HBMG

Collaboration
in
Design Builds

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"May you live in interesting times"

“Interesting” → Good

- Many products to choose from
- Rich set of features and functions
- Multiplatform solutions beginning to appear
- Movement to Web and Cloud
- Changing TCO

“Interesting” → Not So Good

- High cost on many; pricing per component
- Most not standards-based
- Unique, non-intuitive interfaces
- Significant training required
- Limited features and functionality at this time

How the World Has Changed

- Most businesses are global *at launch*
- Businesses are increasingly real time
- Convergence has become a way of life
- Science, product development, and product cycles are compressing
- The source of value has shifted for manufacturing
- Competencies, future capabilities, and “ultra tech” are the prime driver
- The traditional value chain is forever dead

Technology—Webster's

- The science of the practical or industrial arts
- Applied science
- A method of achieving a practical purpose
- The totality of the means employed to provide objects necessary for human sustenance and comfort

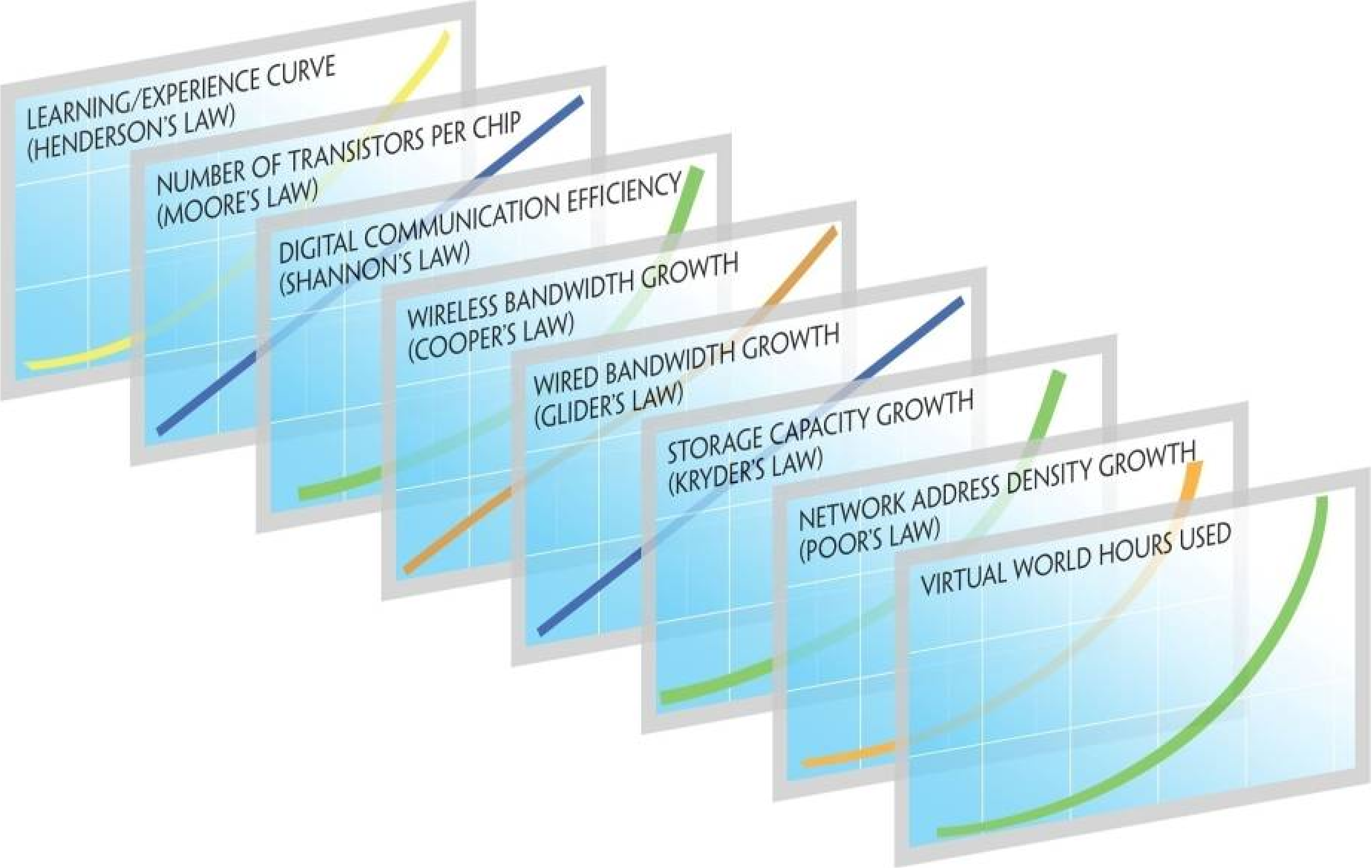
What is Technology?

“Application of knowledge
to objectives”

—J. P. McTague, “Wielding a Three-Edged Sword,”
Federal Lab Technology
Transfer: Issues and Policies (1988)

Information and Communication Trends

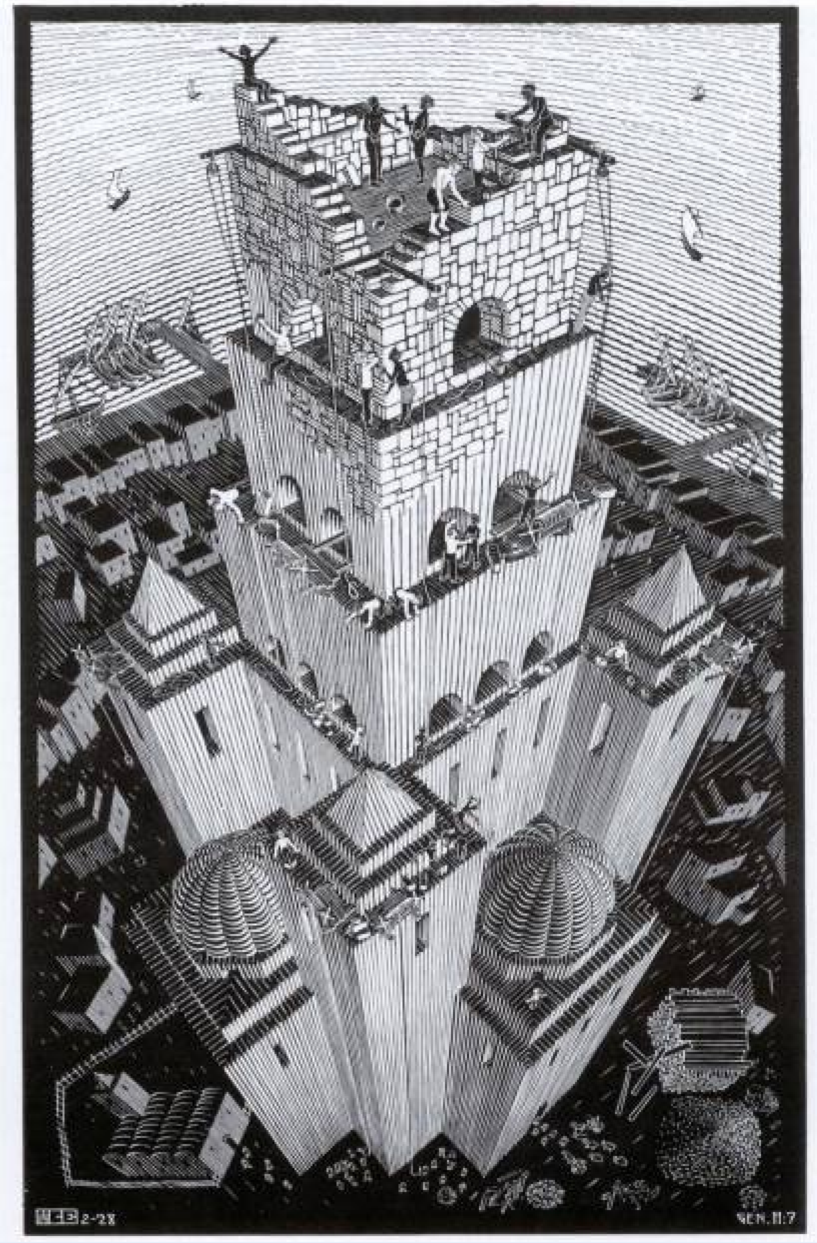
- Seamless Interoperability Between Heterogeneous Networks
- Mobility for All
- User Centered Content-Based Information Access
- Agents Take Over Routine Work
- “E”- Processes for Business and Private Life
- Human Computer Interaction is Turning Into Human Computer Cooperation

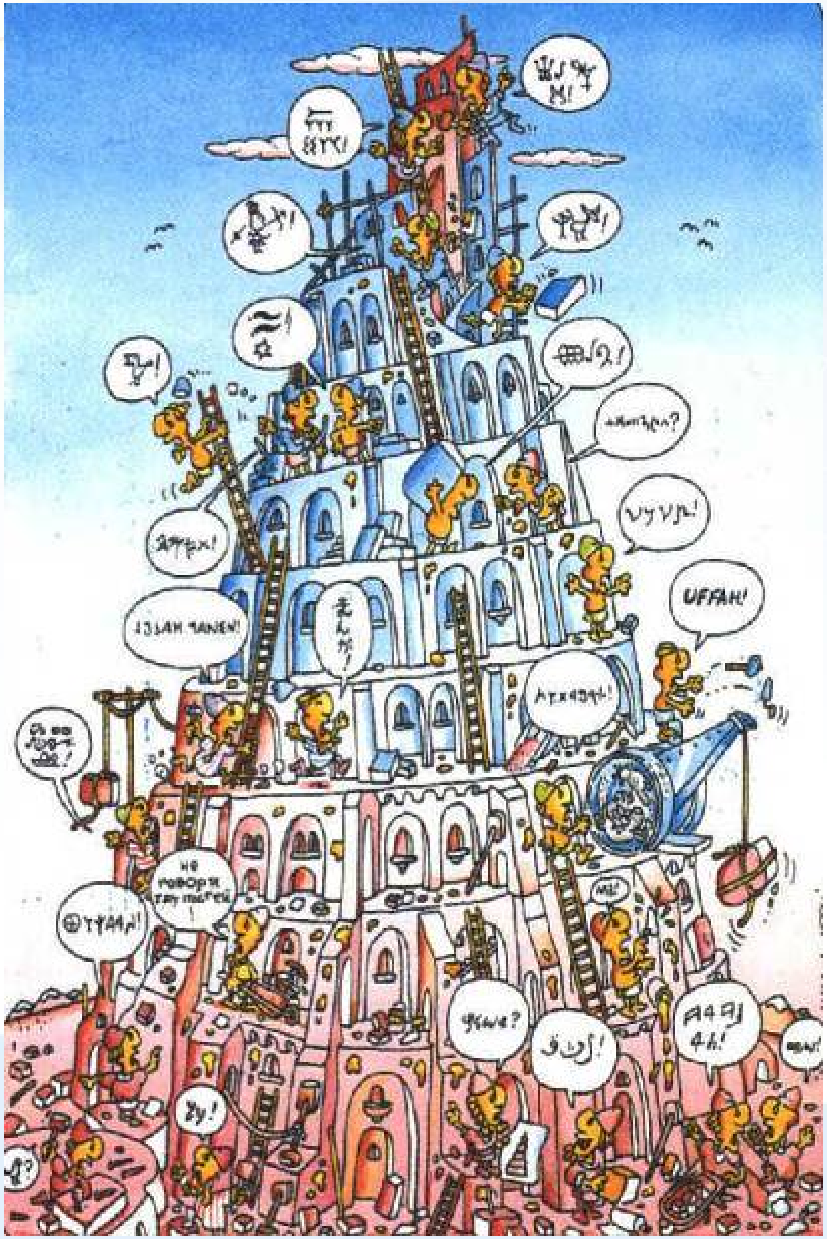

LEARNING/EXPERIENCE CURVE
(HENDERSON'S LAW)
NUMBER OF TRANSISTORS PER CHIP
(MOORE'S LAW)
DIGITAL COMMUNICATION EFFICIENCY
(SHANNON'S LAW)
WIRELESS BANDWIDTH GROWTH
(COOPER'S LAW)
WIRED BANDWIDTH GROWTH
(GLIDER'S LAW)
STORAGE CAPACITY GROWTH
(KRYDER'S LAW)
NETWORK ADDRESS DENSITY GROWTH
(POOR'S LAW)
VIRTUAL WORLD HOURS USED

People have been dealing with Collaboration Issues For a Long Time

The Tower of Babel

About 4000 BCE

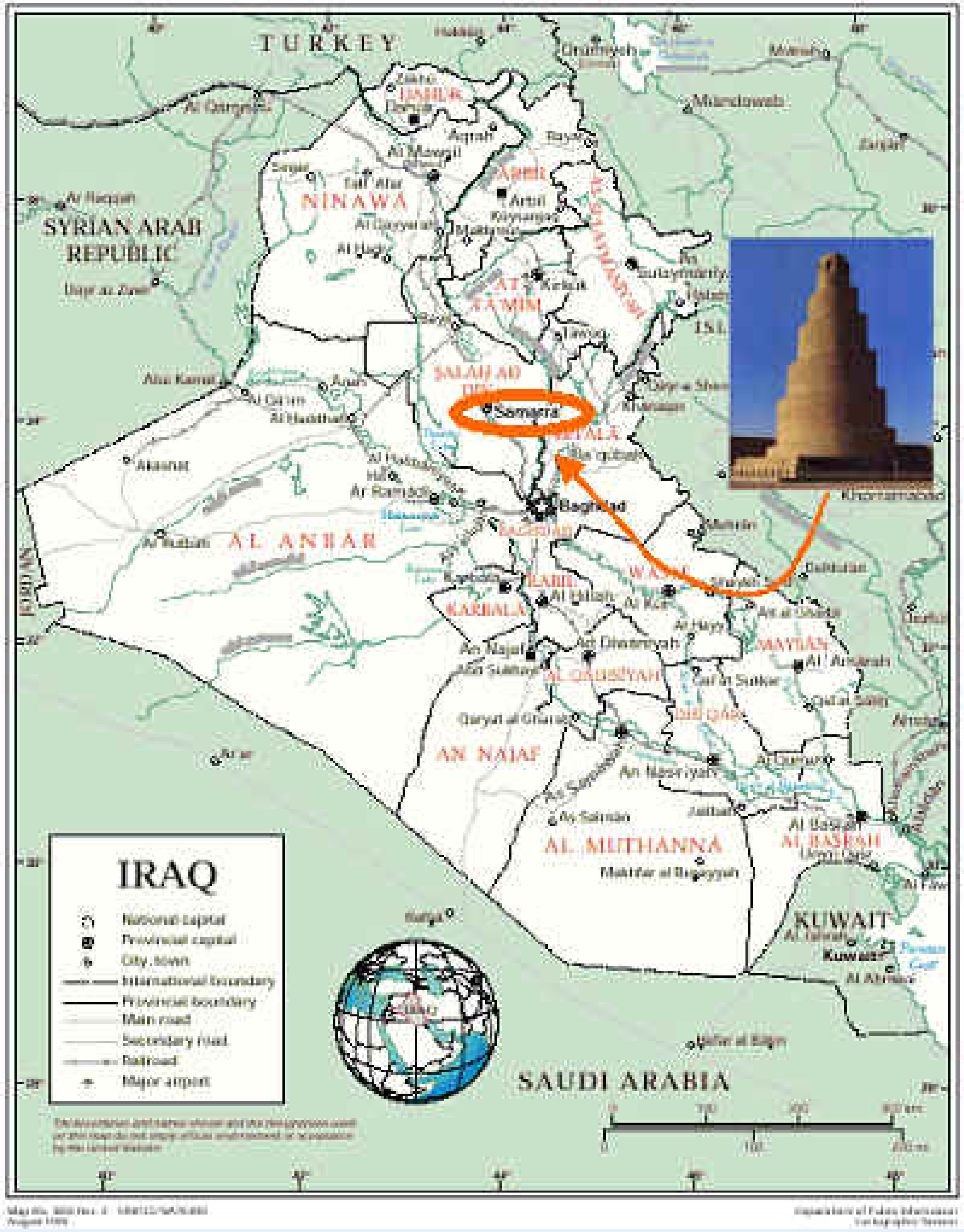




The Consequences?

An end to easy Collaboration

Still Having Difficulties At That Location


TURKEY
SYRIAN ARAB REPUBLIC
NINAWA
SALAH AD DIN
Samarra
Baghdad
AL ANBAR
KARBALA
AN NAJAF
AL MUTHANNA
AL BASRAH
KUWAIT
SAUDI ARABIA
IRAQ
National capital
Provincial capital
City, town
International boundary
Provincial boundary
Main road
Secondary road
Railroad
Major airport

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Collaboration to sustain a competitive advantage

Collaboration consistently delivers business value

Collaboration Technologies

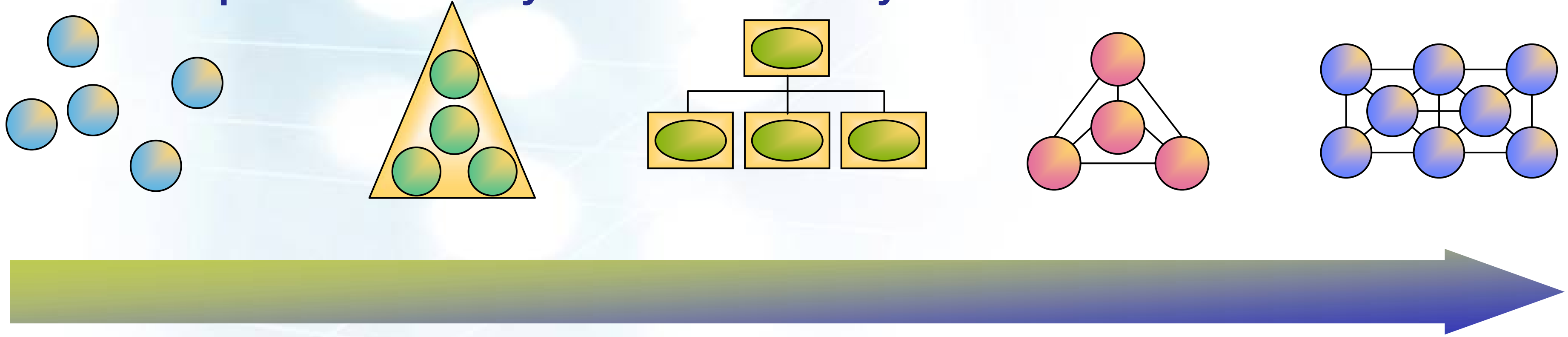
Companies today are facing several critical business challenges brought on by the increasingly virtual nature of their workplaces. More and more, employees are scattered across regions, nations, and continents and yet they must be able to collaborate with one another, and with partners and customers, at any time and from anywhere. At the same time, organizations are concerned about the security and confidentiality of their collaborations.

We are born to work and play together in teams. But we have to give enough of ourselves to let the filaments connect.

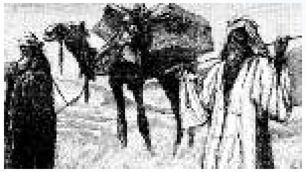
— Paul F. Levy, CEO
Beth Israel Deaconess Medical Center

A Very Brief History of Organizations

Small Group + Hierarchy + Bureaucracy + Network + Collaborative



Nomads



3 Million –10,000 BCE

Agriculture

10,000 BCE –17th Century

Industry

17th Century –20th Century

Information

1945…1998 –21st Century

Self Forming Groups

1999–2015…

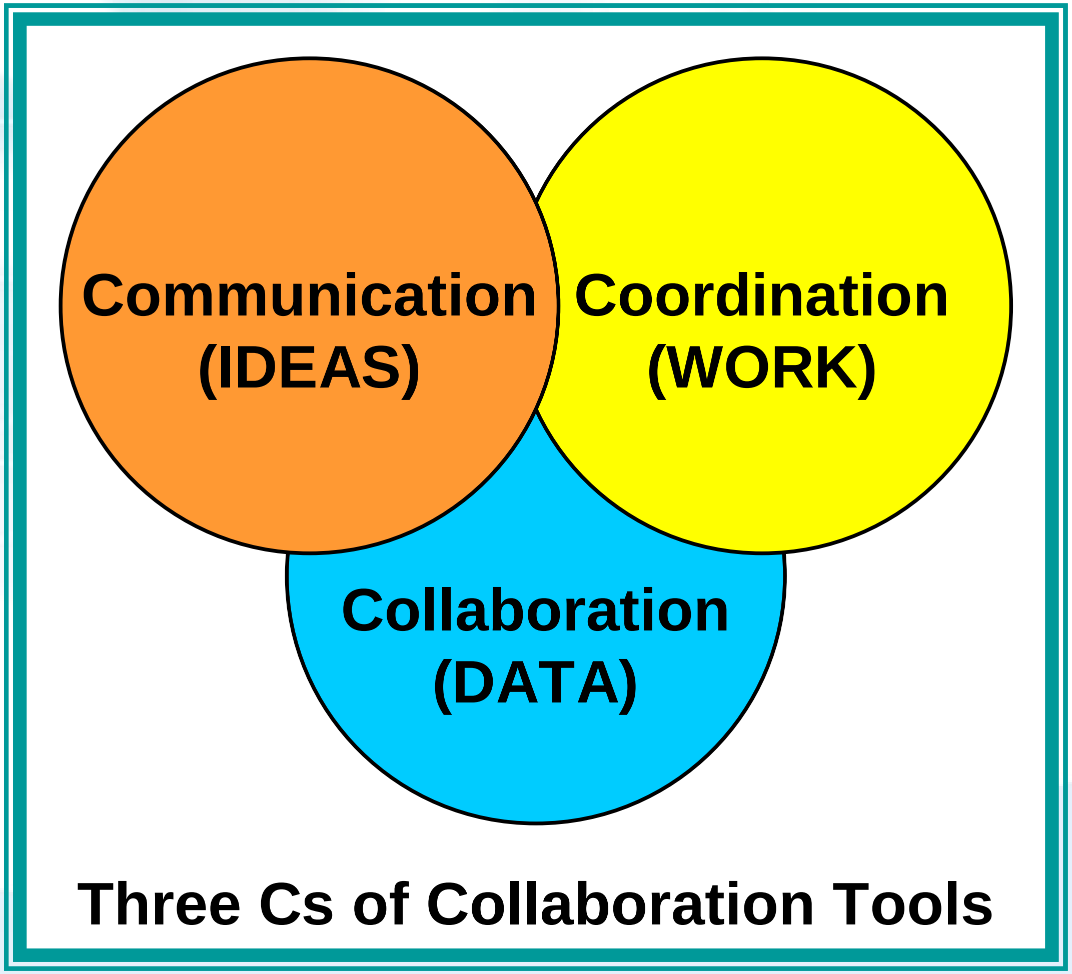
Why does technology-aided collaboration remain a difficult problem?

