Higher Education and Innovation: The Good, The Bad, and The Unknown – An Industry Perspective

Wayne Johnson
HP Labs

IAU 13th General Conference
Utrecht, The Netherlands
July 15-18, 2008

Why is everyone talking about innovation?

The world is changing and the ways in which we do business and become successful are different

We believe that our prosperity and quality of life depend on understanding these ways

The Internet – circa 1474

and today…

The McGraw-Hill Companies

BusinessWeek

MAY 2, 2005 www.businessweek.com

Blogs will change your business

o death of blogs. Don't
f online journals that
, there's plenty out
of hate, and the same
to trade punches on
k in our society today, and it's on

d to close your eyes to them,
formation world since the
business—including yours. It
ies, or videos of Britney in a
one, or delegate. Given the
ective. They're a prerequisite.

gs—or haven't since blogs
g to a Pew Research Center
ead them. So we're going to take
gs 101 for businesses—in the
derlined words that, when
Web page. This all may make for
thing out from the page,

here, with 40,000 new ones
onal law. And, yes, many are
Doo," reads one April posting.
leaves some 40 new ones every
employees, or leaking those

the information the world

JOHANNES GUTENBERG

» This 15th-century German devised technology to manufacture books. Gutenberg failed as a businessman and died poor. Yet his printing press, involving movable type, gave birth to mass media—a world in which a handful of publishers can reach audiences of millions. That model is under threat today.

MOBLOGGING

» Posting to a blog on the go, from a camera phone or handheld device. These postings can be random or tied to news, such as pictures of the iPod Shuffle when it was launched at Apple Computer's MacWorld, or the birth of a baby.

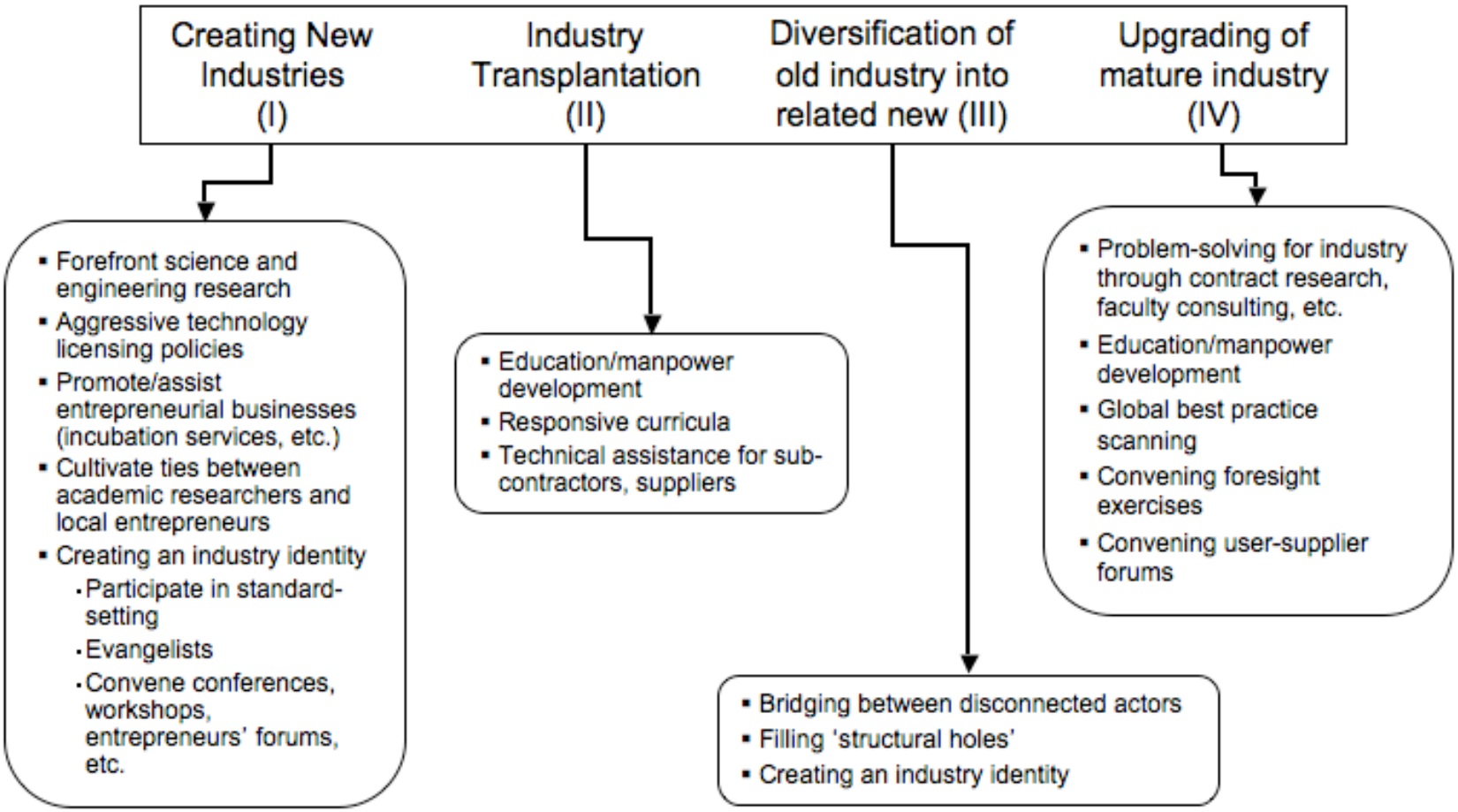
Innovation – What is it?

