

- Portals with embedded Linked Data can stream dynamically generated content from external data sources (other websites, social media, news, images) alongside the publishers' own content, establishing these portals as "one-stop shops" for researchers—this helps to make the sites "sticky" by keeping users from leaving to search other sites
- Topic pages on publishers' websites enhanced with definitions queried from Linked Data sources without staff curation of content

Without the core thesaurus and the automatic linking this set of tasks would have taken several man years of labor to produce the same result. This solution, with the ever increasing burden of so much content, is scalable.

6. Next Steps

After combining content stored in a highly structured XML markup language (such as JATS), a well-formed topical thesaurus, and Linked Data, the next logical step is to implement a robust RDF triples database underneath the content and other data structures. This will help to make Smart Content—websites that are not only enhanced for human users, but completely machine-readable and able to draw inferences between concepts, objects, and entities elsewhere on the web.

8) NOR AZLINAYATI ABDUL MANAF

Padipedia: building a knowledgebase on paddy production using semantic web technology for MARDI (Malaysian Ministry of Agriculture)

1. About the Case Organization

The Malaysian Agricultural Research and Development Institute (MARDI) is a leading agricultural research centre in Malaysia. MARDI was established in 1969 with the main objectives of generating and promoting new, appropriate and efficient technologies towards the advancement of the agriculture, food and agro-based industries. It is located in Serdang, Selangor and has 32 branches nationwide. MARDI is mandated to conduct research in the fields of science, technical, economy, and social with regards to production, utilization and processing of all crops (except rubber, oil palm and cocoa), livestock and food.

2. About the Challenge

Main objective of the effort

To preserve knowledge about research and development on paddy and make it accessible for knowledge discovery.

Issue or problem

The ageing workforce represents an issue with knowledge loss as retirement occurs. Knowledge loss will threaten the paddy and rice research process and activities in order to improve/sustain the rice industry in Malaysia. Electronic and written memos, journals and books provide expert knowledge but they do not connect the knowledge of the whole value chain of paddy research. Thus the paddy ontology is built to be the repository for storing and connecting the knowledge.

Prior to PADIPEDIA implementation, various divisions that are distributed nationwide were "disconnected" from involvement in the paddy research and development activities, making it more difficult to have an integrated knowledge repository.

3. What We Did

The PADIPEDIA application is a web-based portal with searching capabilities, basic analysis and reporting function using Semantic Technology. The development of paddy ontology is an attempt to utilize semantic web technology for organizing knowledge. The paddy ontology will be the repository for storing and connecting the knowledge of the whole value chain of paddy production which includes breeding, agronomy, production system, pest and disease management, post-harvest and product development which is in line with the research scope of MARDI. Padipedia culminated from the need to preserve paddy knowledge and make it accessible for knowledge discovery. Users can obtain paddy-related information not only from within MARDI but from external sites as well.

Innovations about this effort are:

- Ability to perform Semantic Search based on concepts rather than keywords.
- Ability to perform question answering using natural language.
- Provides user access to published knowledge base in the form of open linked data which goes beyond PADIPEDIA knowledge base by linking users to other publicly available knowledge repositories in the world within the Open Linked Data Cloud.

Ability to perform Decision Support based on knowledge stored in PADIPEDIA Knowledge Base.

4. Challenges and Lessons Learned

- Gathering the background knowledge from the subject matter expert.
- Capture shared understanding of domain of interest from various discipline of paddy research (breeders, agronomist, plant pathologist, food scientist)
- People perceive this as another IT project

Overcome the hurdles by conducting several workshops with the domain experts. Need to explain thoroughly to them.

Advice to others

Identify the real champions who are responsible for providing all the materials required to implement the system.

