



Enabling Grids for E-science



BELIEFS ABOUT THE FUTURE OF IT AND HOW THEY RELATE TO THE ENTERPRISE GRID VISION

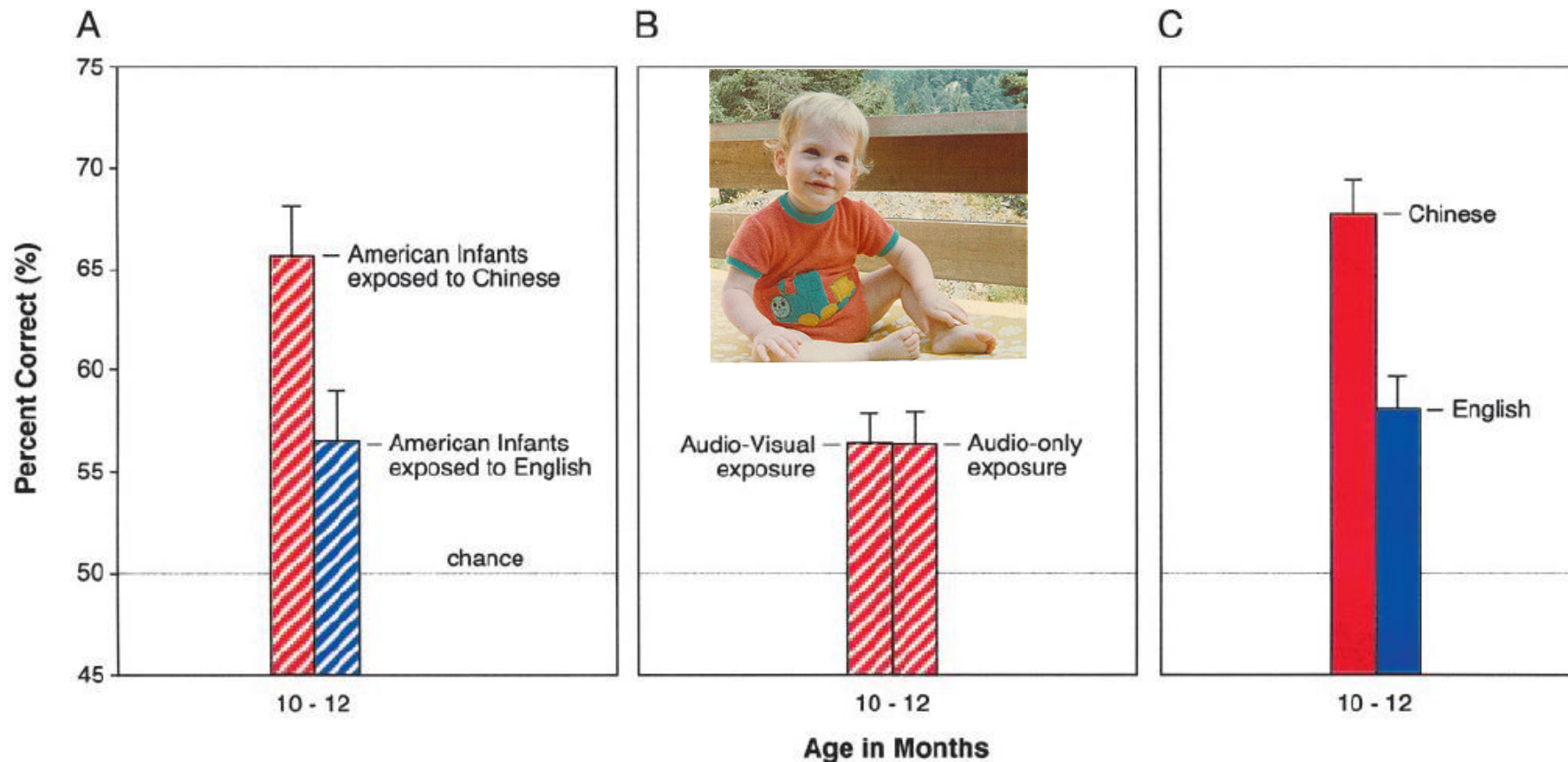
*Dr. Rolf Kubli, EDS Fellow,
Chief Technology Officer EDS Switzerland*

Based on "IT3+", Jeff Wacker et al, EDS Fellow/EDS Futurist

www.eu-egee.org



10 May 2007 / Copyright EDS



(A) Experiment 1. Effects of live foreign-language intervention in infancy. Mandarin Chinese speech discrimination tests conducted on infants after exposure to Mandarin Chinese (red stripes) or American English (blue stripes) show significant learning for the Mandarin-exposed infants when compared with the English controls. **(B) Experiment 2. Mandarin Chinese foreign-language exposure in the absence of a live person (AV or A) shows no learning.** (C) Results of the same Mandarin speech discrimination tests on monolingual Mandarin-learning (red) and English-learning (blue) infants.

