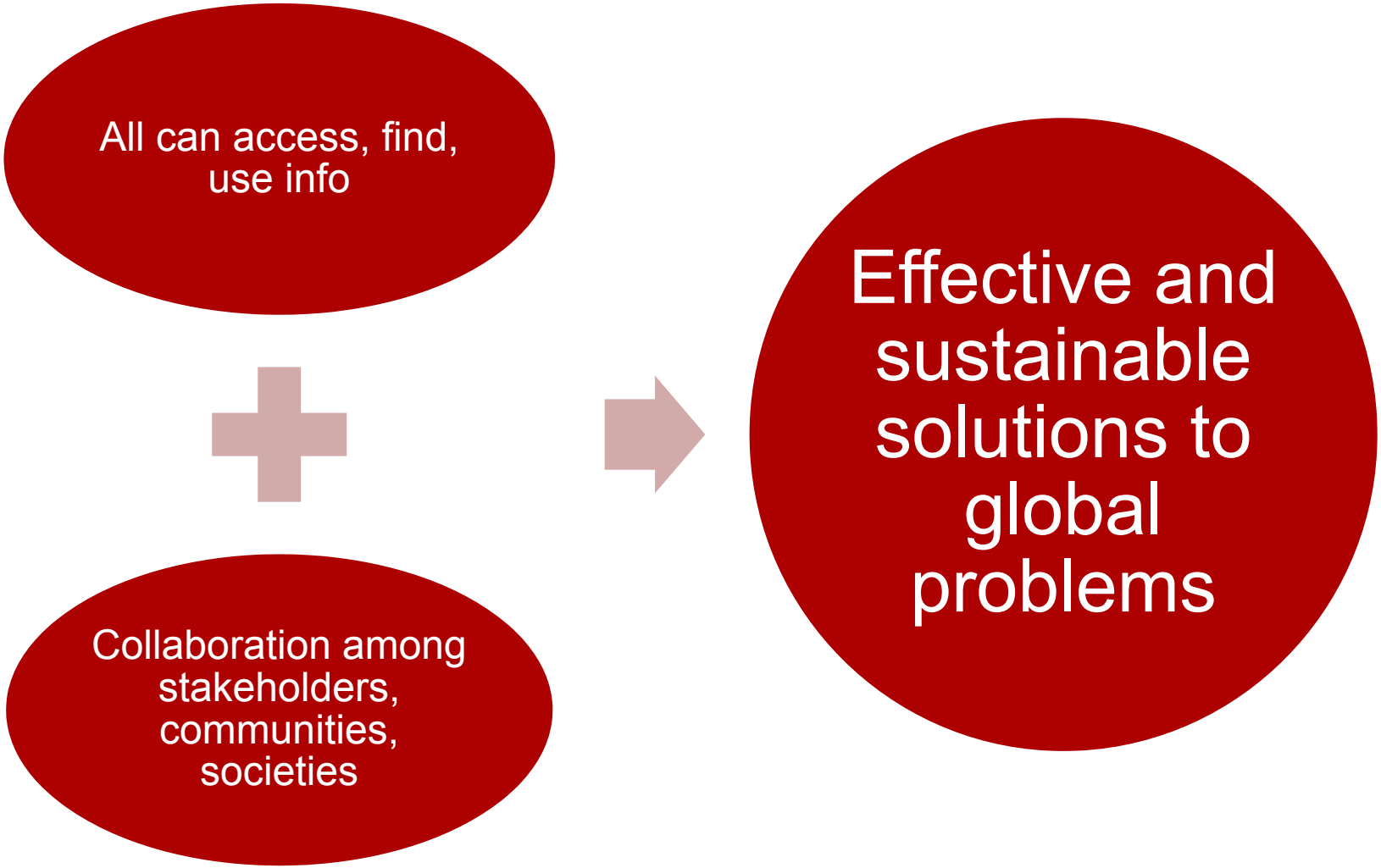
- Varies considerably from one nation to other, and even within nations
- May be inconsistent; over-regulated; or completely lacking
- Develop as needed or as problems arise, rather than in coordinated, cohesive manner with all major stakeholders participating

Information policy and global challenges

How well an individual, an organization, and an entire society can harness, access, share, and make use of available information will ultimately decide their ability to generate economic growth and to enhance the quality of life for all.

