What is Information Logistics?

An explorative study of the Research Frontiers of Information Logistics

by Dr. Darek M. HAFTOR
(prev. Darek M. ERIKSSON)

Miranda KAJTAZI

Approved by Professor Anita MIRIJDAMDOTTER,
Chair of Informatics, Linnaeus University, Sweden
About this Document

• Context  Centrum for Information Logistics in Ljungby (CIL), provides successful academic education in the domain of Information Logistics; CIL has also succeeded to establish a close collaboration with the local Regional actors; CIL’s further key ambition is to develop successful Information Logistics Research.

• Content  This is a Research Report presenting the Research Frontiers of Information Logistics.

• Purpose  This research Report is formulated for the Board of CIL, and aims to facilitate its further decision-making regarding the development of Information Logistics Research at CIL.

• Produced by  Darek M HAFTOR (prev. Darek M. ERIKSSON) and Miranda KAJTAZI

• Sponsored by: The Research Project into the “Research Frontiers of Information Logistics” was assigned and sponsored jointly by the Centre for Information Logistics and Linnaeus University, both Sweden.
Preface

‘Information Society’ is a frequently employed label to characterize that our civilization is not anymore centered in the production of physical goods (a hammer, a jacket, a car) but dominated by information-based goods and services (a movie, a road-information, TV-news). This, together with the commercialization of the Internet, has led to a situation where there is more information available than ever for the human kind, yet there is also more misinformation than ever… The challenge of providing the right information to the right actor, at right time, place, and in the right format, is regularly manifested, among others, by tragic disasters like the Tsunami catastrophe in the South-Eastern Asia. Companies, health care organizations, police and military forces loose their productivity and efficiency because of the lack of the needed information. To handle this challenge, the domain of Information Logistics has emerged slowly in various quarters, both as an intellectual and as practical endeavor. As a response to this need, the Informatics Research Group, at Linnaeus University, has defined Information Logistics as one of its key research frontiers. This research is conducted in a close collaboration with the Centre for Information Logistics, in Ljungby, Sweden, and its unique network of local industry, local governments, and other universities.

The present Research Report “What is Information Logistics? An explorative study of the research Frontiers of Information Logistics”, by Dr Darek M. Haftor and Miranda Kajtazi, provides an important and unique identification of Information Logistics Research conducted since its inception in the late 1970’s. Among its several messages, this explorative report shows that Information Logistics has all the needed characteristics of an academic discipline, that Information Logistics is a strongly diversified discipline, and that there are unmet empirical-needs to be satisfied by further research. I recommend this Research Report to anyone who is interested in the theoretical and practical aspects of information handling.

Professor Anita MIRIJAMDOTTER
Chair of Informatics, School of Mathematics and Systems Engineering, Linnaeus University, Sweden.

The Center for Information Logistics (CIL) in Ljungby, the Southern Sweden, was established in 2000 as a unique knowledge organization with the aim to advance and spread the understanding of Information Logistics, or the specifics of information transfer. CIL is based on a three-part collaboration, between three universities (Linnaeus University, University Collage of Halmstad, and the International School of Economics in Jönköping), the local trade and industry, and the local governmental agencies, and is governed by a board representing these organizational bodies.

In the context of this close collaboration, CIL has successfully developed advanced educational programs in Information Logistics, including Bachelor’s and Masters degrees, and now an opportunity to pursue a doctoral program within this area. Information Logistics research has been pursued in the form of individual research projects, however the time has now come to further advance CIL’s research by means of establishing a dedicated long-term research program and organization. In the latter context, the present Research Report “What is Information Logistics? An explorative study of the research Frontiers of Information Logistics”, by Dr Darek M. Haftor and Miranda Kajtazi, provides an important conceptual foundation for the formulation of CIL’s Research Program on Information Logistics. Further and as a side-effect, the Report’s survey of the international Information Logistics research articulates clearly the importance of Information Logistics as a competence area for the current and future information intensive societies. This in turn strengthens the justification of CIL’s very existence and future need.

Dr. Magnus HELLGREN
Managing Director, Center for Information Logistics, Ljungby, Sweden
About The Researchers

**Darek M. HAFTOR** (prev. ERIKSSON) acted as the Research Leader of this project aimed at the identification of “The Research Frontiers of Information Logistics”. Darek has spent more than ten years in strategic and operational management, both as consultant and manager. He has advised companies and non-profit organizations all over the Europe, Middle-East and North-Africa, on various strategic matters related to the organization, operations, and their IT-systems.

Darek has studied at various universities throughout the Europe and in the USA and he received a doctorate from Chalmers University of Technology, Sweden. Darek’s key research areas include the development of a comprehensive understanding of organizations and their information-related resources and the understanding of the normative implications caused by development of social affairs. His research results have appeared in academic and industrial journals and conferences. Darek has hold academic positions at several Swedish universities and is currently a Senior Research Associate at the School of Mathematics and Systems Engineering, Linnaeus University, Sweden.

**Miranda KAJTAZI** acted as the Research Assistant in this project aimed at the identification of “The Research Frontiers of Information Logistics”.

Miranda is a doctoral candidate in Informatics, at the School of Mathematics and Systems Engineering at Linnaeus University, Sweden. She received a Master Degree in Computer Science from Linnaeus University and a Bachelor Degree in Computer Science from South East European University. Her research interest is concerns one of the most crucial resources of our society and human affairs: Information. Her focus is on information crisis in organizations, which is formed by the dichotomy of information density and information scarcity, driving communication processes to problems and complexity. Thus, Miranda’s intention is to explore the role of social dynamics in organizations that contribute to this problem in a disorderly fashion, often occurring through information technology.
Content

- Summary

1. Background

2. Results

3. Tentative Proposal

- Appendix
Summary

1. The Centre for Information Logistics in Ljungby, Southern Sweden, has the ambition to establish leading Information Logistics (IL) Research

2. This Report is a partial contribution to this end, produced by an investigation aimed at the mapping of the current international research in Information Logistics

3. The research questions addressed was:
What is Information Logistics, in Practice and in Research?

4. The results presented include:
   a) the Internet-hits analysis showing that IL has a significant presence there
   b) the analysis of companies that offer IL-services show their global presence
   c) the analysis of 102 IL-publications showing that established research channels are utilised

5. The derived conclusions include:
   a) there are currently 4 active IL-research directions, all in Europe
   b) the IL-research is fragmented, not interrelated, yet complementary
   c) the various IL-research directions show no common understanding of what Information Logistics is
   d) the most frequently utilised notion of Information Logistics conceives it as the transfer of information
   e) all IL-research addresses information handling, often enabled by Information Technology
   f) there seems to be several opportunities for further development of Information Logistics.
Content

• Summary

1. Background

2. Results

3. Tentative Proposal

• Appendix
Background: Research Questions

What is ‘Information Logistics’ about?

1. What is Information Logistics Practice about?
2. What is Information Logistics Research about?
Background: Approach

1. Concept-driven Investigation
   (i.e. searching for the content of the “Information Logistics” concept)

2. Conceptual Guidance
   1. Meta-modelling (J.P van Gigch 1991) *
   2. Paradigmatic Analysis (Kuhn 1975) **

3. Methods of Investigation
   1. Number of “Information Logistics” hits on Internet ?
   2. Review of organisations that explicitly provide Information Logistics products and services
   3. Content analysis of research publications explicitly addressing Information Logistics

Key Limitations:
   1. Concept-driven Investigation overlooks empirical phenomena that may belong to the area of concern yet is presented under another concept
   2. Review of IL-publications is limited to circa 60% of identified references due to inability of acquisition of the German publications

Content

• Summary

1. Background

2. Results

1. No. of “Information Logistics” hits on Internet?
2. Review of IL-service organisations
3. Content analysis of IL Research Publications

3. Tentative Proposal

• Appendix
Table 1. Presents frequencies of hits at Internet, via selected search engines, of selected terms. The search was made during a seven days period, between 15 – 21 June, 2009. “Information Logistics” hits are compared to some other terms.

<table>
<thead>
<tr>
<th>Average/Week</th>
<th>Information Logistics</th>
<th>Information</th>
<th>Psychology</th>
<th>Chemistry</th>
<th>Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Scholar</td>
<td>1 940</td>
<td>7 014 286</td>
<td>6 605 714</td>
<td>12 600 000</td>
<td>621 714</td>
</tr>
<tr>
<td>Ask.com</td>
<td>11 600</td>
<td>310 030 000</td>
<td>12 881 429</td>
<td>13 500 000</td>
<td>10 900 000</td>
</tr>
<tr>
<td>Google</td>
<td>69 043</td>
<td>3 012 857 143</td>
<td>115 000 000</td>
<td>111 142 857</td>
<td>68 828 571</td>
</tr>
<tr>
<td>Yahoo</td>
<td>167 286</td>
<td>13 428 571 429</td>
<td>307 000 000</td>
<td>294 285 714</td>
<td>279 857 143</td>
</tr>
<tr>
<td>AltaVista</td>
<td>168 000</td>
<td>13 542 857 143</td>
<td>307 142 857</td>
<td>293 142 857</td>
<td>279 571 429</td>
</tr>
</tbody>
</table>

Average | 83 574 | 6 060 266 000 | 149 726 000 | 144 934 286 | 127 955 771 |

“Information Logistics” has a significant presence on the Internet
Identification of Organizations that offer Information Logistics products & services *

21 companies were found offering explicitly “Information Logistics” services **

These companies…

1. …are located in:
   1. Australia, Finland, Germany, Italy, Japan, UK, USA; South Africa, Sweden, Switzerland

2. …offer services that are:
   1. aimed at B2B
   2. made attention to the efficiency of Information Flows in organisations

3. …offer services that are centred on:
   1. Information & Communication Technology (ICT) solutions
   2. ICT embedded in organisations
   3. Document Management
   4. Multi-channel communication & information distribution
   5. Goods Logistics & Supply Chain Management

4. …are detailed in the Appendix.

