Global Knowledge Networking

The Use and Abuse of Technology

Dr David J. Skyrme

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A presentation looking at knowledge management in practice. Knowledge Management is a term that is gaining increasing exposure. This presentation attempts to sort out the business reality from the consultants' hype. It is based on the analysis of this topic over 10 years (before the term was widely used) and recent assignments, by David Skyrme and his colleague Debra Rogers of ENTOVATION International (for contact details see last slide).

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Topics

- Rethinking Research - innovation and knowledge
- The Knowledge Agenda - 2 thrusts; 7 levers
- The ICT Contribution - helping knowledge flow
- Virtual Collaboratories - the distributed laboratory
- Lessons of success (and failure)

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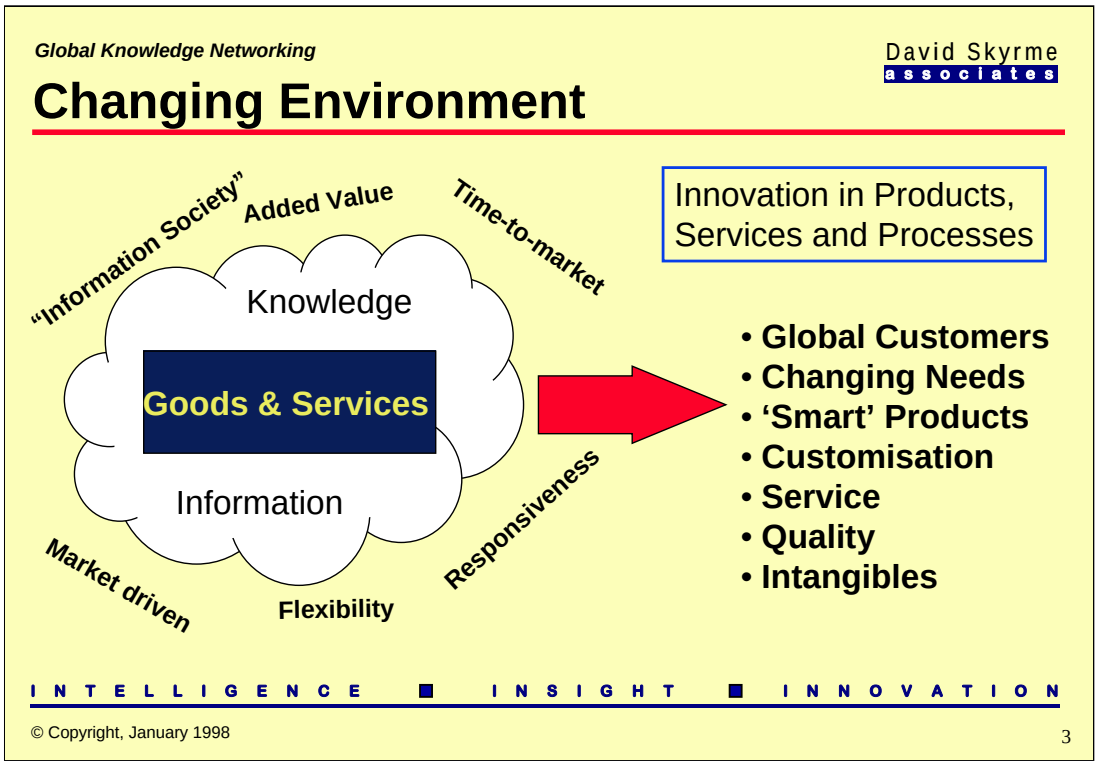
We will argue that knowledge management is fundamental, and that it is fundamentally different from information management, though it does have some similarities with information resources management (IRM).

Cases are based on reported real live cases and interviews by practitioners with the presenter and Debra Rogers. At the moment there is a US bias, for two reasons 1) They are more 'explicit' in the use of the term (in the UK it is often buried within Learning Organisation or Business Improvement initiatives); and 2) They seem to be more 'open' to the external world - itself an indication of a knowledge sharing culture.

Hard infrastructure is provided by IT, but the equally important 'soft' infrastructure covers organisation culture, facilitation processes and HR policies.

As always in such situations, one often learns more from examining failures than successes.



We now accept BPR and TQM as 'fundamental', but at one time they were fads. As products and services carry more information and knowledge content e.g. ICI says it sells 'effects' not chemicals, this core resource needs to be systematically managed. Also standard products and services lend themselves to a high degree of automation in their production. Knowledge based services are less pre-programmable, requiring intellect to respond to different customer situations.

