



Prospective IT governance

0	intro	001-009
1	some IS/IT challenges	010-021
2	Systems and transverse	022-033
3	ICT Technotrends	034-048
4	IS/IT old "rules"	049-050
5	IS quality and Governance	051-085
6	IT and Strategy	086-092
7	ICT intelligence	093-097
8	IT and Organization	098-117
9	IT and Projects	118-127
10	Concurrent engineering	128-132
11	IT infrastructures	133-134
12	ERP's	135-138
13	Mass Customization and Cultures	139-143
14	KM	144-154
15	Informal Networks, Cops, ...	155-156

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1

Your Data Base: <http://davidjf.free.fr/WUTBS/mba.html>

IT governance: why ?

• IT Governance books: some readings....

Computer Confluence	Beekman Tathwohl	Prentice Hall	2003	...state of the art
IT Mgr Survival Guide	Aalders Hind	Wiley	2002	...good rules
CIO Survival Guide	Carl Schubert	John Wiley	2004	...some issues
Knowledge Management	Gamble Blackwell	Kogan Page	2002	...good synthesis
KM	Harvard Business R.	HBS	1998	...guru's
Business Value of IT	Harvard Business R.	HBS	1999	...guru's
Gödel, Escher, Bach	Hofstadter	Penguin Books	1980	...man, mind and machines
IBM System Journal v32-1	IBM System Journal v32-2	IBM	1993	...alignment
IT Service Management	Jan le Bon	Addison Wesley	2002	...detailed "bible"
C R M	Kincaid	HP	2003	...CRM
MIS	Laudon	Prentice Hall	1996-2002	...basics
Customer-Driven IT	Moschella	HBS	2003	...role of IT user
Managing IT as Investment	Moskowitz Kern	Prentice Hall	2003	...rules of the game
Being Digital	Negroponte	Vintage books	1998	...MIT Medialab guru
Does IT matter	Nicolas Carr	HBS	2003	...a real perspective
IT Governance	Peter Weill, Jeanne Ross	HBS	2004	...IT Governance study
Mass Customization	Pine	HBS	1993	...nice concept
Making IT Count	Willcocks & ...	BH	2002	...impressive rules

• IT governance study (Sloan School MIT 2003)

- CISR study of 256 global companies reveals that the **profits of companies** with top-notch IT governance practices are **20% higher** than those of companies with poor IT governance.

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2



Jean-François DAVID

Strategist

<http://www.davidjf.com>

30 years within IBM France (Project manager, CPG Industry Strategy Director, Co-Founder of IBM France Consulting Group), author of many contributions on various IT and Organizational topics: Intelligent agents, IT perspectives, Strategic Alignment, Processes and IT, ...

Since 95:

Education (HEC MBA, ESCP, HEC Management, Collège de l'X, ENST, University of Nantes)

Independent consultant, active member of many networks (EFQM, IQM, AFNET, APM, CJD,...)

Research themes:

Governance and IT Governance. Strategic alignment. IT/Organization/Culture interference. Time-Based Strategies. KM and cognitive aspects. Man/machine interfaces.

**First Mover, Competitive advantage or...
...IT does not matter?**



- Carr article in HBR 2003
 - Spend less
 - Follow, don't lead
 - Focus on vulnerabilities, not opportunities
- Criticism
 - read Carr articles and articles on IT still matters
 - read Business Week' Web 50's

MBA students have mixed feelings about IT/IS...



- TIC pervasive, ubiquitous, ...
- It doesn't work !
- I already know ! (web, laptops, telephone, ...)
- SAP implementation!!!
- IT: binary world of false/true vs truth?
- For everybody or for specialists?
- Strategic or utility?
- MBA's "monoculture" (Strat / Finance / Cultures /)
- OO + IT = COO

Various disciplines connected...



- | | |
|---|---|
| <ul style="list-style-type: none"> • Strategy <ul style="list-style-type: none"> – productivity – Competitive advantage • Management alignment <ul style="list-style-type: none"> – Mgt system – Measurement – Processes • Information systems <ul style="list-style-type: none"> – Systems – Communication • IT trends <ul style="list-style-type: none"> – Storage, Computers, Communication, Man/machine interface • Usages <ul style="list-style-type: none"> – e-Biz, B2B, B2C, B2E, • IT Projects • IT infrastructures • People acceptance <ul style="list-style-type: none"> – Knowledge and KM – Structures – Cultures | <ul style="list-style-type: none"> • Methods • IT Market • + |
|---|---|
- CRM, SCM, ERP, BI, KM

Knowledge to be acquired



- Understanding of information systems' role within organizations and society.
- Knowledge about technological trends, about laws governing IT and IT markets.
- Awareness, beyond the IT potential, of the complexity of the relations between information technologies, organization and human aspects. Ability to build a personal not simplistic opinion on this subject.
- Knowledge of mental models on strategic alignment (strategy, technologies, processes, organization, cultures, projects,...). Full appropriation of connected methodologies.
- Understanding of IT main fallacies, before and after "Internet bubble". E-biz positioning.
- Knowledge of the true potential of IT, awareness of the traps in the implementations.
- Ability to discuss, with the culture and the adequate vocabulary, with computer specialists.
- Capability of disentangling a certain truth, beyond the speeches of the vendors and IT gurus
- Knowledge of IT governance principles in connection with corporate governance

Teaching Methods & Evaluations...



- **Teaching Methods**
 - Formal lectures to motivate on the sub-topic, multi-faces business cases running during the whole course, many real examples from various sectors, some methodological exercises (IT balanced scorecard, culture benchmark, IT quality assessment, ..) and discussions.
- **Evaluation**
 - Group's contribution for business cases, individual assignments results, personal contributions during the whole course.

"What I hear, I forget. What I see, I remember.
And what I do, I understand."

Chinese Proverb



- +...some basic TRICKY TOOLS inside a FUZZY WORLD



1 Main challenges of CEO, 1995...

- Time
- Quality
- Innovation
- Market Share, Growth
- Clients needs and desires
- Costs, Profit, productivity
- Competency
- Redesign processes
- *Think*
 - *client: push or pull?*
 - *What is a process?*
 - *A sample "Balanced Score Card" ?*

1 Which leverage for growth?



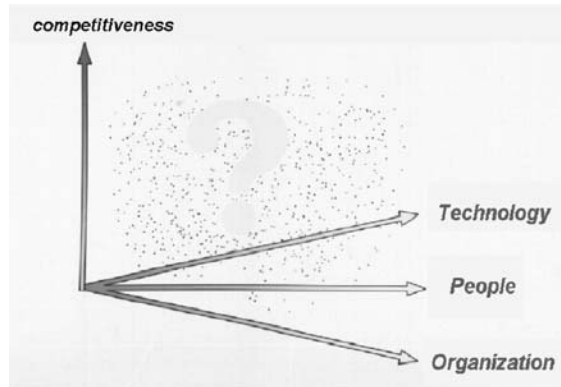
- New ideas through client non-satisfaction topics analysis
- Geographical expansion
- Redesign of main company processes to increase reactivity
- Research of new ideas by combination of apparently incompatible attributes (price/quality/speed/added value/personalization, ...)
- External growth
- *Think*
 - *Mass Customization:*
 - *think about, Benneton, Dell, Toyota, ...*
 - *find examples in products, in services*
 - *Mass Customization and need of upcoming information...*

1 Main challenges CEO 2000...



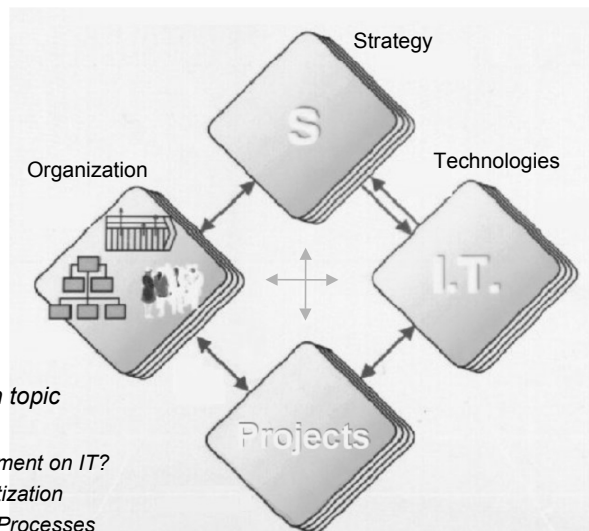
- Globalization
- Improving Knowledge Management
- Cost and Cycle time reduction
- Improving supply chain globally
- Multiple locations/countries manufacturing
- Managing part-time, temporary and contract workers
-
- *Think*
 - *Why KM suddenly top?*

1 Which lever to deploy strategy ?



- *Think*
 - *Correlation proof impossible?*
 - *Timing*
 - *Which first?*

1 Strategic Alignment model



- *Read articles on topic*
- *Think ...*
 - *Strategy alignment on IT?*
 - *Process prioritization*
 - *Structures vs Processes*

1 IT Governance: What is it?



- **Many definitions with common elements:**
 - responsibility of the board of directors
 - protects shareholder value
 - ensures risk transparency
 - directs and controls IT investment, opportunity, benefits and risks
 - aligns IT with the business while accepting IT is a critical input to and component of the strategic plan, influencing strategic opportunities
 - sustains the current operation and prepares for the future
 - is an integral part of a global governance structure
- *Think:*
 - *Why is IT governance specific?*
 - *Look at definitions on the web...*

1 IT Governance: What is it?



Corporate Governance:

A system by which companies are directed and controlled, incorporating both legislative regulations and corporate policies and procedures designed to ensure accuracy in reporting on the financial activities of an entity for use by interested parties.



IT GOVERNANCE

A structure of relationships and processes to direct and control the enterprise in order to achieve the enterprise's goals by adding value while balancing risk versus return over IT and its processes.

1 IT Governance: What is it?



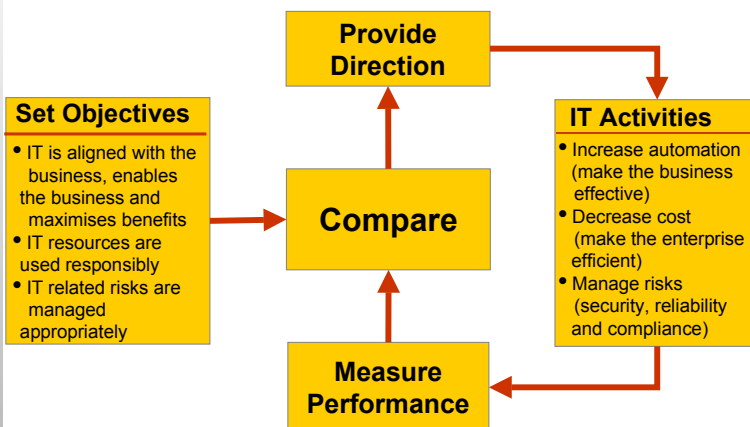
IT GOVERNANCE

A structure of relationships and processes to direct and control the enterprise in order to achieve the enterprise's goals by adding value while balancing risk versus return over IT and its processes.

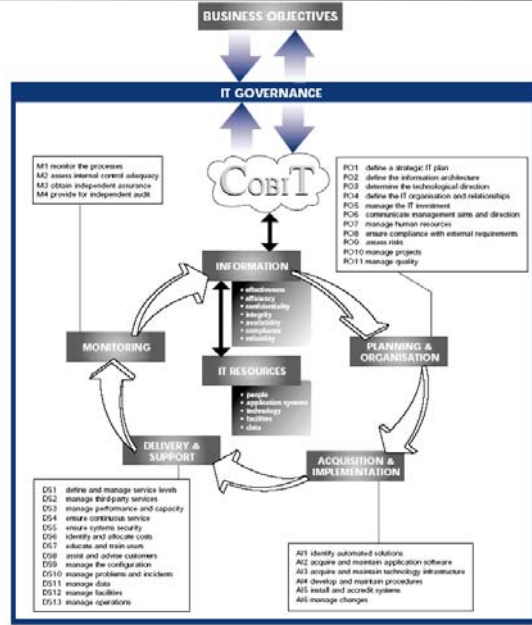
and its dimensions:

Strategic Alignment
Operational Efficiency
Risk Management
Security
Business Continuity
Change Management
System Integrity
Cost Management
Regulatory Compliance
Value Delivery

1 IT Governance: a possible framework



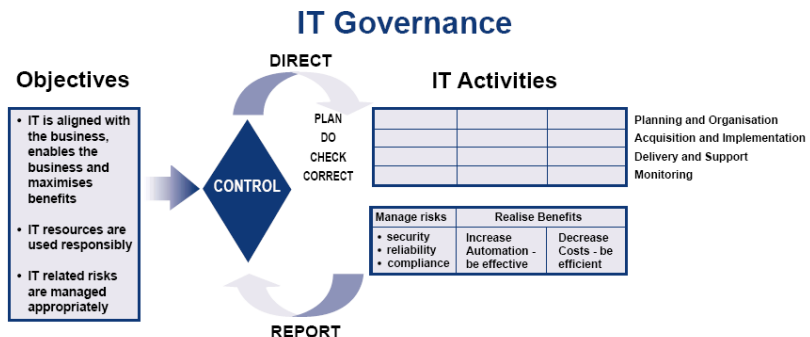
1 COBIT framework



- Read articles on topic
- Think ...
 - IT processes?
 - Technocratic?
 - Realistic?

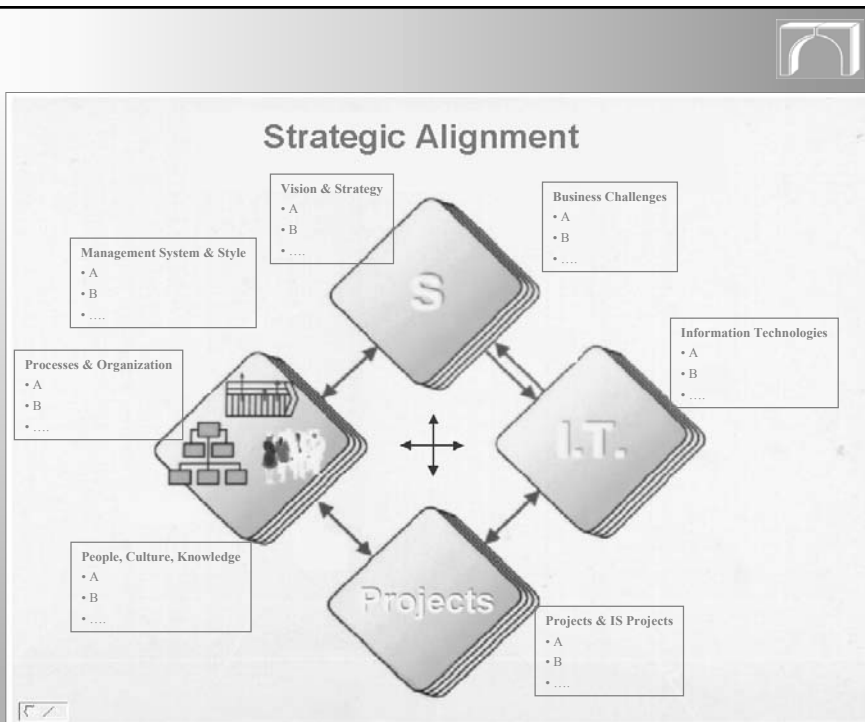
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19

1 COBIT again...

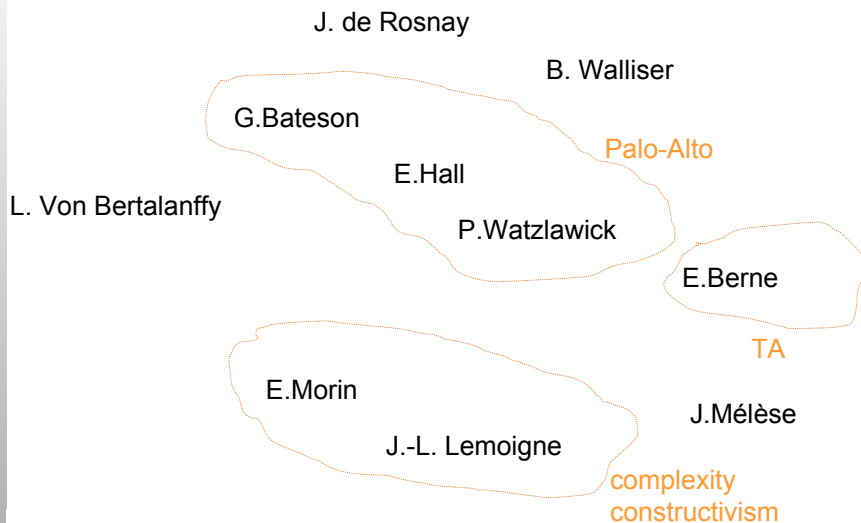


- Think ...
 - Relation with Quality?
 - Different from "normal" management?

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20



2 System and Time



2 System



- "A system is a set of elements in dynamic interaction, organized according to a purpose" Joël de Rosnay
- 1) A set in mutual connection with an environment, this interdependence insuring it a certain autonomy
- 2) This set is formed by systems in interaction, this interdependence insuring it a certain degree of coherence
- 3) It undergoes more or less deep modifications along time while preserving a certain durability " B.Walliser

2 René Descartes, rationalism



The FIRST **was never to accept anything for true which I did not clearly know to be such**; that is to say, carefully to avoid precipitancy and prejudice, and to comprise nothing more in my judgment than what was presented to my mind so clearly and distinctly as to exclude all ground of doubt"

OBVIOUSNESS principle

"The SECOND, to **divide each of the difficulties** under examination into as many parts as possible, and as might be necessary for its adequate solution"

REDUCTIONIST principle

"The THIRD, to conduct my thoughts in such order that, by **commencing with objects the simplest and easiest to know**, I might ascend by little and little, and, as it were, step by step, to the knowledge of the more complex..."

CAUSAL principle

"At the LAST, in every case to make enumerations so complete, and reviews so general, that I might be assured that **nothing was omitted**."

EXHAUSTIVENESS principle

2 System theory, constructivism



Agree that any object which we shall consider defines itself with regard to **the implicit or explicit intentions of the analyst**. Never refrain to question this definition if, our intentions modifying, the perception we had of this object modifies.

APTNES principle

Always consider the object to know by our intelligence as an immersed and active part within a bigger one set. **Perceive it at first globally, in its functional relation with its environment** without caring excessively to establish an accurate image of its internal structure, among which the existence and the uniqueness will never be considered as acquired.

GLOBALISM principle

Interpret the object not in itself, but by its behavior, without trying to explain a priori this behavior by some law involved in a possible structure. Understand on the other hand this behavior and the resources that it mobilizes with regard to the projects which, freely, the analyst attributes to the object.

TELEOLOGIC principle

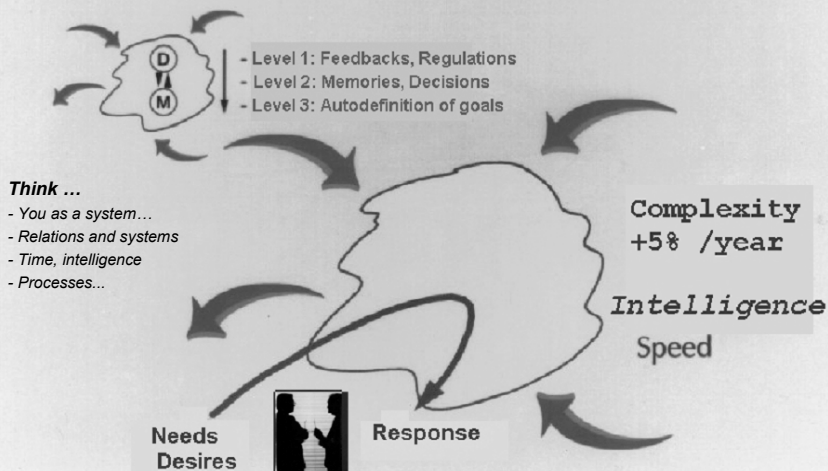
Agree that **any representation is simplifying**, not by neglect of the analyst, but deliberately. Look as a consequence for some receipts able to guide the selection of aggregates considered as relevant and exclude imaginary objectivity of an exhaustive inventory of elements

AGGREGATIVITY principle

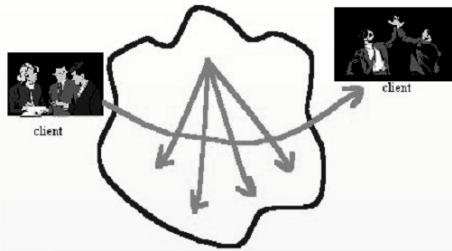
2 System theory, organization as systems...