Sources: Kuhl P.K. et al., Foreign-language experience in infancy..., Center for Mind, Brain and Learning and Dept. of Speech and Hearing Sciences, University of Washington, Seattle and Manfred Spitzer, University of Ulm, Germany

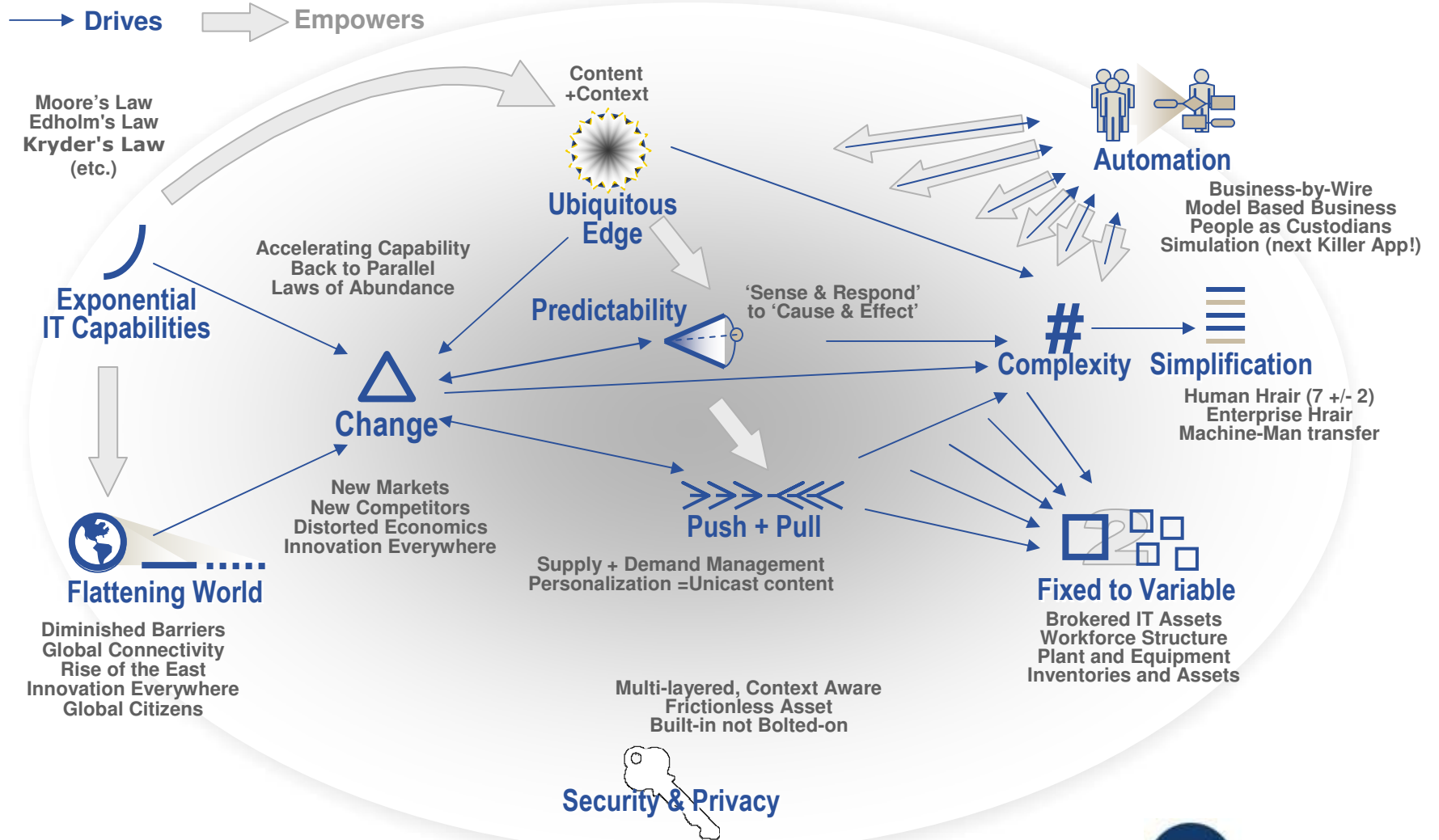
→ Drives

→ Empowers



The "edge" (first contact of IT with application) will continue to expand and disappear into the environment creating an exponential growth of new content and new context information that will be harnessed by leading enterprises to create competitive advantage and superior execution.

- 1. What the infant's brain tells the CIO**
(Chief Information Officer)
- 2. Beliefs about the future of Information Technology**
- 3. Grids for the global enterprise – from “System-Level Science” to “System-Level Business”?**



→ **Drives** → **Empowers**

Moore's Law
Edholm's Law
Kryder's Law
(etc.)

