KI2NA – Linked Data for the Intelligent Society

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Fujitsu’s Philosophy

Human Centric Intelligent Society
FUJITSU RESEARCH WORLDWIDE

Fujitsu Group-wide
- ~18,500 employees in R&D

Fujitsu Laboratories Group
- ~1,500 employees conducting leading-edge R&D at global R&D sites

Numerous R&D partnerships worldwide
- Major universities
- External research institutes
Research in Ireland

OÉ Gaillimh
NUI Galway

Information
- Body Area Aggregator
- ECG Sensor Node
- Blood Pressure Sensor Node
- Pulse Oximetry Sensor Node
- EMG Sensor Node

Assessment, Assistance, Treatment

Dundalk Institute of Technology
Instituto Técnológya Dhún Deághan

DCU
Towards the Human Centric Intelligent Society – a Network of Data
Towards the Human Centric Intelligent Society – a Network of Data

- Interconnected
- Universal
- All encompassing

- assists humans, organisations and systems with problem solving
- enabling innovation and increased productivity
Linked Data enabling Intelligent Society

As of September 2011
KI2NA – Knowledge Integration 2
enable Network Application

LOD4ALL

Your data / Ideas

Open Data

Knowledge Extraction
- Crawling
- Cleansing
- Filtering
- Conversion
- Mapping

Knowledge Integration and Analysis
- Sentiment Analysis
- Event context Provision
- Semantic Text Exploration
- * Knowledge Discovery *

Reusable Components

Knowledge Discovery

Storage and Processing
- Polyglot storage
- Distributed processing

Your brilliant application

Hikaku

Linkspire

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Key features:

- Dynamic and interactable LOD cloud diagram
  - Metadata about 461 datasets
  - Instance data from 96 datasets
- Holistic approach for searching structure and instance data across LOD datasets
  - ~1.5 billion triples available for instance search
- RESTful APIs for applications and developers
Realising the Knowledge Pipeline: A Uniform Data Processing Layer

Applications

Virtualisation/Abstraction

Security

SQL | SPARQL | Lucene | UnQL | XQuery | Gremlin | ... |
---|---|---|---|---|---|---|
RDMS | BigGraph | Lucene | NoSQL | XML | GraphDB | ...
Semantic Text Exploration

- Navigation through textual documents based on semantic relationships
  - Fully Automated computation of the relationships
- Could be applied to many types of open web content (NYT, Wikipedia, PubMed, etc.)
- Also applicable to enterprise document management

[Diagram showing text reader, path navigation, and carousel with linked documents]
Knowledge Discovery

- Relation learning
  - Using machine learning and pattern matching methods to discover new instances (implicit in the data) of a domain specific relations (e.g. drug-side effect)

- Hypothesis verification
  - generation of research hypothesis from the data
  - verification of the hypothesis using the data
Application Area: Financial - Hikaku

How to use all these heterogeneous data together?

How to extract new knowledge?

Key features:
- Integration of heterogeneous data
  - Semi-automatic mapping of resources
- Innovative Data Analysis
  - Company sentiment analysis from New York Times articles
  - User defined Key Performance Indicators
- Security and Provenance
  - User access right to each dataset
  - Provenance flow for all data
From Research to Business

Market Intelligence

Business Driven

Research Excellence

NEW MARKETS
DIFFERENTIATED PRODUCTS
From Research to Business

TARGET SOCIETAL CHALLENGES

ACHIEVE MARKET DIFFERENTIATION

Business Driven

DELIVER NEW INSIGHT

ENABLE BUSINESS TRANSFORMATION

Research Excellence

MARKET INTELLIGENCE

MODEL

A

B

C

D

E
THE FUTURE

Collaboration Expansion

Business Model Development

New Analytics Tools

Early Adoption