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

Dr. Daniel Diemers

University of St. Gallen (HSG), Switzerland
Institute of Sociology SfS

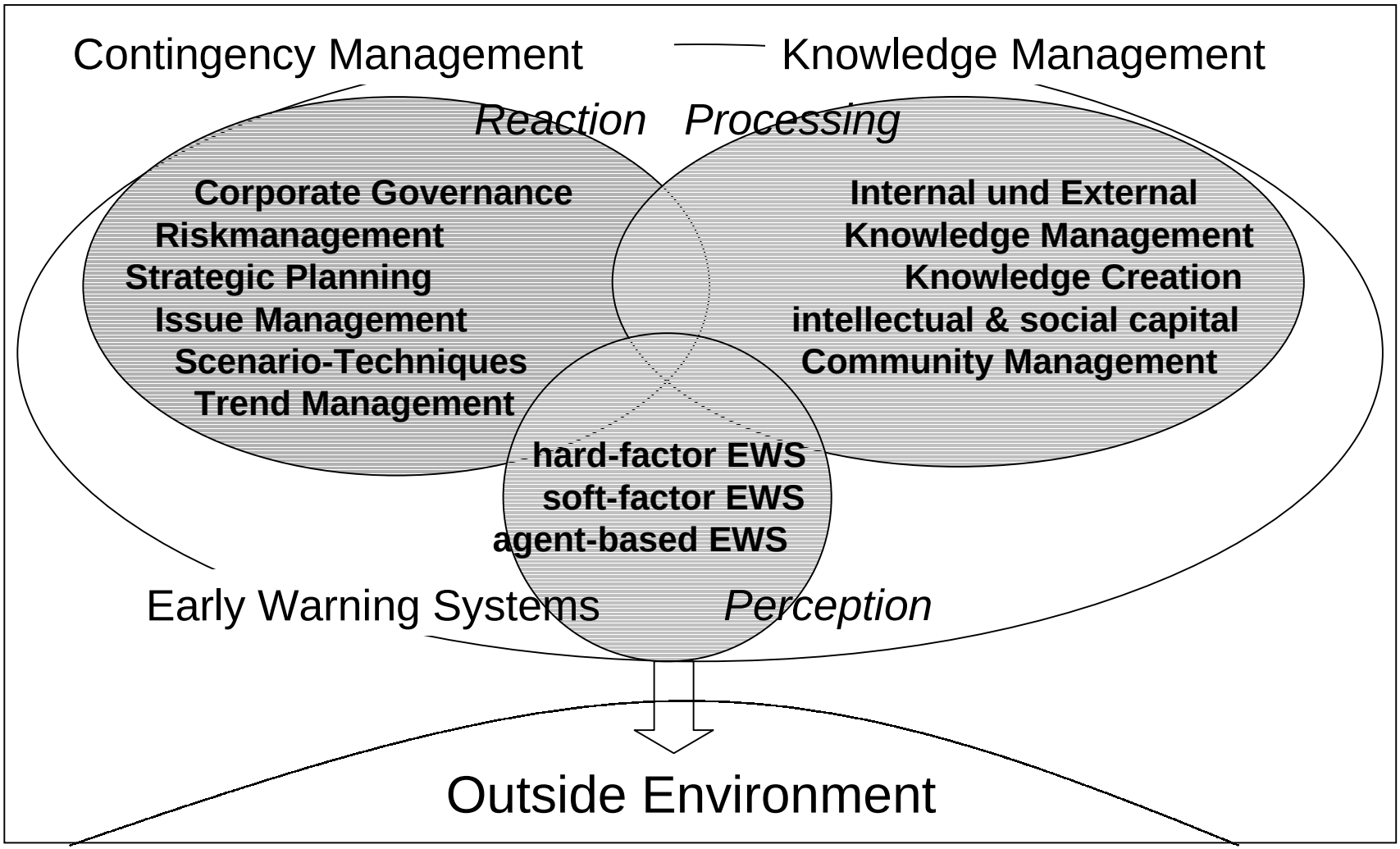
Structure

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

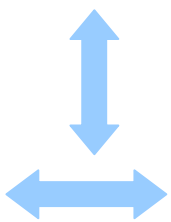
1. Research Context

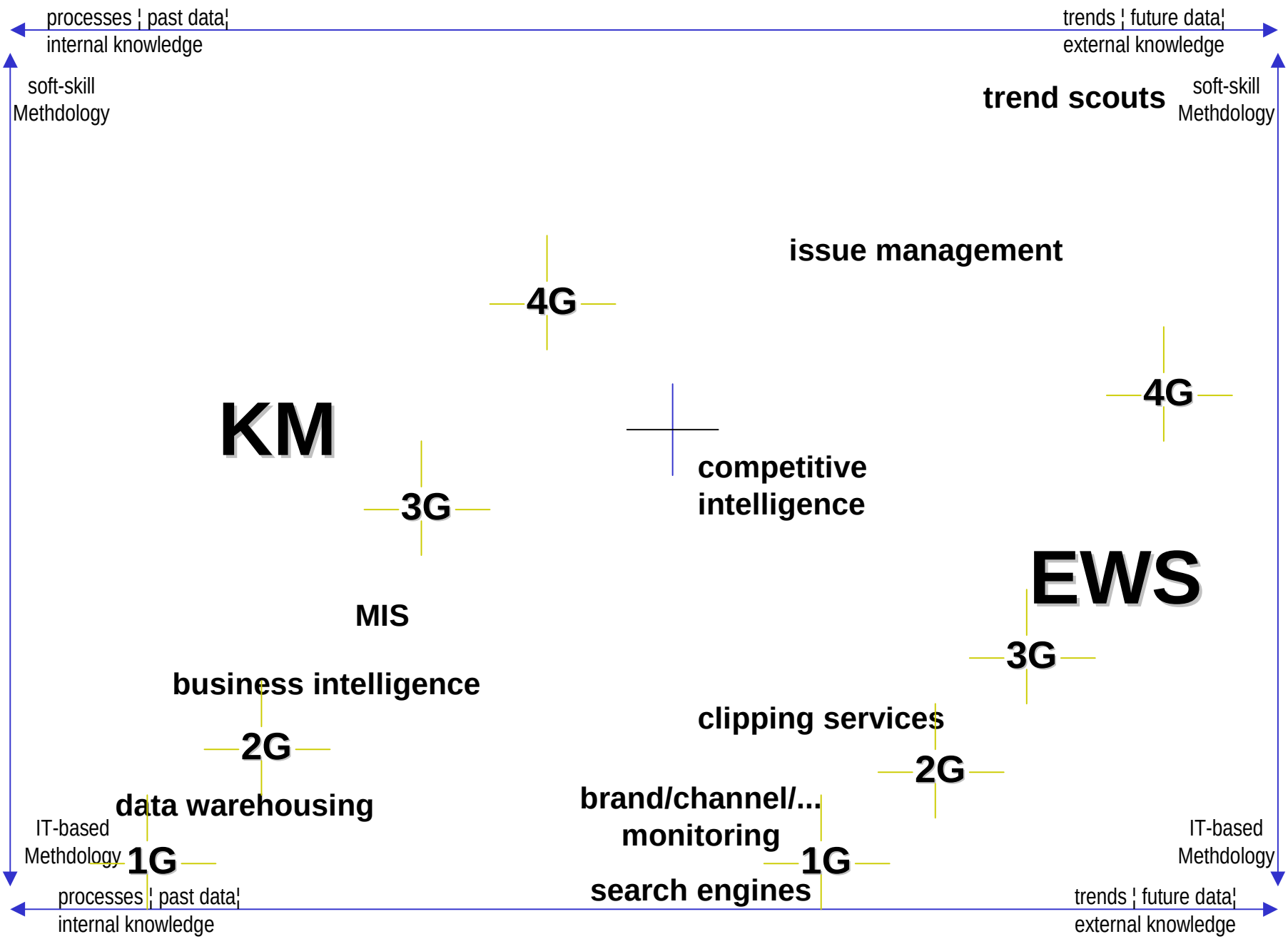
- Contingency Management, Knowledge Management, Early-Warning Systems
- Research Question:
  - „How can we measure and quantify the „quality“ of an identified Web source within an early-warning system?“