Accelerating Capability
Back to Parallel
Laws of Abundance

Exponential
IT Capabilities

△
Change

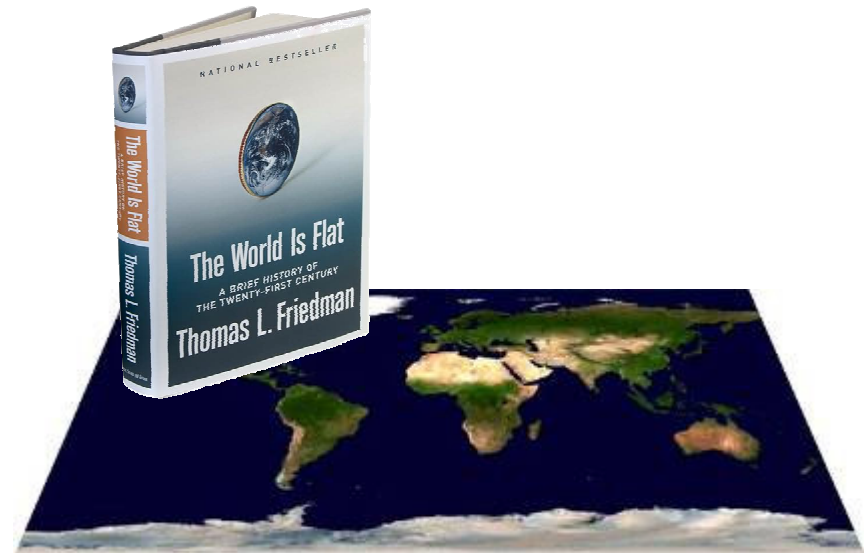