The identified IL organisations are geographically well spread; their offerings are overlapping, focusing on Information-Flow Efficiency

*) Distinction is made here between organisations that use themselves IL and those that offer IL as a product, the focus here is on the latter only
**) The identification was made via Internet search, Fall 2008
Content Analysis of the Research Publications on Information Logistics

1. Some Descriptive Statistics

2. Individual Content Analysis

3. Collective Content Analysis
The last decade has generated a significant increase of IL publications.
The 102 IL-Publications are distributed over the typical academic publications channels

(93 Academic Publ. & 9 Other Publ.)

- Conference: 39
- Journal: 18
- Book: 11
- Book Chapter: 8
- PhD Thesis: 7
- Working Paper: 5
- Report: 4
- White Paper: 4
- Presentation: 3
- Workshop: 2
- Licentiate Thesis: 1
- Master Thesis: 1

The several doctoral (PhD) dissertations suggest that Information Logistics is a formally accepted domain of academic study.
Information Logistics Research is mainly conducted in Europe

The German authors have produced most of the IL-research publications

The countries where the authors’ are officially affiliated
The English Language dominates Information Logistics publications

German language dominates Book and Journal publications
Conclusions on Publication Channels & Volume

1. “Information Logistics” has been published at least for the last three decades

2. However, the last decade shows a growing volume of IL-publications

3. Germany is the leading region of IL-research

4. IL-research publications are canalised via well established channels

Information Logistics Research shows signs of an accepted research domain
Content Analysis of the Information Logistics Research Publications

1. Some Descriptive Statistics

2. Individual Content Analysis
   - Retrieved 67 pub.
   - Missing 35 pub.

3. Collective Content Analysis

* Most of the missing publications are German and not possible to acquire through conventional academic means.
The identified IL-research is categorized into 10 directions, due to their addressed research-object:

1. Local Distribution of Information
2. Information-Production-Flow-Time
3. The User-Demand Information-Supply
4. Efficiency of Information-Flow
5. Cross-Functional Supply of Analytical-Information
6. Outsourced Information Handling
7. Information-Flows in Supply-Chains
8. Work-flow Modelling
9. Global Cross-Reference Database
1. Local Distribution of Information (1:2)
( Harvard University, USA; 1 author, 1 publ.: 1978)

The first publication* identified that is indexed as “Information Logistics”

Information Logistics is:
“Information logistics, as a function of the business enterprise, devotes primary attention to the production, storage, packaging, and movement of information (products). With this in mind, information logistics will, for our discussion, refer to the management of all activities which facilitate information (as a product) movement in order to supply customers with the place and time utility in information goods and services they demand.” (* p. 3)

“Information logistics is concerned with the task of getting the right combination of information (products) to the right consumers at the right time to accomplish a successful transaction.” (* p.5)

Ex. of IL-Industries:
Broadcast television, Cable television, Broadcast radio, Telephone, Mobile Radio Systems, Motion pictures, Organised Sports, Theatres, Computer systems, Postal Services, Private information delivery services, Newspaper, Periodicals, Business consulting services, Advertising & Marketing, Brokerage industries, Book publishing and printing, Libraries, Research & development, Banking an Credit, Insurance, Legal services

Challenges & Opportunities:
1. Emergence of new type of IL-services
2. Increase of costs of IL-services
3. Information Demand Change due to Demographic transformation
4. Development of Information & Communication Technologies

Empirical Questions:
1. What are the crucial problems associated with local distribution of Information?
2. What are the costs associated with local distribution of Information?
3. What are the trade-offs among various modes of information delivery?
4. What are the regulative and legal issues to be considered?

Area Focus: News Paper Industry

1. Local Distribution of Information (2:2)
( Harvard University, USA; 1 author, 1 publ.: 1978 )

Received Theories
• Assumed conceptual framework: General Systems Theory, L. von Bertalanffy, 1969

Research Methodology
• Analysis of industrial statistics
• Extrapolation and consequence derivations for predications
• Positivist Epistemology

Type of Research Results
Descriptive Statistics & Prescriptions

Research Results
1. Decline of the volume of newspaper readers
2. Increased costs of news paper distribution
3. Potential of joint delivery of newspapers and magazines
4. New technology (fiber) for the delivery of news to homes
5. Purposeful handling of information flows will increase physical goods distribution
6. Barriers between current industries will transform

Strengths
1. Early focus on Information Distribution and its significance
2. Formulated predictions that partially were realised
3. Timeless generic research questions

Limitations
Very generic and somewhat speculative results

Key References:
Wormley P. W. (1978) Information logistics: Local distribution (delivery) of information (Book)

The first identified academic publication on Information Logistics!
2. Information-Production-Flow-Time (1:2)
(Vrije Universitet, Amsterdam, The Netherlands; 1 author, 2 publ.: 1992, 1995)

Empirical Challenge

Very limited productivity increase in Information-Producing organisations
- beginning of the 1990s, the difference in performance improvements between blue and white collar work gained
- productivity in offices improved only 3% in the 1980s compared with an improvement of 75% in factories
- e.g. Banks, Insurances, Movies, Legal, Marketing & Advertising, Sales, etc.

Assumed Strategy

- To shorten Information-Production Flow-Time
- To establish relevant control of information-production-processes

Solution Provided

1. A Model for the Information-Production Time-Elements
2. A Modelling Language of flow-time elements in organisations
3. A Model for the Control of Information-Production Processes

Figure 5.1 Production Time Elements
Figure. Illustrates a model for information production with regard to the lead-time.
## 2. Information-Production-Flow-Time (2:2)

( Vrije Universiteit, Amsterdam, The Netherlands; 1 author, 2 publ.: 1992, 1995 )

<table>
<thead>
<tr>
<th>Information Logistics is:</th>
<th>“Information logistics is a relatively new area. Some first publications saw light. They indicate that application of logistics in information production might be valuable.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received Theories</td>
<td>Goods Logistics &amp; Supply Chain Management Frameworks</td>
</tr>
</tbody>
</table>
| Research Methodology | • Transduction (transfer) of conceptual frameworks from goods-production to information-production  
• Acton Research, 3 case studies  
• Hermeneutic epistemology  
• Root-metaphor assumed: Manufacturing-flow |
| Research Results | Descriptive Models & Analysis Method for information-flow time-reduction |
| Strengths | • A unique approach and contribution to Information Logistics  
• Methodology: combination of transduction and case studies  
• Innovative characterisation of information-flow  
• Clear relevance of information-intensive organisation |
| Limitations | • Dangers of transduction not critically reflected, may lead to reductionism…  
• The selected root metaphor reduces an organisation to a manufacturing-flow, and information to a physical entity..  
• Lack of effect / benefit studies & data |
3. The User-Demand Information-Supply (1:7)
(The Fraunhofer Institute for Software and Systems Engineering, Germany; 1997–2009 & other related)

This is the largest research-orientation within Information Logistics

The produced works can be categorised into two related areas:
- Software for satisfaction of user-information-demand
- Software for the coordination of information flows

### Empirical Challenges

**Generic:**
- White collar worker spend too much time on information search and information handling
- At a given time, the Information users experience information-overflow, wrong information, lack of information, etc.

**Ex. Situations:**
1. Semi- & unstructured, ad hoc, situations, process break-downs = > lack of right information at the right time
2. Current IS:es are built upon pre-defined requirement specifications of structured situations & info needs which are not feasible
3. There is a need of right info, at the right cost, for mass-customisation of products
4. Customer change requests require right information at the right time
5. Cross-organisational collaborative work is inefficient
6. Current software architecture is for conventional desk-top, single-terminal, user-centric, reactive information-supply

### Research PGM

- This research program originates mainly from Technical University in Berlin, 1997, and is conducted at various sites in Germany;
- Related research has been conducted in Sweden, Poland, Russia, China, USA, Mexico, The Netherlands
3. The User-Demand Information-Supply (2:7)
(The Fraunhofer Institute for Software and Systems Engineering, Germany; 1997–2009 & related…)

Assumed Goal: To provide only the needed information, in terms of:
- the right content
- the right time & place
- the right channel & format

Assumed Strategy: Demand-Oriented Information-Supply

From Current…
‘Delivery of Available Information’

…to Desired!
‘Delivery of needed Information’

Assumed Strategy:
Context-sensitive, local-awareness, personalised
1. Identification of Information-Demand
2. Search & Select the right Information
3. Supply Information in the right way
## 3. The User-Demand Information-Supply (3:7)