"The capabilities of local firms to take up new technological and market knowledge and apply it effectively (Lester)"

Industrial Transformations:

- Indigenous Transformation
- Transplantation
- Diversification Into Related Industries
- Upgrading An Existing Industry

University roles in alternative regional innovation-led growth pathways



Source: Melle, "A New Social Compact: How University Engagement Can Fuel Innovation"

University Roles In Alternative Growth Pathways

University Engagement Channels:

- Education and Training
- Adding to the Stock of Codified Knowledge
- Increasing Local Capacity For S & T Problem Solving
- Providing Space For Open Ended Conversations

Universities: Effective Channel Translations

Direct Contributions

Indirect Contributions

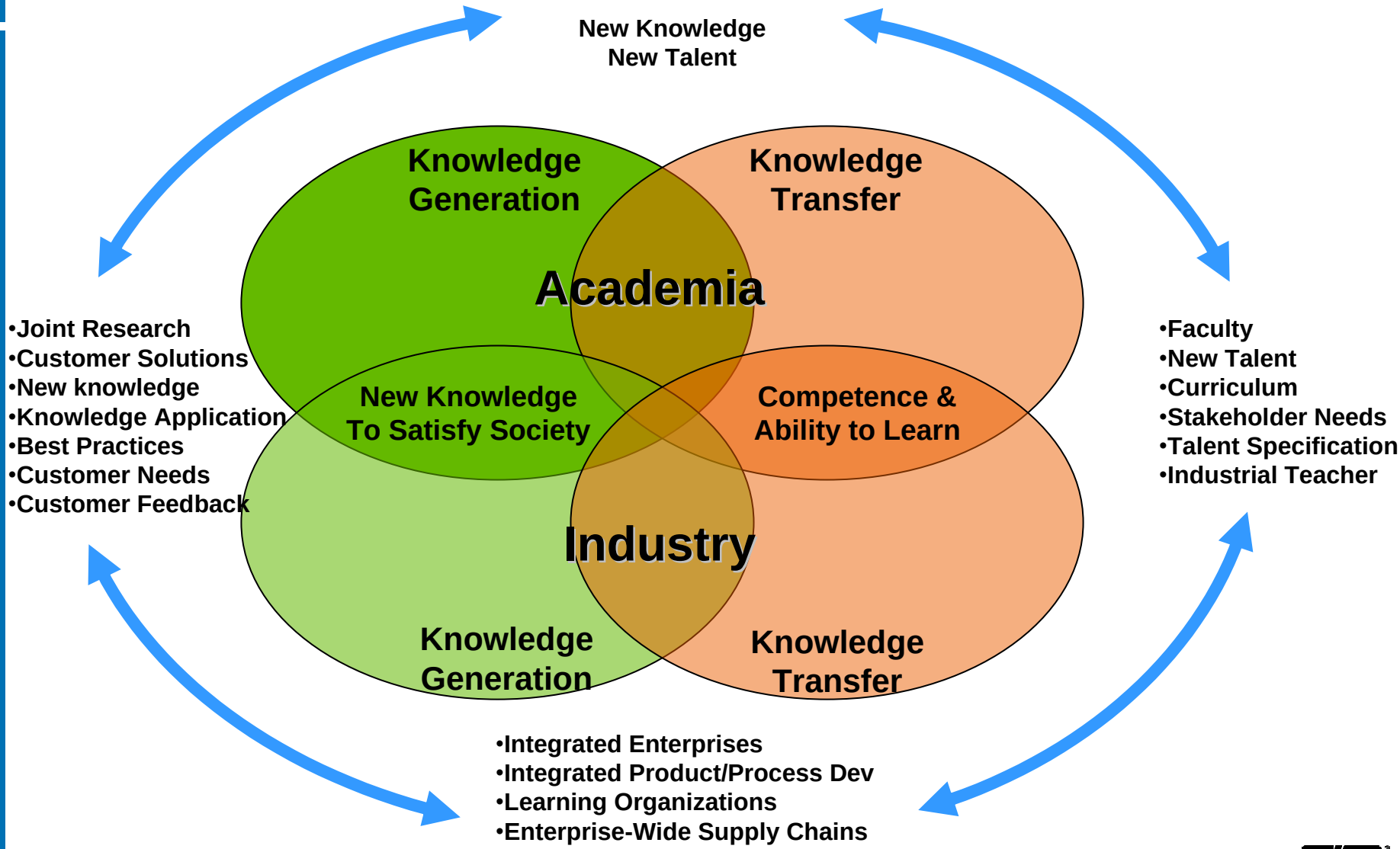
University-Specific Strategies

Context-Specific Strategies

Education and Research Excellence

The Knowledge Process of the Future

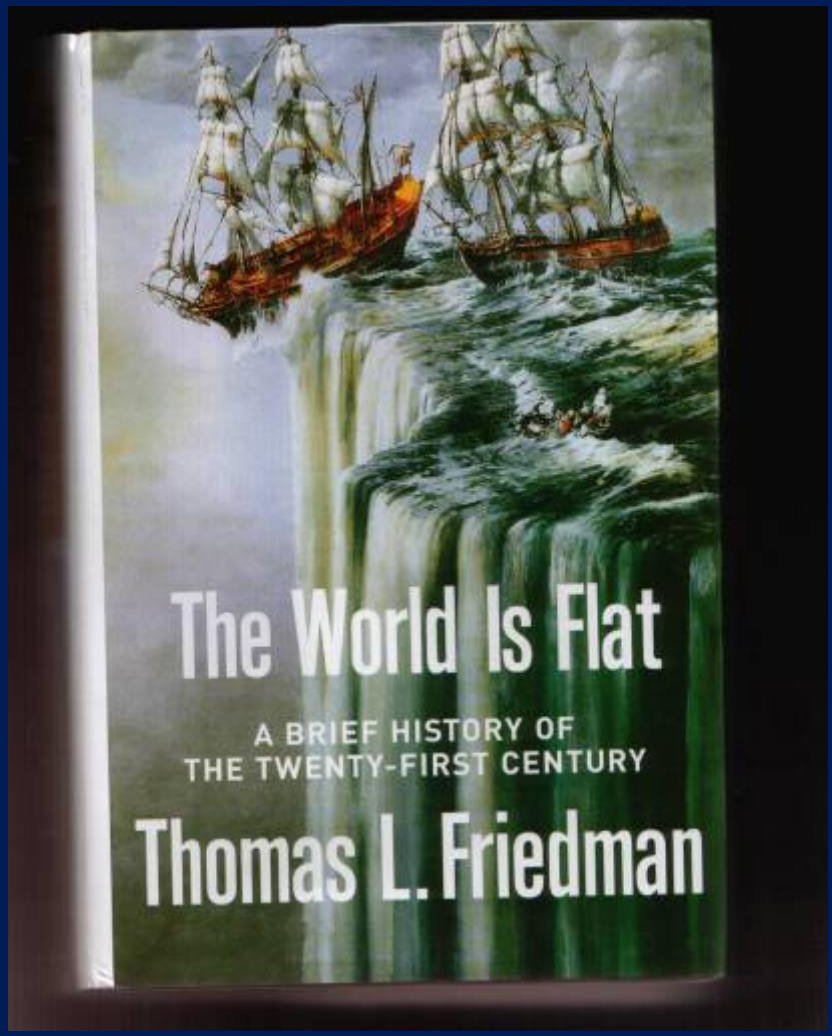
Building knowledge networks to enable the next wave of innovation



