DEMETER: sharing data, knowledge and methods on emerging risks in a rapid and effective manner

Presentation for 74th Advisory Forum, Parma

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DEMETER

Determination and Metrics of Emerging Risks

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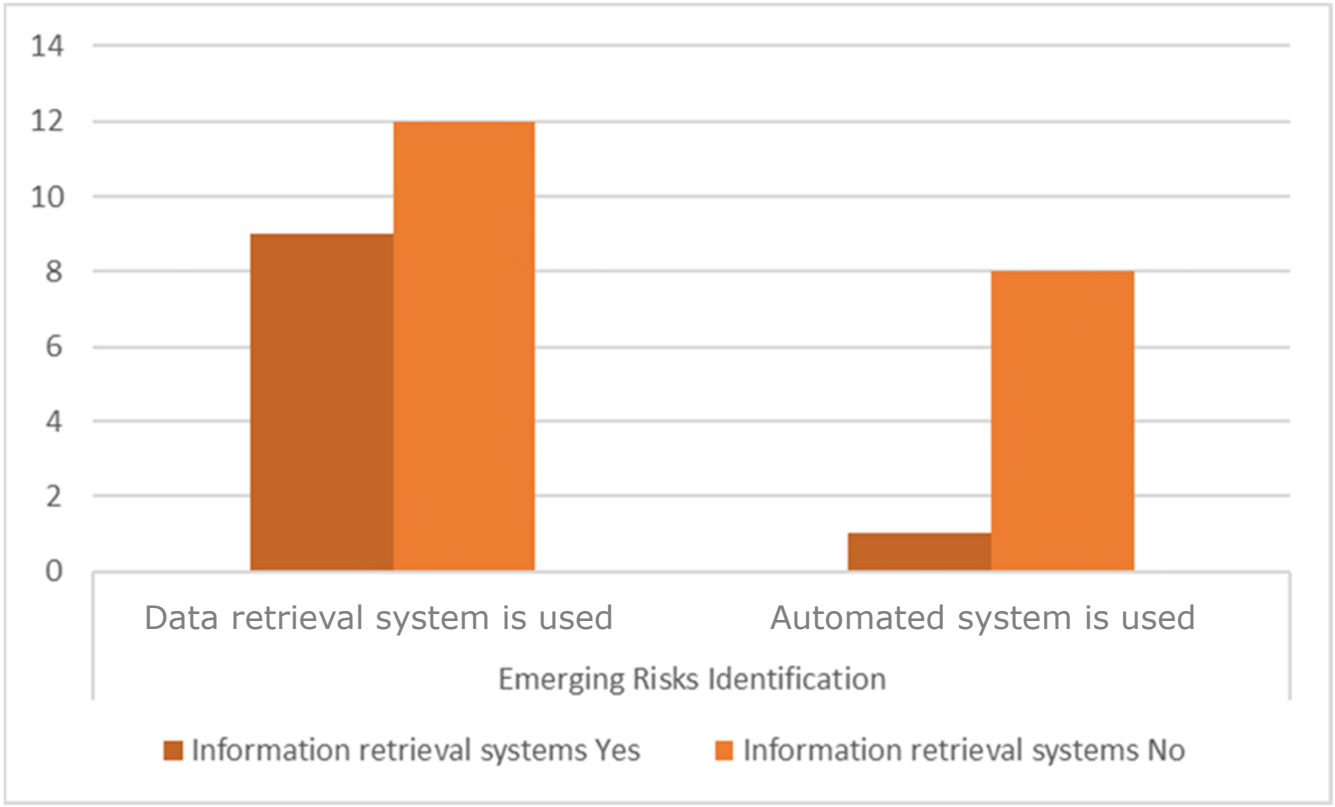
Presentation contents

- MS survey – priorities vs available systems in MS
- AF priority on ERI
- DEMETER objectives
- User needs
- Data sources/data analysis/data visualization example
- Data and information sharing
- Digital collaboration options and networking
- Knowledge sharing
- ERKEP prototype what it can or cannot do
- What’s next