5. Impact and Benefits

Impacts:-

- a. Availability of strategic and reliable paddy info that provide knowledge to researchers and policy makers;
- b. enable networking, collaboration among knowledge workers;
- c. Repackaging of information for specific needs that can reduce search time for information and learning material;
- d. Online streaming of information which offers real time information from source
- e. Context based search which reduce search time; more accurate search to meet with specific work needs;

Benefits:-

- a. Policymakers and Planners (Public & Private Sectors) - better decision making and projecting future venture.
- b. Business community (Venture Capitals, Entrepreneurs, SMEs) - product and services innovations.
- c. Research community - research extensions and product and services innovations.
- d. Education community (Private & Public Institutions) - research extensions.
- e. Individuals interested in Paddy and R&D activities related to paddy

6. Next Steps

MARDI is currently working on several ways to promote PADIPEDIA especially among the paddy community in Malaysia. Some of the main MARDI initiatives are:

- Continuous engagement with relevant organisations and other potential information provider through various meetings, discussions and forums;
- Organise road shows involving relevant organisations and researchers to get information on PADIPEDIA as well to capture updated information on R&D activities; and
- Taking part in many of its Ministry events organised by cluster agencies as a platform to promote PADIPEDIA to the public community.

MARDI also plans to extend the application to include knowledge from other commodities.



Innovation for Life™
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PADIPEDIA: Building a Knowledgebase on Paddy Production using Semantic Web Technology for MARDI

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MIMOS Berhad, Malaysia

IKO Conference 2015, Singapore

Project Objective

To develop a web based portal with data analysis, reporting and searching capability utilizing Semantic Technology, to support MARDI's Research, Development and Technology Transfers activities, in the area of Paddy.

Project Background

- The purpose of MARDI PadiPedia project is to *preserve paddy knowledge, outcome from MARDI's Research and Development* and to *expose it to public for knowledge discovery*.
- It shall be aligned as one of the pillar in *MOA flagship* (AgriFlagship) i.e. under *R&D pillar*.
- It shall be evolved to cover other crops (fruits and vegetables) and livestock in the *future development phase*.

Project Scope

KNOWLEDGE BASE ON PADDY

- Ontology for Paddy
- Knowledge Base for Paddy

- An ontology containing information on all aspects of paddy from plant to rice products.
- Linking MARDI artifacts to the Ontology by Categorization of research, development and technology transfer artifacts within MARDI to the ontology.

PADIPEDIA SYSTEM

- Data Warehouse
- Semantic Clipper
- Semantic Search
- Padipedia Dashboard

- Centralized repository of data about paddy integrated from various MARDI databases.
- Automatically ETL metadata on artifacts into the Knowledge Base.
- Do meaning search for MARDI artifacts in the Knowledge Base.
- A dashboard with a set of fixed reports on PADDY generated from the data warehouse.

What Does PADIPEDIA Do?

ORGANISE

- We **ORGANISE** nation's research knowledge on paddy
- Collect all research results, funding, researchers, etc, in a national repository and classify them

INVENTORY

- We **INVENTORY** nation's research capability
- Develop an inventory of research findings in paddy sector

INSTRUMENT

- We **INSTRUMENT** for effective research policy
- Provide overall view of research areas and accomplishment for policy making on innovation

Impact and Benefits

Impacts

- Availability of strategic and reliable paddy info that provide knowledge to researchers and policy makers;
- enable networking, collaboration among knowledge workers;
- Repackaging of information for specific needs that can reduce search time for information and learning material;
- Online streaming of information which offers real time information from source
- Context based search which reduce search time; more accurate search to meet with specific work needs

Benefits

- Policymakers and Planners (Public & Private Sectors) - better decision making and projecting future venture.
- Business community (Venture Capitals, Entrepreneurs, SMEs) - product and services innovations.
- Research community - research extensions and product and services innovations.
- Education community (Private & Public Institutions) - research extensions.
- Individuals interested in Paddy and R&D activities related to paddy



About Padipedia

Is an initiative to preserve the National paddy knowledge and dissemination of MARDI research outputs

LEARN MORE

Latest News

Thu Apr 09 11:32:17 MYT 2015

Gates Foundation at IRRRI for food and nutrition security updates

Research

National rice consumption is expected to increase from 2.30 million tonnes in 2010 to 2.69 million tonnes in 2020, a growth of 1.6 % per year due to the increase in population. Rice production is expected to increase from 2.55 million tonnes in 2010 to 2.91 million tonnes in 2020, a growth of 1.3 % per annum. Rice industry

Community

A medium for interaction among the farming community. Independent community voice their opinions, exchange ideas and experiences and enhance cooperation among communities involved in agriculture.



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Thank You

Log on to : <http://padipedia.mardi.gov.my/home>