( The Fraunhofer Institute for Software and Systems Engineering, Germany; 1997–2009 & related… )

| Ex. Application Produced | 1. WIND: Weather Information System  
2. Traffic Situation Information System  
3. Personalised News for Journalists  
4. Tourist Adapted Information System |
|--------------------------|----------------------------------------------------------------------------------|
| Ex. Industries Addressed | 1. Automotive  
2. Industrial Manufacturing  
3. Insurance  
4. Tourism  
5. Construction |
| Ex. Developed Technologies | 1. Context Modelling / Representation  
2. Ontology Engineering  
3. Semantic Matching  
4. Information Retrieval |
| Ex: Software Architecture Developed | 1. Content Manager  
2. Time Manager  
3. Communication Manager |
| | - Dual information delivery: combination of Active / Push & Passive / Pull |

Several Real-life Applications Deployed

Automotive Industry dominating
### 3. The User-Demand Information-Supply (4:7)

( The Fraunhofer Institute for Software and Systems Engineering, Germany; 1997–2009 & related… )

<table>
<thead>
<tr>
<th>Source</th>
<th>Data Base</th>
<th>Retrieval Mechanism</th>
<th>Matching</th>
<th>Demand Model</th>
<th>Information Needing Agent</th>
<th>Tasks &amp; Roles</th>
<th>Situations</th>
<th>Contexts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Semantic networks</td>
<td></td>
<td></td>
<td>Automatic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Info-Value Assessment:</td>
<td></td>
<td></td>
<td>contenders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Relevance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Utility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Acceptance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multi-Agent Technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Demand Model Repository</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key Areas of Development:**
1. Demand Representation & Handling
2. Info Matching
3. Retrieval
4. Info Value Assessment
5. Multi-Agent-Technology for Info-Handling
6. Software Architectures
7. Data-base structure modelling
3. The User-Demand Information-Supply (5:7)
(The Fraunhofer Institute for Software and Systems Engineering, Germany; 1997–2009 & related…)

| Received Theories | • Software Engineering: Object-Orientation, Autonomous Agents, Formal Methods  
|                  | • Ontologies & Modelling  
|                  | • Semantic Net Theory  
|                  | • Petri Nets |

| Received Theories | • Engineering: conceptual elaborations, designs, experimental case studies  
|                  | • Realist ontology and rationalist epistemology  
|                  | (one exception of Lundquist 2007, hermeneutic approach) |

| Research Methodology | • Conceptual frameworks for:  
|                     | - Information-demand Identification  
|                     | - Information Matching & Assessment  
|                     | - Information Supply  
|                     | - Software Architectures  
|                     | - Database representations, etc. |

| Research Assumptions: | 1. Humans know what information is needed prior its reception  
|                      | 2. That it is possible to identify info demand prior info is received  
|                      | 3. That a machine can detect the information-demand  
|                      | 4. That the identified information-demand can be satisfied by available info in DB:s |

| Root-metaphor: | “Machine” – assumes that information reception is a mechanistic (passive, rational) endavour |

| Research Anomalies: | • How to handle Human and Social Aspects of Information Logistics  
|                    | (ex. Lundquist 2007: IL has no social factors!)  
|                    | (ex: Heuwinkel & Deiters 2003: User trust is key for Information Logistics) |
3. The User-Demand Information-Supply (6:7)
(The Fraunhofer Institute for Software and Systems Engineering, Germany; 1997–2009 & related…)

Information Logistics is:

“The main objective of Information Logistics is optimized information provision and information flow. This is based on demands with respect to the content, the time of delivery, the location, the presentation and the quality of information. The scope can be a single person, a target group, a machine/facility or any kind of networked organization. The research field Information Logistics explores, develops and implements concepts, methods, technologies and solutions for the above mentioned purpose” (Sandkuhl, p.46)

Strengths

1. Relevant & important research area addressed
2. Well defined and focused research program
3. Productive research / high volume of publications & applications
4. Accumulative research progress
5. Experimental approach employed

Limitations

1. Research Methodology:
- no effect / benefit studies / data
- no empirical surveys
2. Software Systems Focus Only
- other aspects of IL disregarded: social, economic, psychological, legal, ethical
3. Info-Need Only:
- disregards from the challenges of information generations
- disregards partly form information canalisations
- disregards from the Information-Demand Satisfaction dilemma


4. Efficiency of Information-Flow (1:4)


Empirical Concern:
- In Information Networks (e.g. Information Supply Chains in Automotive Industry) there is a lack of Information-Flow efficiency
- This lack of information-flow efficiency leads to production and supply inefficiencies due to unwanted interruptions

Assumed Strategy:
- To assume a holistic view of the whole information-flow network system
- To assume global optimisation of this whole information-flow

View of the System of Concern:
- Network Nodes (IS)
- Intermediaries
- Channels
- Info-flow Patterns
- Info Exchange Standards

Information Logistics is:
“Information logistics is regarded as the planning of information flows, this consequently implies the planning of an information-logistical infrastructure. In doing so, two essential areas need to be distinguished. Whereas on the one hand network relations and/or supplier-requestors relations need to be defined and structured, on the other hand the resulting information-logistical basic infrastructure must be designed and optimized”, p. 33.
4. Efficiency of Information-Flow (2:4)

( Institute of Information Systems, The School of Business & Economics, Frankfurt University; 2 Publ.: 2004, 2007 )

Addressed Challenge # 1

• Assumption: Network Nodes are Homogenous
• Goal: To find the optimal cost of information flow in the Supply Chain of the European Automotive Industry
• Questions: 1. How many nodes?
2. Intermediaries?
3. Channels?
4. Info-flow Patterns?
5. Economic effects?

Solution Provided

• An economic model of Information Flow that covers all IL Tasks; e.g. selection of communication paths, channels, nodes
• Optimisation of current Networks
• Design of Optimal new Networks

• An Application to the Supply Chain of the German Automotive Industry

  • Current total network cost = Euro 79 653 818:-
  • Optimised total network cost = Euro 12 797 571:-
  • Cost reduction = Euro 66 856 247:-
4. Efficiency of Information-Flow (3:4)

Addressed Challenge # 2

- Assumption: Network Nodes are heterogeneous: autonomous, self-interested, utility maximizing
- Goal: To find the optimal coordination of information-flow allocation
- Problem: Not possible to find an optimal coordination of information-flow allocation that is centralised
- Approach: Utilisation of decentralised algorithms

Solution Provided

- Information allocation algorithm based on update mechanism that maintain a weak consistency of replicated information in the network
- Increased efficiency with maintained quality of information-flow for decentralised and distributed computing based on local information

The two Addressed Challenges

<table>
<thead>
<tr>
<th>Kind of Network Agents</th>
<th>Homogenous</th>
<th>Heterogenous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Economic Optimum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global Info-Allocation Optimum</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key References:

### 4. Efficiency of Information-Flow (4:4)

*(Institute of Information Systems, The School of Business & Economics, Frankfurt University; 2 Publ.: 2004, 2007)*

| Received Theories | • Transaction Cost Theory; Network Effect Theory;  
<table>
<thead>
<tr>
<th></th>
<th>• Operations Research Optimisation Algorithms, Information Logistics Frameworks</th>
</tr>
</thead>
</table>
| Produced Theories | • Cost Optimisation Model of Information Flow in a Network  
|                  | • Optimisation Model for Information Allocation in Information Flow Network |
| Research Methodology | • Empirical Data Collection and statistical Analysis of the Supply Chain in Automotive Industry  
|                  | • Positivist Epistemology  
|                  | • Formal algorithmic elaboration  
|                  | • Assumed Root Metaphor: organism, Darwinist Adoption of the Global behaviour with local actors |
| Strengths | 1. Results provide impressive economic implication  
|           | 2. Not ICT-bound  
|           | 3. Methodological Rigour  
|           | 4. Unique Macro-system Perspective |
| Limitations | 1. Few publications (2)  
|            | 2. Positivist epistemology only  
|            | 3. Assumes that global optimum is desirable |
## 5. Cross-Functional Supply of Analytical-Information (1:3)

( Institute of Information Management, University of St. Gallen, Switzerland; Publ. 1993; 2008-2009 )

<table>
<thead>
<tr>
<th>Generic Empirical Concern:</th>
<th>• How to realize organisational synergies, by means of information provision?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empirical Problems:</td>
<td>• Provide Decision-Makers with cross-functional analytic information for Decision-Making</td>
</tr>
<tr>
<td></td>
<td>• ex: Cross-selling, Bonding together Product, X-functional Staff Competence Collaborations</td>
</tr>
<tr>
<td></td>
<td>• This requires analytical information from other organisational units and outside the organisation</td>
</tr>
<tr>
<td>Assumed Strategy:</td>
<td>• To establish process-oriented Information Logistics in organisations, which is embedded analytic information and / or analysis capabilities into the context of organisational process, aimed at support of process execution</td>
</tr>
<tr>
<td></td>
<td>• To establish enterprise-wide IL-infrastructure</td>
</tr>
<tr>
<td>Focus:</td>
<td>• Business processes that are not fully automated</td>
</tr>
</tbody>
</table>

**Information Logistics is:**

“Information logistics (IL) comprises the planning, control, and implementation of the entirety of cross-unit data flows as well as the storage and provisioning of such data. In order to differentiate IL and operational data integration, only those data flows are considered to be IL components which support decision making. If data is used for decision making in the same organizational unit where it originates, such flows do not fall under our IL definition because in this case, most of the managerial challenges do not occur.” p. 1
**5. Cross-Functional Supply of Analytical-Information (2:3)**

( Institute of Information Management, University of St. Gallen, Switzerland; Publ. 1993; 2008-2009 )