Contingency Management (CM)



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

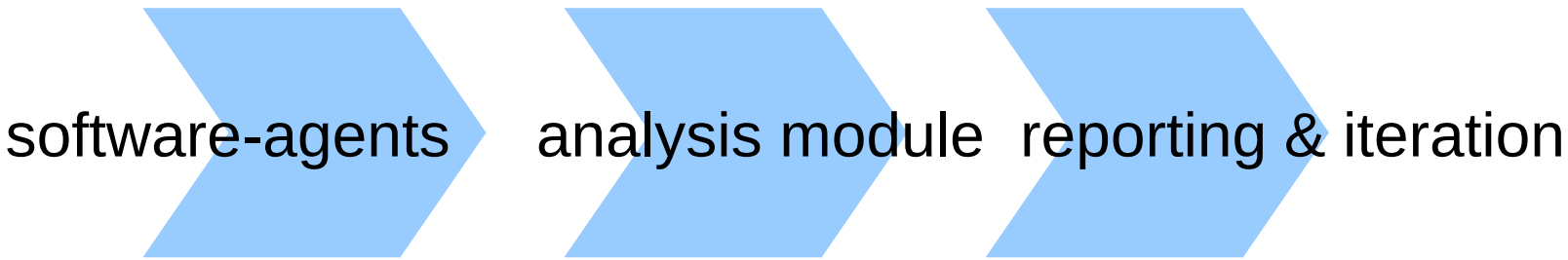

processes ¦ past data¦
internal knowledge
trends ¦ future data¦
external knowledge
soft-skill
Methdology
trend scouts
soft-skill
Methdology
issue management
4G
KM
4G
competitive
intelligence
3G
EWS
MIS
3G
business intelligence
clipping services
2G
2G
data warehousing
brand/channel/...
monitoring
IT-based
Methdology
1G
1G
search engines
IT-based
Methdology
processes ¦ past data¦
internal knowledge
trends ¦ future data¦
external knowledge