- Involves communication among PEOPLE ; *since when has working with people been easy?*
- Each field has its own methods, vocabulary, etc., as do instruction, business meetings, and collaborations. SIMILAR, but NOT THE SAME.
- Sometimes it takes a long time to understand how to make best use of a technology

Definition

- Collaboration is a process defined by the recursive interaction of knowledge and mutual learning between two or more people who are working together in an intellectual endeavor toward a common goal.
- Collaboration does not necessarily require leadership and can even bring better results through decentralization and egalitarianism.
- Collaborative methods are processes, behaviors, and conversations that relate to collaboration between individuals. These methods specifically aim to increase the success of teams as they engage in collaborative problem solving.

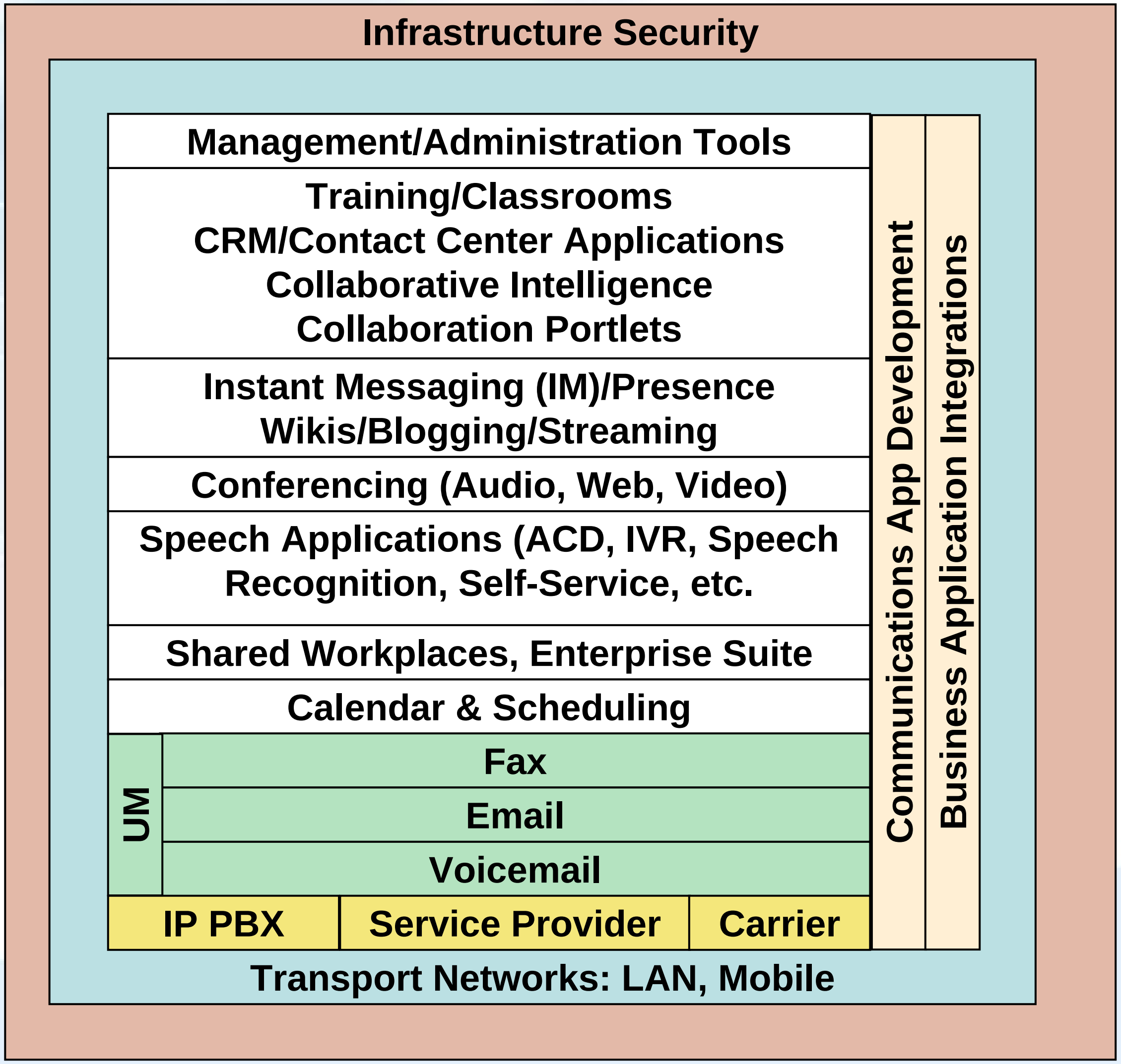
The Three Cs of Collaboration Tools and Technology



Communication
(IDEAS)
Coordination
(WORK)
Collaboration
(DATA)

Three Cs of Collaboration Tools

Collaborative Ecosystem



Infrastructure Security

Management/Administration Tools

Training/Classrooms
CRM/Contact Center Applications
Collaborative Intelligence
Collaboration Portlets

Instant Messaging (IM)/Presence
Wikis/Blogging/Streaming

Conferencing (Audio, Web, Video)

Speech Applications (ACD, IVR, Speech Recognition, Self-Service, etc.

Shared Workplaces, Enterprise Suite

Calendar & Scheduling

UM

Fax

Email

Voicemail

IP PBX

Service Provider

Carrier

Communications App Development

Business Application Integrations

Transport Networks: LAN, Mobile

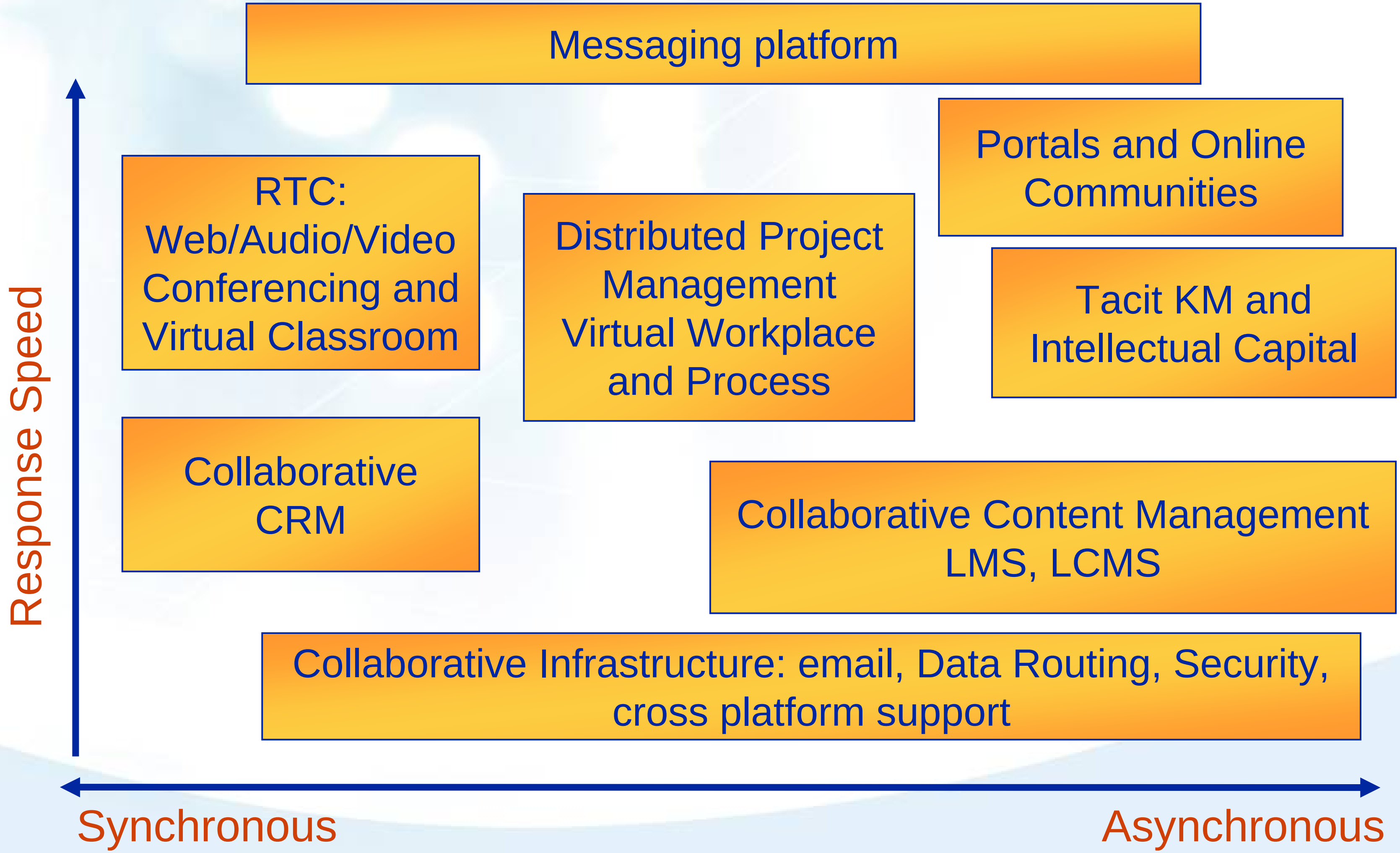
Why Should Collaborative Tools Be Treated as a Priority Now?

- Never before have so many projects had their project team members at such great distances
- Never before have we attempted to carry out such a huge project with so many projects
- Never before have the teams we must interact with been so geographically dispersed
- Never before have we had to deal with such a complex engagement in a remote environment with as many connections as we do today

Brief Look at the Evolution of Collaboration Technology

CUSeeMe Cornell (1992) Reflectors	**T.120** NetMeeting (1995/6) VCON Meeting Point RadVision DCS SGIMeeting Lotus Sametime SunForum MeetingOne PictureTel LiveLan	**Whiteboard/Chat/IM** Netscape Conference (1997) Voxphone MERCI (Teledraw) e/pop	**Virtual Room Videoconferencing System (VRVS)** (1996)
Remote Control VNC (1998) Timbuktu RealVNC	**Custom/Hybrid** Tango (1998) Habañero AG Dist. PowerPoint Ezenia Placeware ThinAnywhere AC/SPARC	**Wiki** Wiki Wiki (1998) Twiki	**AG** Virtual Venue (1998)
Shared Browsers Hipbone (1999) SurfNChat ZofX PowerCall WebAnytime CuSeeMe (2001)	**JAVA/Javascript** Habañero JCE mDesk Brainshark iMeet JAMM MeetingPlace	**Peer to Peer (P2P)** Jxta (2001) Groove BitTorrent Gnutella Napster UseNet Peercasting	**Virtual Classroom/ Desktop/Office** WebOffice (2002) WebEx Elluminate vClass HorizonLive Raindance eMeeting PictureTalk

Current Collaboration Technology



Messaging platform

RTC: Web/Audio/Video Conferencing and Virtual Classroom

Distributed Project Management Virtual Workplace and Process

Portals and Online Communities

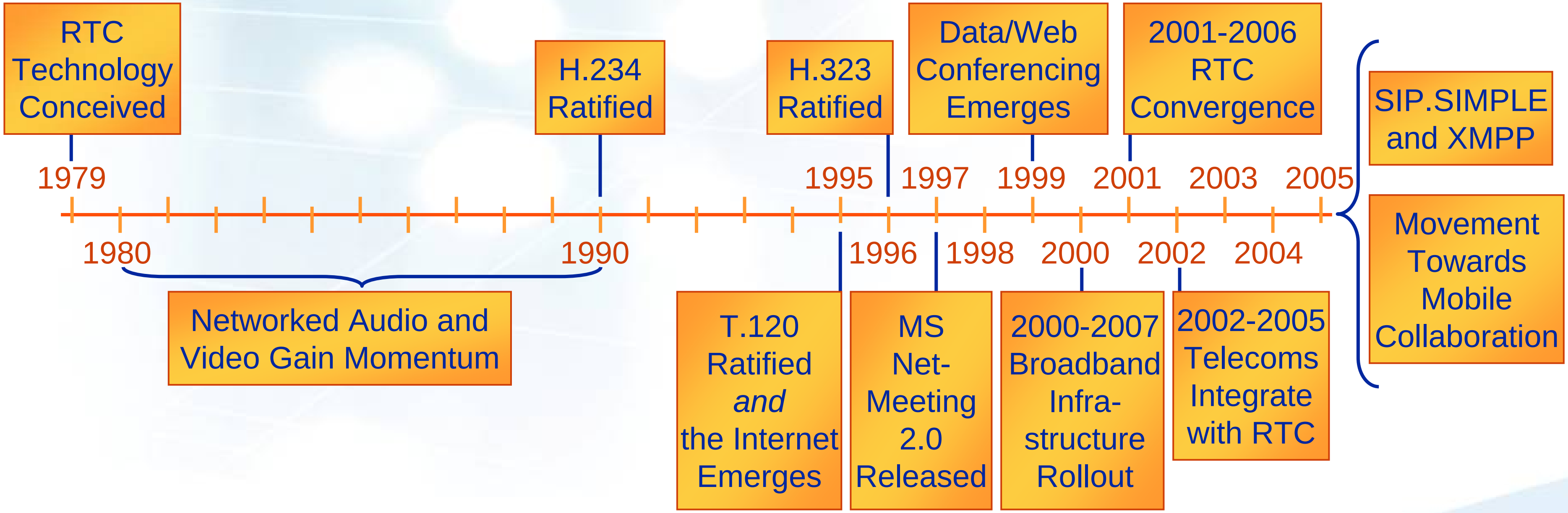
Tacit KM and Intellectual Capital

Collaborative CRM

Collaborative Content Management LMS, LCMS

Collaborative Infrastructure: email, Data Routing, Security, cross platform support

Real-Time Collaboration Timeline


1979
1980
1990
1995
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1998
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2000
2001
2002
2003
2004
2005

RTC Technology Conceived

H.234 Ratified

H.323 Ratified

Data/Web Conferencing Emerges

2001-2006 RTC Convergence

SIP.SIMPLE and XMPP

Movement Towards Mobile Collaboration

Networked Audio and Video Gain Momentum

T.120 Ratified *and* the Internet Emerges

MS Net-Meeting 2.0 Released

2000-2007 Broadband Infra-structure Rollout

2002-2005 Telecoms Integrate with RTC

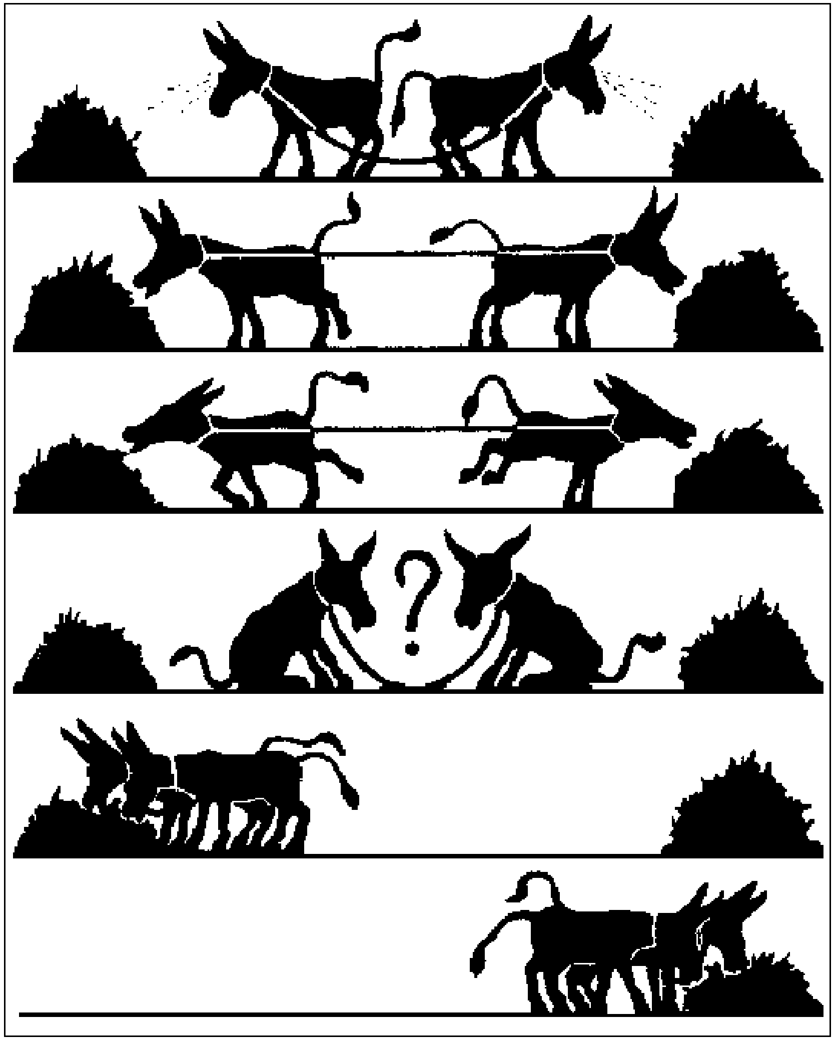
Collaborative Networks

- Networks are nodes linked with a common purpose.
- Nodes are people, positions, teams, organizations, knowledge.
- Networks can be as small as a virtual team of two or as large as a cross-enterprise, cross-industry, global alliance.
- Organizations are networks.
- The common elements of the alliances define the collaborative security.

