MoniQA

An EU-funded Network of Excellence working towards the harmonisation of analytical methods for monitoring food quality and safety in the food supply chain

Executive Summary 2008
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MoniQA started on 1st February 2007, and involves more than 155 researchers and scientist – including 40 PhD students – from 33 organisations in 20 countries. The activities of the various work packages and work groups are addressing analytical challenges, global harmonisation and standardisation efforts, the need for rapid and new analytical methods, use of information and communication technologies, databases, and regulations.

MoniQA is an EU funded Network of Excellence (NoE, FOOD-CT-2006-36337) working towards harmonisation of analytical methods for monitoring food quality and safety in the food supply chain. It is coordinated by the Vienna-based International Association for Cereal Science and Technology (ICC) and is set to receive €12.3M from the European Commission for its activities between 2007 and 2012, within the Sixth Framework Programme Topic T5.4.5.1: Quality and safety control strategies for food (NoE).

MoniQA seeks to establish durable integration of leading research institutions, industrial partners and small-medium-sized business (SMEs) working in complementary fields of food analysis to assure food quality and safety. The project will overcome European and worldwide fragmentation in food diagnostic research by integrating key organisations. The consortium seeks to establish mechanisms for coordinating, and where possible merging fully, research activities, personnel and infrastructure. The industry and SME sector will benefit through application of harmonised protocols and globally accepted analytical methods fulfilling defined requirements. Consumers and international trade will benefit through high quality and safe food, which is tested by reliable and internationally accepted methods.

MONIQA will play an important role in integrating European and worldwide food quality and safety research by creating a virtual laboratory for research, training, dissemination, and mobility programmes. It will actively promote sharing of data and knowledge as well as equipment, materials and personnel through creation of a global platform for food quality and safety researchers. Integrating activities will enable shared access to world’s best research facilities, technological platforms, databases, analytical tools and knowledge. The joint research programme will allow high quality research directed towards the most pressing issues, fulfilling both food quality and safety policies as well as addressing citizens’ concerns. The network will develop common strategies for harmonising and validating detection methods and technologies strategies to set new standards in food quality and safety initially within the production and extending throughout the whole food supply chain.
With the rise of globalisation, more and more foods and food products are being traded around the world. Ensuring that these foods are of a high quality and safe to eat when they reach the consumer requires reliable food analysis techniques. However, different countries currently use different methods to test foods for the presence of harmful substances in food.

MoniQA aims to make the food chain safer by harmonising the criteria for methods used to analyse food for safety and quality. The partners form a virtual laboratory highlighting food safety issues and food testing and analysis. Through this, researchers are able to exchange data and knowledge, helping to develop common strategies that could form the basis of new standards in food quality and safety assessment. By implementing joint research programmes and promoting exchange between the partners, we hope to develop solutions that will be acceptable to consumers, manufacturers and regulatory bodies as well as other groups involved in the food chain.

MoniQA is also investigating the food quality and safety implications of new processing technologies, and identifying future research needs. These needs will be examined along the whole food supply chain, which has become a complex system if crossroads between suppliers and producers, retailers and ultimately the consumer. At each crossing point some sort of documented quality control is required, which must be acceptable to the supplying and the receiving parties as well as to regulatory authorities and control institutions.

The network members are investigating mechanisms to coordinate and merge research activities, personnel and infrastructure to achieve synergetic affects. The resulting harmonised analytical strategies and methods, databases and training modules will extend beyond the network to associated partners and stakeholders. Food production industries and SMEs will benefit through harmonised analytical methods and technologies, as will the consumer.

Drivers for MoniQA

- New EU Regulations (e.g. food allergens, mycotoxins, other food contaminants)
- Fragmentation of research and standardisation
- Limited validity of standardisation/ validation certificates for analytical methods in particular for rapid methods, alternative methods and test kits
- Growing demand for rapid methods for quality and safety monitoring throughout the food supply chain
- Lack of appropriate validation protocols for new and rapid methods (e.g. qualitative methods) and thus a lack confidence in the competence and reliability of these methods
- Lack of reference methods and reference materials for some analytes (e.g. food allergen detection methods and accepted reference materials)
- Lack of appropriate tools to quantitatively assess the financial impact (costs and benefits) of implementation of legally required and/ or voluntary quality assurance schemes requirements in a micro- and macro-socio-economic setting
Project Objectives

The ten-point programme of specific objectives for MoniQA

For Durable Integration – Programme Leader: VTT - Technical Research Centre of Finland, Finland
1. Merge partner strengths through shared use of infrastructure to meet emerging food quality and safety challenges on global scale.
2. Establish a mobility programme to promote the exchange of personnel for both short term secondments and full relocation within the network.
3. Achieve a sustainable network to ensure durable integration of international research institutions through development of joint economic models, research programmes and intellectual property.