MS survey – Priorities vs Available systems in MS



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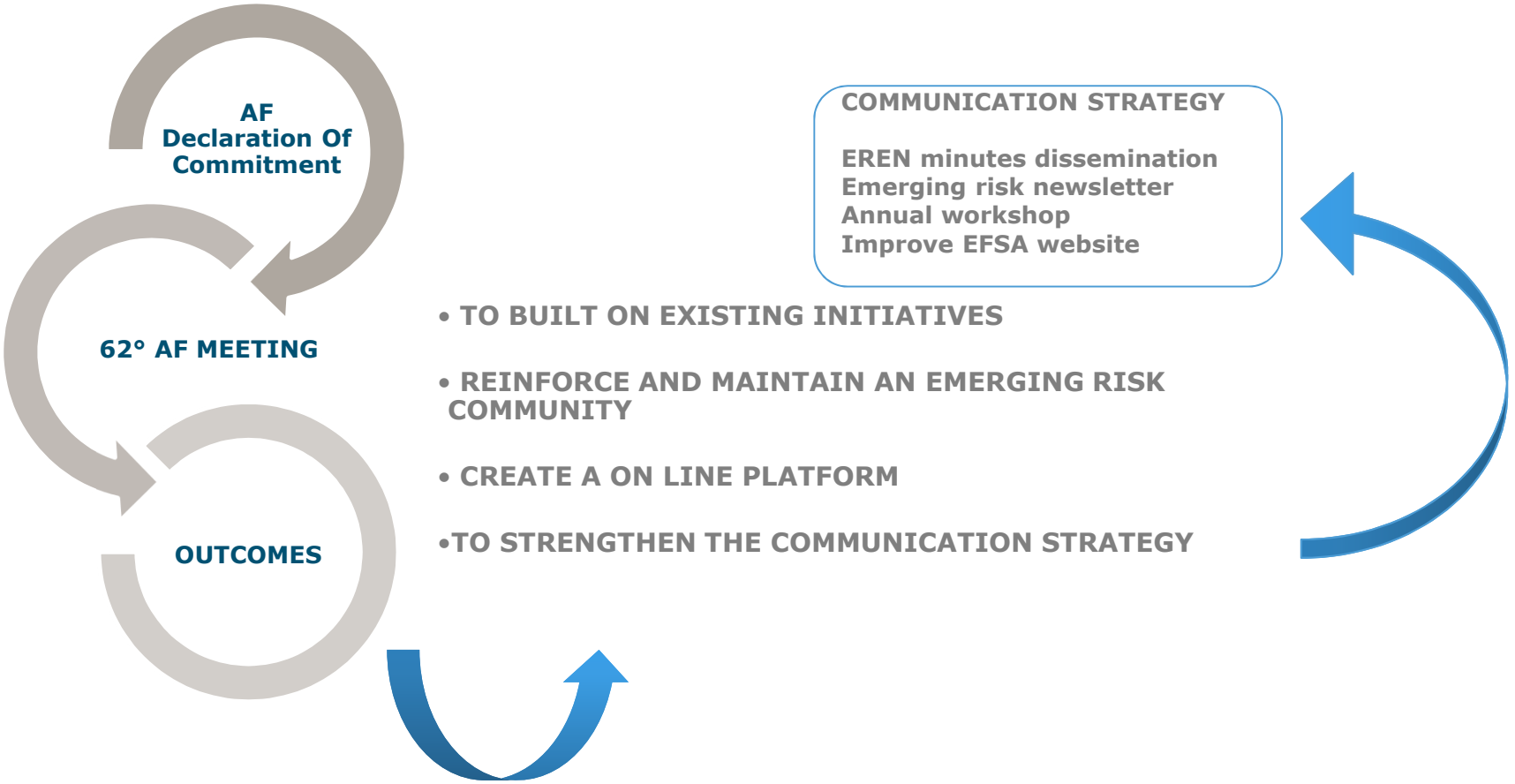
Determination and Metrics of Emerging Risks

62nd Advisory Forum meeting 8-9th Dec 2016



THEMATIC grant – Methodologies for Emerging risks

1. Development of new tools for automatic **data retrieval and validation** from multiple sources for emerging risks identification

2. Integration of **data and methodologies from social sciences** into the emerging risk identification process on a farm to fork approach