Organization as a living SYSTEM



2 Structures... Processes... X-functionnalités...



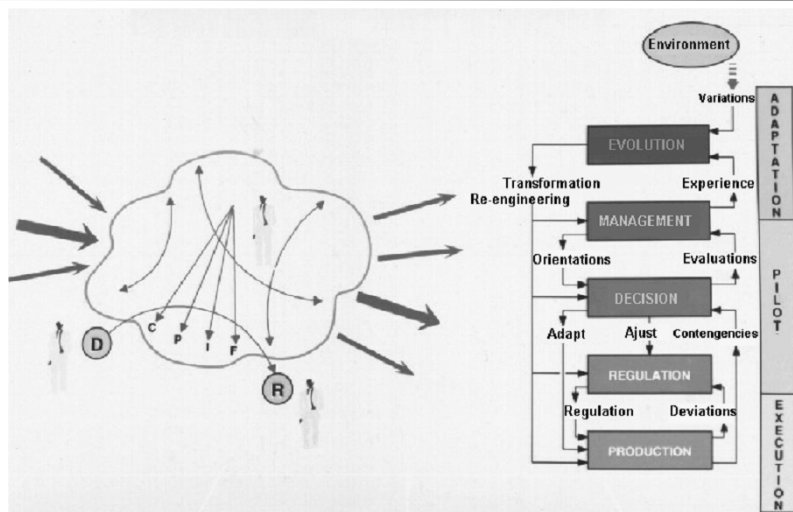
**" Organisations are not built to serve customers, they are built to preserve internal order.
To customers, the internal structure may not only mean very little, it may serve as a barrier.
Organization charts are vertical, but serving the customer is horizontal"**

G.Fischer, CEO, Motorola

Think:

- vertical efficiency vs horizontal solidarity
- Management system - Matrix organizations

2 System and time



**Think: Explosion of communication (good or bad?).
Human limitations to treat information.**

2 Cognitive sciences...



The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information

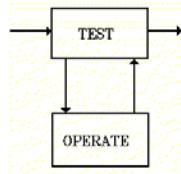
by [George A. Miller](#)

originally published in *The Psychological Review*, 1956, vol. 63, pp. 81-97

Information Processing Theory (G. Miller)

Overview:

George A. Miller has provided two theoretical ideas that are fundamental to cognitive psychology and the information processing framework.

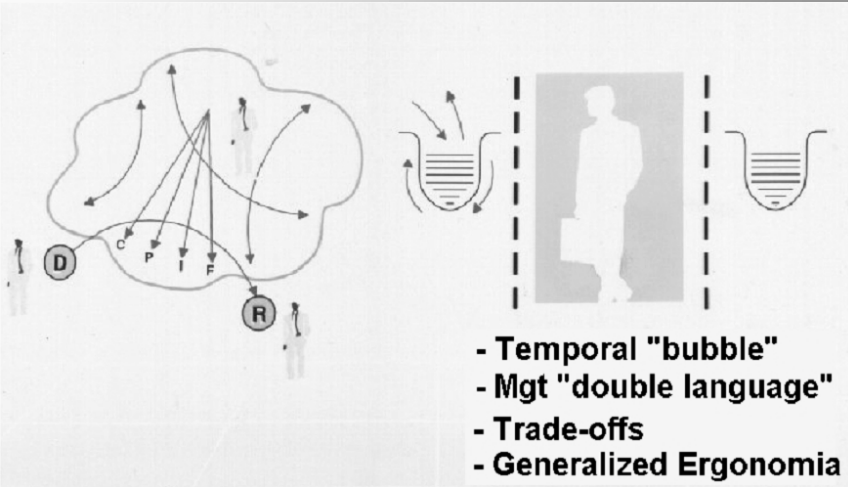


The first concept is 'chunking' and the capacity of short term memory. Miller (1956) presented the idea that short-term memory could only hold 5-9 chunks of information (seven plus or minus two) where a chunk is any meaningful unit. A chunk could refer to digits, words, chess positions, or people's faces. The concept of chunking and the limited capacity of short term memory became a basic element of all subsequent theories of memory.

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29

Think: Media + Message >> Needs + Desires, Opulence, Zapping, ...

2 Individual time, priorities, queues, ...



Think:

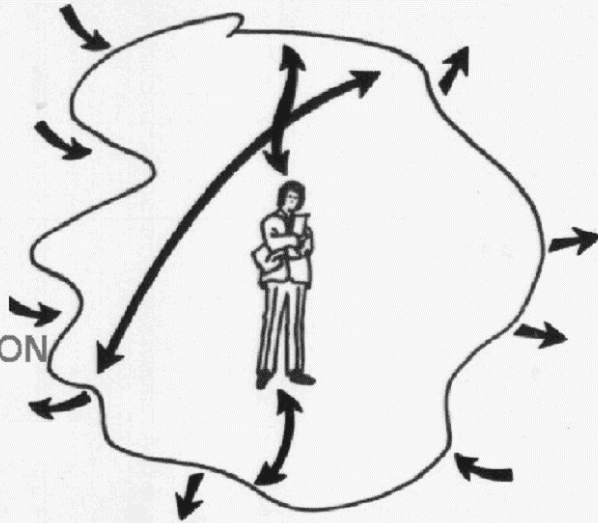
- Information System
- Queues, priorities
- Speed and Stress...

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30

2 Five type of solutions...



HIRING
EDUCATION
ORGANIZATION
D.P.
QUALITY



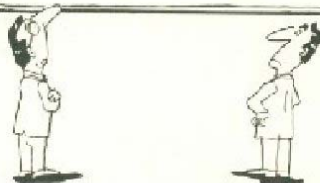
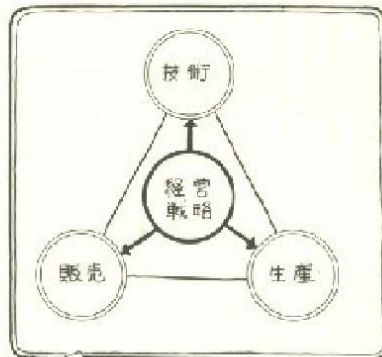
Think:

- Information System again...
- Top down vs Bottom up, Mechanical vs Organic balance

2 Competitiveness and mastership of linkages



販売・技術・生産の三位一体を目指すCIM

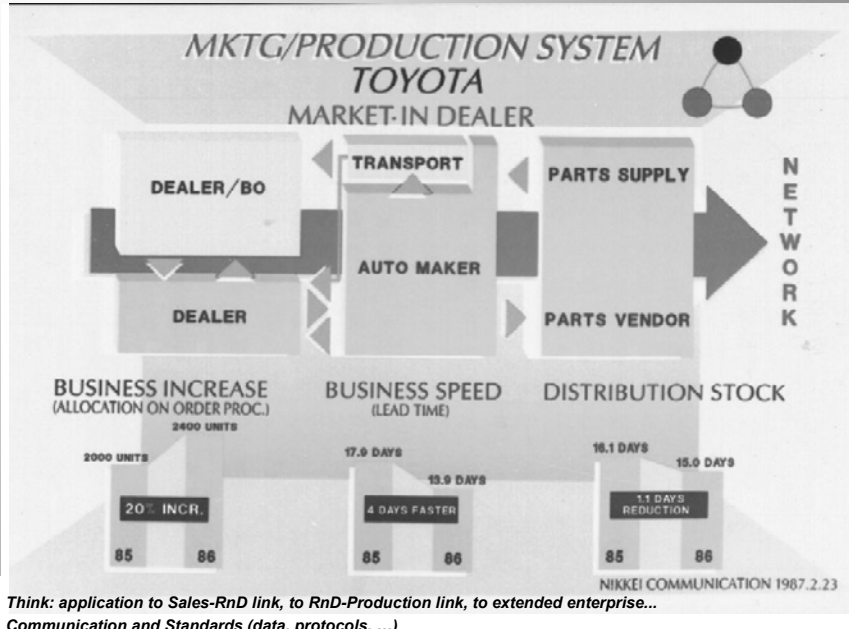


Think:

- CIM
- Integration and ERP trend
- Optimization vs Sub-optimization
- Centralization
- ...

2

Competitiveness and mastership of linkages

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33

3

Techno trends



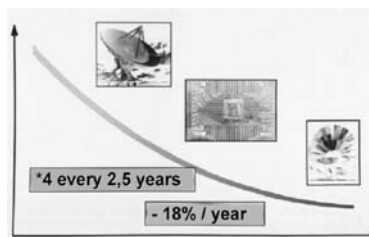
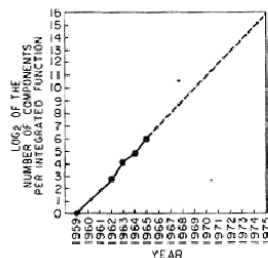
- Chip story
- Store, Compute and Transform, Communicate
- Microprocessors, Storage, Communications, MM Interfaces
- Moore's law:
 - *2 every 18 months, 20% price decrease/year
- Guilder's law:
 - Communication volume = *2 every 100days
 - bandwidth *3 every year
- Metcalfe's law:
 - network value = n nb of users

*Read articles on topic**Think ...*

IT cost decrease vs IT budget increase
Web and Metcalfe law

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34

3 Moore's law

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35

The experts look ahead

Cramming more components onto integrated circuits

With unit cost falling as the number of components per circuit rises, by 1975 economics may dictate squeezing as many as 65,000 components on a single silicon chip

By Gordon E. Moore

Director, Research and Development Laboratories, Fairchild Semiconductor division of Fairchild Camera and Instrument Corp.

The future of integrated electronics is the future of electronics itself. The advantages of integration will bring about a proliferation of electronics, pushing the science into many new areas.

Integrated circuits will lead to such wonders as home computers—or at least terminals connected to a central computer—automatic controls for automobiles, and personal portable communications equipment. The electronic wristwatch needs only a display to be feasible today.

But the biggest potential lies in the production of large systems. In telephone communications, integrated circuits in digital filters will separate channels on multiple equipment. Integrated circuits will also switch telephone circuits and perform data processing.

Computers will be more powerful, and will be organized in completely different ways. For example, memories built of integrated electronics may be distributed throughout the

machine instead of being concentrated in a central unit. In addition, the improved reliability made possible by integrated circuits will allow the construction of larger processing units. Machines similar to those in existence today will be built at lower costs and with faster turn-around.

Present and future

By integrated electronics, I mean all the various technologies which are related to as microelectronics today as well as any additional ones that result in electronics functions supplied to the user as irreducible units. These technologies were first investigated in the late 1950's. The object was to miniaturize electronics equipment to include increasingly complex electronic functions in limited space with minimum weight. Several approaches evolved, including microassembly techniques for individual components, thin-film structures and semiconductor integrated circuits.

Each approach evolved rapidly and converged so that each borrowed techniques from another. Many researchers believe the way of the future to be a combination of the various approaches.

The advocates of semiconductor integrated circuitry are already using the improved characteristics of thin-film resistors by applying such films directly to an active semiconductor substrate. Those advocating a technology based upon films are developing sophisticated techniques for the attachment of active semiconductor devices to the passive film arrays.

Both approaches have worked well and are being used in equipment today.

The author



Dr. Gordon E. Moore is one of the new breed of electronic engineers, schooled in the physical sciences rather than in electronics. He earned a B.S. degree in chemistry from the University of California and a Ph.D. degree in physical chemistry from the California Institute of Technology. He was one of the founders of Fairchild Semiconductor and has been director of the research and development laboratories since 1965.

Electronics, Volume 38, Number 8, April 15, 1965

3 Trends

Microprocessor trends

Year	Product	Process type	Line width (µm)	Transistors (M)	Mask layers	Cell Construction				Layers		Die size (µm)
						Proc./bus (bits)	Clock (MHz)	Voltage (V)	Cache (Kbits)	Poly	Metal	
1971	4004	PMOS	10	0.0023	—	4	0.108	12	0	1	1	13.5
1972	8008	PMOS	10	0.0023	—	8	0.2	12	0	1	1	15.2
1974	8080	NMOS	6.0	0.006	—	8	2	12	0	1	1	20.0
1976	8085	NMOS	3.0	0.0065	—	8	0.37	5	0	1	1	20.0
1978	8086	NMOS	3.0	0.029	—	16	5-10	5	0	1	1	28.6
1979	8088	NMOS	3.0	0.029	—	16/8	5-8	5	0	1	1	28.6
1982	80286	CMOS	1.5	0.134	—	16	6-12	5	0	1	2	68.7
1985	80386DX	CMOS	1.5	0.275	10	32	16-33	5	0	1	2	104
1989	80486DX	CMOS	1.0	1.2	12	32	25-50	5	0	1	3	163
1992	80486DX2	CMOS	0.8	1.2	—	32	50-66	5	0	1	3	81
1993	Pentium	BiCMOS	0.8	3.1	18	32/64	60-66	5	0	1	3Al	264
1994	80486DX4	CMOS	0.5	1.6	—	32	75-100	5	0	1	3Al	—
1995	Pentium Pro	BiCMOS	0.35	5.5	20	32/64	150-200	3.3	0	1	4Al	310
1997	Pentium II	CMOS	0.35	7.5	16	32/64	233-300	2.8	0	1	4Al	209
1998	Celeron	CMOS	0.25	19	19	32/64	300-333	—	128	1	5Al	—
1999	Pentium III	CMOS	0.18	28	21	32/64	500-733	1.65	256	1	6Al	140
2000	Pentium 4	CMOS	0.18	42	21	32/64	1,400-2,000	1.7	256	1	6Al	224
2001	Pentium 4	CMOS	0.13	55	23	32/64	2,000-2,200	1.5	512	1	6Cu	146
2001	Rathum	CMOS	0.18	25	21	64/64	733-800	—	96	1	6Al	—
2002	Pentium 4	CMOS	0.13	55	23	32/64	2,000-3,000	1.5	512	1	6Cu	131
2002	Rathum II	CMOS	0.13	220	23	64/64	900-1,000	—	256/1,200	1	6Al	421
2003	Pentium 4	CMOS	0.09	>55	25	32/64	>3,000	1.2	>512	1	7Cu	—

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36

3 top management and e-"intox"



Think ...

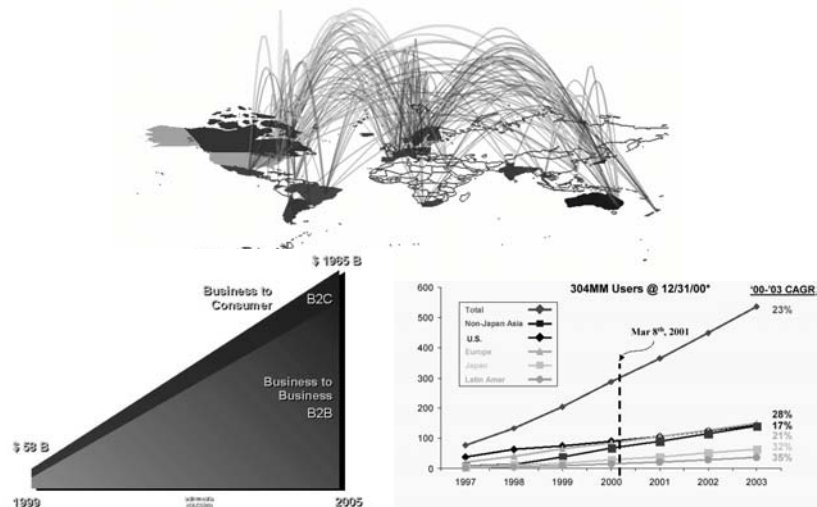
Does IT really matters?

Internet "bubble"

Management subjects: Strategy, Finance, HR, Marketing, ... and IS/IT?

Your own debatable opinion...

3 trends in B2B, B2C, B2M, ...?



Think ...

Find real curves in Europe, in your country, broadband, users, volume, ...



3 Techno future

- Silicon trends
- Physics limitations, electron beams, X-ray, ...
- Nanotechnologies and atoms...
- Copper connections
- some hardware trends
 - Holography
 - Grid computing
 - Wearable
 - Nanotubes
 - RFID's
 -

Read articles on topic

Think about:

Need of permanent technological scan, of IT intelligence?

Applications in sciences, biotechs

Applications in finance, industries, distribution, ...

RFID opportunities and risks

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39



3 units...

Name	Prefix	Factor
yocto	y	10^{24}
zepto	z	10^{21}
atto	a	10^{18}
femto	f	10^{15}
pico	p	10^{12}
nano	n	10^9
micro	μ	10^6
milli	m	10^3
centi	c	10^2
deci	d	10^1
kilo	k	10^3
mega	M	10^6
giga	G	10^9
tera	T	10^{12}
peta	P	10^{15}
exa	E	10^{18}
zetta	Z	10^{21}
yota	Y	10^{24}

Here are the SI magnifying prefixes, along with the corresponding binary interpretations in common use:

prefix	decimal	binary
kilo-	1000^1	$1024^1 = 2^10 = 1,024$
mega-	1000^2	$1024^2 = 2^20 = 1,048,576$
giga-	1000^3	$1024^3 = 2^30 = 1,073,741,824$
tera-	1000^4	$1024^4 = 2^40 = 1,099,511,627,776$
peta-	1000^5	$1024^5 = 2^50 = 1,125,899,906,842,624$
exa-	1000^6	$1024^6 = 2^60 = 1,152,921,504,606,846,976$
zetta-	1000^7	$1024^7 = 2^70 = 1,180,591,620,717,411,303,424$
yotta-	1000^8	$1024^8 = 2^80 = 1,208,925,819,614,629,174,706,176$

Here are the SI fractional prefixes:

prefix	decimal	jargon usage
milli-	1000^{-1}	(seldom used in jargon)
micro-	1000^{-2}	small or human-scale (see micro-)
nano-	1000^{-3}	even smaller (see nano-)
pico-	1000^{-4}	even smaller yet (see pico-)
femto-	1000^{-5}	(not used in jargon--yet)
atto-	1000^{-6}	(not used in jargon--yet)
zepto-	1000^{-7}	(not used in jargon--yet)
yocto-	1000^{-8}	(not used in jargon--yet)

[1993 update: hacker Morgan Burke has proposed, to general approval on Usenet, the following additional prefixes:

groucho $10^{(-30)}$ harpo $10^{(-27)}$ harpi $10^{(-27)}$ grouchi $10^{(30)}$

We observe that this would leave the prefixes zeppo-, gummo-, and chico- available for future expansion.

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40

3 trends and potential use...

Supercomputer Milestones

Supercomputer history begins with Seymour Cray's first design, the CDC 6600 from Control Data Corp. Coming next the petaflops era. By 2010, the Defense Advanced Research Projects Agency wants fantastic machines that can crunch quadrillions of calculations every second.

Year	Supercomputer	Theoretical Peak Speed***
1964	CDC 6600	9 megaflops
1969	CDC 7600	37 megaflops
1976	Cray 1*	160 megaflops
1982	Cray X-MP*	420 megaflops
1989	Cray Y-MP*	1.3 gigaflops
1991	Cray C90*	16 gigaflops
1994	First Beowulf cluster**	3 gigaflops
1997	Intel ASCI Red	1 teraflops
1998	SGI ASCI Blue	3 teraflops
2001	IBM ASCI White	12 teraflops
2002	NEC Earth Simulator*	41 teraflops
2003	HP ASCI Q	20 teraflops
2004	Cray Slesha Red Storm	40 teraflops
2005	IBM ASCI Purple	100 teraflops
	IBM Blue Gene*	367 teraflops
2010	DARPA prototype	1+ petaflops

*Vector processing

**Forerunner of ASCI program and supercomputer clusters

***A megaflop is a million floating-point operations per second. "Giga" means billions, and "tera" is trillions.



Here's how the two flavors of supercomputer chips differ.

Vector chips do rapid-fire processing of strings of related numbers, or vectors, common in scientific problems. The chips in scalar systems process numbers one at a time. Imagine that a computer is helping prepare dinner. A vector chip chef would send you to the market to buy everything on the menu. But a scalar helper would tell you to go buy lettuce. Then it would send you back for meat, again for vegetables, and then for dessert. In business software, vectors are rare, so problems can be divided up among many chips, and total speed "scales" with the number of chips. But the scalar technique isn't efficient when dealing with vectors, such as what happens to a car tender second after second in a simulated crash.

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41

A Race for Flops...

Since 2001, Japan's supercomputers have left the U.S. in the dust

SUPERCOMPUTER	PEAK SPEED IN TERAFLIPS**	LOCATION
MOLECULAR DYNAMICS MACHINE*	76	Institute of Physical & Chemical Research (Riken)
GRAPE-6*	64	University of Tokyo
NEC EARTH SIMULATOR	41	Earth Simulator Center
HP ASCI Q	20.5	Los Alamos National Lab
CALIFORNIA DIGITAL CLUSTER*	20	Lawrence Livermore National Lab
APPLE CLUSTER	17.6	Virginia Tech
DELL CLUSTER	15	National Center for Supercomputing Applications
IBM ASCI WHITE	12	Lawrence Livermore National Lab
HP CLUSTER	11.6	Pacific Northwest National Lab
LINUX NETWORK CLUSTER	11	Los Alamos National Lab

*Not ranked in the latest Top500 Supercomputer List. Riken system was broken in 2008. University of Tokyo's 2007. **Theoretical top speed in trillions of floating-point operations per second. ©Data Center Knowledge Inc., www.top500.org

...And Tera is Just the Beginning

Power needed to complete most complex task in one week

TASK	PEAK SPEED
AUTOMOTIVE DEVELOPMENT	100 TERAFLIPS
HUMAN VISION SIMULATION	100 TERAFLIPS
AERODYNAMIC ANALYSES	1 PETAFLIPS
LASER OPTICS	10 PETAFLIPS
MOLECULAR DYNAMICS IN BIOLOGY	20 PETAFLIPS
AERODYNAMIC DESIGN	1 EXAFLIPS
COMPUTATIONAL COSMOLOGY	10 EXAFLIPS
TURBULENCE IN PHYSICS	100 EXAFLIPS
COMPUTATIONAL CHEMISTRY	1 ZETTAFLIP

(Note: A teraflop is a trillion floating-point operations per second. Petaflop is one 1,000 times faster and 1 million times faster. A zettaflop is 1 followed by 21 zeros, calculations per second.)

