Exploring Opportunities of the Information Society

Information Logistics

Research Program

full edition

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Centre for Information Logistics
Ljungby, Sweden
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About this Document

- **Context:** The Centre for Information Logistics, Ljungby, Sweden, aims to develop long-term research activities in the area of Information Logistics; a central component for such an endeavour is a Research Program aimed to guide such research.

- **Content:** This document contains a proposed Research Program for Information Logistics Research, to be the hosted by the Centre for Information Logistics, Ljungby, Sweden.

- **Purpose:** This document is a proposal, and may be subjected for changes; the document aims to inform and guide.

- **Version:** Full Edition - 18-12-2009

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Summary of this Proposal

This document presents the first formal Research Program of the Centre for Information Logistics (CIL) in Ljungby, Sweden.

The function of this Information Logistics Research Program is to guide the conduct of research activities initiated by CIL and its collaborating actors – universities, industrial and governmental organisations.

This Research Program...

- ...is grounded both in a recent review of the internationally published Information Logistics research and in conducted dialogue with selected industrial and governmental organisations;

- ...has its Mission is to guide the constitution and dissimilation of scholarly knowledge:
  - about current Information Logistic phenomena and about technology (procedures & artefacts) that enables new purposeful Information Logistics phenomena;
  - that manifests value for the various regional, national and international stakeholders, such as businesses, governmental, and non-profit organisations, and for individual human beings.

- ...has Strategic Objectives:
  - to produce IL-knowledge that contributes to an increased productivity of organisational and inter organisational operations.
  - to produce IL-knowledge that contributes to an increased sustainability of human affairs and its nature.
  - to produce IL-knowledge that contributes to an increased human wellbeing.

- ...Key Research Areas are:
  - Information Logistics - Business Models: information activities that generate financial transactions;
  - Information Logistics - Operations Models: information activities that enable conduct of human activity systems and value chains;
  - Information Needing Actors: provision of the right information, at the right time and place, in the right format, etc.;
  - Information Logistics - Foundations: elaboration of foundational concepts such as information, its relation to data, organisation, etc.;

This program also proposes key characteristics of the Research Approach to execute such research as well as a Governance Model for the governance of the Research Program as such.
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1. Background

• The Centre for Information Logistics (CIL), in Ljungby, Sweden, was established in the beginning of the 20th Century as a network organisation, linking the needs of the regional organisations – business and public – and the academic capabilities; CIL’s mission is the dissimilate Information Logistic knowledge.

• CIL has established successful academic programs in Information Logistics, which are conducted in close collaboration between three academic institutions and the regional industries; more recently CIL has also established other academic and professional programs, as a reaction to the regional needs expressed.

• CIL’s Board of Directors made a strategic decision to establish Information Logistics Research.

• The first step in this was to identify and analyse the current international research on Information Logistics.

• The second step was to formulate an Information Logistics Research Program serving as a long-term guide for CIL’s research activities; this document presents CIL’s first Research Program!

• The immediate next steps activities include definition of one or several research projects, that correspond to the defined research program and to identify a set of collaborating organisation as well as researches and foundlings needed of the execution of the research projects defined.
1. Background

2. The Information Society

3. Key Definitions

4. Elaboration of Research Areas

5. Research Program Defined

6. Proposed Research Approach

7. Appendix
2. The Information Society: requires new understanding

Societal Transformations

- Agricultural Revolution
- Industrial Revolution
- Informational Revolution


Some Key Drivers of Information Society

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information &amp; Communication Technology</td>
<td>The extension of symbol-processing technology deployment has surpassed the material processing technology.</td>
</tr>
<tr>
<td>Economic Value of Information Production</td>
<td>The economic value of the informational activities, vs. agricultural and industrial activities, is dominating the GNP’s of the Western Economies.</td>
</tr>
<tr>
<td>Volume of Information Workers</td>
<td>The predominance of occupations, in the Western Societies, is found in the information work.</td>
</tr>
</tbody>
</table>

2. The Information Society: asks for a balance of productivity—sustainability—human-wellbeing

Proposed Chain of Intentionality

- Generated Information Logistics Knowledge...
  - contributes to Innovations...
- of deployed Information Logistics Technology...
  - contributes to...
- Increased Productivity
- Increased Sustainability
- Increased Human-Wellbeing

Proposed Key Desired Benefits of Information Logistics

- **Increased Productivity**
  - Productivity increase of information-based operations is lagging behind the productivity increase of manufacturing operations.
  - How can Information Logistics contribute to remedy this gap?

- **Increased Sustainability**
  - Dematerialisation if human activities, by means of substitution of physical goods for information-based services, posses a central opportunity for the sustainability of our world!
  - How can Information Logistics contribute to this end?

- **Increased Human-Wellbeing**
  - Information safety, security, comfort, and well being is currently limited frequently by the lack of the needed information at the right place and in the right time!
  - How can Information Logistics contribute to the remedy of this lack?
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4. Elaboration of Research Areas
5. Research Program Defined
6. Proposed Research Approach
7. Appendix
3. Key Definitions:
Conception of Information Logistics

INFORMATION is understood here as the meaning that emerges when an actor interprets data (symbols / signals);
(Latin: *informare* = to give form to, to discipline, to teach..)

\[ I = i (D, S, t) \]

where:
- \( I \) : Information obtained by the interpretation process
- \( i \) : the interpretation process
- \( D \) : Data interpreted
- \( S \) : pre-knowledge
- \( t \) : the time allowed


LOGISTICS

rational handing of purposeful human activities,
currently typically delimited to the area of the physical flow of goods
(Ancient Greek: logos = ration, word, reason, calculation)

Logistics is the management of the flow of goods, information and other resources, including energy and people, between the point of origin and the point of consumption in order to meet the requirements of consumers

Logistics is considered to have originated in the military's need to supply themselves with arms, ammunition and rations as they moved from their base to a forward position.
In ancient Greek, Roman and Byzantine empires, there were military officers with the title ‘Logistikas’ who were responsible for financial and supply distribution matters.

Etymologically regarded ‘Information Logistics’ concerns the supply needed data for interpretation into a meaning!
3. Key Definitions:
Conception of Information Logistics

Information Logistics phenomena are empirical and multi-disciplinary

- Mathematics
- Logic
- Physics
- Engineering
- Psychology
- Linguistics
- Organisation
- Sociology
- Business
- Economics
- Aesthetics
- Law
- Ethics, etc.

Illustration: Information Flow when ordering of a book

Producer: Moscow-Publisher
Supplier: Moscow-Books Store, in New York
Shop: Amazon.com
Customer: Order of a Book

Intermediary: Russian Books Import Ltd.

Key components of Information Logistics System
- Information
- Nodes (Information Systems)
  - Source / Sender
  - Intermediary
  - Destination / receiver
- Nodes functions:
  - produce
  - store
  - transfer
  - transform protocol
- Information Channels
- Information Flow Pattern
- Information Transfer Protocol

Information Logistics phenomena require multi-disciplinary inquiry to justify its complexity
# 3. Key Definitions: Conception of Information Logistics

## Scope of Information Logistics

<table>
<thead>
<tr>
<th>Short Definition</th>
<th>Example of Practical Concern</th>
<th>Pro &amp; Con</th>
</tr>
</thead>
</table>
| Too limited Notion of Information Logistics; typically assumed by international IL Research: it addresses the information delivery only | Google’s Search Engine that identifies on the Internet the defined information and then delivers it on request | + Narrow scope easier to research  
+ Correlates closer the research-scope of the current international IL-research  
- Misses the full potential of information oriented research opportunities  
- Information transfer may seldom be completely isolated from other information processing functions  
- Fewer potential stakeholders for collaboration |

### A narrow scope

- **Information Transfer, only.**
  - Information Logistics encompasses only the information transfer, including required processes, structures, conditions, etc.

### A broad scope

- **Information Production, incl. storage & transfer**
  - Information Logistics encompasses the information production, storage, delivery, and its utilization, including required processes, structures, conditions, etc.

  Google’s Information Production Software, such as language translations, earth maps, etc.

  This both produces needed information and then transfers it to the needing actor.

  + Addresses the full potential of information oriented research opportunity  
  + Offers many potential collaborators  
  - Broader scope may require more resources or alternative delimitations  
  - May be understood as overlapping with other disciplines

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Preferred Notion of Information Logistics: addressing the complete flow of information from its generation, throughout its delivery channels to its reception and utilisation.
3. Key Definitions

Information Logistics: Information in an Organizational Context

**Functions of any Information Processing System**
(Newell & Simon 1973)

Levels of concern of Information
(Langefors* & Le Moigne **)

<table>
<thead>
<tr>
<th>Levels</th>
<th>Information Functions</th>
</tr>
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<tbody>
<tr>
<td>Tekto-logical</td>
<td>Information Generation</td>
</tr>
<tr>
<td>Info-logical</td>
<td>Information Storage</td>
</tr>
<tr>
<td>Data-logical</td>
<td>Information Transfer</td>
</tr>
</tbody>
</table>

The here proposed domain of concern for Information Logistics Research

A narrower focus of Information Logistics Research

**Tekto-logical**: - refers to organized human activities, such as organizations, projects and various collaboration networks;
- includes sets of actors (man & machine), their activities and processes, intentions and norms, and then outcomes;
- constitutes the context of information processing, its generation, interpretation, usage and function
- this level of concern is necessary for the emergence of Information Logistics

**Info-logical**: - refers to the semantic aspects of information, such as its meaning, formulation and interpretation,
- addresses questions of information quality, such as validity, reliability and relevance
- requires the tecctological level’s actors for formulation and interpretation of information

**Data-logical**: - refers to the sets of symbols and signals, and their formal processing, typically machine-processing
- these data-sets are carriers or representations of meaning which emerges in the process of interpretation

3. Conception of Information Logistics

**Information Logistics Phenomena** regards those arrangements of objects and processes that conduct generation, transfer, transformation, storage, reception and utilisation 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.

