

Driving Your Information Costs To Zero

How information creates wealth, and why
information must be available in the five
key dimensions of Anything, Anytime,
Anywhere with Anyone in Any Amount

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From Matter to Information

The value of information about a company exceeds the value of its tangible assets

- American Airlines SABRE
- TV Guide
- Amazon.com (no inventory)
- The data on your laptop PC

From Firms to Individuals

People have greater access to information
in their personal lives than on the job

E-mail

Internet

Fax

Cell phone

Voice mail

Pager

*What happens when customers have greater
access to information than your employees?*

From Sellers to Buyers

Customers know more about your store
and products than your employees

Who wants to shop at a store that

- Doesn't have what you want
- Has an understaffed uninformed workforce
- Requires a return trip
- Charges more to cover fixed overhead

From Private to Public

Wealth is created by sharing, not hoarding

- Open instead of closed (Apple & Betamax)
- Shared instead of secret (strategy & data)
- Simple instead of complex (VCRs & SAP)
- Standard instead of unique (cars & Internet)

From Ownership to Access

Ownership of physical resources is now a liability instead of an asset

- Relationship instead of transaction (support)
- Lease instead of buy (cars, PCs, software)
- Parts instead of whole (plug & play)
- Operating cost instead of capital expense

Information Costs: Make or Buy

The purpose of the firm is to reduce information costs — Ronald Coase (1937)

- Company cafeteria
- Oil Change

Information as Wealth

Wealth is created as more data is transmitted with fewer errors over the same unit of time — J. L. Kelly (1956)

- Directly related to transmission speed
- Inversely related to error rate (noise & static)

History of Economics

<u>Period</u>	<u>Limiting Factor</u>	<u>Entity</u>
Agricultural	Inventory	Raw materials
Industrial	Unskilled Labor	People
<i>Post-War</i>	<i>Skilled Labor</i>	<i>Education</i>
<i>1980s</i>	<i>Financial Capital</i>	<i>Internal Data</i>
<i>1990s</i>	<i>Communication</i>	<i>External Data</i>
<i>2000+</i>	<i>Bandwidth</i>	<i>Data Speed</i>

History of MIS and IT

<u>Period</u>	<u>Relationship</u>	<u>Value Basis</u>
1960s	Division	Assets
1970s	Department	Team
1980s	Subordinates	Technicians
1990s	Outsourced	Consultants
2000s	Virtual ASP	Utility

External Data — Communication

OLD

Technology Replaced By

NEW

Paper

EDI

Checks

EFT

Data entry

Scanners

Letters/faxes

E-Mail

Cabinets

Network dbs

Amish Need Not Apply

- No single person knows how to make a car
 - *Infinite Information* (complexity & overload)
 - *Limited Capacity* (300 WPM)
- How do cars and pencils get made?
 - *Information Sharing* (broadcasting: easy)
 - *Information Hiding* (specialization: hard)
- Design a better dashboard ...

Economics of Buying & Selling

- *Information Costs* — the cost of gathering, processing & transmitting information.
- *Transaction Costs* — the cost of exchanging money for goods & services, and moving & storing inventory.

Target: Information Float

- *Information Float* — The time from the occurrence of an event, until the information about the event is communicated to all parties (check float, financial reporting)
- *Transaction Float* — The time from order placement until the product is delivered (Dominos: 30 min, FedEx: 24 hrs)

Information Equation

$$\textit{Unit Cost} = \frac{\textit{Expense}}{(\textit{Volume} * \textit{Quality})}$$

- **Strategy** — Drive *Unit Cost* to zero by linearly increasing *Expense* while exponentially increasing *Volume & Quality*

Goal: Reduce Float to Zero

Aspects of Information Quality

- *Speed* (instantaneous)
- *Accuracy* (error free)
- *Completeness* (sharing: everything to everyone)
- *Customized* (hiding: format, place, time, user)
- *Cost* (free: telegram → fax → e-mail)
- *Security* (copyright, identification, privacy)

Information Float: *Physical*

Do you have virtual access to your data?

Process digital data, not physical paper

- Capture, index and store all paper documents at the source (USAA).
- Use paper only as redundancy confirmation
 - receipts, statements, contracts

Information Float: *Procedural*

Can customers manage the process better than your employees?

The cost of an idle customer is more than the cost of an idle employee

- Paying for gas at the pump (Shell)
- Withdrawing cash from the bank (ATMs)

Information Float: *Contractual*

Are you managing money-wasting delays instead of wealth-producing activities?

Wait = Waste ... and you're paying for it

- Ford pays suppliers on receipt (Start)
- Wal-Mart pays suppliers at POS (Finish)

Information Float: *Hierarchical*

Can information be conveyed
at a higher level?

*Your vendors are already on your payroll
adding cost to the final product*

- Supplier Quality Assurance (ISO 9000)
- Retail forecasting (Wal-Mart)

Information Float: *Logistical*

Are you managing information,
or just moving it?

*Information should wait for people,
not the other way around*

- Dell computer (TX) & Sony monitor (NM)
joint shipments via Airborne Express
- Airline e-tickets

Information Float: *Intellectual*

Does the answer already exist,
but in a different form?

*A “close enough” computer
beats an exact human*

- Database marketing & underwriting (frequent flyer = good credit risk)
- Indexed stock portfolios (pension plans)

Information Float: *Incremental*

Do you already know the answer?

Never ask the same question twice

- ATM: English or Spanish
- Amazon: Address, phone #, credit card #

Information Float: *Terminal*

Is the information in a terminal state?