3. Set up of a **collaborative emerging risk platform** to further strengthen EU emerging risks capacity

- Thematic grant: GP/EFSA/AFSCO/2016/01 – Methodology development in risk assessment
- 04/2017 – 04/2020

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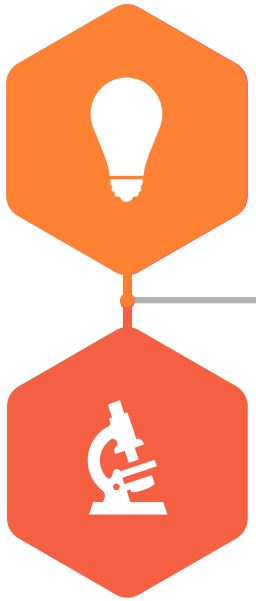
Timescale of Emerging Issues



EARLY WARNING

SHORT

Rapid alert systems

Immediate action required

FORESIGHT

LONG

Driver and scenario analysis

Affects strategic actions

EMERGING RISK IDENTIFICATION

MEDIUM

Screening systems

Increases preparedness

DEMETER vision “Concept Note”

Vision for framework of Emerging Risks Knowledge Exchange (ERKE) published in EFSA supporting publications (11/2018: doi:10.2903/sp.efsa.2018.EN-1524

User requirements addressed in DEMETER

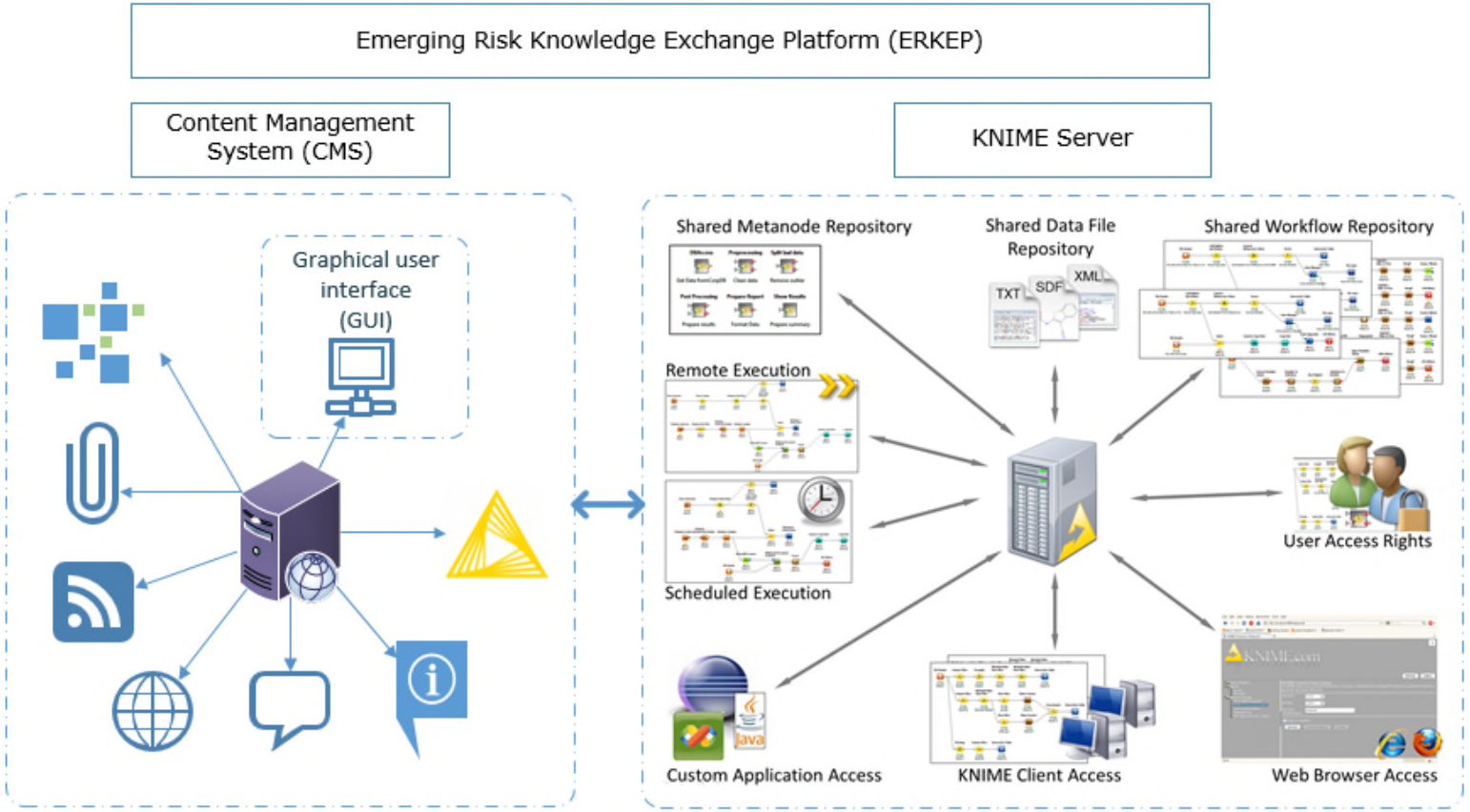
- End-users need to **manage the data work related to indicators**
- End-users need to be able to work with **diverse data types and formats**.
- End-users need to be able to **identify, reference, and manage data sources**.
- The ability to perform **basic computation** and apply operators on datasets and indicators.
- End-users should be able to **access and apply** established **models**, **methods**, and **processes** for analysis.
- End-users should be able to **modify, store, and share models** for risk assessment.

