



AI Data Efficiencies in Oil & Gas

Topics and Timestamps

- [00:23] Introduction
- [05:00] Oil and Gas is at an extraordinary inflection point
- [11:00] \$2 to \$3 billion a year savings with better digitalization.
- [14:30] A Bader holistic supply chain view needed
- [18:30] People aspect is not being considered strongly enough
- [22:00] Cross-functional asset teams not working
- [23:30] Summary --- "It starts with Why"

Marty:

Hi everyone and welcome. I'm Marty Stetzer president of EKT Interactive in Houston. This podcast is brought to you jointly with Upstream Intelligence in the UK as part of our oil and gas Learning Network. Today our topic is data driven efficiencies in oil and gas with an estimated global value of 31 million dollars by 2020. Digital oilfield is the oil and gas industries hotbed of innovation. It now includes big data analytics artificial intelligence and the industrial Internet of Things or IoT.

Today as podcasts media partner with Upstream Intelligence. I'll be speaking with Trond Ellefson an industry veteran now totally focused on AI applications in oil and gas.

Trond is chairman for day one of the May 2018. Upstream intelligence data driven drilling and production conference also in Houston. We're really happy to have Trond's perspective on applications of artificial intelligence to oil and gas.

Trond welcome.

Trond:

Thank you very much Marty. Thank you very much for the introduction. It's good to be here.

Marty:

Can you give our listeners some of your background as we get started?

Trond:

Absolutely. Like I've been in the industry from many many years and that is probably one of the reasons why we are talking because once you have been in the industry for many years you develop a perspective that is quite unique. I'm an engineer by education and before coming to the U.S. in 2011 I have been almost 20 years with Norsk Hydro so I've been Norsk Hydro and start oil and those companies I had multiple leadership and global positions.

And the last five years here in the U.S. I that's the CIO for all in North America and I also had a couple of years as a special adviser on digital strategy for Stato or so not following a normal career path then I resigned from Stato in 2017 to become the CEO of a company called Invatare amines self-learning, and it is a spearhead company with an automated autonomous operation and artificial intelligence.

What we have found is that in the oil and gas industry they are in need off holistic knowledge and that is what I think I bring to the table by the year of the service in the industry across multiple functions and processes.

Marty:

Trond, Thanks for participating. It was interesting when we met I didn't realize when you were at Norsk Hydro you covered everything from data to network analysis and we'll talk a little bit more about that as we go on. But now what are you trying to do with this new organization that you're leading

Trond:

Our company is basically putting in place a autonomous brain in the field. So, our vision is that by 2025 every well should have the autonomous capability in the uh, I would say in the age of the Tesla and the autonomous car there should be no reason why the oil field should be less economists than a car. It's even less complex than a car.

So, what we do is we put self-learning distributed AI algorithms in the field and then we retrain the models in the cloud and we have entire autonomous solution. As a service. To run every oilfield

completely autonomous taking way maybe 80 percent of the workload that is required out in the field. It is not about reducing the number of people working.

It is about taking the human out of the equation in dangerous situation out in the field and that is what we are what we are doing and we actually have a client that wants the complete transformation off there company doing this so that is very exciting.

Marty:

One of your comments again when we met was very interesting to me as another industry veteran and I'd like to start there. You said that oil and gas is at an extraordinary moment in time and a major inflection point for our listeners. Can you elaborate on this observation?

Trond:

Absolutely ummm I think also this goes back to what you said here is but like when you have touched all of these things that the industry has been doing for many years if you have a knowledge of data system if you have the knowledge about ERP systems networking analyses databases and you have seen all of days you are able to spot certain trends or patterns.

But before I go get ahead of myself here. I think the question that you asked here the extraordinary moment in time at the inflection point needs a little bit of historical context to fully understand what I meant by that statement. And I think we need to when looking at several hundred years of perspective many of the innovations that have impacted our world has been transformational. Let us for simplicity call them patent changes and what is special about these major patent changes is that they have the power to change Many aspects of our physical world and quality of our lives.