Information Logistics phenomena are necessarily inherent in all social and human affairs, this is so since as soon there are two or more people there merges information exchange.
3. Conception of Information Logistics: a structural definition of Information Logistics Discipline

The Meta-Theory Level of Information Logistics

Information Logistics Meta-Science
- studies & forms

Information Logistics Science
- constituted by

Analytical Science of Information Logistics
- Studies current phenomena of Information Logistics
- Informs each other

Design Science of Information Logistics
- Studies the design & development practices of Information Logistics phenomena

The Theory Level of Information Logistics

Information Logistics Meta-Science
- constituted by

The Practice Level of Information Logistics

Information Logistics Management
- Are directed & controlled by
- Directs & controls

Information Logistics Operations
- Enables execution of
- utilises

Information Logistics Technology
- Changes

Information Logistics Engineering
- Initiates, Directs & Controls
- Influences
- Develops
3. Conception of Information Logistics: key concepts

• **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 generation, storage, transport, reception and utilization (man & machine), within and between organizations

• **Information Logistics Technology** =
  Physical artifacts, typically ICT, that enable execution of Information Logistics Operations and Management
# 3. Information Logistics versus other related disciplines

<table>
<thead>
<tr>
<th>Academic Filed of Inquiry</th>
<th>Key Concern</th>
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<th>Central Publication</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information Studies</strong></td>
<td>Is probably not a formal discipline but rather a set of scholars that study the very meaning component of information</td>
<td>Cryptography, e.g. ZIP files</td>
<td>Brier, S. (2007). <em>Cybersemiotics: Why Information is Not Enough</em>. Toronto Studies in Semiotics &amp; Communication</td>
</tr>
<tr>
<td><strong>Communication Studies</strong></td>
<td>A discipline that addresses the processes of communication, defined as the sharing of symbols over distances in space and time. Key concern is humans’ interpretation of information communicated and the impact it has</td>
<td>The study of how television and newspapers influence people</td>
<td>Adam G.S. &amp; Carey, J.W. (1988). <em>Communication as Culture</em>.</td>
</tr>
<tr>
<td><strong>Information Management Studies</strong></td>
<td>The study of how existing information is handled, including structuring, storage, delivery, in and between organizations.</td>
<td>Design of an information structure for the filing of a large set of information</td>
<td>Huizing, A. de Vries, E. Eds. (2007). <em>Information Management: Setting the Scene</em>. (Perspectives on Information Management)</td>
</tr>
</tbody>
</table>
## 3. Information Logistics versus other related disciplines

<table>
<thead>
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<th>Academic Filed of Inquiry</th>
<th>Key Concern</th>
<th>vs. Information Logistic</th>
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</thead>
<tbody>
<tr>
<td>Information Systems Discipline</td>
<td>The study of development, use, and effects of computerized information handling system</td>
<td>• Focuses mainly on the development and effects of computer-based information systems</td>
</tr>
<tr>
<td>[US/UK] / Informatics [Scandinavia]</td>
<td></td>
<td>• Typically disregards form the information, its meaning, its flow</td>
</tr>
<tr>
<td>Computer Science [US/UK] / Informatics [Continental Europe]</td>
<td>The study of development, use, and effects hardware and software systems for computers</td>
<td>• Does not address manual information handling</td>
</tr>
<tr>
<td>Information Theory</td>
<td>Is a formal discipline that applies mathematics to the quantification of information</td>
<td>• Focuses mainly on the formal aspects of symbol/data transfer between machines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Is not concerned with information and its context</td>
</tr>
<tr>
<td>Information Studies</td>
<td>Is probably not a formal discipline but rather a set of scholars that study the very meaning component of information</td>
<td>• Focuses on the structure of meaning of information symbols/signals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Is not concerned with form deliberate handling of information, its, flows, its functioning in human affairs</td>
</tr>
<tr>
<td>Communication Studies</td>
<td>A discipline that addresses the processes of communication, defined as the sharing of symbols over distances in space and time Key concern is humans’ interpretation of information communicated and the impact it has</td>
<td>• Focuses mainly on the psychological, social and political effects of inter-human communication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Is not concerned with the manual and machine-based information handling, its flow and functioning</td>
</tr>
<tr>
<td>Information Management Studies</td>
<td>The study of how existing information is handled, including structuring, storage, delivery, in and between organizations; particularly concerned with Information Technology’s role in organization.</td>
<td>• A partly ambiguous concept addressing the various aspects of information handling in and between organizations, often concerned with information storage and access questions and with IT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Has not made attention to questions addressed by IL-research, such as info-flow design, info-demand handling, info generation, etc.</td>
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</tbody>
</table>
3. Information Logistics versus other related disciplines

A UNIQUE POSITION

Given the understanding of the related information-centred disciplines,

Information Logistics has the opportunity to be the only intellectual endeavour
that focuses on the complete value chain of information handling,
from its generation, throughout its transformation, storage,
transport and transformation,
toward its reception and utilisation aimed at a certain end,
typically some kind of value generation in the context of human affairs.

This complete value chain focus is independent of whether it is conducted
by man, a machine, or both.

In this, Information Logistics focus addresses both
the meaning (or semantics) of information
and its physical representation (syntax).

Information Logistics has a particular interest in the kinds of value or benefits
that information handling can give rise in the context of human affairs
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2. The Information Society
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5. Research Program Defined
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4. Elaboration of Research Areas:

*four research frontiers are proposed*
Introduction to Information-Logistics Operations-Models

• VALUE CHAINS
  Human and Social Affairs are today dominated by various kinds of Human-Activity-Systems\(^1\), where one central kind are the so-called Value Chains\(^2\), that conduct transformation of their respective objects or subjects (e.g. a car, a patient).

• INFORMATION LOGISTICS
  The performance of these Value Chains seems to be determined, to a certain extent, by their Information Logistic Activities between the involved Actors.

• IL-OM RESEARCH AREA proposes:
  - an exploration of the current patterns that are inherent in today’s Value Chains
  - an exploration of the potential improvements of these Value Chains, by means of Information Logistics,
    seeking improvements of Productivity, Sustainability, and the Human Well-Being.

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\(^1\) Human Activity Systems are understood as a set of activities conducted by humans and their artefact with in relation to one or several purposes (see Checkland P. (1981). Systems Thinking, Systems Practice. Wiley).

\(^2\) Value Chain is here understood as a chain of activities, hence a subtype of Human Activity Systems, where Products and People (transformation objects & subjects) pass through all activities, at each activity some value gains are realised. The chain of activities gives the transformation objects more added value than the sum of added values of all activities.

In this context, the Transformation Object and Subject may be characterised in terms of their Life-Cycle. (See: Porter, M.E. (1985) Competitive Advantage, Free Press, New York, 1985)

**Sector** | **Object / Subject** | **Issues** | **Value Chain** |
--- | --- | --- | --- |
Pharmaceutical Industry | Ethical Drugs | - R&D: shorten lead-time  
- R&D: increase output  
- Drug Utilisation Effects | [R&D, Prod., Suppl., M&S, Servic.] |
Heavy Vehicle Industry | Heavy Vehicles | - R&D  
- Utilisation Effects  
- Maintenance & Service  
- Total Cost of Ownership | [R&D, Prod., Suppl., M&S, Main Servic., Dispos.] |
Construction & Facility | Buildings | - Construction  
- Maintenance  
- Total Cost of Ownership | [Design, Construct, Maintenance, Destruction] |
Health Care | Patients | - Prevention  
- Diagnoses  
- Treatment, Compliance | [Healthy, Ill, Diagnosis, Treatment] |
Local Governments | Citizens | - Citizen Services  
- Local Democracy  
- Efficient Case Handling | [Case Reception, Allocation, Resolution, Delivery] |
Tourist Industry | Tourists | - The Informed Tourist | [Planning, Booking, Travelling] |
- Etcetera.

Human & Social Affairs seem to be dominated by various kinds of arrangements of Human & Machine Activities where a central kind are the so-called Value-Chains, with their specific Transformation Objects / Subjects.
Ex.: Value Chain for a Forklift Truck

- **ACTORS**
  Each kind of Value Chain seems to have its specific arrangement of Actors (man & machine) that are interacting in order to transform the Transformation Object / Subject.

- **INFORMATION**
  These Actor-Interactions seem to be dominated by intensive information exchanges.

- **ORGANISATIONS**
  The interacting actors are organised into various kinds of organisations and the latter’s networks.
Three Sub-Areas of Information-Logistic Operations-Models

SUB-AREA (a): Intra-Phase Information-Logistics Intra-Value-Chain

Ex.: Value Chain for a Forklift Truck

Area of Concern
Intra-Phase Information-Logistics addresses the Information Logistic within a specific phase of a given Value Chain
Three Sub-Areas of Information-Logistic Operations-Models

SUB-AREA (b): Inter-Phase Information-Logistics, Intra-Value-Chain

Ex.: Value Chain for a Forklift Truck

Area of Concern

Inter-Phase Information-Logistics addresses the Information Logistics between the various phases of a given Value Chain
Three Sub-Areas of Information-Logistic Operations-Models

SUB-AREA (c): Inter-Value-Chain Information-Logistics

Area of Concern
Inter-Value-Chain Information-Logistics addresses the Information Logistics between the different Value Chains
Research Frontier # 1: Information-Logistic Operations-Models

Information-Logistic Operations-Models may be understood in terms of Three kinds of Areas:
(a) the Intra-Value-Chain Intra-Phase IL, (b) the Intra-Value-Chain Inter-Phase IL, and (c) the Inter-Value-Chain IL.
Research Frontier # 1: Information-Logistic Operations-Models

Some Generic Research Questions for Information-Logistics Operations-Models

1. What are the key characteristics of IL-Operations today?
2. What are the key limitations and challenges of current IL-Operations?
3. What are the key opportunities of IL-Operations?
4. What benefits may these opportunities bring?
5. What are the Key Success Factors for realisation of these Opportunities?

6. Illustration: What are the current Information Logistic conductions and opportunities of the following network of Objects and Subjects, and their respective Value Chains?
   a. Patient
   b. Patient Relatives
   c. Physician
   d. Nurse
   e. Drug
   f. Drug-Making Company
   g. Hospital building
   h. Hospital bed
   i. Respirator, etc.
# Research Frontier # 1: Information-Logistic Operations-Models

## Summary of the proposed Research Area:
**Information-Logistics Operations-Models**

<table>
<thead>
<tr>
<th>DOMAIN</th>
<th>- Information Logistics within the various kinds of Value Chain Operations</th>
</tr>
</thead>
</table>
| KNOWLEDGE NEEDS (Research Objective) | - To understand the characteristics of IL-Operations  
                                - To understand the shortcoming and limitations of the IL-Operations  
                                - To understand the opportunities of IL-Operations and their KSF |
| POTENTIAL BENEFITS (Research Purpose) | - To guide the development and management if the various Value-Chain Operations with regard to their:  
                                Productivity, Sustainability, and Human Well-Being |
| STAKEHOLDERS (Benefit-Recipients) | - All Value-Chain Operations Managers and developers  
                                - Goods and Services Industries, and Public Sectors |
| KEY SUCCESS FACTORS | - Cross Disciplinary Research Teams  
                                - Comprehensive review of current knowledge within the various disciplines  
                                - Research: Explorative, Descriptive, Experimental, Normative |
### Information-Logistic Operations-Models: Proposed Research Project 1

