The A to Z of Knowledge Management Technology

David J Skyrme

CORNWELL affiliates
Consultants in Management and IT
Around the KM Tech World in 80 minutes
A is for.....

Artificial Intelligence (AI)

- Neural networks
- Genetic algorithms
- Natural Language
- Counter-intuitive
- Ant algorithms
- IA (intelligent agents)
B is for......

Bayes and Boole

- TRUE, FALSE
- AND, OR, NOT
- Probabilistic
- Autonomy
- Sabio (IBM, Almaden)
C is for......

Content Management

Authors

Editors / Reviewers

Input Templates

Output Templates (HTML)

Workflow

Database (tagged info blocks)
C is for Content

Supply Side

- Distributed authoring
  - Overcome webmaster bottleneck
  - Instant publishing

Demand Side

- Faster & Relevant Retrieval
  - Precision / Recall
  - Information overload / ‘fog’

Solutions

CMS (Content Management System)

EIP (Enterprise Information Portal)

+ Editorial Processes Standards / Style
+ Work tools (‘gadgets’) Connections

Information Architecture (common language and taxonomy)
Personalize this Page
Add New Page
Choose Gadgets
Change Layout
Change Colors

Readworks
A1
Show Closures

My Links
Highways Agency
Corporate Directory Services
WebCat Library Database
PDI Working Time Regs
CSI Directory
MP's and Constituency's
DTLR

Business
Guardian Unlimited

Housing market is shaken
Home buyer confidence has fallen sharply, according to the first major piece of research to examine how the housing market had been affected by the September 11 attacks.
Belgium looks to Virgin to save Sabena
Executives from Virgin Express are expected to meet senior Belgian government officials.

Outlook Deluxe
Inbox | Calendar | Contacts | Tasks
Messages | By Conversation Topic | By Sender | Unread Messages

RE: 800*800 PC Settings - Affect on Gadget
Johnston, Chris
Mon 08/10/2001 11:08

800*800 PC Settings - Affect on Gadget
Amos, Simon
Mon 08/10/2001 10:37

RE:posters
Macchi McLaughlin
Fri 05/10/2001 16:41

Videoconferencing training 12th Oct
Love, Matt
Fri 05/10/2001 15:23

0 HA Portal: N5 Directorate
Melfers, Alan
Fri 05/10/2001 15:17

0 TSS liaison Intranet/Extranet - Agenda
Grindley, David
Fri 05/10/2001 11:19

RE: Portal design
Johnston, Chris
Fri 05/10/2001 11:12

Intranet reports
Johnston, Chris
Fri 05/10/2001 10:27

FW: Communities
Amos, Simon
Thu 04/10/2001 17:34

RE: Super Admin
Johnston, Chris
Thu 04/10/2001 16:30

Network Strategy
Holland, Mark
Thu 04/10/2001 12:42

Canceled: Possible meeting SSR/Extranet
Grindley, David
Thu 04/10/2001 10:34

RE: AquaGen website
Ambler, Dave
Thu 04/10/2001 09:52

UK News
C is for.....

Content Management

“Content management vendors are often obsessed with developing complex, convoluted and expensive technology.”
(Gerry McGovern)

C is also for collaboration and community software, categorization
D is for…..

Document Management

- OCR
- COLD
- Document focus
- Metadata
- Search
- Catalogue
- Information Block Focus
- Workflow
- Tag
- Template
- Personalise
- Use Analysis
- Aggregate
- Content Management

EDMS
E-mail

“Companies have spent billions of dollars on intranets, knowledge management and customer relationship management systems, and the best return on investment they’ve had so far is e-mail” (Mahenrdra Vora, CEO, Intelliseek)

- Info overload
- Email management
- Text mining
- Personal profiling
- KnowledgeMail
F is for…..

Framework

Like ecology, new niches appear; some bubbles expand; some coalesce; others burst; some fade away; and there is always Microsoft, Oracle, IBM, SAP and other heavyweights in the background.
G is for.....