The ultimate knowledge based business is the consultancy whose only assets are their people, their process and intellectual capital. Not surprisingly many of them are focusing a lot of attention on managing their crucial asset - knowledge.

R&D Response

Invention	→	Innovation
Standard products	→	Platforms/customised
Technology Transfer	→	Co-creating
Sequential	→	Simultaneous
Independent	→	Interdependent
Local	→	Global
Centralised	→	Closer-to-customer
DIY	→	Collaboration

Why Collaborate and Network?

- Access to scarce/expensive resources (scale)
- Pooling resources/expertise (scope)
- New insights, new expertise (reach)
- Cross-fertilisation of knowledge and experience
- Creating communities of excellence
- Flexibility - resources with responsiveness

"Collaboration gives the ability to link diverse assets into unique capabilities and leverage in pursuit of new opportunities" (Ghoshal and Bartlett)

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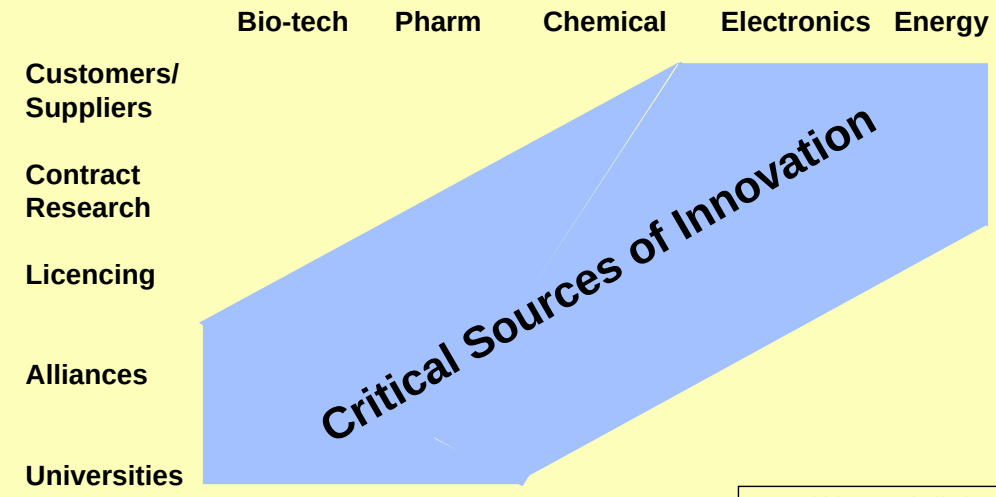
Collaboration



After Tidd & Trewhella (1997)

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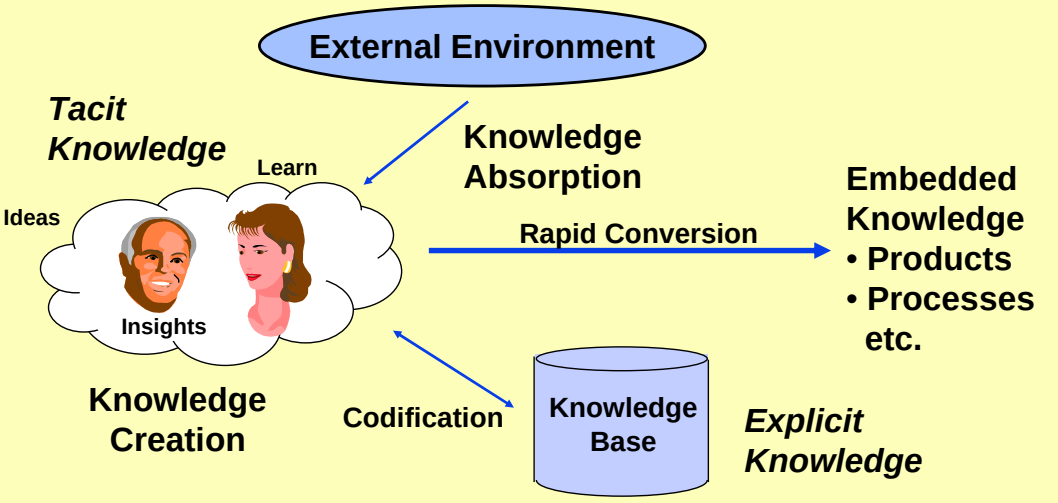
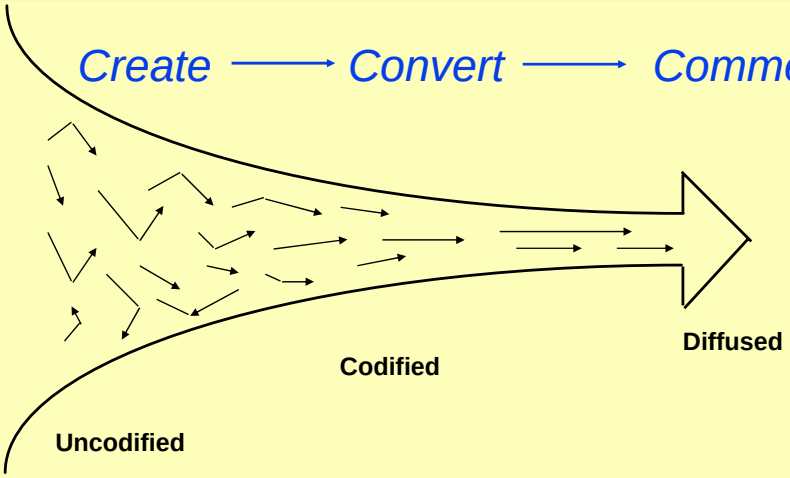
Research as Knowledge Flow