2. Early Warning Systems

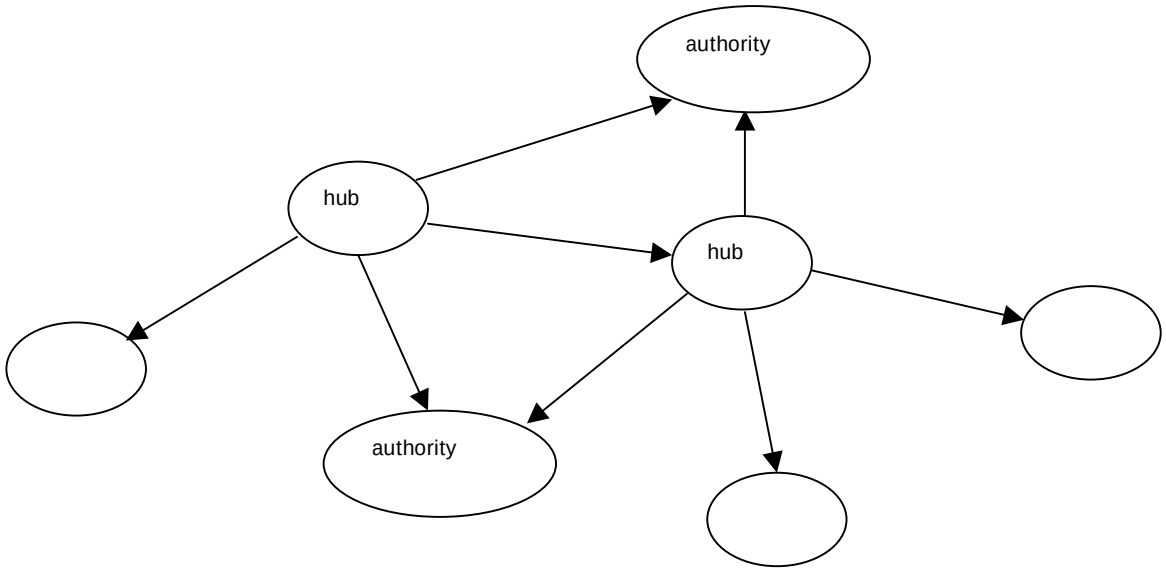
- Early Warning Systems shall help firms in their perception of the contingent corporate environment
- Early Warning Systems will play an increasingly important role in coping with the volatility and dynamics of markets

