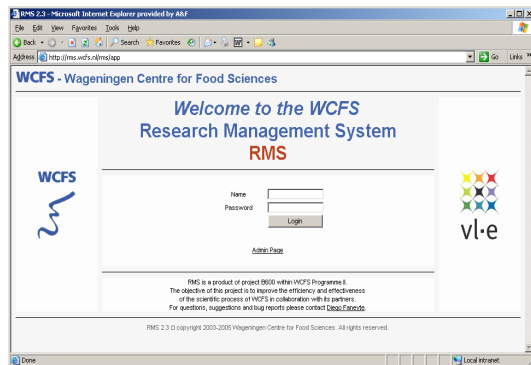


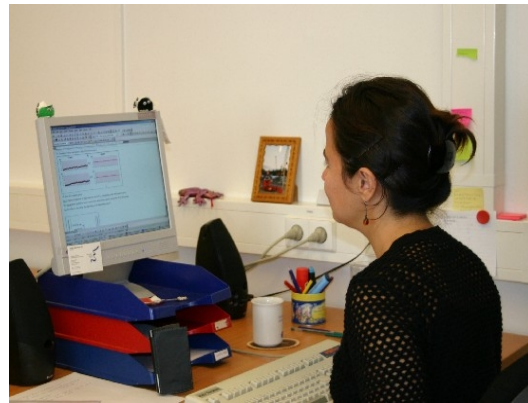
RMS: applying semantics for efficient research

First class research in food sciences requires a multidisciplinary approach, integrating extensive sets of data, models and knowledge from various sources. The motivation of TIFN (Top Institute Food & Nutrition) to develop the Research Management System originates from the observation that research output from one project usually is unavailable in other projects. As a consequence, experimental work and analysis of results are done unnecessarily. Moreover, reasoning patterns and assumptions made are not stored explicitly. This not only leads to inefficient use of resources, but also hinders the learning cycle that is essential to research.

The Research Management System RMS provides an advanced platform for supporting the design of research and for storing, retrieving, processing and presenting experimental and theoretical information – from research question to publication.



From a technological point of view, RMS profits from the latest results in information systems and knowledge management. In particular new standards for information exchange (RDF and OWL) help to construct knowledge models or *ontologies*. Moreover, modern information systems also provide intelligent workflow support, thus guiding researchers in making proper decisions and explicating the underlying reasoning steps. Finally, on the infrastructural level RMS in future will connect to the Grid, a worldwide, transparent network of digital services.



Participation in the Food Informatics project – one of the application projects in Virtual-Lab E-Science – has resulted in a number of tangible results. RMS is selected as one of the showcases in VL-e to demonstrate the practical use of advanced achievements in VL-e. RMS demonstrates tools developed by the Advanced Information Disclosure (AID) team.

- A full text search (à la Google) was implemented using an extended version of *Lucene*, a public domain search engine. Moreover, a set of characteristic terms is generated as described above.
- We have agreed on how to apply automated annotation algorithms as developed by AID. This function learns to recognize terms in natural texts. Presently, identifying concepts and relations (for constructing the above mentioned ontology) is still a manual activity. We assume that with this algorithm we will be able to automate this task at least partly.

TIFN works closely together with the A&F team in the Food Informatics project. A number of tools developed in this cooperation are instrumental to developing next versions of RMS:

- The above-mentioned ontology was developed using the ROCK-method developed by A&F (Rapid Ontology Construction KIT).
- The ontology of units of measurement and related concepts (OUM) has been used to define a set of standard quantities and units in RMS.

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