#### Proposal: IL for the Operation & Maintenance of Heavy Vehicles

- **Operations Models:** Value-Chain => Operation & Maintenance ("Drift & Underhåll")
- **Object of Interest:** Heavy Vehicles (e.g. Trucks: Volvo, Scania; Forklifts: Cargotech)
- **Key Operational Concerns:**
  - reduce the of unwanted number of operational stops
  - reduce the length of unwanted operational stops
  - increase the accuracy of service activities delivered
  - increase the efficiency of vehicle utilisation, etc.
- **Key IL Concerns:**
  - timely delivery of the relevant vehicle state information to the service unit
- **Some IL questions:**
  - how to represent a vehicle? (e.g. ontologies)
  - how to generate, capture and transfer the needed information?
  - how to analyse acquired information?
- **Potential Outcomes:**
  - specific knowledge about the addressed Vehicles
  - specific analysis-patterns
  - proposal for generic knowledge relevant for other Vehicles
  - a prototype software application for IL
- **Business Aims:**
  - to contribute to a reduced Total Cost of Ownership ($)
  - to contribute to a reduction of Fossils Utilisation (Eco)

Note: the below defined project aims at illustration of the link between the Research Program and its Frontier and a Research Project; the here defined Research Project may of may not be found relevant for further conduct.
Information-Logistic Operations-Models:
Proposed Research Project 2

Proposal: IL for the Operation & Maintenance of Buildings

- **IL Operations Models:** Value-Chain => Operation & Maintenance (“Drift & Underhåll”)
- **Object of Interest:** Buildings (e.g. Residences, Offices, Industrial Buildings, etc.)
- **Key Operational Concerns:**
  - reduce the of unwanted number of operational stops
  - reduce the length of unwanted operational stops
  - increase the accuracy of service activities delivered
  - increase the efficiency of vehicle utilisation, etc.
- **Key IL Concerns:**
  - timely delivery of the relevant vehicle state information to the service unit
- **Some IL questions:**
  - how to represent a building? (e.g. ontologies)
  - how to generate, capture and transfer the needed information?
  - how to analyse acquired information?
- **Potential Outcomes:**
  - specific knowledge about the addressed Buildings
  - specific analysis patterns
  - proposal for generic knowledge relevant for other Objects
  - a prototype software application for IL
- **Business Aims:**
  - to contribute to a reduced Total Cost of Ownership ($)
  - to contribute to a reduction of Fossils Utilisation (Eco)

Note: the below defined project aims at illustration of the link between the Research Program and its Frontier and a Research Project; the here defined Research Project may of may not be found relevant for further conduct.
Example of Project

### Proposal: IL for the Development of Heavy Vehicles

- **IL Operations Models:** Value-Chain => Research & Development (“Produktutveckling”)
- **Object of Interest:** Heavy Vehicles (e.g. Trucks: Volvo, Scania; Forklifts: Cargotech)
- **Key R&D Concerns:**
  - to understand the utilisation patterns
  - to understand the limitations & challenges of current products
  - to understand the opportunities of current products
  - to understand the context and priority of these limitations & opportunities
- **Key IL Concerns:**
  - timely delivery of the relevant vehicle state information to R&D unit
- **Some IL questions:**
  - how to represent a vehicle? (e.g. ontologies)
  - how to generate, capture and transfer the needed information?
  - how to analyse acquired information?
- **Potential Outcomes:**
  - specific knowledge about the addressed Vehicles
  - specific analysis-patterns
  - proposal for generic knowledge relevant for other Vehicles
  - a prototype software application for IL
- **Business Aims:**
  - to contribute to increased R&D productivity ($)
  - to contribute to a development of reduced Fossils Utilisation (Eco)

Note: the below defined project aims at illustration of the link between the Research Program and its Frontier and a Research Project; the here defined Research Project may of may not be found relevant for further conduct.
Information-Logistic Operations-Models: Proposed Research Project 4

**Proposal: IL for the Development of Buildings**

- **IL Operations Models:** Value-Chain => Research & Development (“Produktutveckling”)
- **Object of Interest:** Constructions (e.g. Residences, Offices, Industrial Buildings, etc.)
- **Key R&D Concerns:**
  - to understand the utilisation patterns
  - to understand the limitations & challenges of current buildings
  - to understand the opportunities of current buildings
  - to understand the context and priority of these limitations & opportunities
- **Key IL Concerns:**
  - timely delivery of the relevant building state information to R&D unit
- **Some IL questions:**
  - how to represent a building? (e.g. ontologies)
  - how to generate, capture and transfer the needed information?
  - how to analyse acquired information?
- **Potential Outcomes:**
  - specific knowledge about the addressed buildings
  - specific analysis-patterns
  - proposal for generic knowledge relevant for other constructions
  - a prototype software application for IL
- **Business Aims:**
  - to contribute to increased R&D productivity ($)
  - to contribute to a development of reduced Fossils Utilisation (Eco)

Note: the below defined project aims at illustration of the link between the Research Program and its Frontier and a Research Project; the here defined Research Project may of may not be found relevant for further conduct.
Information-Logistic Operations-Models: Knowledge Constitution

Research Project Portfolio as a Base for Generic IL-knowledge Constitution

<table>
<thead>
<tr>
<th>R&amp;D</th>
<th>Prod.</th>
<th>Supply</th>
<th>M &amp; S</th>
<th>Operation &amp; Maintenance</th>
<th>Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy Vehicles</td>
<td>3</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Buildings</td>
<td>4</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Chemicals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Generic IL-knowledge about R&D

Generic IL-knowledge about Operations & Maintenance.

Generic IL-knowledge on IL-Operations
4. Elaboration of Research Areas: 

*four research frontiers are proposed*
Introduction to Information-Logistic Business-Models

• ECONOMIC TRANSACTIONS
  The exchange of information between various actors,
  in the various formats, contexts, and arrangements, e.g. News Paper, Cable-TV,
  may give rise to economic transaction, that in turn generate a positive surplus.

• IL-BM
  such arrangements are understood here as Information-Logistic Business Models (IL-BM)

• IL-BM RESEARCH AREA proposes:
  - an exploration of the currently existing IL-BM
  - an exploration of novel application of the current IL-BM
  - an exploration of new IL-BM
  - an exploration of the relation between IL-BM and IL-OM

<table>
<thead>
<tr>
<th>Instance</th>
<th>Actor Network -- Flows of Info &amp; $</th>
<th>Financial Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Conventional News Paper</td>
<td><img src="#" alt="Diagram" /></td>
<td>- Buyer</td>
</tr>
<tr>
<td>e.g. <em>New York Times</em></td>
<td><img src="#" alt="Diagram" /></td>
<td>- Advertiser</td>
</tr>
<tr>
<td>- Free News Paper</td>
<td><img src="#" alt="Diagram" /></td>
<td>- Buyer</td>
</tr>
<tr>
<td>e.g. <em>Metro</em></td>
<td><img src="#" alt="Diagram" /></td>
<td>- Advertiser</td>
</tr>
<tr>
<td>- Cultural Journal</td>
<td><img src="#" alt="Diagram" /></td>
<td>- Buyer</td>
</tr>
<tr>
<td>e.g. <em>Arena</em></td>
<td><img src="#" alt="Diagram" /></td>
<td>- Sponsor</td>
</tr>
<tr>
<td>- Science Journal</td>
<td><img src="#" alt="Diagram" /></td>
<td>- Buyer</td>
</tr>
<tr>
<td>e.g. <em>Systems Research</em></td>
<td><img src="#" alt="Diagram" /></td>
<td>- Author</td>
</tr>
<tr>
<td>- Non Add Journal</td>
<td><img src="#" alt="Diagram" /></td>
<td>- Buyer</td>
</tr>
</tbody>
</table>
# Information-Logistic Business-Models: Empirical Insights

## Instance | Actor Network -- Flows of Info & $ | Financial Sources
---|---|---
- On-line Search Engine  
  e.g. Google | ![Diagram of actor network](Diagram.png) | - Buyer  
- Advertiser

- On-line Information Service  
  e.g. Google’s Translators | ![Diagram of actor network](Diagram.png) | - Buyer  
- Advertiser

- On-line Free Encyclopaedia  
  e.g. Wikipedia | ![Diagram of actor network](Diagram.png) | - Sponsor  
- Author

- On-line Book-Store (Retailer)  
  e.g. Amazon.com | ![Diagram of actor network](Diagram.png) | - Buyer  
- Publisher  
- Investment  
- Advertiser

<table>
<thead>
<tr>
<th>Instance</th>
<th>Actor Network -- Flows of Info &amp; $</th>
<th>Financial Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Information Supplier</td>
<td><img src="Image" alt="Diagram" /></td>
<td>- Info Source</td>
</tr>
<tr>
<td>e.g. Strålfors for ICA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Social Media</td>
<td><img src="Image" alt="Diagram" /></td>
<td>- Advertiser</td>
</tr>
<tr>
<td>e.g. FaceBook</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Owner of Bounded Social Media Space*
• VARIOUS INFORMATION ARRANGEMENTS…
   Everyday experience shows that there are numerous kinds of arrangements, constituted of Actors, Channels, Formats, Information, and Information-Exchange-Patterns.

• … WITH VARIOUS FINANCIAL SOURCES
   A variety of financial sources are inherent into these Information-Exchange Arrangements, which give rise to a positive economic result and thereby motivates their existence.
Research Frontier # 2: Information-Logistic Business Models

Some Generic Research Questions for Information-Logistic Business-Models

1. What Information-Logistic Business-Models (IL-BM) exist today?
2. What are the key characteristics and conditions of current IL-BM:s?
3. Can these current IL-BM be applied in a novel fashion to generate economic profit?
4. Are there any opportunities for completely new IL-BM?
5. What are the actual and potential Relations between
   a. Information-Logistic Operations-Models, and
   b. Information-Logistic Business-Models?

Diagram:
- IL-OM (Information-Logistic Operations-Models) with "finances" and "enables" to IL-BM (Information-Logistic Business-Models) with a dollar sign.

e.g. Cargotec & Google?
### Summary of the proposed Research Area:
**Information-Logistic Business-Models**

#### DOMAIN
- Information exchange arrangements that gives rise to an economic surplus

#### KNOWLEDGE NEEDS
(Research Objective)
- To understand the characteristics of current IL Business Models
- To understand the opportunities of new applications of the current IL-BM
- To understand opportunities for completely novel IL-BM

#### POTENTIAL BENEFITS
(Research Purpose)
- To guide business organisations in their development of new business opportunities

#### STAKEHOLDERS
(Benefit- Receivers)
- All kinds of organisations, Profit and non, looking for new sources of economic well-being

#### KEY SUCCESS FACTORS
- Business School Setting
- Cross Disciplinary Research Teams
- Comprehensive review of current knowledge within the various disciplines

Proposal: Analysis of the forthcoming De-Regulation of EU’s Postal-Market

- **IL Business-Models:** European Union's Postal Services Market

- **Background¹:**
  - The postal services sector is of vital importance for commercial users and consumers alike and is considered as a service of general economic interest (SGEI). The postal markets are dynamic and quickly evolving in conjunction with the ever widening markets of communication, advertising and electronic commerce. Overall in the EU, postal services are estimated to handle 135 billion items per year, reflecting a turnover of about € 90 billion or about 1% of Community Gross Domestic Product (GDP). About two-thirds of this turnover is generated by mail services. The reminder is generated by parcels and express services which are already in the competitive area (i.e., the market is fully open to competing operators).
  - The objective of the EU postal policy is to accomplish the Single Market for postal services and ensure a high quality universal postal service as part of the Lisbon Agenda. It thus focuses on postal customers, both business and consumers. These objectives are pursued by opening up the sector to competition in a gradual and controlled way on the basis of the regulatory framework of the Postal Directive (Directive 97/67/EC, as amended by Directive 2002/22/EC, and as amended by Directive 2008/67/EC).
  - Under the 3rd Postal Directive (Directive 2008/67/EC), full market opening will be accomplished by **31 December 2010** for the majority of Member States with a further two years allowed for 11 Member States.