Challenge and Opportunity

- Rapid establishment of distributed teams in ever changing, complex world
- Growing transnational threats and opportunities require virtual, global, multidisciplinary teams
- Future teams need to be:
  - secure
  - fast and agile –re-task able, coordinated, precise
  - decisive in a dynamic, complex, uncertain world
  - knowledge superior
- Distributed, Collaborative (synchronous/asynchronous) analysis/decision support

COLLABORATION



Sandbox Dilemma

Because it is easier than working with others…

- **I'll download my own data**
- **I can keep it "current enough"**
- **I want/need to be different…**
  - **Field formats**
  - **Field names**
  - **Update cycle**
- **What do you mean Version Control**

An Ideal Team for the Era of Collaborative Innovation

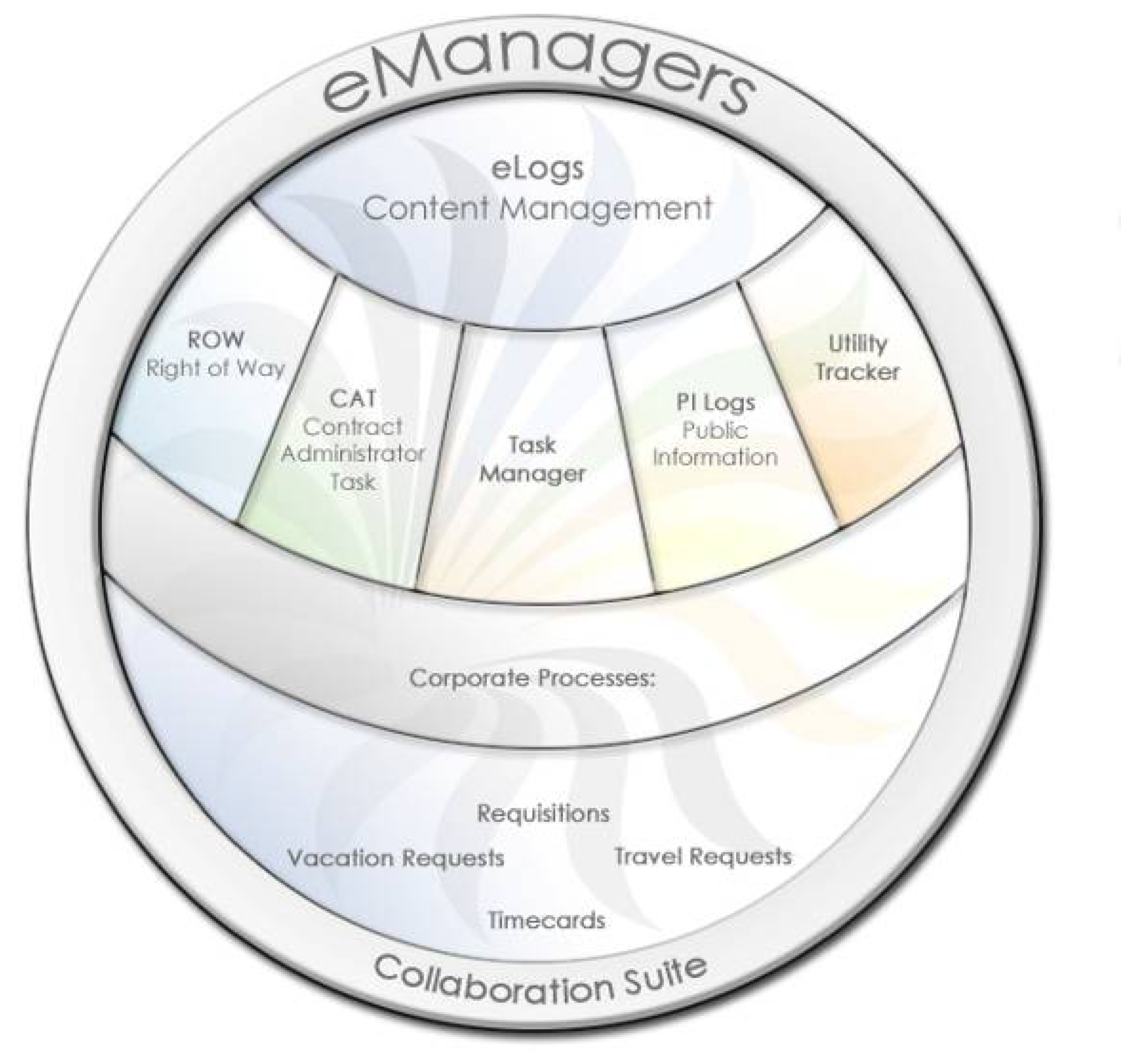
- A Russian to generate ideas
- An American to see and chase the money
- A Japanese to develop the strategy
- A German to organize the process
- A Chinese to manufacture the product
- A Kuwaiti to buy the outcome
- A New Zealander to manage cross-cultural differences

Case Example

DESCRIPTION OF PARCEL 509
LEGEND
Traffic Study
TEXAS DEPARTMENT OF TRANSPORTATION
Project Selection Process
Doc ID: 310809

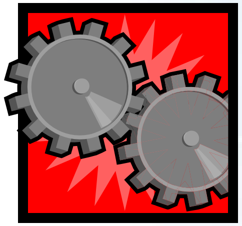
It's not System – It’s the business process and culture

Case Example


eManagers
eLogs
Content Management
ROW
Right of Way
CAT
Contract
Administrator
Task
Task
Manager
PI Logs
Public
Information
Utility
Tracker
Corporate Processes:
Requisitions
Vacation Requests
Travel Requests
Timecards
Collaboration Suite

Competing in a Global Environment

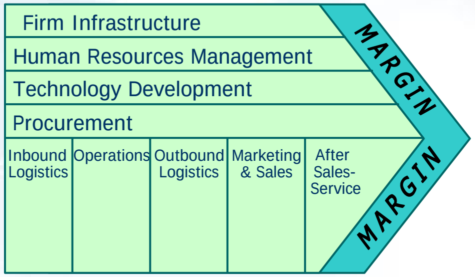
Taylor's Law
(1910 – 1950s)
Scientific Management



Value Created in the Assembly Line (Operations)

Sarnoff's Law
(1960 - 1980)
"Human Side" Management

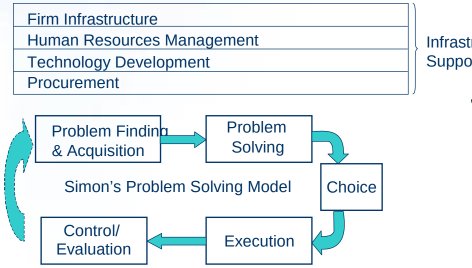
Value Chain


Firm Infrastructure
Human Resources Management
Technology Development
Procurement
Inbound Logistics
Operations
Outbound Logistics
Marketing & Sales
After Sales-Service
MARGIN
MARGIN

Value Created by Transforming Inputs Into Products

Metcalfe's Law
(1980 - 2000)
Quality Management Era

Value Shop


Firm Infrastructure
Human Resources Management
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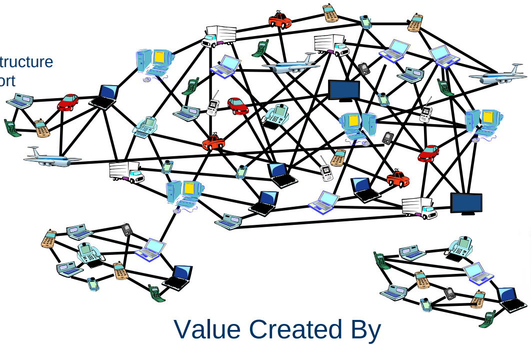
Procurement
Infrastructure Support
Problem Finding & Acquisition
Problem Solving
Choice
Simon's Problem Solving Model
Execution
Control/ Evaluation

Value Created by Providing Solutions, Not Services

Reed's Law
(2000 - Future)
E-Manufacturing

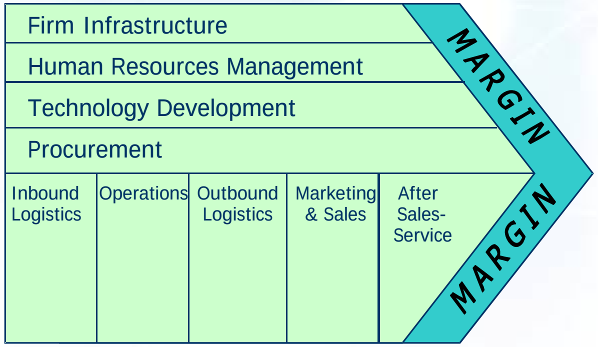


Value Created By Self Forming Groups

Sarnoff's Law –1960s to mid 1980s

For one-way broadcast communication, the value of the network itself rises proportionally to N, the potential number of listeners.

Value Chain



Firm Infrastructure

Human Resources Management

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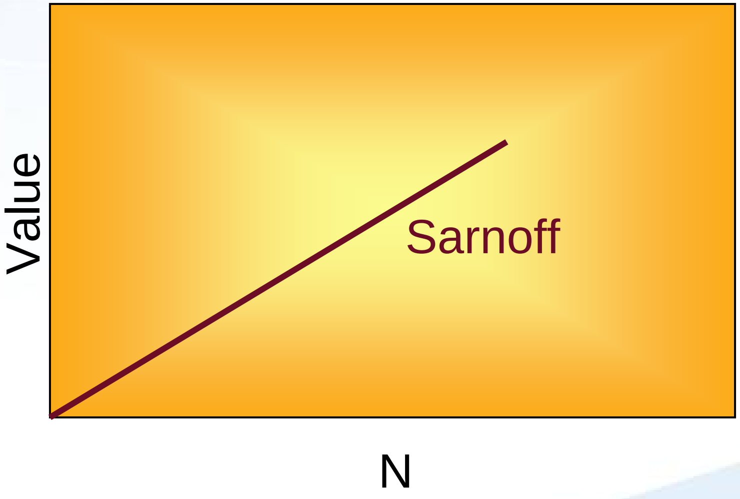
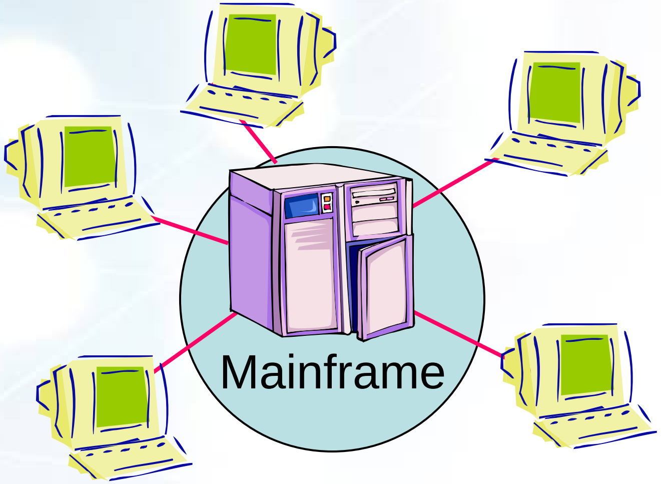
MARGIN

MARGIN

Value created by transforming inputs into products



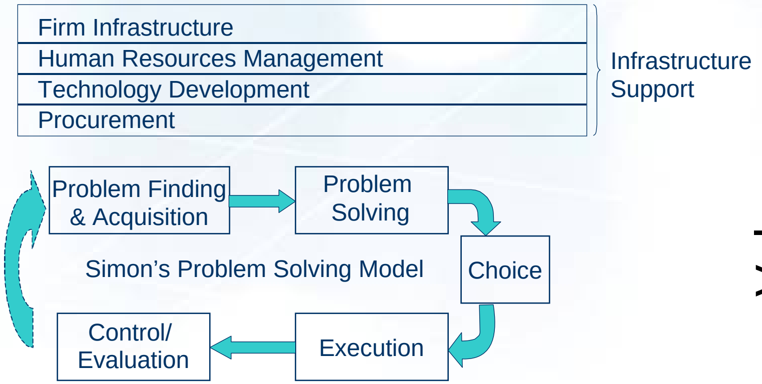
Internet Direction



Metcalfe’s Law — Mid 1980s to 2000s

The value of a network increases exponentially with the number of nodes – N^2. A network becomes more useful as more users are connected.

Value Shop



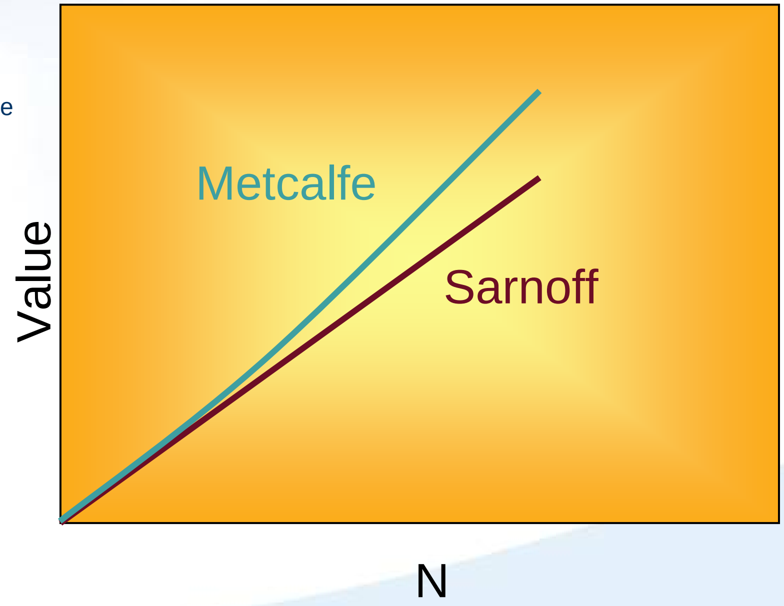
Firm Infrastructure
Human Resources Management
Technology Development
Procurement

Infrastructure Support

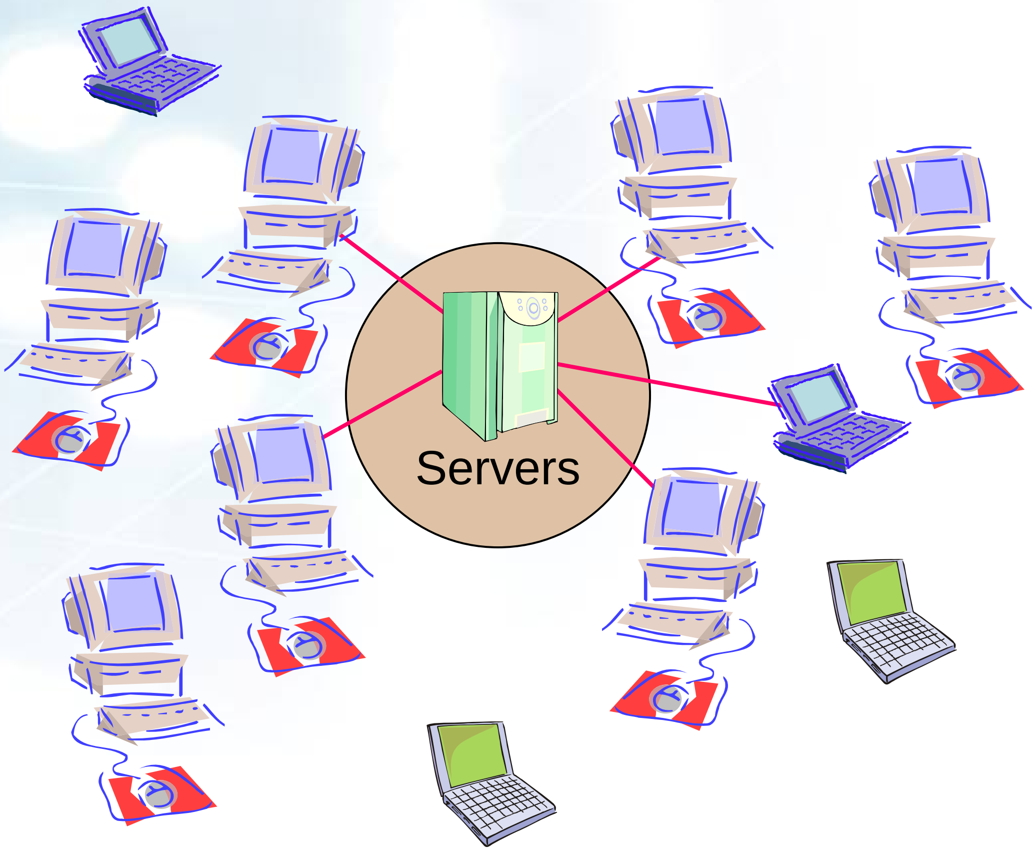
Problem Finding & Acquisition
Problem Solving
Choice
Execution
Control/ Evaluation

Simon’s Problem Solving Model

Value created by providing solutions, not services

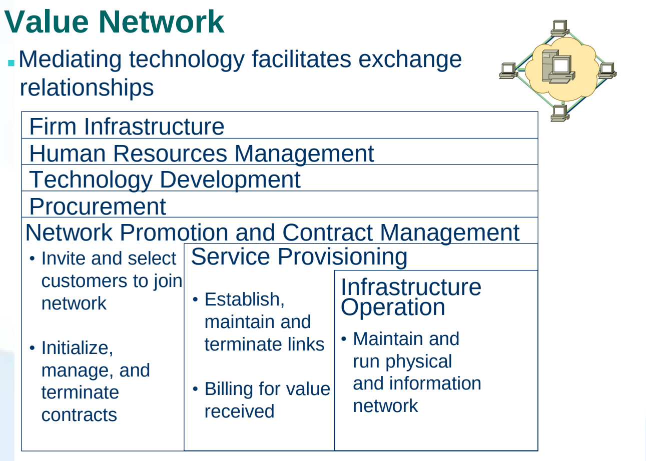


Internet Direction



Reed's Law — 2001 and into the future

Any system that lets users create and maintain groups creates a set of group-forming options that increase exponentially with the number of potential members. And as a function, 2N dominates N2 - which means that even if each individual group-forming option is worth much less than an individual connection, eventually the total set of group-forming options will have far more option value.



Value Network

- Mediating technology facilitates exchange relationships

Firm Infrastructure

Human Resources Management

Technology Development

Procurement

Network Promotion and Contract Management

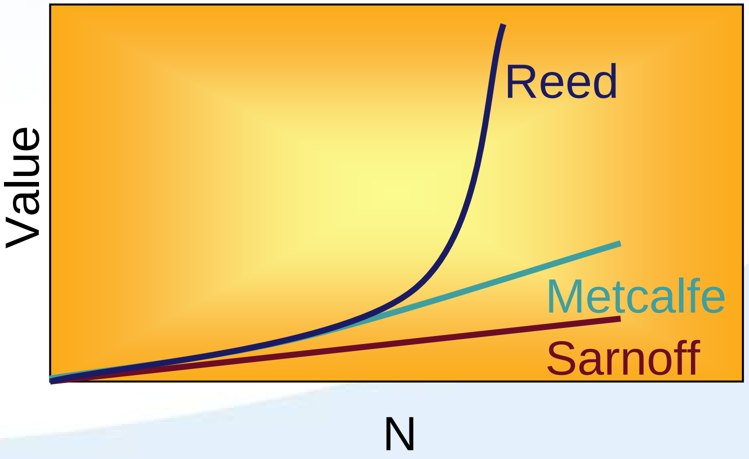
- Invite and select customers to join network
- Initialize, manage, and terminate contracts

Service Provisioning

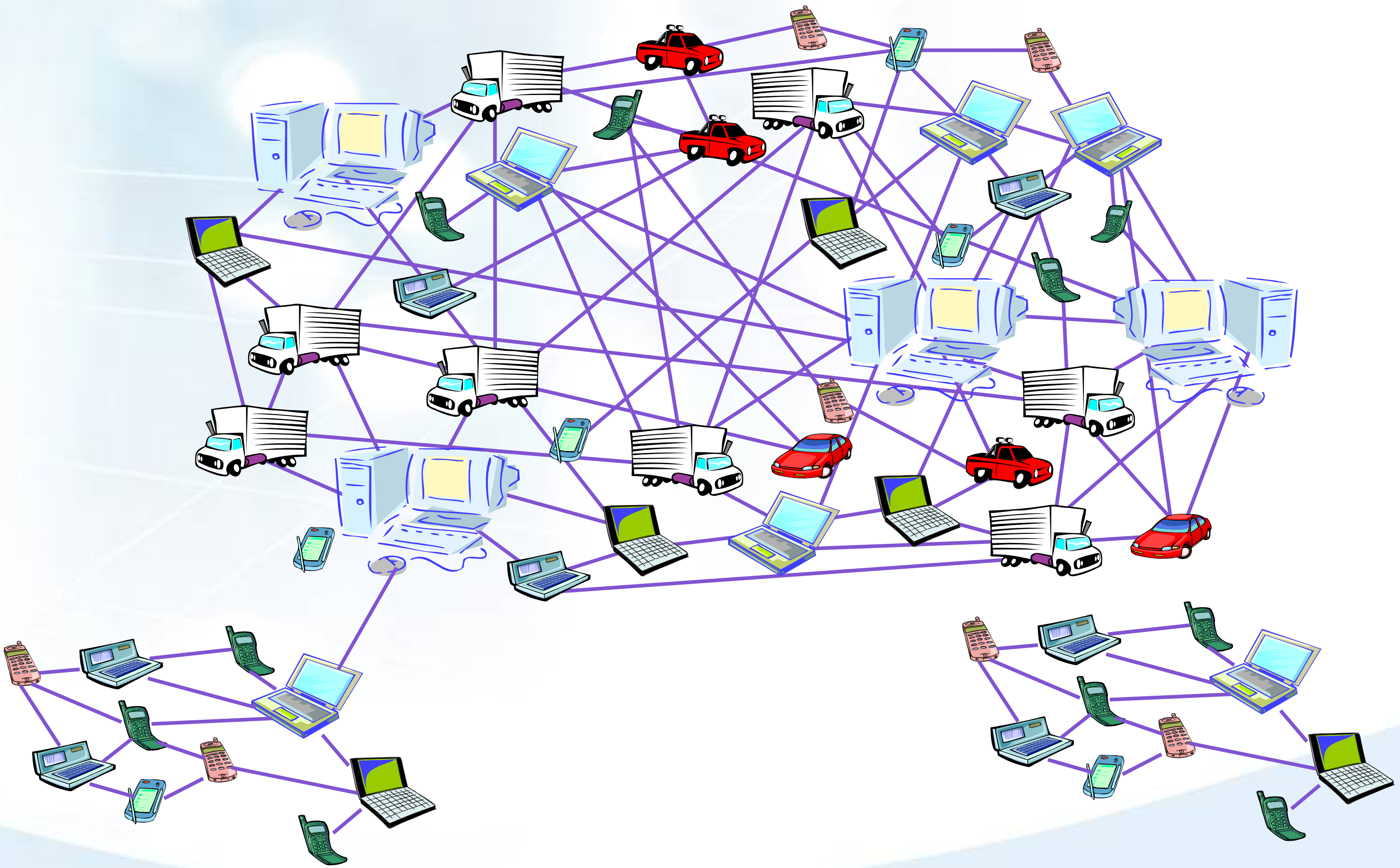
- Establish, maintain and terminate links
- Billing for value received