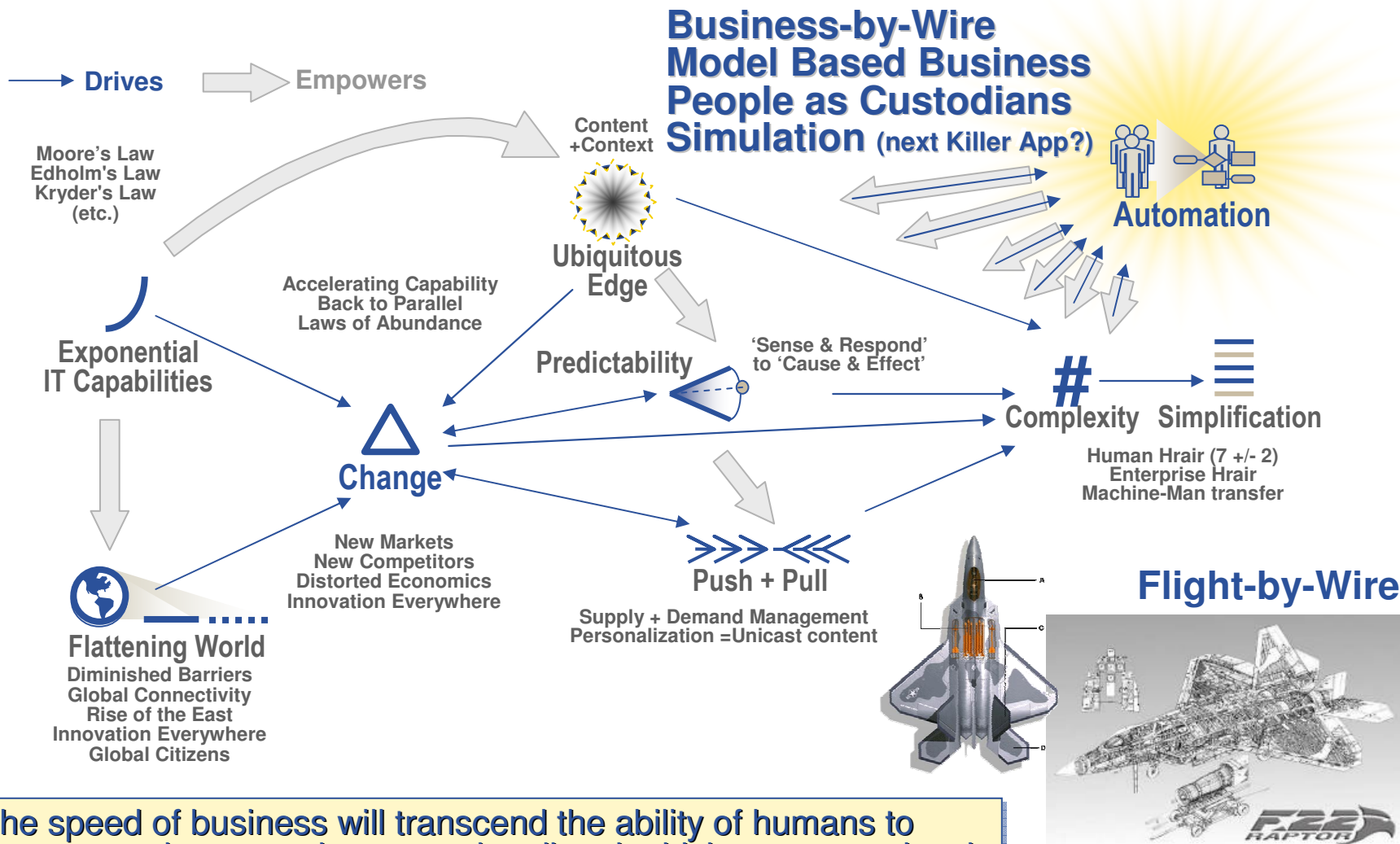
Flattening World

Diminished Barriers
Global Connectivity
Rise of the East
Innovation Everywhere
Global Citizens

