The HealthAgents Project

IST–2004–27214

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Co-ordinator

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Title

Agent-based **Distributed Decision Support** System for **Brain Tumour Diagnosis** and **Prognosis (IST-2004-27214)**

Acronym

HealthAgents

Provenance

- 3-year project funded by the EC under contract IST–2004–27214
- Sixth Framework Programme (FP6) Information Society Technologies
- Priority addressed: IST-2004-2.4.11 - Integrated biomedical information for better health
- Instrument: Specific Targeted Research Project (STREP)
- Information Society Technologies (IST) priority
- €4.1M total (€ 3.7M direct funding)
- 9 Partners

CORDIS

Information Society Technologies

www.cordis.lu/ist/

Participants

- MicroArt, SL (Spain)
- Universitat de València (Spain)
- Universitat Autònoma de Barcelona (Spain)
- ITACA (Spain)
- Pharma Quality Europe (Italy)
- Katholieke Universiteit Leuven (Belgium)
- University of Birmingham (UK)
- University of Edinburgh (UK)
- University of Southampton (UK)

Objectives

SCIENTIFIC
Brain Tumour Classification
New Pattern Recognition Methods
New Candidate DB Checking
“Self-learning” Classifiers
“Trusted” Framework
Dissemination

TECHNOLOGICAL
Large d-DWH
Multi-Agent System
New Ontology
Auto-conversion of Tumour Data
Tumour Exchange Protocol
Classifiers & d-DWH Coupling
Data Mart Comparison & Analysis
Improved Classifiers
Enhanced Security

Specific Objectives

- To improve the healthcare of patients with brain tumours
- To improve our understanding of brain tumours
- To make these improvements widely readily accessible

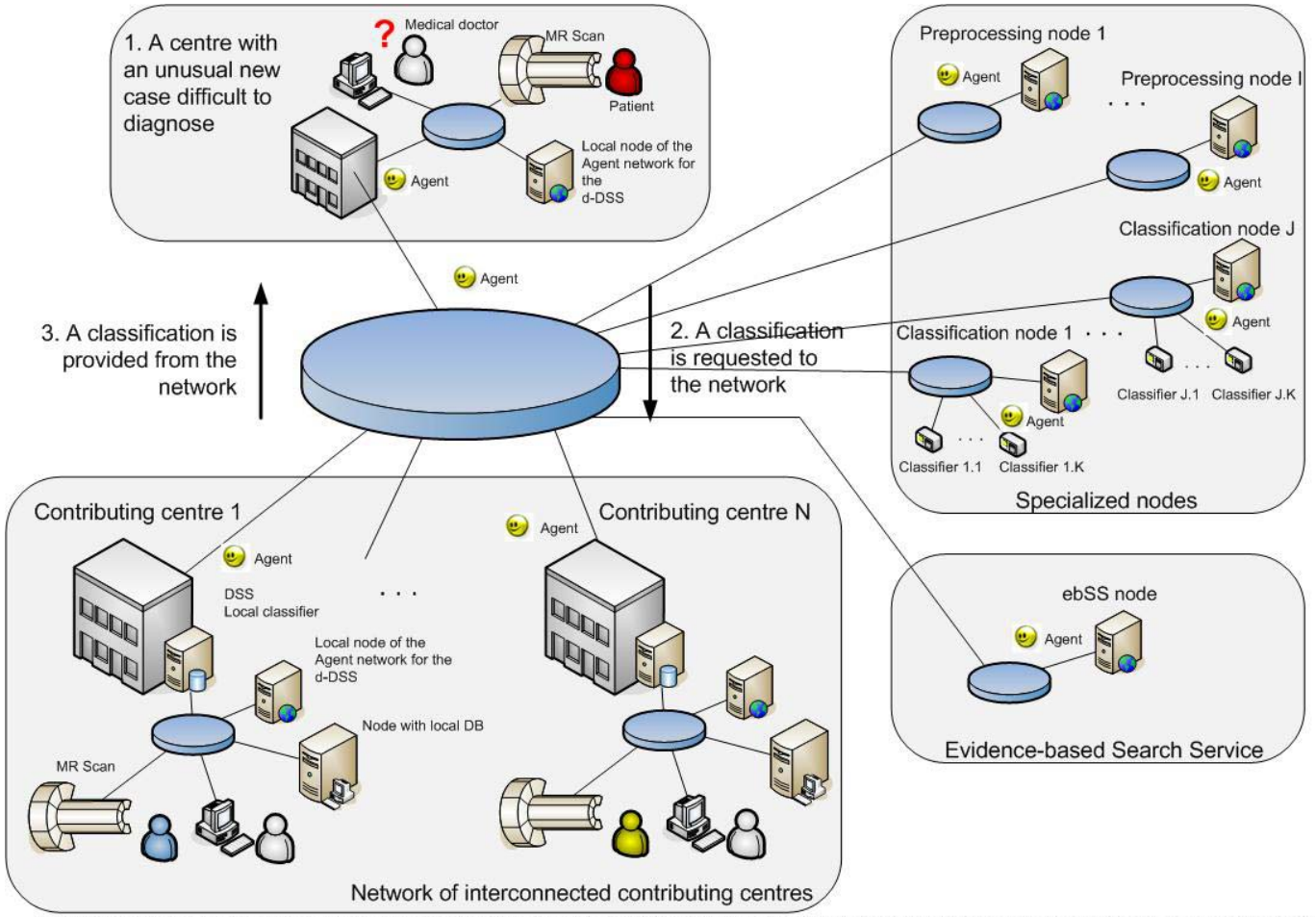
Why brain tumours?

- Clinical importance
  - Important cause of morbidity and mortality in adults and children
  - Few improvements in outcome
  - New approaches to management needed via greater understanding
- Amenable to techniques
  - Brain is amenable to MR studies
  - Tissue available, surgery mainstay of treatment

Chalenges

Objective	Problem	Our solution
Improve the (MRS-based) non-invasive classification (diagnosis/prognosis/progression and therapy follow-up) of brain tumours by using a distributed network of local databases or Data Marts (DM).	There are many brain tumour types and grades. Use of metabonomics or survival data may further increase this (sub)type number. Developping robust classifiers may require 10-15 examples of each tumour (sub)type.	Assuming about 6,000 MRI/MRS centers and 100 cases stored per center this provides a potential harvest field of 600,000 cases for classifier development. HealthAgents wants to set the bases, strategies and protocols for this harvest to start and to demonstrate it feasible.
Classification – histopathology is often a poor predictor of response Non-invasive diagnosis - surgery often associated with morbidity, Tumour assessment - size of tumour on MRI is a crude measure of amount of active tumour, heterogeneity, margins, biological variability Drug targets - New biological targets needed for drug development	Accessibility Standardisation of acquisition Data formats Data processing and interpretation Future proofing Needs to be automatically updated Local needs Tailor to the population seen in the hospital Tailor the work carried out	Distributed databases and DSS Clinician friendly presentation of data and guided interpretation Building of tailored local databases Continued updating Ontologies Improve classification by inclusion of more information Build dynamic systems – improved classification as more data is collected

Our Solution



Scheme of the HealthAgents network: Distributed Decision Support System (d-DSS) and Evidence-based Search Service (ebSS)