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Bundesinstitut für Risikobewertung

# The Risk Assessment Knowledge Integration Platform (RAKIP) Initiative and it's solutions

RAKIP Initiative
risk assessment knowledge integration platform

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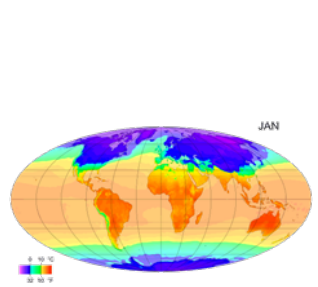
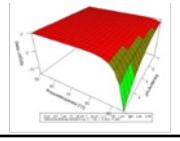
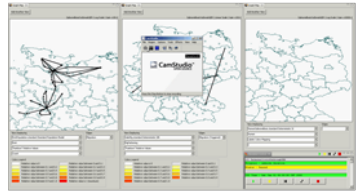
# Risk Assessments in the Digital Age



Predictive Microbial Models



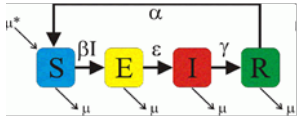
**Agricultural Production**

**Processing**

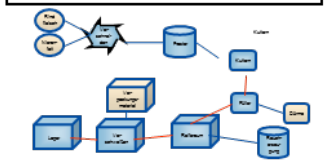
**Distribution**

**Human Consumption**

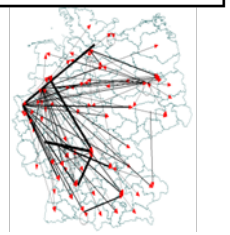
Animal Disease Models



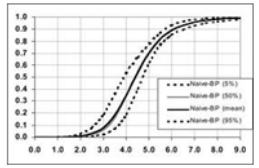

Processing Models



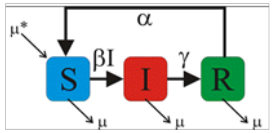
Supply Chain Models



Dose Response Models



Human Disease Models



# Sharing Predictive Models -> Current Practices in Food Safety


=> Often difficult to get “raw models” to run

=> No way to combine models

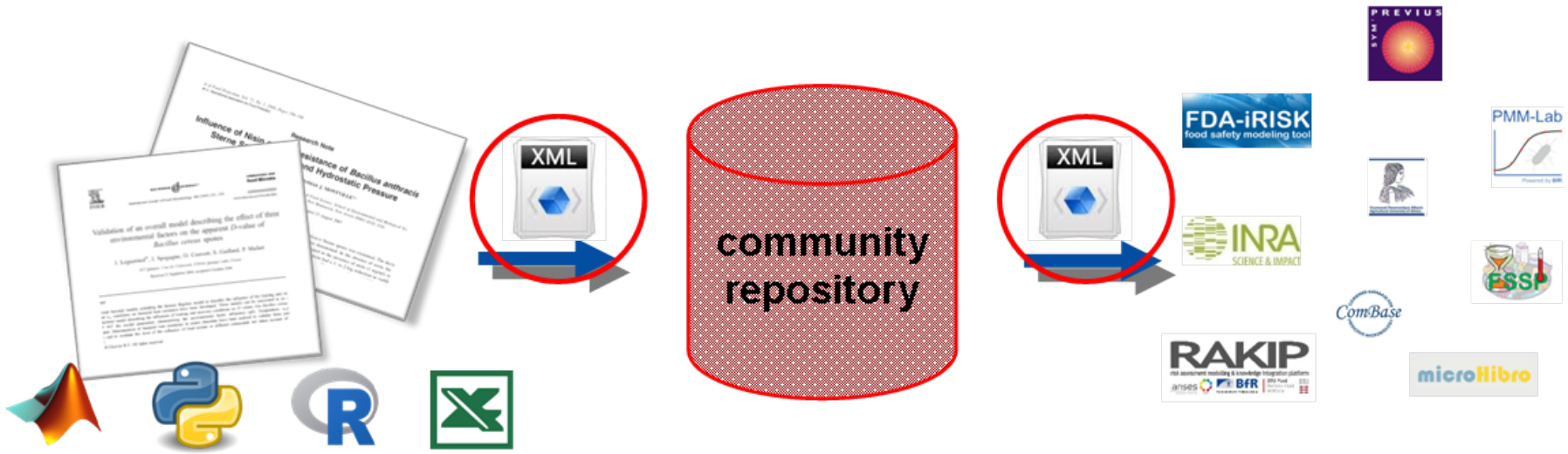
=> No information exchange between existing tools

