INDUSTRIAL XR Forum

Transforming Industrial, Energy & Engineering Enterprise with Immersive Technology

Industrial XR End Users Executive Report

Energy and industrial enterprise leaders from ConocoPhillips, Chevron, Aggreko, Fluor, and Schlumberger share their insight on developing and implementing XR programs.

Table of Contents

Industrial XR Forum

Hundreds of industrial, energy & engineering immersive tech leaders, software developers, and VR / AR / XR / wearables solution providers gathered in Houston, Texas last February to attend the Industrial XR Forum. The event took place over two days and featured more than 20 sessions, numerous opportunities for hands-on demonstrations, and 30-plus speakers.

Two panel discussions brought together training and technology experts from ConocoPhillips, Chevron, Aggreko, Fluor, and Schlumberger to discuss challenges and best practices for developing, implementing and scaling an XR programs.

In this report, we have highlighted consistent themes presented by these industry leaders. We also go more in-depth into some of the challenges our panelists and their organizations faced and advice on implementing your immersive tech programs. Starting with the top takeaways, this report includes details on whom to involve early on in the process, applications with the most significant ROI, and how to find your champion.

Featuring Insight from Industry Leaders:

Paul Daley
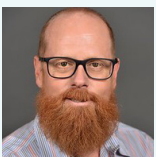*e-Learning Specialist Design & Development Team, ConocoPhillips*

Ed Moore
Senior Technology Strategist – Technical Computing IIoT Technology Area Manager, Chevron Energy Technology Company (ETC)

Amy Peck
Founder, EndeavorVR
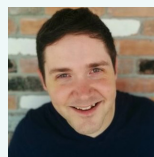
Walter Davis
Head of Talent & Learning Technology, Aggreko

Max Eklund
Construction Visualization Manager, Fluor

Susan Spark
Learning Technology Manager, Schlumberger

Jordan Szymczyk
Industrial XR Lab Manager, The Ion

Key Takeaways:

Several key takeaways emerged throughout our discussions with these industry leaders, centering around getting buy-in, demonstrating ROI, how to scale, and finding information, mentors, and collaborators.

Find your champion.

Finding your champions is vital because of the sheer potential to impact the entire organization. If you are attempting to get your VR / AR program off the ground, you need executive buy-in, as they control the purse-strings. It is equally important to involve IT and the Security team early in developing your first Proof of Concept (POC).

"[I'm] championing [XR] across the organization just because of the sheer potential I've seen. It really doesn't impact any one of us at our organization, it impacts almost the entire organization. There are very few departments that come to mind that aren't going to be impacted."

— Walter Davis, Aggreko

Start with a POC that will deliver the most significant ROI.

Our panelists all agreed that safety training and remote collaboration / assistance / maintenance would allow you to quickly demonstrate the technology's value. Safety training allows for safe "hands-on" field training, and remote assist eliminates costly flights and enables you to increase the frequency of inspections.

Tap into your suppliers' expertise and knowledge.

Your suppliers are the best source for information about what is coming down the pike as far as new hardware and software. Before you invest, check with your manufacturer / suppliers to see if something new is just around the corner. Vendors have the hindsight of seeing multiple implementations across different industries. They can help guide you in choosing a POC that is measurable.

Finding the best sources of reliable information.

All panelists agreed that LinkedIn was by far the best source for information. They advised to make sure your profile is updated to include what help you are looking for in your immersive projects. Find the thought leaders in conferences like this and connect with them.

Other sources of information are podcasts (https://www.thevrara.com/podcast) and email digests, especially in the learning space in which XR is very hot right now.

Don't just rely on those in your industry for advice. There is much to be learned from those in other sectors who have successfully implemented XR programs.

Scale with demos.

Absolutely nothing sells VR / AR like a live demo. Get it in the hands of end-users and your executive team. A PowerPoint presentation or video cannot sell it nearly as well as a hands-on experience can.

Decide whether developing in-house versus outsourcing is for you.

Panelists were split on developing an in-house program versus outsourcing. The choice comes down to the resources you have available. For organizations with 3D skills, software development capabilities, and training expertise, it may make sense to do your own XR development. If you are stretched thin or don't have the available knowledge in-house, leverage your external partners.

Gain access to valuable insights.

You can see things when using VR for training that you usually would not be able to see. For example, in the virtual environment, you will know if someone is afraid of heights and is not able to take on a job that requires climbing. You can also utilize XR to determine and test competencies for situations that cannot be safely replicated in the real-world.

Challenges

Several primary challenges were discussed that are key to recognize and plan for when developing and expanding your XR program.

Engaging Key Stakeholders

Proving overall company value and whether the spend is justified has been a tough sell in some organizations. There is still some stigma over whether or not XR is a toy or fad. For this reason, it's essential that you choose a POC that will deliver measurable results quickly.