Codification of Knowledge



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Working Definition

Knowledge Management is the explicit and systematic management of vital knowledge - and its associated processes of creation, organisation, diffusion, use and exploitation.

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Definitions are many and varied. Four main elements

- explicit: knowledge is explicitly recognised (language, documents etc.)
- systematic: it is too important to be left to chance
- selective: there's lots of knowledge; focus on that which is important
- content and process perspective (nouns and verbs)

By adopting a systematic vs. an ad-hoc approach, management consultancies believe they can offer better global solutions, and reduced competitive price pressures (e.g. see Booz Hamilton Allen)

The Momentum of Knowledge

1995	1996	1997	1998
First US conferences (AA, E&Y)	First UK conferences	First industry confs	More professions
Nonaka & Takeuchi	Consultancies 'push'	Tens of conferences	New geographies
First articles	First CKOs	Reports, Books (3-4)	More benchmarking
	First FT coverage	First surveys (3)	More relabelling
	First 'club' (E&Y)	First journals (4)	More redefinition
		Regular press	Economic agenda
		Intellectual Capital	First big failures?
		IT vendors redefine	
		First hiccups	

Survey

Relative Importance of Knowledge Management to each Function

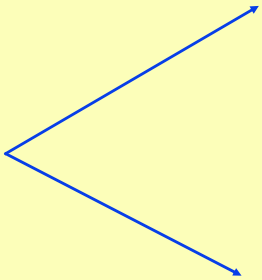
Source: Cranfield/Info Strategy

Some Survey Results

- Is your business knowledge intensive? 87% (2);
- 90% companies have plans to exploit knowledge (1)
- Customer knowledge is the most vital (1,2,3)
- Key Benefits - Innovation (2); Improved decision making (3) [Innovation No. 4 - 73%]
- Key challenge: sharing knowledge (1); culture (2)

Sources: (1) Cranfield/Europe 100; (2) BI/E&Y (US/Eur 430); (3) JKM (73)

2 Key Thrusts

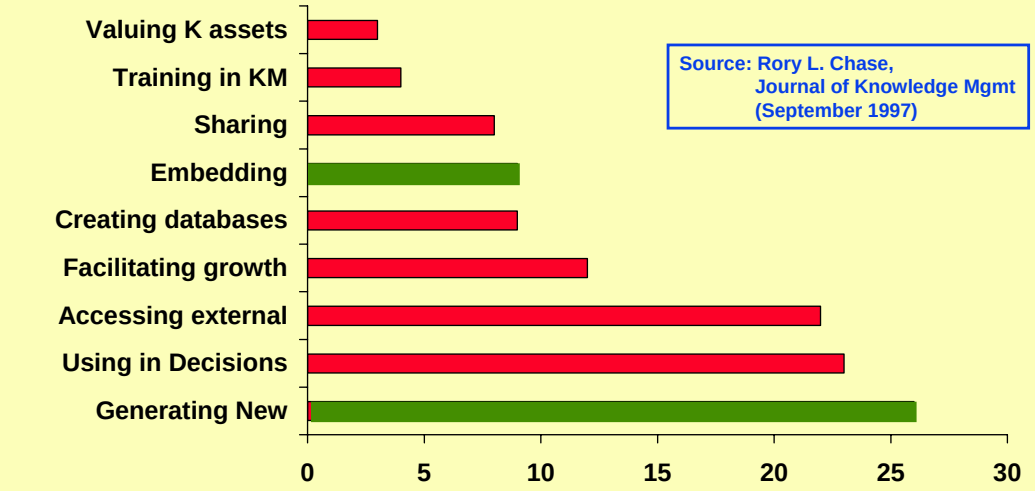


Sharing existing knowledge
"Knowing what you know"