They are however very few of these changes that contains transformational power that is strong enough to make the very fabric of the world changed like the fabric that glues the world together. When you get the rippling that that is a major pattern change in the way that work is done. Money is made how we live our lives. If I could mention a few examples here like in such massive or major pattern changes would be the ability to produce books. When we invented the electricity when we had the car and the bioethics nuclear skills the transistor. Even all of these are examples all major Pattern changes. However, these all lead to incremental step changes in there. If you look at the short-term perspective but after 2007 this changed computing power connectivity storage processing power and all of these transformational powers came together and has acted as a

accelerant or self-fueling digital enablers towards the point where the industry the oil and gas industry stands today. And that is why I think that this is this is an unprecedented moment in time where we are living inside the moment that is captured in a matter of years rather than looking at how long the car industry was able or the automotive industry was able to penetrate the market the world market. Now we are experienced this transformation during a couple of years or in a matter of a decade. And that is a very extraordinary and that gives our kids a lot to think about.

Marty:

So Trond you come at it from the standpoint of what I call the high impact technologies as opposed to what we normally think about in oil and gas such as horizontal drilling and fracking and the upstream or digital control systems and the refining and petrochemical side. This is a very interesting perspective that the outside influences are going to have more of an impact on us than when we come up as engineers internally is that correct.

Trond:

I would I would say yes that's a good does a good statement and I think that we are for the first time we are observing that oil and gas industry are by are being influenced by other industries but we need to also look at if we go from that hundred years perspective when we go down to the more like 5000 feet perspective and say for the last 30 years and the reason what is happening now to the oil and gas industry is that oil and gas companies have been very cold fordable and in a very good financial situation with only a few financial downturns. But none of these have resulted the that the operator is really looking fundamentally at the way that they operate.

So, they have been comfortable with these small incremental changes or the baby steps as mighty managers not leaders have praised it being the art of doing things in oil and gas because they haven't been faced with any external existential threats for the last 30 years. So with that that's an operational canvas behind you there has been no or little or no incentive to change because they have primarily been printing their own money in the industry for the last three decades. When 2015 happened and now almost three years into the downturn we see for the first time the companies that are not agile not nimble have seen their revenue streams been cannibalized by smaller competitors that are agile.

So, they are truly living in the moment in time now where it's not the big ones who eat the small

ones but the fast ones who picked it who eats slow ones. It is something that the oil companies are now starting to realize. So, while they have doing these incremental changes in functional isolation. Now there is an opportunity with the technology coming together that horizontal drilling Endo's. Yes, these are important things but these are incremental small baby steps within the functional processes. So, what you need to really need to have focus on now is like the broader change canvas that is impacting industry and not all the day the narrow functional aspect that we always been doing inside oil and gas. Does that make sense?

Marty:

It does. And the other point you made earlier in your conversation and when we met is that digitalization is really one of the step change functions that can help the industry. And of course, they have to keep their eye on it so it doesn't pass them by. Some of the numbers you gave are like a 2 to 3 billion dollar a year savings with better digitalization but more importantly a point you made was inside a company one of the biggest assets is its data. And yet 99 percent of the data is not used. Why is that happening Trond?

Trond:

So, and that's a good question and that is exactly what I mentioned about these functional silos inside these functional silos. Each of the companies have been mainly been developing their solutions in functional isolation with no incentives to share data.

So, geoscientist wouldn't share data with a petro physicist or to a petro physicist wouldn't shared the data we had the operational people in the field. So now for the first time we see that in order to be able to be successful with artificial intelligence or big data analytics or what have you need to be able to create a layer way you have the ability to harvest data on a broader scale across multiple functions and that is something that is missing in the industry.

So of course, when we have 2015 happening and then 2016 and everyone was starting to get uncomfortable everyone started launching huge projects for becoming digital. We have all of these companies with amazing ability to tell what they are and what they intend to do and not so much what they are doing concretely. So of course, the first thing that they do they take out people from the organization and it's like a laptop crack. You shouldn't do that because it really doesn't impact the cost and those people are what you need as a one of the digital levers for the future when you want to enable all of these new technologies to teach the models so the companies have been

through a situation now where they have looked at OK let's start a few projects artificial intelligence. Let's start a new project with machine learning. Let's do some robotics because that sounds cool.

But most of these projects they will fail. And I think that that have been knowing it ERP system implementation quite well 75 percent of ERP systems fail in the implementation and in oil and gas.