---

**Research Results**

- Best Practice recommendations for an organisation’s ‘Process Oriented Information Logistics’
- Empirical findings state that:
  - Process-oriented Information Logistics is beneficial for organisations

<table>
<thead>
<tr>
<th>IL-approaches identified</th>
<th>Centralised IL integrated into Processes</th>
<th>IL: Data &amp; System Quality</th>
<th>Standard IL Applications &amp; Systems</th>
<th>Sophisticated IL-Strategy</th>
<th># of Org.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balanced</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Standard</td>
<td>½</td>
<td>0</td>
<td>1</td>
<td>½</td>
<td>10</td>
</tr>
<tr>
<td>Strategy</td>
<td>½</td>
<td>¾</td>
<td>0</td>
<td>¾</td>
<td>9</td>
</tr>
</tbody>
</table>

- Successful “Information Logistics Strategy” contains the following components:
  1. IL Sourcing Strategy: defines what IL products & services to be supplied from whom
  2. IL Delivery Strategy: defines the relationship between the IL supplier and the IL receiver
  3. IL Portfolio Strategy: defines guidelines for the development of IL products & services

- Information Logistics in organisations may be understood in the following terms:
  1. Business Architecture (Business Strategy)
  2. Process Architecture (Organisations & Operations)
  3. Integration (IS vs. Organisations)
  4. Software Architecture
  5. Hardware Architecture

---

**Received Theories**

- Frameworks for IS / IT Governance
- Supply Chain Management frameworks
## 5. Cross-Functional Supply of Analytical-Information (3:3)

( Institute of Information Management, University of St. Gallen, Switzerland; Publ. 1993; 2008-2009 )

<table>
<thead>
<tr>
<th>Research Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Empirical surveys &amp; statistical analysis</td>
</tr>
<tr>
<td>• Positivistic Epistemology &amp; Hypotheses testing</td>
</tr>
<tr>
<td>• Design Pattern / Best Practice Seeking</td>
</tr>
<tr>
<td>• Root metaphor: process-structure dichotomy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Focuses on Identification of Best Practices</td>
</tr>
<tr>
<td>2. Searches for the benefits / effects of information &amp; ICT</td>
</tr>
<tr>
<td>3. Empirically grounded research</td>
</tr>
<tr>
<td>4. Addresses the importance of information for Decision-Making</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Unjustified arbitrary notion of IL</td>
</tr>
<tr>
<td>2. Assumes that the more information the better</td>
</tr>
<tr>
<td>3. Positivist epistemology only</td>
</tr>
<tr>
<td>4. Assumes the approach of global optimisation of organisation, based on global information</td>
</tr>
<tr>
<td>5. Limits IL to business process information flow that is trans-unit and for decision-making only</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key References</th>
</tr>
</thead>
</table>

---

**Unjustified IL-notion with an empirisist research methodology**
### 6. Outsourced Information Handling

( Washington University, USA; Graduate Business School, 1 Publ. Chaffe, 2001 )

<table>
<thead>
<tr>
<th>Empirical Concern:</th>
<th>Operational inefficiencies experienced due to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- limited systematization of data management</td>
</tr>
<tr>
<td></td>
<td>- high volume of paper transactions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solution Proposed:</th>
<th>Organisations should outsource its information handling and access operations to specialised Application Service Provides (ASP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>These ASP:s can provide higher quality of Information Logistics services at a lower cost</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Information Logistics is:</th>
<th>a) Information to handle the services of physical goods logistic operations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b) Information handling of information as a product, independent of physical goods</td>
</tr>
<tr>
<td></td>
<td>- includes: gathering, selection, organisations, synthesizing and distribution of data between individuals within and between organisations</td>
</tr>
<tr>
<td></td>
<td>- goal: to achieve improved availability of crucial business information, that is independent of the system…</td>
</tr>
</tbody>
</table>

| Research Approach | • Conceptual elaboration, sense-making and analysis of an actual case |

| Strengths | • Attention to information handling as such |

| Limitations | 1. No scientific research approach; not theoretical and empirical grounding |
|            | 2. Weak support for the proposal provided |
|            | 3. ICT-bound |

### 7. Information-Flows in Supply-Chains

( Halmstad University, Sweden, 2 Publ.: 2003 )

| Empirical Challenge: | • The realised increased efficiency of physical goods flows is not enough  
|                      | • There is a need to increase efficacy of Information Flows |
| Empirical Question:  | • What factors can improve and rationalize information flows in supply-chain-oriented organisations? |
| Research Approach:   | • Explorative, empirical; based on interviews (30) and cases (8)  
|                      | • Literature review on information flows in Supply Chains |
| Research Results:    | 1. There is a lack of information-flows between sales and marketing  
|                      | 2. There is a lack of the occurring lack of information-flows within the supply chain  
|                      | 3. Information is provided too late to the needing agent  
|                      | 4. Wrong information is provided to the needing agent |
| Information Logistics is: | • Klein (1993) stated that the concept of Information Logistics links the functions of business logistics and information management. It focuses on vertical coordination within firms and horizontal coordination within and beyond the boundaries of the firm.  
|                      | In a conceptual perspective, information logistics is a crucial element of a revised model of the firm.  
|                      | In an inter-organizational perspective, information logistics refers to emerging telecommunication infrastructure. |
| Strengths            | 1. The Research Question Defined  
|                      | 2. Explorative & Empirical Research Approach |
| Limitations          | 1. Research results: not very informative or original  
|                      | 2. The assumed understanding of IL in SCM terms is limited |
### 8. Work-flow Modelling

( Växjö University, 2 Publ.: Flensburg, 2004 )

<table>
<thead>
<tr>
<th>Generic Empirical Challenge:</th>
<th>In order to provide the right information to the ICT-user there is a need to represent this information-need in a way that a machine can read and understand this representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy Assumed:</td>
<td>Modelling of the Context of the Information Demanding Agent</td>
</tr>
<tr>
<td>Received Theory:</td>
<td>Ontological Modelling Approach; Infology; ISAC.</td>
</tr>
<tr>
<td>Research Approach:</td>
<td>Conceptual Elaboration, not empirical data</td>
</tr>
</tbody>
</table>
| Research Results:             | Principles for an Ontology for the representation of Agent Workflows  
                                  | This Ontology includes: Work Activities, Story Telling, Roles, etc.  
                                  | Proposes a Participative approach to the modelling process |
| Information Logistics is:     | “Right information to the right person at the right time at the right place and at the right cost. Focus is on dissemination, not on production and classification as in CM.” p.486 |
| Strengths                     | Its attention to the participation and inclusion of the information needing agent |
| Limitations                   | No new Contribution (i.e. similar to the ISAC method in 1980’s)  
                                  | No empirical justification for the recommendations |

**Key References**


---

**Relevant Question - No Research**
9. Global Cross-Reference Database
(Norway, private company; 1 Publ., Simonsen, 2005)

**Generic Empirical Challenge:**
- Currently, most Databases have different formatting and nomenclature standards
- Information exchange is therefore difficult, slow and costly, which generates operational inefficiencies

**Suggested Solution:**
- To create a Global Cross-reference Data Base for all major nomenclatures
- This will facilitate information cross-referencing and therefore information exchange

**Information Logistics is:**
“We speak about information logistics,
i.e. the distribution of information for a specific purpose to a specific audience at a specific time.” p3.

**Strengths**
- Attention the problem of information exchange between heterogeneous Databases

**Limitations**
- Not a scholarly research, only a conceptual proposing

**Key References**
## 10. Process Improvement via Information-Flows (1:2)

( The Nyenrode Research & Innovation Institute, The Netherlands; publ.: 2008-2009 )

<table>
<thead>
<tr>
<th>Generic</th>
<th>Empirical</th>
<th>Challenge</th>
<th>Solutions Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Lack of right information create organisational inefficiencies</td>
<td></td>
</tr>
</tbody>
</table>

### 1. A Procedure for Business Process Re-Design
1. Create Awareness of Sr. Mgt regarding information logistics bottle-necks
2. Analyse the Processes:
   1. Identify information flow bottle-necks
   2. Design improvements
3. Define relevant information-flow **metrics**

### 2. Improvement of Information-Flows in Health Care – The Recommendations are:
1. Establish one common Memory IS that can provide all the needed information, rightly…
2. Eliminate Inconsistencies of:
   1. Heterogeneous & autonomous DB:s
   2. Parallel usage of different IS:es
   3. Parallel usage of paper and digital documents
   4. Establish one media format and one data structure

### 3. Evaluation of Information Access Technology (e.g. Google, Outlook, Documentum)
1. Evaluation & Comparison of the various available products
2. Evaluation of Functionality and Implementation-effort
## 10. Process Improvement via Information-Flows (2:2)

( The Nyenrode Research & Innovation Institute, The Netherlands; publ.: 2008-2009 )

<table>
<thead>
<tr>
<th>Information Logistics is:</th>
<th>The aim of IL consists of several requirements that information needs to fulfil. The Information product needs to be delivered in the right format, at the right place, at the right time, for the right users, all demand driven.</th>
</tr>
</thead>
</table>
| Research Approach        | • Not a scholarly research  
• Consulting-firm-approach & sense-making  
• No received theory; no empirical research |
| Strengths                | • Highlighting the importance of information-flow metrics  
• Addresses domain of health-care organisations |
| Limitations              | • Fragmented topics  
• Recommendations un-motivated, simplistic; not based on empirical data, nor on theory  
• Not based on scholarly research methods |