a feasible EWS Methodology

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

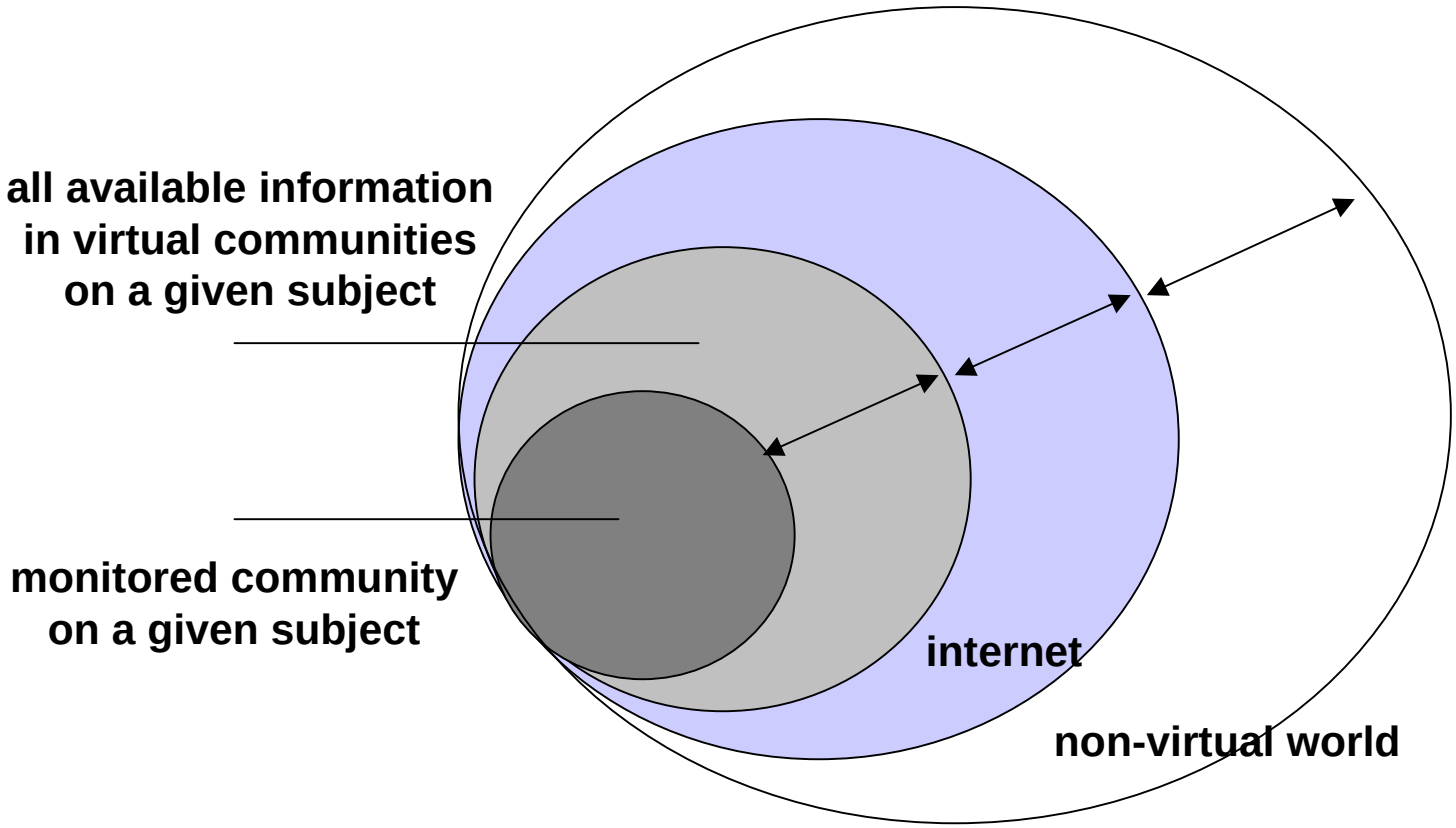


The Community Perspective

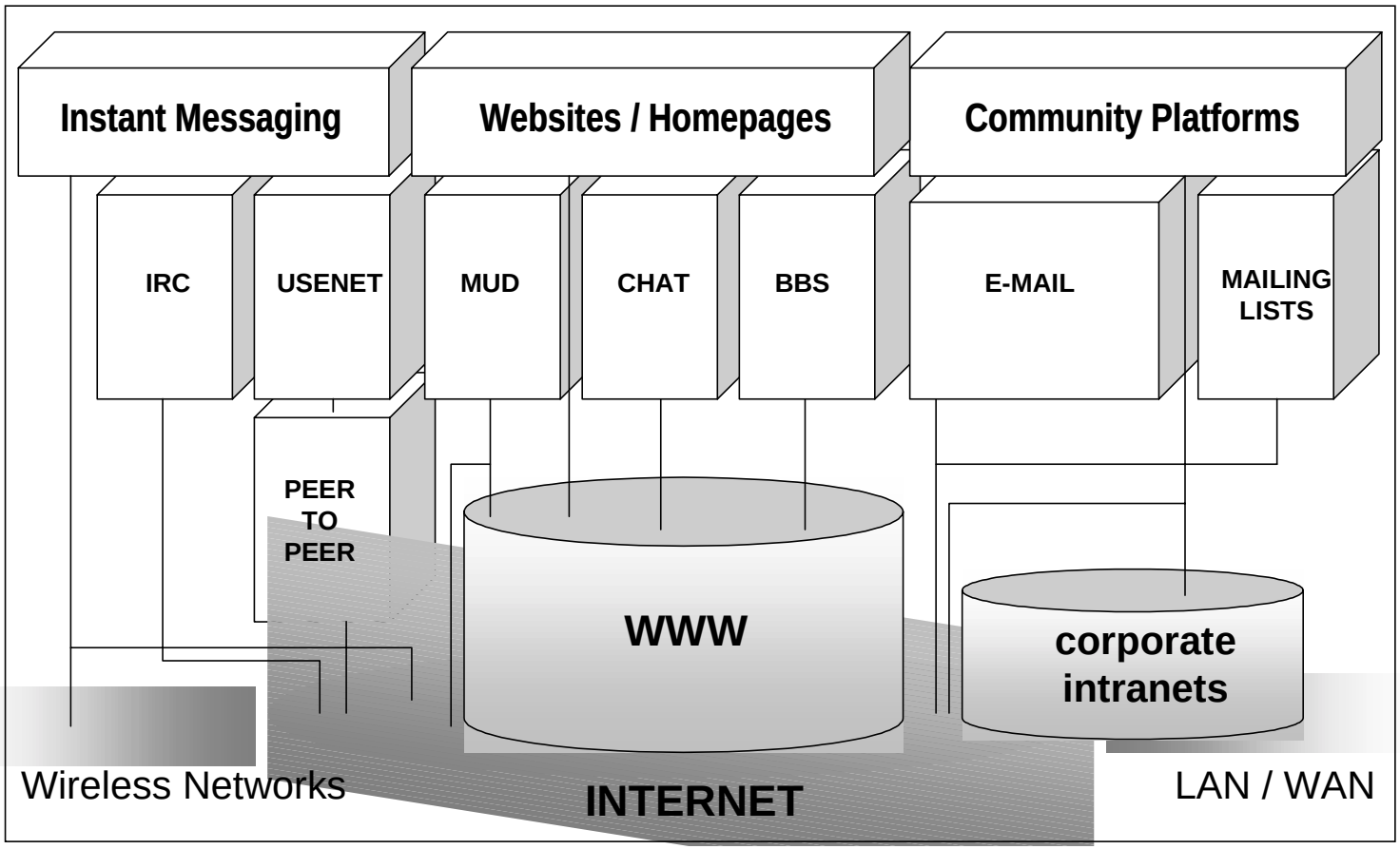


- Diemers Theorem: "only information that is referenced to or embedded in the respective community can develop any potential relevance".
- Identify Hubs & Authorities within topical communities