Knowledge Innovation [SM]
"Creating and Converting"

[SM] Knowledge Innovation is a service mark of ENTOVATION International

Knowledge Performance



Source: Rory L. Chase, Journal of Knowledge Mgmt (September 1997)

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Seven Levers

- Customer Knowledge *- have you identified latent needs?*
- Knowledge in Relationships *- is collaboration boosting K?*
- External Insights *- how good is your environment scanning?*
- Knowledge Repositories *- do you have learning histories?*
- Knowledge in Processes *- is information you need there?*
- Knowledge Assets *- have you valued patents, licences etc.?*
- Knowledge in People *- do you know who knows what?*

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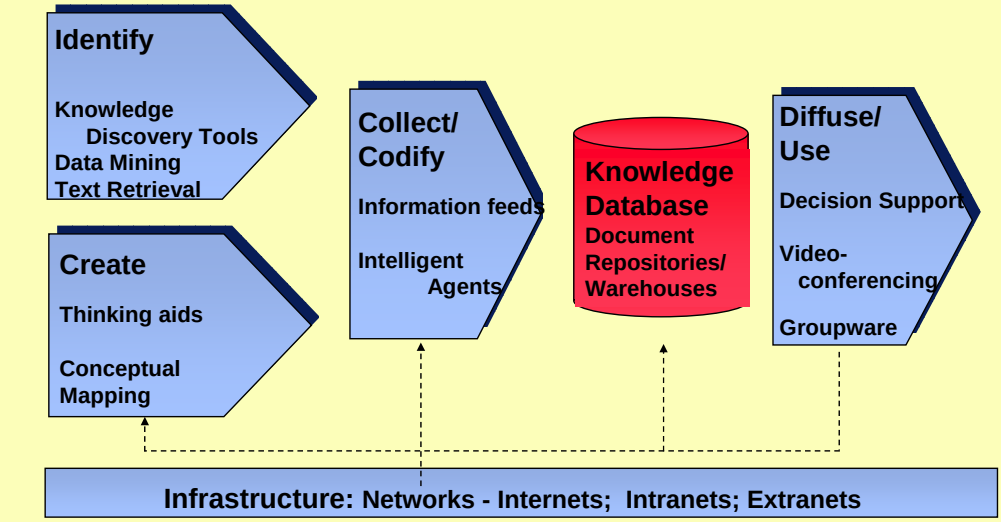
Extensive = externally (in product or service); internally is in processes etc.

Knowledge (in) products (the 'knowledgeburger') - consumer information, applications, internal awareness e.g. cars about to break-down. Some fastest growing sectors - education, health, software etc. are knowledge businesses.

In processes - that which is NOT in the procedure manual! (e.g. emergency procedures in practice). What procedures fall down when a someone crucial is away? Microsoft is a good example of a company worth much more than its physical assets. It has knowledge capital, encapsulated in its software.

Role of ICT



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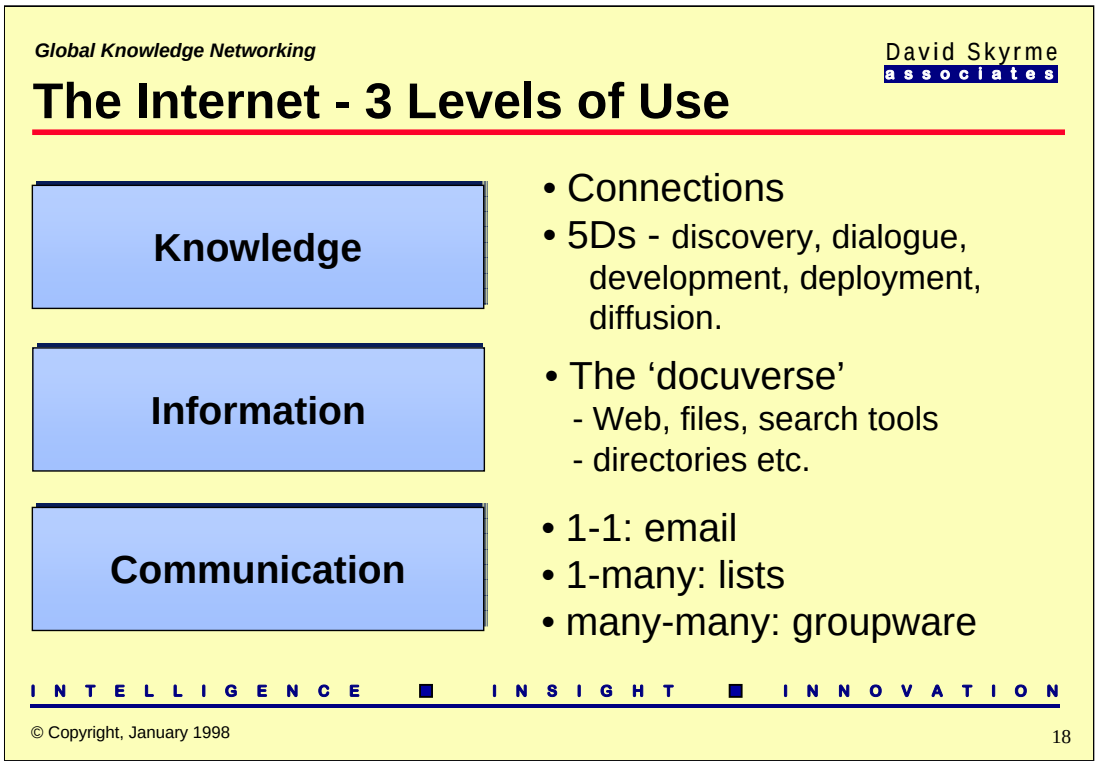
Collaborative Technologies