- **Key R&D Concerns:**
  - to understand the current industry & business conditions for EU’s postal services market
  - to understand new business opportunities that may emerge as a consequence of the forthcoming de-regulation
  - to understand the Key Success Factors for a successful exploration of the emerging business opportunities

- **Key IL Concerns:**
  - Pan-European transport of information

- **Some IL questions:**
  - financial & business conditions for postal delivery
  - legal & cultural structures that condition postal delivery
  - logistic & operational conditions for postal-delivery

- **Potential Outcomes:**
  - specific knowledge about the business opportunities for Postal Services in European Union

- **Business Aims:**
  - to contribute to successful exploration of the emerging business opportunities for EU’s Posta Services

4. Elaboration of Research Areas: four research frontiers are proposed

1. Information Logistics - Operations Models
2. Information Logistics - Business Models
3. Information Needing Actors
4. Information Logistics Foundations

Diagram:
- IL-OM (Information Logistics - Operations Models)
- IL-BM (Information Logistics - Business Models)
- ILF (Information Logistics Foundations)
- INA (Information Needing Actors)
### Introduction to Information-Needing-Actors

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INFORMATION SOCIETY</strong></td>
<td>More information is produced today than ever, and every part of Human and Social Affairs is engaged in various kinds of information handlings!</td>
</tr>
<tr>
<td><strong>INFORMATION INADEQUCY</strong></td>
<td>Numerous of instance are continuously experienced when and where an Information-Needing-Actor, human or machine, is not provided needed information, which in turn gives rise to unwanted consequences, sometimes tragic, such as: the death of people in the Tsunami catastrophe in the South-East Asia.</td>
</tr>
<tr>
<td><strong>RIGHT INFORMATION</strong></td>
<td>The Information-Needing-Actors research area addresses the question of how to assure that: <em>the right information is provided to the right actor, at the right time, format, place, cost, etc.?</em></td>
</tr>
</tbody>
</table>
## Information-Needing-Actors: Empirical Insights

<table>
<thead>
<tr>
<th>Instance</th>
<th>Content</th>
<th>Information Inadequacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tsunami Catastrophe in South-East Asia</td>
<td>- A major underwater earthquake generated an enormous flood hitting the strands of Southern East Asia, and thereby giving rise to thousands of human deaths</td>
<td>- Information about the anticipated Tsunami was available at the Seismic Centre in Hawaii, yet not provided to the Needing Actors</td>
</tr>
<tr>
<td>Enron Bankruptcy</td>
<td>- 2001, the largest bankruptcy recorded in the history of USA, making app. 22,000 staff members unemployed</td>
<td>- Information about the financial difficulties of the company was available more than a year prior its collapse, yet hidden from the owners and the authorities.</td>
</tr>
<tr>
<td>In-efficient Service of an Industrial Laundry Machine</td>
<td>- The Service Operator travels to distant customer aimed to conduct a repair of a broken Laundry Machine; the Service Operator arrives without prior information about the kind of trouble, hence without needed spare part and specific service equipment; the Service Operation must return to the Offices to acquire these specific and return back to the customer</td>
<td>- Information about the broken Laundry Machine exists in the machine, yet is not acquired and forwarded to the Service Operation Centre</td>
</tr>
<tr>
<td>Wrong Leg Amputated</td>
<td>- Every year, the Swedish Healthcare system generates several faulty medical interventions; at least two cases are registered when the surgeon received information to amputate wrong leg of the patient</td>
<td>- Information about the right medical intervention was not provided to its needing Actor: here the surgeon</td>
</tr>
<tr>
<td>Policy Miss-Interprets</td>
<td>- A man was arrested by the Swedish Police, due to a drunk-alike behaviour; the hard physical treatment by the Police officers caused his death; the man had a severe and unusual illness which made him look drunk even though he wasn’t</td>
<td>- Information about the man’s illness did exist, yet the Police Officer never received it…</td>
</tr>
</tbody>
</table>
Information-Needing-Actors: Empirical Insights

- THE LACK OF INFORMATION
  Everyday experience shows numerous of instances when an Information-Needing-Actor, human or machine, is not provided the right information when so is needed: this is understood here as the Information Inadequacy

- INFORMATION INADEQUACY...
  …seems to be constituted by instances when the needed information is not accessible to the Needing-Actor, and instances when the needed information is accessible to the Actor, who cannot find it.

- UNWANTED CONSEQUENCES...
  …are frequently generated by the various instances of Information Inadequacy, including human fatalities and economic disasters!
The Information-Needing-Actor is embedded in an intricate network of activities, that are part of various workflows, which in turn are part of various Value-Chains, that in turn enable various Business-Models!
Research Frontier # 3: Information-Needing-Actors

Some Generic Research Questions for Information-Needing-Actors

1. What are the key characteristics of Information Inadequacy: the lack of need information?
2. What are the generic causes of Information Inadequacy?
3. What are the generic consequences of Information Inadequacy?
4. What are the financial costs of Information Inadequacy?
5. What are the successful strategies for elimination of Information Inadequacy?

6. What are the actual and potential Relations between
   a. Information-Needing-Actors and
      a. Information-Logistic Operations-Models,
      b. Information-Logistic Business-Models?
# Research Frontier # 3: Information-Needing-Actors

## Summary of the proposed Research Area:
**Information-Needing-Actors**

| **DOMAIN** |  - The real-life instances of an Actor’s lack of needed information: Information Inadequacy! |
| **KNOWLEDGE NEEDS** (Research Objective) |  - To understand the causes and consequences of Information Inadequacies  
                                      - To understand the strategies to reduce and eliminate instances of unwanted Information Inadequacies |
| **POTENTIAL BENEFITS** (Research Purpose) |  - To guide design of Human and Social Affairs so that unwanted events caused by Information Inadequacies can be avoided |
| **STAKEHOLDERS** (Benefit-Receiver) |  - All kinds of organisations, profit and non profit, their managers, developers, owners and members |
| **KEY SUCCESS FACTORS** |  - Cross Disciplinary Research Teams  
                                      - Comprehensive review of current knowledge within the various disciplines  
                                      - Empirically-driven research |
4. Elaboration of Research Areas:

*four research frontiers are proposed*
Introducing Information-Logistics-Foundations

• YOUNG DICIPLINE
Information Logistics as a research discipline is young and is not extensively developed.

• DIVERSE
Information Logistics phenomena requires typically understanding of characteristics that are part of various conventional disciplines, e.g. systems engineering, linguistics, psychology, sociology, economics.

• LIMITED FOUNDATIONS
As a consequence of this, Information Logistics lacks clearly established conceptual foundations, both for its key fundamental concepts and for its research approach.

• INFORMATION-LOGISTICS-FOUNDATIONS research area
proposes to address these foundational limitations in order to increase fruitful IL research.
Information-Logistics-Foundations: Empirical Questions

1. What is Information?
2. How is it possible to have Information about Information? – e.g. “This is a sentence!”
3. What do we mean by the statement Information Quality?
4. What is the relation between:
   1. Data, Information, and Knowledge?
   2. Information and Matter/Energy? – e.g. “Vattenfall providing cable TV”
   3. Information and Organisation?
      – e.g. is information informing the process of organising an organisation that formulates information?
   4. Information and Communication?
   5. Information and Language?
   6. Information and Culture, with its various meanings and symbolisms?
5. What characterises information handling
   1. by humans?
   2. by machines?
6. What characterises information exchanges between:
   1. Man and Man?
   2. Man and Machine?
   3. Machine and Machine?
7. Why is productivity gains several times higher in the physical goods production
   – e.g. a car – versus information production – e.g. a newspaper?
8. Etcetera!
Information-Logistics-Foundations: Theoretical Questions

1. INFORMATION
   Why are there still are three competing notions of Information, without sight of consensus?
   1. the Semiotic: of meaning – Charles Sanders Peirce
   3. the Engineering: Signal transfer – C.E. Shannon, W. Weaver

2. DATA-INFO-KNOWLEDGE
   Why are notions of Data, Information, and Knowledge utilised interchangeably in the various disciplines?

3. INFORMATION LOGISTICS
   Why are there several competing notions of Information Logistics?
   1. Frankfurt: Economics of Information Transfer
   2. Berlin: Information Filtering

4. PRODUCTIVITY
   Why do we lack theoretical bodies for productivity of information production operation
   – e.g. News Paper – as is available for physical goods production – e.g. Car?

1 see e.g. Peirce, C. S., and Welby-Gregory, Victoria (Lady Welby), Semiotic and Significs: The Correspondence between C. S. Peirce and Victoria Lady Welby, edited by Charles S. Hardwick with the assistance of James Cook, Indiana University Press, Bloomington and Indianapolis, IN, 1977

2 see e.g. Erwin Schrödinger “What is Life”, 1943

1. What are the most fruitful conception of Information Logistics for its successful research?

2. What disciplinary set-ups are needed for successful research of Information Logistics phenomena?
   1. Multi-disciplinary?
   2. Inter-disciplinary?
   3. Trans-disciplinary?