Ref: USF, Energy Dept, NSA

3 memory of humanity?

The holographic technology under development would be able to store so-called yottabytes of data, and deal with all of the Internet and multimedia data starting to appear. Exabytes, the successor to petabytes, are 10Mb of data to the square of 15, while yottabytes are 10Mb to the square of 24. Other definitions say an exabyte as, in decimal terms, a billion gigabytes.

"If we make the assumption that everyone needs 40 petabytes of data in a lifetime of 100 years, then the world could use 200 yottabytes of data, including video, which takes up the most storage space," said Bill Cody, senior manager of exploratory data management research at IBM's Almaden Research Center in California.

He explained that the world had needed to store 81,000 terabytes of data in 1995 at a cost of 33 cents per Mb, this had risen to 800,000 by 1999 at a cost of \$0.044 per Mb. In 2001, the figure increased to six million terabytes, and the cost is \$0.006 per Mb.

"Some 85 per cent of the world's data is currently unstructured and is not accessible using storage technology," he said. "But at \$0.06 per Mb, storage starts to compete with paper and film. As storage capacity goes up, price is coming down and storage technology is getting more ubiquitous."

Think ...

- Media vs Message
- Data, Information and Knowledge

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42

3 Some more trends



- Keyboard, voice recognition
- Virtual reality
- Autonomic (self protection/optimization/healing/configuring)
- Communications
 - broadband, DSL, Satellites, Web, ...
 - IT + Media, streaming
 - Telephone, PDA's, ...
 - VOIP
 - P2P
 - Games...
- Ubiquity

Think ...

- *Your ubiquity choices*
- *Products, markets...*
- *VOIP market*
- *P2P and right protections*



3 Ubiquity

**Post-Human Opportunities** *unique, conscious*

The post-human opportunities are those that involve processes that are ultra-conscious and unique for each individual. These are extraordinary experiences, such as adventuring, entertainment, and teleimmersion. Since they are time-space independent and extend or enhance our awareness of the world around it, firms that wish to do business within this space should seek business opportunities that enhance conscious interaction with the phenomenal world in specific situations.

Hyper-real Opportunities *ubiquitous, conscious*

The hyper-real opportunities are those that involve processes that are ultra-conscious and ubiquitous for individuals. This opportunity takes advantage of the characteristic that the network is always on and seeks to enhance human facilities. For example, advanced prosthetics that are connected to the network or genetic enhancements to individuals are hyper-real. These opportunities enhance conscious interaction with the phenomenal world acontextually – that is transcending specific time-space locations.

Node Opportunities *ubiquitous, unconscious*

The node opportunities are those that involve processes that are unconscious and ubiquitous for individuals. Firms that seek to find opportunities in the node space seek to move tasks from conscious to unconscious automated consumption. For example, the use of automated toll booths and smart cards or price comparison bots that execute in the background. These free attention for individuals and are universal, acontextual processes designed to automatically perform tasks.

Matrix Opportunities *unique, unconscious*

The matrix opportunities are those that involve processes that are unconscious and unique to each individual. Examples of firms seeking business opportunities within this space are a CRM that tries to understand the customer so well that it offers easily capture attention or a wine-of-the-month club that comes with the permission of the individual. These opportunities reduce the necessity of an individual or collective to consciously interact with phenomena in specific contexts.

3 Risks, Security, ...



- Virus
- Back-ups
- Hackers
- Spywares, worms
- Phishing
- Attacks, accidents
- Bugs (Gödel theorem !)
- Networks
- Distance screen capture
- Big Brother...
-

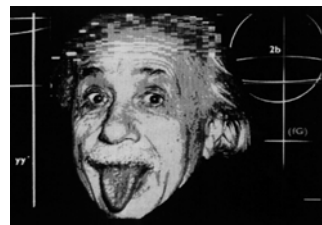
Think ...

- Opportunities vs risks
- Proprietary systems vs Open systems risks

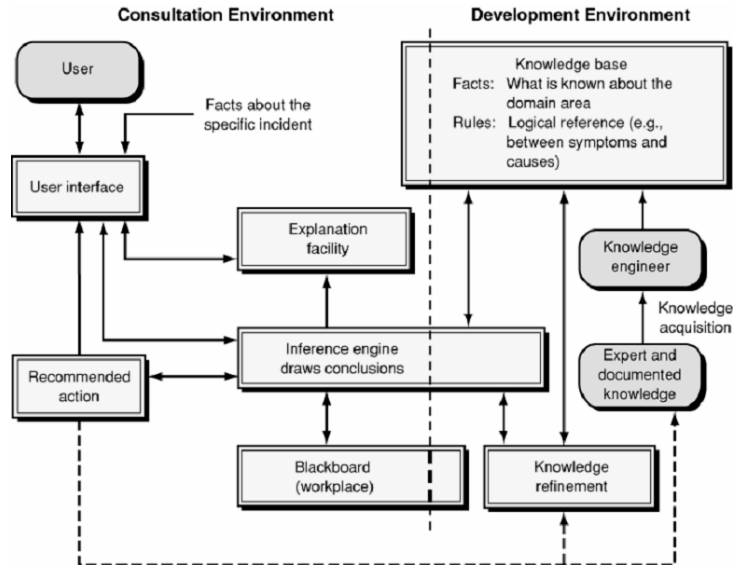
3 Man/machine interfaces



- Pre-historical?
- Effort/return ratio
- Binary logic and thinking
- Artificial Intelligence
 - Natural Language
 - Robotics
 - Perceptive systems
 - Expert Systems
 - Intelligent Machines
- Computer vision
- Neural processing and networks
- Fuzzy logic
- Intelligent agents, bots



3 expert system zoom



Cf. Dr. Samir Chatterjee Claremont Graduate University

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47

3 bots zoom...



- 2 faces of bots...
 - Intelligence function
 - Turned toward understanding and adaptation
 - "a priori" objectives
 - "a posteriori" suggested
 - "over the shoulder"
 - Agent function
 - Turned towards execution of the mission
- Languages, KQML, ...

Look at: botspot.com, agentland.com

Think ...

- Your ideas about bots' best use
- Bots and risks



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48

4 Old but still true rules

- Self-blocking process, why?
 - Coherency problem
 - need of shared information. Which standard?
 - Data Base design, BSP methods, Strategy vs Coding
 - Map and territory...
 - Network protocols
 - 7 osi layers
 - 4 conceptual layers
 - Business processes
 - Semantic (objects,...)
 - Syntactic (XML,...)
 - Technical (HTML, IP, ...)
 - Balanced approach
 - Internal IT Governance and productivity

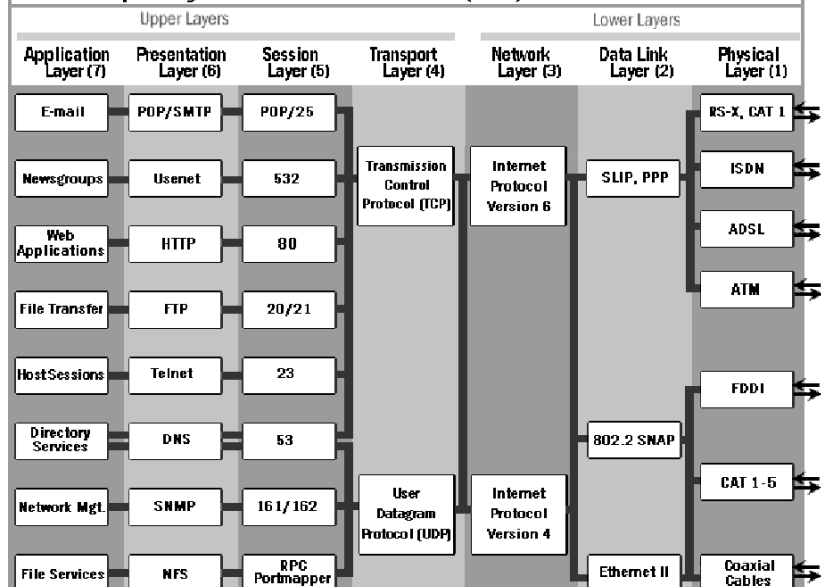


Think ...

- Map and territory
- Proprietary systems vs Open systems
- Leadership and standards mastery

4 Old but still true rules

Open Systems Interconnection (OSI) Reference Model



5 Quality and IS/IT Quality



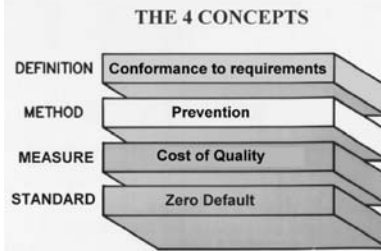
- What is Quality? :
- History
 - Ctl: Q Control -- Q Insurance -- ISO 9000 3/2/1 -- 9000 V2000
 - Org: Q Circle/Groups -- Processes -- BPR
 - Models: Deming -- Malcom Balridge -- EFQM
- Q --> Productivity --> Profit?
- Japan: 1952
- PPM story
- Kaisen
- How to get 0 default? By management? By rational analysis?

改善

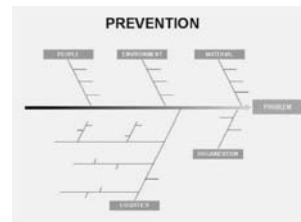
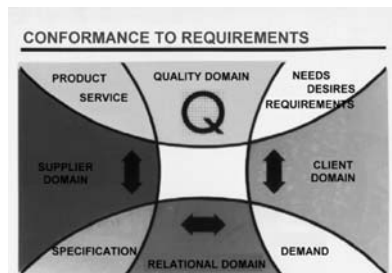
Think ...

- What is Quality?
- What is IT Quality?
- What is IS Quality?

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51

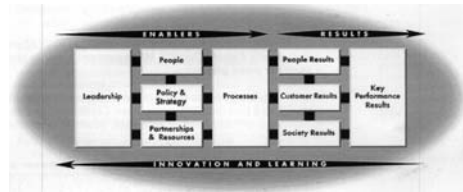
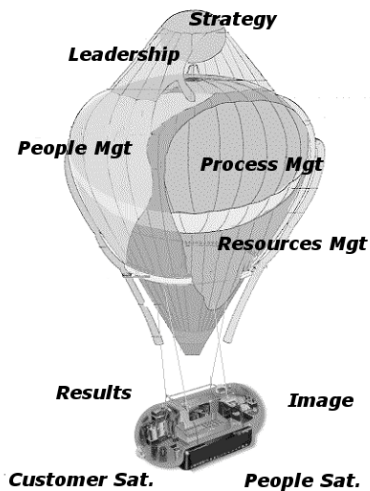


5 Q: Old but still efficient and necessary approaches...



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5 Malcolm-Balridge, EFQM

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Think ...

- Excellence vs Quality
- Certification "technocracy"?
- Bottom/Up vs Top/down approaches...

5 Are Q concepts applicable to IT?



In the facts, Quality and IT are often in a complex relation:

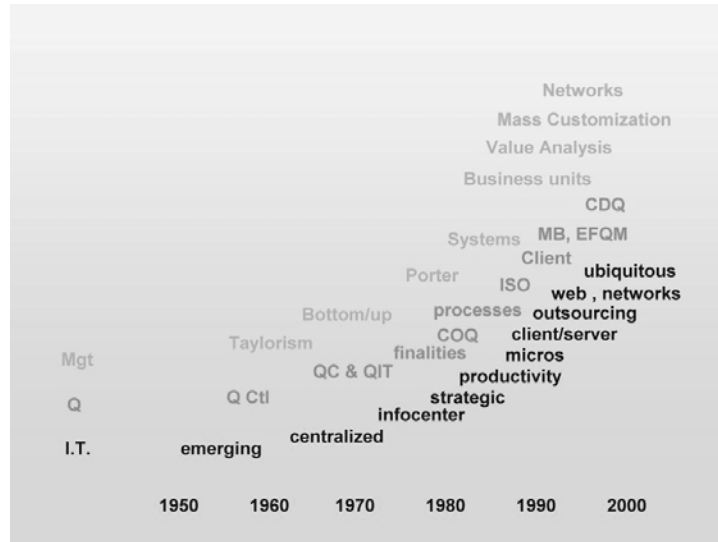
. One way, more and more sophisticated development techniques and tools enable high level quality application development...
...another way, permanent technology evolution periodically scrutinize validity of these tools.

. One way, IT centers are able to provide ISO certified services...
...another way, they are unable (like many organization) to fulfill the Malcolm-Balridge or EFQM criteria.

. One way, IT departments are truly and since a long time sensitive to client satisfaction...
...another way, IT users are mainly and permanently unsatisfied...

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54

5 Mgt concepts vs Q concepts vs IT concepts...



Think ...

- Are technotrends, management philosophies, Q concepts disconnected?

5 IT Governance



- **Several definitions with common elements:**
 - responsibility of the board of directors
 - protects shareholder value
 - ensures risk transparency
 - directs and controls IT investment, opportunity, benefits and risks
 - aligns IT with the business while accepting IT is a critical input to and component of the strategic plan, influencing strategic opportunities
 - sustains the current operation and prepares for the future
 - is an integral part of a global governance structure

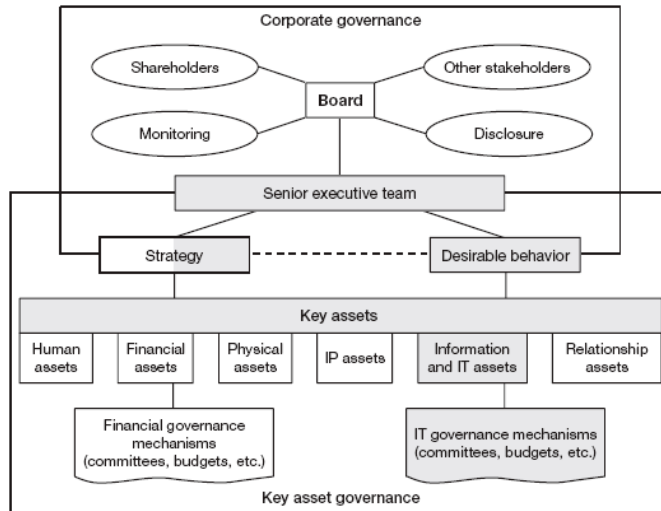
IT GOVERNANCE

A structure of relationships and processes to direct and control the enterprise in order to achieve the enterprise's goals by adding value while balancing risk versus return over IT and its processes.

Think ...

- Governance, IT Governance: a new "buzzword" for consultants?

5 IT Governance



☐ IT governance.

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5 Why is IT Governance important?



Why is IT Governance Important?

Because:

- Links to corporate governance
- IT is now completely embedded in enterprises => maturity
- Demand for IT comes from all areas of the enterprise
- Leadership has limited bandwidth
- Learn from good corporate and financial governance
- Firms with focused strategies and above average IT governance had 30% higher ROAs
- IT Governance can be explained on two pages
- Top performing enterprises govern IT differently
- Good governance can simultaneously empower and ensure compliance to enterprise vision

=> Rethink IT Governance: set vision, decision rights, accountabilities and desirable behaviors.





What is IT Governance?

Decision rights and accountability framework to encourage desirable behavior in the use of IT

Who has *decision rights* and *input* to key IT decisions.

- IT Principles—role for IT
- IT Infrastructure—what is shared and put in first
- IT Architecture—integration & compatibility
- Business application needs—what is required
- IT Investment & Prioritization—how much and when

What is *desirable behavior* in the enterprise.

- Sharing, reuse, cost savings, innovation, growth

What mechanisms are used to implement governance.

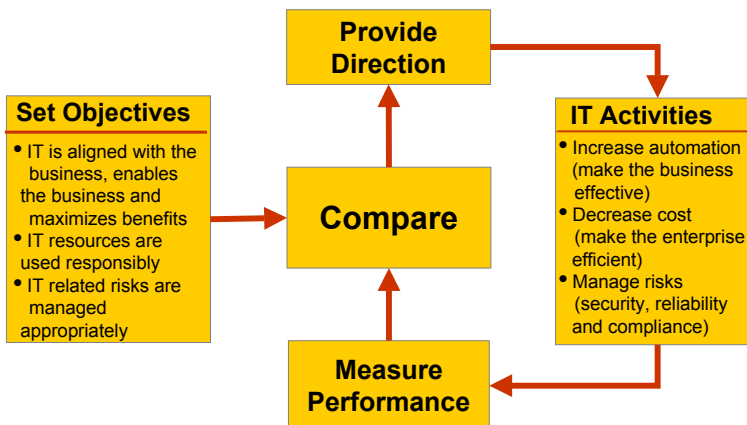
- E.g., IT council, process teams, architecture office, SLAs

How much business value.

- Responsibilities, accountabilities, measurement and metrics

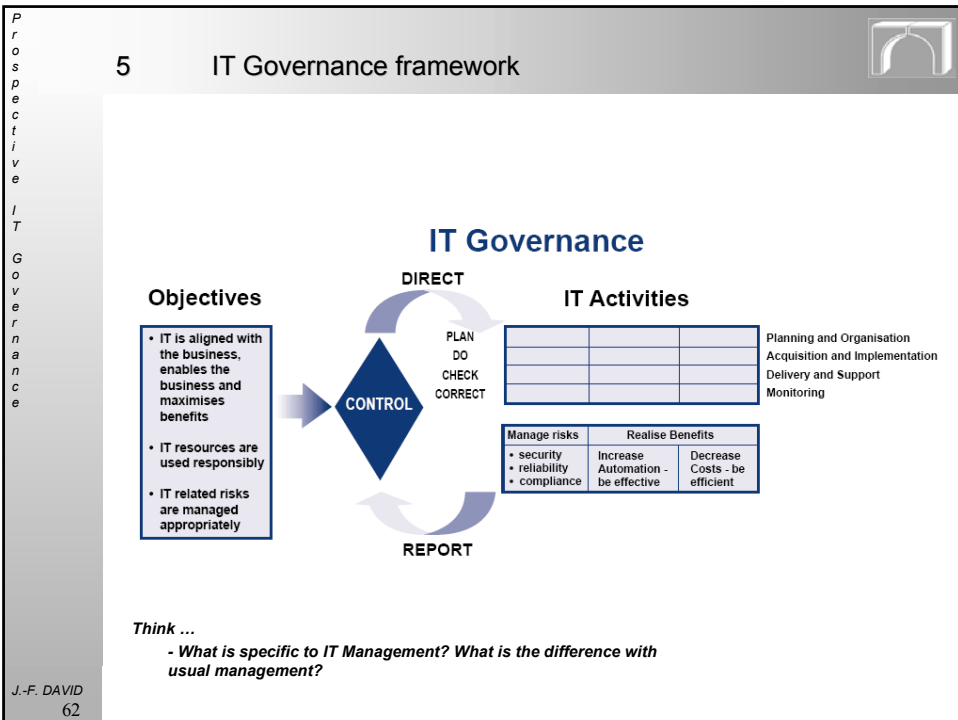
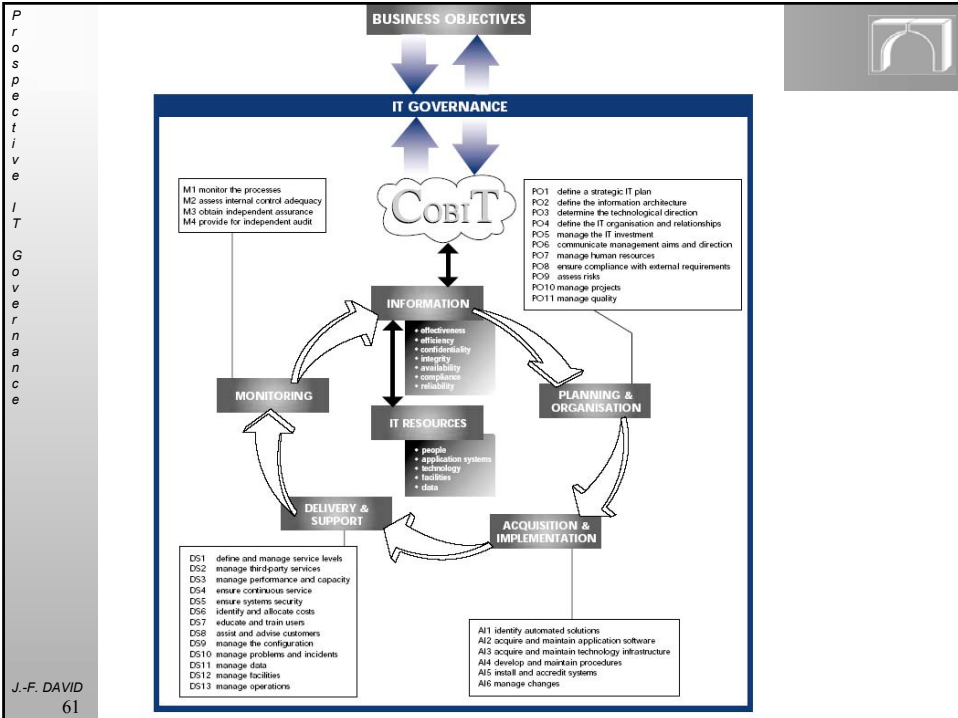
Source: *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results*, P. Weil & J. Ross, Harvard Business School Press, Forthcoming.
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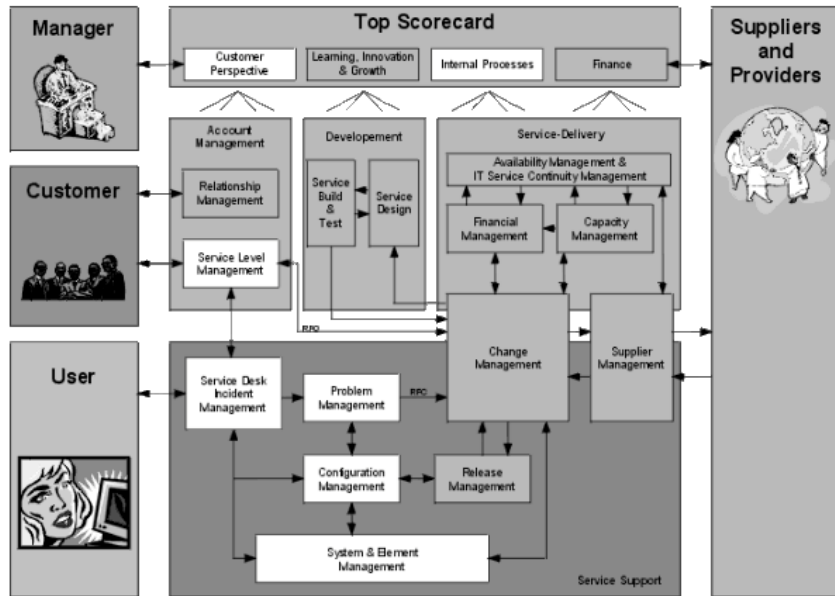


Think ...