"The best customer knowledge in my organisation is not in databases - it's behind people's eyeballs and between their ears"

(Bob Buckman, Buckman Laboratories)

Our research found that collaborative technologies, especially Lotus Notes and the Internet/Intranet provided the most leverage in enhancing knowledge flows.



The real pay-back through the Internet, in my opinion, is its use to augment the development of knowledge. Through deliberations on lists, the use of newsgroups or computer conferencing (e.g. Lotus Notes). This is what knowledge networking is all about - not simply information sharing, but the collaborative development of knowledge - to develop new products, new services, new businesses and above all new relationships. That is what I have personally relished about the Internet.

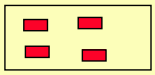
With my Boston colleague, Debra Rogers, we are collaborating on several joint projects. Each needs the development of new ideas and the reframing of existing knowledge. Combinations of sharing presentation material like this - having in depth dialogue via email and occasional phone calls and face-to face meetings, allow us to collaborate effectively irrespective of the distance.

Communications Technologies

‘Soft’

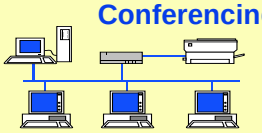
‘Hard’

DTC



GDSS

Conferencing



email

‘Low Tech’

‘High Tech’

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Electronic Communications

Effective

- Choosing right medium
- Setting context
- Cyberskills
- Structure e.g. headers
- Use of lists
- Use of filters
- Efficient personal filing
- Informality, humour

Ineffective

- Wrong medium for purpose
- Thinking aloud (mostly)
- Recipient action unclear
  (c.f. speech acts)
- The 'copy to all' memo
- The essay
  - use one topic per email
- Repeating <u>everything</u> back

Information Management

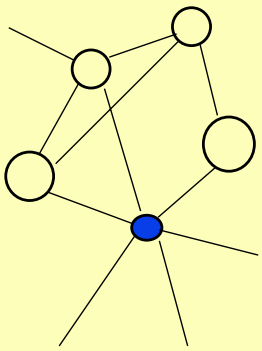
Effective

- Vocabulary/thesaurus
- A Knowledge Inventory
- Information Owners
- Incentives for sharing
- Navigation aids
- Using 'librarians'
- Knowledge refining
- Know-who