Source: Knowledge Supply Chains; A Next-Generation Manufacturing Project

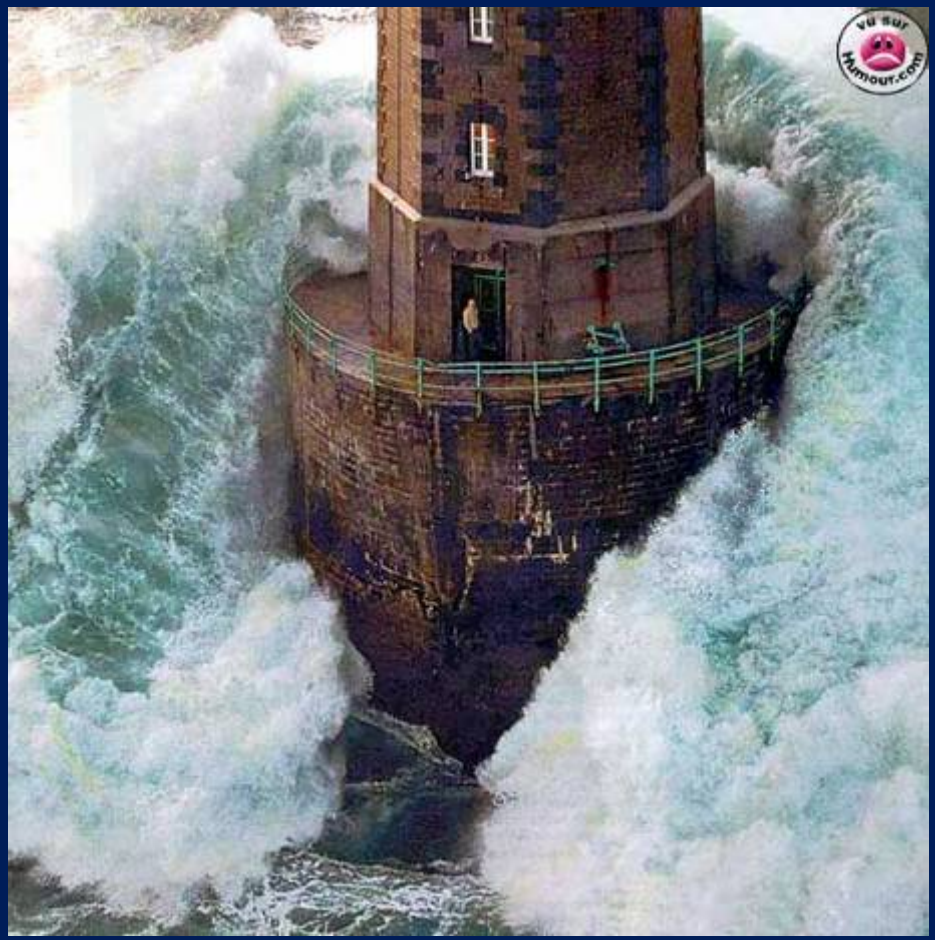
hp invent

Globalization



- The process in which geographic distance becomes a factor of diminishing importance in establishing and maintaining cross-border economic, political, and socio-cultural relations.
- Can be thought of as the widening, intensifying, speeding up, and growing impact of worldwide interconnectedness.
- Is a major force in disintermediating innovation.

Globalization:
What's Really Happening Here?



Evolutions in:

- Economic Ecosystems
- Educational "Success"
- Talent and Skillsets
- Sources of Invention
- Business Strategies

Ultimately, National Competitiveness

Are We Ready?