=> No way to automate KnowledgeBase population

=> No bridge from research to application

# RAKIP Initiative Vision

**Community-driven, curated repository of food safety models / model modules (Food Safety Knowledge Base)**




Newly generated models / re-implemented models / legacy models

Repository with search, info and model download

Model-based predictions & new risk assessments

# RAKIP History

RAKIP Initiative
risk assessment knowledge integration platform

- September 2015 a discussion at the ICPMF9 conference
- October 2016 a proposal for a tri-lateral funded collaboration project between ANSES, DTU, BfR
- January 2017 start of RAKIP project
- Summer 2020 start of RAKIP Initiative
- Currently RAKIP Initiative supported by 12 European agencies / universities

Funding:

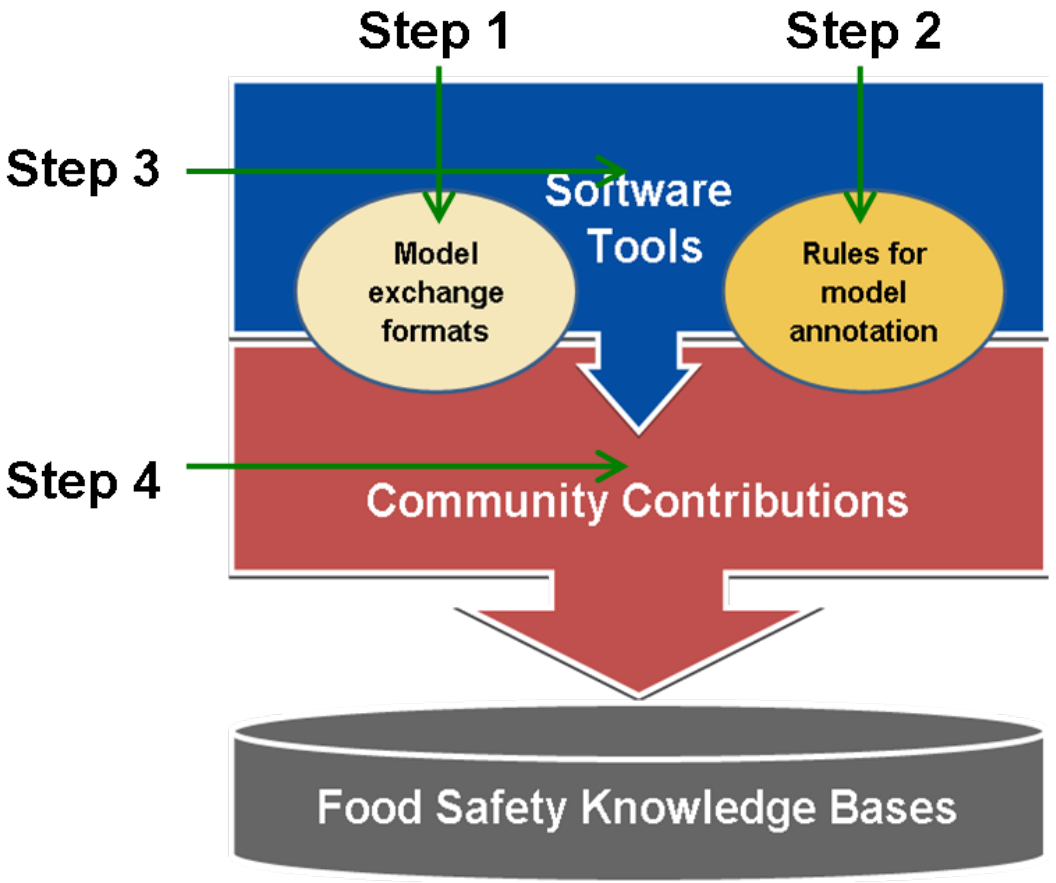
From member organizations