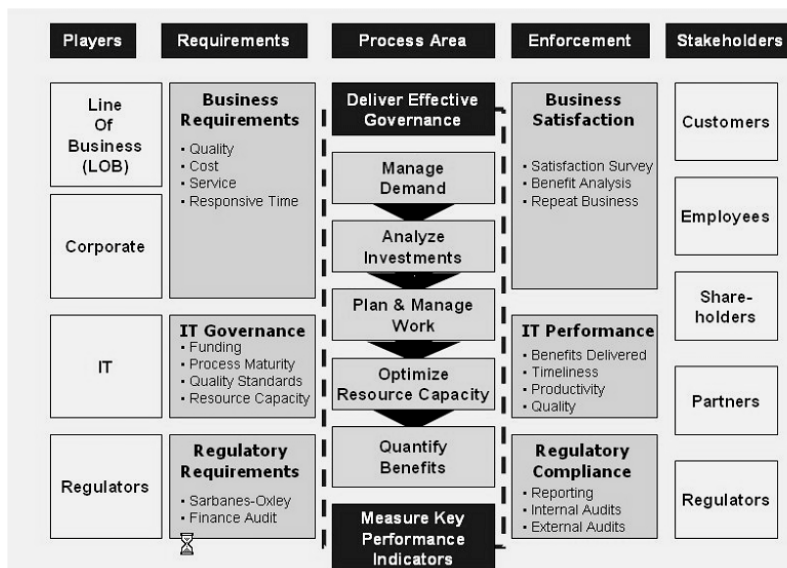
- What is IS mgt, What is IT Mgt?
- Why only now, after 40 years of "mature" IT?



5 ITIL model



5 IT Governance improvement



5 Maturity scoring



Process Area	Informal	Defined	Repeatable	Measurable	Outstanding
Deliver Effective Governance		C		T	
Manage Demand	C			T	
Analyze Investments	C		T		
Plan & Manage Work			C	T	
Optimize Resource Capacity		C		T	
Quantify Benefits		C		T	
Measure Key Performance Indicators		C		T	

C = Current
T = Target

Think ...
- is CMM a tool
for all?



5 CISR study 256 enterprises, 23 countries



IT principles	High level statements about how IT is used in the business
IT architecture	An integrated set of technical choices to guide the organization in satisfying business needs. The architecture is a set of policies and rules that govern the use of IT and plot a migration path to the way business will be done (includes data, technology, and applications)
IT infrastructure strategies	Strategies for the base foundation of budgeted-for IT capability (both technical and human), shared throughout the firm as reliable services, and centrally coordinated (e.g., network, help desk, shared data)
Business application needs	Specifying the business need for purchased or internally developed IT applications
IT investment and prioritization	Decisions about how much and where to invest in IT including project approvals and justification techniques

Think ...
- Who does what in the organizations you know?



IT Governance Archetypes

Decision rights or inputs to decisions for a particular IT domain are held by:

	Business Monarchy	A group of, or individual business executives (i.e., CxOs). Includes committees comprised of senior business executives (may include CIO). Excludes IT executives acting independently.
	IT Monarchy	Individuals or groups of IT executives
	Feudal	Business unit leaders, key process owners or their delegates
	Federal	Shared by C level executives and at least one other business group (e.g., CxO and BU leaders) – may also include IT executives. Equivalent of the center and states working together.
	IT Duopoly	IT executives and one other group (e.g., CxO or BU leaders)
	Anarchy	Each individual user

Note: Some governance styles inspired by Tom Davenport, *Information Ecology*, Oxford University Press, 1997.

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How do enterprises govern?

		Decision Domain									
		IT Principles		IT Architecture		IT Infrastructure Strategies		Business Application Needs		IT Investment	
		Input	Decision	Input	Decision	Input	Decision	Input	Decision	Input	Decision
Governance Archetype	Business Monarchy	0	27	0	6	0	7	1	12	1	30
	IT Monarchy	1	18	20	73	10	59	0	8	0	9
	Feudal	0	3	0	0	1	2	1	18	0	3
	Federal	83	14	46	4	59	6	81	30	93	27
	Duopoly	15	36	34	15	30	23	17	27	6	30
	Anarchy	0	0	0	1	0	1	0	3	0	1
	No Data or Don't Know	1	2	0	1	0	2	0	2	0	0

Most common pattern for all firms.

The numbers in each cell are percentages of the 256 enterprises studied in 23 countries. The columns add to 100%.

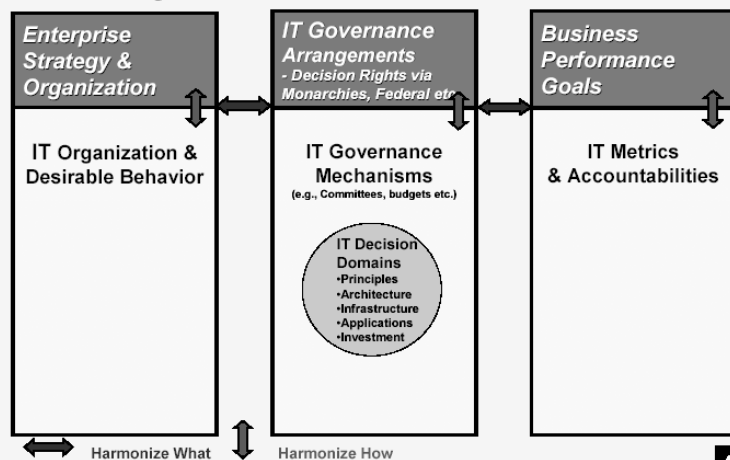
© 2003 MIT Sloan CISR – Weill. This framework is adapted from Weill & Woodham's work originally published and copyrighted by the MIT Sloan CISR as Working Paper No. 326, "Don't Just Lead, Govern: Implementing Effective IT Governance," April 2002.

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Effective IT Governance requires harmony in two directions

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69

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Don't *Just* Lead, Govern! – Critical Success Factors

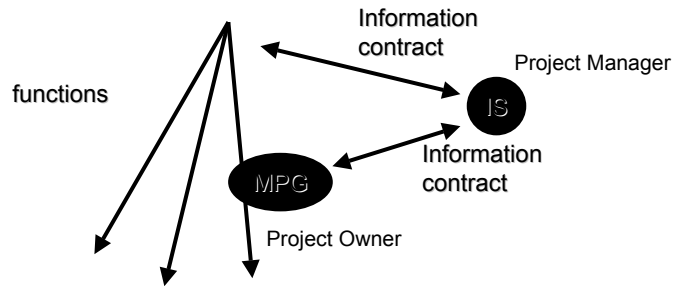
Governance leverages the ingenuity of all the enterprise's people, not just the leaders, while ensuring compliance with the overall vision and principles.

1. **Transparency:** more transparency => more confidence.
2. **Actively design governance:** ineffective governance is often the result of governance by default and uncoordinated mechanisms.
3. **Know when to redesign:** implementation takes months—only change governance when desirable behaviors radically change.
4. **Educate:** educate managers why governance is important—engage, reinforce & redirect behaviors.
5. **Good governance requires choices:** Only a small number of goals, behaviors and metrics can be optimized by governance.
6. **Have a clear exception handling process:** exceptions are how enterprises learn—should encourage debate but escalate quickly to senior management.
7. **Ensure IT governance is owned and has metrics.**
8. **Design governance at enterprise and BU levels.**

Can your enterprise pass the acid test?

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70

5 Some structures...



Method & Projects Group:

Mixed professionals & IS
Detect needs
Stimulate the function
Both IS and Organisation

Think ...

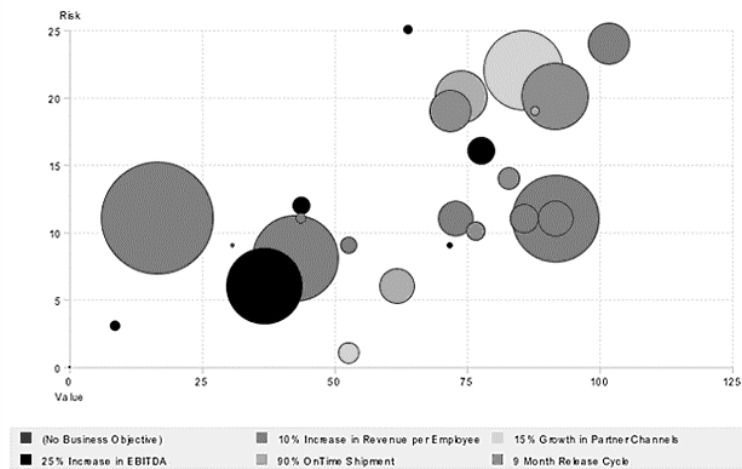
- What are the specific reasons why it does not work so well?
- What must be the knowledge and objectives of MPG people?

5 Portfolio



Current Portfolio Map

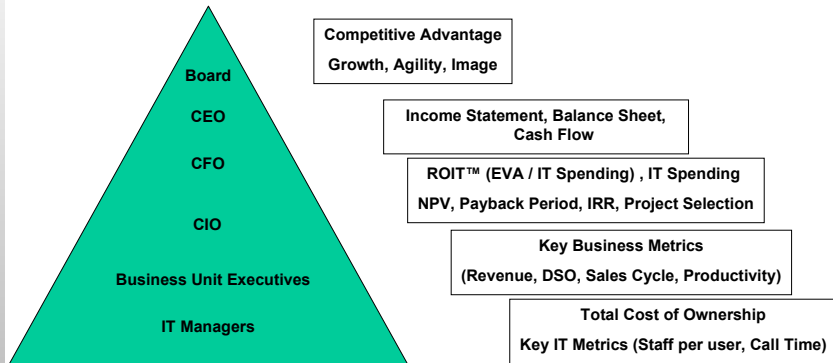
Filtered by: Include all active projects. Include all active assets
Size of bubble indicates: Budget
Color of bubble indicates: Business Objective



Think ... What is your mental methodology to trade-off between strategic opportunity, profit and risk?

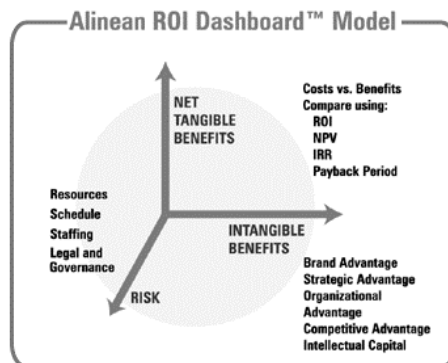
5

Metrics of interest



5

Intangible Benefits & Risks



- Costs
 - Business unit
 - IT costs
- Tangible benefits
 - IT cost reductions
 - Business op efficiency
 - Business strategic advantage
- Financial impact
 - Revenue/profit
 - Operating expenses
 - Accounts payable
 - Accounts receivable
 - Inventory
 - Net fixed assets
- Risks
- Intangible benefits

5 Contracts



Service contract

signed for any project
part of project

- Application definition and objectives
- Project owner (function) responsibilities
- IS responsibilities
- Revision conditions
- Service level
- Education
- Implementation rules
- Indicators

signed by operations and managers
same for internal and external

5 Quality indicators



Usually around 30...

Examples:

1A: What is your feeling about the service given by the recently installed application? (excellent, good, average, bad)

For every question, subsidiary questions on :
response time, screen design, education, doc, availability, ...

1B: During the development, judge your relation with IS dpt

(understanding the need, planning, relation with project mgr, ...)

2: Modifications ratio

nb of function point modified/ nb of function point

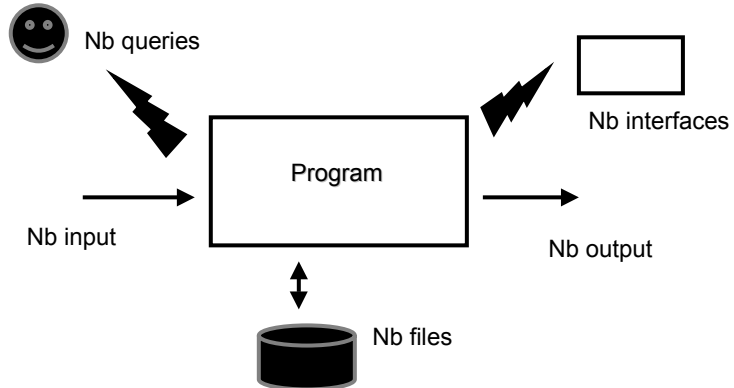
3: Nb validated bugs/function point

....

5 Productivity and Function Points



Systemic approach of programming productivity



- + adjustment by complexity factor for each
- + global adjustment by general factors (technique employed, ..)

Modified every year, additions, suppressions, modifications...

Think ... Is that kind of method applicable to other domains?

5 IT and COQ....



Ex:

Staffs 57%
Machines 12%
Network 31%

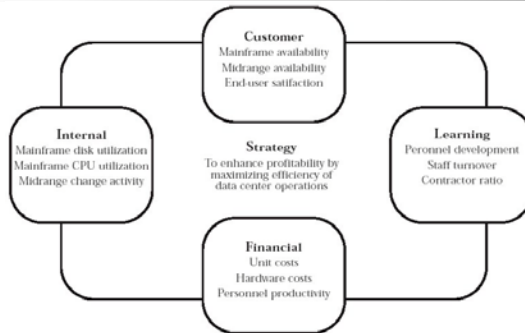
Prevention: education, tools, checklists, code reviews, planning, QC, ...

Control/Measure: Phase reviews, tests, reports, audits, ...

Failures: Stopped projects, bug correction, change mgt, re-runs, stops, virus, ...

	Base	Prevention	Failure	%
Personnel	68%	13,6%	18,4%	57%
Machines	60%	21%	18%	12%
Network(data)	80%	4%	16%	12%
Telecom	67%	14%	18%	19%
TOTAL	68%	14%	18%	

5 IT and BSC...



For internal IT development group, a sample scorecard...

Organization Agility	7	Nb of reengineered processes/year
Image	2	Image indicator
People	5	Morale index
		Absenteeism
Innovation	4	% innov vs existing
Speed	7	Time / function point
		Delay demand/delivery
Client satisfaction	9	Ratio treated vs demanded
		Claims nb
		Engagement observance (pts, t)
Product Q	8	Bugs / function points
Production cost	5	Fulfillment delay
		\$ / function point

5 IT and processes...



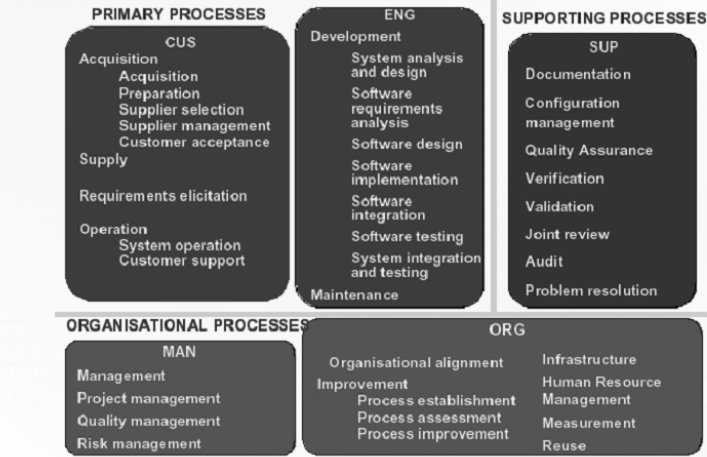
For internal IT development group, a sample value chain (processes) ...

- 01- Client's needs knowledge
- 02- Study/complement specifications
- 03- Study demands impacts (estimation, points)
- 04- Develop formal contract
- 05- Studies, production, quality planning
- 06- Project launching and follow-up
- 07- Development management
- 08- Software objects production
- 09- Prepare middleware and data structures
- 10- Integrate versions
- 11- Implement versions
- 12- Correct bugs
- 13- Documentation production
- 14- Educate users
- 15- Educate production centers
- 16- Problems management (hot line)
- 17- Corrections distribution
- 18- Assist users for new versions
- 19- Define/maintain dvpt methods (guides, reviews, Q, ..)
- 20- Define/maintain application architecture (principles, urbanization, ...)
- 21- Developers assistance (hot-line)
- 22- Dvpt information system
- 23- Control/measure applications
- 24- Data/ Application directory
- 25- Dvpt process control
- 26- Pilot / Control dvpt center, scorecard
- 27- Prepare plans, budget, ...
- 28- Negotiate plans, budget
- 29- People management
- 30- Resources management
- 31- Finance management
- 32- Internal/external communication mgt
- 33- Technological scan & intelligence

5 Spice...



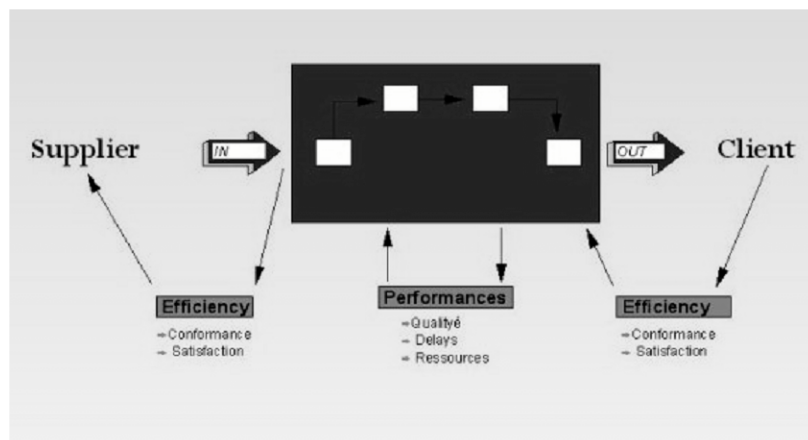
Process dimension:



The SPICE Phase 3 Trials Programme
TP3 R07, Version 1.00 20030219

12

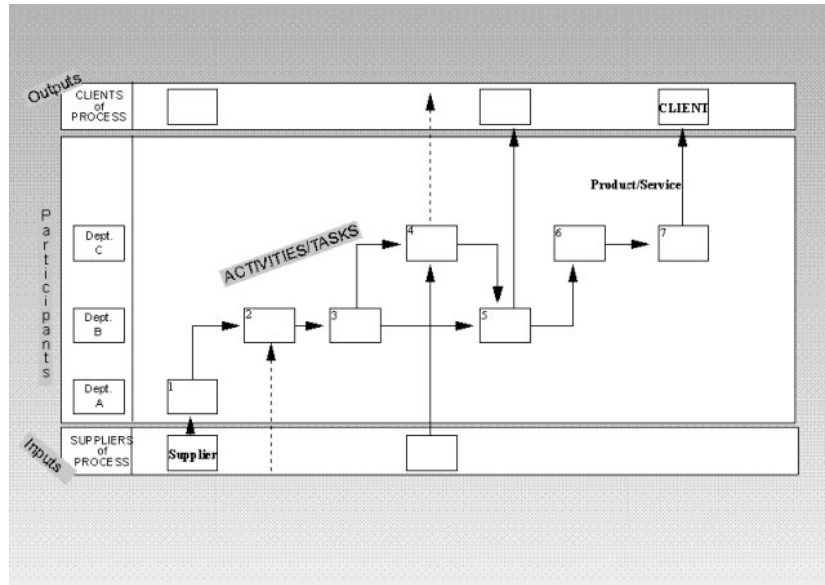
5 Zoom on processes...