Gwang-Jo Kim
Director of UNESCO Bangkok (Karan, 2011)

Information policy and global challenges



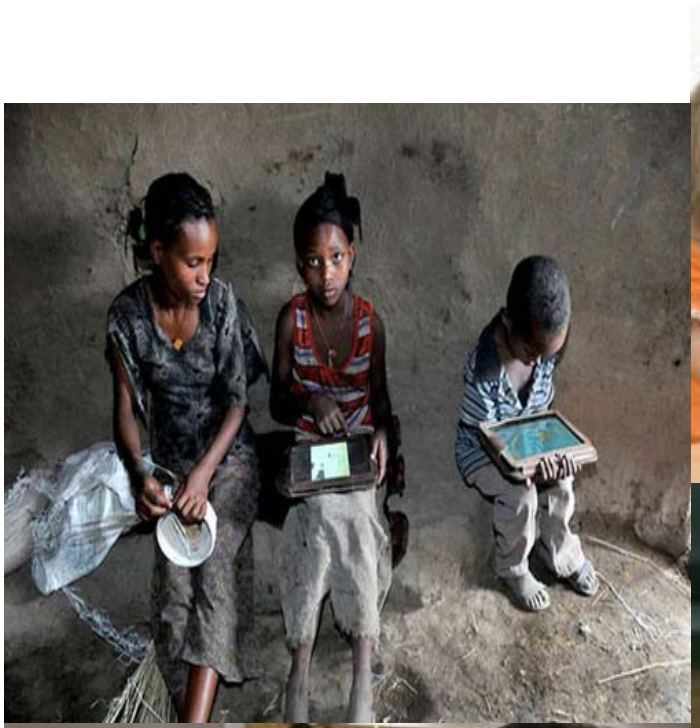
Information policy and global challenges

Inequity in access to information and inadequate training in how to use information worldwide **hampers the collective problem-solving that could lead to dynamic, innovative results.**

Weiner 2013

Information policy and global challenges

Information policy and global challenges



Information policy and global challenges

Teach to the needs and challenges of the 21st century?

International IL policy
Many issues…

- Lack of recognition of relevance of info in development
- ICT is not enough! Does not ensure that people can effectively find and use information
- Limited capacities, resources, and infrastructure
- Restricted access to information
  - Restrictions on access to info in some locations and sectors
  - Limited info in the public domain

International IL policy
What are the issues?

- Better organization for existing resources needed
  - DataBib

- Insufficient libraries and databases of industrial, scientific and statistical information

- Opinions on who should be responsible for information literacy vary: Govt? Education? Workplace? Personal responsibility?

International IL policy
What are the issues?

- Need for respect for cultural and linguistic diversity
  - English-speakers have access to more info in most fields
- Lack of awareness of long-term preservation of info
- Lack of cross-sector and interdisciplinary stakeholder collaboration
- Changes of personnel in policymaking positions

International IL policy

- NGOs have long history of developing recommendations related to information policy

- Most countries do not have a coordinated, well-planned strategy involving multiple stakeholders, prioritization, and sufficient funding to address ICT, creation of relevant information resources, or IL

International IL policy
A sampling…USA

- No central coordinating body for info policy
- Different organizations, agencies, states create policies that can be incompatible, redundant, or conflicting
- Many educational institutions and accrediting organizations include IL as a standard

International IL policy
A sampling…USA

- Information Literacy Proclamation Project
  - Encourage IL advocates in each state and territory to request proclamation from governor on October as IL Month
  - Recognize IL as societal issue, not just library or school issue
  - Increase visibility of IL outside of libraries
  - Give policymakers notice about emerging issue

International IL policy
A sampling…USA

The ability to seek, find, and decipher information can be applied to countless life decisions, whether financial, medical, educational, or technical.

Obama 2009

International IL policy
A sampling…Wales

- Information Literacy Framework for Wales
  - Unified approach to embedding IL in education and training
  - U.K. Seven Pillars model: identify, plan, scope, gather, evaluate, manage, present
  - Mapped IL to national curriculum
  - Credit and Qualifications Framework for Wales—throughout life

International IL policy
A sampling…Africa

- Francophone Africa, ICT and digitization not well developed, so IL training covers the use of print resources.

