Last Class!

Summary and Thoughts

- Rahul Tongia

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Seven Stages of T4GD

1. Curiosity – How does technology impact development?

2. Shock – This world is in bad shape

3. Depression – The road ahead is long and painful

4. Confusion – What can we do?

5. Bargaining – (Projects)

6. Acceptance – I can't solve all the world's problems

7. Motivation – I will try and learn more, and here's a little start

Where did (does) Technology Fit In?

- Incremental changes within processes
- Changes to processes within economy (e.g., Services/Knowledge Economy)
  - o Structural shifts
- Infrastructure buildout
- ICT
  - o Large investments and growth

Next Generation: "Fundamental" breakthroughs

- Genomics
- Nanotechnology
- Artificial Intelligence
- Optical Computing
- Quantum Computing
- Energy
  o Solar, Fusion, Carbon/Hydrogen, Superconductivity
- ???

Future (Optional) reading

o "As the Future Catches You" – Juan Enriquez
  – New industries based on knowledge
    • Worth Billions but only a handful of new jobs

o "Factor Four: Doubling Wealth, Halving Resource Use" - Ernst von Weizsäcker, Amory Lovins, and Hunter Lovins
  – How to be sustainable

o Powershift, Third Wave, and others by Alvin & Heidi Toffler
  – What is fundamentally different about knowledge economies from traditional ones

o Of course, the usual suspects (Lots of Multilateral Agency data)
  – World Development Report (WB)
  – Human Development Report (UN), etc.

Other Important Areas

(Not covered in depth in the class)

- Gender issues
- e-Governance
- Technology details as applicable to developing regions
  - o Security
  - o Privacy
  - o Etc.

Importance of Field Work

- Theory vs. Practice
  - o "In theory there is no difference between theory and practice. But, in practice, there is"
    – Jan L.A. van de Snepscheut

- Remember Carlos Braga's 4 Lessons:
  - o Elvis
  - o Einstein/Beethoven
  - o Mother Teresa
  - o Sex…
  - o (Only makes sense if you hear the story!)
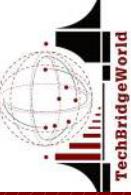
Scholarly Work

- Earlier, was segmented by domain
  - Developmental Economics
  - Energy, Healthcare, etc.
  - IT
- Newly emerging field of ICT and Development
  - Nascent
  - Many "events" are not rigorous
    - Lack of metrics is a serious challenge
    - ICTD2006 we co-organized is an attempt; ICTD2007
    - WWW2006 now has an emerging regions track
  - A few journals are there (e.g., ITID, Jrnl. of Community Informatics, etc.)

Lessons we've (I've) learned doing research and teaching in this space

- The field has matured significantly
  - o More interaction across domains
    - – Still not enough
  - o Students and are more sophisticated (and demanding) in their questions and learning process
- There is a bit of a cyclic nature to "hot" topics
- Different skills are more important at different stages of a project
  - o The early stage of relationship-building takes a LOT longer than we'd think
    - – E.g., true of our speech and healthcare project in Pakistan

Questions from ICTD Experiences (Tongia, et al 2006 – ICTD2006)

1. *Who are the stakeholders, and what are their needs?*
   a. Are all stakeholders considered?
   b. Are metrics for prior state (baseline) available?

2. *Does the technology perform well for the needs?*
   a. Is the Cost – Benefit (or other appropriate) Analysis favorable (incorporating lifecycle, non-monetized factors, etc.)?
   b. Are there unintended consequences, positive or negative?
   c. How is the price-performance or cost effectiveness?
   d. Is the solution optimized (often an iterative process or evolving)?

3. *Do stakeholder incentives align?*
   a. Management of varying and often conflicting stakeholders and/or goals
   b. Development of the required ecosystem
   c. Who "owns" the project or process (responsibility)?
   d. Is there a "champion" driving the process (optional)?

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ICTD Design (Cont.)

4. *Are there mechanisms for feedback or* *participation* *by all stakeholders?*

   a. Design stage

   b. Deployment stage

   c. Diffusion state

5. *Are* *metrics* *available for measuring success across stakeholders?*

   a. Who measures – self, designated stakeholder, or third party?

   b. Are assumptions and methodologies transparent?

   c. What else has or can be done (alternatives and opportunity costs)?

      Have lessons been learned from prior experiences?

Metrics   *(dual)*   Performance

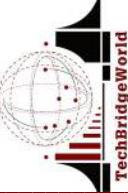# ICTD Design (cont.)