Infrastructure Operation

- Maintain and run physical and information network



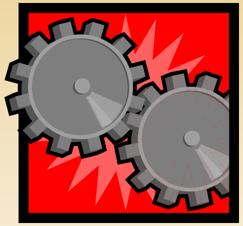
Internet Direction



Competing in a Global Business Environment

Taylor's Law

(1910 – 1950s)
Scientific Management



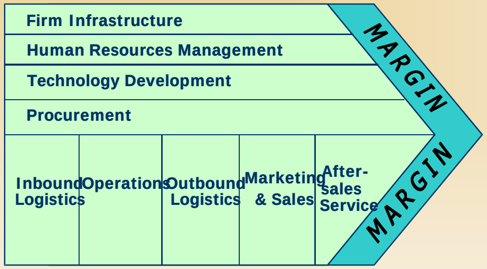
Value Created in the Assembly Line (Operations)

- Standardization Parts and Processes
- Economies of Scale
- Producer-Centric Design, Mfg., and Delivery
- Vertical Orientation
- Required inventory buffers
- Locally Oriented

Sarnoff's Law

(1960 - 1980)
"Human Side" Management

Value Chain



Firm Infrastructure
Human Resources Management
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Inbound Logistics
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Outbound Logistics
Marketing & Sales
After-sales Service
MARGIN
MARGIN

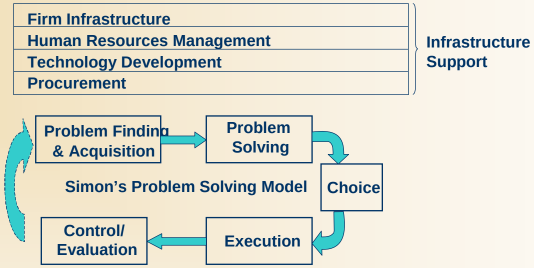
Value Created by Transforming Inputs Into Products

- Stable Relationships
- Price Conscious
- Producer Led Design
- Global Companies
- Regionalism
- Productivity
- Subsidiaries
- Plant Replication by Region

Metcalfe's Law

(1980 - 2000)
Quality Management Era

Value Shop



Firm Infrastructure
Human Resources Management
Technology Development
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Infrastructure Support

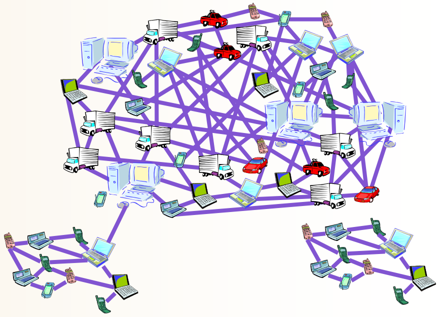
Problem Finding & Acquisition
Problem Solving
Choice
Execution
Control/ Evaluation
Simon's Problem Solving Model

Value Created by Providing Solutions, Not Services

- Lean Manufacturing
- Shift to Horizontal Structure
- Focus on Core Competency
- Reliability and Durability
- Producer Led Design
- Multinational Trade
- Market Centric Design & Delivery

Reed's Law

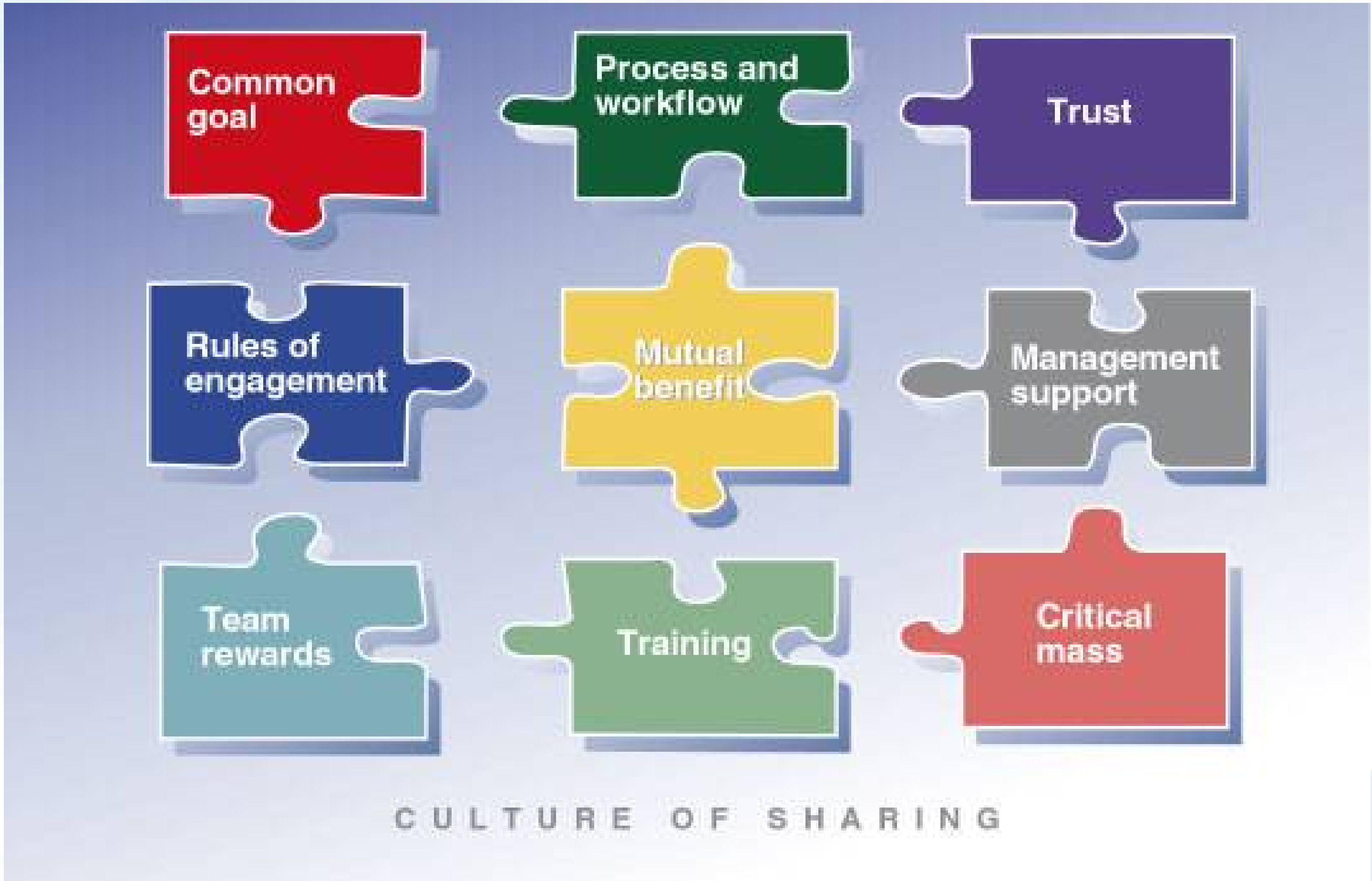
(2000 - Future)
E-Manufacturing



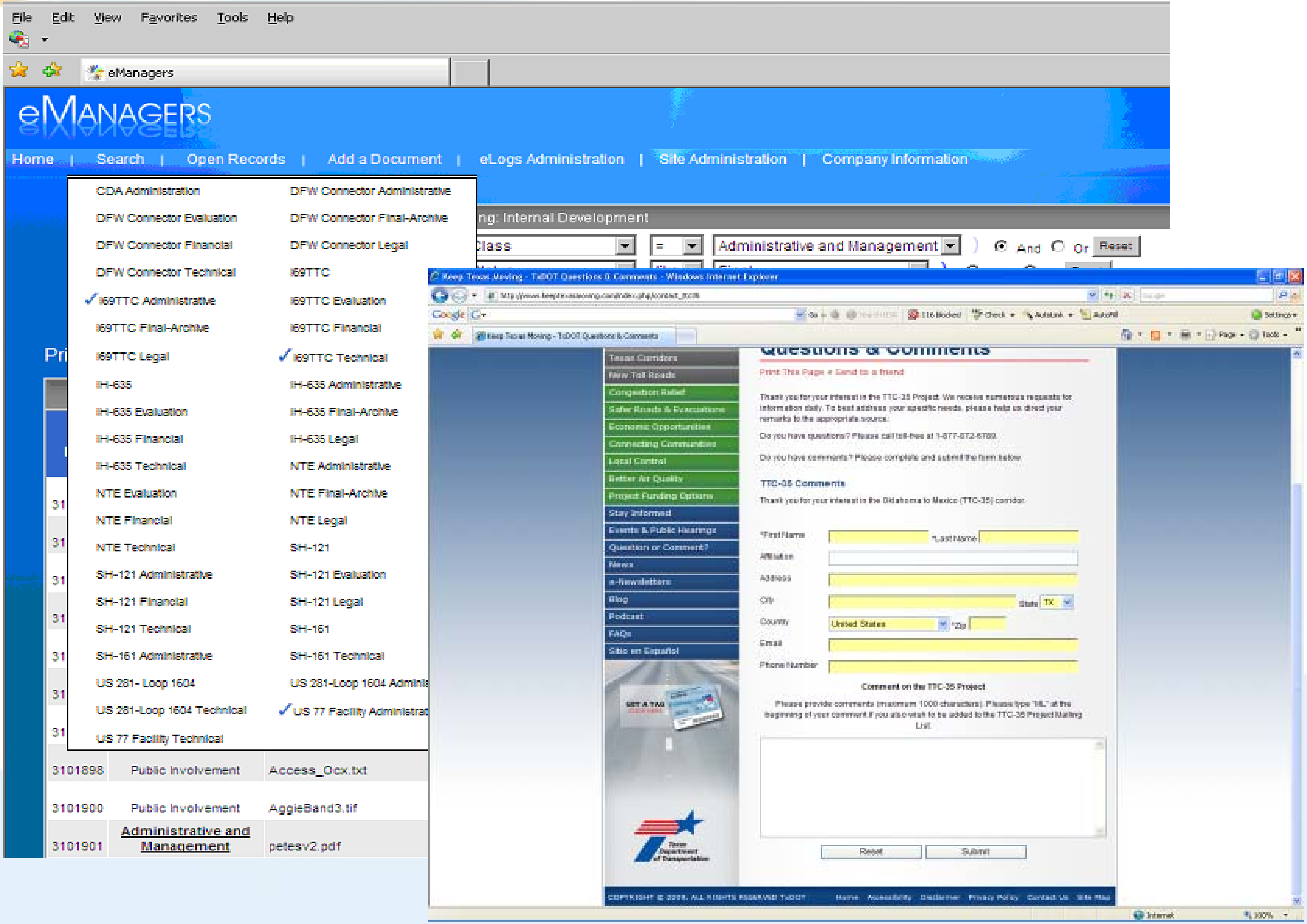
Value Created By Self Forming Groups

- Consumer Centric Design and Delivery
- Flat Corporate Structures
- Collaborative Virtual Networks
- Mass Customization
- Transparency
- Speed and Agility
- Global Orientation

Elements of Successful Collaborations


Common goal
Process and workflow
Trust
Rules of engagement
Mutual benefit
Management support
Team rewards
Training
Critical mass
CULTURE OF SHARING

Case Example


File Edit View Favorites Tools Help
eManagers
eMANAGERS
Home | Search | Open Records | Add a Document | eLogs Administration | Site Administration | Company Information
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- CDA Administration
- DFW Connector Administrative
- DFW Connector Evaluation
- DFW Connector Final-Archive
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- IH-635 Administrative
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- IH-635 Legal
- IH-635 Technical
- NTE Administrative
- NTE Evaluation
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Keep Texas Moving - TxDOT Questions & Comments - Windows Internet Explorer
Texas Corridors
New Toll Roads
Congestion Relief
Safer Roads & Evacuations
Economic Opportunities
Connecting Communities
Local Control
Better Air Quality
Project Funding Options
Stay Informed
Events & Public Hearings
Question or Comment?
News
e-Newsletters
Blog
Podcast
FAQs
Sitio en Español
Texas Department of Transportation

Questions & Comments

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Thank you for your interest in the TTC-35 Project. We receive numerous requests for information daily. To best address your specific needs, please help us direct your remarks to the appropriate source.

Do you have questions? Please call toll-free at 1-877-872-6789.

Do you have comments? Please complete and submit the form below.

TTC-35 Comments

Thank you for your interest in the Oklahoma to Mexico (TTC-35) corridor.

*First Name
*Last Name
Affiliation
Address
City
State TX
Country United States
*Zip
Email
Phone Number

Comment on the TTC-35 Project

Please provide comments (maximum 1000 characters). Please type "ML" at the beginning of your comment if you also wish to be added to the TTC-35 Project Mailing List.

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Submit

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Four Levels Of Collaboration

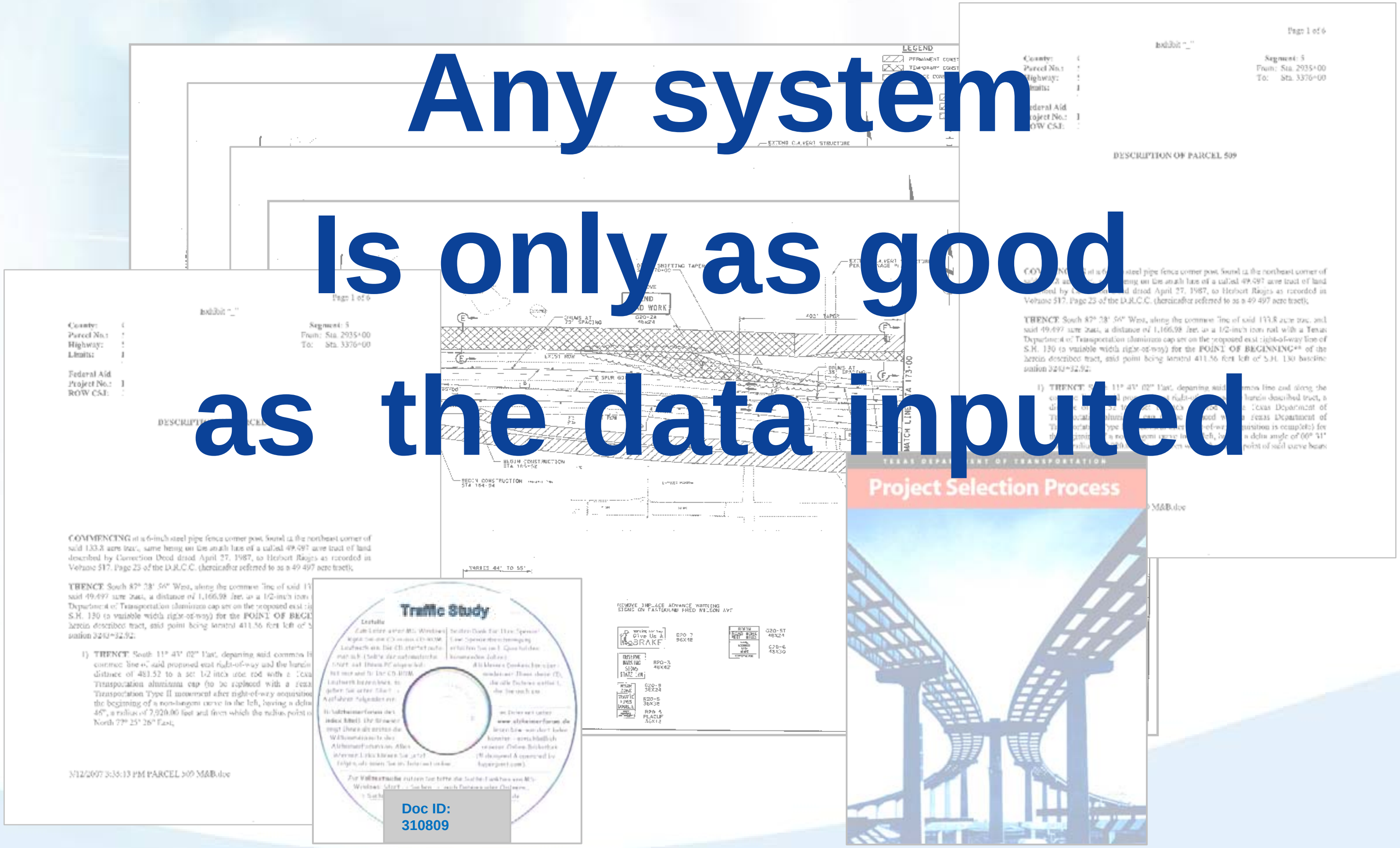
- *Information level* (or transactional collaboration): sharing of data and information, e.g., prices, inventory data, logistics data, business performance data, design data, etc.
- *Systems level*: sharing of applications, source code, software, middleware, databases and repositories, hardware, etc.
- *Process level*: sharing parts of a procurement process, inventory management process, supply chain processes, product design processes, etc.
- *Relationship level*: sharing contextual competencies, e.g., tire manufacturing with automobile design, outsourcing context. The highest level of maturity at this level will be to exhibit dynamic collaboration capabilities wherein enterprises are able to identify partners and work with them electronically.

Case Example

Any system

Is only as good

as the data inputed


Traffic Study
Doc ID: 310809
TEXAS DEPARTMENT OF TRANSPORTATION
Project Selection Process
DESCRIPTION OF PARCEL 509
MATCH LINE STA 173+00
LEGEND

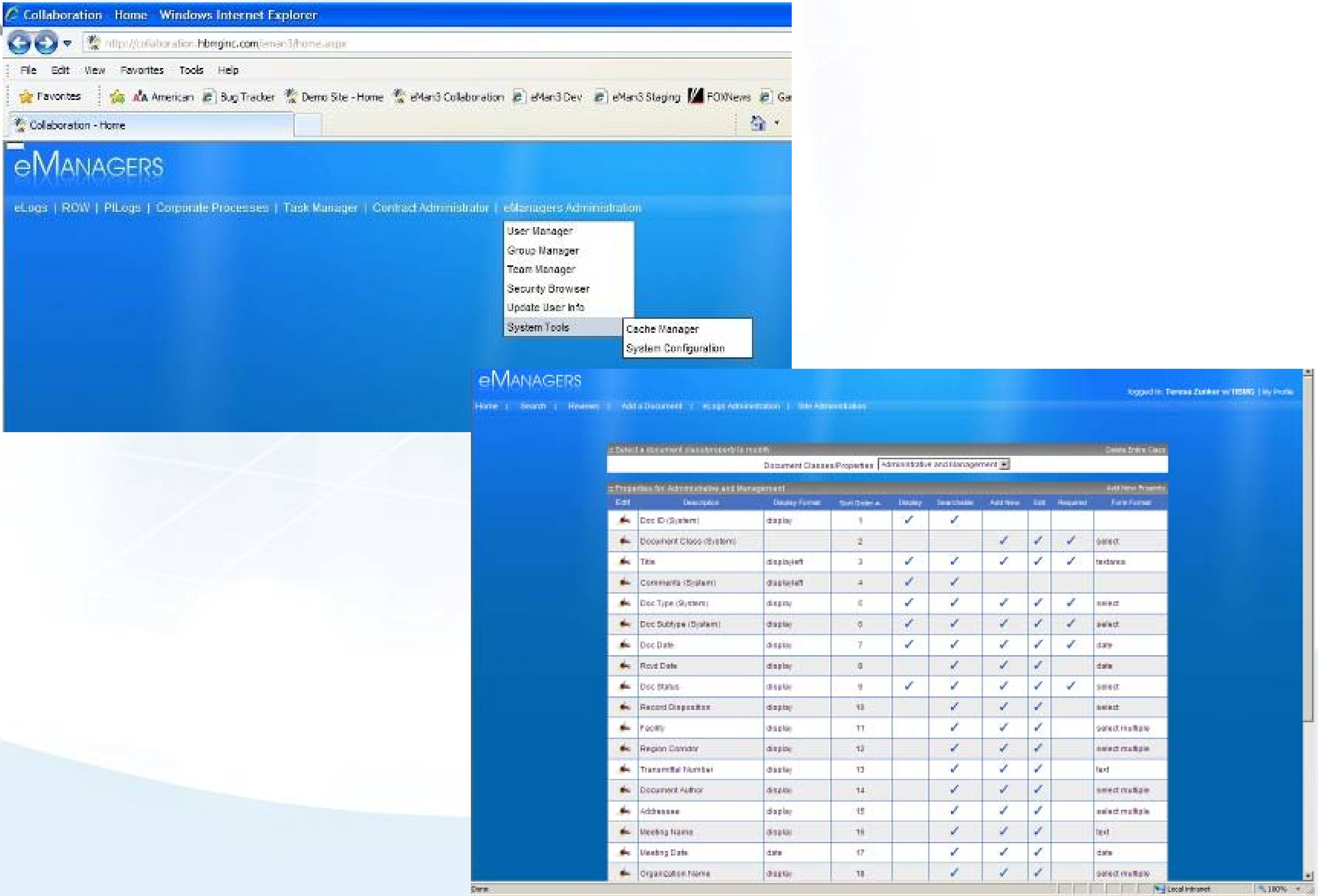
What is Collaboration ?
Features & Functions ?