New Markets + New Competitors
Distorted Economics
Innovation Everywhere

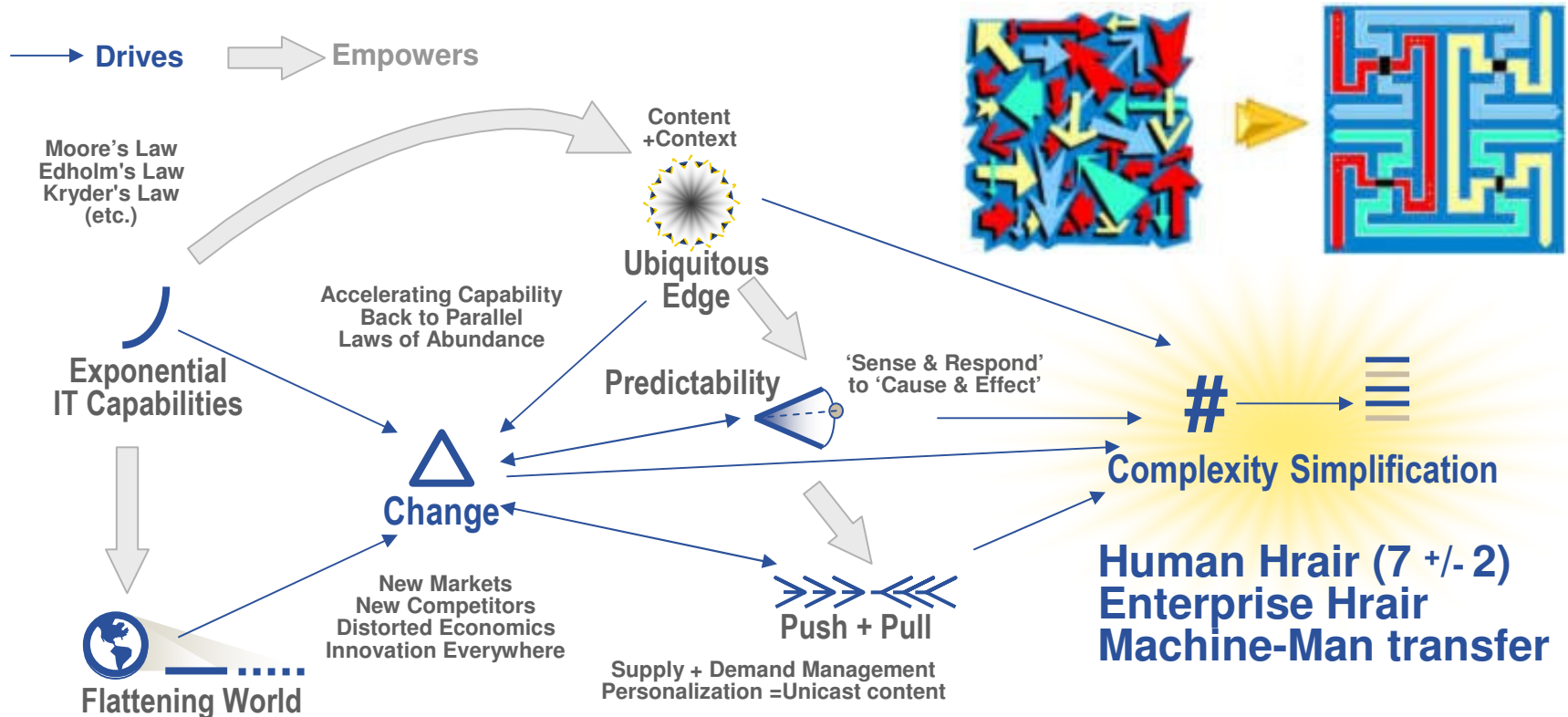
The 'flat world' will amplify the effects of the leveled playfield creating new markets and competitors as well severely distorted economics driving immediate worker dislocation and "leap-frog" strategies.





The speed of business will transcend the ability of humans to manage and operate the enterprise directly driving to a new level of automation that will create "business by wire" enterprises.





The proliferation of change and new capabilities will create a more complex world that will exceed the capacity for change of companies and consumers resulting in a focus on simplification by transferring complexity from humans to IT systems.