Ineffective

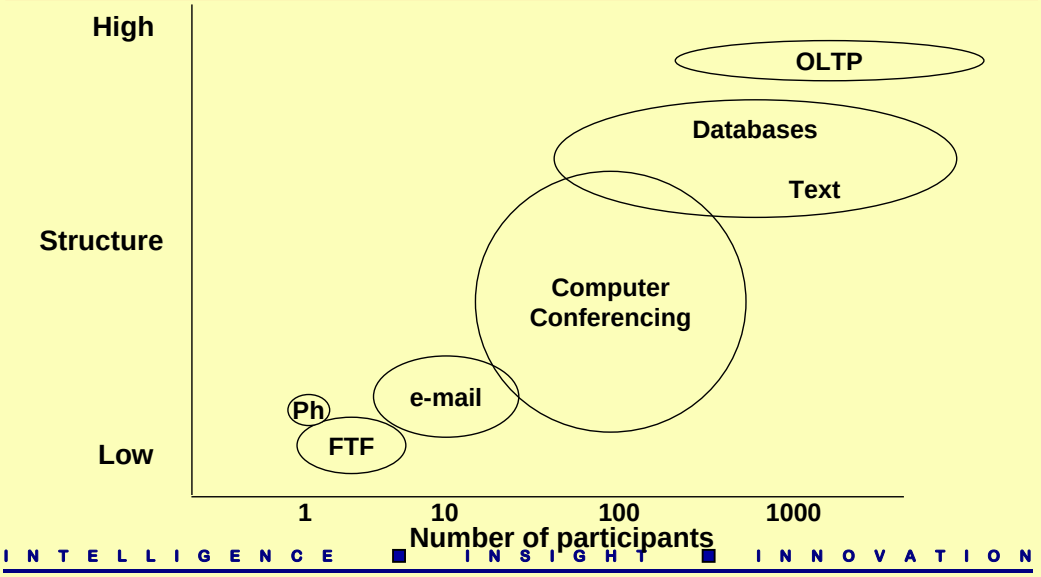
- Search engine does all
- No structure (totally free text)
- No quality checks
- No feedback on usefulness
- No pruning, maintenance
- Formal/informal not clear
- Autonomous fiefdoms
- Everyone a librarian

Virtual Teaming



- Many types e.g.
  - distributed people in a team
  - distributed teams
- One person - many teams/links
- Dynamic/adaptive - flexible resource
- Multiple leaders - for different roles
- Built on trust, understanding
- Rules of engagement (simple)
- Blend FTF, email etc.

Meetings Technologies



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Knowledge Networking

Effective	Ineffective
❒ Clear shared purpose	❒ When time constraints
❒ People profiles	❒ Wrong participants
❒ FAQs	❒ No clarity/coherence
❒ Threaded conversations	❒ Wandering ‘off topic’
❒ Good moderation	❒ Off vs. on record clarity
❒ Knowledge editing	❒ No management participation
❒ Attention to process/FTF	❒ Multimedia for the sake of it

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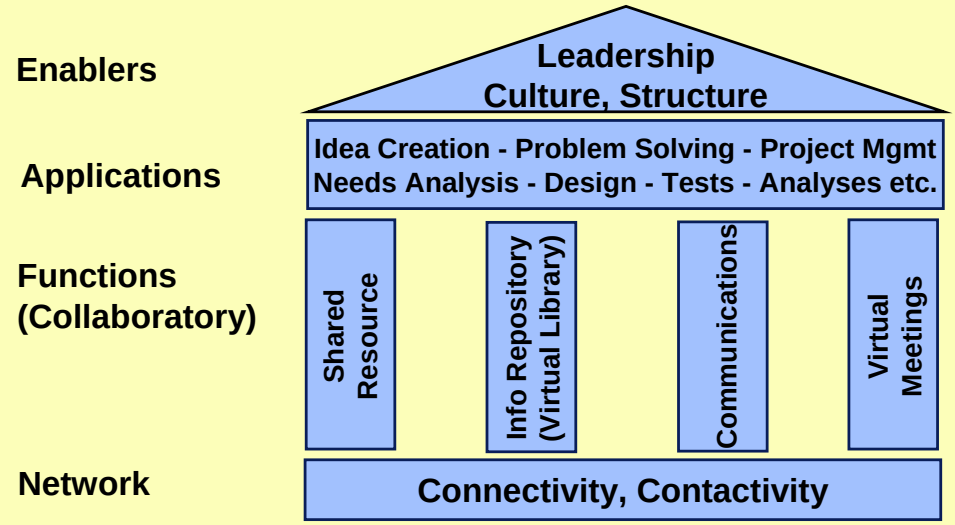
Knowledge Infrastructure



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Some Virtual Collaboratories

- European ESPRIT, ACTS, Telematics projects
- High energy physics community
- The human genome project
- Virtual laboratory for protein chemistry
- Parallel computing e.g. calculation of 'pi'
- Biometric/dosimetry research - real time confencing

Many shared spaces, specialist lists, Web sites - some open, some restricted to collaborators

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Knowledge Leadership Cases

- Create/discover - 3M, Glaxo Wellcome, HCC
- Codify - Hoffman La Roche, BHA etc.
- Diffuse - H-P, Thos. Miller, Rover, BP
- Use - Buckman, Steelcase, Price Waterhouse
- Process/culture - Cigna, Analog
- Conversion - Monsanto
- Measure/exploit - Skandia, Dow

