SERAFIM Perimeter®

Case Study 1
Case Study Technical data warehouse

Summary

A fast growing oil and gas company, with international operations, required a more secure and uniform data management system in order to adapt to the boom in number of geographic locations it operates in and in number of engineers seeking and providing information. The firm realised that a robust and well-designed data management system will ultimately add to its bottom line performance.

The Challenge

Our client realised that as it grew the number of interactions between the increasing number of information providers and consumers is booming. Business sensitive data has to be stored securely and shared efficiently.

The move from individual centred information management processes to more systematic models was also recognised. As a smaller firm, individuals efficiently managed the way they imported, transformed, stored and communicated information. However, as its size increased, individuals who traditionally had been custodians of a type of technical data (tops, well locations, pressure tests etc.) had started to find it burdensome. Moreover, as an international firm, a central repository of technical information consultable from any asset location cannot be provided by neither individual dependent systems nor by spreadsheets. Hence, Serafim was asked to design an alternative to the existing adhoc information systems into a more robust information management system.

Situational analysis

Serafim's analysis showed that the existing information management model led to the following:

- Problems with data:
    o Hard to locate sensitive data
    o Duplication
    o Several versions of the 'same data'
    o No access to primary data
    o Difficult to analyse existing data

- Problems with processes:
    o Reliance on spreadsheets
    o Non-uniformity of shared data
    o Lack of integration
    o Timeliness issues
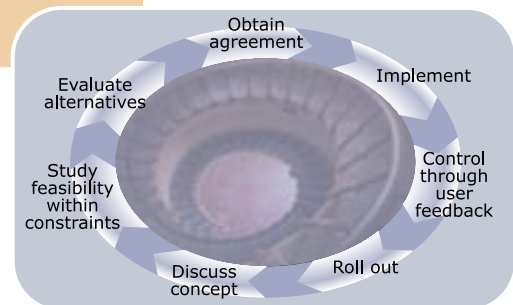   o Volatility

As a result, it was estimated that up to 80% of engineers' time was consumed by locating the appropriate data.

The solution

Serafim methodology

Serafim Ltd believes that for a large cross-functional project to succeed, an incremental approach must be taken. As the project progresses and small successes are achieved, more support is generated. Moreover, frequent milestones allow the collection of users' feedback more often and help to steer the development of the project towards the most appropriate and user-friendly solution. Information management solutions only succeed when they are fully endorsed by users.

Accordingly, Serafim started by understanding the problems and the broader needs of the client. It then built a concept of the solution and agreed a number of first small actions that can be implemented in collaboration with Reservoir Engineering staff. As these milestones were achieved, it became apparent that further enhancement to the information management system where required to tackle inconspicuous problems related mainly with the uniformity of data shared with other discipline, the location of primary data and connectivity.

Obtain agreement — Implement — Control through user feedback — Roll out — Discuss concept — Study feasibility within constraints — Evaluate alternatives

Perimeter® solution to data management problems across a growing Oil & Gas Company

Serafim ensured that users and decision makers approved the achievements at each milestone and their feedback was acted upon. By ensuring that the small successes are made visible across several technical departments in the client firm, support was granted for extending the scope of the project to achieve a true cross-functional information management system and to tackle data uniformity issues between different disciplines.

Serafim Purpose data warehouse

Our client firm business model is based on refuting technical discipline silos structure. Multi-disciplinary teams organised by asset are formed and, as a result, an efficient communication system and data storage solution became central to the structure.

Because different types of data are stored in different databases maintained by discipline specialists, an effective information management system should:

• Allow querying the operational databases (e.g. production, completions, geophysics etc…)

• Provide storage solution for data currently kept in spreadsheets or text files

• Provide a tool to manage, view, query, interpret and export the data

• Implement workflow management features such as permissions, updating, changing etc.

A data warehouse model was identified as the most appropriate solution, since it allowed all the functionalities listed above.

The information management solution incorporated the process detailed opposite. It is the engineering knowledge which Serafim brings, that allows to make proper choices and designs at each step of the process. The nature, content, form and standard that the data ought to hold is fully understood, hence, adequately implemented.

Serafim team, using its engineering skills and experience, identified the nature and the importance of the links between different types of data and the transformation required in order to deliver our clients:
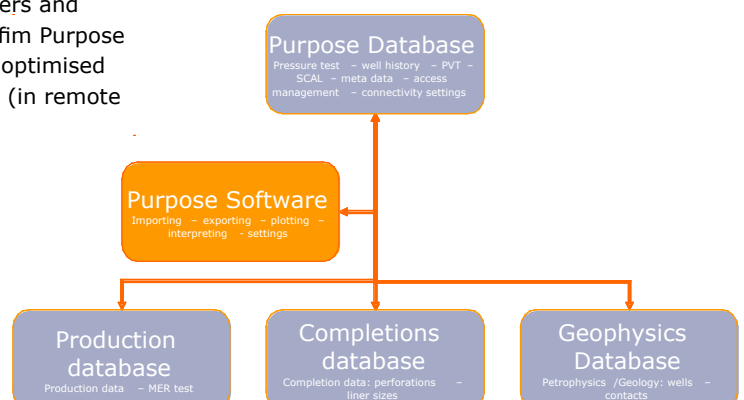
• Consistent data   • Excellent quality data   • Interpretation tools

For instance, in order to correlate down-hole gauges reading to a datum depth or to build

a full analysis of the measured data, one needs to know the depth of the gauges and the depth of the completion (e.g. perforation, sand screens etc…) through which hydrocarbons flow. Consequently, a link between the completions database in use and Serafim Purpose was built in order to provide engineers with the correct depths from their primary source. The impact of such a simple operation can be of great value especially that the interpretation of the data and the subsequent decisions made and knowledge gained using those interpretations are guaranteed to be correct.

The current layout of the warehouse is depicted below and shows how Purpose brings together different data sources maintained by discipline specialists.

The results

The type of connections between users and Serafim Purpose, and between Serafim Purpose and the operational databases, was optimised such that the bandwidth restrictions (in remote production sites) are overcome.

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Purpose Database
Pressure test – well history – PVT – SCAL – meta data – access management – connectivity settings

Purpose Software
Importing – exporting – plotting – interpreting – settings

Production database
Production data – MER test

Completions database
Completion data: perforations – liner sizes

Geophysics Database
Petrophysics /Geology: wells – contacts