The Big Shift: the mutual coupling of two sets of disruptions – one in business & one in IT ecosystems & cloud computing

Our Business Context in 5 Astounding Graphs

or depressing graphs
The return on assets (ROA) for U.S. firms has steadily fallen to almost one-quarter of 1965 levels.

Similarly, the ROA performance gap between corporate winners and losers has increased over time, with the “winners” barely maintaining previous performance levels while the losers experience rapid performance deterioration.
Average Lifetime of S&P 500 Companies

However, in those same 40 years, labor productivity has doubled – largely due to advances in technology and business innovation.
The performance paradox: ROA has dropped in the face of increasing labor productivity

![Firm performance metric trajectories (1965-2008)](chart)

Source: Deloitte analysis

But why is this happening??
A Partial Answer

• power has shifted to customer
• brand loyalty diminishing
• (global) competition increasing
• creative talent is grabbing more of the rent

But I thought you implied there was something more fundamental, more deep structural going on, jsb.

20th Century Era Captured by Alfred Chandler
Push Economy

20th century infrastructure
roads/cars/trucks/trains/ships/airplanes

Scalable Efficiency becomes the goal.

- predictable
- hierarchy
- control
- organizational routines
- minimize variance

S-curve
stable over decades.
(Few real changes in 60 years)
Organization Architectures leverage the properties of Global Infrastructure Architectures

And stable transportation infrastructures => Chandlerian firms that focused on scalable efficiency

But the 21st C infrastructure driven by the continual exponential advances of computation, storage & bandwidth, with no stability in sight, has consequence!!

Then, what does this say about the need for new organizational architectures & institutional innovations?

For example:

in a world of increasingly rapid change, the half life of a given stock/skill is constantly shrinking & the predictability of future needs is increasingly less certain!

Stocks ===> Flows
(of K assets, including IP) (of knowledge)
protecting, participating,
teaching predetermined learning on demand curriculum

wow, are knowledge flows the new normal?
The Big Shift

Push → Pull

Stable Environments (predictable/forecast-able) → Dynamic Environments (Unpredictable)
Knowledge Stocks (manage/protect) → New Knowledge Flows (participate in)
Knowledge Capture (knowledge management) → Knowledge Creation
Explicit Knowledge → Tacit Knowledge
Transactions → Relationships
Zero Sum → Positive Sum Mindsets

Institutions driven by scalable efficiency → Institutions driven by scalable peer learning

Key is how to participate in knowledge flows especially on edges (firm/industry/region/gen Y,..)

Supporting & leveraging knowledge flows (social media & relational thinking to the rescue)

social media as a new kind of scalable architecture for scalable learning.
Supporting Users Across Generations

Learning from the Twitter/FB generation.

Peter E. Lesser
Director of Global Technology
Skadden, Arps, Slate Meagher & Flom LLP
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Social Bookmarking

Extending traditional public bookmarking:
- User-specified metadata
- Ability to add descriptions and comments
- No hierarchical structure – retrievable via tag search
- Centrally stored-accessible from any browser
- Shareable with others

Onomi – Mitre Corporation
SAP wants to accelerate customer inspired enhances of NetWeaver

SAP Developer Network (SDN) was created as a learning platform and as an environment to foster interaction through forums, wikis & blogs in 2002.
SAP Community Network’s scale and richness have potential for Exponential Learning

SAP Community Network
Growth in Members 2003-2008E

Note: Includes SDN and the BPX Community beginning in Fall 2006.
Source: SAP

An Enterprise Twitter solution emerged from the SAP Community Network
Enterprise Social Media Experiment (ESME) Founding Members

Anne Petteroe
Pearl Consulting
-ABAP developer, Web/UI designer

Darren Hague*
Axon Solutions
-Architect, Java/Scala coder

Denis Howlett
Enterprise Irregulars
-BPX expert

Dick Hirsh
Siemens IT
-NetWeaver expert

Oliver Kohl
MIBS GmbH
-ABAP/Java developer

Mrinal Wadhwa
Rich Internet App.
-Flex, Flash, AIR, AJAX developer

Dick Hisrich
Siemens IT
-NetWeaver expert

Oliver Kohl
MIBS GmbH
-ABAP/Java developer

Mrinal Wadhwa
Rich Internet App.
-Flex, Flash, AIR, AJAX developer

*Now a principal consultant for SAP
Mastering the art of participating in flows helps you stay current in a world of flux and in that sense learn faster — but can’t you do much more than just that?