**Groupware**

- Collaboration
  - Videoconferencing
  - Chat
  - Threaded discussions
  - Shared workspace

- Same Time
- Different Place
- Different Time
- Same Place

- $200 m a year market
- Lotus Notes #1 revenues
- Microsoft #1 seats
- Many specialised suppliers
- More integration with portals etc.
- Sometimes cheap / cheerful the best
G is for…..

Groupware
H is for.....

Humans

- High intelligence
- Common sense
- High touch
- 10-100 billion neurons
- 2K-10K synapses / neuron
I is for.....

Intelligent Agent

- Discovery
- Alerting
- Active matching
- Filtering
- Negotiation?

I is also for integration, intranet, innovation (e.g. Invention Machine)
J is for.....

JIT Knowledge

- Remember ‘push’?
- Backweb’s hanging in – just!
  - Polite® communications
  - Notification (Flash Alerts)
  - Closed-loop reporting.
- c.f. Alerting
- Best is probably reliable retrieval
K is for.....

Know-bot

- Auto replies for simple questions
- Links to humans when stuck
- Case-based reasoning
- Customer service e.g. Dell
- Multi- knowledge channels

K is also for knowledge discovery, KM suites (?), killer application
L is for.....

Learning Objects

Assembled lesson
(supported by LMS)

Library of reusable modules

Developers’ building blocks
M is for.....

Mobile KM

IT manager’s survey:

■ One of top three applications

■ Info access 2nd only to messaging for mobile device usage (32% vs. 35%)

■ Location sensitive knowledge

M is also for mereology (search method), metadata, multi-lingual
Half Way……

- KM services market – $2bn a year
  - Strategy
  - Operations
  - Implementation
  - Training

- Thoughts so far?
- Implications for Cornwell?
N is for.....

Natural Language Processing

- Basis of 2\textsuperscript{nd}/3\textsuperscript{rd} generation retrieval and classification software
- Morphological analysis
- Syntax
- Semantics
- Pragmatics

“Harry flew to New York on a cheap ticket”
Rough Sets

Rough set theory is a tool for studying imprecision, vagueness, and uncertainty in data analysis. It focuses on discovering patterns, rules, and knowledge in large pools of data. The theory has its origin in the great research effort in the 1970's by Polish mathematicians and computer scientists in the analysis and representation of information systems. The concept of a rough set was put forward by Dr. Zdzislaw Pawlak in 1982, and was later advanced into various data mining applications by Dr. Andrzej Skowron. The theory of rough sets has been used for numerous applications in medicine, pharmacology, engineering, manufacturing, and banking. Dr. Andrzej Skowron is currently a Senior Partner at NuTech Solutions.
Open Standards

Do you know your SCORM from your SOAP?

- "The nice thing about standards is that there are so many to choose between".
- Vendor alliances; W3P
- ANSI/ISO e.g. KM stds

<table>
<thead>
<tr>
<th>Layer</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Layer</td>
<td>tpAML, ADS, UDDI</td>
</tr>
<tr>
<td>Discovery Layer</td>
<td>ADS, UDDI</td>
</tr>
<tr>
<td>Description Layer</td>
<td>WSDL (ebXML)</td>
</tr>
<tr>
<td>Exchange Layer</td>
<td>SOAP, ebXML, XMLP</td>
</tr>
</tbody>
</table>

O is also for ontologies
P is for…..

P2P

- Napster?! Yes/no, but…
- Use idle PCs e.g. Boeing
- File sharing
- Connect project teams
- Avoid clogging email
- Get in the Groove…. 

P is also for portals (see Content)
A Sample Groove Workspace Shared Space

Work online or offline in Groove shared spaces

- Virtual work spaces you create & control
- Bring together people, information & tools
- Work directly across network firewalls
- Edit docs, manage projects, & more...
- Easy as IM & chat
Create space & invite contacts. Dissolve when done, or use for ongoing projects

Click red circles for more info
Q is for.....