### Key References

  Nyenrode Research and Innovation Institute, Nyenrode University, The Netherlands.
  Nyenrode Research and Innovation Institute, Nyenrode University, The Netherlands.
  Nyenrode Research and Innovation Institute, Nyenrode University, The Netherlands.
Content Analysis of the IL Research Publications

1. Some Descriptive Statistics

2. Individual Content Analysis

3. Collective Content Analysis
There are 4 Currently Active Research Directions within Information Logistics

1. The User-Demand Information-Supply
   (The Fraunhofer Institute for Software and Systems Engineering, Germany; 1997–2009 & related…)

2. The Efficiency of Information-Flow
   (Institute of Information Systems, The School of Business & Economics, Frankfurt University; 2 Publ.: 2004, 2007)

3. The Cross-Functional Supply of Analytical-Information
   (Institute of Information Management, University of St. Gallen, Switzerland; Publ. 1993; 2008-2009)

4. The Process Improvement via Information-Flows
   (The Nyenrode Research & Innovation Institute, The Netherlands; publ.: 2008-2009)

Risk:
If two-three of these research directions turn down its interest for IL, the future of IL-research may be endangered.
Information Logistics Research focuses mainly on the handling of the Syntax of Information

This may articulate the distinction between Information Logistics research and Communication Studies, where the primer focuses on syntax of information-transport while the latter on the semantics (meaning) of information-transport. This constitutes an opportunity for inclusion of the semantic component into Information Logistics research.
There are two conceptions of Information Logistics with regard to information handling

Proposed by only one Research Direction, that seems not to be active anymore:
2. Information-Production-Flow-Time
Vrije Universitet, Amsterdam, The Netherlands; 1 author, 2 publ.: 1992; 1995

There is nothing in the Etymology of “Information” and of “Logistics” nor in the (goods) Logistics domain that limits Information Logistics to be concerned only with Transportation of Information; however the Broader Conception of IL is overlapping with the domain of “Information Resource Management”
Initially, Information Logistics was regarded as an adjunct to Goods Logistics. Today it addresses Information Production and Transfer, in itself.

<table>
<thead>
<tr>
<th>Information Logistics: understood as the administration of Goods Logistics, only.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goods Logistics: production &amp; transport</td>
</tr>
<tr>
<td>Information Logistics: information transport</td>
</tr>
</tbody>
</table>

The development of Information Logistics reflects the increased significance and spread of information-centred services and activities in today’s societies.

(See Augustin 1993)
Information Logistics Research has broadened in terms of the information processing functions and the representation mode.

The various scopes of Information Logistics implied in the various research streams:

- Information Logistics understood as Transportation of Information
- Information Logistics understood as Information Processing (production, storage, transport)
- Information Logistics as information processing for goods handling and for information handling
### Information Logistics Research is Fragmented:
The 4 Active IL-Research Directions differentiate with regard to the Aspects of Inquiry

<table>
<thead>
<tr>
<th>Property of Object of Inquiry</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sender of Info</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>• Transport of Info</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>• Transformation of Info</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>• Storage of Info</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>• Semantics of Info</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>• Syntax of Info</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>• Cost of Info Transfer</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>• Decision-making Info</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>• Intra-Unit Info</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>• Inter-Unit Info</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>• IL-Management</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>• IL-Operations</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>• IL-system SW Architecture</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>• Receiver of Info</td>
<td>![image]</td>
<td>![image]</td>
</tr>
</tbody>
</table>

The differences of focus of the 4 Active IL-Research Directions seem to be complementary, yet no Direction seems to address the Sourcing of Information.
There are clearly areas of information-flow communication that are not addressed:

i) The Sender-side of information or the information-generation

ii) the concept of “Information” is reduced to “data”

iii) a comprehensive approach to Information Logistics is lacking
**Information Logistics Research is Fragmented:**
The 4 Active IL-Research Directions differentiate with regard to the Research Methodologies

<table>
<thead>
<tr>
<th>Property of research Methodology</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Descriptive Case Studies</td>
<td>✗</td>
<td>☑</td>
</tr>
<tr>
<td>• Experimental Case Studies</td>
<td>☑</td>
<td>✗</td>
</tr>
<tr>
<td>• Optimization Algorithms</td>
<td>✗</td>
<td>☑</td>
</tr>
<tr>
<td>• Deductive Quantitative</td>
<td>☑</td>
<td>✗</td>
</tr>
<tr>
<td>• Inductive Quantitative</td>
<td>☑</td>
<td>✗</td>
</tr>
<tr>
<td>• Effect / Benefit Measurements</td>
<td>☑</td>
<td>✗</td>
</tr>
<tr>
<td>• Positivist Epistemology</td>
<td>✗</td>
<td>☑</td>
</tr>
<tr>
<td>• Hermeneutic Epistemology</td>
<td>✗</td>
<td>☑</td>
</tr>
</tbody>
</table>

As an Research Area, Information Logistics employs all the typical features of Research Methodologies except for Critical Epistemology that maybe caused by its lack of Social Theory grounding...

The 4 currently active IL-Research Directions:

- The User-Demand Information-Supply  
- Efficiency of Information-Flow  
- Cross-Functional Supply of Information  
- Process Improvement via Information-Flows
Information Logistics Research lacks explicit and commonly established theoretical foundations

<table>
<thead>
<tr>
<th>Information Logistics</th>
<th>Received Theory / Conceptual Frameworks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Distribution of Information</td>
<td>Indirectly: General Systems Theory, L. von Bertalanffy, 1969</td>
</tr>
<tr>
<td>Information-Production Flow-Time</td>
<td>Large set of Goods Logistics &amp; Supply Chain Management Frameworks</td>
</tr>
<tr>
<td>The User-Demand Information-Supply</td>
<td>A set of Software Engineering: Frameworks, The O.O. Approach; Autonomous Agents, Formal Methods; Ontologies &amp; Modelling; Semantic Net Theory; Petri Nets</td>
</tr>
<tr>
<td>Efficiency of Information-Flow</td>
<td>Transaction Cost Theory; Network Effect Theory; OR Optimisation Algorithms, Information Logistics Frameworks</td>
</tr>
<tr>
<td>Cross-Functional Supply of Analytical-Information</td>
<td>Frameworks for IS / IT Governance, Supply Chain Management frameworks</td>
</tr>
<tr>
<td>Outsourced Information Handling</td>
<td>Non.</td>
</tr>
<tr>
<td>Information-Flows in Supply-Chains</td>
<td>Non.</td>
</tr>
<tr>
<td>Work-flow Modelling</td>
<td>Ontological Modelling Approach; Infology; ISAC.</td>
</tr>
<tr>
<td>Global Cross-Reference Database</td>
<td>Information Logistics has received theoretical components from Computer Science, Logistics, IT-governance, Transaction Costs Theory and Operations Research</td>
</tr>
<tr>
<td>Process Improvement via Information-Flows</td>
<td>No IL Research addresses the meta-theoretical foundations of IL-research and its theory, something that is important due to its position both within the physical and the social domains.</td>
</tr>
</tbody>
</table>
Summary of Collective Content Analysis:
Information Logistics Research is still in its Intellectual Inception Phase

1. There are 4 Active Research Directions within Information Logistics
   1. **The User-Demand Information-Supply**
      (The Fraunhofer Institute for Software and Systems Engineering, Germany; 1997–2009 & related…)
   2. **Efficiency of Information-Flow**
      (Institute of Information Systems, The School of Business & Economics, Frankfurt University; 2 Publ.: 2004, 2007)
   3. **Cross-Functional Supply of Analytical-Information**
      (Institute of Information Management, University of St. Gallen, Switzerland; Publ. 1993; 2008-2009)
   4. **Process Improvement via Information-Flows**
      (The Nyenrode Research & Innovation Institute, The Netherlands; publ.: 2008-2009)

2. There is a Risk:
   • if two-three of these research directions turn down its interest for IL, the future of IL-research may be endangered

3. **All IL-Research Directions focus on the Syntax of Information**
   • This may articulate the distinction between Information Logistics Science and Communication Science,
     where the primer focuses on syntax of information-transport while the latter on the semantics of information-transport

4. **There are two conceptions of Information Logistics with regard to information handling:**
   1. The Broader conception includes Information Transpiration, Production, and Storage
   2. The Narrower Conception includes Information Transportation & Storage as a supporting function

5. There is nothing in the Etymology of “Information” and of “Logistics” nor in the (goods) Logistics domain
   that limits Information Logistics to be concerned only with the Transportation of Information;

6. However the Broader Conception of IL is overlapping with the domain of “Information Resource Management”

7. **Information Logistics Research is Fragmented:**
   1. The 4 Active IL-Research Directions differentiate with regard to the Objects of Inquiry
      • The differences of focus of the 4 Active IL-Research Directions seem to be complementary,
        yet no Direction seems to address the Sourcing of Information nor the Information Semantic
   2. The 4 Active IL-Research Directions differentiate with regard to the Research Methodologies
      • As one Research Area, Information Logistics employs all the typical features of Research Methodology,
        except for Critical Epistemology (that maybe caused by its lack of Social Theory grounding)
   3. Information Logistics Research lacks explicit and commonly established theoretical foundations
   4. Shannon’s Communication Model manifests the fragmentation of IL-Research
      • There are clearly areas of information-flow communication that are not addressed
       1. The Sender-side of information or the information-generation
       2. The concept of “Information” is reduced to “data”
       3. A comprehensive approach to Information Logistics is lacking

