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Machine learning in oil and gas

report from our London conference

Finding Petroleum

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The monitoring solution can have tracking and time stamping tools.

There could be a bid monitoring tool, and a production monitoring tool.

It can also do analysis, showing how the expected payments will change as the oil price goes up and down.

The Indian hydrocarbon officials can check facts and see what is happening. "This will be very easy for them to monitor with this tool," he said.

There could also be a production monitoring system. Most oil companies have a system, but government people don't see production in real time, they look at documents.

Delegates at the Digital Energy Journal Mumbai conference in September 2016

"It is very difficult to monitor when it is happening in different basins of India," he said.

3D printing

Another area digital technology could help is in 3D printing of geological models, particularly when they need to be shown to people who do not usually use subsurface interpretation software.

There was a time when Mr Sangvai needed to explain a geological model as evidence in a court trial.

Rather than bring geological software into the courtroom, he wanted to print a 3D model using a 3D printer.

It proved very difficult to generate the 3D model in a file which a 3D printer could use, he said, taking the output from the subsurface modelling software, but Mr Sangvai's team eventually managed to do it.

"We took it to the court, they were very happy to see it, it saved a lot of time," he said.

You can watch the talk on video and download slides at
www.d-e-j.com/video/1810.aspx

Using satcom together with sensors

Satellite communications company ITC Global, owned by electronics giant Panasonic, is looking for ways to put together electronics from Panasonic with satellite communications, to provide a new range of services.

Finding new ways to use offshore satcom - Joe Spytek, CEO, ITC Global

Oil and gas satellite communications company ITC Global was acquired by Japanese electronics giant Panasonic in 2015.

The company is looking for ways to put its satellite communications services together with electronic equipment from Panasonic, to create a new range of services, says company CEO Joe Spytek.

Panasonic has a $12.4bn revenue automotive systems division, manufacturing (among other components) all of the cameras and sensors which are used on the Tesla vehicle.

Panasonic is also a major investor in Tesla's "Gigafactory" battery manufacturing plant, investing an estimated $3.8bn in the factory.

Panasonic acquired ITC Global in 2015 through its subsidiary Panasonic Avionics Corporation, a provider of inflight communications and entertainment systems to the aviation market.

The idea was that ITC Global and Panasonic Avionics could combine their capabilities and satellite networks to provide satellite communications services across the mobility markets they jointly service, including energy, mining, maritime and aviation.

Panasonic also has a weather information business developed for the aero world, which would be useful to ITC Global customers that operate in remote and harsh environments.

Video analytics

One idea for satcom to support video is that oil and gas companies could do real time video data analytics for their offshore operations.

For example, a video stream of the water around an unmanned platform could be continuously analysed, to see if there is any sign of an oil spill.

ITC Global is able to take advantage of some of the massive recent advances in camera technology, from its parent company Panasonic.

In doing this sort of analytics, the company would be treating video like any other data stream, something to try to get value from.

"We're working very closely with a number of our partners on some of these technologies, which we hope will evolve into marketable services," he says.

Crew LIVE

An interesting oil and gas industry service is "ITC Crew LIVE", which enables remotely located crew to use satellite communications for personal connectivity. The crew data is handled completely separate from any corporate data, sometimes travelling over a different network. This means there is no risk of crew activity interfering with corporate communications.

"Everyone gets a quality experience which the crew themselves are willing to pay for. It's not locked down by the company because of competing priorities."

"Most companies provide a sliver of capacity free to crew - but you have 140 people sharing 512 kbps," he says. "It's very inadequate – especially for today's younger crew." The Crew LIVE platform allows remote users to purchase data packages of as little as 250MB up to multi Gigabytes. Data packages are portable and can be used at any Crew LIVE equipped site.

"The uptake in Crew LIVE has been fantastic," he says.

There have been 14,500 individual user accounts as of December 2016. "We see this as the iPass or Boingo of the offshore world," he says.

Ultimately ITC Global would like to provide the service, which also provides a range of entertainment options, to the entire offshore industry globally, and all at no cost or perhaps even a small profit centre, to the offshore companies, he says.

It runs over ITC Global's HTS Ku band communications network.

Panasonic Avionics already provides entertainment solutions via Ku band to 1350 aircraft, and similar content can be provided to offshore crew.

"We will have live TV delivered over the network with the next version release by the start of 2017," he says. "We'll be layering in a full suite of entertainment solutions. Being able to rent movies and TV shows - on demand - is the next step."

It will also be possible to provide crew training software over the system.

"Some companies have asked if we can deliver a company wide TV station, delivered to hundreds and thousands of employees around the world," he says.

Out of the downturn

The company recently won a 3-year contract to provide VSAT communications to the "world's largest semi-submersible drilling rig", operating offshore Southern and Western Australia.

For its oil and gas activities, ITC Global is starting to see a "slight uptick in activity," as the oil price slowly recovers, says ITC Global CEO Joe Spytek.

"It is still a tough market for sure," he says. "The bleeding has stopped, there's potentially small signs of a rebound, small pockets of strength."

Companies are being very cautious about where they re-start investment, or only doing projects in places where they have contractual obligations to drill or risk losing their licenses, he says.

There is some activity by national state-owned oil companies who can be less sensitive to the oil price.

ITC Global has signed some longer term oil and gas contracts in India.

Learning from mining

Perhaps the oil and gas industry will follow a similar trend to the mining industry, which went through a big global bust in 2007-2008, which led to companies looking hard for better ways to do the work, including much more use of automated remote operations, he says.

It is much cheaper to run mines if the operations staff don't have to be housed near the mine, which is often in a remote location, he says.

"They thought long and hard about how to automate as many of these facets as possible," he says.

"They are so much more advanced in many ways than the energy people in terms of remotely controlling and managing the operations."

"They embraced satellite technology as an augmentation to terrestrial technology."

ITC Global works not only with the mining companies, but also with their systems integrators, companies like CSC and ABB, and companies which manufacture sensors which are fitted in their driverless trains and trucks.

Often mining companies choose one company as their 'IT integrator', who then buys the various services, including satellite communications.

IT infrastructure

ITC Global has developed a great deal of expertise in how to fit terrestrial and satellite communications together, from its work in the mining industry, and this can now be brought into oil and gas.

Sometimes mining companies switch communications from a terrestrial network to a satellite network – for example it could use the satellite as a back-up if the terrestrial network fails. All the applications need to continue to work.

Writing software to work with satellite communications can be tricky, due to the latency (time for the data to go up to the satellite and back again) in the data communication.
"You have to work very closely with the people writing the applications themselves," he says.

This means that the way the network performs will change.

Business understanding

Many people and companies can do the IT elements of satellite communications. But the business differentiator is market knowledge and understanding true remote operations requirements, Mr Spytek says.

"We hire a lot of engineers from the industries we serve, we understand that end to end kind of environment," he says.

"We rarely compete on price - always on the high level of services."

The secret sauce is being able to have very close and intimate relationships with engineers and IT guys - on the customer side and truly solve problems," he says.

"You can do so much more with this - if you take the time to understand the actual operational environment," he says.