3. What meta-theoretical foundations are needed for successful Information Logistics Research?
   1. Ontological – the nature of Reality
   2. Epistemological – the nature of Knowledge
   3. Anthropological – the nature of Human-being
   4. Normative – the nature of Human Values

4. Etcetera
Research Frontier # 4: Information-Logistics-Foundations

Summary of the proposed Research Area: Information-Logistics Foundations

**DOMAIN**
- Conceptual Foundations of Information Logistics and its Research

**KNOWLEDGE NEEDS** (Research Objective)
- To have established conceptual foundations of Information Logistics
- To have elaborated fruitful approach into Information Logistics

**POTENTIAL BENEFITS** (Research Purpose)
- To guide the understanding of Information Logistics Phenomena and their Research

**STAKEHOLDERS** (Benefit-Received)
- Researchers, Developers, Students

**KEY SUCCESS FACTORS**
- Collaborative approach including several Disciplines
- Assume best practice approach from similar endeavour elsewhere
CONTENT

1. Background
2. The Information Society
3. Key Definitions
4. Elaboration of Research Areas
5. Research Program Defined
6. Proposed Research Approach
7. Appendix
5. Mission the Research Program

This Research Program aims to guide the constitution and dissimilation of scholarly knowledge:

– about current Information Logistic phenomena and about technology (procedures & artefacts) that produce new purposeful Information Logistics phenomena;

– that manifests value for the various regional, national and international stakeholders, such as businesses, governmental, and non-profit organisations, and for individual human beings.
5. Strategic Objectives of the Research Program

This Research Program aims:

- to produce IL-knowledge that contributes to an increased productivity of organisational and inter organisational operations.
- to produce IL-knowledge that contributes to an increased sustainability of human affairs and its nature.
- to produce IL-knowledge that contributes to an increased human wellbeing.
5. Four Research Frontiers Proposed

1. Information Logistics - Operations Models

2. Information Logistics - Business Models

3. Information Needing Actors

4. Information Logistics Foundations

ILF

INA

IL-OM

IL-BM

$
5. Four Research Frontiers Proposed

1. **IL-OM**
   - **Information-Logistic Operations-Models** addresses the functionality, dependencies and productivity for human-activity-systems, such as the Value Chains and Life-Cycles.
   - Ex: What limitations is the lack of needed information imposing upon the maintenance of a machine?

2. **IL-BM**
   - **Information-Logistic Business-Models** addresses situations where information exchange generates financial transactions.
   - Ex: Which kinds of actor-configurations, where exchange information gives rise to financial transactions, exist currently?
   - Ex: how can the current IL Business Models be applied in a novel manner to conventional industries? -e.g. maintenance of a machine!

3. **INA**
   - **Information Needing Actor** addresses the need for how to provide an actor with the right information at the right time, place, format, etc.
   - Ex: what are the generic causes of the lack of information in complex human affairs, such as the ‘Tsunami’ and ‘Challenger’ disasters?
   - Ex: how can machine-based context-awareness enable to deliver the needed information?

4. **ILF**
   - **Information Logistics Foundations** addresses the key foundational concepts and assumptions of Information Logistics and its research.
   - Ex: What is notion of ‘information’ is needed for Information Logistics? How is it possible to have information about information?
   - Ex: what is the relation between data-and-information, and information-and-organisation?
1. Background
2. The Information Society
3. Key Definitions
4. Elaboration of Research Areas
5. Research Program Defined
6. Proposed Research Approach
7. Appendix
6. Proposed Research Approach

The following are proposed Key Generic Features for how IL-Research should be conducted within the context of this Research program in order to reach success.

- **Cross-Context**: Address seemingly the same IL-phenomenon in various context for identification of isomorphism – e.g. maintenance of heavy trucks in Scandinavia vs. maintenance of buildings in Italy.

- **Multi- & Inter-Disciplinary**: Address the inquired IL-phenomenon with multiple disciplinary positions that are inter-related – e.g. maintenance of heavy trucks: engineering, economics, organization, linguistics, biology, etc.

- **Mixed Methods**: Produce IL-knowledge by means of various types of knowledge constitution methods due to the heterogenous characteristic of IL-phenomena – e.g. surveys, interpretative cases, critical studies.

- **Descriptive & Experimental**: Utilize both conventional scientific descriptive research of existing IL-phenomena and the so-called applied sciences create experiments, developments, engineering, design.
CONTENT

1. Background
2. The Information Society
3. Key Definitions
4. Elaboration of Research Areas
5. Research Program Defined
6. Proposed Research Approach
7. Appendix
Appendix

1. Research Program Formulation Method
2. Research Program Governance
3. Summary of International IL-Research
4. Collected Information on IL-needs
# 1. Research Program Formulation Method

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>OUTCOMES</th>
<th>TIMELINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Planning of the Work</td>
<td>Conceptual Framework for IL Research</td>
<td>15 September</td>
</tr>
<tr>
<td>2. Formulation of a Conceptual Framework</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Collection of Empirical IL-Dilemmas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Selection of Research Focus</td>
<td>Research PGM</td>
<td></td>
</tr>
<tr>
<td>5. Formulation of a Research Approach</td>
<td>Xyy Xxxx</td>
<td></td>
</tr>
<tr>
<td>6. Delivery for Approval</td>
<td>Yes / No</td>
<td>Mid December</td>
</tr>
</tbody>
</table>
Appendix

1. Research Program Formulation Method

2. Research Program Governance

3. Summary of International IL-Research

4. Collected Information on IL-needs
2. Research Program Governance

**PROCEDURE**

1. Research Team formulates a proposal for the Research Program

2. The Proposal is reviewed by two Reference Groups: an academic and a practitioners

3. The Proposal is formally approved by the CIL’s Board

4. The Research Program is to be evaluated and updated every period of 12-24 months
Appendix

1. Research Program Formulation Method

2. Research Program Governance

3. Summary of International IL-Research

4. Collected Information on IL-needs
3. Summary of International Information Logistics Research

A recent investigation into and mapping of the international Information Logistics Research (*) has shown the following:

1. IL-research has been published through academic channels for at least three decades
2. The last decade shows a significant increase of IL-research publications
3. 10 distinct IL-research directions have been identified
4. 4 of these IL-research directions are currently active, all in Europe
5. These four active IL-research directions are:

   3. Institute of Information Management, University of St. Gallen, Switzerland; 2008-2009
   4. The Nyenrode Research & Innovation Institute, The Netherlands; 2008-2009

3. Summary of International Information Logistics Research

<table>
<thead>
<tr>
<th>Research Direction</th>
<th>Site</th>
<th>IL Definition</th>
<th>Key Concern</th>
</tr>
</thead>
</table>
| Local Distribution of Information   | Harvard University, USA; 1 author, 1 publ.: 1978                      | “Information logistics, as a function of the business enterprise, devotes primary attention to the production, storage, packaging, and movement of information (products). (...) information logistics will be 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.” | • Local distribution of information  
• Distribution costs  
• Distribution channels  
• Transformation of information industries  
• Legal conditions of information distribution  
• Impact of information on physical goods flow |
| Information-Production Flow-Time    | Vrije Universiteit, Amsterdam, The Netherlands; 1 author, 2 publ.: 1992, 1995 | “Information logistics is a relatively new area. Some first publications saw light. They indicate that application of logistics in information production might be valuable.”                                                                                                                   | • To shorten Information-Production Flow-Time  
• To establish relevant control of information-production processes                                                                                                                                                                             |
| The User-Demand Information-Supply  | The Fraunhofer Institute for Software and Systems Engineering, Germany; 1997–2009 & its related in: Sweden, Poland, Russia, China, etc. | “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) | • Conceptual frameworks for:  
- Information-demand Identification  
- Information Matching & Assessment  
- Information Supply  
- Software Architectures  
- Database representations, etc.                                                                                                                                                                    |
| Efficiency of Information-Flow      | Institute of Information Systems, The School of Business & Economics, Frankfurt University; 2 Publ.: 2004, 2007 | “If 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.” | • In Information Networks there is a lack of Information-Flow efficiency  
• This lack of information-flow efficiency leads to production and supply inefficiencies due to unwanted interruptions |
### 3. Summary of International Information Logistics Research

<table>
<thead>
<tr>
<th>Research Direction</th>
<th>Site</th>
<th>IL Definition</th>
<th>Key Concern</th>
</tr>
</thead>
</table>
| Cross-Functional Supply of Analytical-Info | Institute of Information Management, University of St. Gallen, Switzerland; Publ. 1993; 2008-2009; several authors | “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.” | • To provide Decision-Makers with cross-functional analytic information  
• This requires analytical information from other organisational units and outside the organisation |
| Outsourced Information Handling            | Washington University, USA; Graduate Business School, 1 Publ.; 2001; 1 author, | Information handling of information as a product, independent of physical goods; this includes: gathering, selection, organisations, synthesizing and distribution of data between individuals within and between organisations; the goal is to achieve improved availability of crucial business information, that is independent of the system. | • Organisations should outsource their information handling and access operations to specialised Application Service Providers (ASP)  
• These ASP:s can provide higher quality of Information Logistics service at a lower cost |
| Information-Flows in Supply-Chains         | Halmstad University College, Sweden, 2 Publ.: 2003                    | 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 he 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. | • What factors can improve and rationalize information flows in supply-chain oriented organisations? |
### 3. Summary of International Information Logistics Research

<table>
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</thead>
<tbody>
<tr>
<td>Work-flow Modelling</td>
<td>Växjö University, 2 Publ.; 2004; P. Flensburg</td>
<td>“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.” (CM = Content Management)</td>
<td>• In order to provide the right information to the ICT-user there is a need to represent this need in a way that a machine can read and understand this representation</td>
</tr>
</tbody>
</table>
| Global Cross-Reference Database     | Norway private company; 1 Publ., 2005                                | “We speak about *information logistics*, i.e. the distribution of information for a specific purpose to a specific audience, at a specific time.”                                                                 | • Currently, most Databases have different formatting and nomenclature standards  
• Information exchange is therefore difficult, slow and costly, which generates operational inefficiencies  
• To created a Global Cross-reference Data Base for all major nomenclatures  
• This will facilitated information cross-referencing and therefore information exchange                                                                                                                                         |
| Process Improvement via Information-Flows | The Nyenrode Research & Innovation Institute, The Netherlands; publ.: 2008-2009 | 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. | • A Procedure for Business Process Re-Design  
• Establish one common Memory IS that can provide all the needed information, rightly  
• Evaluation of Information Access Technology                                                                                                                                                                                  |
3. Summary of International Information Logistics Research

The identified directions of Information Logistics Research focus mainly:

1. the data-component (i.e. physical symbol & signal) of information, not the meaning of information
2. the transport (communication, forwarding) function of information processing
3. the information processing machines (i.e. software & hardware)
4. the optimisation of information flows in and between organisational processes

There is no or little attention put onto:

1. how information is produced and identified, prior its transfer
2. the meaning and the quality of information
3. the man-based handling of information vs. the machine-based information handling
4. the consequences of the lack of needed information
Appendix

1. Research Program Formulation Method

2. Research Program Governance

3. Summary of International IL-Research

4. Collected Information on IL-needs
   - Construction Industry
   - Pharmaceutical Companies
   - Strålfors / Info Distribution
   - Ljungby Kommun / Public Sector
   - Health Care
   - Cargotec / Fork Trucks
   - Diverse
Information Logistics Research Needs

Input from
the Swedish Construction Industry

Dr. Darek M. HAFTOR

Centre for Information Logistics
Ljungby
02-11-2009
About this Document

• **Context:**
  - Centre for Information Logistics (CIL), in Ljungby, Sweden is a unique excellence organisation addressing with the mission to develop and spread of knowledge of Information Logistics;
  - CIL is currently formulating a new research program to guide its future research operations;
  - in the latter process, inputs about knowledge dilemmas and needs within the area of Information Logistics is central to secure the relevancy of the research program; this is secured by a series of interviews with representatives from organisations that possess such needs.