There also seems to be some gap between IL-Research & IL-Practice where the latter also addresses information-flows not mediated by ICT
Content

• Summary

1. Background

2. Results

3. Tentative Proposal

• Appendix
A Tentative Proposal for the Conception of Information Logistics (1:3)

- **Information Logistics Meta-Science** = Intellectual domain that is concerned with the analysis and design of the knowledge production process and its outcomes, about Information Logistics phenomena

- **Information Logistics Science** = Intellectual conduct that utilized scientific methods for the study of Information Logistics phenomena, both Operational and Managerial; produces knowledge about patterns of invariance;
  - **Analytical Science Information Logistics** = Subset of Information Logistics Science, that investigates the existing Information Logistics phenomena
  - **Design Science Information Logistics** = Subset of Information Logistics Science, that investigates the process of design and development of Information Logistics phenomena

- **Information Logistics Engineering** = Intellectual sub-domain of Engineering that addresses the development of Information Logistics Technology

- **Information Logistics Management** = Control & Command of Information Logistics Operations

- **Information Logistics Operations** = Information Flows (alt. Information Production) between actors (man & machine), within and between organizations

- **Information Logistics Technology** = Physical artifacts, typically ICT, that enable execution of Information Logistics Operations and Management
A Tentative Proposal for the Conception of Information Logistics (2:3)

The Meta-Theory Level of Information Logistics

Information Logistics Meta-Science

The Theory Level of Information Logistics

Information Logistics Science

Analytical Science of Information Logistics

Design Science of Information Logistics

The Practice Level of Information Logistics

Information Logistics Management

Information Logistics Operations

Information Logistics Engineering

Information Logistics Technology

Studies current phenomena of Information Logistics

Studied the design & development practices of Information Logistics phenomena

Informs each other

Initiates, Directs & Controls

Changes

Influences

Develops

Enables execution of

utilises

Directs & controls

Are directed & controlled by

Informs

studies & forms

constituted by

constituted by

constituted by

Studies the design & development practices of Information Logistics phenomena

Analytical Science of Information Logistics

Design Science of Information Logistics

Information Logistics Management

Information Logistics Operations

Information Logistics Engineering

Information Logistics Technology

Linnaeus University

In forming for sustainable

centrum för informationslogistik
A Tentative Proposal for the Conception of Information Logistics (3:3)

**Information Logistics Phenomena** regards those arrangements of objects and processes that conduct temporal and/or spatial transport of information.

These phenomena can be **natural** – e.g. information transfer in atoms or in human neural systems – or **artificial and social** – e.g. the ancient Greek messenger who run from Marathon to Athens, the Viking Rune Stone, or and the Internet. The presents concern focuses on the latter kind.

**Information Logistics Discipline** is the academic intellectual domain that utilises a set of methods of inquiry from various academic areas, such as natural sciences, engineering studies, and social and behavioural sciences, in order to study existing Information Logistics Phenomena as well as the processes that design and develop such phenomena.
Content

• Summary

1. Background

2. Results

3. Tentative Proposal

• Appendix
APPENDIX

1. List of Web links to organizations that offer Information Logistics Products

2. List of References for Information Logistics Publications

3. List of Web links to Information Logistics Research Bodies
List of Web links to organizations that offer Information Logistics Products
List of Web links to organizations that offer Information Logistics Products (1:14)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.edb.com/se/Tjanster/Informationslogistik/">http://www.edb.com/se/Tjanster/Informationslogistik/</a> last accessed on: 05/03/2009</td>
<td>EDB Business Partner Nordic Company with app. 6000 employees Offers a set of IT-related services</td>
<td>Information logistics is the delivery of needed information, independently of channel and format, typically multi-channel; Ex. given: Bank Customers require their bank information sometimes in an electronic information sometime on paper, sometimes both</td>
</tr>
<tr>
<td><a href="http://www.empolis.com/en/">http://www.empolis.com/en/</a> last accessed on: 05/03/2009</td>
<td>Empolis part of arvato: a Bertelsmann company European Company located in Germany and Poland.</td>
<td>Information logistics is the right information at the right time to the right person” in applying the just-in-time philosophy of material logistics to the increasingly complex world of information and communication management. Empolis offers complex, convergent solutions and services, from a single source, relying on information logistics for their key to long-term success for with intelligent creation, management, distribution and utilization of information.</td>
</tr>
</tbody>
</table>

*Identified: Spring 2009*
# List of Web links to organizations that offer Information Logistics Products (2:14)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.e-centremassey.org.nz/The+e-centre/e-centre+Residents/Information+Logistics.html">http://www.e-centremassey.org.nz/The+e-centre/e-centre+Residents/Information+Logistics.html</a></td>
<td>E-center</td>
<td>Information Logistics is how to manage the movement of information among several internal and external information systems in different projects. Their strategic aim is to work with Government and Corporate clients to enable both the extrapolation and effective management of data and information with a view to enhancing organizational performance.</td>
</tr>
<tr>
<td>last accessed on: 05/03/2009</td>
<td>The Business of Information Logistics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>New Zealand Company Ltd (ILC)</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.informationlogistics.co.za/">http://www.informationlogistics.co.za/</a></td>
<td>Information Logistics</td>
<td>Information Logistics Ltd, believes that with the abundance of data and information available today there will be an ever increasing demand for: the creation of databases, the development of tools, systems and processes to enable effective management of information.</td>
</tr>
<tr>
<td>last accessed on: 05/03/2009</td>
<td>A South African company</td>
<td></td>
</tr>
<tr>
<td>(Identified: Spring 2009)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# List of Web links to organizations that offer Information Logistics Products (3:14)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
</table>
| ![Image](http://www.ilogs.com/)  
*last accessed on: 05/03/2009* | Ilogs – Information Logistics GMBH  
European Company located in Austria and Switzerland | Ilogs uses information logistics for customer service and quality solutions that answer expectations in terms of stability and functionality. They have always delivered on time and on budget solutions and services that have most of the times exceeded expectations.  
Software solutions for e-business, Mobile GPS and Telecom Industry that |
| ![Image](http://www.sigmakudos.com/opencms/services/information_logistics.html)  
*last accessed on: 05/03/2009* | Sigma Kudos AB – Member of Sigma Group  
Global Company  
Headquarters: Sweden | Information Logistics includes a set of KPIs ensuring that the right information is developed and processed most efficiently throughout the chain. Our ambition to take responsibility for the downstream components is a natural extension to our operations, which enables us to increase the customer value.  
Sigma Kudos sells Information Logistics services helping them to become your end-to-end partner in the whole product information delivery and lifecycle, by taking the total responsibility for the entire chain of Information Logistics. |
## List of Web links to organizations that offer Information Logistics Products (4:14)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.june.se/english.aspx">http://www.june.se/english.aspx</a></td>
<td>June AB Swedish Company Experts of Information Logistics</td>
<td>Information Logistics is to make it easy to work with and publish the right information to the right place. It is not only about providing a solution in the shape of a system, but also providing suggestions on time-saving changes in the organization and solutions that can increase the effectiveness of information handling. As experts in information logistics, we create systems and solutions for larger websites. We help our clients to understand how different types of information flows and are managed in their company; we also deliver and maintain a platform for web publishing.</td>
</tr>
<tr>
<td><a href="http://www.stralfors.se/en/Informationlogistics/">http://www.stralfors.se/en/Informationlogistics/</a></td>
<td>Strålfors, Service Company European Company Information Transfer, from one to many in many ways</td>
<td>Strålfors Motto: The right thing at the right place at the right time in the right volume, at the right time and at the right cost! Information Logistics offers printing and packaging of business, marketing and electronic communication, personalization of cards, electronic payment services as well as logistics solutions. Strålfors is the Nordic region's leading player within information logistics, with a great deal of experience and broad competence within the area direct communication. We offer everything from customer club solutions to individualized printing, pick &amp; pack, response management, and also comprehensive solutions for communication via e-mail and sms.</td>
</tr>
</tbody>
</table>

*(Identified: Spring 2009)*
# List of Web links to organizations that offer Information Logistics Products (5:14)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.ser-solutions.net/ww/en/pub/website/products.htm">http://www.ser-solutions.net/ww/en/pub/website/products.htm</a></td>
<td>SER&lt;br&gt;German Company&lt;br&gt;IT and Manufacturing company</td>
<td>Whatever information you need and wherever you need it, integrated Enterprise Content Management (iECM) delivers the right information at the right place, at the right time, in the right quality, in the right combination and at the right cost. The DOXiS iECM Suite quite simply takes care of the planning, management and provision of information along the chain of business processes within a company. In a nutshell: iECM is ‘information logistics’.</td>
</tr>
<tr>
<td><a href="http://www.vamosa.com/vamosas-business-a84">http://www.vamosa.com/vamosas-business-a84</a></td>
<td>Vamosa – because content matters&lt;br&gt;USA &amp; UK Company&lt;br&gt;Solution Provider in Information Logistics</td>
<td>Information Logistics is the practice of maintaining, moving, monitoring and manipulating enterprise content utilizing a framework of policy based rules to enable organizations to realise the highest benefit from their information assets. Their solutions are focused on high volume automated processing and structuring of documents and web content – which they call it ‘Information Logistics’. Vamosa is a highly focused solution provider offering best practice information management consulting, software and processes in Information Logistics.</td>
</tr>
</tbody>
</table>