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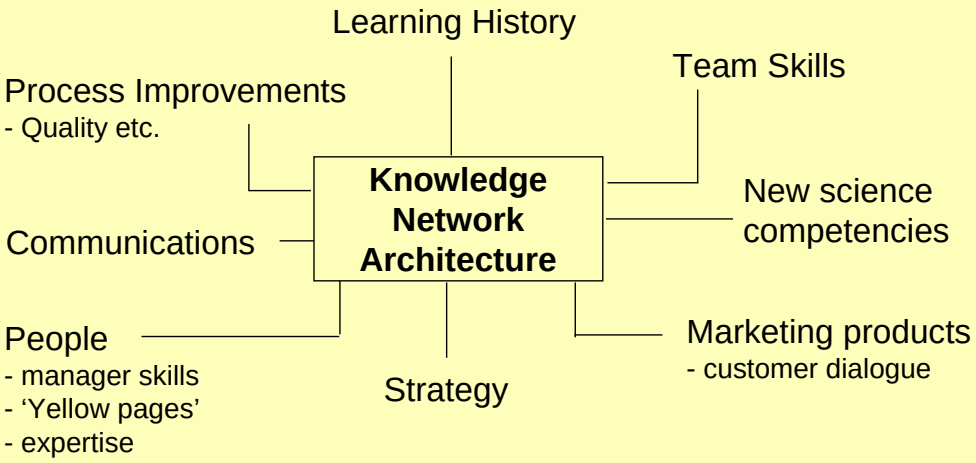
These are a selection from over 30 cases known to me. They illustrate particularly good practice at some aspect of knowledge management. However, most of them cover several aspects of knowledge management, while a few, such as Dow and Monsanto claim to have in place a comprehensive Knowledge Management Architecture. However, like the early days of BPR, at the moment Knowledge Management is usually deployed in pilots or pockets of organisations and is not widespread.

Glaxo Wellcome - Knowledge Net



Glaxo Wellcome - Architecture

- Client browser - standard access to repositories
- Directory Services - ability to locate resources
- Search/index - toolkit for searching and cataloguing
- Thesaurus - vital classification for organising information
- Publishing - ability for users to generate and share
- Applications - Web visible
- Data Analysis - data mining and analysis tools

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Glaxo Wellcome

- A strategy led initiative - learning org. focus
- Workshops to convert rhetoric to action plans
- Bottom-up; top-down; middle-out
- Using Intranets to share R&D, help approvals
- Library, document management support
- Challenge is creating 'sharing culture'

Expected Bottom Line - better RoIC

(Return on Intellectual Capital)

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A real company, but illustrative of 2-3 others in the sector. Drug companies have high investment in knowledge assets, and they also have high intellectual value they need to protect. The challenge is to convert this R&D investment into marketable drugs quickly. Therefore much emphasis goes into organising knowledge (hence the need for a good library function), sharing it widely (hence the need for a good IT infrastructure). Most important is to get scientists to share their hard gained knowledge with colleagues. HR in the form of OD work provide an important plank in this programme.

Hoffman La Roche

- "Right first time" - reduce drug approval time
- Know-what - documents, experts
  - standards: e.g. context, purpose, logic, clarity
- Know-why - knowledge links
  - understand relationships of all the elements
- Making sense - prototype guided documents
  - writing as thinking, clarity of customer needs
- Best employees tackled the problem

Results - Faster time-to-market; better quality docs

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Buckman Laboratories

- "Solutions lie in minds, not databases"
- Corporate network (V1 - CIS) - up in 30 days
- Knowledge Transfer department and VP
- CEO monitors and uses the network
- FAQs, virtual conferences, forums
- K'Netix (sm) - knowledge sharing Intranet
- Metrics - direct customer engagement

Bottom line - open, unrestricted communication

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A specialist company in water treatment, with focus on solutions not products. Starting point here was realising the importance of tacit knowledge:

"The latest and greatest and freshest solutions to customer problems reside in the minds of individuals, not in some report or database" (Robert Buckman, CEO). Note - Buckman's personal enthusiasm

Hence the creation of a knowledge sharing network which the CEO actively monitors. Their first network (1992) was up in less than 30 days, due to selecting CIS (CompuServe) as the corporate network.

On metrics - the cost is known 3.75% of turnover. Benefits are measured in terms of percent of employees engaging directly with customers, e.g. up from 12% to over 50, with 90% the target.