Think ...

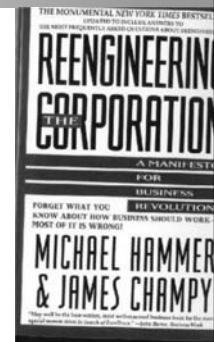
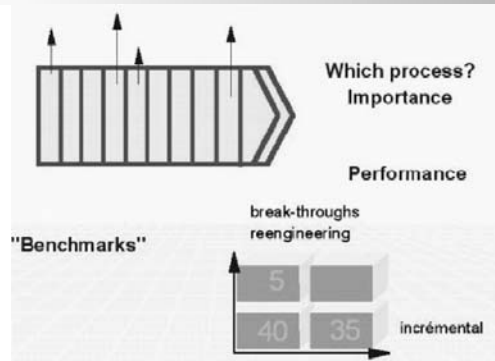
- Why are the 3 (Quality, Cost, Delays) criteria not sufficient?
- What is a process "finality"?
- Must a process be completely defined ?

5 Zoom on processes...

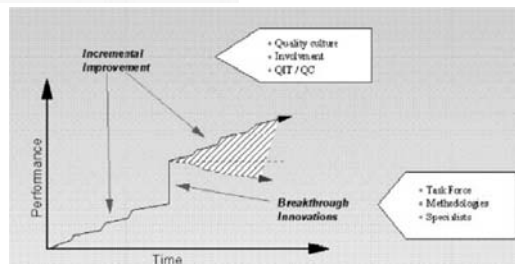


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83

5 Incremental or Breakthrough? BPR ?

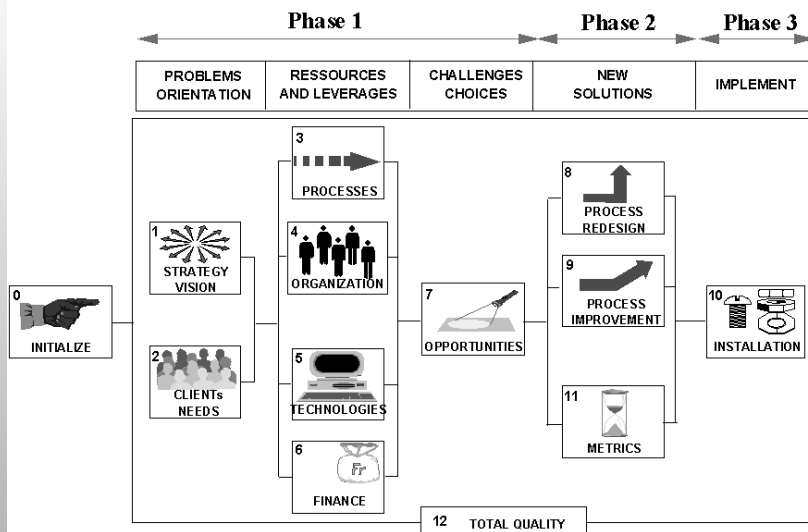


- Think ...
- must we benchmark mainly with competitors?
 - Which process must we outsource? In what case?
 - Which process can we outsource?
 - Is BPR incompatible with Kaizen?

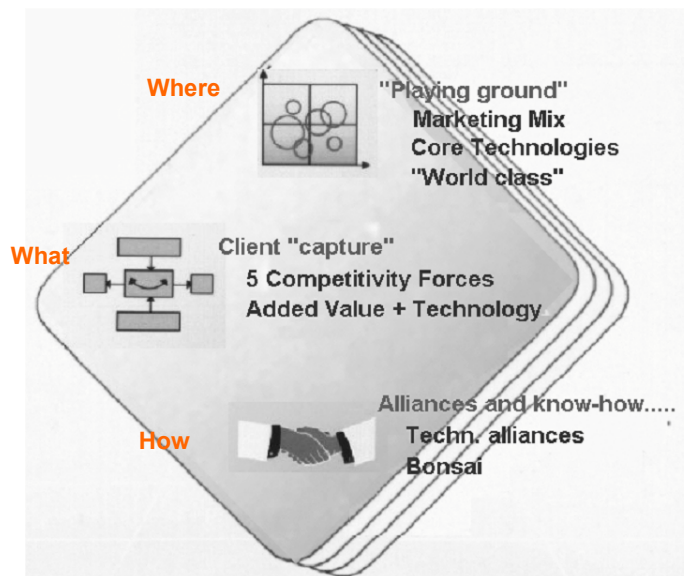


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84

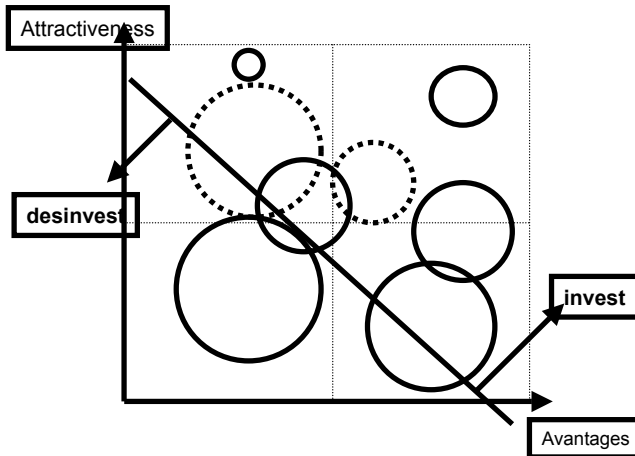
5 Improvement Consulting Methodology?



6 IT and Strategy



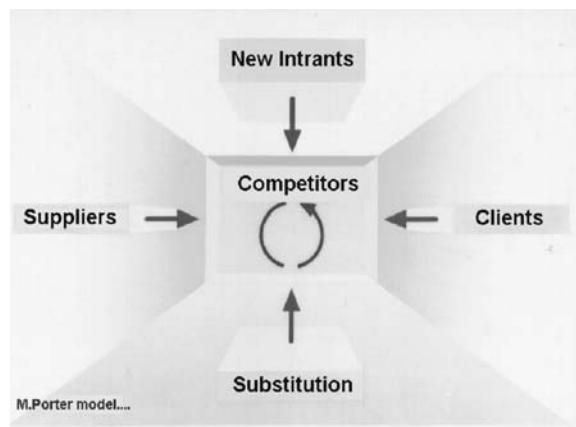
6 Portfolio



Think ...

- What is the difference between BCG, McKinsey, ... portfolio models?
- Can portfolio model be applied to IS/IT?
- Building a business plan, what is the right sequence for SWOT, Vision, Competitive analysis, Portfolio approaches?

6 What...



Satisfied --> Excited --> Delighted

Added Value Service +++ (Customized?) = Idea

The generic strategy: Idea + Emerging Technology

- Upcoming information stream
- Experience curve + proposition to competitors --> new activity

Think ... Apply this kind of thinking to your industry, your company...

- Just dream: What kind of impressive customized added value services for your clients?

6 Activity moving...



Paradigm changes

Banks --> Insurance products, Retirement products, ...
Insurance --> Travel, Retirement, Leisure, ...
Credit card --> Luxury, Services, ...
Retail --> Credit, Travel, Insurance, ...
Water distribution --> Wiring, multimedia, TV, ...
Construction --> Wiring, telephon, leisures, ...
Hospital --> Hotel, services, medical devices, ...
Nuclear --> expert systems, software dvpt, ...
Real Estate --> 3 rd age services, robotics, ...
Aerospace --> CAD/CAM, ...
Hotels --> health, sport, check-up, ...

6 Refocusing or diversification?



**Bonsai
strategy**



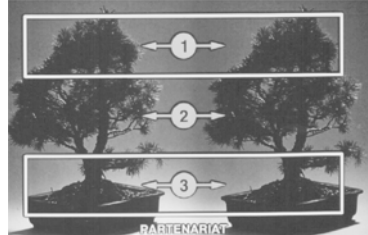
Products/Markets

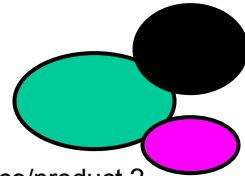
Know-how

Core Technologies

Think ...

- What kind of problems to find the right alliance in ICT?





a) Paradigm change, profession slippage

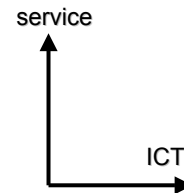
Why do client want this kind of service/product ?

- ◆ New professions, competitors
- ◆ New vision

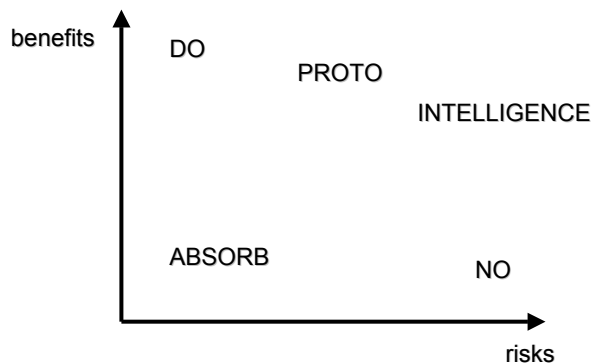
b) List of product/services

How can we add

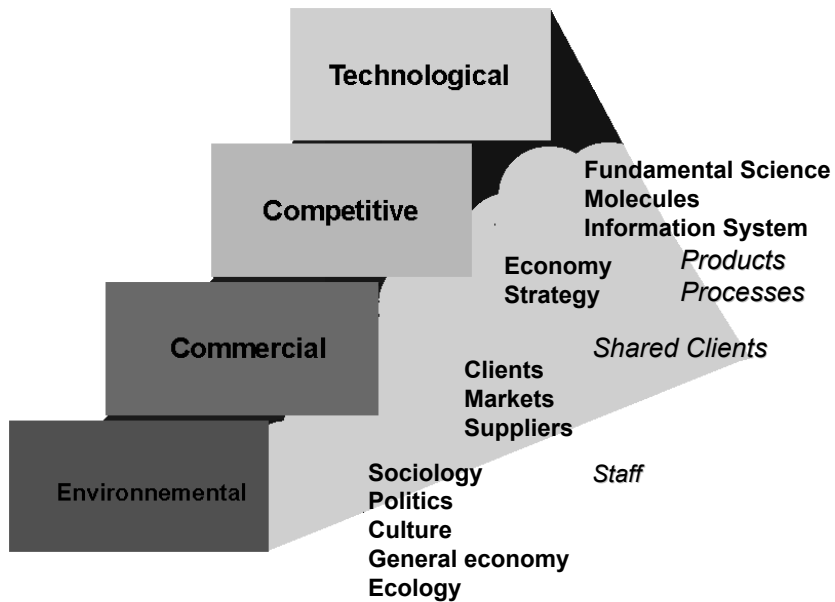
- ◆ more customization services
- ◆ more ICT



How to decide go/no go ?

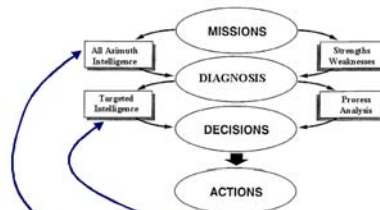
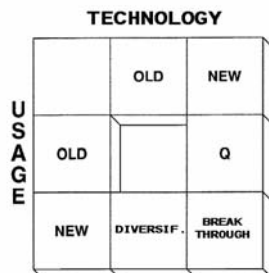


7 Intelligence



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93

7 Intelligence

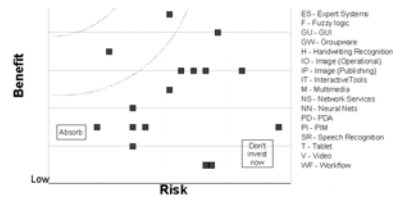
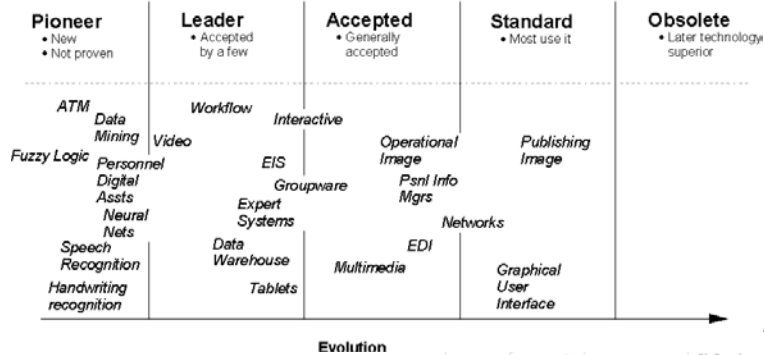


95% of useful information can be obtained by intelligence

objective	black information	forbidden	forbidden	espionage
	gray information	intelligence	intelligence	dangerous nonsense
	white information	intelligence	costly nonsense	dangerous nonsense
		open	organized & deontological	illegal
		technique used		

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94

7 Intelligence



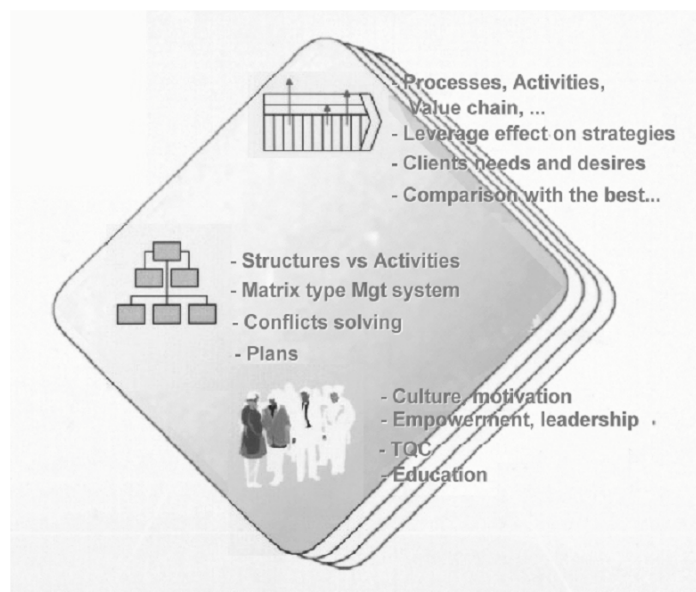
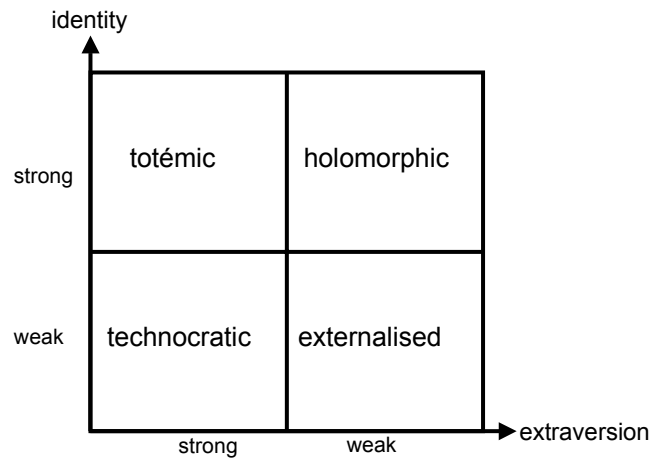
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95

7 Intelligence

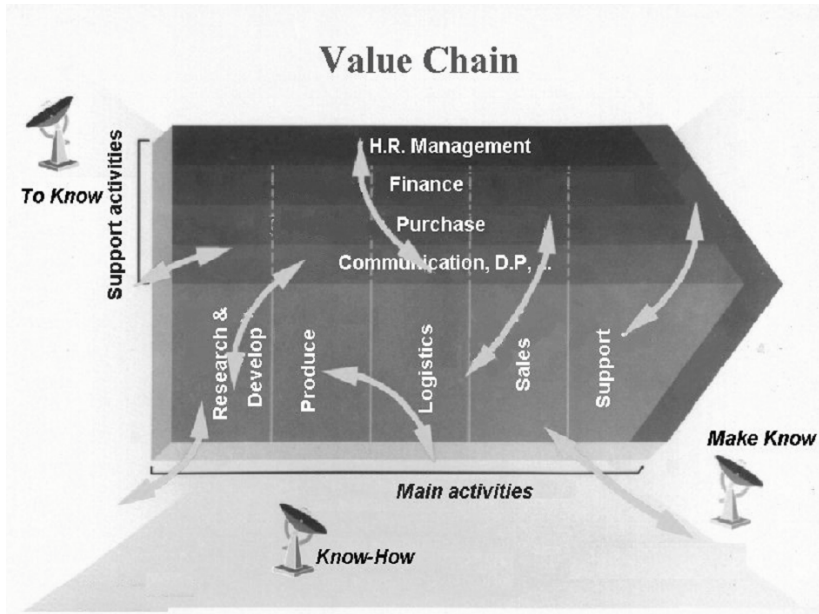


- 1- The majority of collected and communicated information by individuals and organizations have little to do with the decisions which they must take
2. The majority of information used to justify decisions are collected and interpreted once the decision is taken or almost taken
3. The majority of the information collected in response to a request are not taken into account at the time of the decision-making
4. Whatever information is available at the moment a decision is considered, one claims additional information
5. One complains that the organization does not have enough information to make a decision while not using information available
6. The relevance of the information provided for the decision taken is less manifest than the insistence with which it is collected

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96

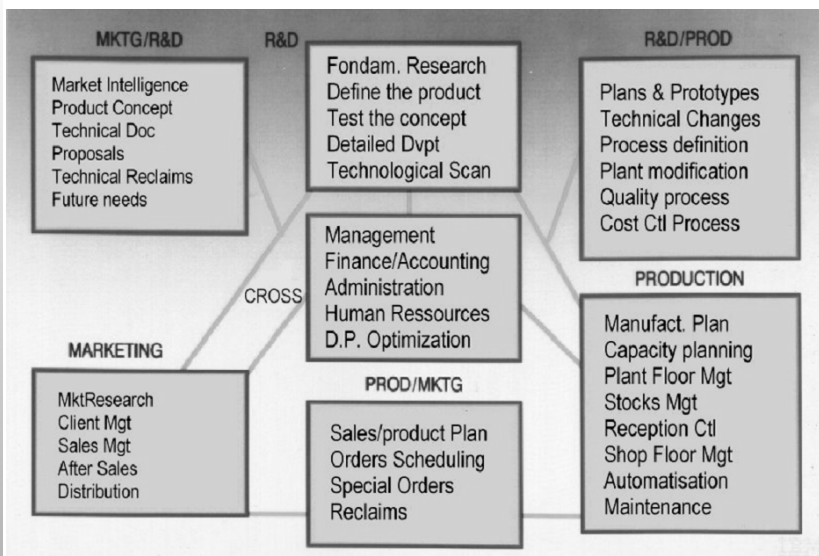


8 Value Chain



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99

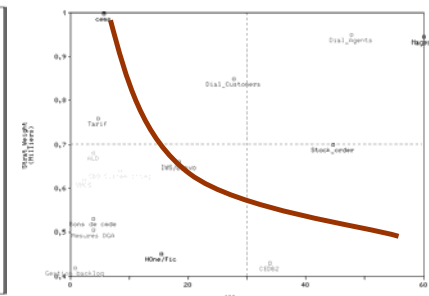
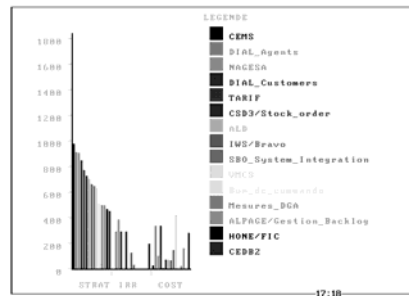
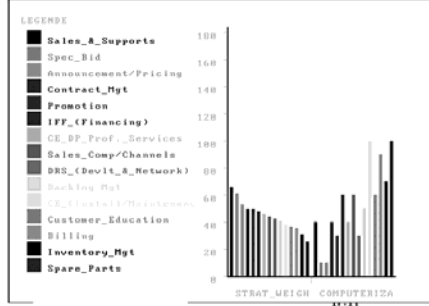
8 Processes



Think ...