International project funds: AGINFRA+, One Health EJP, MediFit, EFSA-FPA,

National funds: FoodDecide, KIDA, EFSA focal points tailor-made tasks

# RAKIP Initiative Strategy

RAKIP Initiative
risk assessment knowledge integration platform

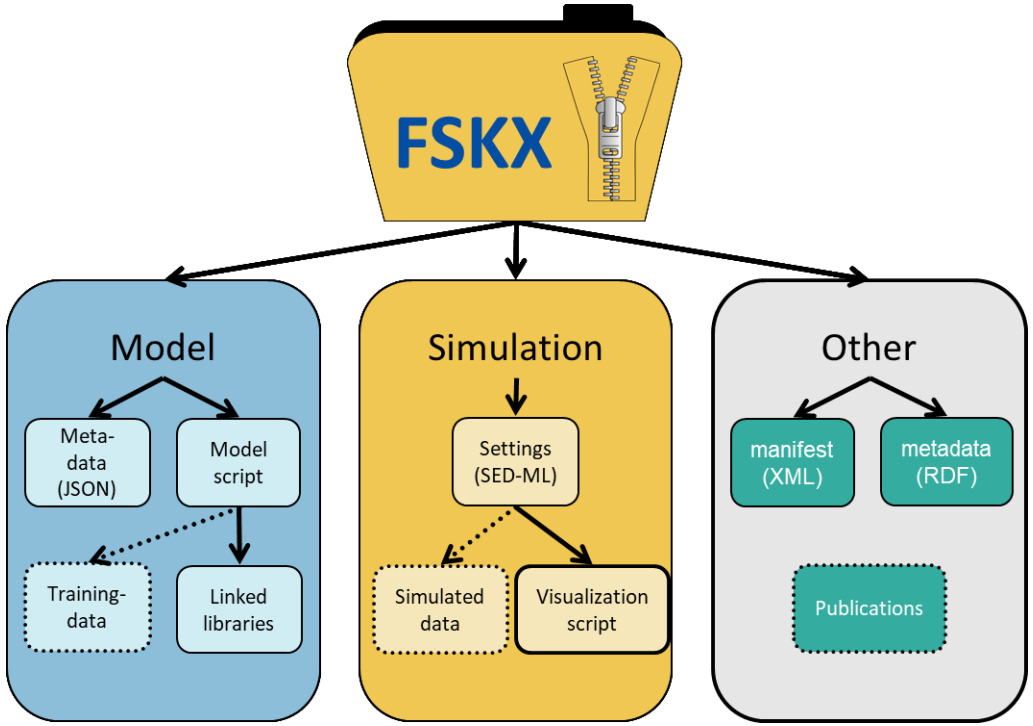


# Core Achievement:
# FAIR Scientific Knowledge eXchange Format (FSKX)

RAKIP Initiative
risk assessment knowledge integration platform

- A harmonized format for knowledge exchange
- Encodes all relevant data / models in a machine-readable format

- Supports:
  - model scripts in different scripting languages, e.g., R or Python
  - provisioning of data, simulation settings and supporting scripts (e.g. for result visualization)
  - metadata schema maintained by RAKIP
  - Linked Data paradigm



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# Core Achievement:
# Minimum Information Guideline (MIRARAM)