David Skyrme associates (SM)

Price Waterhouse KnowledgeView

- Knowledge is their business
- Systematic processes - sharing ‘best practice’
- Knowledge centres - editors and advisers
- Taxonomy - International Business Language
- Common formats on information
- Lotus Notes for multiple ‘views’
- Adding contextual/contact information
- Developing a culture of sharing

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Analog Devices

- Example of ‘community of practice’
- Stata promoting rate of learning
- email, dbases - customer info into development
- Innovation through collaboration & relationships
- Focus on ‘conversations’ - sharing language
- Challenges - momentum, flow, energy

Bottom line - growth/profit (up 70 per cent 1996)

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Again an example of top led involvement. Ray Stata, CEO, has written article in journals e.g. on Organisational Learning in the Sloan Management Review (1989). Faster product development is a continual challenge so much of early effort was into information sharing with customers etc. Now it is on getting better collaboration internal and external, Therefore all senior managers must share vision, goals, and also the language. Hence off-site workshops and developing better ways of having ‘conversations’ between functional managers.

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Monsanto

- KMA - Knowledge Management Architecture
- Links internal/external, formal/informal (+YP)
- Honeycomb structure - science + commercial
- Focus on conversion processes (cf. Nonaka)
- 'Sense making' - thinking with incomplete information
- Change Agent - KMT - "virtual encounters"

Bottom line - better collaboration, faster innovation

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IT was the driving force in this initiative. First a data warehouse that made available coherent information for senior decision makers. The unique focus is the integration of four information quadrants - internal/external, unstructured (qualitative) and structured (quantitative).

The Knowledge Management Team comprises IT and library science. They are virtual, span all four quadrants and have developed Yellow Pages.

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Dow Chemical

- "A journey to value creation"
- Identification/exploitation of intellectual assets
- Evolution e.g. from patents ('hard' asset)
- Pilot - familiarity+success prob.+speed
- Map processes = lines between the boxes
- Link operational/conceptual space (know-why)

Bottom line: Raise licensing income 5-fold by 2000

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Driven by need to generate value from intellectual resources. Dow often spent sums on developments that were not then exploited in the business. Their approach is a a blend of:

asset identification - what are the intellectual assets

asset usage and valuation - how do they benefit the business and bottom line

developing the processes to generate value - in detailed process maps

Focus on the WHY to maintain the motivation and momentum

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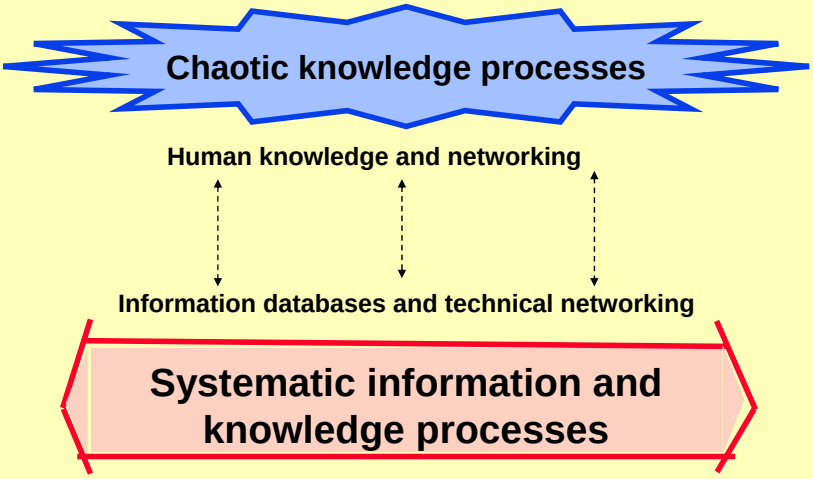
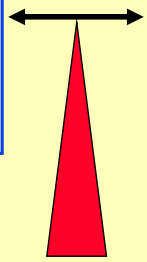
A Blend of Processes



Virtualisation - a balancing act

Same Place-Time

- **Close relationships**
- **High interaction**
- **Contextual awareness**
- **Physical resources**
- **'Casual encounters'**
- **Creative stimulation**



Different Place-Time

- **Access 'world-class'**
- **Richness-Diversity**
- **Global perspective**
- **Quality - local validation**
- **Timeliness**
- **Cost avoidance**

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Critical Factors

- Strong link to business imperative
- Compelling vision and architecture
- Knowledge leadership
- Knowledge creating and sharing culture
- Continuous learning
- Well developed ICT infrastructure
- Systematic organisational knowledge processes

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Not a lot new to those familiar with innovative change. Some of the highest benefits from knowledge managemetn have been in organisations where the chief executive has just believed in it and got on with it, worrying about return on investment later (e.g. Analog, Buckman)

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http://www.hiway.co.uk/skyrme/entovatn.htm