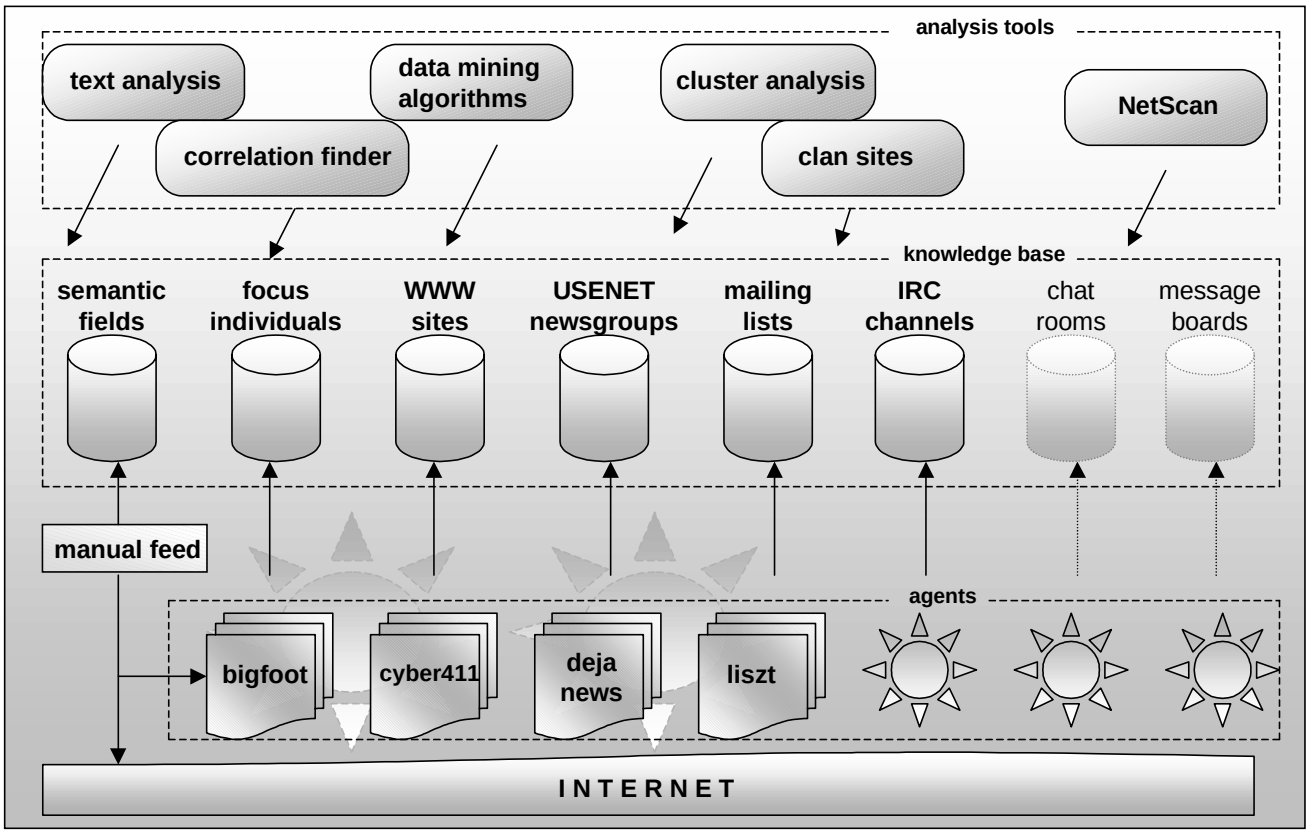
Why Community Knowledge?