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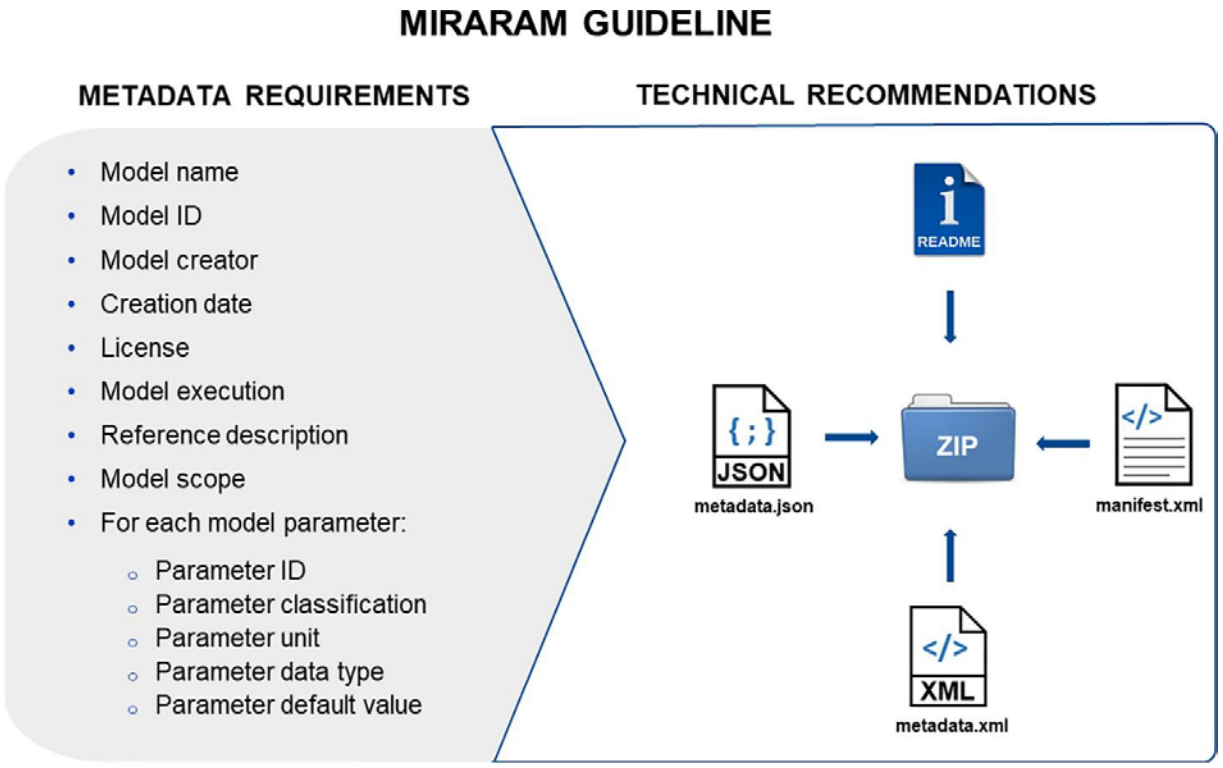