→ Emerging Risk Knowledge Exchange Platform (ERKEP)

User requirement input for ERKEP vision

ERKEP: Two pillars

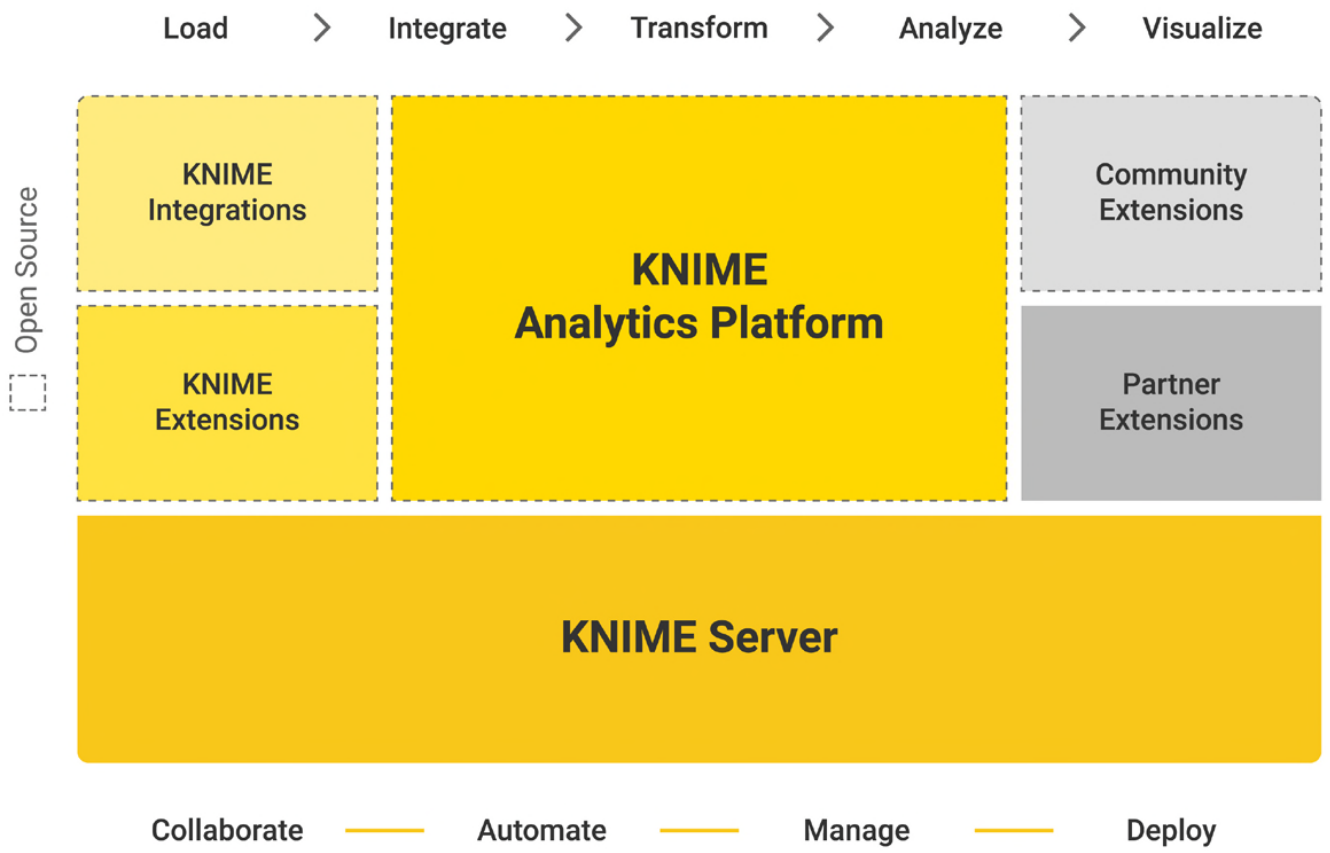
1. Environment to manage content and knowledge
2. Environment to execute extraction and data analysis



