RAKIP

risk assessment modelling & knowledge integration platform

anses — French agency for food, environmental and occupational health safety

BfR — Bundesinstitut für Risikobewertung

DTU Food — National Food Institute
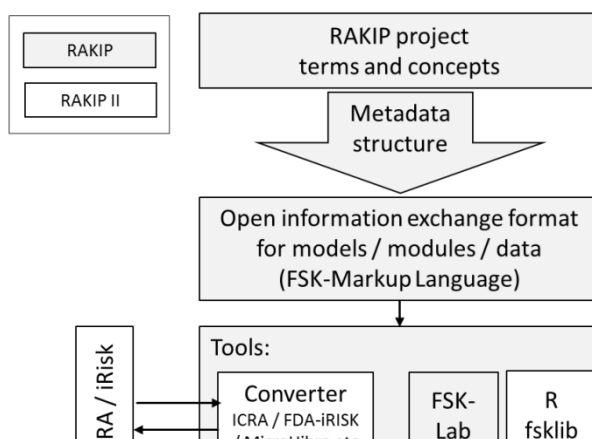
DTU

RAKIP Initiative

The food safety community is generating a variety of scientific knowledge (e.g. scientific publications, experimental data and mathematical models) and resources (e.g. databases and software tools for model generation and application) in the areas of risk assessment and predictive microbiology. However, the access to this knowledge and the exchange of information between resources are currently difficult and time consuming. Therefore, three European institutions specialized in food safety risk assessment (ANSES, BfR and DTU Food) initiated a joint project to establish new community resources that facilitate the knowledge exploitation and exchange. The envisaged "Risk Assessment Modelling and Knowledge Integration Platform" (RAKIP) will be a new resource based on harmonized data formats and consistent rules for knowledge annotation.

RAKIP Concept

Within the **first RAKIP phase** a common understanding on terms and concepts in the risk assessment domain has been developed, together with a structure of relevant metadata for describing data and models in this domain. These results are the foundation for an open information exchange format called Food Safety Knowledge Markup Language (FSK-ML), capable of describing data and models from different scripting or programming languages, e.g. R, Matlab and Java. In the future, files compliant with this format will serve as a bridge between different resources, like ICRA, FDA-iRisk, MicroHibro and FSK.Lab. The initial RAKIP phase is also dedicated to the provisioning of a proof-of-principle implementation of this concept and the establishment of a first shared model repository for the area of Quantitative Microbial Risk Assessment (QMRA).

The **second RAKIP phase** will establish an operational community-driven risk assessment model repository within a public RAKIP community portal. This portal will provide access to open source software libraries (e.g. R fsklib), converter tools and software-specific import and export functions that promote the adoption of FSK-ML by the risk assessment community. The model repository within the RAKIP community portal will be populated with a collection of published microbial and

RAKIP concept

RAKIP / RAKIP II

RAKIP project terms and concepts

Metadata structure

Open information exchange format for models / modules / data (FSK-Markup Language)

Tools:

RA / iRisk

Converter ICRA / FDA-iRISK

FSK-Lab

R fsklib

chemical models that will be re-implemented, annotated and encoded as FSK-ML compliant files. The web-based RAKIP community portal will provide search and filtering functionalities and even allow the download, execution, modification and combination of FSK-ML compliant files. In this phase members of the RAKIP Initiative will create the basis for the establishment of a RAKIP initiative foundation during the third phase.

RAKIP Targeted end users
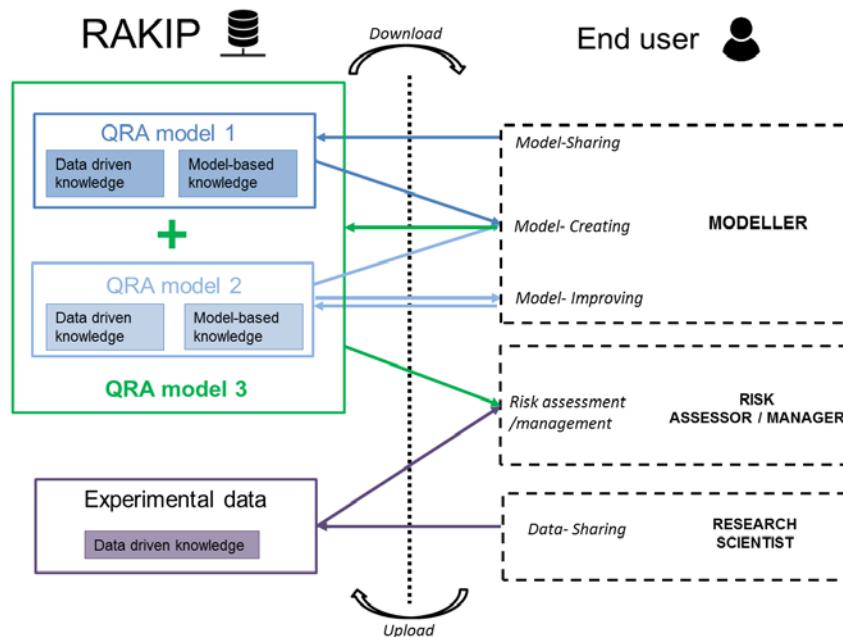
The RAKIP solutions are designed to support the whole risk assessment community including national and international risk assessment agencies, business operators and academic institutions. Modellers, risk assessors and risk managers will benefit most from the envisaged RAKIP portal. Other users like research scientists can also make use of the RAKIP resources, e.g. share their experimental data or apply improved modelling tools in the future.

In the RAKIP portal, the end-users will find a web-based risk assessment model repository that can be freely assessed and searched, and where models can be downloaded, combined and executed. In addition, modellers can contribute their models to the repository by sharing their own models in the harmonized FSK-ML format. The RAKIP portal is however not primarily a new web-based model simulation software. It will be designed such that experts and non-experts can make use of it.

More information about RAKIP Initiative

https://foodrisklabs.bfr.bund.de/rakip-web-portal/

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