



**Editorial**  
**The Challenge of Large-scale Communication Systems**

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Published 21 April 2010

**Journal of Chain-computerisation**  
Information Exchange for Chain Co-operation

Editorial

2010 – Volume 1, Editorial 1, pp. 1-5

URN:NBN:NL:UI:10-1-100859

ISSN: 1879-9523

URL: <http://jcc.library.uu.nl/index.php/JCC/article/view/1/1>

Publisher: Igitur, Utrecht Publishing & Archiving Services in co-operation with the Department of Information and Computing Sciences

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## Editorial

### The Challenge of Large-scale Communication Systems

A well-organised society provides *well-being* - by providing security - and *wealth* - by improving efficiency. As a consequence, modern society abounds with organisational structures and substructures, each addressing a separate collection of well-identified issues stemming from problems identified in the past, and each following its own procedures and maintaining its own data needed for executing these procedures. Once procedures are better understood and data is available in electronic form, computers can be very effective in optimising these processes within organisations. Unfortunately, problems which span several organisations (henceforth collectively called 'chains') become harder to deal with effectively, since these organisations have not been optimised to solve interorganisational problems. This has made us increasingly aware of the problems inherent in the advancing process of 'chain-computerisation' which this *Journal of Chain-computerisation* aims to study.

The chain concept used here refers to social chains, large-scale interorganisational processes that yield a social product such as well-being, wealth, security or health. In a social chain, hundreds of organisations and professionals work together without a clear relationship of authority, in ever-changing combinations depending upon the actual case. We need theories and methods explicitly focused on large-scale chain projects and interorganisational chain communication systems to prevent these from failing or producing poor results. More than ten years after the publication of the first theory and methodology (Grijpink, 1997; Grijpink, 2000a; Grijpink, 2000b) the start of this *Journal of Chain-computerisation* marks a new period of its development and application by a scientific community of scholars and professionals.

The theory and methodology of Chain-computerisation (Grijpink, 1997) can be positioned in several ways:

- As a *body of knowledge with its own right of existence* within the Interorganisational (Information) Systems (IOS)-literature based on three considerations (Van Breemen, 2007):
  1. The chain concept based on a dominant chain problem is new in the IOS-literature. Because dominant chain problems evolve over time, this chain concept is a *dynamic* chain concept: chain co-operation configurations tend to adapt to changes in the dominant chain problem, as well.
  2. In the IOS-literature there is no other school of thought that makes an analytic distinction between two different levels, the chain level and the base level of the chain, to separate chain communication from data collection and storage and to separate the coordination of chain activities from the chain activities themselves.
  3. Three of the four analytic tools of Chain-computerisation – see the founding article in this journal (Grijpink, 2010) – are new and especially one, the chain co-operation profile, represents a contribution towards the IOS literature.
- As a *landmark in information history*, because this approach centred on a dominant chain problem enables researchers and professionals to pass beyond mere logistics in their efforts to improve the information exchange in chains (Bemelmans, 2007).
- As a *scientific sub-discipline* in its own right having met the five required criteria (Robbins, 1932). The doctrine of Chain-computerisation has its own:

1. *level of analysis*: the chain level;
2. *perspective*: critical chain communication;
3. *empirical object*: (lean) information infrastructures;
4. *concepts*: e.g. the dynamic chain concept;
5. *theories and laws*: e.g. the impact of the dominant chain problem.

Thus, given the fact that Chain-computerisation has its own place in the IOS-literature, is a landmark in information history and a scientific sub-discipline in its own right, this *Journal of Chain-computerisation* should get the chance to prove its right of existence.

Where do we stand along the development path of the theory and methodology of Chain-computerisation? Swierstra (2009) proposes five development phases:

1. *amateurism*: no real insight;
2. *craftsmanship*: trial and error;
3. *science*: patterns are discovered in experimental results and theory develops;
4. *engineering*: procedures to guide correct application of knowledge;
5. *automation*: specification of 'when and how to apply' enables automation.

Chain-computerisation seems to be developing from phase 2 towards phase 4. We are still improving the methodology while beginning to understand the many pitfalls of 'fallacies of the wrong level' during development and maintenance of large-scale chain communication systems, but procedures to correctly apply the insights gained from chain analysis still depend too much on the researcher or professional involved (Grijpink, 2010).

Therefore, this journal is a timely initiative inviting scholars and professionals to contribute to the advancement of our knowledge for better large-scale information infrastructures. You are invited to join this scientific and professional undertaking of further refining and improving the theory and the methodology of Chain-computerisation to ensure better reproducibility of the results. For example, we need:

- a. better methodologies to uncover dominant chain problems and find out about their dynamics and impact on large-scale chain co-operation;
- b. better risk analysis and monitoring methodologies for large-scale social systems (criminal records, patient files, identity records), before, during and after development;
- c. better methodologies to develop suitable checks & balances within large-scale social systems that can effectively prevent or cope with threats and risks;
- d. better methodologies to gradually develop and exploit large-scale communication systems.

If at least a few of these challenges could be adequately solved in the next decennium, our information society will be a better place to live.

As a starting point for future development and discussion, the chain analysis methodology of Chain-computerisation is published here as a founding article, together with – in the professional section of the journal – the chain analysis results regarding the Manic-depressive Disorder Chain-of-care as a first example of its application.

Jan Grijpink  
Editor-in-Chief

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