Data sources/data analysis/data visualization examples

- Many data and information sources identified
- Few data retrieval and analysis applications developed and deployed
    - Sharing through deploying applications to the server to be run on the server
    - Sharing through downloading the KNIME analysis workflows (for advanced users)
- Examples:
    - Media monitoring workflows
    - Dairy sector indicators data collection workflows
    - News and patents network analysis

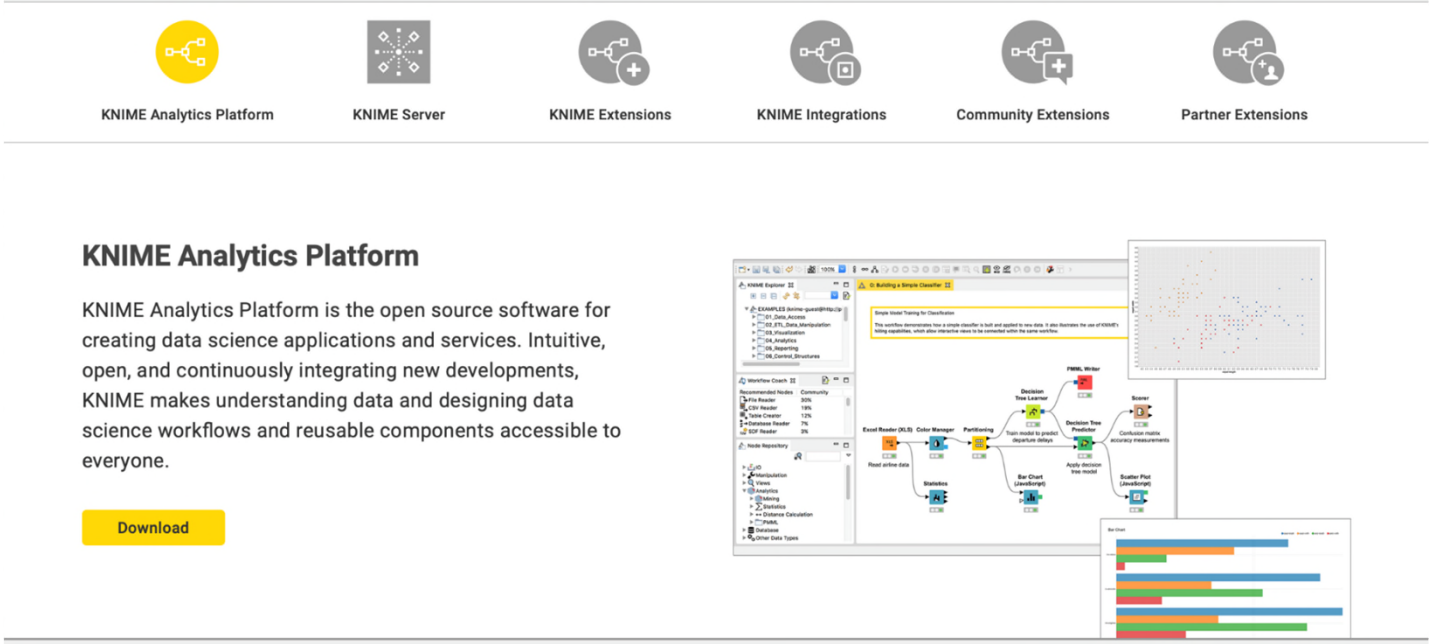
KNIME Server as Enabler for online ERI



Coupling KNIME-CMS: dairy alert example

