FUTUREON

PRECISION VISUALIZATION: THE OILFIELD SANDBOX
A blueprint and a prototype model are effectively equal. They both present their content as a general description of the information an individual is seeking. Only, one is more effective than the other. While the blueprint provides a bird’s-eye view of a subject, the prototype realizes it on a more manageable scale, in 3D. Now, a realistic visualization software introduces a whole new level of graphical capacity, as it presents information more vividly than drawings and numbers alone.
We call it FieldTwin™—a workflow process where you create, build and operate your facility with an entirely digital methodology.
With increasing complexity in enterprise data—by volume, variety and velocity—the need to see the biggest and most accurate picture becomes paramount, most notably in complex industrial settings. The oilfield is one vast system of interconnected industrial assets that generate hundreds of millions of bytes of data every day, meaning that the information to be presented has to be descriptive yet easily palatable. What started out as a vision in 1999, when a group of engineers, came together to provide content including media and visualization, high-resolution graphic imagery, videos, animation, and impressive PowerPoint® presentations, soon became grounds for designing field concepts for bidding processes in oil field operations—and that is FutureOn. To quote Darrell Knight, EVP of FutureOn, “We deliver a data visualization platform that integrates with machine learning, production analysis and flow simulation tools to process data relevant to a particular decision-making workflow and bridge the gap between information and the process with an entirely digital methodology. This is allowing our customers to make real-time decisions based on bringing all their data together in a visual way.”

**The Makings of a Digital Twin Visualizer**

The company is now helping their customers build concept fields in the Cloud. A potential field or multiple concepts might be in a Greenfield or Brownfield environment. With FutureOn's solution, every asset in the system is replicated in the Cloud, using a drag-and-drop ecosystem, rendered in full 2D or 3D, where a user can design risers, umbilicals or pipelines. Users can drag in all their assets and bring in all the key data types, including mapping data, to ensure everything is in context and placed in the correct geographical coordinates. FutureOn brings multifarious data into the system and can visualize it for maximum visibility into an oil field's operations. Knight explains, “When we typically onboard a client, we bring the software, and our next question becomes, ‘What data do you need to bring into your environment to make decisions on developing a field?’”

From a use case perspective on the field development side, FutureOn has assisted clients to integrate a lot of the core data they have, reducing weeks spent in developing a concept field down to a couple of hours with FutureOn, driving a significant ROI for their customers. Each and every team member, right from the installation team to the person performing the field planning to the well operator overseeing the drilling, would all be fundamentally looking at the same set of data, thanks to FutureOn’s Cloud-based solution. All users will have the right version of the data, in relevance to the decisions they have to make, all the way from the beginning through to the process of planning, to engineering, and up to the operations side.

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**The Area of Expertise**

In the oil and gas industry, “digitalization” is a concept that can mean different things to different people. To FutureOn, it is all about the data, particularly related to the subsea domain. The term digital twin—which means a digital version of a system’s operating assets—is often applied to the top side of the field. But FutureOn is all about what is under the water with no solution quite as robust as theirs. The FutureOn solution allows operators to understand digitally what is going on under the water. With a plethora of sensor data, the ability to visualize that information in a way that different types of users can respond to is vital. “We call it FieldTwin™, and that is our big message; we have a suite of solutions or a workflow process, that allows you to realize, create, build and then operate and decommission your facility,” elaborates Knight.

FutureOn is introducing a paradigm shift in the way oilfields use software. In a siloed world, with a variety of owned tools, applications and data, one of the earliest documented challenges was the need to centralize the disparate entities, and to make only the relevant data accessible to the people who need it. In order to collaborate, the units have to do so across the various stakeholders involved in a project, who generally will not be in the same room, time-zone or country at the same time. To work with the data and be able to see what is happening in real time, better understand the data and make sound decisions, moving to digital is crucial. Corporate must recognize that the different parts of the organizations are interconnected, and much can be benefited through this transition. People are apprehensive about technology; some will push back, as many processes can be automated such as generating reports from disparate data, although ultimately, the decision is Blockbuster vs Netflix.

**Going Live before the Field**

Most companies bring in engineering processes in the pre-engineering stage. When the price of oil was high a few years ago, several operators acquired new leases, and they had enough cash available to invest in the pre-engineering
stage. They could go to a third-party engineering company, invest in their study for that field and then split the expenses among potential bidders and fund it efficiently, to see what works out. Today, there are no margins for error in the current climate, so whoever wants to bid, will have to manage the costs immediately, if they are to have a chance of winning.

What FutureOn’s products have done in the short term, is to eliminate the need for the type of detailed engineering that should be reserved only for the FEED phase. They present the data and position it accurately which makes it usable, in a way that gives precise specifications as opposed to estimates. FutureOn integrates with popular flow assurance software to test the viability of the field before any engineered field is developed. They have taken the process of concept planning from months to days or even hours, resulting in significant cost reductions. Additionally, their clients don’t have to outsource these tasks to specialized engineering groups anymore, and they can retain everything in-house, and tie it into their own costing data to come up with very accurate bids. One such company that FutureOn has worked with is McDermott, which is now using FutureOn’s software to win tenders and outbid incumbents. Being able to do so without any engineering work in the pre- FEED stage, has made them a thought leader in digitalization.

**Over and beyond the Digital Oil Trenches**

FutureOn’s work has been focused on the Pre- FEED/ Concept stage to date. But the creative process around what data is available, along with the ability to evaluate the possibilities of how that new field could evolve has always been the objective. They are currently working with operator clients that want to take the fields that have been developed in the concept phase, and then bring them into the engineering phase. Knight states, “We are moving into that phase where we can export the data, update to as-builds and make the Digital Twin of the Field available to the clients—the FieldTwin™. This FieldTwin™ would include integration of all the engineering tools that they could want and update the digital fields with the gathered data.” Subsequently, when the clients engineer the pipelines that they put in place conceptually, there are going to be various additions and changes that they have to determine, and they will need to know exactly what kind of pipeline they are going to use, what material availability they have. Pipelines move and change over the life of the field – FutureOn’s solution can make sure you always have all the latest information at your fingertips.

*We are going to make operations more efficient and faster by helping publish the finished field into their operational dashboard*

FutureOn’s platform can be consolidated into a PLM or content management system where any content can be linked directly to the digital field. Users can then look at the field, which has all the associated documents that can be pulled programatically from a PLM system to access a complete document set at the user’s fingertips. In the past, users have had a lot of sensor data that they had to compare manually to discover useful information from the data, i.e., the productivity the equipment should be reaching versus what it is actually doing. “We are going to make operations more efficient and faster by helping publish the finished field into their operational dashboard in whatever context that makes sense, along with the ability to access and interact among users, bridging the predictive data with the operational action required,” concludes Knight.