- Why is this "circle" representation of processes more efficient than Porter's arrow?

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100

[illegible]

8 Process management



What is Process Management?

A business process is any broad collection of activities within your company that is involved in the ultimate goal of developing your product or service for the customer.

Business processes are typically evaluated from the customer's viewpoint.

Ensuring a smoothly running business process is critical in maximizing the added value you are providing to your customers.

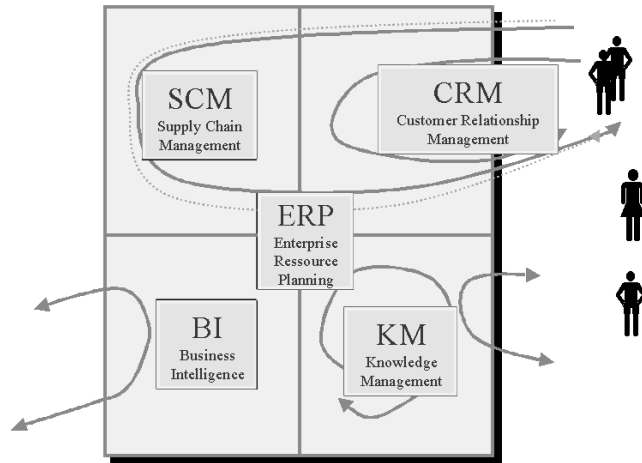
Managing the key processes efficiently is critical to the success of the company.

But managing the processes is harder than it may seem at first - mostly because these processes don't stand alone, but interact with one another.

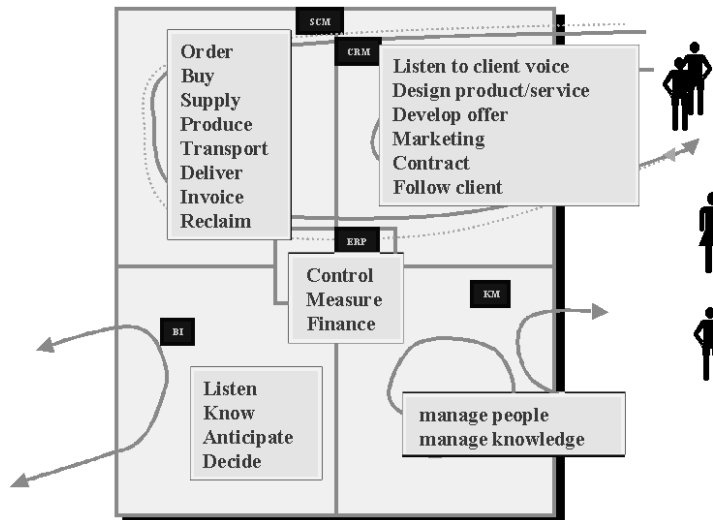
There are many types of business processes such as key processes, support processes and sub-processes. Typical business processes include:

- * **Procurement:** Securing the materials and equipment necessary to produce your goods or services.
- * **Product development:** Planning new goods or services for your customers or refining existing products.
- * **Production:** Creating those goods or services.
- * **Order delivery:** Receiving orders from customers and ensuring that those orders are fulfilled.
- * **Distribution:** Ensuring smooth distribution of goods to customers.
- * **Customer support:** Providing assistance to customers after they've bought your product or service.

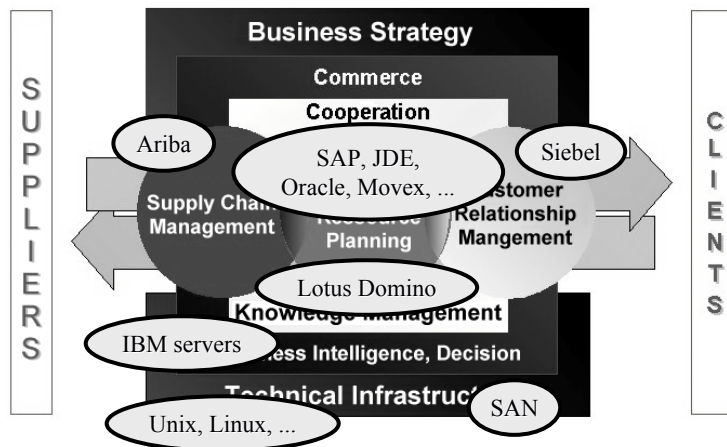
8 "new" value chain



8 "new" processes



8 Processes or Softwares?

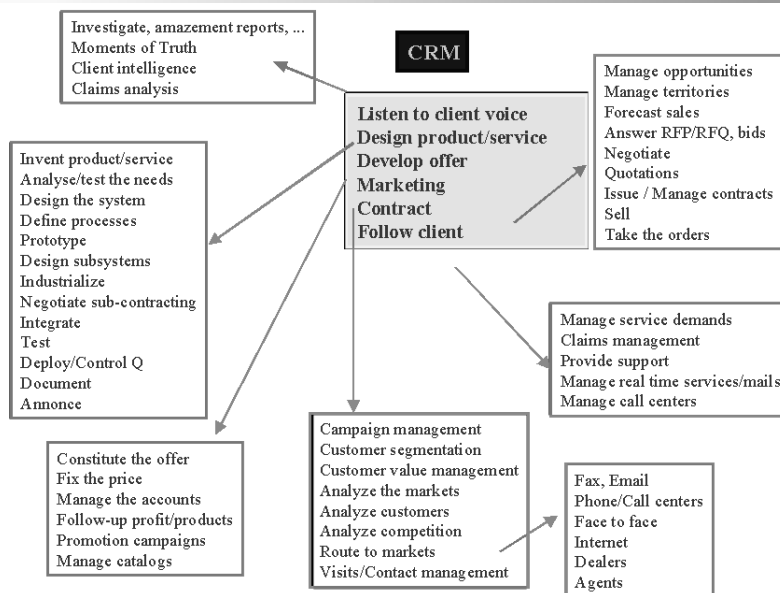


IBM strategy partial view

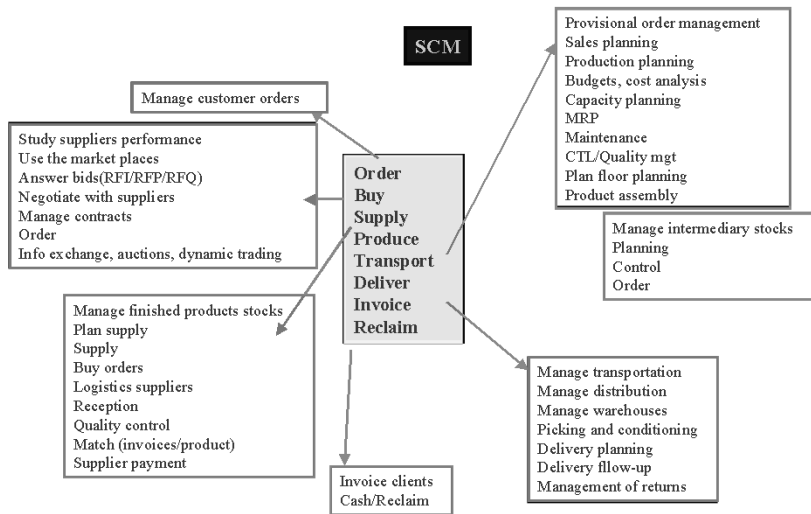
Think ...

- Why such a vocabulary mixture between Processes and Softwares ?

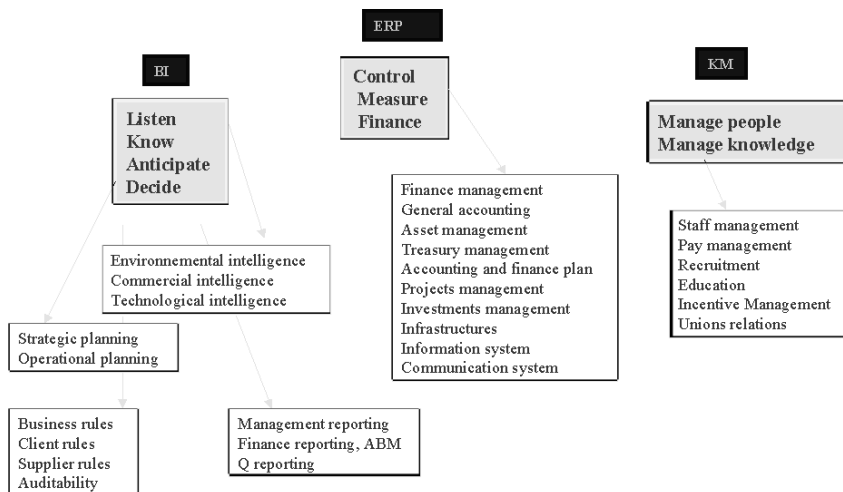
8 Sub-Processes



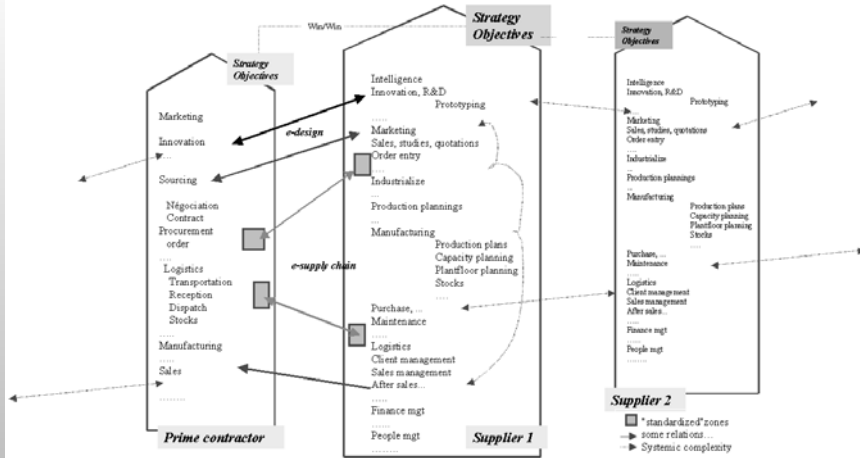
8 Sub-Processes



8 Sub-Processes



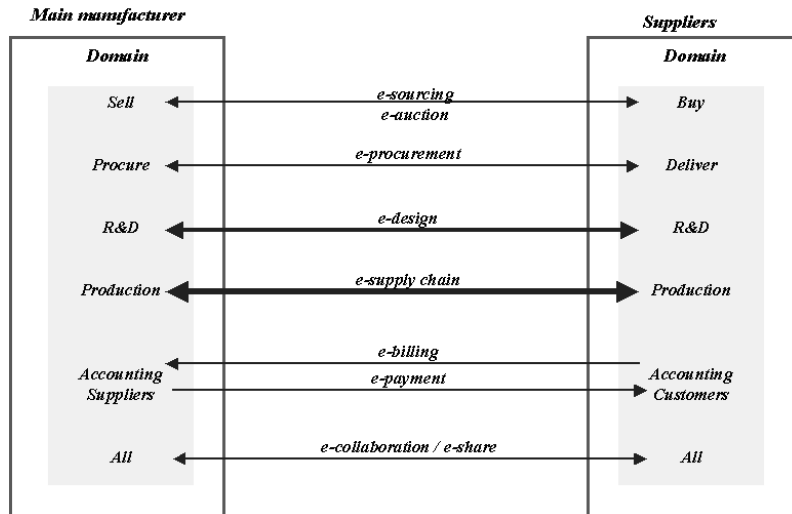
8 Processes in extended enterprise



Think ...

- What are the main B2B Challenges (standards, deals, power, cost pressures, ...)
- for suppliers
- for clients

8 B2B...



8 Hoshin Kanri

- Measuring the business system as a whole
- Setting core objectives of the business
- Understanding the environmental situation in which the business operates
- Defining processes that make up the system, and their activities, goals, and metrics
- Providing resources to perform activities to achieve business objectives.

方針

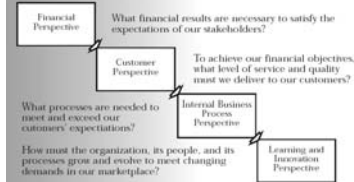


Hoshin = a course, a policy, a plan, an aim

管理

Kanri = administration, management, control, charge of, care for

Hoshin = Policy Deployment



Management ScoreCard (insurance sector)

Strategic Objectives	Weight	Strategic indicators	Significance
Results balance	3	Damage Payments/ Paid fees General expenses / Revenue Provisions clearance Financial products/ Revenue ratio Reinsurance	4 E/C 2 P/O 1 R/P 3 F/F 1 P/a
Growth, market share	5	Contracts + Volume + Contracts - Volume - Coverage ratio, nb contract/client Penetration ratio Nb new contracts, generated sales	4 C+ 3 C- 2,5 C/ox 2 Pen 2 N/C
People competence	2	Nb education days Absenteeism Visit success ratio Error ratio, internal Q	2 Form 1 Abs 2 Vis 4 QI
Client's satisfaction	6	Customer Sat survey Client dissolutions ratio Complaints nb	4 S/C 4 Diss 2 P/ciam
Leadership	4	Image survey	4 Im

8 Hoshin Kanri (key methodology)

Processes

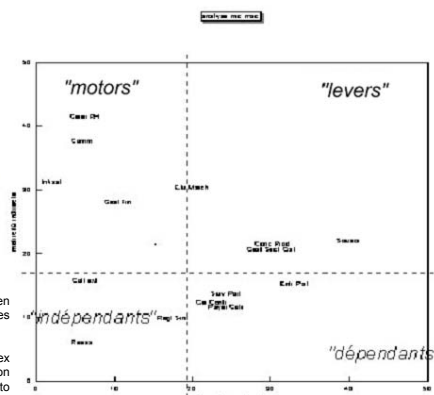
- 01-Study the market (Competitive intelligence, Marketing strat, ...)
- 02-Design products (New contracts , Mking. Techn Dept.)
- 03-Sales sector management (prospect, update client/prospect file)
- 04-Sell (informations, pricing, conclusion)
- 05-Contracts management (create docs, modifications,)
- 06-Maintain clients (informations,garanties adaptation, follow-up)
- 07-Invoice payment actions (computation, letters, cashing, reclaim,...)
- 08-Damagesrefund and payment (open files, inquiries, payment, ...)
- 09-Client follow-up (follow results, negotiation modifications, ...)
- 10S-People management (enroll,education,management,...)
- 11S-Finance management / Control (budget, controls, measurements, ...)
- 12S-Experts structure management
- 13S-Reinsurance management
- 14S-Communicate (internal, external)
- 15S-Infrastructure supply (IS, facilities,...)

Strategic Weight of Processes



Leverage effect

Strat Indic	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
Weight	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
01-Study the market	1																			
02-Design products		1																		
03-Sales sector management			1																	
04-Sell				1																
05-Contracts management					1															
06-Maintain clients						1														
07-Invoice payment actions							1													
08-Damagesrefund and payment								1												
09-Client follow-up									1											
10S-People management										1										
11S-Finance management / Control											1									
12S-Experts structure management												1								
13S-Reinsurance management													1							
14S-Communicate														1						
15S-Infrastructure supply															1					

[illegible]

In "my" use of words, lever in "hoshin kanri" approach, is used when something plays on something different (projects on processes processes on strategies, strategies on vision, ...)

In the other method, where people try to disentangle a complex problem of interference of objects of the same category (people on people, processes on processes, strategies on strategies, ...) and try to detect where is the "hen" and where is the "egg" and where to start, motricity means action of something on the others, dependence means the contrary.

Any factor has a certain level of motricity on the others, and a certain level of dependency.

If motricity ++ and dependency -- elements are called MOTORS

If motricity -- and dependency -- elements are called INDEPENDENTS

If motricity -- and dependency ++, elements are called DEPENDENTS

If motricity ++ and dependency ++, elements are called LEVERS

This use of word lever is not the same than within Hoshin Kanri.

8 Process vs Structures (ABM/ABC Prototype)

- 01-Study the market
- 02-Design products
- 03-Sales sector management
- 04-Sell
- 05-Contracts management
- 06-Maintain clients
- 07-Invoice payment actions
- 08-Damages/refund and payment
- 09-Client follow-up
- 10S-People management
- 11S-Finance management / Control
- 12S-Experts structure management
- 13S-Reinsurance management
- 14S-Communicate
- 15S-Infrastructure supply

Co m b i n	Mgt	Class	Ch Uti l s	GP al	Gen t Sini	Ag Co m	S. Co m	DR v	Infr	SG	S. Tec	Dist UG
3	7	10					15				10	
4	4	5									50	10
2	2	30	20	10			30		30		2	
2	8	40	10	20			20					
	2	5	20	50			20		30		10	20
2	10	20	30	20			10		10		10	10
2	4	10	10	5		30	5		10		5	
15	20		10		100	10					10	20
5	10	15	20	10			5					5
20	20					10		10.0				5
20	5											
9									5			
4	2			5	10				2		10	2
20	20	10	10				10	10			10	
A									30	50		

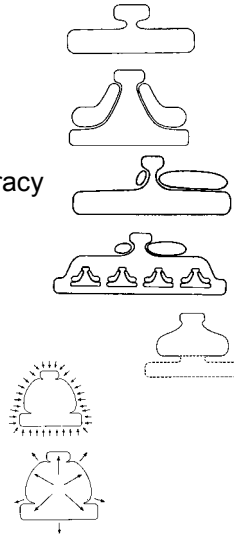
Think ...

- Why is that matrix representation of organizations not frequent?
- Who must manage cross-functional processes?
- When there is a conflict between silos and process owners, which mechanism?

8 Organization and Structures (Mintzberg)



- Simple Structure
- Machine Bureaucracy
- Professional Bureaucracy
- Divisionalized Form
- Adhocracy
 - +... Missionary
 - +... Political



8 Organizations



Direct supervision

One person gives direct orders to others

Standardization of work processes

One person designs the general work procedures of others to ensure that these are all coordinated.

Standardization of output

One person specifies the general outputs of the work of another.

Standardization of skills

A person is trained in a certain way so that he or she coordinates automatically with others.

Mutual adjustment

Two or more people communicate informally among themselves to coordinate their work.

- Operating core
 - The basic work of producing the organization's products and services gets done.
- Strategic apex
 - The home of top management
- Middle line
 - Managers who stand in a direct line relationship between the strategic apex and the operating core.
- Techostructure
 - The staff analysts who design the systems by which work processes and outputs are standardized in the organization.
- Support staff
 - The specialists who provide support to the organization outside of its operating workflow.