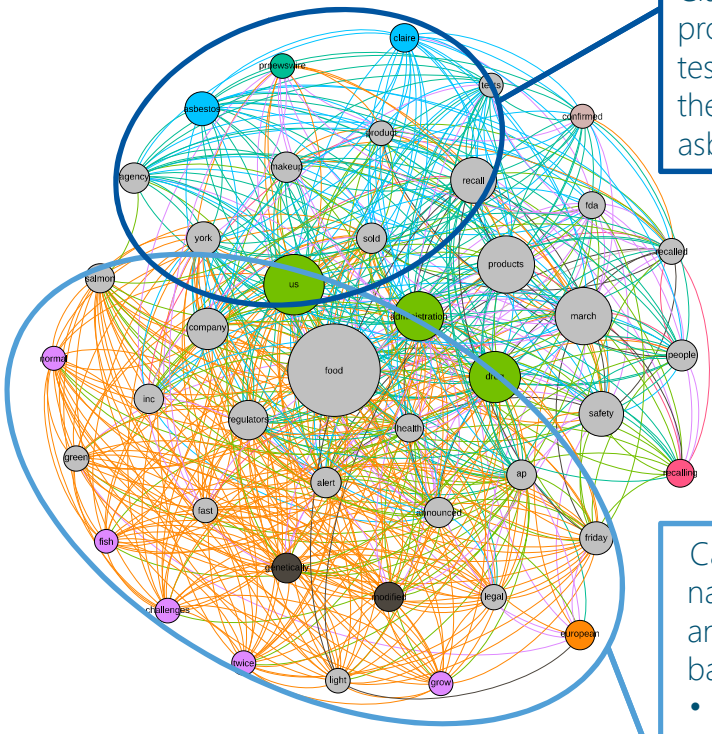
Developing workflows in KNIME:

- to automatically collect & process data from identified data sources
- to detect abnormalities in the data sources
- to send an automatic alert to the end-user and show the results in CMS



Network analysis and visualization

- Identifying **trending topics in news** based on text mining and network analysis:
  - Words co-occuring in the same text are connected to each other
  - Same words in different news texts imply their relative importance
  - This network of words could be analyzed and visualized
  - Using Europe Media Monitor (EMM Newsbrief) data