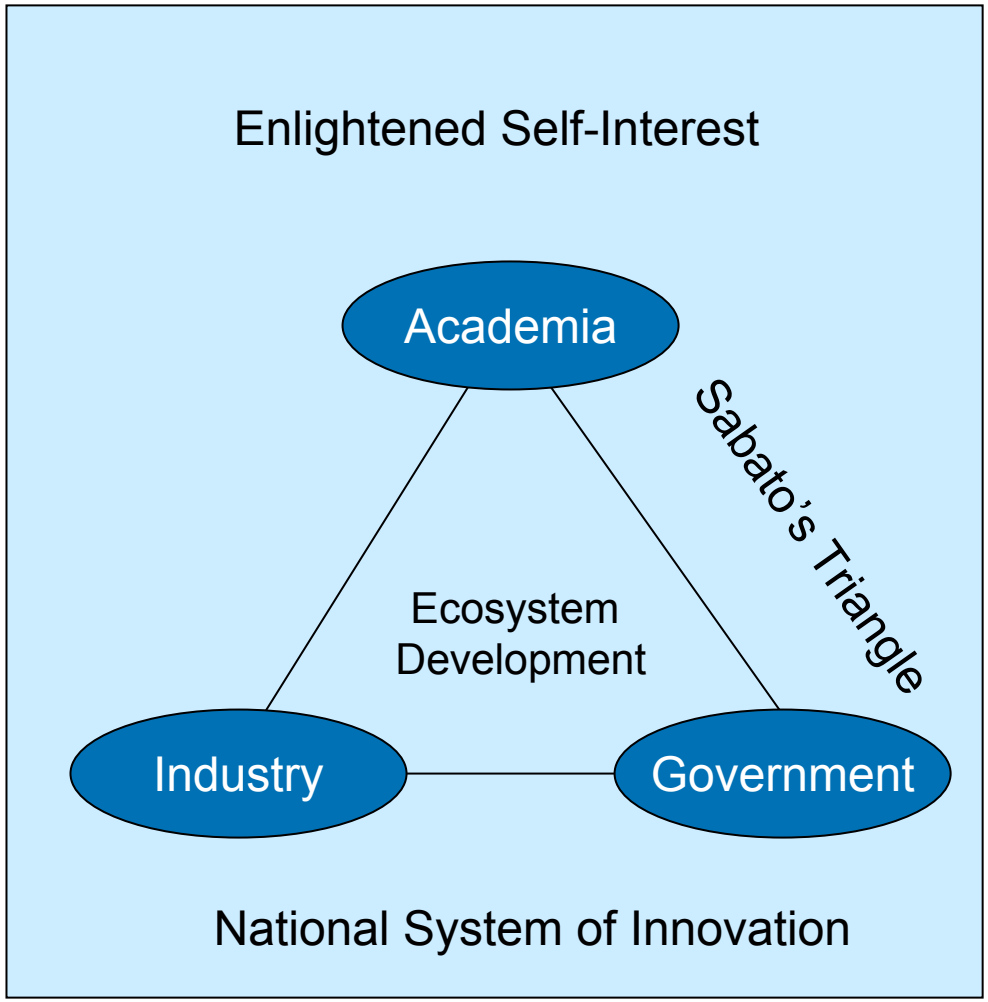
Creating the Next Innovation Ecosystem

Think Globally,

Act Locally

Think Locally,

Act Globally



Global Trends

- “Go-it-alone” no longer works – the problems are too complex.
- The various players come together because their common interests compels them to work together.
- Technology has made it possible to quickly transfer goods, ideas, money, etc. and has created a global community of increasing communication, trade, and shared interests.