• **Content:**
  this document presents results from a Formal Report, published by the KK-Stiftelsen “Beställa Bygga Bruka. Ett exceptionellt kompetenslyft för brukarnytta I världsklass. Förstudie av ett samhällsbyggnadsprojekt. ISSN 1652-5213. wwwkks.se

• **Purpose:**
  this documents shall constitute an input into CIL’s research program

• **Version:**
  02-11-2009

• **Producer:**
  *Dr. Darek M. HAFTOR*, senior researcher, Växjö University
Summary of Interviewees Statements

1. "Effektivitet inom och utveckling av samhällsbyggnadssektor har mycket stor betydelse för att säkerställa att Sverige har de bästa förutsättningarna för en hållbar samhällsutveckling och ett effektivt och konkurrenskraftigt näringsliv." s.5

2. "Beträffande fastigheter räknar man med att 1 % av husbeståndet idag är nybyggnad och att resterande 99 % utgörs av befintliga fastigheter. s.24

3. "BIM (ByggnadsinformationsModell) är en process där man skapar digitala modeller av byggnader och kontinuerligt uppdaterar dem under byggnationen och hela byggnadens livscykel. Målet är att få ökad effektivitet, bättre koordination och enklare kommunikation och därmed lönsammare byggande och förvaltning" s. 29-30


5. "Sedan några år tillbaka börjar aktörer över hela världen använda sig av BIM. Sverige står i startgrupporna!" p.30

6. "I Sverige har vi inte kommit igång på samma sätt" s.29

7. "Det är skandal att IT inte fungerar i byggsektorn. Detta skapar brist-kostander" s. 29

8. "Slutsatser och rekommendationer.
Jag rekommenderar att KK-stiftelsen tillsammans med privata och offentliga aktörer går vidare med att mer i detalj definiera ett forskningsprojekt för ett exceptionellt kunskaps- och kompetenslyft i samhällsbyggnadssektorn. s.7

9. "Forskningsprogrammet föreslås omfatta följande åtta delprojekt:
...
7. System för lärprocesser, inklusive BIM. Definiera och starta upp BIM i Sverige motsvarande de statliga satsningarna i de nordiska länderna samt utveckla system för institutionalisera lärprocesser." s.7
Key Research Needs Proposed: Overview

Lifecycle of a Construction

New Construction → Re-construction & Maintenance → Abort

Stakeholders of a Construction:
- Owner
- User
- Constructor
- Maintenance Provider
- Authorities
- etcetera

BIM: “ByggInformationsModell” = “Construction Information Model”

Construction of Representation (Model): the “BIM”

1. What to represent?
2. How to represent?
3. How to generate information?
4. How to communicate information?
5. How to use information for increased efficiency of construction and maintenance?
Generic Take-Away

1. A Construction => A Manufactured Object => Object
   – States of the Object

2. Transformation of Objects (Lifecycle)
   1. Construction
   2. Maintenance
   3. Abort

3. Stakeholders
   1. Owner
   2. User
   3. Constructor
   4. Maintenance Provider
   5. Authorities, etc.

4. Information that represents
   1. The Construction
   2. The Transformations
   3. The Stakeholders

5. Information handling
   1. Representation
   2. Transfer
   3. Storage

6. Generic Challenge
   – Optimisation (increase efficiency) of the Object,
     in its several Transformation Phases,
     in relation to the various stakeholders
   – By means of information exchange between the Management System and the Operating System
Information Logistics Research Needs

Input from Pharmaceutical Industry:
*BioVitrum & Wyeth*

Dr. Darek M. HAFTOR

Centre for Information Logistics
Ljunby
24-09-2009
About this Document

• **Context:**
  - Centre for Information Logistics (CIL), in Ljungby, Sweden is a unique excellence organisation addressing with the mission to develop and spread of knowledge of Information Logistics;
  - CIL is currently formulating a new research program to guide its future research operations;
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• **Content:**
  this document presents results from an interview with Stefan Fraenkel, VP Marketing at BioVitrum AB;
  Håkan Garpenstrand, Business Development Director, Wyeth AB
  the document presents a set of research needs within Information Logistics

• **Purpose:**
  this documents shall constitute an input into CIL’s research program

• **Version:**
  29-09-2009

• **Producer:**
  Dr. Darek M. HAFTOR, senior researcher, Växjö University
Summary of Interviewees Statements: BioVitrum AB

• Marketing & Sales
  – Informationsdelning runt nyckel kunder över hela bolaget är av intresse, dvs alla interaktioner som sker med kund från R&D ända till sälj styrkan.
  – Här behövs nytänkade för att praktiskt få CRM system att bli företagsövergripande eller att olika system kan kommunicera lämplig info mellan varandra.

• En nyckel kanal för Pharmaco:s är idag websiter.
  – Hur ska man kunna komplettera kundprofiler i exvis CRM system med hur kunder rör sig på websiterna som företaget har?
  – Vilken info får man spara på?
  – vilken info är av värde?
  – hur kan man använda info:n i kommunikation med kund? dvs vad är bra och vad avskräcker kund?

• R&D
  – Hur kan man säkerställa att forskningsprocessen tar del av marknadsinformation för att säkerställa att framtida läkemedel är affärsmässigt gångbara?
  – Vilken information behöver de?
  – och kan de förstå och analysera informationen eller behövs det ytterligare verktyg?
Key Research Needs Proposed: Overview

The Value Chain of an Integrated Pharmaceutical Company

Information Provision

The Customers: Health Care Professionals & Authorities

1. Collection of customer-information: customers’ conditions, attitudes, preferences, behaviour, needs & wants
2. Share collected customer-information with all functions within the value-chain
3. Information about customers to the R&D function to influence the R&D process
4. Coordination of all channels for customer-information collection: i.e. websites, face-to-face, letters, etc.
5. Legal consideration in customer-information collection and usage?
Summary of Interviewees Statements: Wyeth AB

- Läkemedelsbranschen (LMB) och dess motpart sjukvården, domineras bl.a. av enorma mängder av information, bl.a. om människor, dess funktion och beteende, de olika sjukdomar, och de olika läkemedel och dess medicinska, sociala och ekonomiska konsekvenser.

- INFORMATIONSBEHÖV
  - Genomförande av kliniska prövningar av genererar en hel del information;
  - idag finns det system för effektivisering av informationstransport från test-patienter till DB
  - Detta utnyttjas dock er fullt ut: när patientdata inhämtas från de olika kliniker runt om i världen, när ett LM testas, så ligger det där obehandlat länge
  - Möjligheten är att skapa real-tid analyser av pågående försök, samt simuleringar av utfall av dessa försök och vid behov att hela designen av test-protokoll modifieras under tiden för den pågående studien
  - Detta skulle resultera i att, bl.a.:
    - fler läkemedel kan utvecklas
    - läkemedel blir bättre: effektivitet vs bi-värkningar
    - de stora kostnaderna för LM utveckling kan optimeras mer
    - etisk vinnings: testpatienterna behöver inte lida i onödan

- Användning av läkemedel => design av nya LM
  - vid användning av LM, inte minst vid interaktioner mellan två el fler LM, skapas en hel del effekter och därav information
  - bl.a. avsedda och oavsedda effekter och bivärkningar uppkommer
  - utmaningen är att
    - denna information fångas inte alltid
    - även om information fångas så kanaleras den ej till FoU verksamheten, som skulle kunna använda den vid designen av nya läkemedel samt nya indikationsområden för befintliga LM;

- fånga patientinformation:
  - en hel del, kanske upp emot 1/3 av sjukdomar skulle kunna elimineras eller reduceras avsevärt, om de upptäcktes tidigare
  - frågan är hur mäta människans bio-data och förmedla för analys?
  - Detta skulle kunna reducera både vård och LM kostnader och framförallt lidande och död
  - Men då måste mättekniker utvecklas, som fångar analog kroppsdatal och digitaliserar det för att överföra det vidare
  - Detta område är mycket, mycket underutvecklat!
Key Research Needs Proposed: Overview

The Value Chain of an Integrated Pharmaceutical Company

1. Collection of Clinical information so that product re-design may be conducted during the trials
2. Collection of Drug effect information: particularly of unknown effects!
3. Collection of Patient Bio-data for early illness detection

The Patient Lifecycle

Healthy, Ill, Diagnosis, Treatment, Healthy
Generic Take-Away

1. Pharamaceutical => A Manufactured Object => Object
   – States of the Object

2. Transformation of Objects (Lifecycle)
   1. Design & Development
   2. Production
   3. Market Introduction, growth, maturity, exit

3. Industrial Value Chain
   – R&D, Procurement, Production, Marketing, Sales Delivery, Service

• Stakeholders
  1. Patient / User
  2. Developer & Producer
  3. Prescriber
  4. Payers
  5. Authorities, etc.

1. Generic Challenge
   1. Information exchange within and between the above actors & phases
   2. Accurate reception of needed information, of a drugs state and effects for dynamic product development
   3. Condition of information exchange: e.g. legal, ethical,
Information Logistics Research Needs

Input from Strålfors

Prof. Anita MIRIJAMDOTTER
Dr. Magnus HELLGREN
Dr. Darek M. HAFTOR

Centre for Information Logistics
Ljungby
24-09-2009
About this Document

• **Context:**
  - Centre for Information Logistics (CIL), in Ljungby, Sweden is a unique excellence organisation addressing with the mission to develop and spread of knowledge of Information Logistics;
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• **Content:**
  this document presents results from an interview with Håkan Larsson, Head of Development at Strålfors;
  **the document presents a set of research needs within Information Logistics**

• **Purpose:**
  this documents shall constitute an input into CIL’s research program

• **Version:**
  24-09-2009

• **Producer:**
  Prof. Anita MIRIJAMDOTTER, Chair of Informatics, Växjö University
  Dr. Magnus HELLGREN, managing director CIL
  Dr. Darek M. HAFTOR, senior researcher, Växjö University
Appendix: Collected Information on IL-needs

