Informationsmanagement

Hans Uszkoreit

AUFGABEN DES IM (1)

- ☆ **Die Aufgabe des Informationsmanagements ist die Verwaltung und Nutzbarmachung von sehr großen Informationsmengen, wie wie sie heute bereits auf dem WWW, in Intranets und in großen Text-Datenbanken finden.**

- ☆ **Das Netz macht sie erst einmal nur verfügbar.**

- ☆ **Im Gegensatz zu herkömmlichen Datenbanken ist die Information viel weniger vorstrukturiert (in Sinne der Strukturierung von Computerdaten). Auf der anderen Seiten sind die relevanten inhaltlichen Strukturen natürlich weitaus komplexer. Durch die Digitalisierung von großen Teilen des menschlichen Wissen (z.B. digitale Bibiliotheken, Filmarchive etc.) wird dieses Problem noch zunehmen.**

AUFGABEN DES IM (2)

Information wird

- ☆ gewonnen
- ☆ kategorisiert
- ☆ gefiltert
- ☆ zusammengeführt
- ☆ strukturiert
- ☆ dem Benutzer zugeführt
- ☆ adäquat präsentiert

PROBLEME DES IM

Distributivität

Die Information liegt auf verschiedenen Maschinen

Heterogenität

Vielzahl von Dokumentformaten
Multilingualität
Multimedialität (z.B. Sprache, Bilder, Klänge),
Multimodalität (z.B. geschr. u. gesprochene Sprache, Filmdateien o. Realzeitübertragungen)

Unstrukturiertheit

keine einheitliche Klassifikation,
keine einheitliche interne Strukturierung.
keine einheitliche u. verläßliche Hypertextverknüpfung

Redundanz

Viele Informationen sind mehrfach vorhanden.

EINIGE TECHNOLOGIEN

- ☆ Sammeln (gathering)
- ☆ Indizieren (indexing)
- ☆ Kategorisierung (categorization)
- ☆ Gruppierung (clustering)
- ☆ Zusammenfassung (summarization)
- ☆ Informationsextraktion (information extraction)
- ☆ Informationsfusion (information fusion)
- ☆ Berichtsgenerierung (report generation)
- ☆ Textübersetzung (text translation)

INFORMATIONSGEWINNUNG

- ☆ Sammeln (gathering)
- ☆ Data Mining auch Text Mining
- ☆ Konversion z.B. Einscannen, OCR, Transkription
- ☆ Agenten z.B. NetBots, WebBots

STRUKTURIERUNG UND SPEICHERUNG

- ☆ Indizieren (indexing)
- ☆ Kategorisierung (categorization)
- ☆ Gruppierung (clustering)
- ☆ Zusammenfassung (summarization)

INFORMATIONSAUFBEREITUNG

- ☆ Informationsextraktion (information extraction)
- ☆ Hyperverknüpfung (hyperlinking)
- ☆ Informationsfusion (information fusion)
- ☆ Trendanalyse (trend analysis)
- ☆ Berichtsgenerierung (report generation)

INFORMATIONSZUGRIFF

☆Suchschlüsselerweiterung (query expansion)

☆Relevanzsortierung (relevance ranking)

☆Dublettenerkennung (redundancy check)

☆thematische Gruppierung (thematic clustering)

☆Erkennung verwandter Information (information association)

PRÄSENTATION

☆Ergebnispräsentation (result presentation)

☆Informationsvisualisierung (information visualization)

☆virtuelle Navigation (virtual navigation)

Informationsversorgung

- ☆ Eine Information c_S (Quellinformation) soll für einen Entscheidungsprozess so zu zugänglich gemacht werden, dass der/die Entscheider die Information in dem Prozess nutzen können. Dazu muss sie unter Umständen gesucht, umgeformt, übersetzt, und transportiert werden.
  - Suche (search) durch Suchmaschine, browsing, Datenbankzugriff etc.
  - Umformung (transform) Die Information muss in eine Form gebracht werden, die die Information ohne weitere Bearbeitung für den Entscheider benutzbar macht, z.B. wird eine Zeile aus einer Tabelle extrahiert oder mehrere Werte in einem Tortendiagramm dargestellt,
  - Übersetzung (translate) Die Information muss z.B. von UTF-8 nach einer regionalen Codepage, von OWL ins Deutsche, von XML nach Bildschirmtext, von Chinesisch nach Englisch übersetzt werden.
  - Transport (transport, apport) Die Information muss von einem (Cyber)Ort an einen anderen gebracht werden. Dabei wird natürlich nur eine Kopie bewegt (Teleportation, bilocation)
- ☆ Weil es für das Ergebnis keine Rolle spielt, wie Suche, Transport, Transformations und Übersetzung verknüpft sind, fassen wir die vier Prozesse zu einer komplexen Operation zusammen, die mit einer Preisangabe versehen werden kann.