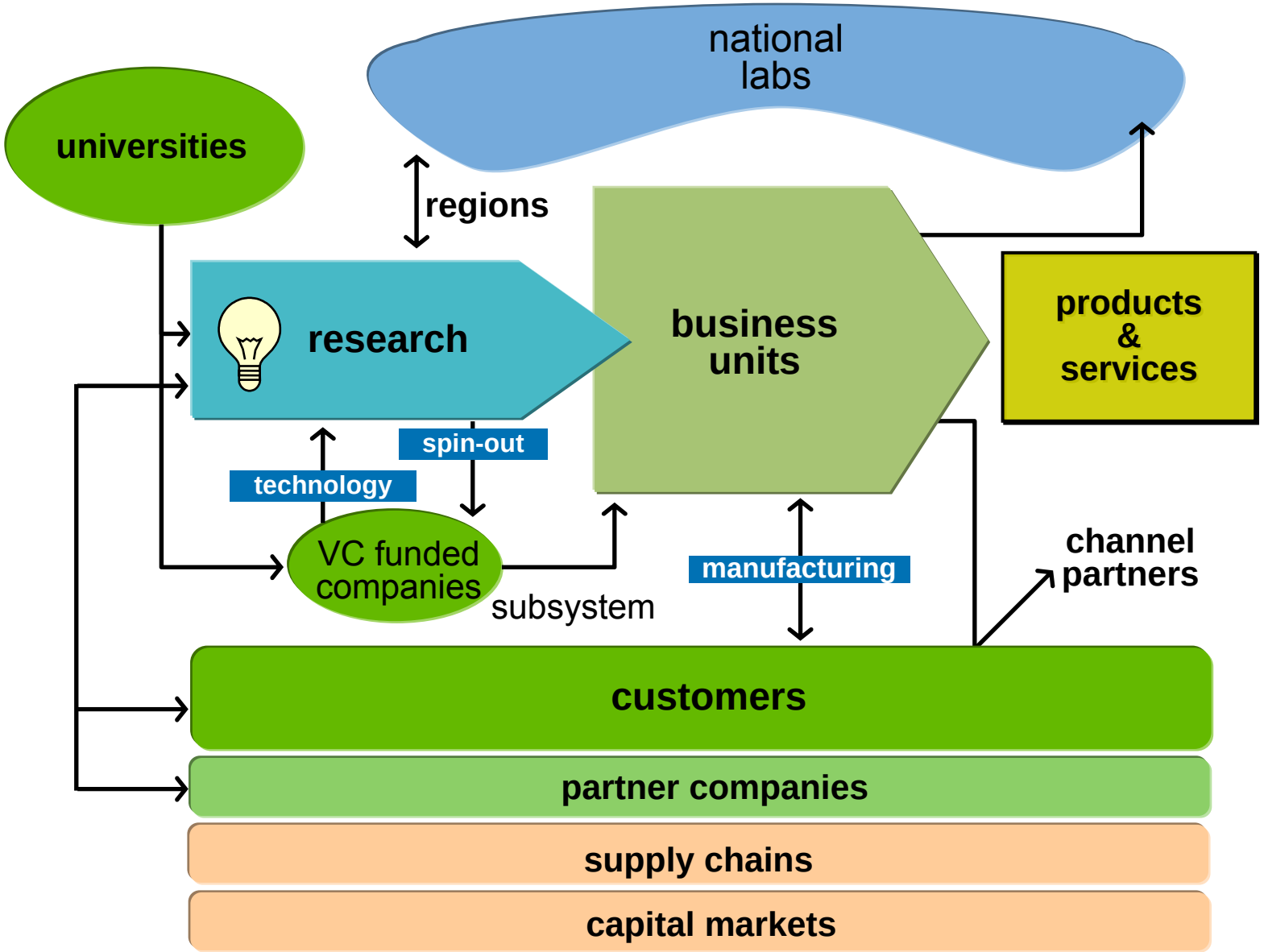
Innovation 2.0

- Industry, universities, and government make investments, create partnerships, build infrastructure, and add capability in a fragmented way.
- Programs are narrowly focused and optimized around what they can get out of the system, and serve local interests and stakeholders.
- Attempts at collaboration are increasingly mired in complex issues including IP, legislative hurdles, institutional silos, etc.

