IT Applications and Optimization in Oil & Gas Supply Chain

Topics and Timestamps

Marty:

Hi everyone and welcome. I'm Marty Stetzer president of EKT Interactive in Houston. His podcast is brought to you jointly with upstream intelligence in the UK and 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 billion dollars by 2020 the 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 and media partner for upstream intelligence. I'll be speaking with John Archer.

He's an industry veteran now focused on oil and gas data management applications as the senior Energy Application solution architect at RedHat software. John will be presenting at the May 2018. Upstream intelligence data driven drilling and production conference in Houston.

So, John welcome.

John:

Hi Marty. Thanks for having me.

Marty:

John can you give our listeners your background and a brief scope of of what RedHat is up to in this space today.

John:

Yeah sure no problem. And I never know whether I should do this forward or backwards but I'm currently RedHat where we're one of the I think every knows as a Linux company of course. But we do a lot of other things and I'll talk about a little bit of that today but I spent time at Oracle at B.A. systems a company called silver stream. It features little will older might have heard of but these are all Java based enterprise software firms and I worked in energy federal state and local.

There are a lot of time in the DOD doing some fun things there that I can't talk about. But in any case, mostly been on the enterprise java side for integration software I used to do a lot of RFID stuff as well in the past.

So, talking about IoT had a history there do an RFID type of business but mostly what I've been trying to do is help companies become better software firms themselves. Right. Used to be in engineering roles were actually used to build products.

But since I moved back to Texas I've been mostly in a pre-cell engineer type of position. I did take a little break worked for a company called Petreus which is now no landmark and took a product management position there where we were doing upstream GNG data management doing data quality helping just kind of break down the silos a is kind of like ETL for weblogs and seismic data things of that nature.

Marty:

John we really appreciate you participating. When you and I talked over some podcast ideas one of your comments was really interesting to me as an oil and gas veteran and I'd like to start there.

You said that today there are both physical and technical challenges to implementing digital applications in oil and gas for our listeners. Can you elaborate on that point?

John:

Yeah sure yeah, I think a lot of folks particularly on the unconventional side have got to a point to hook or crook just go as fast as I can. Right.

And for instance, there's a lot of folks I think dealing with sand and water issues   out in these frack wells and there's a lot of inefficiencies in the way. Most of my customers are running these businesses today. They have assets deployed maybe they know where they're at.

Maybe they don't they've got service companies hired and visibility to their   their safety training to their skills with that particular equipment and whatnot. And at the same time, you've got things like autonomous rigs coming on line and   a lot of robotics and a lot of other remote capabilities where we're trying to reduce the windshield time as a way to drive distance improvements.

That being said also then on the I.T. side we've got a more command and control type of deployments and some of these I.T. shops right I.T. guys may not even be aware of what their O.T. counterparts are doing. There's a lot of shadow I.T. as well. And this creates five DMs and fights and no headaches for all folks. There's a lot of people in there that really have. There are some really smart people a lot of the customers and a lot of times they're in a position on a role where they're not able to be as efficient or as helpful as they would like do to the structure of the organization.

So, I think where we really try to focus is helping speed up what we call dev ops. Right. And this is being able to kick tires more quickly to experiment right to architecturally build things that are more organic right.

I talk talking how systems can potentially be integrated better to act as one a lot and getting folks that can leverage all these newer technologies like Docker and kubernetes and a lot of other exciting things like python and all these IoT and big data technologies what we're really trying to do is help drive efficiencies by allowing business events from real things on the O.T. Side Get into the back office I.T. as seamlessly as possible without trying to reduce as many headaches between what happens on a rig or what happens on a production site versus the data scientists in the back office trying to help improve that operation.

Marty:

John that's really interesting. I had the full supply chain when I was head of materials at Superior Oil we never missed a well review meeting and we had control of the the pipe from the time it was in the let's say the mill until it was loaded on a barge at Cameron.

One of our issues was modeling the for-supply chain is it really an issue in what we're seeing in let's say the shale as you mentioned earlier with all the different components that are trying to get together and is modeling the issue or is actually the tools to help with the modeling. The issue is if what I mean yeah.

John:

Good question. Yes. I think we're always doomed if we don't really understand what's happened before us right. There is there's a lot of folks that have full understanding of how things are unfortunately a lot of these people get shuffled around quite a bit. And so the intelligence of an organization is always a constant thing in motion where now by the time someone perfectly understand something they're usually onto something else.