*Identified: Spring 2009*
List of Web links to organizations that offer Information Logistics Products (6:14)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
</table>
| http://www.itella.com/group/english/index.html | Itella Corporation  
Global Company  
Headquarters: Finland  
Managing Information and Material Flows | Information logistics enhances companies’ and organizations’ information management. Previously, an invoice, customer letter or another business document was delivered on paper in a postman’s bag, but nowadays these documents are being more and more frequently delivered electronically from sender to recipient, all or some of the way. This calls for a thorough reassessment of the entire process of information production and reception in companies. The need for information logistics services is based on this. By purchasing all information logistics services from Itella, customers can concentrate on their core business. Itella is an expert in managing information and material flows |
| http://www.scribanetstudio.com/infologic.html | ScribaNetStudio  
Italian Company  
Anything, Anytime, Anywhere | The field of information logistics aims at developing concepts, technologies and applications for need-oriented information supply. Information-on-demand services are a typical application area for information logistics, as they have to fulfill user needs with respect to content, location, time and quality. source: 29th Euromicro Conference  
ScribaNetStudio tools are based on information logistic principles: handle, integrate and find the way for data. Users can find the accurate and personalized information they are looking for, when they need it. |
List of Web links to organizations that offer Information Logistics Products (7:14)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.leanomedia.de/">http://www.leanomedia.de/</a></td>
<td>Leona Media German Company An Information Logistics Ltd.</td>
<td>Information Logistics is the ability to authorized individuals have the correct data at the right time and in any place available.</td>
</tr>
<tr>
<td><a href="http://www.post.ch/en/index_log/log_log_gk/log_inf_infolog.htm">http://www.post.ch/en/index_log/log_log_gk/log_inf_infolog.htm</a></td>
<td>Swiss Post Swiss Company</td>
<td>End-to-end information logistics optimize delivery times, processes and ultimately the overall costs in addition to data quality, transparency and reliability. Clear added value for you and your customers. Information Logistics Track &amp; Trace – complete data availability for your shipments round the clock – is just as much a part of the PostLogistics service as innovative tools for dispatch management, electronic order processing and billing. Enhance the efficiency of your physical logistics with sound information logistics.</td>
</tr>
</tbody>
</table>
## List of Web links to organizations that offer Information Logistics Products (8:14)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.schema.de/eds/en/">http://www.schema.de/eds/en/</a></td>
<td>Schema</td>
<td>Information logistics is to optimize the content and format of the information, reduce throughput times and achieve a high degree of parallel processing.</td>
</tr>
<tr>
<td>last accessed on: 05/03/2009</td>
<td>German Company</td>
<td>Software Solutions and Services are developed specifically for the area of Information Logistics. One of their best-known software solution is: SCHEMA ST4 which is used in Documentation, Marketing, Training, Service, Contracts departments etc. - wherever users need to create and process product information.</td>
</tr>
<tr>
<td></td>
<td>IT Company</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.designstationen.se/informationslogistik-effektivisering-portooptimering.aspx">http://www.designstationen.se/informationslogistik-effektivisering-portooptimering.aspx</a></td>
<td>Designstationen</td>
<td>Information Logistics is about to gain maximum efficiency in communication by optimizing the design, production and choice of channels, such as letters or e-mail, so that the right information reaches the right recipients in the right way at the right time. We can help you analyze your flow of information internally and externally and give you suggestions for improvements and savings.</td>
</tr>
<tr>
<td>last accessed on: 05/03/2009</td>
<td>Swedish Company</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Services in Information Logistics</td>
<td></td>
</tr>
</tbody>
</table>
List of Web links to organizations that offer Information Logistics Products (9:14)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.tudock.de/informationslogistik.html">http://www.tudock.de/informationslogistik.html</a></td>
<td>Tudock - Information Logistics</td>
<td>Information logistics is information at the right time, the right place.</td>
</tr>
<tr>
<td></td>
<td>German Company</td>
<td>The information logistics services deal with the right information at the right time in the right format and in the right quality for the right user at the right place. The goal is to increase the availability and throughput of information.</td>
</tr>
<tr>
<td></td>
<td>IT Company</td>
<td>TUDOCK provides tools - such as software for project management, team communication and planning for the mission, thus facilitating the exchange of knowledge.</td>
</tr>
<tr>
<td></td>
<td>Danish Company</td>
<td>It ensures that the service reaches safely to the public authority and in the correct format. Logica focuses on delivering the right information from the sender to the recipient via different solutions such as:</td>
</tr>
<tr>
<td></td>
<td>Consulting and Outsourcing Company</td>
<td>Information Logistics solution that helps you to regularly send invoices to the public. This solution makes it possible to receive electronic orders from the customer and to register customers who need to receive electronic invoice.</td>
</tr>
</tbody>
</table>

(Identified: Spring 2009)
# List of Web links to organizations that offer Information Logistics Products (10:14)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.fondmatt.de/informationslogistik.html">http://www.fondmatt.de/informationslogistik.html</a></td>
<td>Fond Matt Consulting&lt;br&gt;German Company&lt;br&gt;Consulting Company</td>
<td>Information logistics is to ensure the availability of the right information, at the right time in the correct format, in the right quality at the right recipients and at the right place. Fond Matt supports customers in these complicated processes by providing a great experience in this field, with careful analysis of information needs, coupled with an improved information flow and high flexibility that guarantee optimal processes. With: Information targeted transport, and analysis of the information flow and information need</td>
</tr>
<tr>
<td><a href="http://www.datametrix.se/web/Information_logistics_1.aspx">http://www.datametrix.se/web/Information_logistics_1.aspx</a></td>
<td>Datametrix&lt;br&gt;a part of Tele2 Group, a European Group&lt;br&gt;European Company</td>
<td>Information Logistics is a really smart platform for processing and distribution of our clients’ business documents. Within information logistics, Datametrix takes a holistic approach of in-and outflows of business documents. Companies with large volumes of business documents have enormous potential to streamline the process.</td>
</tr>
</tbody>
</table>
# List of Web links to organizations that offer Information Logistics Products (11:14)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://processplatsen.ibissoft.se/?q=en/node/69">http://processplatsen.ibissoft.se/?q=en/node/69</a> last accessed on: 05/03/2009</td>
<td>IbisSoft – ahead of current thinking Swedish Company Conducting research with KTH.</td>
<td>Information logistics is dedicated to improving the current status and chaos of information in different organizations. The project of IL is about beating information chaos with information logistics. Their solution is to fully utilize the power of modern computers in information processing; they need to radically change information logistics. The traditional logistics is based on the “conveyor belt” metaphor – physically move information to a person doing the next operation. The new logistics should be based on the “construction site” metaphor – virtually move a person to information when he or she is needed.</td>
</tr>
<tr>
<td><a href="http://www.pdb.se/?id=423">http://www.pdb.se/?id=423</a> last accessed on: 08/03/2009</td>
<td>PDB DataSystem Jönköping AB Swedish Company IT Solutions</td>
<td>Information logistics is to find the best solution, taking the lead from the client’s activities. Regardless of whether it applies to slimmed down solutions in the form of web orders for individual order systems or replenishment with huge demands on information management in several sectors both from the market and to purchasing sources. Pdb develops global IT solutions for businesses that have extensive dealings with countries around the world.</td>
</tr>
</tbody>
</table>
# List of Web links to organizations that offer Information Logistics Products (12:14)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
</table>
Global Engineering Company | Information Logistics is to provide designers with optimum support at every stage of their work. ERCO offers a multitude of both classic and digital media. Their extensive range of material is divided into information on products and reference projects and into didactic subject matter. |
Japanese Company  
Supply Chain Logistics | Logistics Information is to achieve overall efficiency in the distribution chain, from the manufacturer to the consumer, for the purpose of providing maximum value to both the industry and the consumer. This industry seeks appropriate distribution solutions through an integrated system utilizing information technology (IT) so that information pertaining to distribution as a whole can be collected and analyzed in real time.  
In order to achieve optimum distribution efficiency, Senko develops an extensive business network, which includes e-commerce, chain stores that reach the final consumer, and a consumer delivery system for the delivery of pharmaceutical supplies. |

*(Identified: Spring 2009)*
List of Web links to organizations that offer Information Logistics Products (13:14)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.posti.fi/english/current/2007/20070216financialstatement2006.html">http://www.posti.fi/english/current/2007/20070216financialstatement2006.html</a></td>
<td>Posti, Itella Group, Finish Company</td>
<td>Information logistics is successful in data management services in particular, with customers e.g. in the banking sector outsourcing extensive business processes. Included in the Itella Group, Posti has a wider range of logistics and information logistics services that now supplements postal operations. Postal services are the cornerstone of their operations in Finland. Consumer services in Finland.</td>
</tr>
<tr>
<td><a href="http://www.fil.com.au/focus.htm">http://www.fil.com.au/focus.htm</a></td>
<td>Focus, Information Logistics Pty Ltd., Australian Company</td>
<td>Information Logistics offers a unique cost-to-serve model for optimizing the information you need to understand the cost and profit measurements that generate important statistical information. Focus offers different software solutions such as ‘Supply Chain solution development for the industry.</td>
</tr>
</tbody>
</table>

