STREAMLINING FORECASTING, PLANNING AND RESERVES MANAGEMENT FOR OIL AND GAS CORPORATIONS
With demand for natural resources increasing worldwide, oil and gas companies must optimise their forecasting and planning processes to ensure they can fulfil market requirements. Detailed reporting on developed and undeveloped oil and gas Reserves is essential, as are accurate scheduling and production planning.

To enhance medium- to long-term planning – and to analyse production based on sales targets, profitability and long-term capital requirements – oil and gas companies need to improve data accuracy and introduce real-time, dynamic forecasting capabilities. It may also be necessary to change, streamline or integrate key business processes.

As one of the world’s leading systems integrators with a wealth of experience in the natural resources industry, CSC can help oil and gas companies define their business requirements; align and optimise systems and processes; optimise forecasting and planning processes; and reduce their total cost of ownership.

CSC’s Developed Reserves Management System (DRMS) comprises fully integrated modules to enable end-to-end management of developed oil and gas Reserves. Used with CSC’s Production Management System (PMS), the DRMS can help identify potential well Reserves; forecast and regulate production; and maintain developed Reserves; and manage capital and operating expenditure and reporting.

All modules feed information into a data warehouse before accessing the data warehouse before accessing the operating expenditure and reporting. The DRMS can be integrated with our PMS to predict future production based on existing resources with a high degree of accuracy.

The DRMS also provides foundation data and reports to support other related business processes.

The PMS allows oil and gas corporations to:

- forecast oil, gas and constrained oil production using depletion models
- prioritise future projects using undeveloped Reserves based on economic ranking
- schedule future projects based on forecasts (if a forecast implies a shortfall)
- scheduling projects automatically to meet the long term demand after manual scheduling
- plan for enough capacity to safely meet present and future demand
- schedule just-in-time drilling of new wells to avoid excessive over-investment.

The PMS also enables users to forecast production over a range of periods based on existing resources, and use simulations, models and well-founded estimates to calculate likely Reserves. It also makes it possible to recalculate forecasts based on actual production output and new sales targets. An additional extrapolation feature provides the ability to analyse trends in depth.

The system forecasts the output needed to meet production targets, based on existing resources. It identifies any shortfalls – the difference between output and sales targets – and ensures the necessary volume of oil or gas needed to meet sales targets is incorporated into future production plans. Conversely, the system can rectify over-production and address gaps.

Future production forecasts use the available undeveloped Reserves and a scheduling module in PMS schedules the drilling rigs to create a Gantt chart of drilling schedules. This ensures the optimum usage of expensive drilling rigs and reduces idle time.

The PMS also enables users to review production against targets on a monthly basis to help them develop the most effective production and drilling plans. The system takes into account data such as actual production results, the latest Reserves, engineering and construction costs, and the ranking of wells based on output, to develop production forecasts and project expenditure reports.
ANALYSIS

CSC’s Production Management System (PMS) offers ‘what if’ analysis tools that help production planners optimise rig utilisation and processes such as hydraulic fracturing. Users can also take advantage of detailed drilling schedules and graphs to improve production planning. Robust version control features ensure planners only work on the latest production plan and drilling schedule.

The PMS also includes a built-in economics tool that analyses the outcome of scenarios based on variables such as output and price to support informed decision making. Revenue and expenses reports for contract-wise/contract group-wise are included. Economic analysis of projects can also be evaluated on different government tax structures.

This economics tool allows users to:
• configure price decks
• connect to the drilling planning system in the PMS to forecast scenarios and predict sales
• develop a range of drilling scenarios
• manage versions for each economics analysis case
• rank unproven Reserves using a ‘pseudo rate model’
• rank projects using Net Present Value (NPV) efficiency
• input projected sales forecasts using a Microsoft Excel interface
• import from and export to Excel.

REPORTING

Users can run a wide range of reports such as daily production information and forecasting, project expenditure, or planned maintenance or shutdown activities. Based on these reports, users can adjust production to continue to meet commercial requirements; check that expenditure remains within budget; and ensure people and resources are allocated properly.

ENVIRONMENTAL MANAGEMENT

The PMS has a water injection engine plug-in to help companies minimise the amount of disposed water, reducing the impact on the environment from oil and gas extraction activities.

Organisations can undertake forecasting to see if current production will meet the sales target. The results are displayed in a graph, showing where there are shortfalls in meeting the demand. The example above shows that forecasted production did not meet demand (see 1). To meet the shortfall, future projects (from undeveloped Reserves) are scheduled against available rigs at the appropriate period and a drilling schedule is prepared (see 2). The forecast calculation and the scheduling of projects takes place in cycles until the production forecast meets sales targets. The forecast results that meet demand are shown at 3.
CSC’S DEVELOPED RESERVES MANAGEMENT SYSTEM (DRMS)

CSC’s Developed Reserves Management System (DRMS) is used to manage developed oil or gas reserves, helping companies calculate and keep track of the volume of reserves so they can forecast production for the medium and long term.

The DRMS supports an organisation from the stage of undertaking preliminary drilling and proposing wells based on undeveloped Reserves. The organisation can use information fed into the DRMS to develop a business case for developing wells.

Once the funds are approved, the organisation can capture the information required to drill wells and connect them to reservoirs of oil or gas. Once the well has matured, the organisation can use actual production data to calculate Reserves and categorise the well accordingly.

The DRMS also includes features such as reporting and tank tracking, and integration capabilities to incorporate data from external applications and databases. This enables the system to analyse additional factors relevant to an oil or gas drilling project, as required.

The DRMS and PMS can be integrated, allowing an organisation to manage and report on projects over their full lifecycle. The process begins when oil and gas companies acquire specific areas for exploration. After extensive scientific analysis, areas with potential are marked for further exploration. Prior to drilling a commercial well, the Reserves are identified as undeveloped. The PMS is used to forecast future production against demand using data from existing wells.

Drawing on data from the DRMS, future projects are scheduled in the PMS and a drilling plan is developed based on the undeveloped Reserves. Oil and gas are extracted from producing wells and future wells as and when they are ready for production. The production data from all the wells is used to evaluate performance and estimate remaining Reserves.

CSC’s team of experts will work onsite to gather and analyse business requirements. CSC then develops a list of process and solution recommendations. After the business and technology requirements are finalised, CSC begins designing, building and testing source programs. When the systems are ready to be implemented, CSC will work onsite to ensure a smooth and seamless roll-out. CSC can provide user training at onshore and offshore facilities.

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CSC has a robust service delivery model based on industry best practices. CSC has based this model on a proven methodology and systems integration framework that has been developed over CSC’s 50 years. This methodology and framework has delivered consistent results for clients in the oil, gas and mining sectors – and even for a well-known space exploration and research agency, CSC delivers these services from Centres of Excellence in Perth, Western Australia and Houston, Texas, as well as various cities across India.

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About CSC
The mission of CSC is to be a global leader in providing technology-enabled business solutions and services.

With the broadest range of capabilities, CSC offers clients the solutions they need to manage complexity, focus on core businesses, collaborate with partners and clients and improve operations.

CSC makes a special point of understanding its clients and provides experts with real-world experience to work with them. CSC leads with an informed point of view while still offering client choice.

For more than 50 years, clients in industries and governments worldwide have trusted CSC with their business process and information systems outsourcing, systems integration and consulting needs.

The company trades on the New York Stock Exchange under the symbol “CSC”.

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