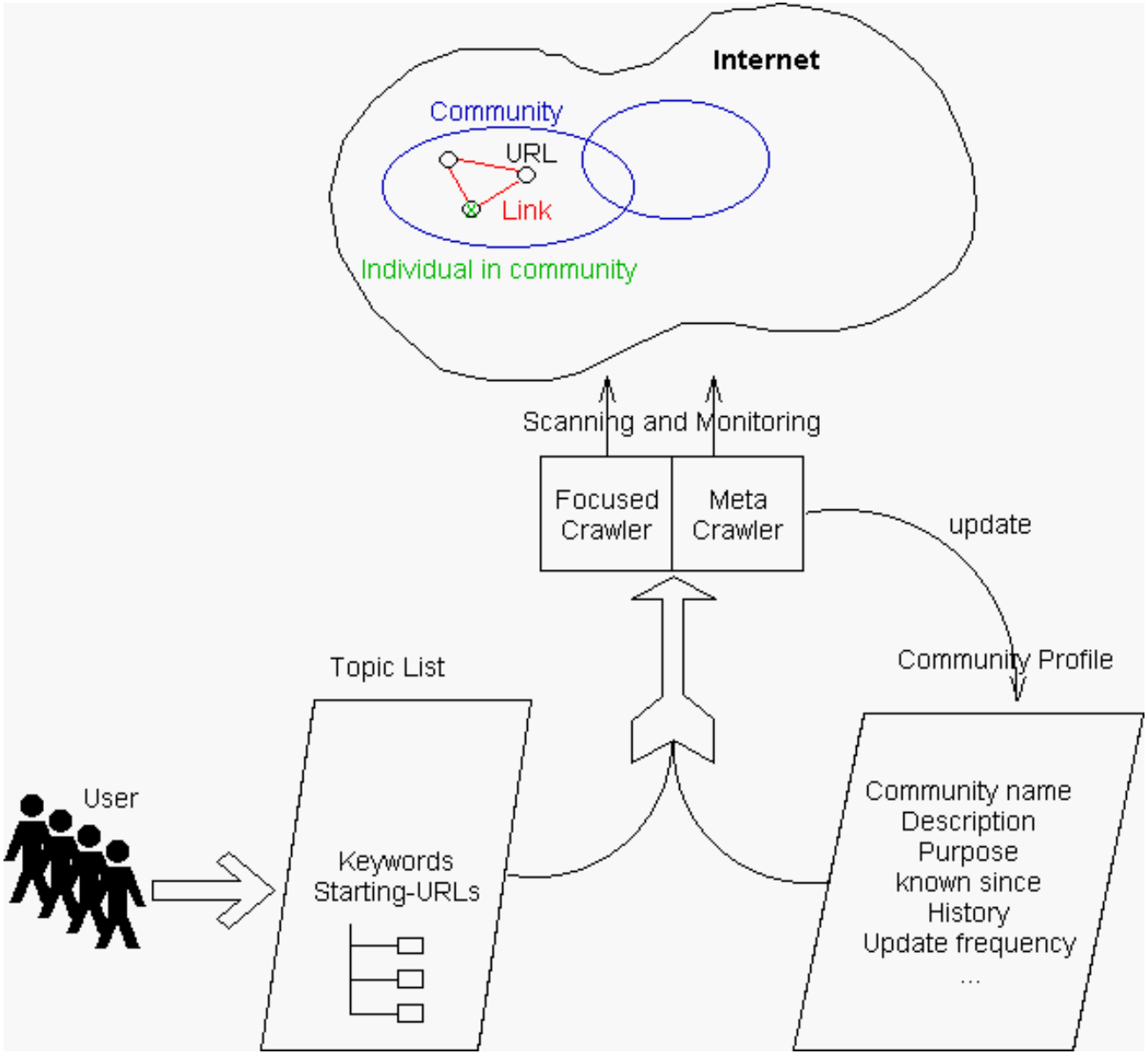
Modelling Virtual Spaces



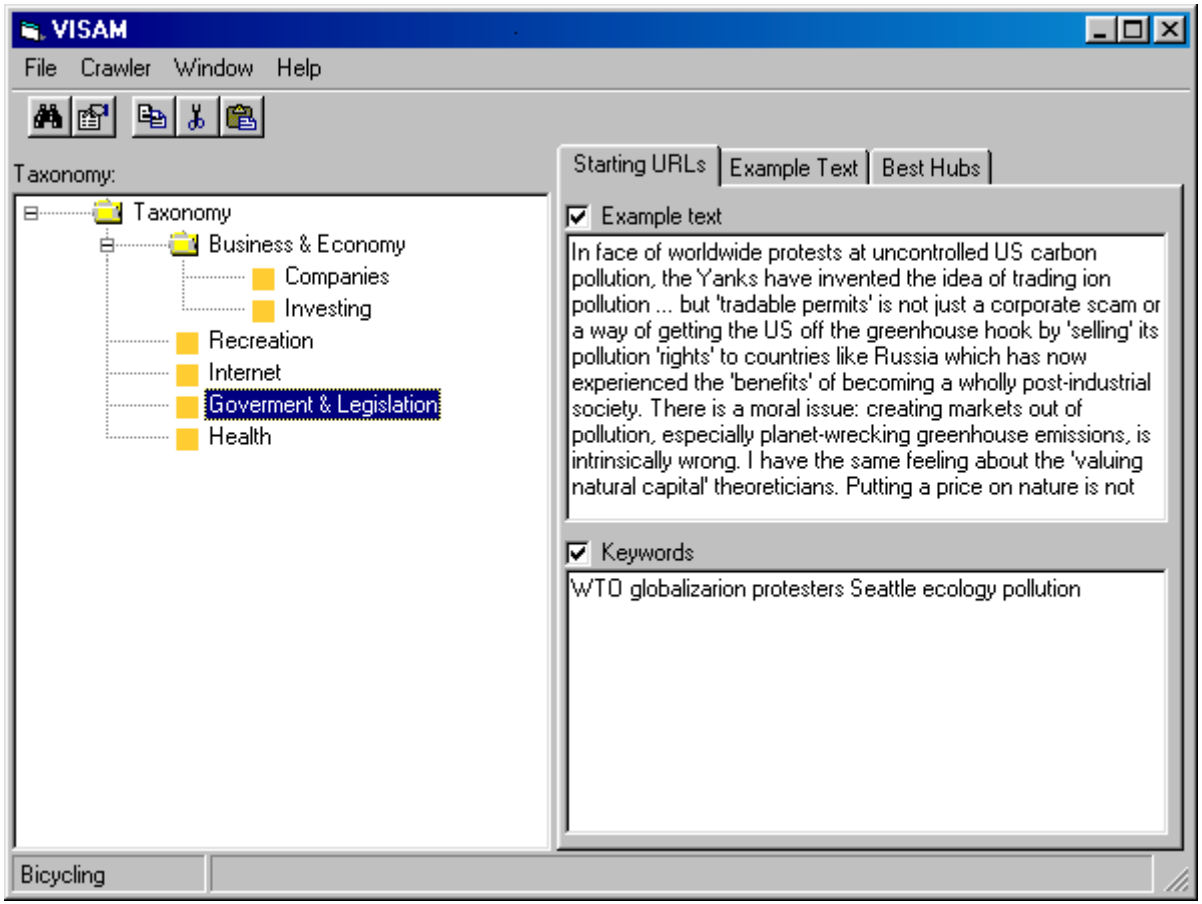
Static Methodology Overview



Dynamic Methodology Overview



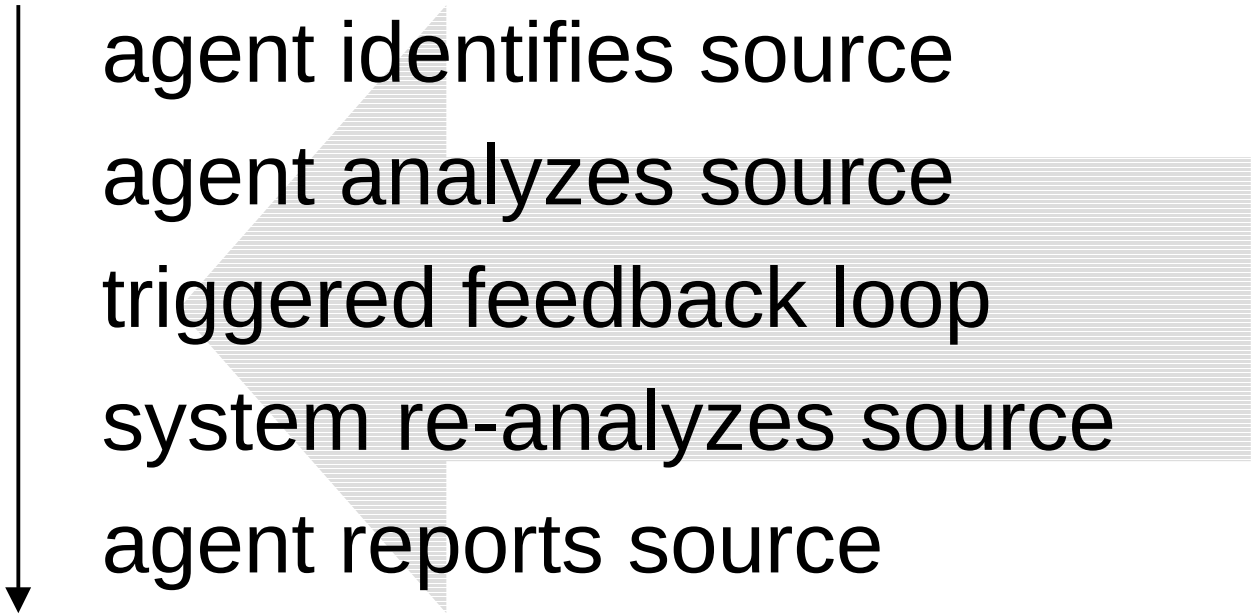
Software GUI



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

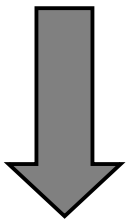
IQ Assessment Process



IQ criterias

3 Levels of IQ Criterias

- General IQ Criteria (analysis)
- First Order Relevancy (semantic analysis)
- Second Order Relevancy (feedback loop)



IQ Quantification Model

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

IQ Cat. II: First Order Relevancy

1 Keyword matches #matches

→ RELEVANCY

analysis according to semantic networks with example text and keywords. Certain value triggers „second order analysis“