Question Boards

- Discussion, Chat?
  - perhaps, haphazard
- Expertise profiles
- Auto-generated
- Manually modified
- Auto-routed
- Anonymous or not
- Answers update knowledge base and profile

“But who has the answers?”
Answer Board!

Dear Sandra,

SKGN found the following resources that would help your question regarding "supply chain".

16 Questions & Answers

<table>
<thead>
<tr>
<th>Question</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ROI of Supply Chain Automation</strong></td>
<td>02/20/2002</td>
</tr>
<tr>
<td>It depends on your group's existing degree of automation and organizational integration. If you have a solid base of &quot;legacy sys...</td>
<td></td>
</tr>
<tr>
<td><strong>Supply Chain Automation</strong></td>
<td>02/27/2002</td>
</tr>
<tr>
<td>I am interested in finding any information or past projects related to supply chain automation specifically in the area of suppl...</td>
<td></td>
</tr>
<tr>
<td><strong>JIT Inventory Management</strong></td>
<td>02/11/2002</td>
</tr>
<tr>
<td>What is the Just In Time system and how can it be implemented?</td>
<td></td>
</tr>
<tr>
<td><strong>Customer Success with Supply Chain ...</strong></td>
<td>03/06/2002</td>
</tr>
<tr>
<td>Do we have an example of a customer success integrating our RobotMems products with Supply Chain Management?</td>
<td></td>
</tr>
<tr>
<td><strong>Inventory Management Protocols</strong></td>
<td>02/11/2002</td>
</tr>
<tr>
<td>The key to managing a supply chain is managing inventory levels. The process Honeywell uses to manage these levels is detailed b...</td>
<td></td>
</tr>
</tbody>
</table>

See more questions and answers...

9 Experts

<table>
<thead>
<tr>
<th>Expert Name</th>
<th>(Supply Chain Management)</th>
<th>Experience</th>
<th>Rating</th>
<th>Avg. Reply</th>
<th>Prev. Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Bono Vaughn</em></td>
<td></td>
<td>20+ years</td>
<td>5 stars</td>
<td>2 hrs</td>
<td>11</td>
</tr>
<tr>
<td><em>(more)</em></td>
<td></td>
<td>experience in managing procurement and supply management in organizations at the corporate and business unit levels. Extensive inter...</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Given Harrison</em></td>
<td></td>
<td>20+ years</td>
<td>5 stars</td>
<td>1 min</td>
<td>2</td>
</tr>
<tr>
<td><em>(more)</em></td>
<td></td>
<td>experience in managing procurement and supply management in organizations at the corporate and business unit levels. Specialties inc...</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Eric Johnson</em></td>
<td></td>
<td>20+ years</td>
<td>5 stars</td>
<td>25 mins</td>
<td>2</td>
</tr>
<tr>
<td><em>(more)</em></td>
<td></td>
<td>experience in using software applications to automate supply chains. Have used applications to not only help manage inventory, forecasting...</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Derrick Barton</em></td>
<td><em>(Customer Success)</em></td>
<td></td>
<td>5 stars</td>
<td>59 mins</td>
<td>4</td>
</tr>
<tr>
<td><em>(more)</em></td>
<td></td>
<td>I am the Director of Professional Services and can speak to all angles and sides of customer successes. Prior to being the Director of Pro...</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Mike Springer</em></td>
<td><em>(Customer Success)</em></td>
<td></td>
<td>5 stars</td>
<td>59 mins</td>
<td>2</td>
</tr>
<tr>
<td><em>(more)</em></td>
<td></td>
<td>I am a Consulting Manager for RobotMems products targeted towards the Automobile industry. I was the Team Lead on the large projects we hav...</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Retrieval

- Many file types
- NLP, fuzzy
- Patterns e.g. video
- Semantic filters
- Results navigation
- Test at TREC
- Hot topic
S is for.....