For Joint Research – Programme Leader: CSL - Central Science Laboratory, UK
4. Develop harmonisation guidelines for risk assessment and standardisation of detection methods and technologies in food safety and quality.
5. Assess implications of advanced processing and monitoring technologies implemented in modern HACCP systems. Identify and prioritise gaps and needs for future food quality and safety research.
6. Develop a database for food quality and safety issues and corresponding analytical tools for food production and supply chain including information on the validation level, and a thesaurus of terms and definitions used in standardisation/validation of analytical methods.
7. Analyse new EU food quality and safety regulations with respect to industry, control and regulatory bodies, and their socio-economic impacts in terms of efficiency, effectiveness and consistency, administrative costs and impact on international trade.

For Spreading of Excellence – Programme Leader: Q-Plan - International Quality and Environment Services SA, Greece
8. Facilitate knowledge sharing within the network and dissemination to food production and supply chain and other relevant stakeholder groups for harmonisation of, and compliance with, food quality and safety standards.
9. Define requirements for and set up training programmes to achieve harmonisation of know-how and skills, and mutual recognition of academic and industrial qualifications.

For Consortium Management – Programme Leader: ICC - International Association for Cereal Science and Technology, Austria
10. Establish an efficient management structure with quality assurance that can be sustained beyond the period of EC funding.
## Project Objectives (contd)

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<tr>
<th>Integration objective</th>
<th>Integration activities</th>
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| To overcome fragmentation of research activities by co-ordinating and merging research portfolios in terms of infrastructure, personnel and joint economic models to achieve a sustainable network | **WP 1:** Co-ordinating and merging research infrastructure  
**WP 2:** Personnel exchange and mobility  
**WP 3:** Achieving network sustainability |

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<th>Joint research objective</th>
<th>Joint research activities</th>
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| To develop collective knowledge of the network by producing common tools such as guidelines for harmonisation of detection methods and technologies, Good Traceability Practices, database for food quality and safety assessment and socio-economic impacts of new EU food quality and safety regulations | **WP 4:** Harmonisation and standardisation of analytical methods  
**WP 5:** Advanced processes and ICT technologies  
**WP 6:** Development of database for food safety hazards |

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<th>Spreading of excellence objective</th>
<th>Spreading of excellence activities</th>
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| To promote results generated by the network to targeted stakeholder groups, as well as to facilitate and foster a knowledge sharing and learning culture within the network through educational programmes and training courses | **WP 8:** Dissemination and knowledge management  
**WP 9:** Joint education programmes and training tools |

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<th>Management objective</th>
<th>Management activities</th>
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<td>To establish an efficient management structure with independent quality assurance that can be sustain beyond the EC funding</td>
<td><strong>WP10:</strong> Consortium activities management</td>
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### Programmes and Work Packages of MoniQA:

- Programme 1: Integration (WP 1-3)  
- Programme 2: Joint Research (WP 4-7)  
- Programme 3: Training and Dissemination (WP 8+9)  
- Programme 4: Management (WP 10)

### Project organisation

MoniQA is organised in four Programmes (P) and 10 Work Packages (WPs). Each Programme addresses a specific strategic objective and is further detailed by various WPs, which address specific activities. WPs 1-3 deal with consortium building and integration activities; WPs 4-7 focus on joint research activities; WPs 8 and 9 training and dissemination pathways and tools; and WP 10 is the management system, which will be sustainable beyond the project funding period.
Setting thematic priorities

The possible topics concerning food safety and quality assessment are diverse and manifold. After evaluating various reliable sources of information, the thematic priorities within MoniQA have been defined by weighting RASFF data, European legislation (e.g., new and upcoming Regulations and Directives), available data on official and new/rapid methods for food hazards, active working groups in CEN, especially CEN TC 275 on horizontal methods and Codex Alimentarius (Joint Programme of WHO and FAO), recently published methods by organisations represented in IAM (Inter Agency Meeting), and of course input from MoniQA partners, interested parties outside the core consortium, and our Advisory Panel.