- Whiteboard
- Chat or Instant Messenger
- Shared Documents (Still Image)
- File Transfer
- Shared Applications
- Remote Control
- Pointers
- Surveys, Polling, Quizzing
- Recording
- Telephone and/or VC Bridges
- Video Streaming
- Animation Support
- Chair Control
- Scheduling and Timers
- Agendas for Meetings, Classes
- Announcement Boards
- Participant List, Status panels
- Management Console
- Directories
- Logging, Tracking
- Security
  - Authentication
  - Encryption
- Shared Repository, Meeting/Class Archives

Perhaps Easier to Understand From Social Interaction Model

- **Show and Tell (one to many)**
- **Person to Person (a “team”)**
- **Group to Group (a set of teams)**
- **A Meeting ?**
- **Sitting around at the job site working ?**
- **Doing an review together?**
- **How does your collaboration system do its work?**

Case Example


Collaboration - Home - Windows Internet Explorer
http://collaboration.hbmginc.com/eman3/home.aspx
File Edit View Favorites Tools Help
Favorites
American
Bug Tracker
Demo Site - Home
eMan3 Collaboration
eMan3 Dev
eMan3 Staging
FOXNews
Collaboration - Home
eMANAGERS
eLogs | ROW | PILogs | Corporate Processes | Task Manager | Contract Administrator | eManagers Administration
User Manager
Group Manager
Team Manager
Security Browser
Update User Info
System Tools
Cache Manager
System Configuration
eMANAGERS
logged in: Teresa Zunker w/ HBMG | My Profile
Home | Search | Reviews | Add a Document | eLogs Administration | Site Administration
Select a document class/property to modify
Delete Entire Class
Properties for Administrative and Management
Add New Property
Done
Local intranet
100%

Document Classes/Properties: Administrative and Management

Edit	Description	Display Format	Sort Order ▲	Display	Searchable	Add New	Edit	Required	Form Format
	Doc ID (System)	display	1	✓	✓				
	Document Class (System)		2			✓	✓	✓	select
	Title	displayleft	3	✓	✓	✓	✓	✓	textarea
	Comments (System)	displayleft	4	✓	✓				
	Doc Type (System)	display	5	✓	✓	✓	✓	✓	select
	Doc Subtype (System)	display	6	✓	✓	✓	✓	✓	select
	Doc Date	display	7	✓	✓	✓	✓	✓	date
	Rcvd Date	display	8		✓	✓	✓		date
	Doc Status	display	9	✓	✓	✓	✓	✓	select
	Record Disposition	display	10		✓	✓	✓		select
	Facility	display	11		✓	✓	✓		select multiple
	Region Corridor	display	12		✓	✓	✓		select multiple
	Transmittal Number	display	13		✓	✓	✓		text
	Document Author	display	14		✓	✓	✓		select multiple
	Addressee	display	15		✓	✓	✓		select multiple
	Meeting Name	display	16		✓	✓	✓		text
	Meeting Date	date	17		✓	✓	✓		date
	Organization Name	display	18		✓	✓	✓		select multiple

Collaboration Technologies

Collaboration technologies have undergone many changes over the last 20 years. They started out as a *niche product* with the application, transport, and security all included in the product. This began to change with the introduction of *intranets, secure VPNs, and enterprise-wide networking*. This change began to move elements of the transport and security down to the network level. During this time, *applications began to be integrated within other products*. Prime examples of this are the collaborative tools integrated into Microsoft office and IBM Lotus notes

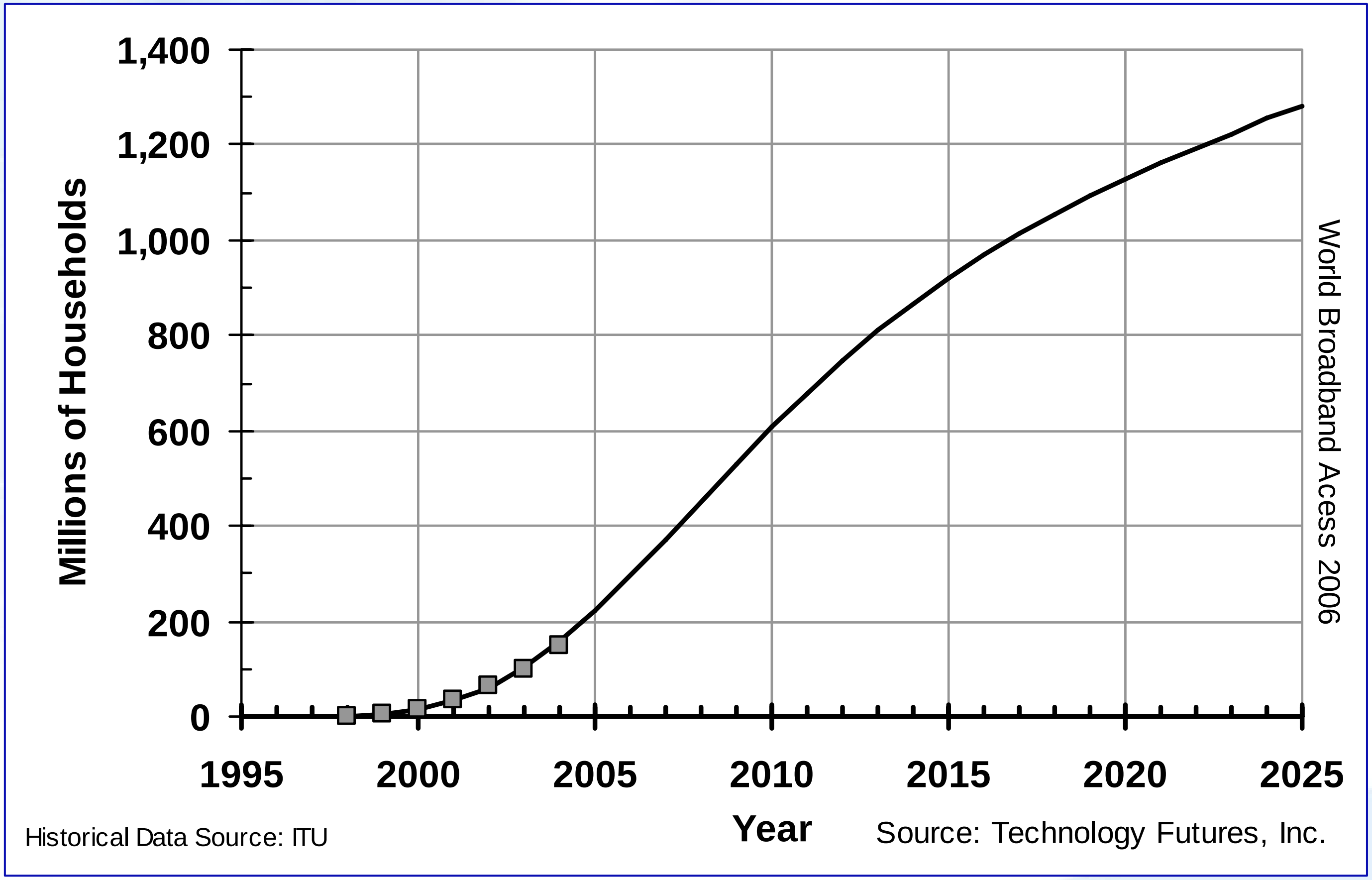
Collaboration Platform Decision

The collaboration platform decision is increasingly becoming a *stack decision* —taking into account not just messaging, real-time collaboration, and team collaboration platforms, but also the organization's internal standards for office productivity, portal software, enterprise content management, enterprise directories, application servers, databases, and operating systems. As a result, the market for point collaboration products (e.g., team collaboration, enterprise instant messaging) is shrinking as *collaboration features get absorbed into the software infrastructure*. In the future, organizations will continue to swap out collaboration point products for enterprise collaboration platforms, and the market will continue to consolidate.

…[T]he design of the system is the design of the enterprise; and if the system can’t change, the enterprise can’t change!

**—John Zachman, Founder,
Zachman Institute for Framework Advancement**

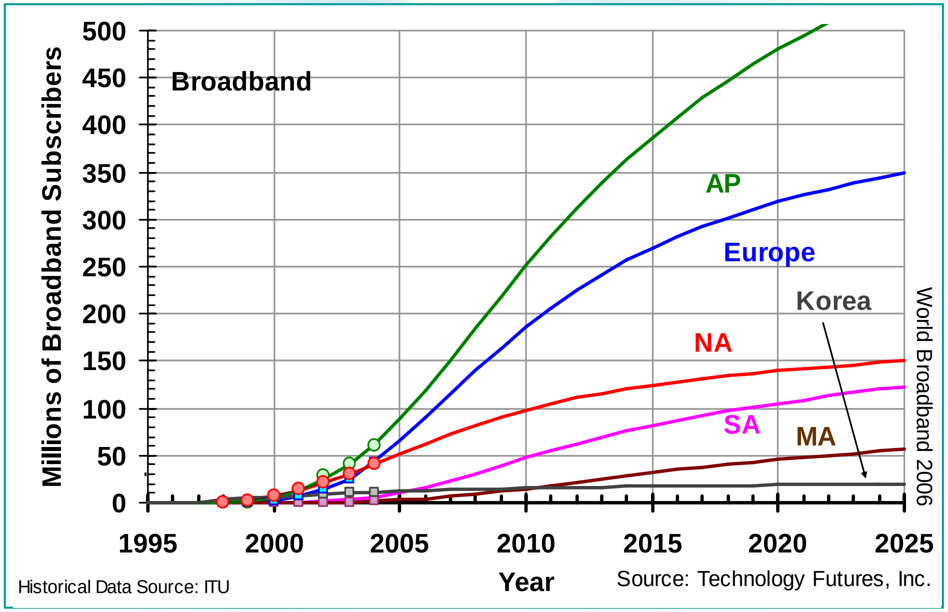
Worldwide Broadband Access



Historical Data Source: ITU

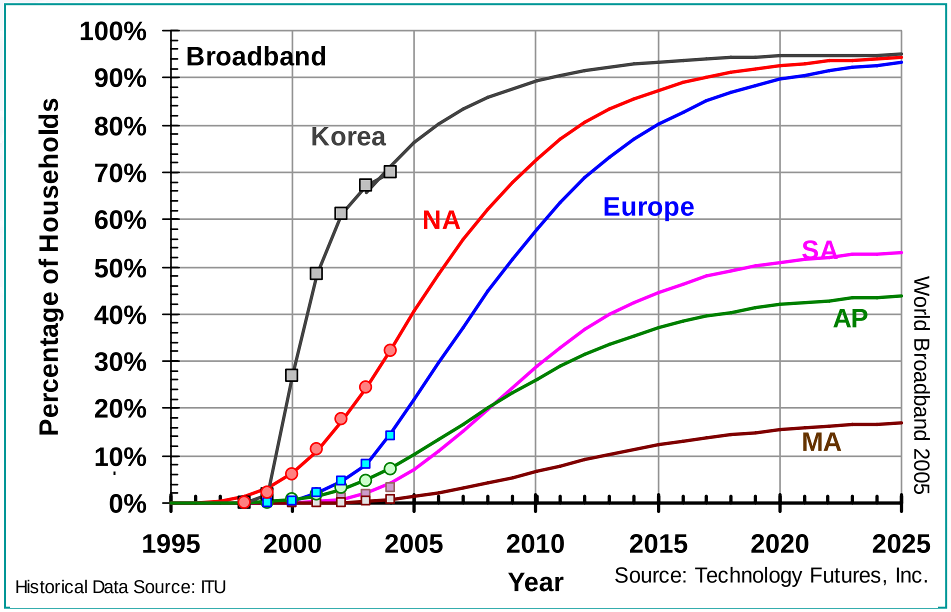
Source: Technology Futures, Inc.

Regional Forecasts — Broadband



Historical Data Source: ITU

Source: Technology Futures, Inc.

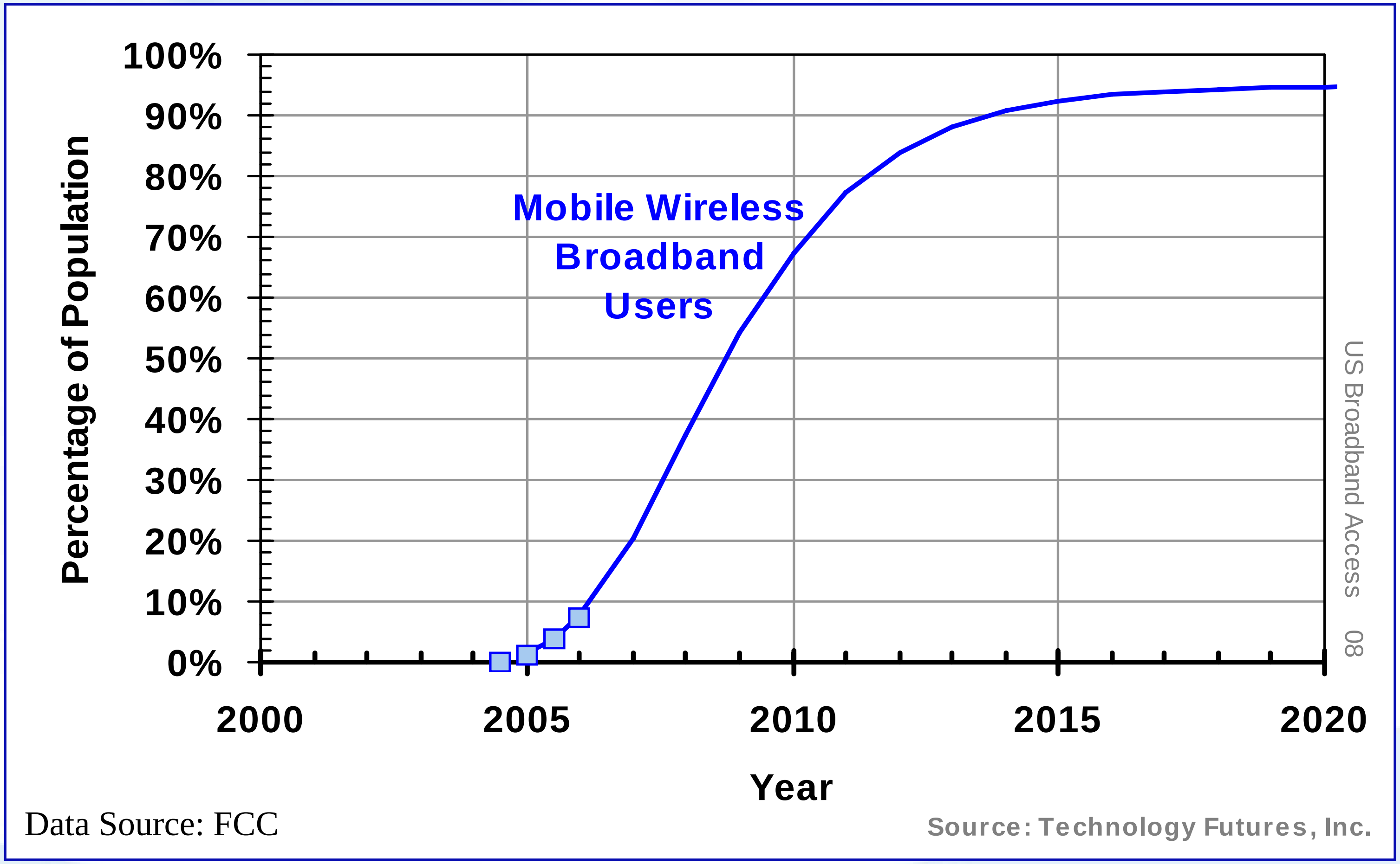


Historical Data Source: ITU

Source: Technology Futures, Inc.

The first looking at millions of broadband subscribers, and the second looking at the penetration.

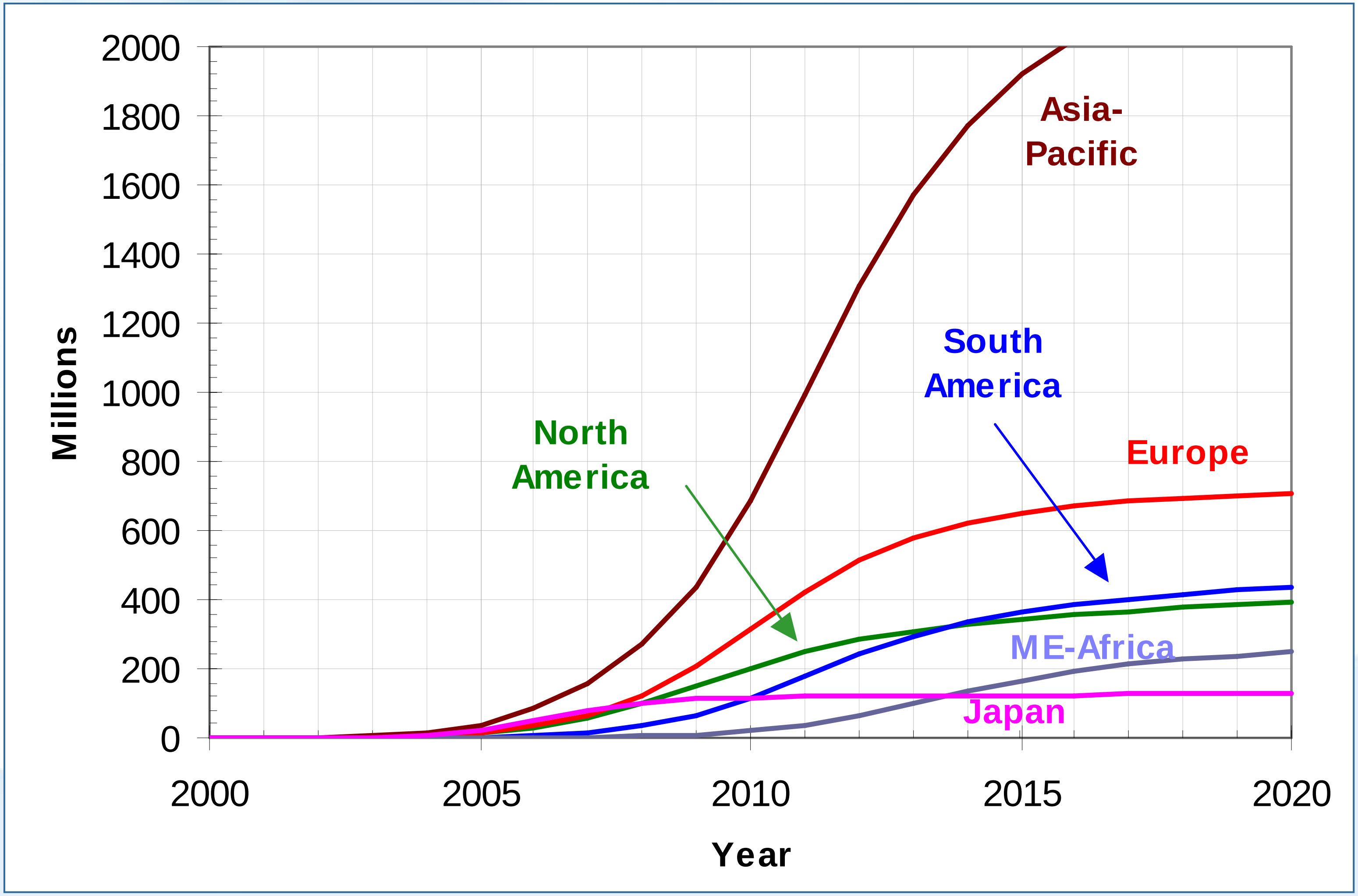
Wireless Mobile Broadband



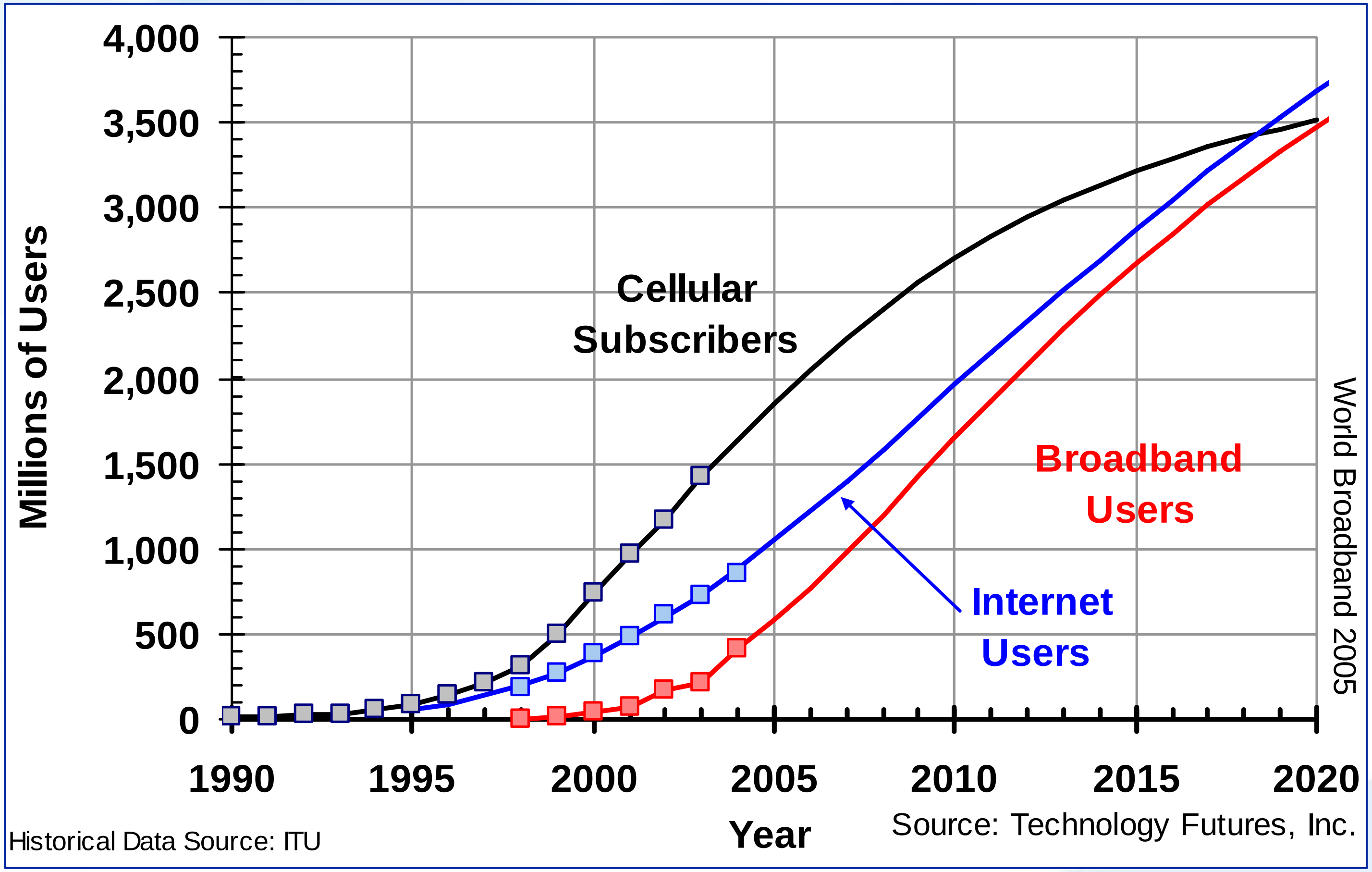
Data Source: FCC

Source: Technology Futures, Inc.