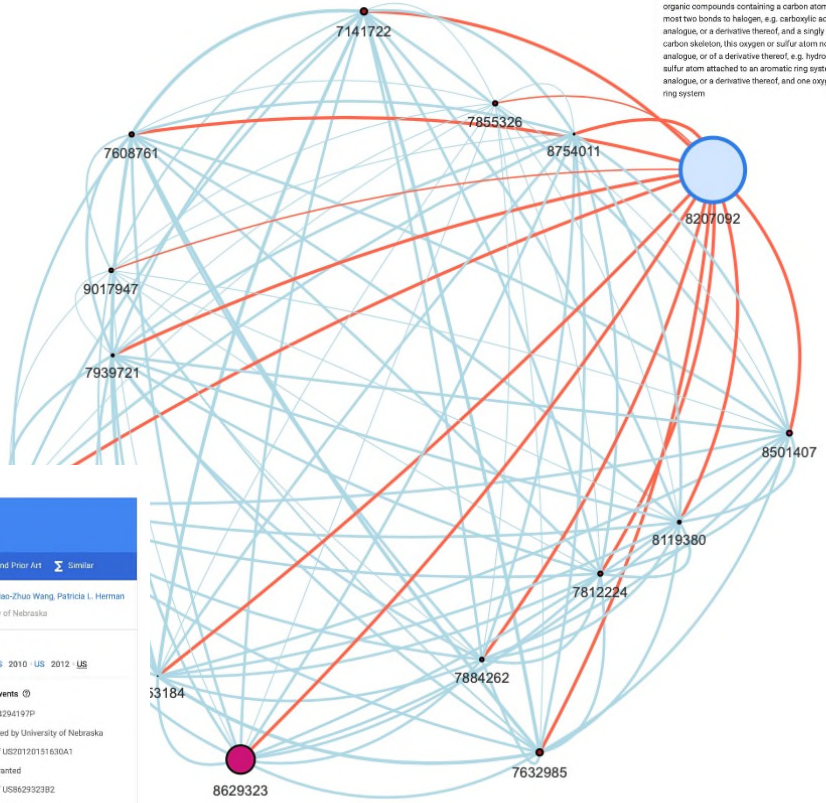


FDA on Tuesday warned people not to use certain Claire's makeup products because tests confirmed they contained asbestos.

California is the nation's biggest GMO and organic food battleground

- US regulators clear path for genetically modified salmon
- Beginning in 2020, labeling for foods that are bioengineered will be gradually implemented.

Patent network analysis: co-citation network (food and agri patents)



Methods and compositions for improving plant health

Abstract

The present invention provides methods and compositions for improving plant health. In particular, application of dicamba or another substrate of DMO, or metabolites thereof including DCSA, to a plant confers tolerance to, or defense against, abiotic or biotic stresses such as oxidative stress including herbicide application, and plant disease, and enhances crop yield. Such application may be in combination with the application of another herbicide such as glyphosate.

Images (11)

Classifications

A01N37/40 Biocides, pest repellants or attractants, or plant growth regulators containing organic compounds containing a carbon atom having three bonds to hetero atoms with at the most two bonds to halogen, e.g. carboxylic acids containing at least one carboxylic group or a thio analogue, or a derivative thereof, and a singly bound oxygen or sulfur atom attached to the same carbon skeleton, this oxygen or sulfur atom not being a member of a carboxylic group or of a thio analogue, or of a derivative thereof, e.g. hydroxy carboxylic acids having at least one oxygen or sulfur atom attached to an aromatic ring system having at least one carboxylic group or a thio analogue, or a derivative thereof, and one oxygen or sulfur atom attached to the same aromatic ring system

US8207092B2

United States

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Inventor: Muhammad Bhatti, Ronald J. Brinker, Gerald M. Dill, Jr., Paul C. C. Feng, Sio-Wai Hoi, Jennifer L. Jacobs, John Pitkin

Current Assignee : Monsanto Technology LLC

Worldwide applications

2008 · US 2009 · BR WO PE AR UY 2012 · US US US 2013 · CL CL

Application US12/099,101 events

2006-10-16 • Priority to US857308D6P

2008-04-07 • Application filed by Monsanto Technology LLC

2009-04-23 • Publication of US20090105077A1

2012-06-26 • Publication of US8207092B2

2012-06-26 • Application granted

2019-11-21 • Application status is Active

2030-04-10 • Adjusted expiration

Show all events

Methods and materials for making and using transgenic dicamba-degrading organisms

Abstract

The invention provides isolated and at least partially-purified dicamba-degrading enzymes, isolated DNA molecules coding for dicamba-degrading enzymes, DNA constructs coding for dicamba-degrading enzymes, transgenic host cells comprising DNA coding for dicamba-degrading enzymes, and transgenic plants and plant parts comprising one or more cells comprising DNA coding for dicamba-degrading enzymes. Expression of the dicamba-degrading enzymes results in the production of dicamba-degrading organisms, including dicamba-tolerant plants. Finally, the invention provides a method of selecting transformed plants and plant cells based on dicamba tolerance and a method of selecting or screening transformed host cells, intact organisms and parts of organisms based on the fluorescence of 3,6-dichlorosalicylic acid produced as a result of dicamba degradation.