Six analyte-specific Working Groups (WGs) established to tackle analytical challenges as well as eight horizontal issues. The WGs are coordinated within WP4 (Harmonisation and standardisation of analytical methods). Advance process and ICT technologies (WP5) have also assessed the needs and potential for improvement and modernisation of existing HACCP systems in the food supply chain. The situation in Europe and elsewhere has been examined, and gaps have been identified for future action and a research agenda for the years to come.
Working groups and horizontal issues

In addition to the six analyte-specific WGs, two further groups have been established: 1) Validation of qualitative methods – one of the horizontal issues is the lack of a useful protocol for validation of qualitative methods and this work will result in a harmonised IUPAC/ ICC/ NMKL/ MoniQA protocol for validation of qualitative methods including an applied ring trial to generate data to support the proposed new protocol. This work will be done in cooperation with CEN TC275 WG0, ISO, and the IAM (Inter Agency Meeting supporting Codex Alimentarius CCMAS); and 2) Socio-economic impact addressing costs and benefits of quality assurance schemes and method validation on the micro-, meso- and macro-levels.

Establishing Working Groups

All eight WG have a work plan identifying the needs, difficulties, and gaps in their respective area of research, developed through consultation with stakeholder groups within and outside MoniQA. Their outputs will feed into database generated within WP6 (Development of database for food safety hazards) and the socio-economic impact assessment managed by WP7 (Socio-economic impact and cost efficiency). The groups have also prepared position papers describing the current analytical situation and identifying gaps and needs. These will be presented during the MoniQA International Conference – Increasing trust in rapid analysis for food quality and safety – in Rome, Italy (8-10th October 2008) and published during 2009.
Building the network

Our aim is to create a resource describing the skills of individuals, and the skills and competencies of consortium organisations as well as their infrastructure. The availability of methods and specific relevant appliances, research interests and information on future strategies will help establish close co-operation, and help to merge the activities of the network.

Currently, the MoniQA database has information from online questionnaires including an inventory of equipment, facilities, analytes and methods as well as methods used. In the future it will also contain information on legal constraints and factors limiting mobility. These legal constraints (e.g. health and safety, insurance) and any other identifiable factors were investigated and described in a report, which will be published in various forms during 2008-2009.

Building the network requires detailed information about the participants and their organisations as well as a functional management structure. These issues are addressed by the Integration Activities (WP1 – Coordinating and merging research infrastructure, WP2 – Personnel exchange and mobility) and WP10 – Management, and will be updated throughout the network’s lifetime. Several Integration Teams have, however, formed spontaneously by combining related competencies of various partners independent of the WPs’ and WGs’ structures, and include:

- IT Team: consisting of database experts from ICC, BOKU, VTT, CSL
- Communication Team: consisting of communication experts from ICC, IFR, and RTDS
- Management Team: consisting of ICC, RTDS, QPlan, NFNI and the Programme Leaders
- Quality Assurance Team: consisting of ICC, QPlan, and RTDS for consortium management, and the Advisory Panel and the Programme Leaders for content and deliverables

These teams are the nucleus for continuous collaboration and contracting services to stakeholders outside of MoniQA as part of the sustainability programme. In addition, the MoniQA Advisory Panel, chaired by Andre Pirlet from CEN Research, consists of representatives from mainly international governmental organisations but also international non-governmental organisations. The panel have helped the consortium establish additional links to other organisations and related research projects. As a consequence, MoniQA has already grown to include more than 90 organisations from 35 countries across five continents (Europe, Africa, Asia, North and South America, and Australia). The Advisory Panel have also reviewed and revised strategic deliverables completed during the first year.

65 Associated Partners: organisations without MoniQA funding but with access to selected benefits

New research collaboration

MoniQA aims to establish the necessary infrastructure to boost international research co-operation in food quality and safety assessment. Partners have initiated research proposals to be funded by national and/or international sources, and responded to several calls for proposals for collaborative research projects and other EU-funded projects within Framework Programme Seven (FP7). MoniQA partners outside the EU (e.g. New Zealand and China) have also submitted proposals for funding of complementary national research activities involving international partners from the network. Partners with skills and experience with large collaborative projects have helped less experienced organisation, and training for soft-skills in preparing research proposals, and managing research projects and networks have been provided. These activities have been facilitated either by members organisation or via WP3 Sustainability or WP8 – Dissemination and WP9 – Joint education programmes and training tools.
Information resources

MoniQA Databases: 1) consortium database generated for MoniQA partners’ use and for building the network and collaboration. 2) research database developed for public use as information resource, such as existing analytical methods for specific analytes, validation levels, legal situation in various countries, infrastructure, etc.