Semantic Web

- TB-L, funded by W3C
- Web as a gigantic ‘brain’
  - Meanings & relationships
  - Agents and humans
  - Enhance global collaboration
- Automated web services
  - Needs XML, RDF, ontologies
- Will it work?
  - C.f. WWW 10 years ago; XML 5
Taxonomy

- Hierarchies of terms
- Thesaurus adds controlled vocabulary (e.g. for tags)
- Organized information
- Helps retrieval
- Multi-lingual mapping
- Stand-alone systems
- Integrated with search

Narrower Term
NT1 Budgets
  NT2 Budgetary control
  **UF Budgeting**
  NT3 Financial audit
NT1 Capital
  NT2 Capital flow
NT1 Currencies
NT1 Customs policy
  **UF Customs duties**
  NT2 Tariffs
  **UF Tariff barriers**
NT1 Financial administration
  **UF Financial management**
  NT2 Accounting
Applied Semantics
U is for...... Usability

- HCI well-known but not well practiced
- Usability labs – how real users (not developers) work
V is for......

Visualisation

Aurigin’s Themescape

Mind Manager
InXight’s hyperbolic tree
Orgnet’s Inflow
## W is for.....

### Who?

- **3Path**  
  P2P focusing on the real-time delivery of e-mail

- **APR**  
  Decision Intelligence. Acquired Smartlogik (Brightstation). Youmeus.com

- **Akiva**  
  Idea management software plus WebBoard (O'Reilly) conferencing and WebChat

- **Albert**  
  French search engine that works with Domino

- **Antarcti.ca**  
  Visual Net information visualisation for search and discovery

- **Applied Semantics**  
  CIRCA technology (ontology and the linguistic processing) text mining

- **AskMe**  
  Expertise profiler that integrates with Outlook

- **AskSam**  
  Bibliographic database for semi-structured data. Beats Access hands-down.

- **Autonomy**  
  Not just search but full portal and other KM tools

- **BackWeb**  
  P2P 'polite' push for altering and updating

- **Broadvision**  
  Enterprise portal and content management suite

- **Bungo**  
  Connected Workspace for virtual teams. Also LiveMail instant messaging

- **Cipher**  
  Knowledge.Works that extracts competitor intelligence from Outlook, Exchange

- **Convera**  
  Retrievalware that also searches graphics, images, videos through pattern matching

- **Correlate**  
  Drag 'n drop K-maps from Domino and SharePoint data

- **Divine**  
  eCRM but acquired Northern Light categorised search engine

- **Documentum**  
  Content management evolved from document management suite

---

W is also for web analytics, workflow, WiFi, web services
Who Else?

- eGain: CRM that uses case based reasoning (Inference)
- eRoom: Online collaboration software. Also hosted eRoom.net service.

Fretwell Downing: ZPORTAL: Z39.50 retrieval from multiple online databases

Grimmer Software: Word Mapper takes the results of searches and displays in a concept map.

Groove Networks: P2P shared workspace: "10x better than email for sharing files"

Hummingbird: Portal suite from many acquisitions e.g. PCDOCS, Fulcrum

Hyperwave: eKnowledge infrastructure (CMS/portal). Germany.

IBM: Highly integrated Websphere (portal) now merged with Lotus K-station

InXight: Xerox spin-off; categorization and visualization (hyperbolic trees)

Inktomi: Search Everywhere concept induction search engine. Recently acquired Quiver.

Intelliseek: Aggregates, categorizes and tracks external sources for business intelligence

Intraspect: Collaborative solutions: shared workspace plus vertical markets

Invention Machine: Invention 'recipes' using Cobrain semantic processing.

JXTA: core P2P technology to links PDAs, mobiles, PCs

W is also for web analytics, workflow, WiFi, web services, W3C
# Who Else?