I would suggest that probably as much as 80 to 85 percent of the projects that are currently ongoing in the industry will fail because they are only incrementally focused on the small bits and pieces that belongs to the past and their legacy and they are not for enabling the future harvest data and for the companies to become agnostic to the tools that we use. But more focused on the view where do you want to be in five years and very few companies and even fewer of the vendors have their focus on these things because they really don't want to solve the problem.

They just want to continue doing what they are doing because that is how they are generate revenue. Don't fix the problem.

Marty:

Trond in addition to the data silos that you did just mentioned you also talked about a broader holistic view. When we met and the analogy you gave was let's look at upstream all the way from the land acquisition leasing process through drilling through production all the way to the market. Can you elaborate on your ideas on who might be able to be doing something like this or how the companies might go about getting this broader perspective?

Trond:

I think what I hear from the big operators is that they have several things that are hampering their ability to change. I would say primarily these are related to politics culture symbolism and the lack of incentives as I mentioned earlier.

So by saying those four things there are very few that there's not much likelihood that the industry at least the bigger companies will be forced to change until you have a lighthouse up and running.

My belief is that there are a small few smaller companies that are nimble and they are they have they don't have the financial muscles as the big corporations do. So they have to try to find other

means and other ways to solve this and by running days as manufacturing does. Like purely and highly optimized processes and to and from the birth of the birth of the well and to the death of the well. And how can you optimize that.

So, I think that the smaller companies because if they are are they. They do not have the legacy to consider when they make decisions. They are able to do this much better and that will be very similar to what we have seen in other. If you look at their brick and mortar for instance and you can see that companies like Sears Macy's J.C. Penney etc. They find themselves faced with an almost unbeatable competitor because they have a legacy and they have stores to pay for.

The same is with the big companies they have a legacy and they have a lot of vested interest in the current legacy the cement of the company. I call it. So they will find themselves most likely now in need of doing change without having the ability to do the change.

Marty:

Interesting. Interesting. I your comment on bricks and mortar you know missing innovation especially due to Amazon. I just saw a recent article that one of the reasons Amazon has Alexa in your living room and kitchen and is now tied to Whole Foods as you probably know is groceries next. If you're able to get on Alexa and order everything you need from Whole Foods what's going to happen to the other very strong regional grocery chains.

And it's interesting that the innovation is not a better piece of supply chain but it's a better way of getting the order management cycle handled and that is through Alexa rather than go into the store picking it up or walking around the store with your list on your cell phone.

So, I think this is the kind of thing around that people see around them but for some reason we can't seem to translate those things that we see outside of oil and gas inside oil and gas. And you said another thing when we met was the hard stuff is the soft stuff is the soft stuff causing some of this inability to innovate.

Trond:

Absolutely. I think the people aspect is not being consider strongly enough because the people that you want to go through change if they are not part of this and they are they cannot visualize themselves as part of that change journey and the future there is very little likelihood that they will

play along and going into this. So, you will meet a lot of resistance.

So, what I hear from the big companies is that they launch maybe 10 20 30 different projects within these areas that are that has the potential to become transformational but by disregarding or having companies or consultants in that do not understand that this is not about acknowledging.

This is primarily... This is 30 percent technology but is also about change management. It's about the governance part. It's the digital foundation that you build. It's about the data access it's the governance of the whole thing.

I'm talking about the operating model of the company that is not fit anymore for a hyper connected world. So as old and people in order to make changes to the culture of the company you really need to invest a lot and understand how the company works and that is why I also.

My previous comment about the whole metric project will fail is that one yes, they do not consider all the functional silos with data with uncorrelated data. And the other thing is that they do not consider the fact that you are dealing with people and a lot of people with a lot of power.

That you will be in need of some change in order to participate in this journey to be successful for an oil and gas company. So, another aspect of that it also the vendor industry and they do not have an interest because if they change the way they work and actually start delivering solutions to the oil and gas industry.

Well they revenues will be cannibalized as well because they have been tailor made to try to tap into the revenue streams of oil and gas companies in the most profitable way. So once what they want to do is to deliver as many projects as many outsourcing and making things as silent as possible.