Two databases have been developed within MoniQA: 1) consortium database and 2) research database. The former allows members to search for individuals within MoniQA, stakeholder groups, competences, special appliances, infrastructure, training courses, and eventually sustainable outputs including publications, products and services. This is an important tool for building the network, granting rapid access to expert opinion and competencies in order to deliver outputs and services to the consortium and stakeholders.

The research database enables searches on relevant analytical methods for specific analytes including information on the degree of validation, legal requirements, legal limits, and availability. The databases will be extended and updated continuously. This database will in time become publicly accessible on basis of defined terms and conditions and possibly a user fee.
MoniQA will systematically assess new regulations in the field of food quality and safety, and aims to set mutually acceptable evaluation criteria (e.g. effectiveness, efficiency and consistency and it will compare the impact of different options in qualitative, quantitative and monetary terms). The socio-economic impact of administrative costs imposed by new regulations will also be evaluated on the macro level. In this respect, MoniQA and representatives from the European Commission’s Secretariat General, DG Enterprise, DG SANCO, DG Environment and DG Finance met to facilitate collaboration between MoniQA and the various Directorates for better and more cost effective regulations in the future. In a follow-up meeting, input from EU and USA experts in socio-economics and new regulations was also sought. A major output of this will be a predictive assessment tool to evaluate the costs and benefits of employing new quality assessment schemes and/or new food safety regulations on a meso- and micro-socio-economic basis. The socio-economics WG will address the challenges of communication between scientists, including our WGs, and experts in the life sciences area and socio-economics.

Mobility programmes

Exchange of researchers and students has been encouraged through a mobility programme. Currently only available for the partner organisation, this scheme will be extended to Associated Partners and invited experts in the future and schemes for short- and longer-term visits. This year, the mobility programme has focussed on bursaries for PhD students and post-doctoral researcher to attend meetings and participate in MoniQA-funded workshops such as the newly established MoniQA Food Scientists’ Training (MoniQA FST), which is organised within WP9. The scheme was developed by WP2 based on the experience of other NoEs such as EUROFIR and NuGO, and the bursaries awarded on a selective basis after application, managed by WP2 and WP10.

Training Courses

MoniQA training courses together with courses available at partners’ sites are included in the consortium database. This was achieved by WP9 in collaboration with WP1 and WP2, and supports the development of the network as well as forming the basis of personnel exchanges and grants. The first MoniQA Food Scientists’ Training (MoniQA FST) workshop was held in Prague, Czech Republic, on 6th November 2008 in connection with the conference ‘Recent Advances in Food Analysis’.

Further workshops in Austria, Turkey, Italy, China, and New Zealand are currently under preparation and include: Scientific skills (development and validation of new analytical methods for food safety and quality assessment); soft skills (presenting scientific data and managing research projects); European Commission Services and Research Framework Programmes FP6 and FP7; EU legislation, Food and Agricultural Policies; and Use and design of rapid methods and test kits.

Establishing mutually recognised and externally-rated training courses is important and an international post graduate programme is under discussion. The training courses offered by MoniQA are managed by WP9 with the support of WP 10, and include lecturers and trainers from within MoniQA as well as external expertise. As a global network e-learning tools would widen access to training as well as bring added value; an initial MoniQA e-Learning course is planned for 2009.
Consortium meetings and stakeholder events

Meetings are an integral part of any network and after our kick-off meeting in Vienna (20th-22nd March 2007), the consortium gathered again in Glasgow (5-7th September 2007) for a working meeting before the 1st Annual MoniQA Meeting (12-14th February 2007) in Athens, Greece. In addition to these meetings, there have been work package and working group meetings throughout the year. Workshops and conferences as well as dedicated MoniQA sessions at other international events have been initiated to promote knowledge transfer and networking opportunities with non-MoniQA organisations.

Working for sustainability

MoniQA is funded by the European Commission for five years. Within this funding period consortium/network management and infrastructure, collaborative services and products will be developed, which will be marketed and thus support the sustainability of the network and its outputs beyond the EC funding.

Strategies and business models including monitoring and eventual exploitation of intellectual property have been initiated to secure future financing and to ensure durability of the network. This will be achieved through four sustainability working groups: 1) IPR monitoring group, 2) Sustainability scouts and 3) Sustainability managers, and the 4) Stakeholder interaction group.

