Knowledge database – Risks and Opportunities in Systems projects (energy, environment, transports) to support decision making process
Agenda

1. EFACEC Introduction
2. Objectives & Environment
3. Linked:PM – Domain Knowledge database
Efacec is present in infrastructure development main sectors...
Utilities have increasingly outsourced engineering projects at all stages of the value chain, including EPC and automation systems, as well as power equipment supplies.

Power Energy

Power Products
To apply on Generation, Transmission and Distribution
- Power Transformers
- Mobile Substations
- Distribution Transformers
- Switchgear solutions and apps
- Automation solutions

Transmission & Distribution
- Thermal Power Plants
- Solar and Hydro Power Plants
- Automation solutions

Energy Service
Efacec is an engineering solutions provider

Environment & Industry

Water and Waste
- EPC–Turn Key Solutions
- Water and Wastewater Treatment Plants
- Water Supply and Irrigation Systems
- Remote Management Systems
- Mechanical Treatment, Sorting and Biological Treatment of Solid Waste
- Refuse Derived Fuel Systems
- Biogas and Valorization Systems

Engineering Solutions for Industries
- O&G Refineries
- Paper, Pulp and Cement
- Mines & Steel
- Harbours

The environment market derives essentially from people and facilities systems needs.

Efacec targets the global expansion in access to a sustainable environment.
Efacec is an engineering solutions provider

Mobility & Transportation

Electric Mobility
Efacec offers a full range of charging solutions for electric cars, motorcycles and buses, being the worldwide leader on fast charge.

Transportation
Rail services include a broad range of equipment and systems as high speed trains, heavy and light railway trains as well as the development of the infrastructure.
Efacec is present in most part of the value chain, except in rolling stock for locomotives and wagons.
Those capabilities can also be used in Telecom activities
The Company has a global footprint on more than 65 countries.
...working everyday towards its goals with the commitment of its employees wherever they are...

2500 Employees worldwide

≥ 16,4M€ R&D+I activity

More than 220 employees on R&D+I
Agenda

1. EFACEC Introduction
2. Objectives & Environment
3. Linked:PM – Domain Knowledge database
The main objective is to have a knowledge management system that uses the available internal information from projects and contracts and external relevant information (on internet) to support the decision management process regarding the business development and risk management.
What type of knowledge we need to handle? 1/2
What type of knowledge we need to handle? 2/2

Country Information:
• Political
• Business
• Entry conditions
• Law

Country/Risk Information:
• Risks
• Security, terrorism
• Health

Country/Financial Information:
• Exchange rate/Money
• Inflation
• Business Indicators
• Commodities

External Information:
• Opportunities
• Tenders
• Contracts
• Financed projects
Agenda

1. EFACEC Introduction
2. Objectives & Environment
3. Linked:PM – Domain Knowledge database
How all these glue together?
Linked:PM Architecture

- Two main modules: Extraction services and knowledge base builder
  - Extraction services
    - Imports daily data from PMO Portal
    - Has several processors to import daily external data (one processor per external source as the data is available in different formats)
  - Knowledge base builder
    - Uses output information from extraction services to build the linked data database
    - Has defined a set of resource extraction rules that reflects the domain knowledge and target keywords
    - Produces the response the input questions using a set of defined templates
What is the output?

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Project ID</th>
<th>Country</th>
<th>Status</th>
<th>Value</th>
<th>See more</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFD Clay</td>
<td>CNR11641</td>
<td>Mauritania</td>
<td>Execution</td>
<td>500,000.00€</td>
<td><a href="url"></a></td>
</tr>
<tr>
<td>AFD Clay</td>
<td>CNR11235</td>
<td>Mauritania</td>
<td>Execution</td>
<td>1,000,000.00€</td>
<td><a href="url"></a></td>
</tr>
<tr>
<td>AFD Sénégal</td>
<td>CNR11711</td>
<td>Mauritania</td>
<td>Evaluation</td>
<td>4,500,000.00€</td>
<td><a href="url"></a></td>
</tr>
<tr>
<td>AFD Maroc</td>
<td>CNR11999</td>
<td>Mauritania</td>
<td>Evaluation</td>
<td>2,100,000.00€</td>
<td><a href="url"></a></td>
</tr>
<tr>
<td>AFD Sénégal</td>
<td>CNR3116</td>
<td>Mauritania</td>
<td>Evaluation</td>
<td>6,000,000.00€</td>
<td><a href="url"></a></td>
</tr>
</tbody>
</table>

Financial/Business indicators

More country information (Law, security, etc.)

Effaced Projects (from various sources)

EFACEC proposals

Question here

Country information
What kind of questions does it handle?

- What are the projects in Angola?
- Commodity prices
- Disasters in Tanzania
- RAFs in Norway
- Copper prices
- Projects in Mozambique of environment
- Security in Ghana
- Opportunities in Malta
- Projects of waste
- Law in Congo
- Projects in Mozambique of Rui
What were the challenges to develop Linked:PM?

New technological Paradigm

Change development methodology half way

Using Natural Language

Very little Business information

New methods to manage information

Semantics Alignment

New unstable development tools
The result of an excellent team work

Risk & contract Management
• Domain Knowledge, Project Management
Information Systems
• Infrastructure setting
Project Managers
• Project knowledge
Selected key users
• Test pilots

Development Team
• Linked data specialists

Project Finance (QREN)
How does it work?
Thank you