Creation Spaces \textit{qua} Institutional & technological Platforms – environments that effectively integrate individuals and teams within a broader learning ecology to engage in challenging problems so that performance improvement accelerates as more participants join.
Open Source as a Participatory Learning Platform

The Open Source Movements:
• writing code to be read
• engagement thru useful additions
• social capital matters

Each OS community has a constitution, dispute resolution mechanisms, culture, ...

open code, open system, open community discussion

Li & Fung – Process Orchestrator

10,000 suppliers
48 countries
ROE 30 to 50% & one million$/employee
Li & Fung – orchestration
Learning, bootstrapping skills & knowledge creation
goods dominant logic to service dominant logic

Li & Fung Performance Feedback

Retailing
Distribution
Centers
Global

Key: 30/30 Relational Principle

The Big Shift in IT
(from enterprise systems to clouds)
is precisely what is needed
to support:
> unpredictable scaling needs
> distributed creation spaces/platforms
> rapid experimentation
> innovation on the edge
20th Century: Push Economy - Stocks

Infrastructure of roads/trucks/trains/ships/airplanes & ERP

Big Shift

21st Century: Pull Economy - Flows

Cloud Architectures & providers

21st century firms/producers

Drivers for change will catalyze four fundamental disruptions

1. Capability of existing premise-based platforms to meet business needs
2. New delivery models
3. Addressing unmet needs of business ecosystems
4. Disruption of other industries

Restructuring of the IT industry

Differentiated value of cloud providers
The customer segments benefiting most from this disruption are typically cash-strapped, growing rapidly, and lack on-premise support

- Start-ups
- SMBs
- High growth enterprises
- Edges of enterprises

New delivery models

- IaaS on-demand
- SaaS functionality
- Lower up-front capital outlays
- Lower fixed costs
- Speed to scale

Amazon’s Cloud and web services (AWS) creates an ecosystem that enables startups to get going fast and scale quickly.

Animoto startup – (personal MTVs) went viral one day on Facebook: scaled from 50 servers to 5000 servers in just about a day on the Amazon Cloud
Examples of SaaS services built on AWS, Google AppEngine and Force.com

A wave of lead companies are emerging that orchestrate complex extended business process across large diverse ecosystems of participants

- Orchestrators of business ecosystems
- Addressing unmet needs of business ecosystems
- Scalable by multiple parties
- Security and SLA enforcement capabilities
- Enterprise ready capability
- Ability to scale diverse networks
- Ability to facilitate complex, long-lived transactions
Rearden Commerce is an orchestrator that needed to transform their architecture to meet business needs

Original shortcomings:
- Current architecture unable to support customer's policy
- No standard way of incorporating vendors into platform
- No way to maintain context of an interaction

A typical scenario of a travel itinerary illustrates some of the challenges an orchestrator faces

If the flight to ORD was canceled:
- Car service to airport from restaurant needs to be canceled
- Flight to ORD must be rebooked for the next day
- Hotel reservation in Chicago must be canceled
- Restaurant reservation for breakfast in Chicago must be canceled
- New hotel reservation in NY must be made
Rearden adopted a policy-based, outside-in approach to transformed their architecture.

Outside-In approach provides the necessary flexibility required of cloud computing architectures to support a large number of participants.

<table>
<thead>
<tr>
<th>Architectural style today</th>
<th>Architectural style to address unmet needs of orchestrators</th>
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<tbody>
<tr>
<td>Control</td>
<td>One control point</td>
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<tr>
<td></td>
<td>Autonomous entities</td>
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<tr>
<td>Resources</td>
<td>Heterogeneous</td>
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<td></td>
<td>Heterogeneous squared</td>
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<tr>
<td>Transactions</td>
<td>Fine grained Short-lived</td>
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<td></td>
<td>Coarse grained Long-lived</td>
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<tr>
<td>Completion</td>
<td>Optimistic</td>
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<td></td>
<td>Pessimistic</td>
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As enterprises focus more on orchestration, outside-in architecture will be needed to support ecosystem participation.

Enterprises expanding business networks

From: Enterprise \hspace{1cm} To: Ecosystem

beyond hub and spoke

Need For Scalable Workflow

- Multiparty interactions, with N large
  - Workflows must be structured to accommodate multiple ways to accomplish business goals so that unique party-specific implementations are not necessary
- Control-oriented (EAI-styled) flow will not scale
  - Specifics of enterprise platform implementations need to stay within the enterprise
  - BUT business policies must be factored out and made explicit
    - Business policy buried deep in an enterprise system, or implied in the edge of a directed graph, restricts reusability
- Externalized policy enables loosely coupled, policy informed Interactions
In wave 3, emerging demands of complex ecosystems & large scale enterprises lead to specialized, federated cloud infrastructural services.

Large scale enterprise IT
Other intense, complex computational tasks.

Composition of services from multiple layers
Cloud service providers enhance differentiation

e.g., Enterprise Data Fabric/clouds – redefining analytic architectures
(Greenplum, Aster Data, Hive, DryadLINQ)
In wave 4, industry specific cloud solutions will emerge to address specific needs.

- Industry and market shapers
  - Mature, robust enterprise architecture
  - Interoperability
  - Collaboration platforms
  - Leveraging scale and scope

The impact of Cloud Computing has the ability to disrupt the structure of the healthcare industry.

- Support Communities
- Devices
- Analytic Service Providers
- Personal Health Record Managers
- Personal Health Advisors
- Patient

- Urgent/Convenient care
- Disease Specific Providers
- Fitness Providers
- Prevention Providers
A rapidly evolving co-evolution between emerging digital infrastructures & it’s industry structure and the structure and form of enterprises & business ecosystems more generally.

Cloud Architectures & providers 21st century firms/producers

Wow – this is a different world.

Thank You

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