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# FSKX Software Ecosystem

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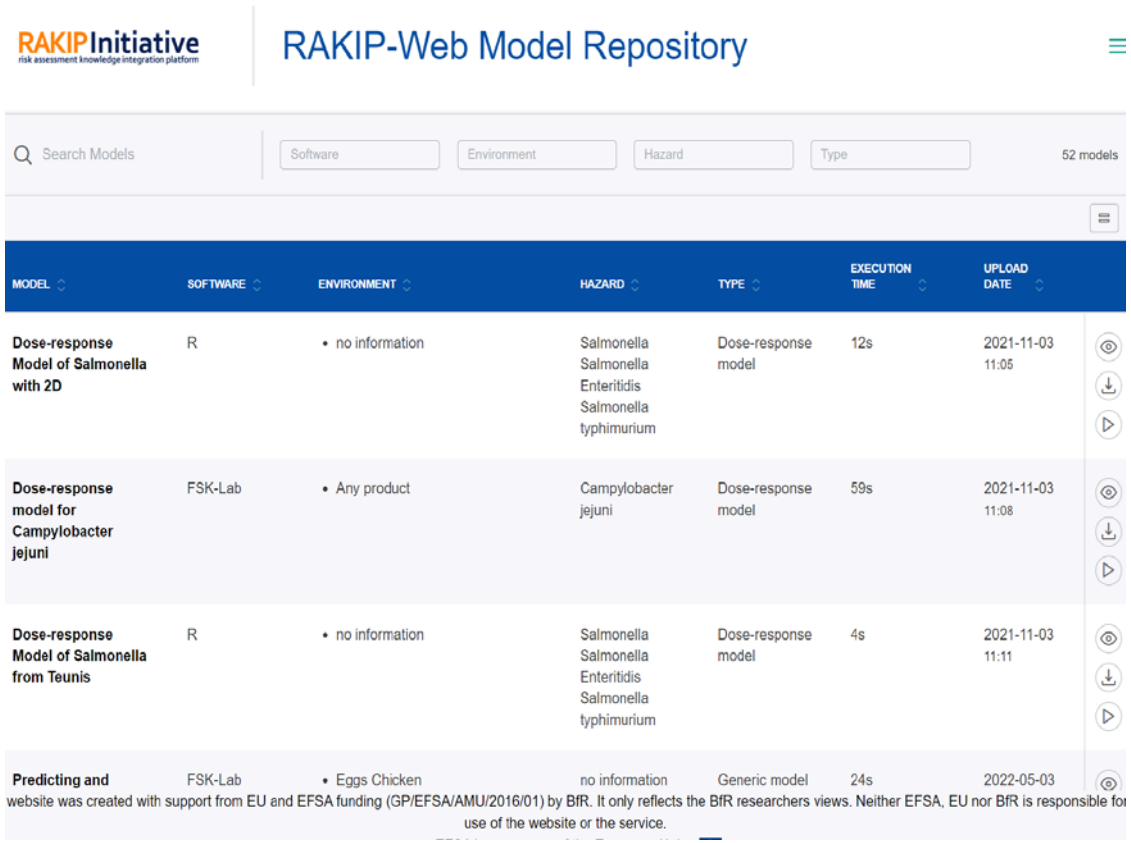
risk assessment knowledge integration platform

- **Online:**
  - RAKIP Web Model Repository
  - Knowledge Junction (Zenodo) Repository
  - Virtual Research Environment Repository
  - FSKX Model Creation service
  - FSKX Model Execution sercie
  - FSKX Model Joining service
  - Zenodo Upload service
  - 3rd party tools support (MicroHibro, FESMJ)

- **Desktop software (open source):**
  - FSK-Lab
  - R
  - “Helper libraries” (for software developers)