Eras of the IT Evolution

60s 70s 80s 90s **Y2K** 2004 Present

Increasing complexity levels



Dawn



Monolithic



Decentralized



Distributed



Internet



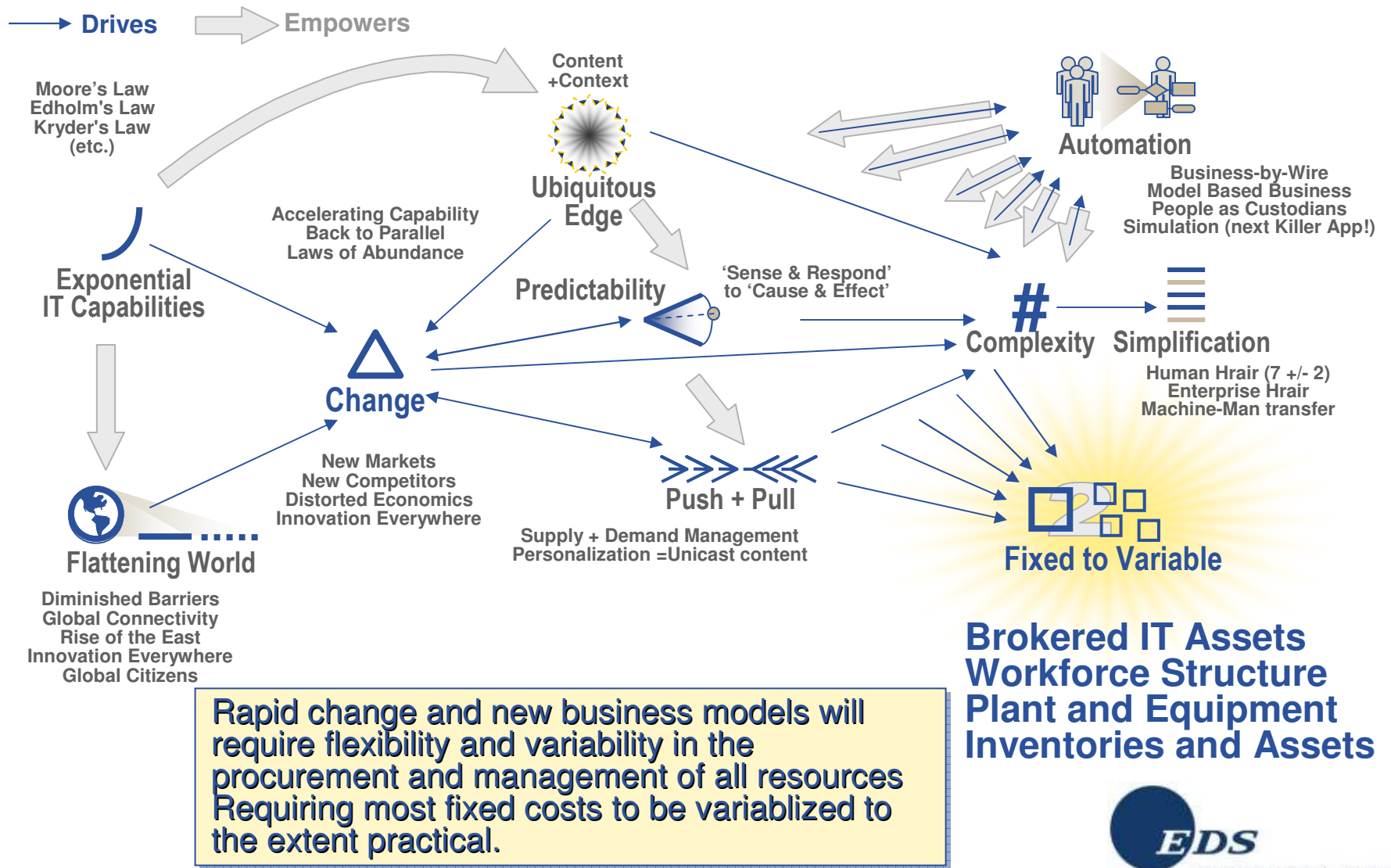
Agile

“Back to the Future”

Convergence

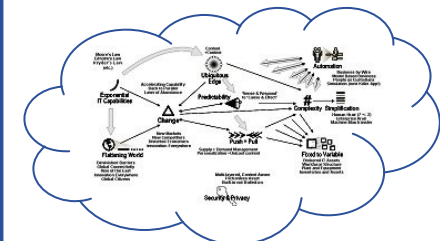


EXPERTISE. ANSWERS. RESULTS.



<p>Exponential IT Capabilities </p>	<p>Parallelization, scalability, capacity aggregation, biology inspired computing algorithms</p>
<p> Flattening World</p>	<p>Global collaboration, virtual organizations, innovation networks, "World Wide Grid"</p>
<p>Ubiquitous Edge </p>	<p>Adaptive environments, data volume growth, context-awareness, real-time enterprise</p>
<p>Predictability </p>	<p>Simulation, complex event processing, complex models, agile enterprise</p>
<p> Push to Pull</p>	<p>Coping with mass-customization complexity, virtual private services</p>
<p>Change </p>	<p>Agility, responsiveness, application acceleration, Service Oriented Architecture</p>
<p> Complexity Simplification</p>	<p>Standardization, consolidation, virtualization, resource sharing, integrated integration</p>
<p> Automation</p>	<p>Business by wire, process management and service delivery automation</p>
<p> Fixed to Variable</p>	<p>Flexible IT sourcing, virtual services brokerage, utility, pay-per-use</p>
<p> Security & Privacy</p>	<p>Pressure to solve complex policy, security and privacy problems and provide confidence</p>