I've seen that quite a bit but yeah. So, the belief to have a built in intelligence in your in the processes for how we get things done. There's been tons of process optimization and in parts of all organizations I've seen from the service companies to the actual operators. And that data that they create and leave behind is there's always challenges and cleaning up that process and getting control of the data that goes along with that.

From actually, we're looking at things now things like digital twins right where we're trying to have a software replica of what's on the rig and then all the asset management pieces that can be driven off of that that concept. And there's older systems that did a very good job of that right. I think what these new technologies were kind of it's a it's a we're redoing something saying like back and look at stuff like clip's morto project and what the Mimosa project is for instance to see com schemas as being the same thing. Just no they don't know about each other. Right.

Or his are trying to come up with their digital twin and they're just having a stable step back a little bit and look at what's out there to leverage things such ours and to recreate the wheel. We think a lot of people are how fault's offer developers here too. It's like if they didn't build it they don't trust it. Right. So, and that's something that we're always fighting against now. We're here to promote reuse.

You have to want to reuse things and that's something that not every organization or even individuals are or want to do. So as part of how we can model out some of the things we're working with a few partners now on edge computing side we work with companies like Aerotech who actually has IoT gateway software that's part of the eclipse IoT Foundation.

There's a product called Eclipse Curra that we use there upstream or their douching versions called ESF and so we can deploy that to edge computing devices to help collect that data. And then we also then work with folks. There's a company called zip codes that's been kind of more of a software integration petroleum engineering company that's really focused on capturing and these folks can help not only understand the data as it's coming in but then help optimize how   what type of optimizations would make sense to them deploy as an application to fill and workflow gaps resolve those type of bottlenecks.

So how you once you have that they know how you then get the value of a you need folks I really understand the domain and it comes as a company we work with that can help provide that.

Marty:

John you mentioned in your earlier comments the organizational silos have. Have you seen the shift to asset management teams as kind of helping with that part of the problem.

John:

Yeah. Let me say it this way. Lot of my customers particular now I'll say the super majors are in a constant state of reorg. And it's. And this is on the inside and the outside the service companies obviously are much smaller than what they were two years ago.

I think that started to rebound a little bit, but I think sometimes managers reorg because they want to feel like they've done something. I hate to say it that way, but sometimes the reorgs there is definitely getting from an I.T. or developer develop type of thinking aligning to the service is how we try to drive.

How organization should be constructed. So I'm building out an API first micro service. Thing where it's like I want to go create the thing that gives me a list of all the wells and Simon or his vision for instance for a lot of companies that's very hard and in Turkey particularly you would think that that wouldn't be that tough but it does.

But then think about I want to then go create an optimization process right for from assets. That's going to be even that's a much more complicated in some cases. And so based upon the type of asset that it is the the how well we know how to operate it ourselves versus a service companies that we leverage to manage that asset.

I think most companies are still there at the beginning of getting more intelligence around how they operate an asset around. why this team is. How why is these guys able to go 1000 feet a day and these guys go 500 feet a day. Right.

And I was either subsurface characteristics impact that but there is there's teams that get better at doing certain things and try to figure out how to capture that knowledge and share in the OR and somehow instill that across multiple teams in multiple geographies is something that   I think all this particularly the larger firms are really focused on.

Marty:

When we were talking about topics for the podcast you mentioned that you had a worked with Energistics in the data standard side and we've had a good relationship with Energistics since 2012. Will the standards help what we're trying to do with some of this full value chain optimization or are there going to be a hindrance to be   as a question?

John:

Yeah, I like it part of what I've been in and out of the past now and are just dicks throughout many years. Ashley you used to work for David Archer shoes ever. PDS now and they've open sourced their BTP implementation right and now I can maybe claim to help poke them that way or not.

I'm not sure maybe they are always thinking that but eventually you see someone actually open sourcing their efforts right and making sure learning to trust in industry something that no one can know without going too far off the rails here. Yeah. Halpern's created this thing called the U.S. right in which you're saying it's a community but if you don't end the IP it's ours.

Well PDS and their ETP implementation is an open source that anyone can go and grab and play with them for themselves right. The maturity of how we build software and oil and gas industry. I think PBS is helping lead the way a little bit here just some cells are trying to figure out how to build a community that's active and participates openly to everyone's.

All boats float kind of mentality is what they're trying to drive towards. And we've talked to some Energistics folks about how RedHat sees software and how communities can be built and how we can help create the right incentive structures. there's no RedHat talks about the way you run a community's through a meritocracy.