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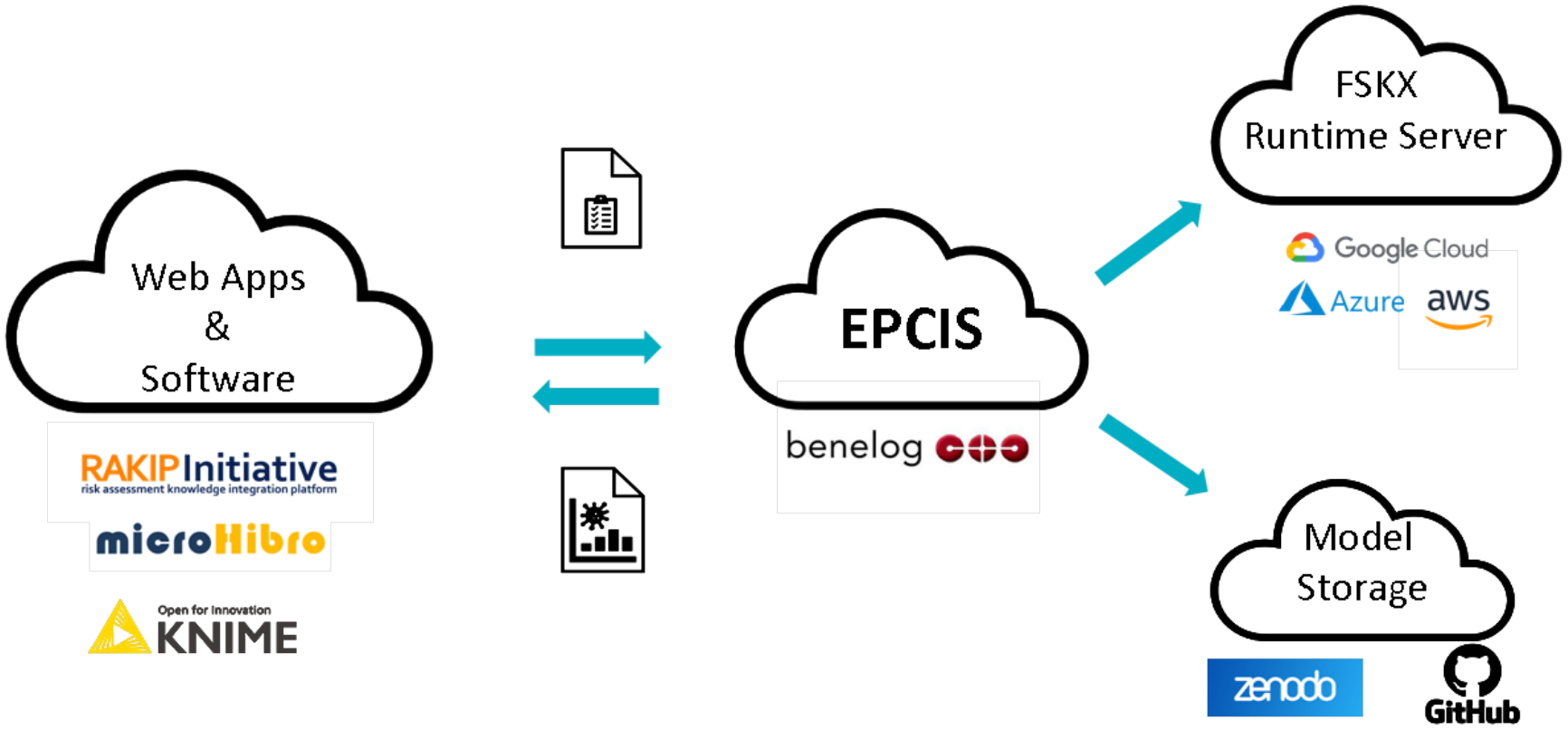
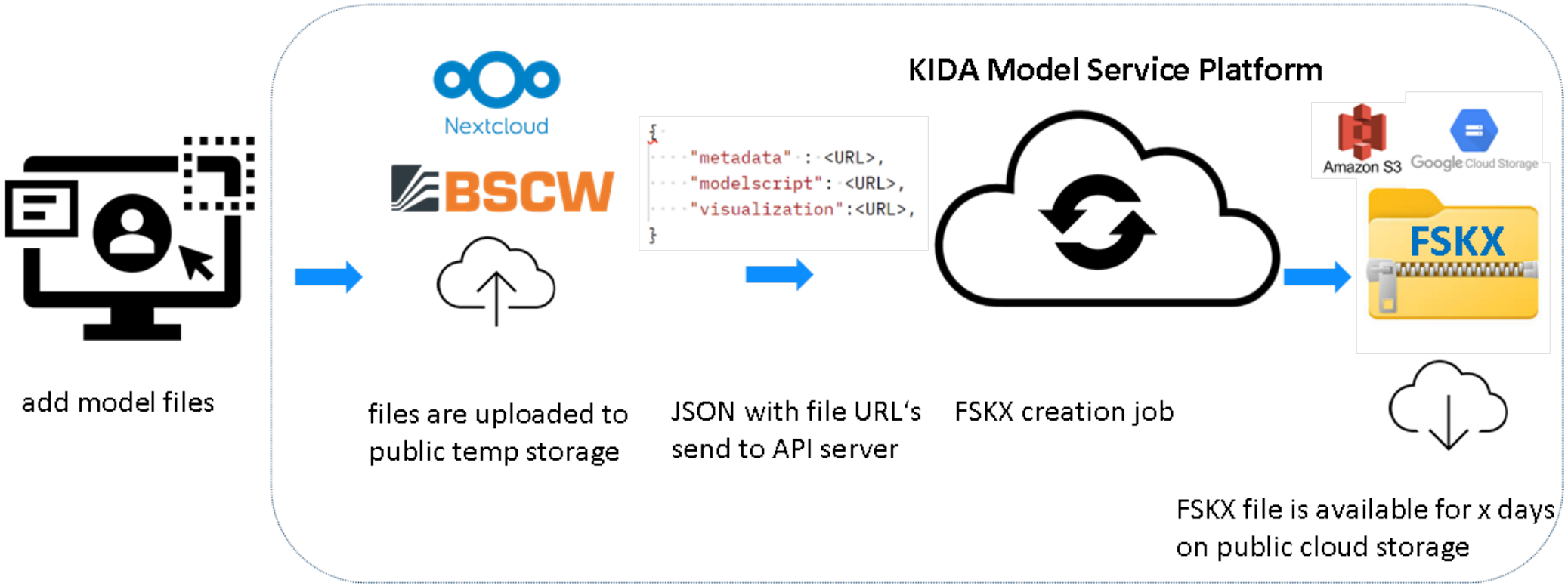
# Current Work:
# Establishing a Cloud-based FSKX Execution Framework

