

**ISKO Singapore – Augmented Reality Knowledge Management
Arshad Ahmed – 18 March 2022**

Edited chat notes

Arshad's first exposure to augmented reality was about 12 years ago, when he saw a real estate application, where pointing a device at a building overlaid details of the building - "point and see" augmented reality. Another potential application in fire services - being able to assess living spaces for risks.

AR doesn't necessarily have to be on wearables, but for safety reasons in environments where you need your hands free they are useful.

In Saudi Aramco - KM is in the same function as training, so this is where the AR pilots were focused. It was used to capture knowledge around the steps within a procedure.

There are also health and safety applications - for people, or for physical assets. In the oil and gas industry, asset integrity disasters have major human, environmental and commercial impact. There is also a challenging demographic trend, with large numbers of experienced people retiring, and large numbers of relatively inexperienced people coming in. The use case of being able to embed asset-related procedural and safety knowledge into physical assets is a strong one.

The pilot Aramco conducted was successful. With 30 minutes of training an SME could demonstrate the procedure and capture it, where it might have taken up to 3 months to have a professional internal crew to create training modules around it.

A QR code is placed on the machinery, and this can be scanned to run the captured procedure, step by step, from any smart device/ wearable or hand held. In this way point of need training can be embedded on physical assets. This could also be used to embed health and safety information, incident reports, and maintenance records.

The device can also be used to call in remote assistance from an expert - similar to telemedicine. With KM support, a remote assistant could also have access to a lessons learned knowledge base, and so could the operator.

Lessons learned knowledge bases can be leveraged to create more structured/ integrated learning resources, enhancing the learning cycle.

The true value of AR enhanced by KM would be to solve real life problems in working contexts, backed up by learning resources.

The KM cycle can be expanded further as well. For example, for tricky issues, where there is no straightforward solution in the knowledge base, you could expand the query/problem statement to a wider community.

Virtual presencing via the wearables can bring the context to the audience, or it can bring knowledge from the audience to an operator in context.

In oil and gas, the wearables need to be (and are) “intrinsically safe” for very hazardous (e.g. flammable) environments where electrostatic charges from equipment can be hazardous. They also need to be robust to withstand rough treatment. For noisy environments, noise cancellation is needed to capture the operator’s voice accurately. In terms of network, industrial wifi is purpose-made for these kinds of applications.

For special applications, currently it is much easier and cheaper to get out of the box tools than to customise applications in-house. There is a risk that IT teams might want to develop themselves, not understanding the effort needed in this new domain.

Piloting strategies work well. Leadership needs something to be able to visualise. If you create a minimum viable product they start imagining what more complex things they can do with it.