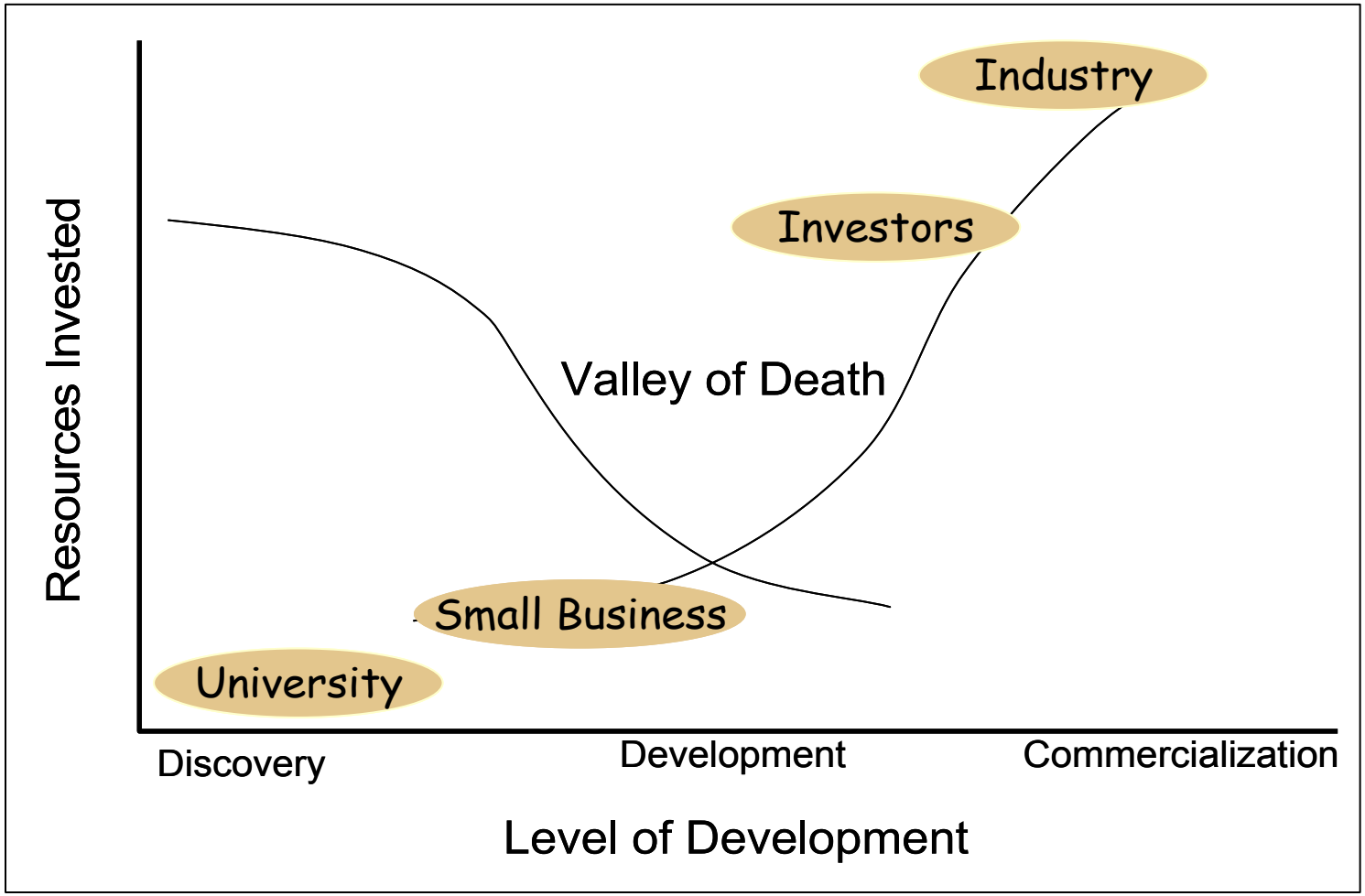
The Next Wave of Innovation …

- Form and structure of innovation are changing (globalization).
- Ways that we innovate, both individually and collectively, are changing (assumptions, values, interconnectedness)
- Environment and habitat in which we innovate are different

Modern Product Development



Valley of Death



Capacity Building

The Role of Universities

Private Sector Leadership

NGO’s

Capital Markets

World Bank – The Four Pillars of The Knowledge Economy

- *Education & Training*
  An educated and skilled population is needed to create, share and use knowledge.

- *Information Infrastructure*
  A dynamic information infrastructure-ranging from radio to the internet-is required to facilitate the effective communication, dissemination and processing of information.

- *Economic Incentive & Institutional Regime*
  A regulatory and economic environment that enables the free flow of knowledge, supports investment in Information and Communications Technology (ICT), and encourages entrepreneurship is central to the knowledge economy.

- *Innovation Systems*
  A network of research centers, universities, think tanks, private enterprises and community groups is necessary to tap into the growing stock of global knowledge, assimilate and adapt it to local needs,
  and create new knowledge.

Engineering for the Americas

An Example of Engineering-centric Partnership Today

EftA Vision

- Engineering for the Americas will provide global leadership and achieve economic impact through development of the hemisphere's engineers.

- A revitalized, holistic and multidimensional engineering experience, recognized in meaningful and portable ways, will enable the hemisphere's engineers to develop relevant skills and excel in facing the challenges of the twenty-first century.

EftA Mission

Engineering for the Americas

- Build capacity of engineering talent in order to improve hemispheric competitiveness
- Contribute to creating holistic, entrepreneurial skills needed to face the multidimensional challenges of the global economy
- Enable mobility of both people and work
- Foster partnership between industry, government, academia, accreditors and professional associations

EftA: Outcomes

Engineering for the Americas

- **Ministerial Mandate** in Lima Declaration (2004)
- **Educational and Accreditation Workshops:** in Mexico, Chile, Peru, Ecuador, Dominican Republic (2004 -)
- **IDB Regional Public Goods 2006:** a Regional Engineering Accreditation System in the Greater Caribbean ($750K) – Dominican Republic with Jamaica and Panama
- **Keynotes:** Global Colloquium on Engineering Education (2006) and World Bank Forum on Science, Technology and Innovation
- **Presentations:** CCPE, ABET, LACCEI, CONFEDI, CONDEFI, ASEE, ISTEC and many other engineering forums (2004 -)
- **Student Scholarships** to LACCEI (2007)
- **IDB Regional Public Goods 2007:** Entrepreneurship in the Southern Cone ($2.5M) – Argentina with Chile and Brazil
- **Community Development:** Outreach to ASIBEI, ABENGE, CONFEDI, CONDEFI, LACCEI, IEEE (2004 -)