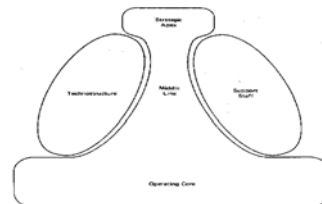
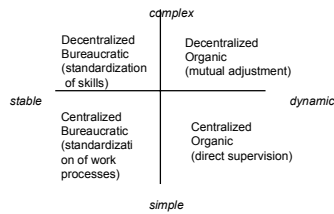
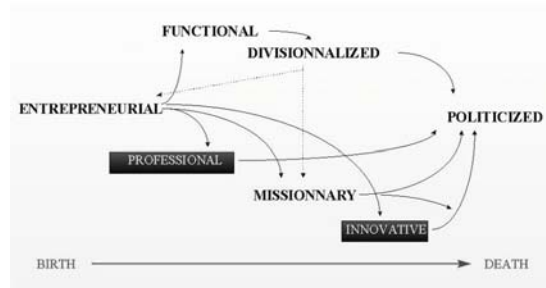


FIGURE 3-1 The Five Basic Parts of the Organization, from Henry Mintzberg, The Structure of Organizations (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1973)

8 Mechanic vs Organic, Life Cycle



Structural Configuration	Prime Co-ordinating mechanism	Key Part of Organization	Type of Decentralization
Simple Structure	Direct supervision	Strategic apex	Vertical and horizontal centralization
Machine Bureaucracy	Standardization of work processes	Technostructure	Limited horizontal decentralization
Professional Bureaucracy	Standardization of skills	Operating core	Vertical and horizontal decentralization
Divisionalized Form	Standardization of outputs	Middle line	Limited vertical decentralization
Adhocracy	Mutual adjustment	Support staff	Selective decentralization



9 Where to start alignment?



ref. Henderson / Venkatraman

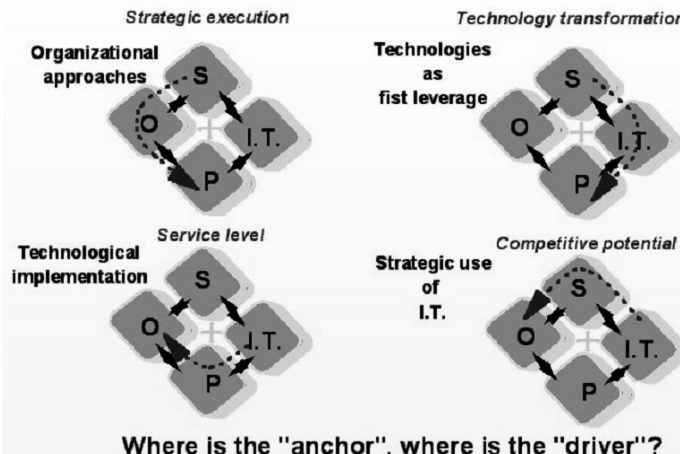
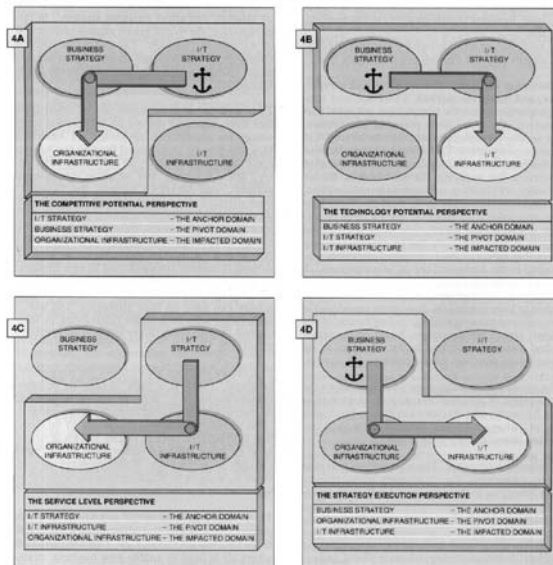
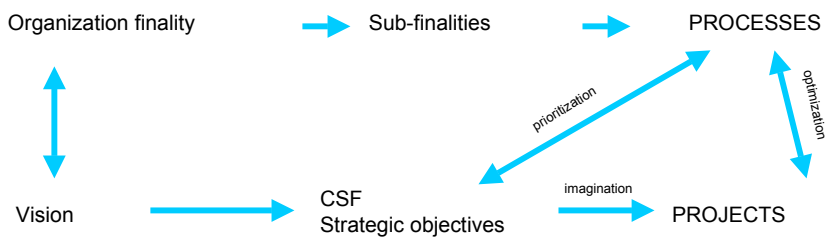




Figure 4 Strategic perspectives


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119


- Reflection over the present (lack of satisfaction, what is missing)
- Desire or will to fill these lacks
- Implementation of actions at the service of this desire or will
- Organization to channel the actions
- Regular evaluation of the progression

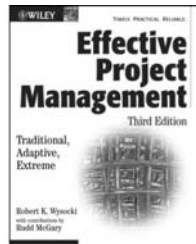
Implementation of an organization by projects is a delicate activity, because it requests to create **effective imbalances**, for it leads to transform companies beyond their only organizational aspects..."

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120

9 Projects...

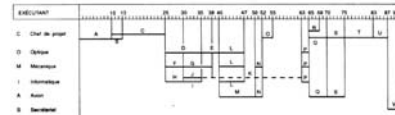
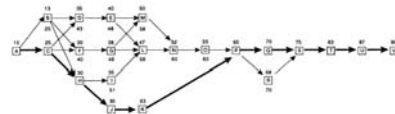
- A project is
- a coordinated set of works,
 - accomplished by people
 - using means and supports
 - in order to equip a company with a product, a service or a system
 - to deal with anticipated situation aimed
 - at the slightest cost

the cost can be financial, social, human, technical

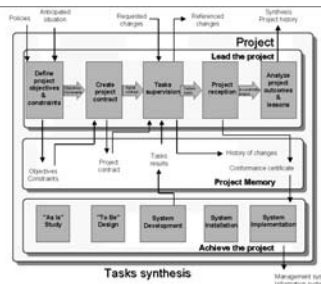
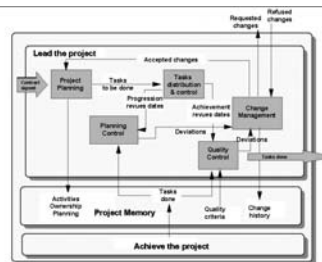
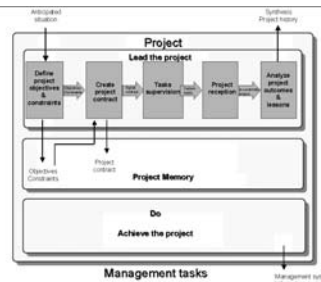
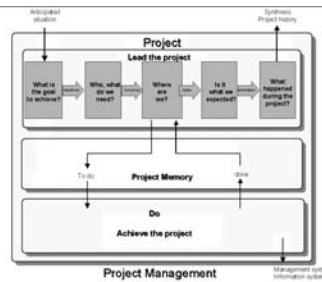


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121

CODE	Task	DATE	STATUS	RES	PM	STATUS	CODE	Task	DATE	STATUS	RES	PM	STATUS
A	Pre-study	10	10	10	10	10	1	Accounting	100	7	40	47	10
B	Design	10	10	10	10	10	2	Management plan	100	7	40	47	10
C	Design	10	10	10	10	10	3	Production	100	7	40	47	10
D	Design	10	10	10	10	10	4	Production	100	7	40	47	10
E	Design	10	10	10	10	10	5	Production	100	7	40	47	10
F	Design	10	10	10	10	10	6	Production	100	7	40	47	10
G	Design	10	10	10	10	10	7	Production	100	7	40	47	10
H	Design	10	10	10	10	10	8	Production	100	7	40	47	10
I	Design	10	10	10	10	10	9	Production	100	7	40	47	10
J	Design	10	10	10	10	10	10	Production	100	7	40	47	10
K	Design	10	10	10	10	10	11	Production	100	7	40	47	10
L	Design	10	10	10	10	10	12	Production	100	7	40	47	10
M	Design	10	10	10	10	10	13	Production	100	7	40	47	10
N	Design	10	10	10	10	10	14	Production	100	7	40	47	10
O	Design	10	10	10	10	10	15	Production	100	7	40	47	10
P	Design	10	10	10	10	10	16	Production	100	7	40	47	10
Q	Design	10	10	10	10	10	17	Production	100	7	40	47	10
R	Design	10	10	10	10	10	18	Production	100	7	40	47	10
S	Design	10	10	10	10	10	19	Production	100	7	40	47	10
T	Design	10	10	10	10	10	20	Production	100	7	40	47	10
U	Design	10	10	10	10	10	21	Production	100	7	40	47	10
V	Design	10	10	10	10	10	22	Production	100	7	40	47	10
W	Design	10	10	10	10	10	23	Production	100	7	40	47	10
X	Design	10	10	10	10	10	24	Production	100	7	40	47	10
Y	Design	10	10	10	10	10	25	Production	100	7	40	47	10
Z	Design	10	10	10	10	10	26	Production	100	7	40	47	10

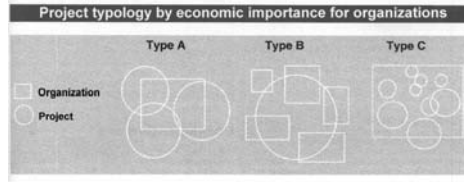


9 Project sequence



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122

9 Projects

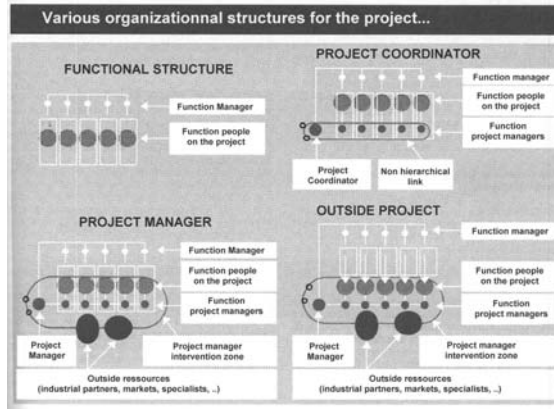


Think ...

- What best organization for your projects?

- Management of projects vs Management by projects

- Difference between Process Management and Project Management



9 Projects problems

1 DEADLINES

- 33% of enterprise wait for 3 years (Xephon 1983),
- delayed backlog is 7 years (Martin 1984).
- 5 years for Fortune 500 (Rosenberger 1981), sometimes 10 years.
- Demand is 2 to 3 times supply (Alloway et Quillard 1983)

2 COSTS

- 60% à 80% of maintenance costs are due to communication problems (Lientz *et al.* 1978).
- 30% à 50% of overall costs are due to communication problems

3 REQUIREMENTS

- 80% of development budget = maintenance

Intellectual temptation

or ... perfection pursuit

Creeping specs

or ... inability to say no

Cavalry

or ... therapeutic obstinacy

Enforced project

or ... go after others happiness without their consent

Project arthritis

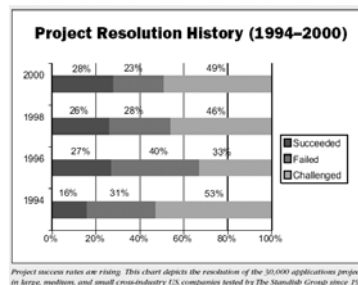
or ... insidious paralysis

The monster

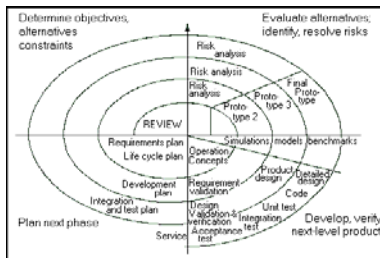
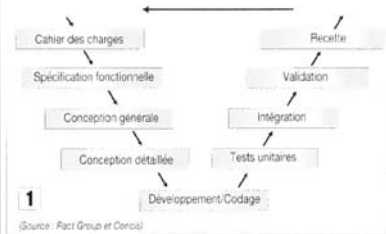
or ... uncontrollable gigantism

Degeneracy

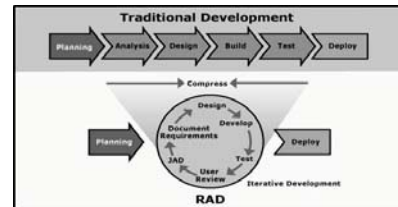
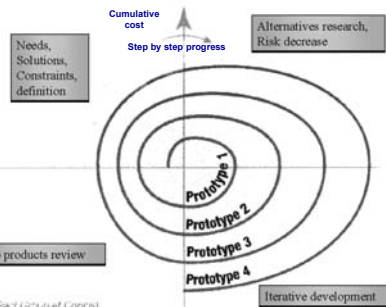
or ... memento mori



9 Prototyping, RAD,



Spiral cycle : a better adequation to needs



9 Projects and Change Management

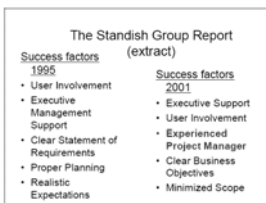
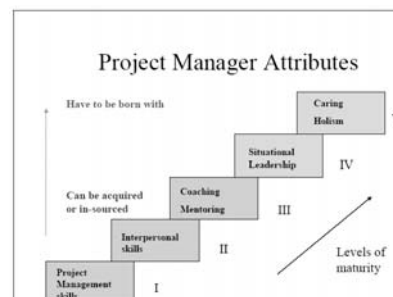
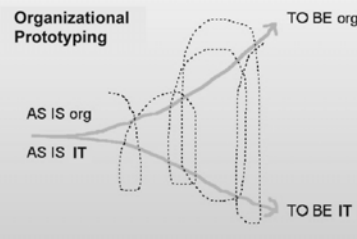


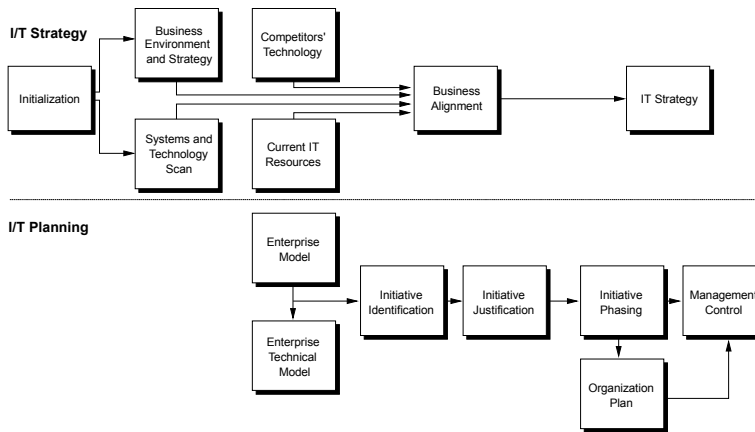
Figure 1: Top five success factors, IT projects studied by The Standish Group, original study 1995, update 2001.



9 Projects and Change Management



IT/IS consultancy : a possible framework



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127

10 Concurrent Engineering



Concurrent Engineering Definition

"A systematic approach to integrated development of a product and its related processes, that emphasizes response to customer expectations and embodies team values of co-operation, trust, and sharing in such a manner that decision making proceeds with large intervals of parallel working by all life-cycle perspectives, synchronized by comparatively brief exchanges to produce consensus."

- Competitivity
- Delays
- "Time to Market"
- Quality
- Drastic decrease of late modifications
- Client satisfaction
- Decrease of non AV
- Closer "break-even point"
- Increase of "bilities" (manufacturability, reliability, ...)

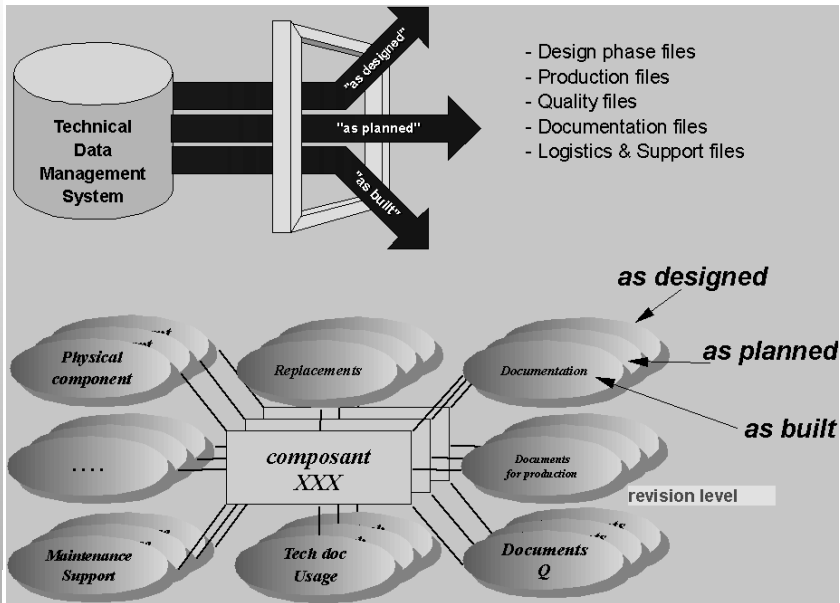


Dvpt delays decrease:	30 to 50%
Fall of modification nb:	65 to 90%
Reduction for time to market:	20 to 90%
Increase of total quality:	200 to 600%
"white collar" productivity:	+ 20 to 110%
Sales increase	20 to 100%
Invested assets profitability	+ 20 to 120%

In automotive and aerospace industry, a 50% expense exceeding for RnD produce a 5% profit decrease on 5 Years, a 10% expense exceeding for Production gives 25%, a 6 months delay vs planned gives 33% profit decrease !!!

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128

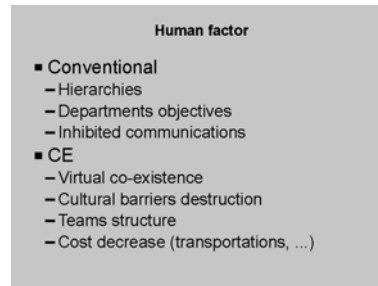
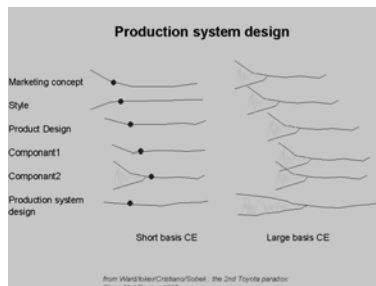
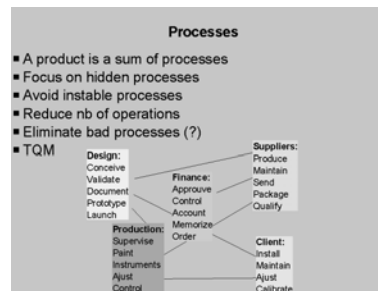
10 PDM challenge



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10 CE: some conditions of success

- Again, Think on Data
 - Processes
 - **Semantics**
 - Syntax
 - Technical representation
- Core shared information vs individual needs...

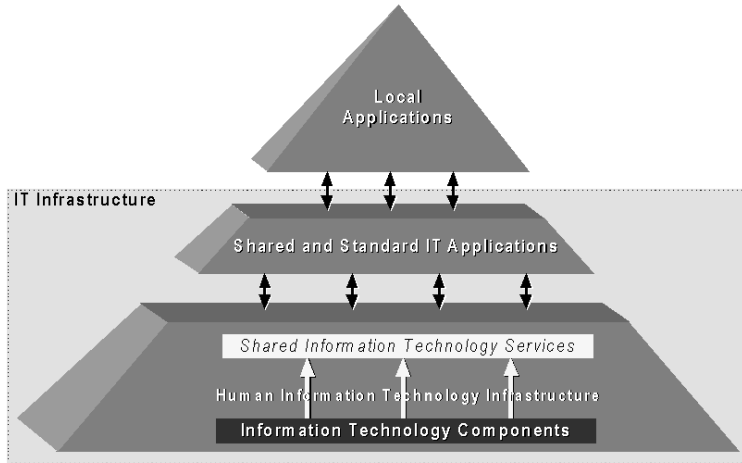


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132

11 IT infrastructure...

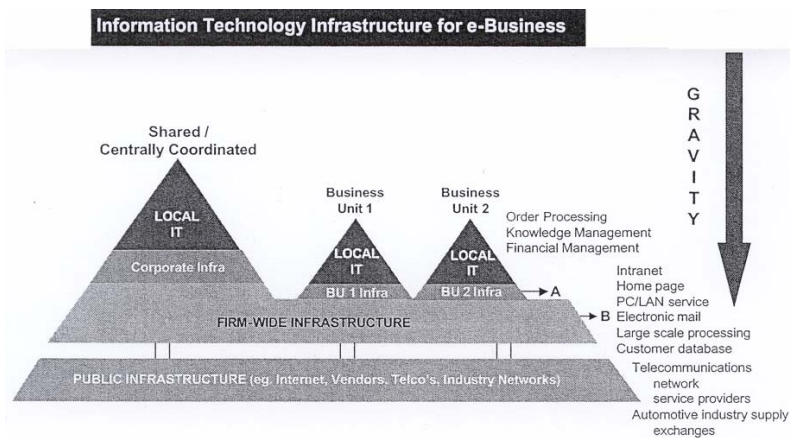


The base foundation of budgeted-for IT capability (both technical and human), shared throughout the firm as reliable services, and centrally coordinated.



Source: P. Weill & M. Broadbent "Leveraging the New Infrastructure: How Market Leaders Capitalize on IT", Harvard Business School Press, May 1998. (Based on a study of 54 businesses in 7 countries over five years).

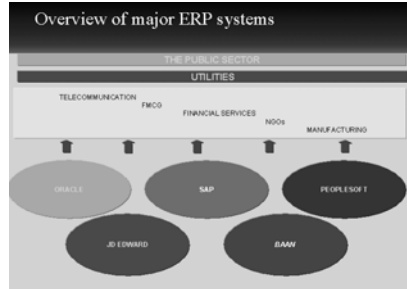
11 IT infrastructure...



Adapted from P. Weill & M. Broadbent "Leveraging the New Infrastructure: How Market Leaders Capitalize on IT", Harvard Business School Press, June 1998, pp 37.

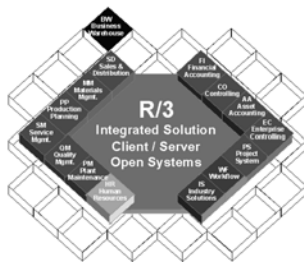
12 ERP?

- From history to dedicated applications for silos to integration
- CIM japan story
- ERP from finance consolidation to full system
- Process names and fundamentals vs Software first
- Finance history vs Production History
 - Mapics story, ERP as plant "bottom-up" design vs finance "top-down"
- Generalized or Sector oriented?
- Level of tailoring, difference in design ?
- Standard creation ?
- ERP and B2B ?
- ASP and ERP ?
- Banking? Insurance? Retail?