6. *Is the solution sustainable?*
   a. Supplier side – profitable
   b. Consumer side – affordable
   c. Concerns
      a. If subsidies are required, will they be available continually?
      b. Is this viable only in some select cases (cherry-picking)?

7. *Is the solution scalable?*
   a. Can it grow beyond a pilot?
   b. Will it work in other regions or cultures?
   c. Will economic sustainability remain with scaling?

8. *Is the solution acceptable?*
   a. Displacement of vested interests – issues of political economy
   b. Culturally acceptable?
   c. Trustworthy?
   d. Empowering?
   e. Will people use it of their free will?

Success Story: African River Blindness

- Black fly used to make African River Blindness endemic to much of West Africa

- Used hydrologic sensors, satellite imagery, and forecasting software to help eradicate the black fly

- Optimized insecticide spraying protects 30,000,000 people, and frees up 100,000 square miles of land

Things to remember…

Prof. Jay Aronson

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State of the World

- 3 big problems (among many others):

  o Deadly Triad: HIV/AIDS; Malaria; Tuberculosis

  o Urbanization

  o Economic growth alone does not lead to human development (must be part of integrated public-private-NGO strategy)

- Always be skeptical of statistics—don't just look at them, look at how they are created

Poverty

- Need to move beyond "us and them" mentality

- To understand poverty, you need to experience it at a personal level for at least a short time

- Remember high cost of being poor

Culture

- All societies are granular
  - o get to know societies in all of their richness and complexity
- Importance of cultural hybrids/cultural translators
  - o you won't get very far without them
- Need to identify and build social capital
- Ask people what their goals and aspirations are
  - o don't assume them to be just like yours

Development

- Development means different things to different people

- Development has a history and is political

- Don't impose an idealized Anglo-American model of development on rest of world

- Privatization is the not the holy grail and it doesn't necessarily lead to competition

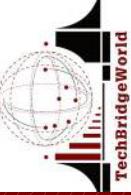- No monocausal solutions for development

Economics

- Markets are meant to be efficient, not equitable
- Markets require equal access to information to work properly
  - Generally not the case in the developing world, but technology can help
- BOP debate

Working in the community

- Humility and Respect will get you far
- You and your project should be:
  - FLEXIBLE
  - ITERATIVE
- You must engage with the community in order to succeed!
  - Hopefully in a collaborative or collegial way
- Forming strong local partnerships is key

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Participatory Development

- Needs assessment
- Monitoring and Evaluation
- Capacity Building
- Design

Technology

- Don't settle for old, out-dated technology!
- Technology has to work well in order to be successful and change lives!
  - o Remember: "garbage in, garbage out"
- Build prototypes and solicit feedback
- BE CREATIVE!!!

Technological Systems

- Technologies are systems of human, social, political, cultural and technical elements
- "Dropping in" a black-box doesn't work
- Technologies don't usually trickle down
  - o they must be specifically designed (or tweaked in creative ways) to have an impact in developing communities
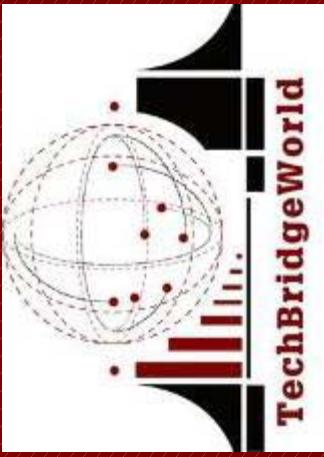
General lessons

- When something is described as "free" or low-cost don't forget to read the fine print

  o There are often hidden or future charges included that will negatively impact sustainability of solution

  o Remember to calculate life-cycle costs, including maintenance and updates

- Others?

Additional Web Resources

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(Or: Things I would like to read if I had much much more time ... presented in no particular order)
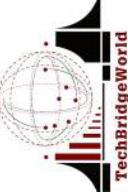
Professor Joe Mertz

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IDRC

- International Development Research Centre

  o *A public corporation created by the Parliament of Canada in 1970 to help developing countries use science and technology to find practical, long-term solutions to the social, economic, and environmental problems they face.*

- http://www.idrc.ca/

- Includes free books and reports online

I4D

- *The i4d (Information For Development) print magazine ... for exchange of information, ideas, opinions and experiences, both inside and outside the Information and Communication Technology for Development (ICT4D) sector.*

- http://i4donline.net/

World Bank - PovertyNet

- *PovertyNet provides an introduction to key issues as well as in-depth information on poverty measurement, monitoring, analysis, and on poverty reduction strategies for researchers and practitioners.*