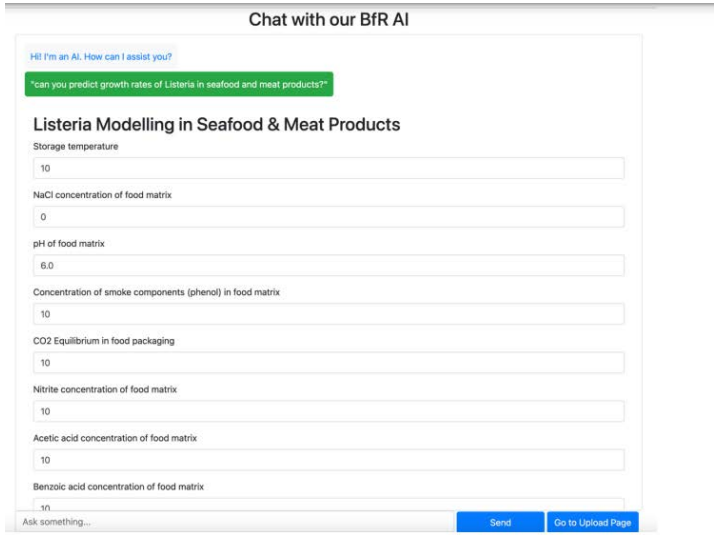


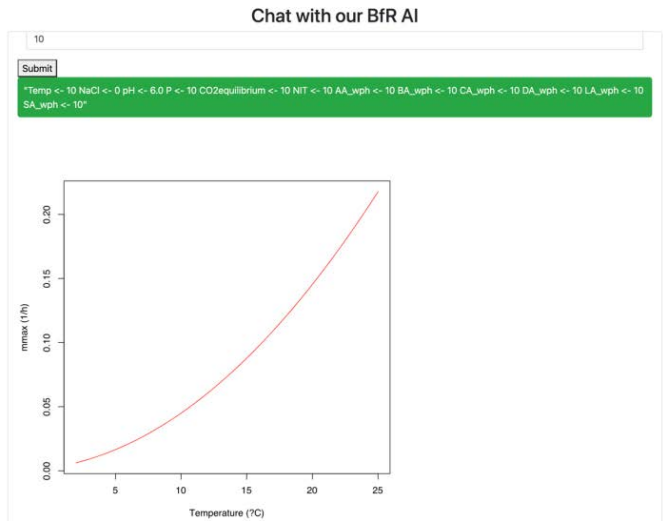
# Current Work:
# Establishing an AI-assisted FSKX Generation Service



# Current Work:
# Demo-Applications to show the Power of FSKX and AI

- Online Chatbot, powered by generative AI, that can answer questions on available FSKX model files
- On user request, the chatbot finds a suitable FSKX model if it exists
- Chatbot triggers execution of agents to create a model-specific User Interface so user can enter his own input data for a simulation with the given model
- Chatbot triggers model execution with user-defined input in a secure cloud compute infrastructure
- Chatbot display simulation results and helps with interpretation



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**https://foodrisklabs.bfr.bund.de/rakip-initiative/**

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