

The issue of IQ in internet-based early-warning systems for trend management

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Practice-oriented Paper

Executive Summary

This contribution presents our latest experiences with internet-based early-warning systems that are used in firms in different areas with different functionalities to facilitate trend management and risk management. In these systems, intelligent software agents are deployed to gather and analyze information and monitor sites on the internet.

A central problem in this context is to calibrate these systems in a way that data mining and analysis processes deal with all mission-critical data available, but are still able to operate with a manageable amount of data. Thus, IQ plays a central role in measuring the performance of such a system and in achieving a sound balance between quality information and information overload.

Our methodology includes a distinct framework of IQ and respective procedures and algorithms that are based on a socially biased, community-oriented perspective of IQ that has been presented in past contributions to this conference.

“The issue of IQ in internet-based early-warning systems for trend management”

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Structure

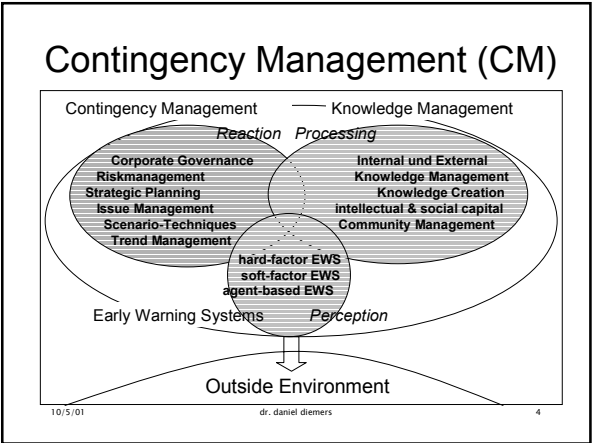
1. Research Context: Trend Management
2. Internet-based Early Warning Systems
3. Our Framework for IQ
4. Practical Experiences with IQ issues
5. Conclusions and open questions

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1. Research Context

- Contingency Management, Knowledge Management, Early-Warning Systems
- Research Question:
 - „How can we measure and quantify the „quality“ of an identified Web source within an early-warning system?“

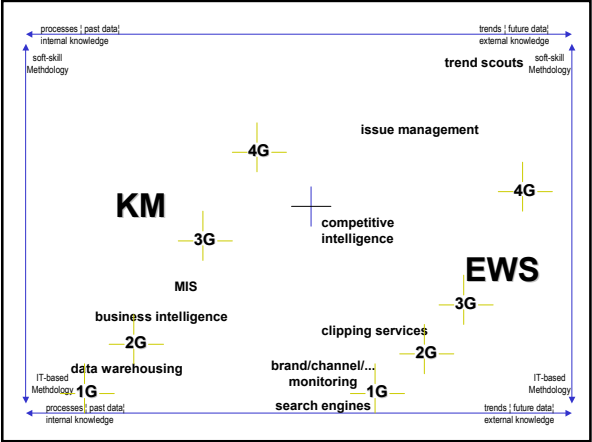
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Locating EWS in a CM Framework

- Internal view:
 - Knowledge Management, Data Mining, MIS, Business Intelligence
- External View:
 - Trend Scouts, Issue Management, Clipping Services, Monitoring Service, Search Engines
- soft-skill vs. IT-based Methodology
- future/external vs. past/internal data

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2. Early Warning Systems

- Early Warning Systems shall help firms in their perception of the contingent corporate environment
- Early Warning Systems will play an increasingly important role in coping with the volatility and dynamics of markets

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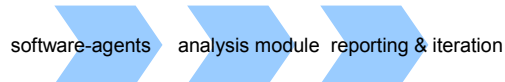
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a feasible EWS Methodology

- 3 Phases:
 - Focused Crawling: Community Topography
 - Scanning/Monitoring/Analyzing
 - Border Control and Topography Updating

- 3 Modules:

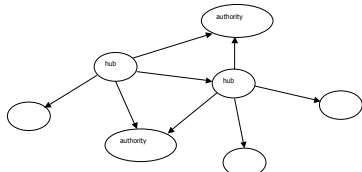


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The Community Perspective



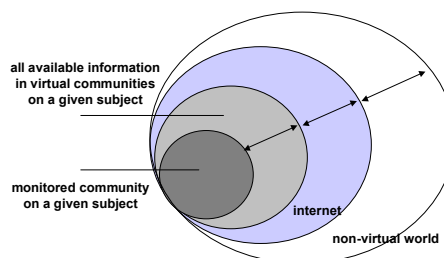
- Diemers Theorem: "only information that is referenced to or embedded in the respective community can develop any potential relevance".
- Identify Hubs & Authorities within topical communities

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Why Community Knowledge?