Forecast of 2.5G and Above Subscribers by Region — Millions



Growth of Broadband Users



Historical Data Source: ITU

Source: Technology Futures, Inc.

Convergence of Devices…
The Most Visible…

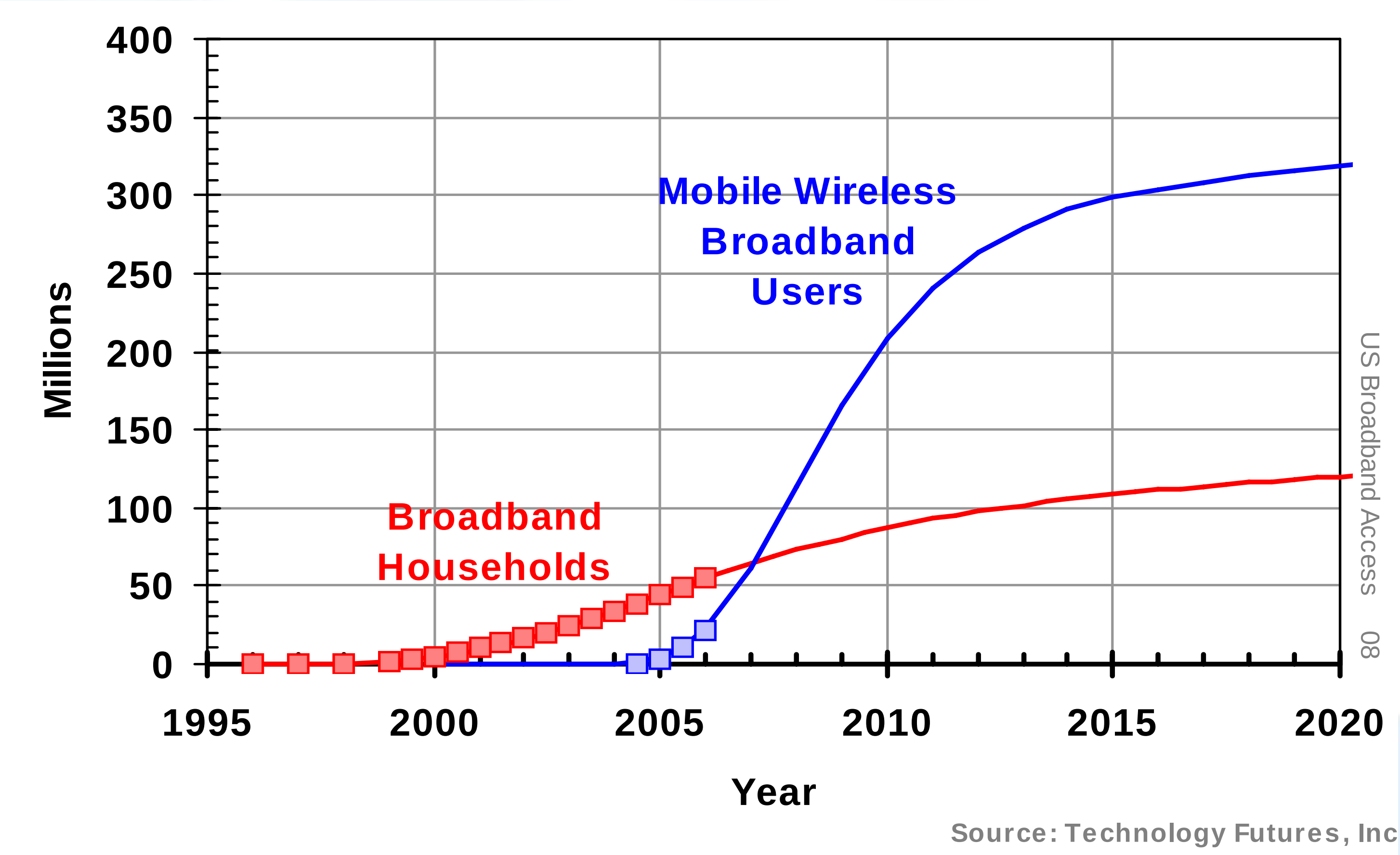
NOKIA
PCMCIA-GPIB
NATIONAL INSTRUMENTS

- Mobile phones turn into mobile multifunctional devices:
  - Integrated FM radio
  - Camera
  - DVB-H on mobile phones
  - Integrated Wi-Fi
- Personal communications devices
  - TV cards
  - MP3 Devices
- Interactive TV sets
  - display a TV signal & computer data simultaneously, watching TV and surfing Internet at the same time
- Final stage-service/network neutral devices
  - Emphasis on programming equipment

Today’s Mobile Reality is Changing

- 2 billion mobile phone users worldwide
  - Historically communication devices
- Mobile phones are no longer “phones”
  - Multimedia devices
  - Capture and consume
  - Entertainment, information services
- Digitalization, miniaturization, mobility, connectivity, communities
- By 2010, there will be 3 billion users of “mobile devices” and 2 billion TV viewing multimedia devices
- People are spending more time with new media

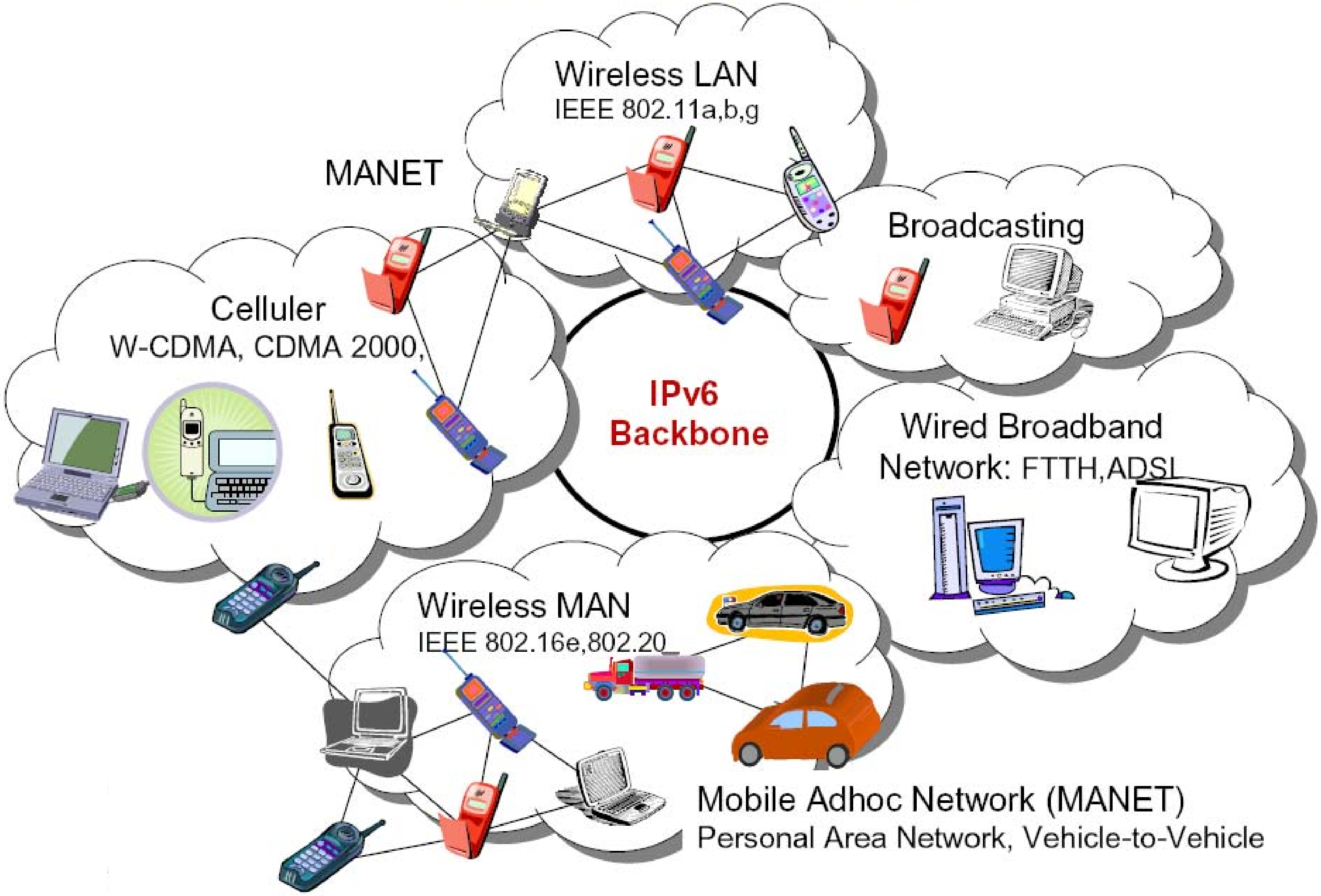
Mobile Broadband vs. Wireline Broadband



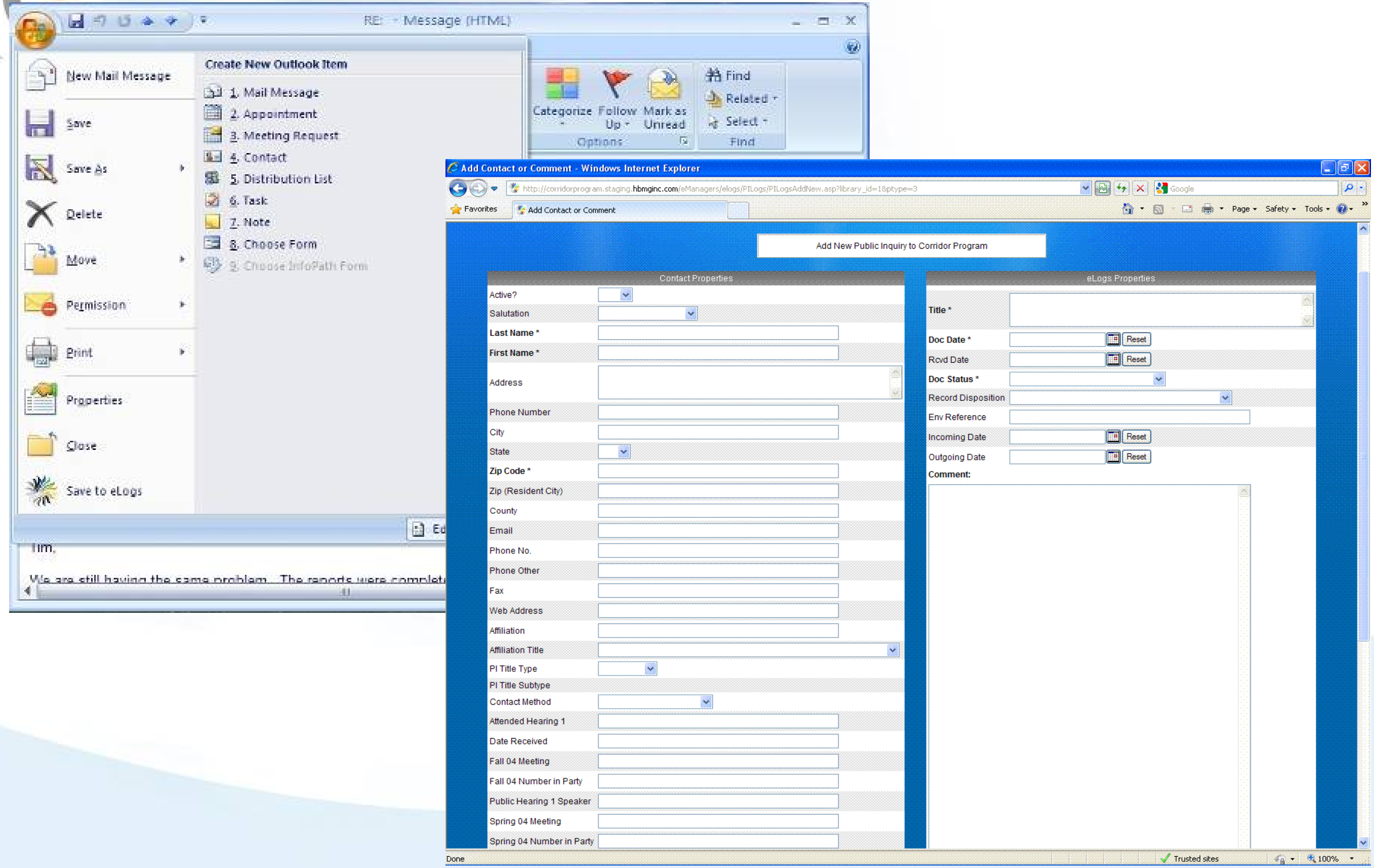
Source: Technology Futures, Inc.

Data Source: FCC

Unwired Internet


Wireless LAN
IEEE 802.11a,b,g
MANET
Broadcasting
Celluler
W-CDMA, CDMA 2000,
IPv6
Backbone
Wired Broadband
Network: FTTH,ADSL
Wireless MAN
IEEE 802.16e,802.20
Mobile Adhoc Network (MANET)
Personal Area Network, Vehicle-to-Vehicle

Case Example


RE: - Message (HTML)
New Mail Message
Save
Save As
Delete
Move
Permission
Print
Properties
Close
Save to eLogs
Create New Outlook Item
1. Mail Message
2. Appointment
3. Meeting Request
4. Contact
5. Distribution List
6. Task
7. Note
8. Choose Form
9. Choose InfoPath Form
Categorize
Follow Up
Mark as Unread
Options
Find
Related
Select
Find
Add Contact or Comment - Windows Internet Explorer
http://corridorprogram.staging.hbmginc.com/eManagers/elogs/PILogs/PILogsAddNew.asp?library_id=1&ptype=3
Google
Favorites
Add Contact or Comment
Page
Safety
Tools
Add New Public Inquiry to Corridor Program
Contact Properties
Active?
Salutation
Last Name *
First Name *
Address
Phone Number
City
State
Zip Code *
Zip (Resident City)
County
Email
Phone No.
Phone Other
Fax
Web Address
Affiliation
Affiliation Title
PI Title Type
PI Title Subtype
Contact Method
Attended Hearing 1
Date Received
Fall 04 Meeting
Fall 04 Number in Party
Public Hearing 1 Speaker
Spring 04 Meeting
Spring 04 Number in Party
eLogs Properties
Title *
Doc Date *
Reset
Rcvd Date
Reset
Doc Status *
Record Disposition
Env Reference
Incoming Date
Reset
Outgoing Date
Reset
Comment:
Done
Trusted sites
100%

Tim,

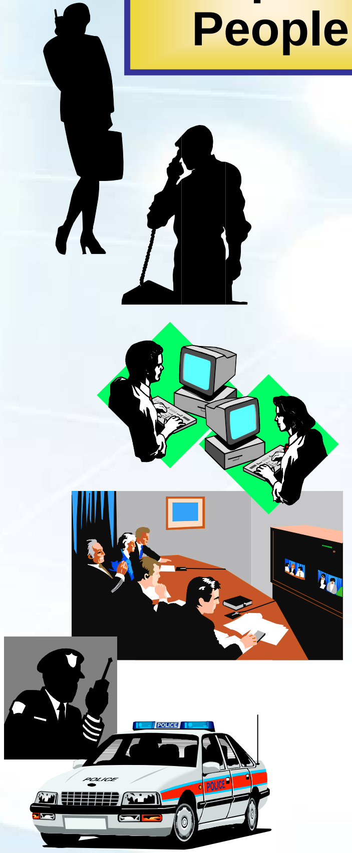
We are still having the same problem. The reports were complet

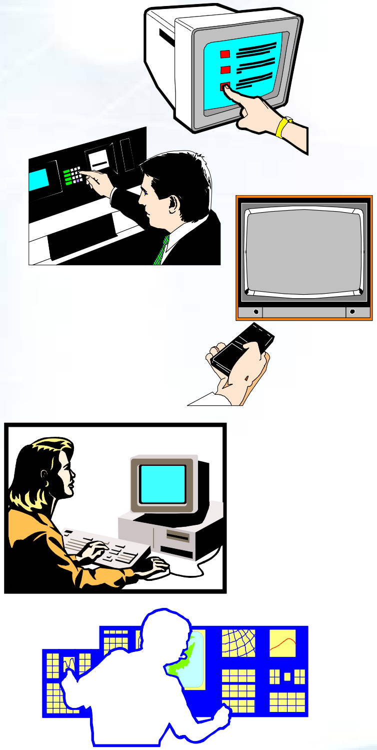
Wireless Broadband Changes Everything….

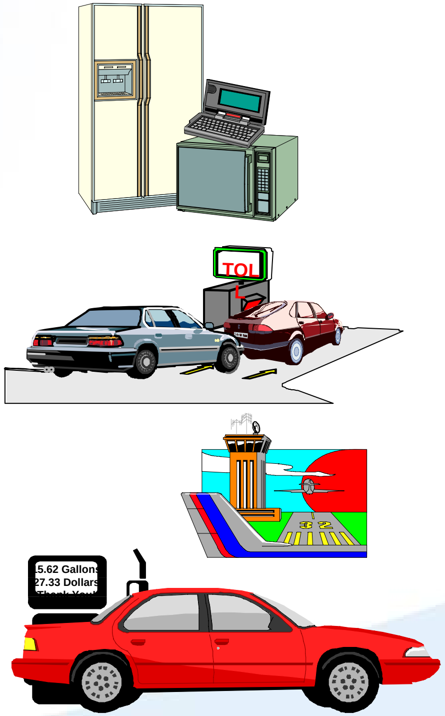
- Habits and behaviors sometimes change quickly:
  - Once you had a great (and affordable) experience with new technology, you usually don't want to miss it anymore.
    See: Blackberry, iPod, Skype, in-flight Wi-Fi, HD radio…
- Wireless enables two-way, personalized media
  (as opposed to mass media)
- Mobile content access will dwarf desktop-based access 10:1
- In wireless broadband, interaction takes on a whole new meaning:
  - "Sharing" will become a default standard
  - Multimedia communications will abound (messages, video, photo, sound)
  - Games become all-pervasive (posing other problems)
  - Shared content creation is now "on the fly" (contributing, remixing, mashing, etc.)
  - Location-based CONTENT services will explode
- Receivers become senders too

The Nature of Communications Has Been Changing...