- No national info policy, but govt recognizes importance for problem-solving and economic development

International IL policy
A sampling…Latin America

- Postsecondary institutions, though not usually part of curriculum

- Little IL activity in schools and none in public libraries or the private sector

International IL policy
A sampling…Europe

- European Network on IL posts links to policy info for countries

- U.K. incorporated info policy functions into Cabinet Office

- Departments address developing citizens' skills, promoting media literacy, and libraries, museums, and broadcasting

International IL policy
A sampling…Finland

- Leading knowledge-based economy since 1990s
- Occurred because of strong educational system and institutions for formation of national consensus
- Leaders attended programs in economic policy management and national strategy issues-helped to conceptualize and implement change
- PM chaired Information Society Council that included key representatives of public administration, private sector enterprises, interest groups, and organizations

Addressing the issues…

- Think about what you can do…
- Professionally, societally, personally

Addressing the issues…

- Education policy
  - Consider education a progressive continuum through life rather than as segmented courses, modules, learning outcomes to be mastered and forgotten
  - Include expectation of IL in teacher education, for teachers-in-training, for teachers-of-teachers, students, throughout lifespan

Addressing the issues…

- Communicate importance of IL to stakeholders
- Work with communities
- Need stories of how IL affects decisions and problem-solving, lack of IL hinders it

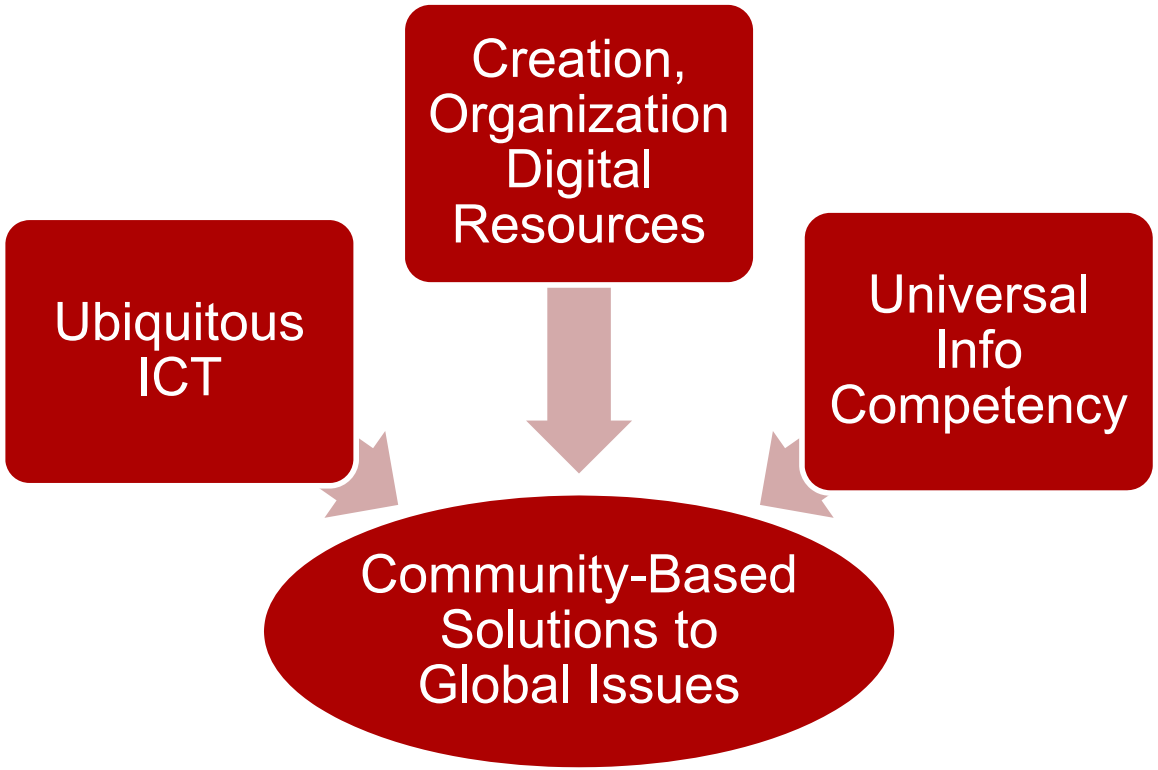
Addressing the issues…

- Need data on the cost of lack of IL
  - Standard of living related to financial resources + financial literacy
  - Lower health literacy = difficulty controlling chronic illnesses, less likely to participate in disease prevention programs, more likely to be hospitalized, greater mortality

In conclusion…mixed success

Conference theme:

Emerging Priorities for Scientific Information, Food Security



In conclusion…concerted effort needed

- What are the emerging priorities for scientific information?
  - Creation and organization of digital resources
  - Information literacy—how to find and use information (in all of its forms) for a specific purpose
- What can you influence your professional organizations to do?
- How can you influence your communities, societies, governments?