(Identified: Spring 2009)
List of Web links to organizations that offer Information Logistics Products (14:14)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.cordaware.com/index.php?id=the_challenge&amp;L=3">http://www.cordaware.com/index.php?id=the_challenge&amp;L=3</a></td>
<td>Cordaware Gmbh Information Logistics German Company</td>
<td>Information logistics is capable of quickly, reliably and, most importantly, inexpensively distributing information. Clogged means of communications and a delayed flow of information increasingly lead to wasted resources. Overfilled mailboxes, spam, low response to enquiries, delays that lead to the complete loss of messages etc. are only the tip of the iceberg. What do you do, when an urgent message that must be read immediately, has to be sent to hundreds or thousands of recipients at the same time? Our main focus is on optimizing costs and resources by quickly and flexibly distributing and receiving information from one or more central areas of a company.</td>
</tr>
<tr>
<td><a href="http://processplatsen.ibissoft.se/?q=en/node/69">http://processplatsen.ibissoft.se/?q=en/node/69</a></td>
<td>IbisSoft AB Processplatsen Information Logistics Swedish Company</td>
<td>Information logistics is dedicated to improving the current status and chaos of information in different organizations. It is about beating information chaos with information logistics. Their solution is to fully utilize the power of modern computers in information processing; they need to radically change information logistics. The traditional logistics is based on the “conveyor belt” metaphor – physically move information to a person doing the next operation. The new logistics should be based on the “construction site” metaphor – virtually move a person to information when he or she is needed.</td>
</tr>
</tbody>
</table>

(Identified: Spring 2009)
List of References for Information Logistics
List of References (1:9)


List of References (2:9)


List of References (3:9)


List of References (4:9)


List of References (5:9)

List of References (6:9)


List of References (7:9)


List of References (8:9)


List of References (9:9)


List of Web links to Information Logistics Research Bodies
**List of Web links to Information Logistics Research Bodies (1:5)**

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.informationslogistik.se">http://www.informationslogistik.se</a></td>
<td>Center of Information Logistics</td>
<td>Information Logistics is the right information, to the right person, in the right way, in the right place at the right time and at the right cost, which is very important for the future.</td>
</tr>
<tr>
<td><a href="http://www.jth.hj.se/filarkiv/forskning/informationsteknik/1-Log-4-Seiter-engl.pdf">http://www.jth.hj.se/filarkiv/forskning/informationsteknik/1-Log-4-Seiter-engl.pdf</a></td>
<td>Ljungby, Sweden</td>
<td>The growing volume of information is already one of the biggest bottlenecks, and a threat to increased efficiency and quality in the entire society.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Information technology deployed globally with explosive speed. This changes the conditions for all business and public activities. Local. Worldwide. In both large and small businesses.</td>
</tr>
<tr>
<td><a href="http://www.isst.fraunhofer.de">http://www.isst.fraunhofer.de</a></td>
<td>Information Logistics Competency Center Fraunhofer Institut Software- und Systemtechnik, Germany</td>
<td>The philosophy of information logistics to Information Logistics Competence Center is: right information at the right time and place. The Information Logistics Competency Center is a think tank of the Fraunhofer ISST and one of the leading institutions for research and development of information logistics.</td>
</tr>
<tr>
<td><a href="http://www.jth.hj.se/filarkiv/forskning/informationsteknik/1-Log-4-Seiter-engl.pdf">http://www.jth.hj.se/filarkiv/forskning/informationsteknik/1-Log-4-Seiter-engl.pdf</a></td>
<td></td>
<td>Innovative technology for tomorrow’s world of information: That is what information logistics is all about. The Information Logistics Competency Center was founded in 1999 at the Fraunhofer ISST to enforce research and development activities in this field. The Fraunhofer ISST develops basic concepts of info-logistical applications and enables a practical realization.</td>
</tr>
</tbody>
</table>
## List of Web links to Information Logistics Research Bodies (2:5)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
</table>
Bremen, Germany                                                                                           | The department of Information Logistics offers competent services, products and innovative research via studies and R&D projects in the field of information and simulation technologies for the transport area. Our experts combine their knowledge of transport and logistical processes with efficient project management and IT experience.  
IL-system: the ISL InfoLine application is developed by the ISL’s information logistics department, is in its core function a user interface, which allows users to log into a portal, complete data and download port figures. Thus, ISL InfoLine is your personal resource of up-to-date market information from the ISL. |
| http://www.jth.hj.se/filarkiv/forskning/informationsteknik/I-Log-4-Seiter-engl.pdf last accessed on: 06/03/2009 | Research in Information Logistics  
School of Engineering, University of Jönköping, Jönköping, Sweden   | The philosophy of information logistics to Information Logistics Competence Center is: right information at the right time and place. The Information Logistics Competency Center is a think tank of the Fraunhofer ISST and one of the leading institutions for research and development of information logistics.  
Innovative technology for tomorrow’s world of information: That is what information logistics is all about. The Information Logistics Competency Center was founded in 1999 at the Fraunhofer ISST to enforce research and development activities in this field. The Fraunhofer ISST develops basic concepts of info-logistical applications and enables a practical realization. |
### List of Web links to Information Logistics Research Bodies (3:5)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="https://www.vxu.se/msi/utb/program/imag/">https://www.vxu.se/msi/utb/program/imag/</a></td>
<td>Växjö University School of Mathematics and Systems Engineering; Department of Informatics Sweden</td>
<td>Masters Program in information logistics is aimed primarily at professionals who want to develop and streamline information flows within companies and organizations, it provides two directions: business or care facilities.</td>
</tr>
<tr>
<td><a href="http://www.fachhochschule.de/FH/Studium/Informationslogistik_3344.htm">http://www.fachhochschule.de/FH/Studium/Informationslogistik_3344.htm</a></td>
<td>University of Applied Sciences Stuttgart Program of Information Logistics Germany</td>
<td>Information logistics is a part of information management which deals with information flows within an organization. The aim is to optimize the availability and lead times of information. In other words, the information deals with the logistics of providing Right information; At the right time; In the right quality; For the right user; At the right place. The information logistics is an innovative work area and deals with the need for equitable provision of information - just in time. The study of information logistics aims to typical activities at local and global level. Studies in Information Logistics will provide you with a broad knowledge in the areas of Spatial Information, computer science, business administration, international project management and specific communication skills. Methods to achieve this objective are: The analysis of information needs. Optimizing the flow of information. Ensure a high degree of flexibility in technical and organizational terms.</td>
</tr>
</tbody>
</table>
## List of Web links to Information Logistics Research Bodies (4:5)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://interval.hu-berlin.de/content/en/projects/pd.php">http://interval.hu-berlin.de/content/en/projects/pd.php</a> last accessed on: 05/03/2009</td>
<td>InterVal Internet and Value Chains Research Institute Located in Berlin, Germany.</td>
<td>Information Logistics is about complex value chains, which are based upon information being available at the right place at the right time. The project &quot;Information Logistics&quot; aims to develop concepts and solutions to optimise business information and communication processes in modern value chains. An information logistics service architecture (ILOG-Architecture) is conceived, which is prototypically tested with variable use cases.</td>
</tr>
<tr>
<td><a href="http://infoeng.hj.se/research/infoflow/infoflow.php">http://infoeng.hj.se/research/infoflow/infoflow.php</a> last accessed on: 05/03/2009</td>
<td>InfoFlow The Information Engineering Group School of Engineering, Jönköping University in cooperation with Fraunhofer ISST</td>
<td>Information Logistics aims towards an optimized flow of information, i.e. the fulfillment of users information demands with the right information at the right time and place. Information Logistic investigates approaches and solutions for an optimized information flow (the right information for a user’s needs, just-in-time, in the right quality, to the right location) for all kinds of distributed work contexts (enterprises with several locations, networks of SMEs, geographically distributed work groups, mobile workforces, etc.). There is a need especially for supporting, organizing, and optimizing information flow in networked organizations.</td>
</tr>
</tbody>
</table>
List of Web links to Information Logistics Research Bodies (5:5)

<table>
<thead>
<tr>
<th>Web-Link</th>
<th>Organisation &amp; Geo</th>
<th>Notion of Information Logistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.uni-duisburg-essen.de/il/wir-ueber-uns.shtml">http://www.uni-duisburg-essen.de/il/wir-ueber-uns.shtml</a></td>
<td>University of Duisburg-Essen Department of Informatics Germany</td>
<td>Information Logistics means the right information in proper form (in terms of size and quality), at the right place, at the right time, reliably and economically reasonable cost to provide. The logistics information includes substantial stake of the (technical) information management, knowledge management and communication management. We deal in research and development with logistical information systems at the interface to specific application fields of energy, mechatronics and medical technology, taking into account the interaction of humans. We are working practically oriented and in close cooperation with small, medium and large industrial partners and academic institutions.</td>
</tr>
<tr>
<td><a href="http://www.edu.mah.se/TR112A/syllabus/">http://www.edu.mah.se/TR112A/syllabus/</a></td>
<td>Malmö Högskola School of Technology Course in Information Logistics, Sweden</td>
<td>The course provides skills in management information systems for logistics, such as GPS, GIS, EDI and RFID, and for transport (mapping software). The various systems and applications in a carrier are treated as links between information logistics, business and other decision support systems.</td>
</tr>
</tbody>
</table>
End.