Summary of Interviewees Statements

1. Strålfors myntade Informationslogistik i dess svenska betydelse
2. IL betyder rätt info, på rätt sätt etc., men också hela cirkeln från infoproduktion, transport, mottagande, användning och åter till produktion
3. Strålfors kärnverksamhet är informationslogistik i betydelsen rätt info, i rätt tid, på rätt sätt etc.
4. IL är kärnverksamheten; de tar emot elektroniska data, förådlar information och trycker och skickar ut info till slutmottagaren.
5. Interna infologistiken är avancerad men har också brister liksom för andra industriföretag
6. Strålfors industrialiserar informationslogistik dvs. driver tryck och utskick i mycket stör skala
7. Det handlar alltid om kunder som har mycket stora informationsvolymer; stordrift och kvalitet är de stora utmaningarna
9. Avregleringen av post i Europa är den kommande stora utmaningen
10. Om postverksamheten skulle skapas de novo skulle den förmodligen se annorlunda ut än i dag. Dagens system är skapat utifrån de regelverk som funnits.
11. Det är mycket kostsamt att ta sig in på nya marknader då infrastrukturinvesteringarna är enorma
   1. Detta innefattar många områden som teknik, logistik, juridik, management, skatter etc., speciellt lyftes behovet av kompetens inom produktionsteknik i vid mening samt behov av folk som kan analysera informationsflöden (informationskreatörer) som kan se till att folk får information och på det sätt som de önskar (tex. ICA:s personliga kunderbjudanden)
13. Om vi inte kan lita på posten eller att det plötsligt finns en uppsjö av alternativ, vad gör vi då vilka alternativ väljer vi
14. Säkerhet är viktigt; leveranssäkerhet, informationssäkerhet, sekretess
15. Strålfors vill gå uppfå i värdekedjan och ta ett större ansvar för att tillgodose kundens behov.
16. Folks informationsbeteende är intressant. De flesta vill ha informationen i tryckt form, men lämna ifrån sig information elektroniskt
17. Om folks system att kommunicera ändras kommer det att snabbt få stor påverkan på Strålfors.
18. Om Häkan hade en professor till sitt förfogande skulle han vilja satsa på djupdykning i infoflöden i en avreglerad marknad.
19. Informationsflöden driver affärer som i sin tur ger upphov till nya flöden som i sin tur....
Key Research Needs Proposed: Overview

Illustration: 2 Information Flows.

1. Transformation of EU’s Post Industry
   IL Business Models exist within the Post Industry

2. Information Logistic Business Models
   Info-Flow gives rise to IL Business Models

3. Information Flows Analysis
   Info-Flow possess a certain level of efficiency

4. Information Flows Efficiency
   Info-Flow possess a certain level of security

5. Information Flows Security
   Info-Flow possess a certain level of eco-efficiency

6. Information Flows Eco-Efficiency
Generic Take-Away

1. Post Industry => An Industry => Object of Investigation
   1. Transformation of
   2. Conditions

2. Information-Flow
   1. .... Flow / Exchange
      1. ...patterns of exchange
         1. Actors
         2. Information
      2. ...giving rise to positive financial transaction
      3. ...security of
      4. ...resource consumption
         1. ...efficiency of
         2. ...ecological impact

3. Generic Challenges
   • Design of information exchange patterns so that they give rise to positive financial transactions
   • Revenues vs. Costs
1. Transformation of EU’s Post Industry

- Definition: The European Union’s delivery of (regular) mail, conducted by the actual actors who execute such a delivery of mail, in relation to current legal laws in each country; all this for the given customers (sender and receivers of the mail) and enabled operationally by means of the employees, subcontractors, the various operational procedures, the technology, and the investments made.

- Illustration: Each country in European union has a national post carrier, who operates the delivery of mail.

- Key Research Questions:
  - what are the conditions (Political, Economic, Social, Technological, Legal, competitive, customer-wise) for the current post industry in EU?
  - given the anticipated de-regulation of the post industry what will the new landscape look like? (cpr. de-regulated air carrier, energy or telecom industries)
  - in the newly de-regulated market:
    -- what business models may emerge?
    -- what information flows may be realised?
    -- what actors and industry fusions may result?

- Potential outcome:
  - an understanding of the current post industry in EU
  - some qualified insights into the potential forthcoming de-regulated post industry in EU
  - some qualified insights into the upcoming new business opportunities
2. Information Logistic Business Models

• Definition: Information Logistic Business Model is here understood as those information-flow patterns that give rise to economic transaction that generate positive result

• Illustration: - sales of the paper-based daily News Paper, e.g. Dagens Nyheter  
- sales of books via Internet, e.g. Amazon.com  
- adds-revenues generated retrieving and transferring of information via Google search engine  
- FaceBook (or other social-media)  
- delivery of advertising brochures to consumers mail-boxes, etc.

• Key Research Questions: - what Information Logistic Business Models exits today?  
- what economic profiles (revenues, costs, results) are related to each kind of Business Model?  
- what opportunities for new Information Logistic Business Models are yet unrealised, and why?

• Potential outcome: - an understanding of the current Information Logistic Business Models, and their economic profiles  
- an insight into some potentially new Information Logistic Business Models
3. Information Flow Analysis

• Definition: Information Flow is here understood as the transfer of information (analogue or digital) through some channels and their protocol, between two or more actors (man or machine); this may include various storage and transformation occurrences of information, all aimed at successful information delivery.

• Illustration: - telephone talk between two or more people, - e-mail message from between one person to another, - traffic signalling from the traffic light to a driver, etc.

• Key Research Questions: - what information flow patterns exists in our societies? (in and between organisations, in the professional life, in the private life, in the households, as citizen, etc.?) - what information flows are yet unrealised yet could provide a value? - what information production, transfer and consumption behaviour characterises humans? - what are the similarities and differences between material vs. electronic information transfer?

• Potential outcome: - an understanding of the kinds of information flows that exists - an insight into what novel information flows may be established - an understanding of human information handling behaviour
4. Information Flow Efficiency

- **Definition:** Information Flows Efficiency is here understood in terms of the rate of the amount of resources (financial or other) needed for the execution of a given information flow pattern.

- **Illustration:** - sending greetings from your vacation via a post card may cost 1 Euro, while sending similar greetings via an sms may cost 10 Cents.

- **Key Research Questions:** - what information flow patterns exists in our societies? (in and between organisations, in the professional life, in the private life, in the households, as citizen, etc.?)
  - what information flows are yet unrealised yet could provide a value?
  - what information production, transfer and consumption behaviour characterises humans?
  - what are the most efficient ways of producing and distributing large volumes of printed info?

- **Potential Outcome:** - understanding of the kinds of information flows that exists
  - insights into what kinds of novel information flows may be established
  - understanding of human information handling behaviour
  - insights into optimal production and distribution of printed info.
5. Information Flow Security

• Definition: Information Flows Security is here understood in terms of handling deliberately flows of information so that unwanted access to such information is not feasible; or to put it otherwise: that an unwanted access to an information flow is handled as a calculated risk versus the amount of resources allocated aimed at hindering such an unwanted access;

• Illustration: - delivery of information with a new credit-card PIN, from a bank to a card-holder, as subjected to routines aimed at hindering unwanted access to such information;

• Key Research Questions: - what are the key threats for unwanted access to an information flow? - what are the differences between electronic vs. material information flows in terms of unwanted access? - what are the various available means for hindering unwanted access to information flows? - what unresolved information flow protection exists and why?

• Potential Outcome: - understanding and insight into the current threats as well as the current protective means with regard to unwanted access to information flows
6. Information Flow Eco-Efficiency

• Definition: Information Flows Eco-Efficiency is here understood in terms:
  (a) the amount of natural resources required for the execution of a given Information Flow;
  (b) the amount of natural resources requires as a consequence of a given Information Flow;

• Illustration: delivery of information, by means of Information Technology that is updated every year
  and that uses electricity from a coal-driven power-station may consume significantly more
  natural resources compared to such a delivery where IT is updated every 3rd year and
  where electricity comes from a wind-driven power-station;

• Key Research Questions: what natural resource utilization is related to each kind of information flow?
  what are the consequent natural resource utilisation profiles for respective kind of information flow?
  what means may be employed to reduce natural resource utilisation in information flows,
  yet maintaining the desired quality and cost?

• Potential Outcome: understanding and insight into the current natural resource utilisation profiles of related to
  the Information Flows execution and their consequences
  proposals for strategies for the reduction of natural resource utilisation related to
  Information flow execution and their consequences
Information Logistics Research Needs

Input from Ljungby Kommun

Dr. Darek M. HAFTOR

Centre for Information Logistics
Ljungby
27-10-2009
About this Document

- **Context:** Centre for Information Logistics (CIL), in Ljungby, Sweden is a unique excellence organisation addressing with the mission to develop and spread of knowledge of Information Logistics;
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- **Content:** this document presents results from an interview with Controller, Ljungby Kommun

- **Purpose:** this documents shall constitute an input into CIL’s research program

- **Version:** 27-10-2009

- **Producer:** Dr. Magnus Hellgren, Managing Director, CIL
  Dr. Darek M. HAFTOR, senior researcher, Växjö University
Summary of Interviewees Statements

• input från den kommunala verksamheten; controller på Ljungby kommun.
  Han har bekymmer med informationshanteringen i kommunala sektorn.

• Kommuners intranät verkar vara antingen undermåliga eller övermåliga.
  Hur som helst går det oftast inte där att hitta det man söker.
  Det verkar som slump och erfarenhet har avgörande betydelse för sannolikheten att hitta den information man behöver.
  Egentligen finns bara en bråkdel av informationen i informationssystem. (Access)
  Den avgörande kunskapen finns i huvudet på folk och "i väggarna".
  Endast om du frågar rätt person, rätt frågor, får du den information du behöver (index people)
  Det finns ingen överblick över vem som vet vad eller vad de enskilda medarbetarna vet.
  Vet man inte vem som har vilken information kan man heller inte veta vad man förlorar om personen slutar eller går i pension.
  Det finns inga övergripande detaljerade strukturer att hänga upp kunskapen på. (info org & index)
  Det finns inget bibliotekskatalogsystem för kommunal verksamhet som talar om var viss kunskap finns.
  Det behövs nya metoder att hitta kunskap i både tekniska system och i folks huvuden.
Key Research Needs Proposed: Overview

1. To access / receive the right info, at the right time, place, format, cots..
2. Information structuring and indexing
3. Codified and non-Codified information
Generic Take-Away

1. Information Generator => Actor => Subject and/or Object
   1. Actor’s transformations, due to information receptions
   2. Actor’s Information Needs & Demands
   3. Actor’s Integrity of: security, safety, ethics, legality

2. Information
   1. Meaning of, quality of
   2. Provision of
   3. Organisation & indexing of
   4. Codification
Information Logistics Research Needs

Input from HealthCare System

Dr. Darek M. HAFTOR

Centre for Information Logistics
Ljungby
02-10-2009
About this Document

• **Context:**
  - Centre for Information Logistics (CIL), in Ljungby, Sweden is a unique excellence organisation addressing with the mission to develop and spread of knowledge of Information Logistics;
  - CIL is currently formulating a new research program to guide its future research operations;
  - in the latter process, inputs about knowledge dilemmas and needs within the area of Information Logistics is central to secure the relevancy of the research program; this is secured by a series of interviews with representatives from organisations that possess such needs.