all available information in virtual communities on a given subject

monitored community on a given subject

internet

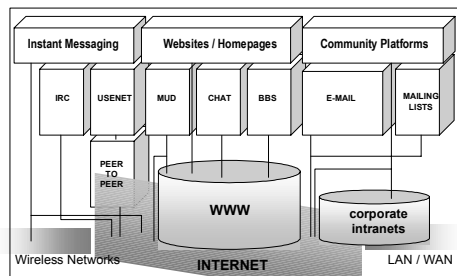
non-virtual world

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Modelling Virtual Spaces

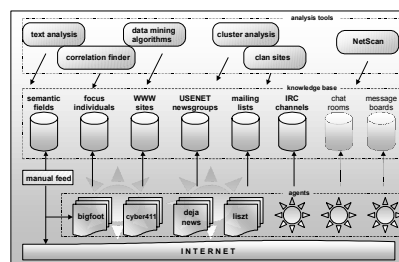


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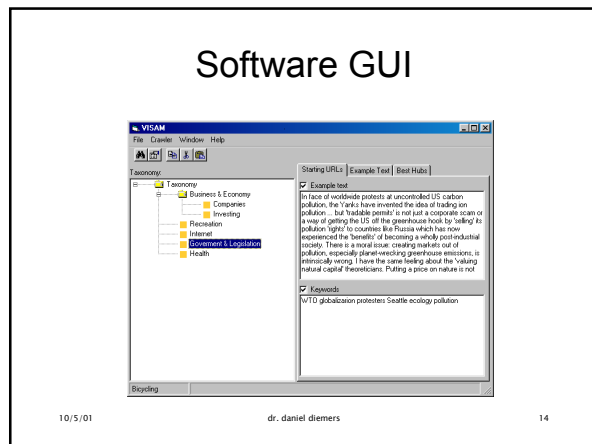
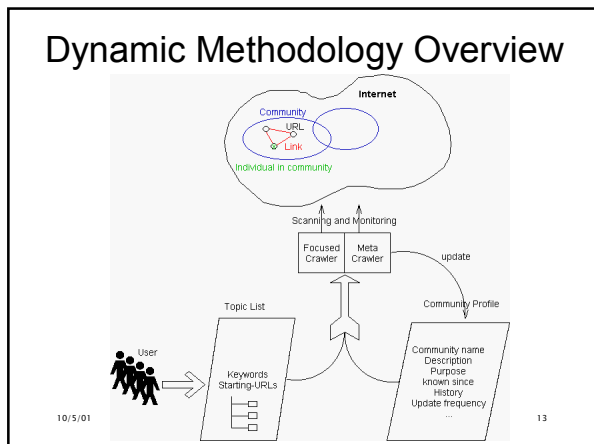
Static Methodology Overview



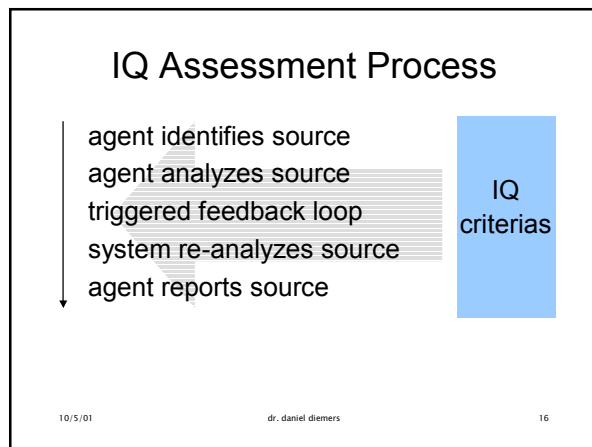
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- ### 3. Our Framework for IQ
- How can we measure and quantify the „quality“ of an identified Web source within an early-warning system?
 - Agent-based IQ assessment process
 - 3 levels of IQ criterias applied
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- ### 3 Levels of IQ Criterias
- General IQ Criteria (analysis)
 - First Order Relevancy (semantic analysis)
 - Second Order Relevancy (feedback loop)
- ↓
- IQ Quantification Model
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- ### IQ Cat. I: General IQ Criteria
- | | |
|---------------------------------|-----------------|
| 1 Latency (Agents sleep/frozen) | #seconds |
| 2 Server Performance | #Kbits/s |
| 3 Relative Size of Source | #Kbyte/Average |
| 4 Age of Site | #days |
| 5 Age of Last Update | #days |
| 6 IP Address / Domain Name | semantic rating |
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Practical Experiences (cont.)

- Establish a learning-system, especially in respect to IQ
- In Scanning Mode: achieve „minimum tolerance“, 90% „no blind-spots“ reliability
- In Monitoring Mode: achieve „zero tolerance“, 100% speed and reliability

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5. Conclusions

- Internet-based early-warning systems are increasingly becoming accepted and useful tools for management
- monitoring and scanning virtual spaces requires highly sophisticated methodology and agent/software technology
- reliable results depend mainly on a sound and applicable framework for IQ

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IQ'2001 community!
Thank You For Your Attention!

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