2 Number of Links #links

→ HUB

number of links leaving site indicates hub quality

Cat. III: Second Order Relevancy

1 Mentioning/Reference of Site #

→ AUTHORITY

2 Number of inside links incoming #links

→ AUTHORITY

3 Number of inside links outgoing #links

→ HUB

4 Site already analyzed #days

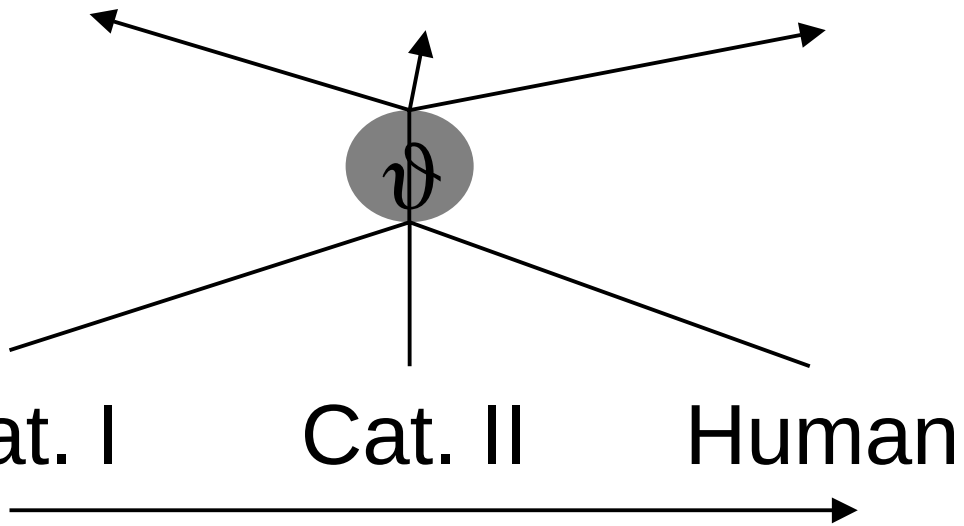
5 Similarity of Site %

6 Reassesment of Relevancy semantic analysis

IQ Quantification Model

Site „xy.net“:

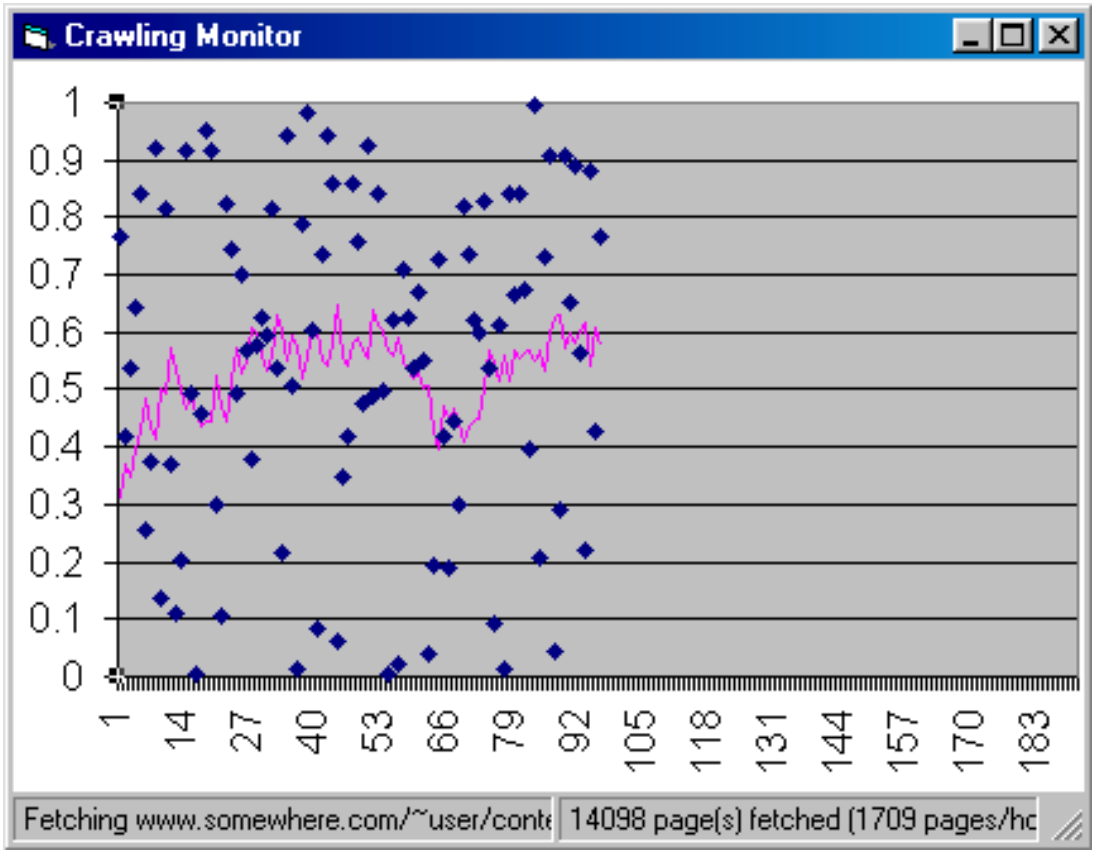
REL [0.65] HUB [0.24] AUTH[0.67]



Example:
IQ Criteria I.6: IP/Domain Address

- Semantic analysis and rating
  - type of primary address and host:
    www.relevant.org\index.htm
    www.member.tripod.net\~john\xy.htm
    www.freenet.net\classof98page\xy.htm
  - domain name extensions
    .edu, .gov, .com, .biz, .net, .to, .li, ...etc.

Example:
Realtime IQ Measuring



4. Practical Experiences

- Achieving the right balance between Information Overload and Capturing all relevant Information
- Getting human IQ input into the early-warning system vs. automating the routine agent processes
- Applying high-quality semantic analysis (which theory/technique? which tools?)

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

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

IQ‘2001 community!
Thank You For Your Attention!

contact information:

dr. daniel diemers

institute of sociology sfs, university of st. gallen (hsg), switzerland

partner, wedoso gmbh, zurich, switzerland

ackerstrasse 44, 8005 zurich, switzerland

+41 1 271 18 35, e-mail: daniel@diemers.net