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135

12 ERP (SAP modules example)



R/3 Financial Applications

- | | |
|--|--|
| <p>FI - General ledger</p> <ul style="list-style-type: none"> • Accounts Receivable/ Payable • Special Ledgers • Fixed Asset Accounting <p>CO - Overhead Management</p> <ul style="list-style-type: none"> • Activity Based Costing • Product Cost Accounting • Profitability Analysis <p>AM - Investment Planning/ Budgeting/Controlling</p> <ul style="list-style-type: none"> • Depreciation Forecast/ Simulation/Calculation | <p>EC - Executive Information System</p> <ul style="list-style-type: none"> • Profit Center Accounting <p>PS - Work Breakdown Structure</p> <ul style="list-style-type: none"> • Costs and budgeting • Time scheduling • Orders in the project |
|--|--|

R/3 Logistics Applications (1/2)

- | | |
|---|--|
| <p>SD - Sales Promotion/Sales Activities</p> <ul style="list-style-type: none"> • Inquiries/Quotations/Order • Contracts and scheduling agreements • Shipping/Transportation/ Foreign trade • Billing • Materials requirements planning • Purchasing • Goods movement • Invoice verification • Inventory management Simulation/Calculation <p>MM</p> | <p>PP - Sales/Production planning</p> <ul style="list-style-type: none"> • Material requirements planning • Forecasting • Capacity planning • Shop Floor information System <p>BW - Management reporting</p> <ul style="list-style-type: none"> • Data collection from various sources stored in a central repository • "Slice and Dice" |
|---|--|

R/3 Logistics Applications (2/2)

R/3 Human Resources

- | | |
|---|---|
| <p>SM - Service planning</p> <ul style="list-style-type: none"> • Processing service orders • Service Information System <p>QM - Quality planning</p> <ul style="list-style-type: none"> • Quality inspection • Quality Management Information System | <p>PM - Maintenance planning</p> <ul style="list-style-type: none"> • Processing maintenance orders • Maintenance Information System <p>HR - Recruitment management</p> <ul style="list-style-type: none"> • Personnel Capacity and Shift Planning • Payroll accounting |
|---|---|

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136



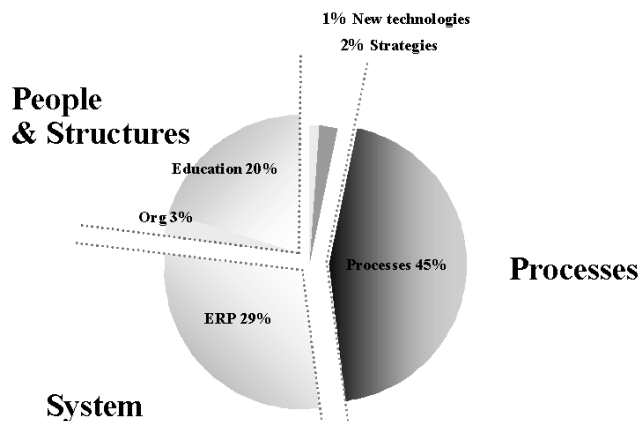
Table 1: Five Success Factors for ERP Projects

Brown Vessey "lessons learned from ERP"

1. Top management is engaged in the project, not just involved
2. Project leaders are veterans, and team members are decision makers
3. Third parties fill gaps in expertise and transfer their knowledge
4. Change management goes hand-in-hand with project management
5. A satisficing mindset prevails



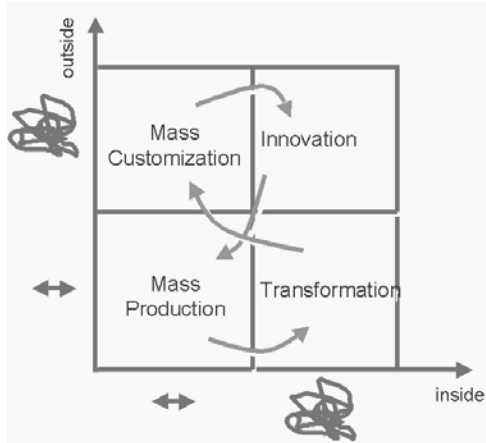
Optimisation is done through processes, organizations and ERP systems evolution



Think ...

- What is the best way to implement ERP?
Soft first, Education first?, Process BPR first?, ...
- In case of merge of 2 entities with different ERPs, what to do?
- Must your suppliers have the same rules than your own ERP?

13 Mass Customization

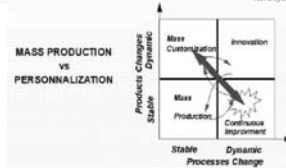


- From Benneton story to Toshiba future
- Is Dell Mass Customized?
- Impossible to move directly from MP to MC and from I to MC
- Spend time on the left !
- Where are you on the cycle?

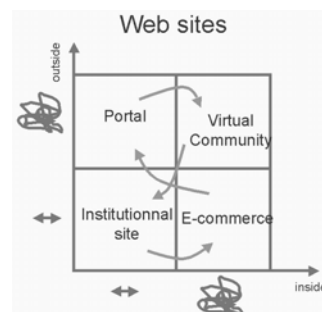
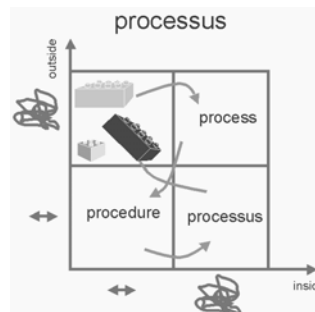
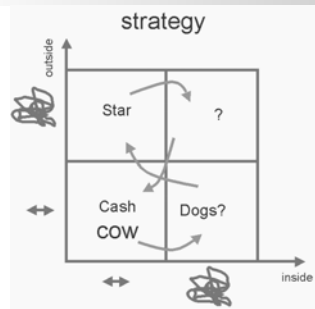
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139

Towards Dynamic Stability....

ref: Beynon, Pao H. Vieto



13 4 quartiles typology ... and semantics



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140

13 Cultures and Mass Customization...



**70% of TRANSFORMATION experiences
ar inhibited by HUMAN FACTOR.....**

What criterias
to appreciate
human factor?

Vision
Values
Culture
Structure
Communications
Decision making
Employment relationship
Performance evaluation
Compensation
HR programs
Org capabilities
Individual competencies
Leadership
Morale
Tolerance for change



Employees
vs
Executives...



Benchmarking
with the best
on each criteria



13 Change Management and Cultures



15 Carnegie-Mellon criterias

Vision	shared stimulating view of the company in the future
Values	common basic believes
Culture	ways to act, based on myths, taboos, rituals,
Structure	work organization style
Communications	how the organization share information
Decision making	how are decisions taken
Employment relationship	company/employee contract
Performance evaluation	what is valued, rewarded
Compensation	compensation system
HR programs	style of educ., promotion, social, ...HR pgms
Org capabilities	learning abilities of organization
Individual competencies	archetype of the perfect competence
Leadership	recognized type of leader
Morale	employees' satisfaction motor
Tolerance for change	flexibility in front of changing world

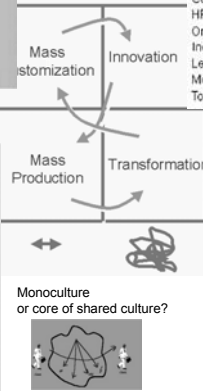
13 Culture benchmark....



Vision.....	customization
Values.....	adaptation
Culture.....	informal
Structure.....	networked
Communications.....	authorized networks
Decision making.....	simultaneous
Employment relationship.....	contractual
Performance evaluation.....	service level
Compensation.....	mix
HR programs.....	cafeteria style
Org capabilities.....	metamorphic
Individual competencies.....	broad skilled
Leadership.....	orchestrator
Morale.....	extrinsic
Tolerance for change.....	continual transform

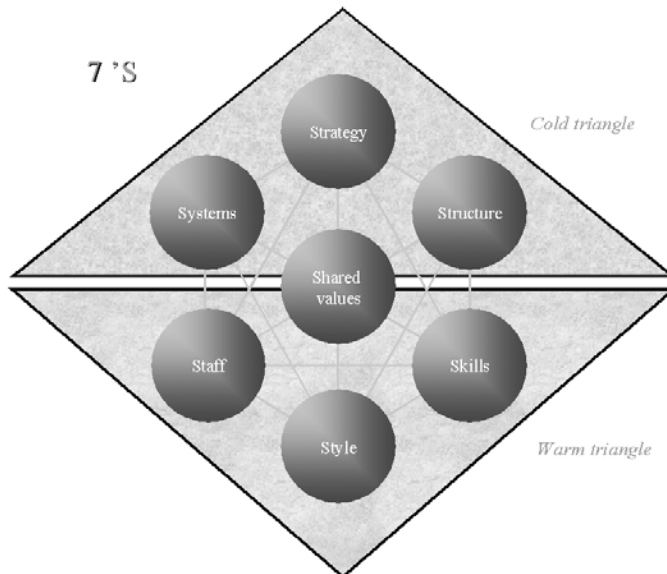
Vision.....	entrepreneurial
Values.....	innovation
Culture.....	highly informal
Structure.....	guid
Communications.....	informal networks
Decision making.....	collaborative
Employment relationship.....	individualized
Performance evaluation.....	creativity
Compensation.....	individual
HR programs.....	flexible
Org capabilities.....	creative
Individual competencies.....	expert
Leadership.....	entrepreneurial
Morale.....	intrinsic
Tolerance for change.....	change generative

Vision.....	status quo
Values.....	stability
Culture.....	highly formal
Structure.....	hierarchical
Communications.....	top-down
Decision making.....	sequential
Employment relationship.....	commodity
Performance evaluation.....	productivity
Compensation.....	time-based
HR programs.....	rigid
Org capabilities.....	reactive
Individual competencies.....	narrow skilled
Leadership.....	authoritarian
Morale.....	extrinsic
Tolerance for change.....	change resistant



Vision.....	qualitative
Values.....	efficiency
Culture.....	formal
Structure.....	team-based
Communications.....	bottom-up
Decision making.....	consensual
Employment relationship.....	at will
Performance evaluation.....	defects
Compensation.....	team-based
HR programs.....	innovative
Org capabilities.....	anticipatory
Individual competencies.....	advisory
Leadership.....	entrepreneurial
Morale.....	recognition
Tolerance for change.....	incremental

14 Mac Kinsey 7'S

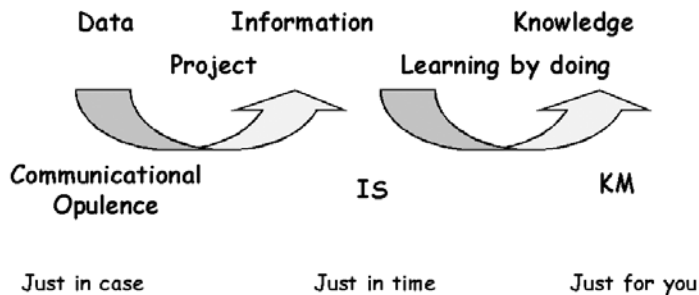




Knowledge Management caters to the critical issues of **organizational adaptation, survival and competence** in face of increasingly discontinuous **environmental change....**

Essentially, it embodies organizational processes that seek **synergistic combination** of data and information processing capacity of **information technologies**, and the **creative and innovative capacity of human beings**.

www.brint.com



14 Data, Information, Knowledge...



Data

- Objective observed facts about organizational events.
- Source of error - measurement related

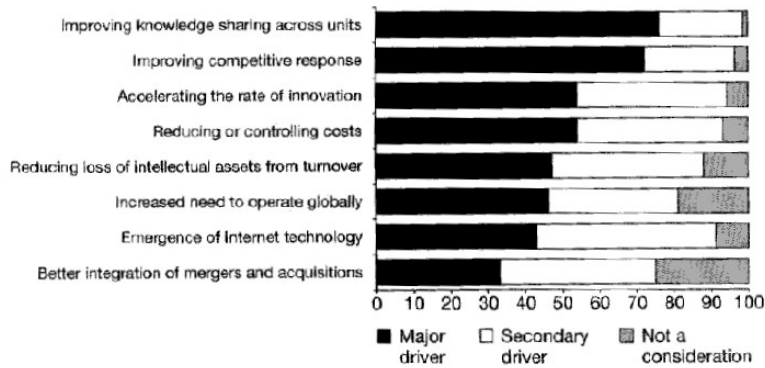
Information

- A communication carrying a *message*.
- Can be found from data by adding relevance and purpose.
- Source of error - interpretation related

Knowledge

- Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a *framework for evaluating and incorporating new experiences and information*.
- It originates and applied in the minds of knowers.
- Closest to "Action."
- Various forms: Experience, Judgement, Intuition, Value and Beliefs,
- Source of error - validity related.
 - Internal validity - is this knowledge sound?
 - External validity - is this knowledge sound elsewhere?

14 Why KM?



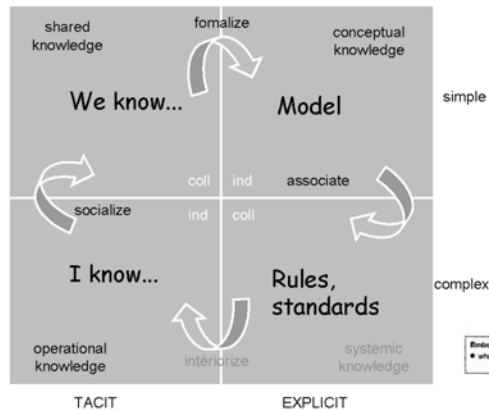
Source: Gartner Consulting study for major knowledge management providers (1999)

Eight key business drivers for knowledge management

Think ...

- What is the main KM challenge of your organization?

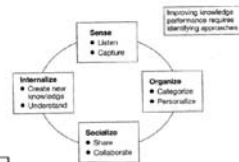
14 What is K? (Nonaka)



The types of knowledge that exist in and around every organization

Source: Knowledge Management: Concepts, Models, and Cases, Page 204

14 What is K Management?



tools for managing knowledge processes

Source: Knowledge Management, Goodwin/Blackwell, Korean Page 2002

Approach \ Type	Embodied	Represented	Embedded
Sense	Observe - Knowledge surveys - Workshops/interviews - Network analysis	Gather - Business intelligence - Text and data mining - Intelligent agents	Hypothesize - Market/customer/competitor analysis - Modeling/reasoning tools - Reverse engineering
Organize	Contextualize - Focus groups - Expertise guides - Knowledge coordinators	Categorize - Knowledge taxonomies - Libraries - Data maps	Map - Job/workplace design - Workflow analysis - Performance measures
Socialize	Share - Mentoring/coaching - Communities of practice - Conferencing tools/groupware	Disseminate - Broadcast tools/intranet/e-mail - Distance learning - Application systems	Simulate - Scenario planning - After-action reviews - Training/competency management
Internalize	Apply – Decide – Act		

The KM Matrix

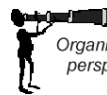
Range of tools used in approaches to knowledge management

Source: Knowledge Management, Goodwin/Blackwell, Korean Page 2002

14 What is K Management?



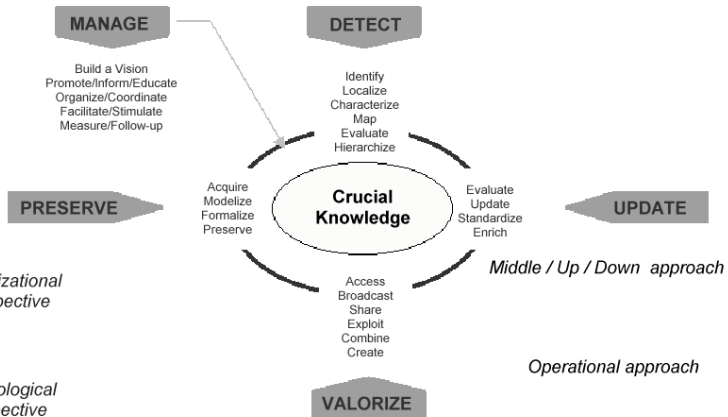
Socio-Economical
perspective



Organizational
perspective



Technological
perspective



14 KM and the learning Mix (Moingeon, HEC France)



KM is the explicit and rigorous management of the Learning mix

=

Technology + K Portfolio
+ Structure + Identity

Technology is an important enabler for KM,
but it is only one component of the L mix.

'The medium should not be the message'
(K portfolio > Technology)

The vision must set the priorities,
not the technology.

K Portfolio = K Capital + New K

Management of K Capital:

- To identify K (Danger = presbyopia, wasting knowledge by not using it)
- To codify K
- To re-use K ("don't reinvent the wheel")

Objective = K sharing

New K:

"Knowledge is aware of what it does not know"

- To explore new alternatives (danger = "competency trap")

- To learn new K (danger = myopia, "not invented here" syndrome)

Objective = K acquisition

Corporate level

Chief Knowledge Officer

Chief Learning Officer

Knowledge Director

Director of Intellectual Capital

BU level

Knowledge Manager

Knowledge Champion

Knowledge Finder

Knowledge Editor

Emergence of
Communities of Practice

Self managed Learning teams

People share K because they share the same
passion

Trust and Intrinsic motivation

Need to have a learning identity

•Promotes K sharing and K creation

•High level of trust

•People can productively confront their views

•People can make the "real" issues discussible

Obstacles to overcome:

"Not invented here" syndrome

Hoarding: "K is Power"

Lack of time to share K or learn

Leaders who are not role models

Challenge :

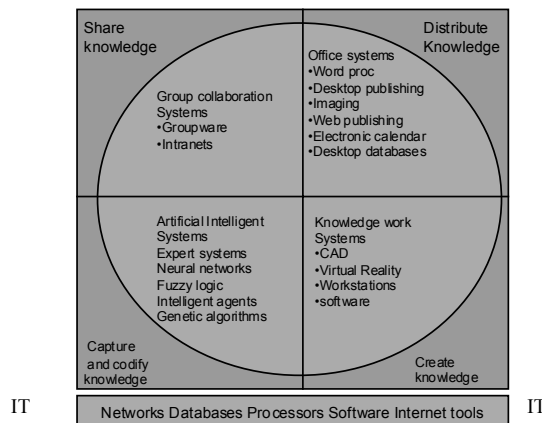
From "K is power"

to "Shared K is more power"

14 KM and Tools mapping



KM and IT



14 KM and cognitive styles



"Cognitive style may be defined as individual variations in modes of perceiving, remembering and thinking, or as distinctive ways of apprehending, storing, transforming and utilizing information." (Kogan, 1971)

"Learning is any relatively permanent change in behavior that occurs as a result of experience." "Learning styles are cognitive, affective, and physiological traits that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment." (James W. Keefe)

EX: Serialist/Analytic –
Wholist/Global
Verbal/Linguistic –
Visual/Spatial
Field Dependent - Field Independent
Impulsive - Reflective

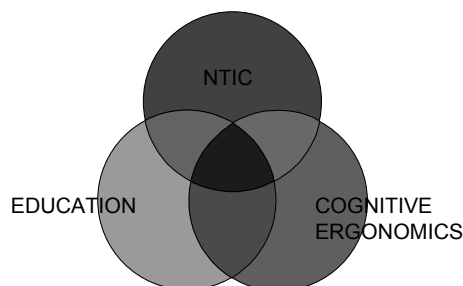
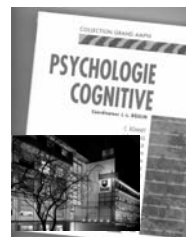
Think ...

- What is your learning style? (see Brain.exe)

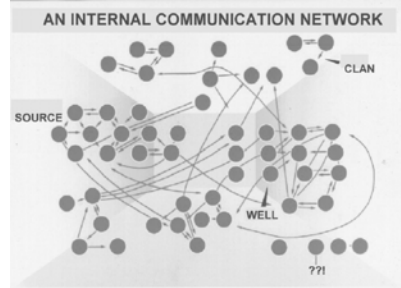
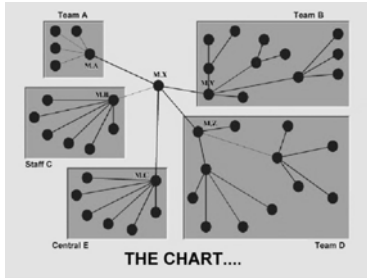
14 KM and... distance education, e-learning, ...



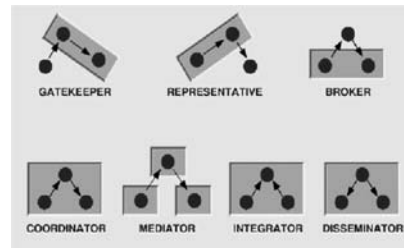
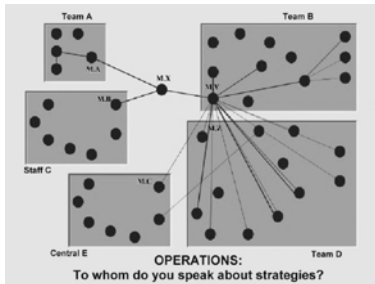
- Steps in Knowledge acquisition
 - Illumination
 - Deepening, Studying
 - Project definition
 - Project
 - Capitalization towards next steps....
- A necessary cross fertilization



15 Informal Networks, "charts behind the chart"



Key role of COPs !!!



15 Informal Networks, example