<table>
<thead>
<tr>
<th>Company</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kana</td>
<td>eCRM and analytics with auto-answers from KANA IQ knowledge base</td>
</tr>
<tr>
<td>Knowledge Management</td>
<td>Deskartes suite uses neural network technology to aid search</td>
</tr>
<tr>
<td>Lexiquest</td>
<td>Automatic text mining, classifier used by Verity. Now a division of SPSS.</td>
</tr>
<tr>
<td>Lotus</td>
<td>Integrating with Websphere. Discovery server, K-station, SameTime, Quickplace</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Getting better - expect integration of Sharepoint TeamServices and Portal</td>
</tr>
<tr>
<td>Native Minds</td>
<td>vReps (virtual agents) that mimic real ones</td>
</tr>
<tr>
<td>Netmap Analytics</td>
<td>Started as social networking but now data mining with link maps</td>
</tr>
<tr>
<td>Nutech Solutions</td>
<td>Intelligent search and extraction system based on &quot;rough sets&quot;.</td>
</tr>
<tr>
<td>Open Text Corporation</td>
<td>Livelinks: a full suite developed from document management services</td>
</tr>
<tr>
<td>Orgnet</td>
<td>Inflow social network analysis software</td>
</tr>
<tr>
<td>Plumtree</td>
<td>Major portal vendor with all the 'gadgets'</td>
</tr>
<tr>
<td>ProjectPlace</td>
<td>Shared virtual space e.g. used by Fujitsu/Siebel on joint CRM project</td>
</tr>
<tr>
<td>Purple Yogi</td>
<td>Automatically classifies and collates information in metadata store</td>
</tr>
<tr>
<td>Quiver</td>
<td>Hybrid Classifier and Topic Adviser</td>
</tr>
</tbody>
</table>

W is also for web analytics, workflow, WiFi, web services
Whose Left?

Retrievalware  Formerly Excalibur product; now Convera following merger.
SiteScape  Computer conferencing - evolved from VAX Notes. Used by Shell.
SmartLogik  Assets recently acquired by APR.
Sopheon  Product development, expertise profiling (Organik) and Teltech.
Stratify  Automatic classification with SOAP and WSDL APIs.

Tacit Knowledge Systems  Knowledgemail analyses emails and extracts user profiles
UBBThreads  Infopop. "a database driven message board that doesn't require brain surgery to implement”

Ventris  Alkaline: a very fast and low cost NT/Unix search engine
Verity  K2 Enterprise: portal with interesting modules from 3rd parties.

WebCT  Leading provider of e-learning solutions
Webversa  Voice-to-enterprise (V2E) access and alerting software. Now owns Semio.
Wordmap  Taxonomy management system

XDegrees  Interesting P2P enterprise software. So interesting Microsoft acquired 10 Sept
Yaga  P2P software that includes digital rights management, royalty accounting
Zylab  Full text retrieval from document imaging - ZyCOLD, ZyImage etc.

See also KM World’s ‘100 companies that matter’ http://www.kmworld.com/100.cfm

W is also for web analytics, workflow, WiFi, web services
Convergence / Consolidation

EDMS
- OCR
- COLD
- Document focus
- Metadata
- Search
- Catalogue

Collaboration
- Videoconferencing
- Chat
- Threaded discussions
- Shared workspace
- Single log-on
- Security
- Unified Search
- Personalised Desktops
- Structured / unstructured
- Application integration

E-Commerce
- Transactions
- XML
- Rules-based
- Database
- Web-based

Content Management
- Information Block Focus
- Workflow
- Tag
- Template
- Personalise
- Use Analysis
- Aggregate

Portals

Transactions
XML
Rules-based
Database
Web-based
X is for…..

**XTM (XML Topic Maps)**

- ISO 13250
- XML tags for:
  - topics (types and names)
  - occurrences
  - associations
- [www.topicmaps.org](http://www.topicmaps.org)
- c.f. RDF, OIL, DAML!!

X is also for XML, xHTML
Yellow Pages

- Traditionally a chore
- Structured and free text
- Informal photos help
- BP Connect
- Automated through expertise profiling
- Sopheon, AskMe, Tacit, but all now wider in scope
Zillion

“A very large but indefinite number”

Do we have a problem?
“No technology can beat the knowledge sharing that takes place in the bar after work”