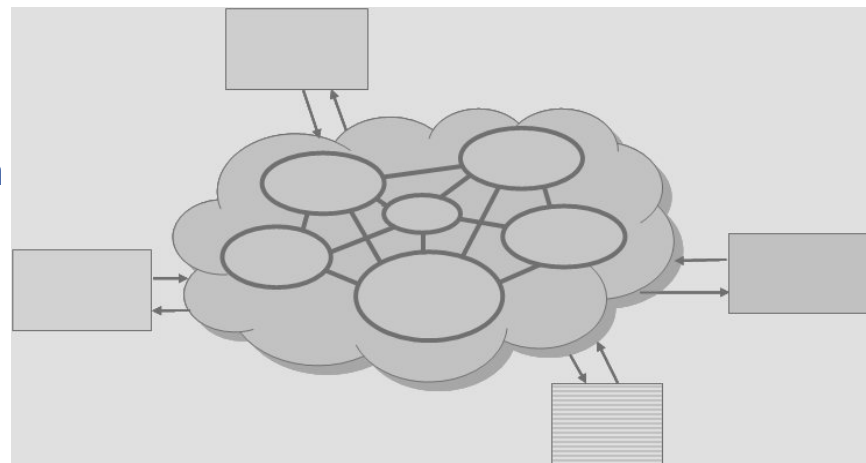
Beliefs



Grid-related Characteristics

System-level science*

„...developing an end-to-end (stimulus to output) understanding of fundamentally complex, multidisciplinary, multiphenomena behaviors (characterizing a single system)...“



The implied dynamic and efficient assembly of people, infrastructure, software and policies united by some common interest or task, i.e. creation and operation of a virtual organisation (VO), describes

a vital integration challenge and a mission-critical collaboration capability for many companies operating in a highly competitive global market!

* Source:

Ian Foster, Carl Kesselman, "Scaling System-Level Science: Scientific Exploration and IT Implications", IEEE Spectrum, November 2006

Thesis: Towards System-Level Business

The EGEE-type „World Wide Grid“ shared computing approach will help reinvent virtual enterprises and stimulate technology and new processes for future IT service models.

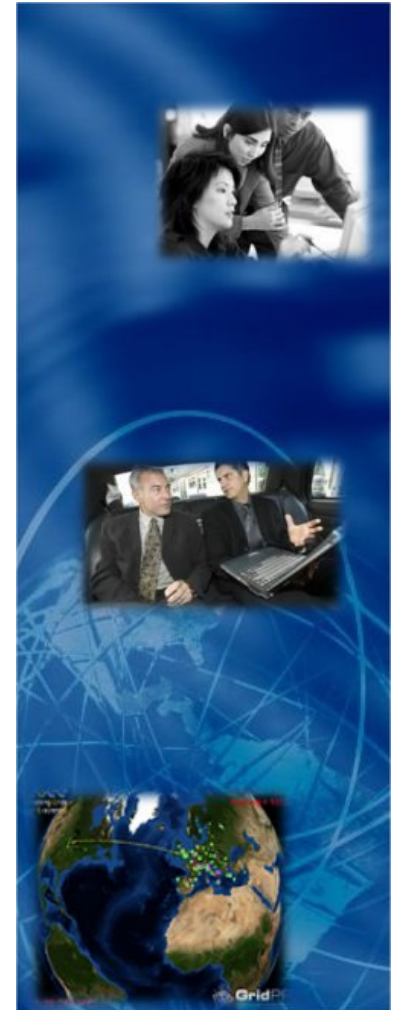
Antithesis: Grid-Skeptics

Cultural and political barriers, lack of standards, poor technical quality, security challenges and limited commercial exploitation of publicly funded programs prevent broad adoption of large-scale, shared computing utilities.

In my view, matching the large-scale grid opportunity to business needs is very attractive, but needs more work - now.

Business buy-in success factors include

- Operational excellence and dependability
- Understanding business benefits and shared computing economic models
- Governance and risk management best practice





Enabling Grids for E-science

Rolf Kubli

EDS Information Business GmbH
CH-8052 Zurich

Phone +41 43 812 97 90

Fax +41 43 812 01 32

Mobile +41 79 638 99 21

Email rolf.kubli@eds.com

www.eu-egee.org



EXPERTISE. ANSWERS. RESULTS.

EDS and the EDS logo are registered trademarks of Electronic Data Systems Corporation. EDS is an equal opportunity employer and values the diversity of its people. © 2007 Electronic Data Systems Corporation. All rights reserved.



Information Society
and Media



10 May 2007 / Copyright EDS

EGEE-II INFSO-RI-031688

EGEE and gLite are registered trademarks