Compass: a web interface to a Data Warehouse for Pharmaceutical Decision Support
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ABSTRACT
The system that will be demonstrated needs to collect information from different legacy systems and structure them in such a way that on-line analytic processing and scenario handling can be done easily from any JRF location.
To satisfy these requirements, a data warehouse has been built to capture all the information; the Web technology will make the data available for analysis.
This presentation will explain how this whole system has been developed and what the ambitions and risks were. During the demo you will get a glance of the functionality and the nice look and feel of the user interface.
Finally we will give you an overview of the SAS tools used to realize this challenging project.

INTRODUCTION
This paper shows the construction and usage of a web application grafted on top of a Data Warehouse. This application is used by the financial department of the Janssen Research Foundation, which is part of the Johnson & Johnson group.

DEFINITIONS
Indication: medical problem; e.g. Perdolan is an efficient and safe drug for the ‘headache’ indication
Finding a drug to remedy this indication is done in a ‘project’

Project: ‘Gathering’ of tasks needed to prove the safety and efficiency of a chemical substance in order to be able to put the resulting drug on the market for a certain indication following a typical pharmaceutical methodology.
As in IT projects, tests or trials are done. Some of these tests are done with humans and are called ‘clinical trials’.
The various steps in these projects are called ‘phases’.
Phases are delimited by ‘Decision points’. At these moments, go-no go decisions are taken.

Pipeline: Collection of all projects of a pharmaceutical company
Portfolio & franchise: Grouping of projects following some criterion; e.g. all the projects of interest to a user can be combined in a personal portfolio
e.g. all the projects related to stomach problems are grouped in the gastro-intestinal franchise

OBJECTIVES
The User Community of this application will be the Board members, Management and Analysts
Compass will serve the following purposes:

Reporting tool
- Financial and status information on the development of a new product
  - History
  - Budget definition
  - Various financial and status metrics
  - Costs depending on a decision

What if analysis
Scenario’s, i.e. define extra, fake, projects based on a change in an existing projects or something totally new
portfolio’s:
- Depending on user interest
- Combining official projects with scenario’s

General objectives
- Up-to-date information
- World-wide availability
- State of the art technology
- Strong graphical user interface

PROJECT DEFINITION
Selected technology
- Inflow: Warehouse Administrator
- Oracle connectivity
- Flexibility
- Stability of company
- Outflow
- Web
- AppDev Studio, because of the capability to build advanced graphical screens

Partners
- ISO HCG: Business consultants,
- SPS: User interface prototype
- Gitek: Application testing
- SAS: Project Advisor

Known project risks
- Timeframe (start date 1 Feb 2000, delivery 30 Jun 2000)
- High visibility (board members)
- No experience with this technical configuration
- Data quality is of prime importance
- ...

TOOLS & TECHNIQUES
PROJECT OVERVIEW

DIMENSIONAL MODELING
The data structure is modelled following the Star Schema because:
- Specifically for decision support data modelling
- Is quite intuitive for non-technical users
Data focussed
- Based on a foundation of business and E-R modelling
- Less normalisation is applied

**STAR SCHEMA EXAMPLE**

**DEMO OF MODULES**
The demo shows the OLAP application that has been developed to analyze the data interactively. Two types of screens are designed to present the information (the “portfolio viewer” and “scenario builder”).

The portfolio viewer screens are designed to analyze the data (stored in the Dwh) interactively through different views:

- A financial views with drill-down and expand possibilities, several standard reports and actual vs. budget analysis. All these screens show data of projects within a specific portfolio. The possibility exists to switch from one portfolio to another in all the views.
- Pipeline views, which give a clear overview on the positioning of the projects towards the development phase and towards the budgets. Also drill-down possibilities are present here and direct links to other views are possible.
- Status tracker views, which detail the status and important dates by project with the concerned budgets. These views help in taking the adequate decisions regarding the future of the project.

The scenario builder screens give the possibility to do “what-if” analysis. Three types of “scenario” data can be entered:

- Portfolio tool to create new and customized portfolio’s. These portfolio’s can then be used in all the portfolio viewer screens.
- Project scenario’s give you the possibility to change deadlines and plans of projects. This gives an idea about the impact that these changes would generate.
- Hypothetical projects can be entered in the system to simulate the impact of a possible start-up of a new project.

**LESSONS LEARNED**
- Data Quality from source systems (gigo)
- Deadlines
  - Dropped technical design
  - Limited exploitation features of SWA or MDDB
- Team definition
  - Find capable persons on short notice
  - Multi disciplinary - multi site team
    - Resulted in large team, not easy to manage
    - Languages (Du, Fr, E, Arabic, …)
    - Part time (planning & scheduling issues!)
    - Seugi, PharmaSug
- State of the art technology
  - Integration with existing standards
- Learning curve
  - Necessary tools not supported

**FUTURE**
- **Functional**
  - Expand functionality on core Compass system
  - Data Warehouse for information on clinical trials
  - Include other research groups within J&J
- **Technical**
  - Exploit SWA functionality more completely
  - Additional functionality
    - Web EIS
    - MDDB

**CONCLUSION**
Setting up a data warehouse is an ideal process to gather and combine data coming from different systems. It gives the possibility to bring data, that is logically linked, together even if physically they are stored in different locations. This process turns the data into knowledge.

Once the knowledge is available, you need to find a way to make it visible. That’s where the Web technology offers a lot of advantages. You don’t have to take care of the location and technical environment of the user, neither of the distribution of your application. Everything is centrally developed and the application will be made available through the web browser. I hope this presentation has proved that the combination of data warehousing and web development is the ideal process to develop information delivery systems.

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