EftA: Outcomes

IDB Regional Public Goods 2006: a Regional Engineering Accreditation System in the Greater Caribbean ($750K)

- Regional project between Dominican Republic, Jamaica, and Panama – Requires Government Commitment by Ministers
- Involves Industry and Accreditation Agency sponsors
- IDB Granted $600K to INTEC as Executing Agency for REAS to
  - Establish the project plan
  - Create REAS organization and infrastructure
  - Establish and promote adoption of engineering accreditation standards (Engineers Canada involved)
  - Support both Spanish and English languages
  - Develop Training and Adoption Facilities

A Vision for Innovation 3.0

- Our current prosperity exists because government, universities, and industry have partnered for the past 50 years.
- The three pillars that underlie this coming together have been innovation, education, and entrepreneurship.
- We have the opportunity to recreate the post-World War II renaissance, in a contemporary format for the modern networked economy and the flat world.
- To achieve this vision, the participants in the innovation ecosystem have the opportunity to work together to create the next wave innovation infrastructure:
  - Identify and amplify key patterns
  - Steer the investments
  - Manage the complexity
  - Solve the problems and issues that emerge

Models For Effective Innovation

Value Creation Based

Pull vs Push

Global Context

Regional Specialization

Obervations

Innovation is a Complex Space

Requires Simultaneous Understanding of National & Global Innovation Ecosystems

Collaboration Essential Among GUI Sector & NGO's, Capital Markets and Supply Chains

Intentional Strategies Between GUI Essential

Capacity Building Remains a Critical Challenge

Most University and Industry Partnerships Are Non-Strategic and Fragmented

Call To Action

We Need to Adapt to the Flat World

National Investments Must be Realigned

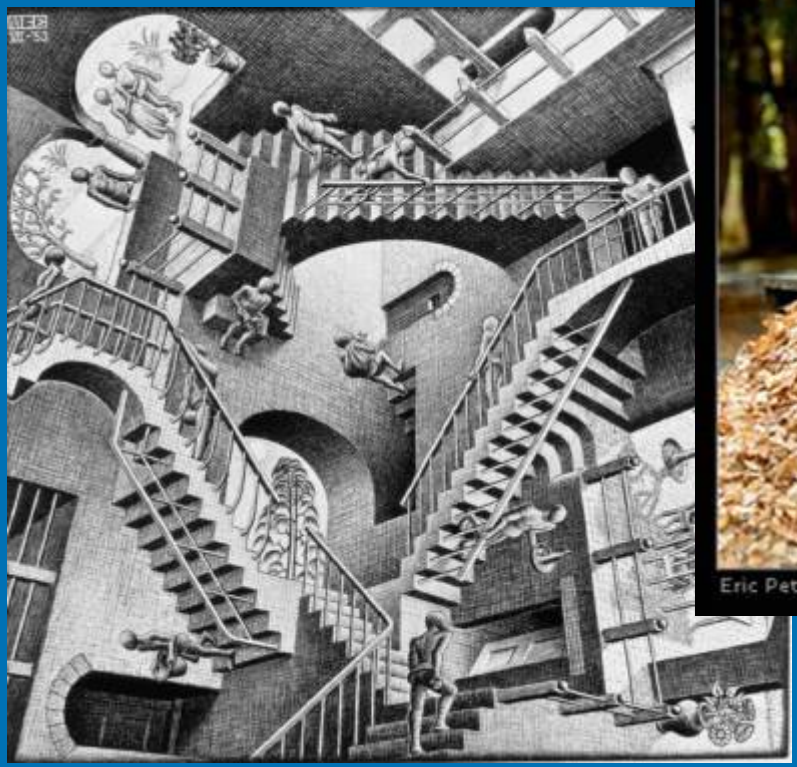
Capacity Building Requires All Sectors

Multilateral Development Banks Must Engaged

Industry And Universities Must Work Together To Be Relevant, Innovate In Meaningful Ways And Positively Impact Society

To Paraphrase Darwin – It is Not the Strongest who Survive but Those Best Able to Adapt

Innovation: What's Needed?



~ Networked Infrastructure ~

The Right Attitudes ~

~ Inspiration ~

hp invent


Win-win-win-win-win


Thank You
wayne.johnson@hp.com


hp
invent