- http://www.worldbank.org/poverty/

- And and WorldBank site more generally…

InfoDev

- *infoDev works to promote better understanding and effective use of information and communication technologies (ICTs) as tools of poverty reduction and broad-based, sustainable development.*

- (another World Bank site)

- http://www.infodev.org/

- m-Banking, Education, FOSS, low-cost devices…

The Stockholm Challenge

- *The Stockholm Challenge brings together inspiring people working with ICT from around world in the six categories of the Award.*

- http://stockholmchallenge.se/

E.g. some 2007 Finalists

Economic Development:

- Enabling financial inclusion and increasing efficiency of Self Help Groups Microcredit Federations

- KhmerOS - FOSS for Cambodia

Education:

- TOPIC64 - National network of E-learning centers in 64 provinces of Vietnam

Public Administration:

- The etuktuk project - roving telecentre/radio station via 3 wheeled auto-rickshaw.
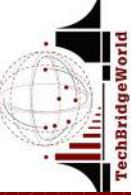
SIDA

- Swedish International Development Cooperation Agency
- Manages 60% of Sweden's development aide.
- http://www.sida.se/sida/jsp/sida.jsp?d=121&language=en_US

Eldis ICT for Development Resource Guide

- *Eldis is one of a family of knowledge services provided by the Institute of Development Studies, Sussex*

- http://www.eldis.org/ict/

APC Africa ICT Policy Monitor

- (Association for Progressive Communications)
- Mobilizing African civil society around the importance of ICT policy for development of the continent.
- http://africa.rights.apc.org/

Development Gateway.org

- A behemoth site of development information
- Includes a Information and Communication Technologies for Development dgCommunity
- RSS feed
- http://www.developmentgateway.org/ict

Benetech

- Uses a business start-up model to get disseminate technology innovations to serve humanity

- http://www.benetech.org/

- They are hiring.

Fundable

- Not an ICTD site, but a way to pull financial donors / investors together for projects
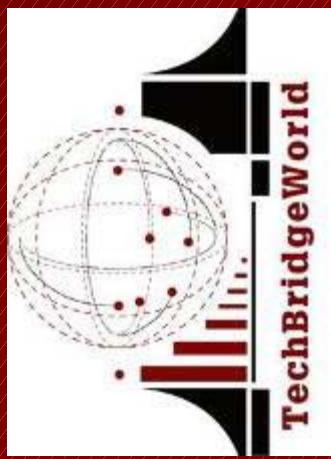- E.g. Support Tara & Aaron volunteering in Tanzania (just one case I found)

- http://www.fundable.com/

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DevNetJobs.org

- Jobs & Consultancies in International Development, NGO & Environment Sector

- http://www.devnetjobs.org/

- Crummy UI, lots of jobs.

Idealist.org

- Action without boarders

- Job postings of nonprofit organizations domestically and NGOs internationally

- Also volunteer and internship opportunities.

- http://idealist.org

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What Comes Next?

M. Bernardine Dias

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While you are a student…

- Take other relevant courses
  (V Unit and TCinC for example – we will compile a list of relevant courses and make them available online)

- Do a related internship
  (TCinGC for example – we may also be able to help you get an internship with groups such as MSRI)

- Engage in scholarly work on related topics

- Participate in relevant conferences and publish your work

- Attend relevant seminars and events

If you join the business world…

- Look for (and create) opportunities to work on relevant topics

- Think about how your products/services can make a difference in developing communities

- Encourage your company to be socially responsible

- Encourage your company to sponsor relevant research and internships

Some relevant companies…

- Microsoft
- Hewlett-Packard
- Intel
- Google
- Synergo
- Arrow Network Systems, Ltd.
- K-NFB Reading Technology, Inc.

- Shell
- Benetech
- DEKA
- Eletra
- Unilever
- Sumitomo Chemical Company, Ltd.
- PointCare Technologies, Inc.

Other opportunities…

- Join the UN or the World Bank
- Become a social entrepreneur
- Join a NGO/not-for-profit
- Some specific possibilities:
  - Geekcorps
  - Engineers Without Borders
  - Peace Corps
  - Associates for Change
  - Practical Action

No matter what you do…

- Stay informed
- Raise awareness
- Keep in touch and look for opportunities to collaborate with us ☺
- Encourage others to think about these topics
- Volunteer for TechBridgeWorld…
- Travel to developing communities
- Remember that you can make a difference in many ways….

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Things we can do for you

- Recommendations
- Advice and guidance on relevant topics, research, and careers
- Help provide relevant contacts and opportunities
- Maintain an updated list of resources through TechBridgeWorld

www.techbridgeworld.org

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