Thank you!

Questions and comments…

References

ACRL. 1989. Presidential Committee on Information Literacy: Final report.

Anderson RE, Plomp T. 2009. Introduction. In: Plomp T, et al., eds. *Cross-national information and communication technology: Policies and practices in education.* 2nd ed. Charlotte, NC: Information Age Publishing, p. 3-17.

Arnold A. 2004. Developing a national information policy—considerations for developing countries. *International Information & Library Review* 36:199-207.

Ayoo P, Otike J. 2002. Factors hampering the formulation of a national information policy in Kenya. *Library Review* 51(7):350-7.

Beacons of the Information Society: The Alexandria Proclamation on Information Literacy and Lifelong Learning., 2005.

Baker, D.W., *et al*. 1998. Health literacy and the risk of hospital admission. *Journal of General Internal Medicine* 13(12)**:**791-98.

Basili C. 2011. A framework for analyzing and comparing information literacy policies in European countries. *Library Trends* 60(2):395-418.

Boekhorst AK, Horton Jr. FW. 2009. Training-the-trainers in information literacy (TTT) workshops project, final report to UNESCO. *International Information and Library Review* 41(4):224-30.

Braman S. 2006. *Change of state: Information, policy, and power. Cambridge,* MA: MIT Press.

Declaration of principles: Building the Information Society. World Summit on the Information Society, Geneva 2003-Tunis 2005.

References

Catts R, Lau J. 2008. *Towards information literacy indicators*. Paris: UNESCO.

Eichler K., et al. 2009. The costs of limited health literacy: a systematic review. *International Journal of Public Health* 54:313–324.

Epstein D, Nisbet EC, Gillespie T. 2011. Who's responsible for the digital divide? Public perceptions and policy implications. *Information Society* 27:92–104.

Garner SD. 2006. High-level colloquium on information literacy and lifelong learning, Bibliotheca Alexandrina, Alexandria, Egypt, November 6–9, 2005: Report of a meeting.

Informing communities: Sustaining democracy in the digital age. 2009. Washington, DC: Aspen Institute.

Karan K. 2011. Information policies in Asia: Development of indicators. Bangkok, Thailand: UNESCO Bangkok.

Ma F, Jiang T, Fu Z, Zhao H. 2012. A study on the structure of the Chinese information policy domain framework. *Journal of Information Science 38(1) 52–63.*

The Marrakech Action Plan for Statistics: Better data for better results—an action plan for improving development statistics. Presented to the Second International Roundtable on Managing for Development Results Marrakech, Morocco, February 4-5, 2004.

The Moscow Declaration on Media and Information Literacy. UNESCO Information for All Programme, IFLA. June 28, 2012.

References

Munyua H, Adera E, Jensen M. 2009. Emerging ICTs and their potential in revitalizing small-scale agriculture in Africa. *Agricultural Information Worldwide* 2(1):3-9.

National Information Society Policy: A template.

Nielsen-Bohlman L. 2004. *Health literacy: A prescription to end confusion.* Washington, DC: National Academies Press.

Obama B. 2009. National information literacy awareness month, 2009: A proclamation.

Perrault A. 2007. *American competitiveness in the Internet age: Information Literacy Summit, October 16, 2006, Washington, DC.*

The Prague Declaration: "Towards An Information Literate Society", 2003.

Rabina D, Johnston S. 2010. Recent trends in EU information policy: Toward greater transparency in the information society. *Advances in Librarianship* 32:181-97.

Tăbuşcă S. The Internet access as a fundamental right.

Thompson, S. 2003. *Information literacy meeting of experts, Prague, the Czech Republic, September 20-23, 2003: Report of a meeting.*

UNGIS Joint Statement on the Post-2015 Development Agenda at the WSIS Forum 2013

UN. Millennium Development Goals.

References

UN Millennium Project. 2005. *Investing in development: A practical plan to achieve the Millennium Development Goals*. *New York:* United Nations Development Programme.

UNESCO Constitution. 1946.

UNESCO NATIS. 1974. Objectives for National and International Action: Intergovernmental Conference on the Planning of National Documentation, Library and Archives Infrastructures. Report COM- 74/NATIS/3, July 1974.

Vernon J.A., et al. *Low health literacy: Implications for national health policy.*

Weiner S. 2013. Overview: The role of information policy in resolving global challenges. Purdue University Global Policy Research Institute *Policy Briefs* 1(1), Article 6.

Welsh Information Literacy Project.