Rather than trying to bring things together holistically either through a hampering access to your own data so that they can continue having their revenue streams tied to the data and the analytics or by outsourcing the competency of how the systems works.

So, we're inside a very interesting complex of problems that the industry needs to solve by creating a lighthouse and say look this works this way. And I think several companies are looking into re-innovating. They are at their oilfield.

So, it works from birth to the death of the well.

Marty:

Trond, one other thing that the industry did years ago and as a way of trying to overcome the silos as you know is to put two together cross-functional asset teams and very highly cross-functional field development planning teams are they just not working as well as they should.

Even though they've got the organizational structure?

Trond:

I would maybe give you a lawyer answer to that. It depends. It really depends on the on the stuffing that you have around these teams.

If they are focused and are given a being given incentives as a team that they have to work together in order to be able to release bonuses etc. Well then there is a higher likelihood.

But today every company day they give bonuses and incentivized the people only for a performance inside the functional silos and not what they achieve in total there are very few companies that have holistic measures in place or K.P. eyes and plays to help go in the direction of a more holistic view.

Marty:

Trond, thank you so much these insights will really be valuable. There's a lot for companies to put in place besides the data structures and the new machine intelligence is what I'm hearing.

Will this all be really valuable to both the upstream intelligence and E.K. interactive listeners. Do you have anything to add if our listeners need more information or where they might look for some other call lessons learned or better practices in this area.

Trond:

I would think that the advice that I have been giving when I have been ask OK so.

So we have all of these projects ongoing. We have all of these initiatives. And I think I think every person I read one book by Simon Sinek could it starts with Y. And I think that is a good statement to start with.

You actually need to understand very clearly what you want to achieve and not embark on this with the technology because the solution is not about technology. It's having a clear understanding about the why you are doing it and that is much more important than running your your projects the way it's done today.

Where You hire in the company and what they do is apply basically statistical models to a known problem and they deliver some incremental small value. That is not artificial intelligence that is at best a little slice of machine learning, but it does not help you as a company to overcome the added challenges that you have in order to become truly digital.

Because when we're becoming truly digital is all about the why how are you going to be able to put your data in such a way that you would be able to harvest all of that dark data 99 percent that you're not looking at today to optimize the way you run your field.

so that you understand better the operational aspects so you can have fewer incidents so that you can have a cash flow that is the and out of your how you run your assets from hour to hour based on how the market moves.

These are things that doesn't happen in the oil and gas industry that is kind of a mess. It's really strange that the industry has not come further in implementing this when the benefits are so huge.

So, I would look at the smaller companies that are doing something and those that have been forced because of their revenues or they being very thin how they have implemented they more holistic value chain. We have a few companies that do not talk so much about how digital they are but they are doing a lot of things that I find is of transformational nature for the industry.

It is not about solving yesterday's problem but having a clear interpretation of where they want to go why they want to go there and how they are going to do that. And that is the last step how you're going to do that. Most companies are only focused on the bottom now and I think is a distraction.

Marty:

Trond was a terrific summary I guess we all have to start saying why more than what even though that's tough for an engineer isn't it.

Trond:

I would say I would say yes deduct the statement because it requires you to rethink the way that you always learn how things should be done. I think the more knowledge you have about this the more complex you make things in your head.

The thing is with the technology such as artificial intelligence and their analytics there is a benefit from looking at this with a pair of new eyes having new resources state scientists working on these problems providing a new perspective to all of these data and teach the rest of the people that have been looking at these in just one way inside functions for many many years.

So, I think the data scientists in the new generation of millennials that comes into our industry now and look at the horizon and say hey why don't you do it like this. And most of the engineers will say Well that is not possible.

Well here's the data that proves it. So that is what I've heard in several companies that they have been forced to look by putting people that does not necessarily have the 30 years of experience but putting people that look at things in a different perspective are not limited by the barriers of their own knowledge but that they are able to understand that how the data looks in that different prospect.

Marty:

Trond again thank you. That was another wonderful summary and we really appreciate your time and insights on our podcast today. I'd like to thank everyone for listening to learn more about how the all-important oil and gas industry works.

Be sure to check out our free oil 101 series at www.ektinteractive.com.

It's now mobile ready and you can watch and listen on your phone. Thanks again for listening.