Images (3)

Classifications

C12N9/0036 Oxidoreductases (1.) acting on nitrogen containing compounds as donors (1.4, 1.5, 1.6, 1.7) acting on NADH or NADPH (1.6)

View 8 more classifications

US8629323B2

United States

Download PDF · Find Prior Art · Similar

Inventor: Donald P. Weeks, Xiao-Zhuo Wang, Patricia L. Herman

Current Assignee : University of Nebraska

Worldwide applications

2001 · US 2002 · WO US US 2010 · US 2012 · US

Application US13/348,900 events

1997-04-04 • Priority to US4294197P

2012-01-12 • Application filed by University of Nebraska

2012-06-14 • Publication of US20120151630A1

2014-01-14 • Application granted

2014-01-14 • Publication of US8629323B2

2018-07-19 • Adjusted expiration

2019-11-21 • Application status is Expired · Lifetime

Show all events

Social sciences methodologies

- There is not one **expert elicitation method** which can uniquely be applied to identification of emerging food and feed risks
  - There is need for: method triangulation, a harmonised model/tool/framework
  - It is very difficult to "automate" this process at the present time.
- Utility of **Crowd Sourcing** and **Citizen Science**:
  - Potentially a valuable risk identifier
  - Quality is low and intensive resources are required to evaluate this data

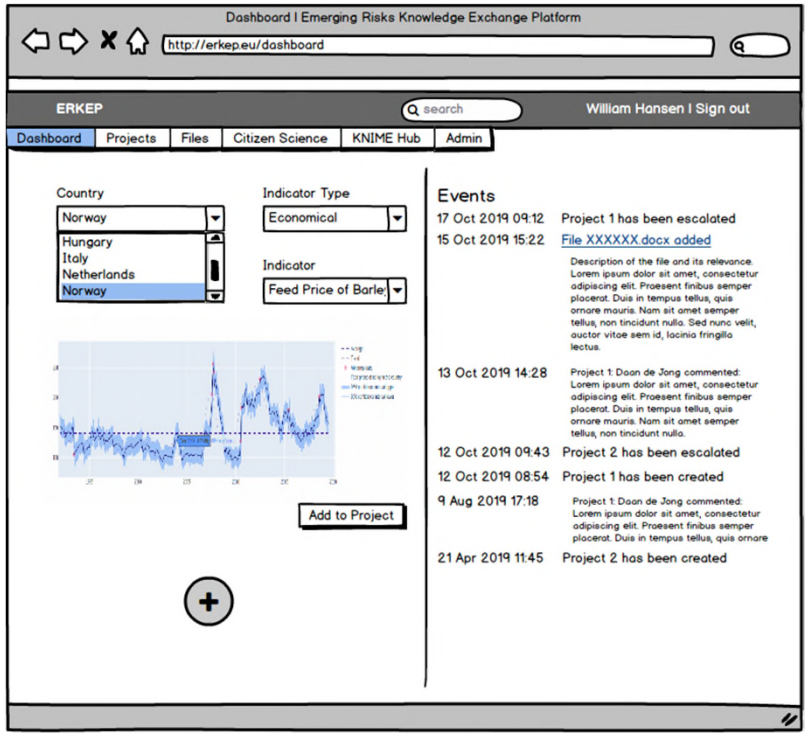
Social sciences methodologies

Development of a Framework for Citizen Science would need to address the following:

- Heavy investment of personnel resources for data validation, interpretation and analysis
- Require bespoke experimental designs focused on identification of food risk
- Currently, sentiment analysis is not adequate for machine learning approaches to be effective
- More efficient machine training needed

Knowledge management

- Data and information sharing
- Digital collaboration options and networking
- Knowledge sharing



What the prototype system will be capable of?

System administration	User management	Data /resource inventory	Tracing of documents
Data analysis workflow	Collaborative glossary/ontology	Message dashboard/chat function	Project management features
Document editor	Reporting tool	Educational resources	Indicator management

And what the system will not be capable of…

- Only few prototype examples of data analysis and visualization
- No country-specific data sources
- Not a living system: no users, no emerging issues
- Not tested yet in real life environment

- It has to be populated and used!

Future steps

- Investigating sustainability of platform after project DEMETER
- Finalizing CMS
- KNIME workflows made available via CMS
- Demo and Training on ERKEP
- Scientific publications on social science research
- Final report

Questions to consider

- The project delivers a prototype platform
- How to proceed?
  - It is just before introduction phase → user engagement has to be built up → critical crowd of users is needed
  - Then feedback shall be collected and the platform shall be continuously improved
  - A platform in use would also decrease the time pressure on the meetings
- Who should maintain and operate the platform?
- Who should develop new tools and functionalities?

Thank you