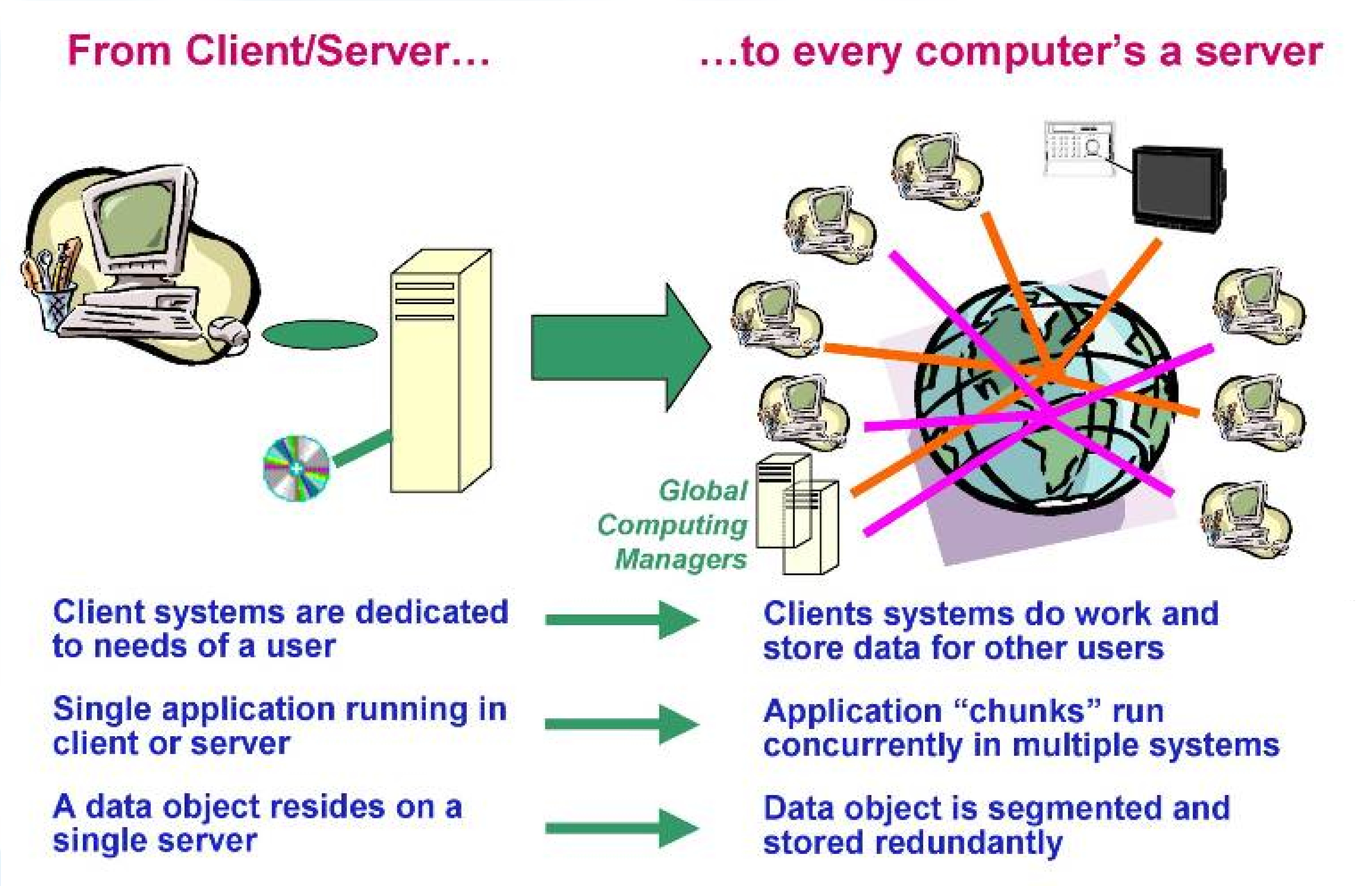
People to People → **People to Things** → **Things to Things**


POLICE
POLICE




TOL
5.62 Gallons
27.33 Dollars
32

The Global Grid



From Client/Server…	…to every computer's a server
Client systems are dedicated to needs of a user	Clients systems do work and store data for other users
Single application running in client or server	Application "chunks" run concurrently in multiple systems
A data object resides on a single server	Data object is segmented and stored redundantly

To Every Sensor is a Server

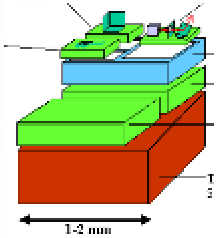
Processor

Data Storage

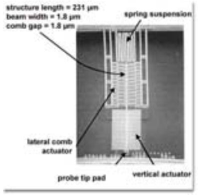
Communications

Rich variety of sensors

Phone -PDA

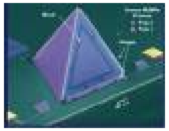


Smart Dust

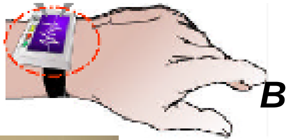

structure length = 231 µm
beam width = 1.8 µm
comb gap = 1.8 µm
spring suspension
lateral comb actuator
probe tip pad
vertical actuator

Microstorage

(Areal density 100x's CD)



Microphone



Embedded Biofluidics Chip

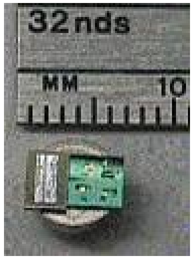
Robot

Micro Servers

Rockwell Scientific Remote Sensor

NASA/JPL Sensor Web 2 Pod

NASA/JPL Sensor Web 1 Pod



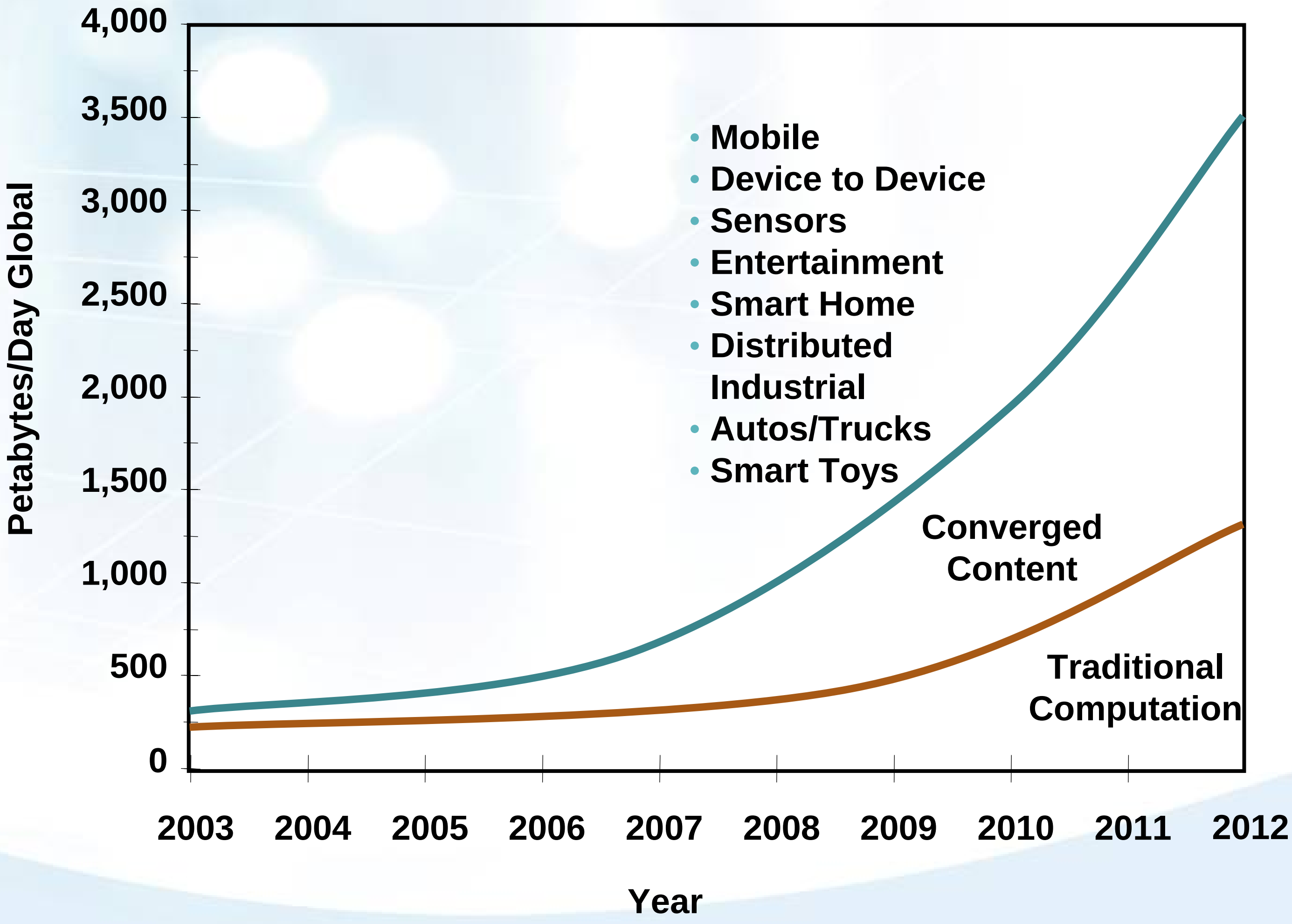
Berkeley Mote (1999)

XPort Embedded Device Server

UCLA Medusa MK-2

Crossbow MIICA Mote

Growth at the Edge of the Network



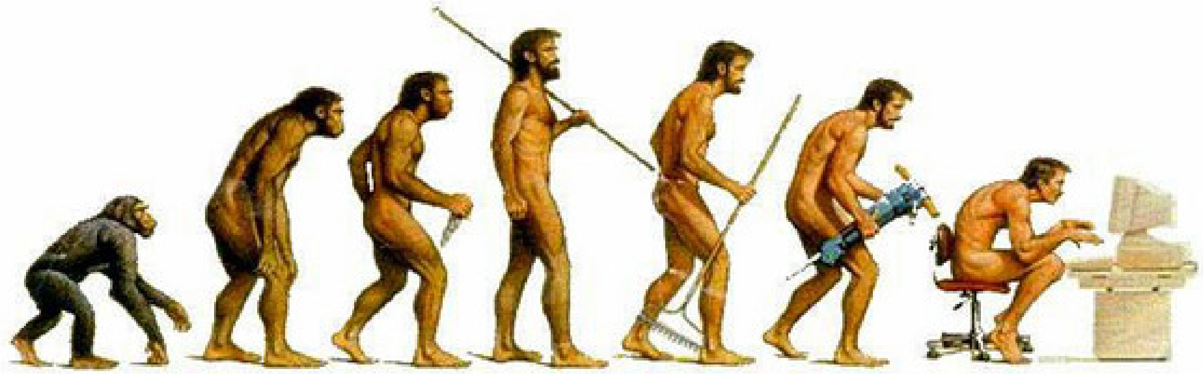
"Mobile phones are more than a billion smart computers we can't ignore that may create a software spiral like that of PC over the next 10 years."

—Paul Otellini,
CEO, Intel

"We really believe we are on the cusp of a whole new era of mobile computing."

—Steve Ballmer,
CEO, Microsoft

Does the Tool Feel like Progress or Not?



The most critical factor to successful collaboration is not the technical barriers but rather the people barrier.

—Andrew White, Logility, Inc.

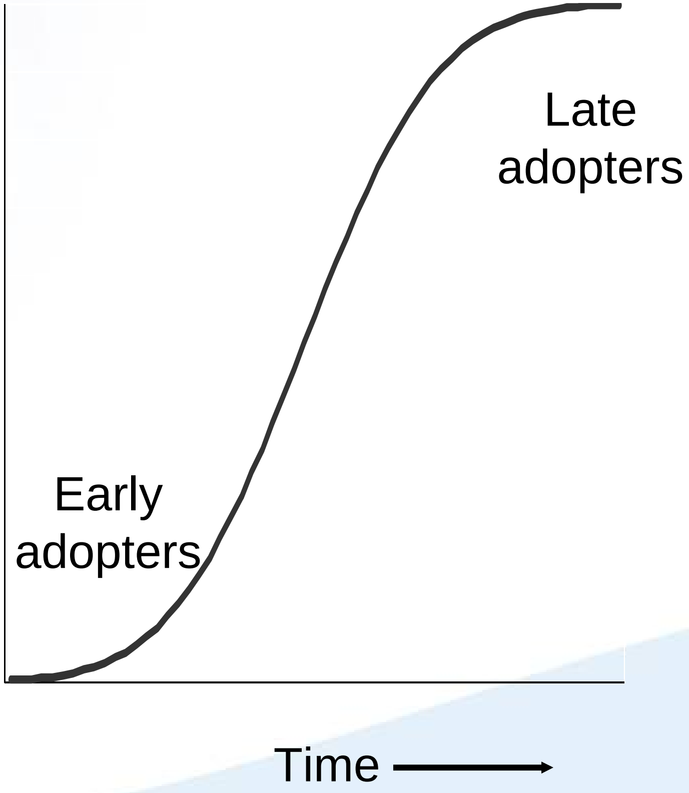
Case Example

TEXAS DEPARTMENT OF TRANSPORTATION
Project Selection Process
DESCRIPTION OF PARCEL 509
Doc ID: 310809

Collaboration REQUIRES Time and Specialized people

The Challenge of Collaboration Technology Adoption

- Technology adoption is a slow, phased process
- Physical distance is an obstacle to adoption
  - People learn from neighbors
  - Organizational mandates have limited range
- Collaboration technologies require universal adoption but have inherent limiting properties
  - Tragedy of the Commons
  - Critical mass
  - Difficulty of learning infrequent features
  - Visibility of performance



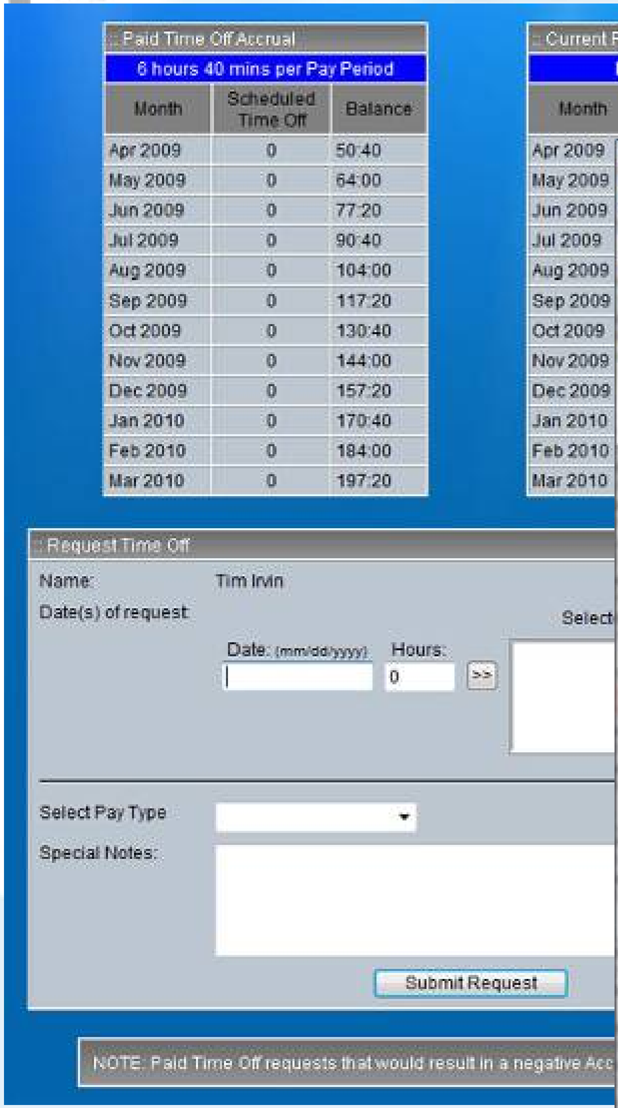
Main Objectives,
In Any Collaborative Effort:

1. *Integration of people, process, and technology*: Any collaborative effort would aim at bringing integration between people and processes, people and technology, and technology and processes.

Main Objectives,
In Any Collaborative Effort:

2. *Superior communication and synchronization*: The other outcome of collaboration is more accurate, frequent, and two-way or multiple-way communication across all company locations, better information exchange with partners, enhanced knowledge management, and improved external communications to the customer base and the market at large. This results in better synchronization of all activities in the organization.

Case Example



:: Paid Time Off Accrual

6 hours 40 mins per Pay Period

Month	Scheduled Time Off	Balance
Apr 2009	0	50:40
May 2009	0	64:00
Jun 2009	0	77:20
Jul 2009	0	90:40
Aug 2009	0	104:00
Sep 2009	0	117:20
Oct 2009	0	130:40
Nov 2009	0	144:00
Dec 2009	0	157:20
Jan 2010	0	170:40
Feb 2010	0	184:00
Mar 2010	0	197:20

:: Current Request

Impact If Approved

Month	This Request	Resulting Balance
Apr 2009		
May 2009		
Jun 2009		
Jul 2009		
Aug 2009		
Sep 2009		
Oct 2009		
Nov 2009		
Dec 2009		
Jan 2010		
Feb 2010		
Mar 2010		

:: Request Time Off

Name: Tim Irvin

Date(s) of request

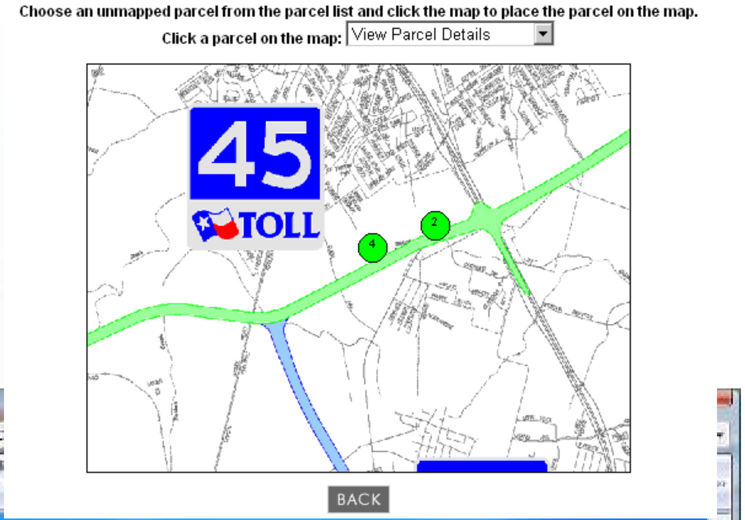
Date: (mm/dd/yyyy) Hours: 0

Select Pay Type

Special Notes:

NOTE: Paid Time Off requests that would result in a negative Acc

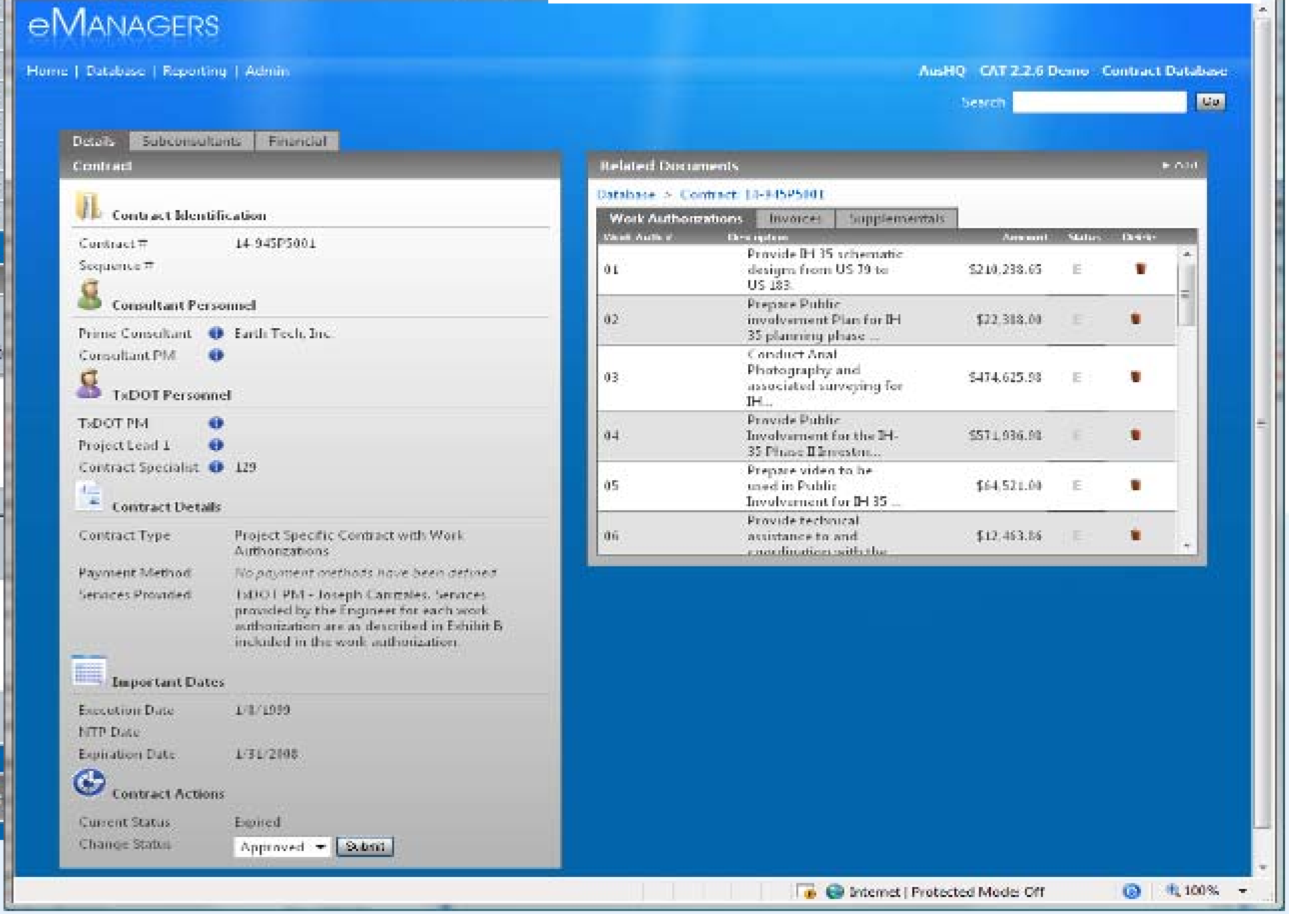
Select
>>
Submit Request



Choose an unmapped parcel from the parcel list and click the map to place the parcel on the map.