And so, we try to advocate that not only for our own projects but then for how other organizations can be designed as well. So I think just IX's done a real good job in being the stewards of these protocols around schemas and now the transfer protocol and definitely think that ETP can definitely be able to help especially for a high latency networks and where we're trying to transfer a lot of data from a Web log that they're going to have a way to help reduce the like the sat com Bill for instance by adopting that protocol so we actually see how quickly the uptake is on folks move into ETP for the what's Amelle stuff.

Vendors like site Kongsberg and those folks I think are really have their stuff working there as well. And your RedHat spend looking at helping advise him around some of the security standards that they are specifying in the protocol and so know we definitely like to help out with things like that.

We're also looking to help try to drive some I.T. automation with our ansible stack and be able to help deploy things on the edge do low touch or no touch provisioning for the compute as well as even on the back and back and as well.

Marty:

John that was terrific. The explanation on how they're focusing on a GNG I just hadn't picked up in my working recently with Energistics. But while we're talking about organizations when I spoke with Dave Montana he said RedHat has a really solid relationship with the S.H.P.C.P. Which for our listeners stands for a society of high performance computing professionals?

I have a two-part question what they did and is there a benefit to oil and gas companies being involved with as HP S.P. or a three-part question or are some of them already involved.

John:

Yeah. Yes, sir certainly. Yeah. So yeah, we're working with Gary Kraus at the Society of HPC professionals. So, there are a group that really focus on the high-performance computing. So, I think a lot of folks understand that for taking seismic data and make it look interesting to subsurface engineers to G.G. exchange, mechanics.. geophysics.. whatever you need a lot of raw horsepower and there are different applications I can take advantage of that.

Now you've got to trim when these high-end graphics card sieving or anything desk you can be pretty productive your jobs. But those are maybe hard to come by. Or maybe you're not in the

office where your 10000-dollar workstation is and you like to still be able do some work. HPC folks have really focused on how to do GPU type work remotely and also try to do virtualization around the GPU.

You were also working on things where you could do general purpose GPU like for data scientists like guys that were running tensor-flow applications or Python applications and they want to speed those things up   be on the use in each PC cluster with GP cards and it is something that we've been supporting.

I think most folks.. let's say most folks in all the gas know us as a Linux company and they know us know because some folks are using RedHat. Some folks are using syntax which is   a different flavor. RedHat that's unsupported. And they use those Odessa's to power most of the HPC environments the most in oil and gas companies.

And so   we've had a long that's where we can interact with folks that are try out new things and kicking the tires around some of the newer features of how we're adding there's the GPU support not only into rail 74 but it has now shown up in the red hat virtualization layer. Now Supports also GPU's. Also in openshift, we can now use tags to do what we're starting to call performance pods.

So, if you're familiar with openshift and how you can spin up Docker images and orchestrate them through the cube Nettie layer, I can now say this job gets to use the GPUs just a simple tag. And so,   I can take my data science load where I know I can take advantage GPU in and share that card throughout my day and assigns users for instance.

Marty:

John thanks. RedHat sure has come a long way.

Building on its Linux heritage and I'm sure these insights will surely be valuable to the upstream intelligence and interactive listeners especially those familiar with the technologies as you are. Do you have anything to add if our listeners need more information. Or again a two-part point. Would you like to give them an idea of what you'll cover in your presentation at the upcoming conference in May.

John:

Yeah sure. We're going to know for folks that were there last year that saw my predictive maintenance demo. We're going to kind of build on top of that. And so, we were showing off some

IoT things where we're pulling data off of a Pomp and showing alerts for vibration everything but we're going to show that round trip to the data scientists so we'll complete that.

But then we also talk about overall how we can help optimize a field. You there is a there's another capability that RedHat has. We've got a mathematician that's is trying to solve when those million-dollar math problems call the PNP problem. And so being able to solve for P. predictively once but I cannot solve for p in number of times predictably. Basically, this is a tool that can optimize pretty much anything if you feed it the right data.

So taking edge computing information over our best fitting layer and feeding it to a tool is one way to help optimize all your resources that have constraints for how and gas does business around the frac business so water sand people trucks rigs all that can be fed to the saying and then help you not only build out schedules that routes and help you plan your your operations better.

[00:21:43] So we're going to talk about that primarily at the conference and I hope everyone can come out and ask questions and understand this. This capability can be applied better to the oil and gas folks

Marty:

John again I appreciate your time and look forward to meeting you at the conference. I'd like to thank everyone for listening to learn more about how the important oil and gas industry works.

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

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