Thus far, services in preparation include the MoniQA research database and a joint ICC-MoniQA Journal, Quality and Safety Assurance of Crop Foods, to be published by Wiley-Blackwell as well as validation services for test kits.

Extending the network

MoniQA has established links to relevant other research projects within EU’s Framework 6 programme, and also globally to exchange information and promote international collaboration. MoniQA has invited various stakeholders to express their interest and participate as Associated Partners. The work groups are the typical entry point for these organisations to contribute and they benefit from some selected services.

- Participation in MoniQA events at reduced rates
- Collaboration and involvement in Working Groups
- Consideration for partnering in new projects
- Involvement and selective invitation to expert panels
- Participation in integration and dissemination programmes (not funded by MoniQA)
- Entry into a Memorandum of Understanding, including a non-disclosure agreement

The terms and conditions of Associated Partners were decided in September 2007, and will remain until new services can be offered. Associated Partner status is currently free but, in the future, when more services and outputs of commercial value become available, a membership fee or service fee is foreseen. These fees will contribute to the sustainability of MoniQA.
Stakeholders and beneficiaries of MoniQA

Consumer & Trade
- Consumer
- Consumer organisations
- The press & media
- Food manufacturers
- Food developers
- Methods providers
- Test kit providers

Science & Research
- Projects/NoE's
- Universities
- Research Institutes
- Young Scientists
- PhD students
- Authorities
- Policy makers
- European Commission
- Standardisation bodies
- Regulatory bodies

Industry & SMEs

Organisations
- better regulations
- harmonised validation
- harmonised performance criteria
- global acceptance

Stakeholders needs and interests and what MoniQA offers

Consumer & Trade
- safe
- healthy
- high quality foods
- awareness and training
- expectations

Science & Research
- infrastructure
- exchange of personnel
- training, new curricula
- new research projects
- new co-operations

Industry & SMEs
- new developments
- modernisation
- improved HACCP concepts
- rapid, cost efficient methods
- training and networking

Organisations
Stakeholders needs/interests and offers of MoniQA

Who to contact?

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Belgium
CEN Technical Committee on Horizontal Methods
(CEN TC 275)
Germany
Codex Alimentarius – Joint FAO/WHO
Food Standards Programme (FAO/ WHO)
Italy
Health Canada (HC)
Canada
Inter Agency Meeting (IAM)
Hungary
TNO – Netherlands Organisation of
Applied Scientific Research (TNO)
Netherlands
Joint Research Centre – Institute for Health and
Consumer Protection (JRC-IHCP)
Italy
The International Life Sciences Institute
(ILSI-Europe)
Belgium
Institut Scientifique de Recherche
Agronomique (INRA)
France
International Standards Organisation
ISO TC 34 Foods ISO TC34
Switzerland
International Union of Food
Science & Technology
(IUFOS) USA
American Oils Chemists’
Society (AOCS)
USA
MoniQA Partner Organisations

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Universität für Bodenkultur Wien (BOKU)
Ain Shams University (ASU)
Campden and Chorleywood Food Research Association (CCFRA)
Centre d’Économie Rurale (CER Groupe) (CER)
Eurofins Analytik GmbH (Eurofins)
Centro Tecnologico Gaiker (Gaiker)
Central Science Laboratory (CSL)
International Quality and Environment Services SA (Q-Plan)
Tübitak Marmara Research Center (TUBITAK)
University of Food Technologies (UFT)
Vocal Tag Ltd. (VTAG)
VTT Technical Research Centre of Finland (VTT)
University of Naples Federico II (DSA)
Norwegian Food Research Institute (Matforsk)
National Technical University of Athens (NTUA)
National Institute for Public Health and the Environment (RIVM)
Sichuan University (SCU)
Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (INRAN)
Budapest University of Technology and Economics (BUTE)
Institute of Environmental Science and Research (ESR)
National Food and Nutrition Institute (NFNI)
Hacettepe University (HCTU)
Chinese Cereals and oils association (CCOA)
Institut Pertanian Bogor (IPB)
Hanoi University of Technology (HUT)
Institute of Food Research (IFR)
National Research Council (CNR)
RTD Services (RTDS)
JRC- Joint Research Centre (JRC)
Rheinsche Friedrich-Wilhelms Universität Bonn (Uni-Bonn)
Interdisciplinary Centre for Comparative Research in the Social Sciences (ICCR)
University of Bologna (UNIBO)

Country

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