- ☆ Suche = search
- ☆ transform+translate+translate= transx
- ☆ search&transx

- ☆ search(c_s,c_u,l_{sc},l_{uc})

- ☆ transx(c_s,c_u,l_{sc},l_{uc})

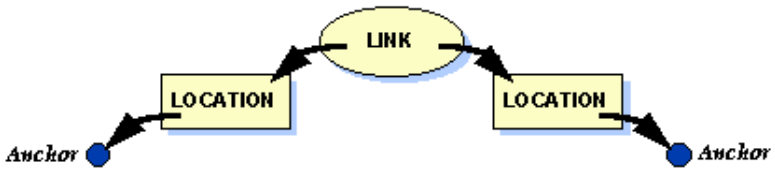
- ☆ price(effort(search(c_s,c_u,l_{sc},l_{uc})))+ price(effort(transx(c_s,c_u,l_{sc},l_{uc})))

THE GLOBAL INFOSTRUCTURE

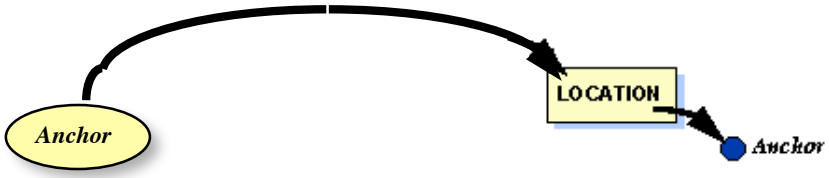
A development in three stages

- ☆ Linking machines (ARPANET, INTERNET)
- ☆ Linking information (today´s WWW)
- ☆ Creating a dense contextualized associative information network

Simple Links



asymmetric HTML links



Decision Triggers

All kinds of forms requiring

- Approvals,
- Recommendations,
- Selections

Examples:

- Application for a Building Permit
- Credit application
- Request for a comment on a hiring decision

Good decision triggers contain information relevant for the decision or references to such pieces of information

INFORMATION MANAGEMENT - TASK

The task of modern information management

is to gather, maintain and supply

large volumes of digital information.

Information Management - Components

- **acquisition** (gathering)
- **categorisation** (sorting w.r.t topics)
- **indexing** (by strings, words, terms, concepts)
- **summarisation** (condensing the information)
  - **information extraction** (relevant data in text)
- **translation** (indicative translations)
- **delivering** (filtering, routing, push services)
- **presentation** (ranking, structuring, visualising)

The Ultimate Information Management

- ☆ **The ultimate challenge for IM is the delivery of the right type of information exactly at the right time.**
- ☆ **How can IM know when the information is needed. It can't.**
- ☆ **If the needed information (decision basis) is linked with the decision trigger, it will be available at the right time.**
- ☆ **Therefore: use automatic hyperlinking for preparing the decision basis.**

Topics of Knowledge Management

- ☆ **Strategies for Knowledge Sharing**
- ☆ **Analysis und Evaluation of Corporate Knowledge**
- ☆ **Knowledge-Centered Workflow Management**
- ☆ **Knowledge-Centered Information Management**
- ☆ **Organisation and Exploitation of the Corporate Knowledge Base**
- ☆ **Learning Organisations**

CORPORATE KNOWLEDGE BASE

- ☆ **Combination of ”structured” and “unstructured” information in a distributed partitioned knowledge base**
- ☆ **Structuring of the knowledge base for different uses**
- ☆ **Transforming Information into Knowledge**

In order to become knowledge, information must be

- **immediately accessible**
- **grounded**
- **densely connected**
- **suited for inferences**

THE ONE-CLICK APPROACH

New wireless voice technology introduced

Posted at 5:09 PM PT, Feb 8, 1999

By Stephen Lawson, InfoWorld Electric

NTT Labs on Monday brought Dick Tracy into the enterprise, introducing a wireless voice and data system that can use a wrist radio at the Demo 99 conference.

AirWave technology, demonstrated for the first time in the United States at this week's conference in Indian Wells, Calif., is based on a wireless PBX. Small, handheld phones -- and a wrist radio that looks like an oversized watch -- can be used to make voice calls and exchange data around a building or campus. The handheld phones can be switched to a public cellular mode to become conventional cell phones.

Company representatives touted the system as offering higher voice quality than a typical PBX. Airwave is based on NTT's Personal Handyphone System, which is currently deployed by more than 600 users in Japan, according to the company.

Modems built in to both devices allow users to plug in a notebook or portable device for dial-up data connections as fast as 64Kbps. Users can exchange files or e-mail, or access a LAN or the Internet. There is no airtime charge for AirWave communications in the building or campus. AirWave systems are scheduled to be available through distribution partners by the end of this year, priced as low as $400 per user.

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