Data should be entered only once

- What have we ordered? (EDI)
- What's on the truck on in your cart? (UPC)
- Medical data (pulse, blood pressure)

Information Float: *Intermedial*

Are you competing
with the speed of light?

Don't send a man to do a computer's job

- FedEx package tracking via the Internet
- London Stock Exchange electronic trading

Information Float: *Monitorial*

Are you juggling too much
information simultaneously?

*Computers have unlimited bandwidth,
humans don't*

- Program trading
- Credit card fraud

Information Float: *Relational*

Have you forgotten that
you're the customer?

*Reverse engineer the accumulated
knowledge and trust of every relationship*

- Residential utility bills
- 'Wal-Mart' your local grocer

IT Competitive Scenarios

- *Operational Necessity*: requirement to survive — GM and EDI
- *Competitive Necessity*: requirement to compete — Sears and MC & Visa
- *Competitive Opportunity*: chance to take the lead — Shell's automated gas pumps
- *Breakaway Opportunity*: chance to change the industry — Encarta vs. Britannica

Economics of Bandwidth

Internet \Leftrightarrow Data

Electricity \Leftrightarrow Energy

Credit Cards \Leftrightarrow Wealth

- Complete outsourcing of the MIS function
- MIS and ISP merge into ASP
- ASP utility providing $[A^5]$ data access

[A⁵] Architecture of Wealth, Energy & Information (ASPs)

- *Anything* — Functionality (plug & play)
- *Anytime* — Availability (JIT, on/off, 24/7)
- *Anywhere* — Connection (electricity, Visa)
- *Anyone* — Sharing (Internet, IBM vs. Apple)
- *Any Amount* — Scalability (Amazon)

History of [A⁵] Utility Access

WEALTH

Land

Gold

Cash

Banks *

Bonds

Stocks

Credit Card

ENERGY

Muscle

Animal

Wind

Coal

Steam

Oil

*Electricity **

DATA

Stone

Parchment

Paper

Punched Card

Disk Drives

CD-ROM

*Internet **

Financial Service Providers

Services

- Checking
- Credit
- Trading
- Diversification
- Record keeping
- Research

Principles

- Can't touch it
- Can't control it
- Can't fix it
- Don't hire personnel
- Don't store it
- Don't know where it is

Application Service Providers

MIS Department

- Hardware
- Software
- Communication
- Data storage
- Support
- Training

Principles

- Can't touch it
- Can't control it
- Can't fix it
- Don't hire personnel
- Don't store it
- Don't know where it is

Reliability & Security Issues

What do you do when ...

- Your power goes out?
- Your wallet is stolen?
- Your house burns down?
- Your system crashes?

Current Reliability Scenarios

- **FEAR:** You won't be able to hire and retain sufficient expertise to keep your network up-and-running
- **PANIC:** You won't learn that your IT staff can't do the job until a crisis occurs
- **WASTE:** Your highly paid expert IT staff will be overpaid and underutilized

Current IT Risks

- **Platform** — Is your OS & hardware obsolete? (Wang)
- **Quality** — Is your error rate acceptable? (data entry)
- **Talent** — Can you afford the IT expertise? (LAN/ISP)
- **Retention** — What's the career path for your IT staff?
- **Morale** — Is your data safe from theft and sabotage?
- **Communication** — Can customers talk to you? (EDI)
- **Regulation** — Can you keep up with the law? (FASB)
- **Time** — Will customers wait for you? (Shell)
- **Costs** — Can you compete with Wal-Mart?

Shrinking Survival Timetable

- *Decades* — Seat belts, Smoking
- *Years* — ATMs, Voice Mail
- *Months* — E-mail, Internet
- *Weeks* — EDI, EFT
- *Days* — London Stock Exchange
- *Hours* — Utilities response time

Business & Personal Operational Necessities

20th Century Analog

- Plumbing
- Literacy
- Electricity
- Telephone
- Bank account
- Driver's license
- **Credit card**

21st Century Digital

- PC
- E-mail
- EFT
- EDI
- Scanners
- Internet
- **ASP [A⁵] Access**

Business Survival Checklist

- Do your competitors, customers, suppliers or employees have lower information costs?
- Are they trying to get around you and is there an Amazon alternative open to them?
- Where are you on the security/reliability scale?
- Which current IT risks threaten you the most, and how are you addressing them?

Business Planning Checklist

- Is your business plan founded on industrial age economic models such as vertical integration, economies of scale, diversification etc.?
- How are you leveraging the economics of external information and exponentially increasing bandwidth?
- When will your employees, customers and suppliers have A^5 access to your data?

Business Structure Checklist

- **Access:** Subordinates have a greater need for information technology tools than superiors
- **Age:** Younger employees may be more valuable than older ones
- **Knowledge:** Subordinates have more technical knowledge and expertise than superiors
- **Mobility:** Subordinates must be more mobile than superiors

If Wal-Mart Can Do It ...

The Wal-Mart Handicaps

- *Proprietary Technologies*: none
- *Margins*: low
- *Markets*: rural
- *Customers*: lower class
- *Switching Costs*: none
- *Workforce*: hourly
- *Turnover*: high

Information: The Final Frontier

- The purpose of a business is to reduce information costs (Coase).
- More information transmitted with fewer errors translates into wealth (Kelly).
- Like a utility, information must be A⁵ universally accessible: Anything, Anytime, Anywhere, with Anyone, in Any Amount.