• **Content:**
  this document presents results from an interview with Gustaf waxegard

• **Purpose:**
  this documents shall constitute an input into CIL's research program

• **Version:**
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• **Producer:**
  Dr. Darek M. HAFTOR, senior researcher, Växjö University
Appendix: Collected Information on IL-needs

Summary of Interviewees Statements: Gustaf

- General Child Health Care – with the role to promote psychological health and to prevent psychological unhealthy conditions (working in the prevention frame, not a specialist in health-care).
- Primary prevention: advising patients what to look for, where to find information, how to talk to parents.
- Secondary prevention: relationship between children and parents (often mothers with post-natal depression).
- Child Psychiatry – collaborating and developing networks, focusing on how to improve services and support. Where the problems range from social to psychic.
- The project focuses on: General psychological organizational perspective, such as: types and differences in organizational cultures aiming to reach efficiency, doing qualitative analysis.
- Understanding patient needs: does the health-care supply satisfy the patient?, doing quantitative analysis.
- To better organize patient records and the data that patients look for, by providing a better systematic way to receive these data.
- Practically speaking: there are ideas in our organization how to deal with information flow, but how we plan does not really happen in reality, e.g. doctors send very late information to the patient. "Queuing problem is the bottleneck!"
- vad är de central utmaningar för framgång, för Er verksamhet idag?
- To be able to cooperate effectively and smoothly with health-care neighbours, who can help us to define our tasks, as a united group.
- Maintain our ability to describe child’s health problems in a correct way.
- To erase irrelevance and hindrances of how we communicate information.
- To provide health-care at the right time - acquiring timely availability due to problems with long queues; difficulties in organizing, due to lack of resources and consensus.
- vad är de central utmaningar för framgång, för Er verksamhet om 3-5 år?
- Improve the organizations strategy for coordination and money-saving.
- To create more units in the organization together with better cooperation, with the aim to become multi-disciplinary, where professionist from different areas can contribute (cross-scientif and cross-professional involvement).
- Needs differ from children’s needs to parent’s needs.
- Children needs: a sustainable environment for a sustainable development; this varies a lot from child to child. Contextual assessment
- Parents needs: very heterogeneous and hence very uncertain. They need to be empowered, and need advices to solve different problems as being parents.
- I think of it as: How Information Logistics functions in health-care processes, such as supplying the patient with needed information and health-care, using IL more from a theoretical perspective.
- To develop a common language between professionals through IL.
- Maybe through IL, in the future the patient will play the role of setting rules for information transfer: from – to.
- Quality and contextual information is very important when sending them at a reasonable time
- Customer satisfaction
- Balanced scorecard - quantifying and deciding what we want to measure for a better success
- Quality – how much are we capable to help the patients with our services; can we and do we really measure the patient satisfaction – this is usually recorded after treatments!
Key Research Needs Proposed: Overview

Healthcare System’s Actors

- Nurse
- Therapist
- Physician
- Other

The Healthcare System (HCS)

- 1. Provision of Preventive Information to the Patient
- 2. Provision of Illness Information from the Patient
- 3. Exchange of Treatment Information between Actors of the HCS
- 4. Establishment of a common language between HCS Actors
- 5. Establishing of Quality and Context of HealthCare Information

The Patient Lifecycle

- Healthy
- Ill
- Diagnosis
- Treatment
- Healthy
Generic Take-Away

1. **Information Generator => Actor => Subject and/or Object**
   1. Actor’s transformations, due to information receptions
   2. Actor’s Information Needs & Demands
   3. Actor’s Integrity of: security, safety, ethics, legality

2. **Patient => Actor => Subject**
   1. State transformations: health, ill, diagnosed, treated
   2. State information provision

3. **Subjects => Stakeholders:**
   1. Patient
   2. Physician
   3. Nurse
   4. Etc.

4. **Information**
   1. Meaning of
   2. Representation of, language
   3. Quality of, context of
   4. Exchange of
Information Logistics Research Needs

Input from CargoTech

Dr. Darek M. HAFTOR

Centre for Information Logistics
Ljungby
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• **Content:** this document presents results from an interview with Controller, Ljungby Kommun

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• **Producer:** *Dr. Magnus Hellgren*, Managing Director, CIL  
*Dr. Darek M. HAFTOR*, senior researcher, Växjö University
Summary of Interviewees Statements

– Gör Cargo Handling utrustning
  • Gaffeltrucker
  • Contatiner maskiner
– Verksamheten gör hela värdekedjan
  • Från FoU, via produktion, M&S, finans, leverns, aftermarknad: support
– Utmaningarna nu är:
  • Lågkonjunkturen, nedgång i efterfrågan
  • ”Total Cost of Ownership” (TCO) för kunden
    – T.ex.
      » Anskaffningskostnad, Driftmedel, Slitage, däck, m.m., Service, Driftstopp
  • Underhåll
    – Reducera inträffande av driftstopp
    – Reducera längden på inträffade driftstopp
    – Service:
      » Snabbhet, Avstånd till service
  • Miljö, pga:
    – Kostnader för bränsle och olja, Lagstiftning för emission
– Långsiktiga utmaningar
  • Miljöfrågorna
    – Produktion av produktorna, Dess drift: diesel, olja
  • Lösning
    – Hybridmotorer, Elektrifiering
  • Sänka TCO
    – Reducera Diesel och olja
    – Reducera Driftstopp
    – Förarlösa system
      » Reducera förarkostand
    – Optimera kundens logistik
Summary of Interviewees Statements

– Ett särskilt intresseområde för IL
  • Vid användning & drift av maskinen att kunna överföra information från maskinen (truck) till Servicecentrum, för att kunna behandla den och där efter erbjuda nytta för kunden, t.ex:
    – snabbare och noggrannare service support
    – ny mjukvara
    – anpassad förarutbildning, etc.
    – utveckla en "preventiv service ansats" som reducerar mängd tid för driftstop
    – optimerar service kostand vs. driftskostand vs. produktionsnytta
  
• exempel på information som kan överföras är
  – kör-timmar
  – kör-still
  – fel koder som uppstår
  – användning
  – bränsle konsumtion
  – lufttryck i däck, m.m.

• det kan finnas olika intressenter för denna information
  – ägaren
  – användaren
  – leverantör
  – serviceenhet
  – etc.
  
• information kan också använda till FoU av nya produkter, produktionsätt samt service modeller
Appendix: Collected Information on IL-needs

Key Research Needs Proposed: Overview

**Potential Stakeholder:**
- Manufacturer
- Service Provider
- Owner
- User
- etc.

**Database**

**Control Information:**
- No of Utilization hrs
- Utilization Style
- Petrol consumption
- Oil pressure
- etc.

**Command Information:**
- Engine Software, etc.

**Information to guide new development**

**R&D** → **Manufacturing** → **Utilization** → **Disposal**

**Objectives:**
To decrease the Total Cost of Ownership
or
To Increase the Return On Investment

**Means (examples):**
- Reduced No. of down-times occurrences
- Reduced length of down-time occurred
- Preventive Service at the right time
- etc.

1. To access / receive the right info about the truck’s performance
2. To provide right info for optimal utilisation
3. To provide right info for new development
Generic Take-Away

1. Truck, Driver, Service provider, etc., => Information Generator => Actor => Object
   • R&D, Manufacturing etc. => Object’s transformations, in its Value-Chain, or Lifecycle
   • Objectives / Interest: optimisation of an object’s utilisation

2. Stakeholders => Actor => Subjects
   • Actor’s Information Needs & Demands
     • Control Info & Command Info
Information Logistics Research Needs

Input from *Diverse Settings*

*Dr. Darek M. HAFTOR*

Centre for Information Logistics
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27-10-2009
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- **Content:**
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Summary of Interviewees Statements


2. Skapa modeller för organisationsstruktur som i sin tur kan ge tydlighet i rolldefiniering. Samarbetet med motparter, kunder, leverantörer m.fl. underlättas om organisationsstrukturen är standardiserad. (Johan Andersson, banverket, T6 handl. Johan E GU06)


5. Hur ska vi använda nya möjligheter såsom sociala medier för marknadsföring. Hur ska företaget bättre kunna styra och kontrollera "earned marketing" (det som konsumenter, journalister m.fl. säger om företaget, produkterna). Vilka arbetsmetoder krävs för att få framgång i utnyttjandet av "earned marketing"? (Lisa Grubb, Sony Ericsson, T6 handl. Dhyun Z GU06)


# Summary of Interviewees Statements


6. (Eva Holmqvist, SYSTEM, T6 handl. Lydia S, GU06)

7. En viktig fråga är hur man säkerställer kvalitén på information. Idag är det ju lätt att få massor av information, men frågan är till vilket värde. (Eva Holmqvist, SYSTEM, T6 handl. Lydia S, GU06)

8. På Strålfors har alla förändringar under de senaste åren motiverats med att vi ska förstärka vårt kundfokus. Vad leder till ökat kundfokus? Hur gör man för att öka kundfokus? (Martha Andersson, Strålfors, T6 handl.Mattias Johansson, GU06)

9. Den stora utmaningen handlar om att göra IT så proaktivt som möjligt. Idag kommer oftast IT in för att lösa ett problem i efterhand. Det borde vara tvärtom. Det borde ske en diskussion från första idéstadet så att IT kan säga; "Om ni vill växa/effektivisera på detta sätt så ska ni göra på det här sättet med er IT". I övrigt är ITIL väljligt hett. (Robert Pernetun, IKEA IT, T6 handl. Christopher Krutröck, GU06)

10. IKEA:

11. Jag håller med Dareks slutpunkter och förslaget är bra men

   1. jag saknar delen som han i första stycket också nämner inte har varit utrett tillräckligt
   2. delen kring ”The meaning and the Quality of information” - jag kan inte utläsa att det byggs in i hans förslag och
   3. det bör det göra i framför allt alternativet ”a broad scope” –

12. det alternativ jag anser det störst behov av och som jag anser att CIL har stor chans att fokusera på inom FoU.
Key Research Needs Proposed: Overview

1. DEMAND: To receive the right info, at the right time, place, format, costs...

2. INFORMATION: meaning of information, its quality and relation to organisation

3. STORAGE: Information structuring and indexing

4. CUSTOMER Information function in an Organisation

5. INTEGRITY: Legal & Ethical aspects of information access

6. GOVERNANCE: Outsourcing & Management of Information Handling

7. CHANGE: Information, Communication, Reception & impact, Change, Implementation
Generic Take-Away

1. Information Consumer => Actor => Subject and/or Object

2. Information Generator => Actor => Subject and/or Object
   1. Actor’s transformations, due to information receptions
   2. Actor’s Information Needs & Demands
   3. Actor’s Integrity of: security, safety, ethics, legality

3. Information
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