"There are a lot of factors that go into [stakeholder support and funding], chiefly being the price of oil as a motivator for the availability of funds. Assuming that's okay, which you can't, then I would say proving value overall to the company--whether or not what you're pursuing is valuable enough to justify the investment."

— Paul Daley, ConocoPhillips

Lack of 3D Modeling

For some, the lack of a library of up-to-date 3D models means XR is not supportable in the long term for many applications.

Starting an XR Training Curriculum

There is no "one-size-fits-all" approach, and VR cannot just be tacked on to your current program. You should integrate VR into what you are currently doing, and it must be seamless to gain adoption.

Convincing Others

This type of technology is often a significant change to a user's process and workflow. Some users are hesitant even to put on the headset. However, our panelists agreed that all users, regardless of age, quickly picked up on the technology due to the natural user interface. Once you get the headset on them, the ideas start flowing on ways to utilize the technology for their projects.

"[Your] development of the champions of the end users who can also now really socialize the technology is really critical...getting that input on what people expect, what they don't like."

— Susan Spark, Schlumberger

User Safety

Those who use Microsoft's Hololens (a mixed reality device) said the transparency ensures users do not lose peripheral vision, and they have had no incidents. That said, they advocate for being overly safe in the beginning and sending a buddy to guide them.

Motion sickness can be a problem for some users as they move around in the VR environment, but that can be solved by implementing teleporting. Still, you must have a monitor, as users can become disoriented or unbalanced.

"The fact that [the Hololens is] hands free, that actually makes us safer when typically, we're carrying around a tablet. The only thing we've done is some of our business units have asked for a [guide] to walk with the person as they're getting more used to the technology. So, as you're adopting it, it's better to be overly safe."

— Ed Moore, Chevron

Need for Better Technology

There are some issues with the technology as it is today. Our experts are looking forward to improved technology, such as untethered headsets, better processing, and haptic (sense of touch) feedback. Additionally, recent technology breakthroughs allowing desktop or table interface with the virtual environments can speed adoption for a reticent workforce safely.

Closing the Skills Gap

Our panelists felt that the foundations and ecosystems for closing the skills gap are already there. Universities are developing the skill sets required to help the enterprise. Still, companies are not tapping into that research and expertise when it comes to their immersive programs. The industry as a whole needs to tell a better story of what is happening in Houston. The more we share, the more it will spread.

The roles the panelists represent is indicative of industry 4.0. Many of these jobs didn't exist and they require skill sets that didn't exist. Businesses need to find a way to train and develop those skills within the organization.

Tech Wish List

Our industry experts are looking for vendors to take an enterprise approach with their technology. Providers focused on niches are missing out on opportunities to deploy across the whole enterprise. Companies are not looking for solutions for one group within their company. They are looking for solutions that can adapt to many different uses across the enterprise.

As mentioned earlier, leaders are looking forward to the further development of haptic solutions. Sensory technology will be a massive game-changer in applications across the board if users can 'feel' virtual tools in their hands as they manipulate them.

We need a certifying authority or industry agreement on whether VR simulations can be used in competency assessments and confirmation that the number of VR jobs carried out is equal to the real jobs, especially when they are rare or dangerous.

Use Cases with Fluor

Making Safety Training Fun and Memorable

When Fluor was interested in adding a VR component to their Life Critical training program, they partnered with a gaming company to assist with development. Both a virtual ground scenario and a height scenario were created. Trainees would learn how to safely navigate a project site amidst heavy equipment and develop awareness of falling objects.

Your typical safety training runs all day and likely uses PowerPoint slides, video, and a list of don'ts. However, Fluor's incorporation of VR and gaming resulted in a fun and engaging training solution that hit all aspects of safety in the field. Eklund said that while traditional safety training is repetitive and boring, Fluor's trainees could retain the information far better dueto the game's fun element.

Communicate a Vast Effort in a Simple Way

During engineering design, Fluor has 3D model reviews. For about two weeks, 50 people are stuck in what seems like an endless cycle. However, when they converted their models for the VR environment, people could immediately understand how structures are designed and constructed. The VR environment immerses the viewer on a one-to-one scale, making it easy to communicate all aspects of engineering, operations, safety, and more.

Advice for Implementation

Keep your options open to emerging technology in general. You need to understand the market and develop relationships with your vendors. Partner with a university to help you set your foundation and modernize your approach to learning. Start building your foundational digital twins so you can show XR is not just for a single course but is a strategy for learning.

Build a demo kit to show the strengths of all your technology, not just AR/VR. Don't try to hit everything with the same hammer. You'll be surprised to find just how many times a video will work just fine for the application.

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Energy Drone & Robotics Global Gathering

November 10-11

INDUSTRIAL XR Forum

Industrial XR Leadership Forum

February 24 - 25

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Staying up to date on the latest digitization trends, best practices, news, and solutions is a considerable task as the areas for emerging technology in the energy industry rapidly evolve. We are here to make it easy.

Interested in getting involved with the Industrial XR Forum or InnovateEnergy communities?

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