Click a parcel on the map: View Parcel Details

45
TOLL
4
2
BACK



AustHQ - CAT 2.2.6 Demo - Contract Database - Windows Internet Explorer

https://cat2demo.hbmginc.com/emanagers/contractadmin/C

DevToolBar View DOM Disable View Outline Validate Images Resize Mi
AustHQ - CAT 2.2.6 Demo - Contract Database
eMANAGERS
Home | Database | Reporting | Admin
AusHQ CAT 2.2.6 Demo Contract Database
Search
Go
Details
Subconsultants
Financial
Internet | Protected Mode: Off
100%

Contract

Contract Identification

Contract # 14-94SP5001

Sequence #

Consultant Personnel

Prime Consultant Earth Tech, Inc.

Consultant PM

TxDOT Personnel

TxDOT PM

Project Lead 1

Contract Specialist 129

Contract Details

Contract Type Project Specific Contract with Work Authorizations

Payment Method No payment methods have been defined

Services Provided TxDOT PM - Joseph Carrales. Services provided by the Engineer for each work authorization are as described in Exhibit B included in the work authorization.

Important Dates

Execution Date 1/8/1999

NTP Date

Expiration Date 1/31/2008

Contract Actions

Current Status Expired

Change Status Approved Submit

Related Documents

Database > Contract: 14-94SP5001

Work Authorizations | Invoices | Supplementals

Work Auth #	Description	Amount	Status	Delete
01	Provide IH 35 schematic designs from US 79 to US 183	$210,238.65	E	
02	Prepare Public involvement Plan for IH 35 planning phase ...	$22,318.00	E	
03	Conduct Anal Photography and associated surveying for IH...	$474,625.98	E	
04	Provide Public Involvement for the IH-35 Phase II Investig...	$571,936.00	E	
05	Prepare video to be used in Public Involvement for IH 35 ...	$64,521.00	E	
06	Provide technical assistance to and coordination with the	$12,463.86	E	

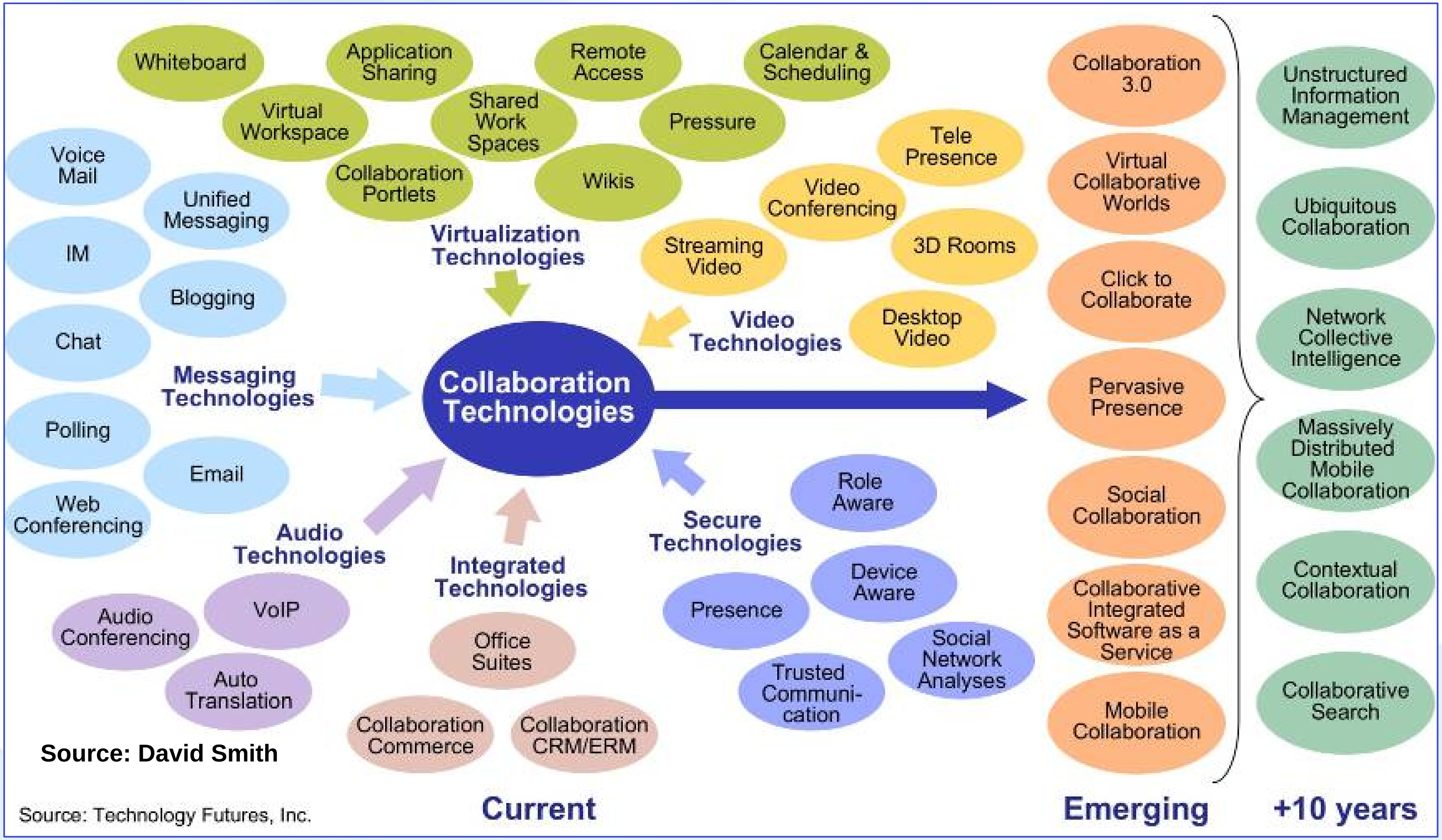
Drivers

- Shift from Ownership to Partnership
- Trust Built between Partners
- Information Technology
- Convergence of Integration, Interactivity, and Infrastructure Technologies
- Networked Businesses
- Emergence of XML as the De Facto Data Transport
- B2B and B2C Collaboration
- Knowledge Management and Collaboration Technologies

Constraints

- Externalizing Automation
- Evolution of a Digital Equivalent of Trust
- Balancing Privacy and Security Concerns
- Consortium Development between Communities
- Internal Challenges

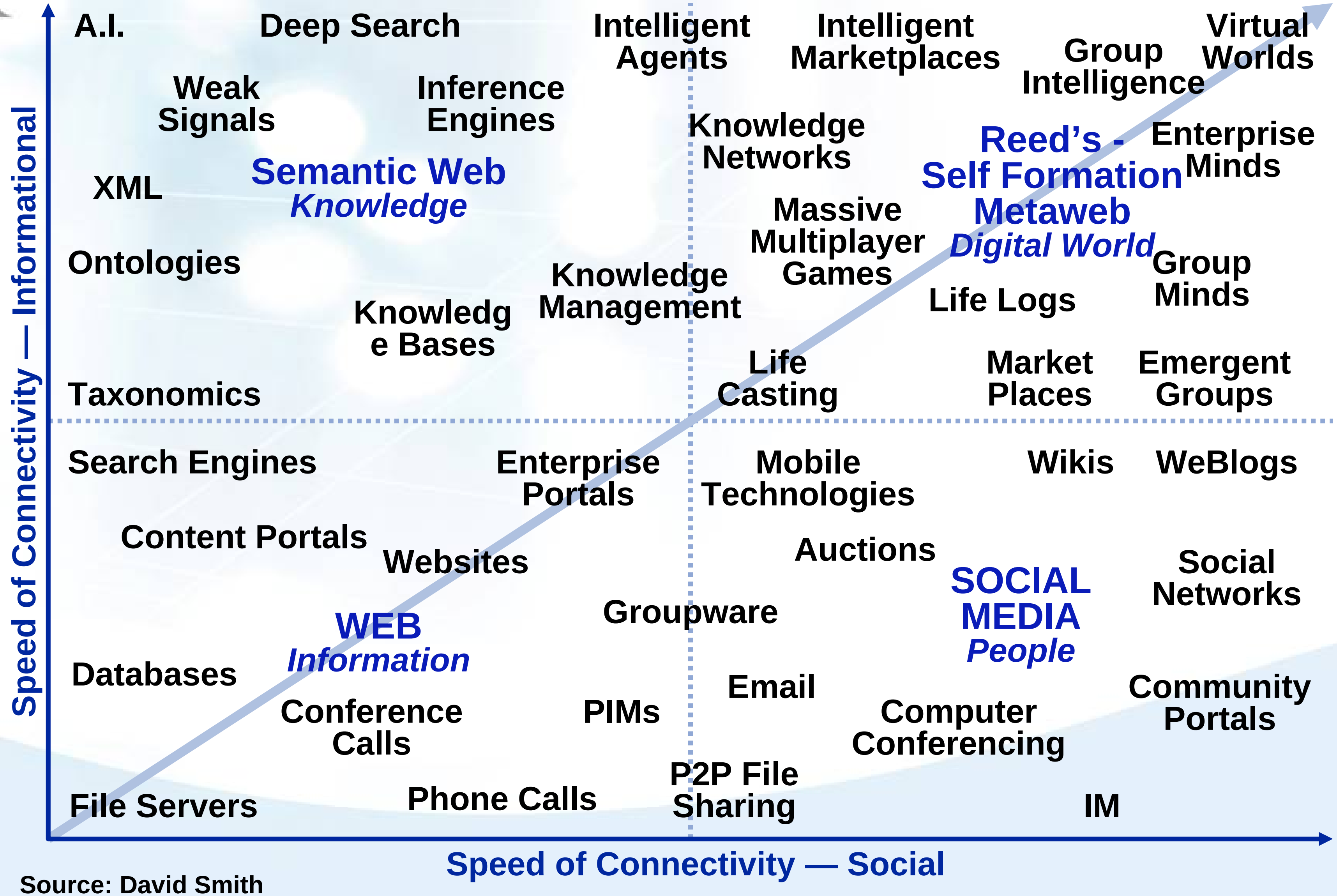
Collaboration Technologies


Whiteboard
Application Sharing
Remote Access
Calendar & Scheduling
Virtual Workspace
Shared Work Spaces
Pressure
Collaboration Portlets
Wikis
Virtualization Technologies
Tele Presence
Video Conferencing
Streaming Video
3D Rooms
Video Technologies
Desktop Video
Voice Mail
Unified Messaging
IM
Blogging
Chat
Messaging Technologies
Polling
Email
Web Conferencing
Collaboration Technologies
Audio Technologies
Integrated Technologies
Secure Technologies
Role Aware
Device Aware
Presence
Social Network Analyses
Trusted Communi-cation
Audio Conferencing
VoIP
Auto Translation
Office Suites
Collaboration Commerce
Collaboration CRM/ERM
Collaboration 3.0
Virtual Collaborative Worlds
Click to Collaborate
Pervasive Presence
Social Collaboration
Collaborative Integrated Software as a Service
Mobile Collaboration
Unstructured Information Management
Ubiquitous Collaboration
Network Collective Intelligence
Massively Distributed Mobile Collaboration
Contextual Collaboration
Collaborative Search
Current
Emerging
+10 years

Source: David Smith

Source: Technology Futures, Inc.

Evolving—Self Forming



A.I.

Deep Search

Weak Signals

Inference Engines

XML

Semantic Web
Knowledge

Ontologies

Knowledge Bases

Knowledge Management

Taxonomics

Intelligent Agents

Intelligent Marketplaces

Group Intelligence

Virtual Worlds

Knowledge Networks

Reed's - Self Formation Metaweb
Digital World

Enterprise Minds

Massive Multiplayer Games

Group Minds

Life Logs

Life Casting

Market Places

Emergent Groups

Search Engines

Enterprise Portals

Content Portals

Websites

WEB
Information

Databases

Conference Calls

PIMs

File Servers

Phone Calls

Mobile Technologies

Wikis

WeBlogs

Auctions

SOCIAL MEDIA
People

Social Networks

Groupware

Email

Computer Conferencing

Community Portals

P2P File Sharing

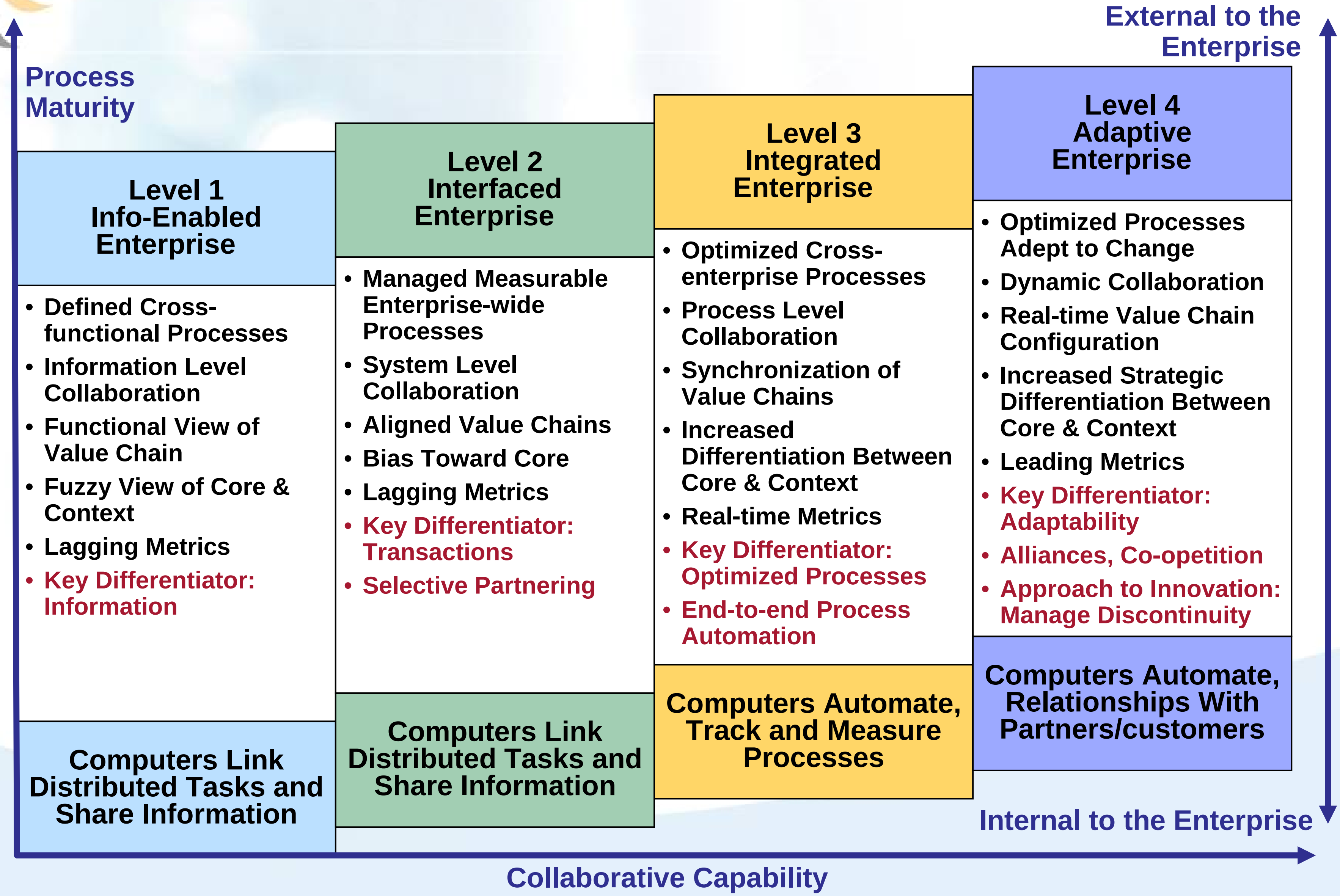
IM

Speed of Connectivity — Informational

Speed of Connectivity — Social

Source: David Smith

Collaborative



Process Maturity

External to the Enterprise

Internal to the Enterprise

Collaborative Capability

Level 1 Info-Enabled Enterprise

- Defined Cross-functional Processes
- Information Level Collaboration
- Functional View of Value Chain
- Fuzzy View of Core & Context
- Lagging Metrics
- Key Differentiator: Information

Computers Link Distributed Tasks and Share Information

Level 2 Interfaced Enterprise

- Managed Measurable Enterprise-wide Processes
- System Level Collaboration
- Aligned Value Chains
- Bias Toward Core
- Lagging Metrics
- Key Differentiator: Transactions
- Selective Partnering

Computers Link Distributed Tasks and Share Information

Level 3 Integrated Enterprise

- Optimized Cross-enterprise Processes
- Process Level Collaboration
- Synchronization of Value Chains
- Increased Differentiation Between Core & Context
- Real-time Metrics
- Key Differentiator: Optimized Processes
- End-to-end Process Automation

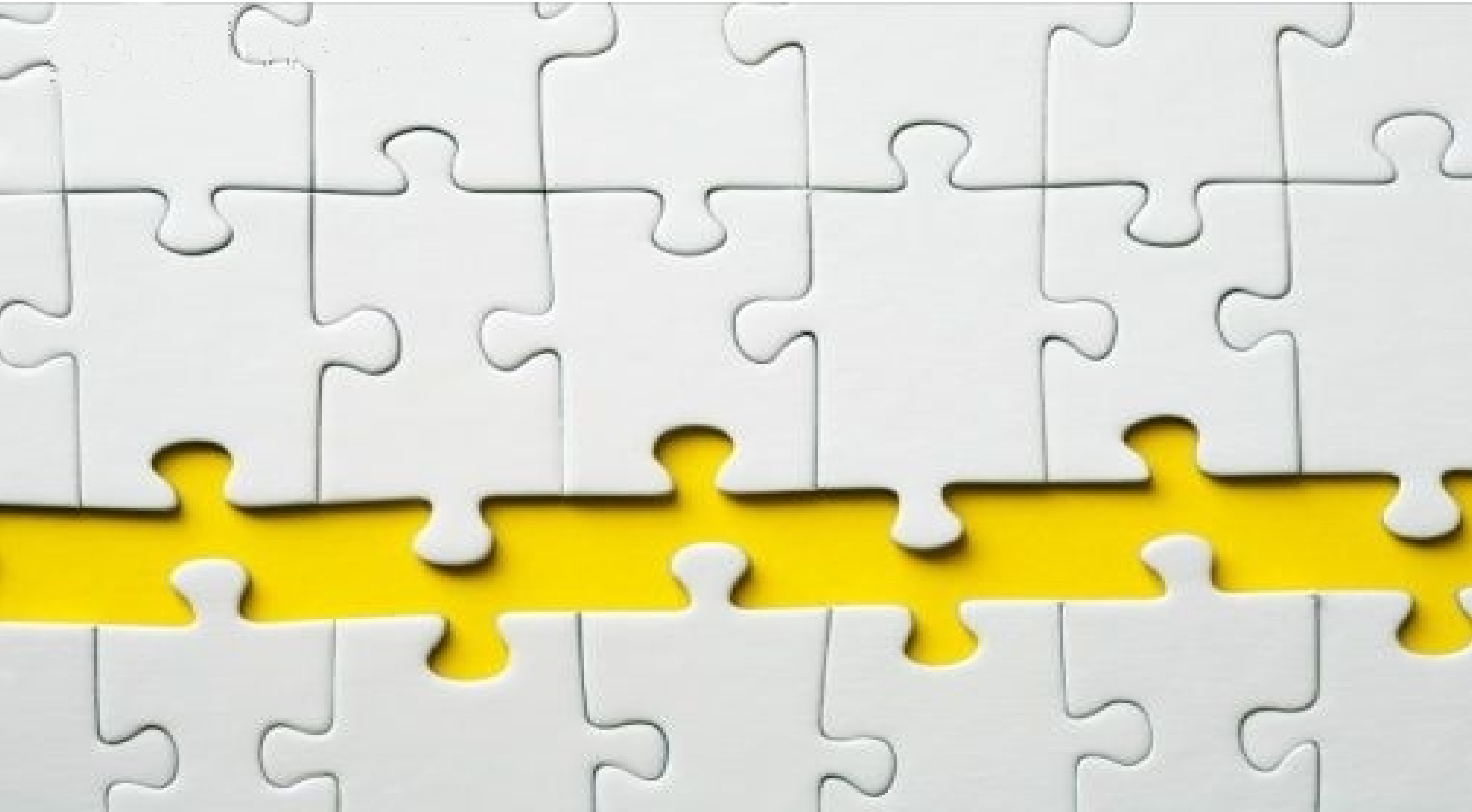
Computers Automate, Track and Measure Processes

Level 4 Adaptive Enterprise

- Optimized Processes Adept to Change
- Dynamic Collaboration
- Real-time Value Chain Configuration
- Increased Strategic Differentiation Between Core & Context
- Leading Metrics
- Key Differentiator: Adaptability
- Alliances, Co-opetition
- Approach to Innovation: Manage Discontinuity

Computers Automate, Relationships With Partners/customers

develop **great** solutions



innovate!

collaborate

Thank You.

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