



An important hurdle to overcome when trying to bring together several emerging technologies in one place is data connectivity.

That is why ATS Bus was chosen to serve as the Manufacturing Service Bus development platform for the VIVAR project at the Manufacturing Technology Centre (MTC) in the UK.

### The VIVAR Project

VIVAR stands for *Virtual Instruction, Inspection and Verification using Augmented and/or Virtual Reality* and is a joint venture between several manufacturers and research technology organisations.

The project aims to solve real-world problems related to Manufacturing Operations Management (MOM) in both the delivery and execution of electronic work instructions.

The project is investigating how augmented and virtual reality could be used to enhance the operator experience when viewing work instructions and increase efficiency and accuracy for both instruction delivery and data capture.

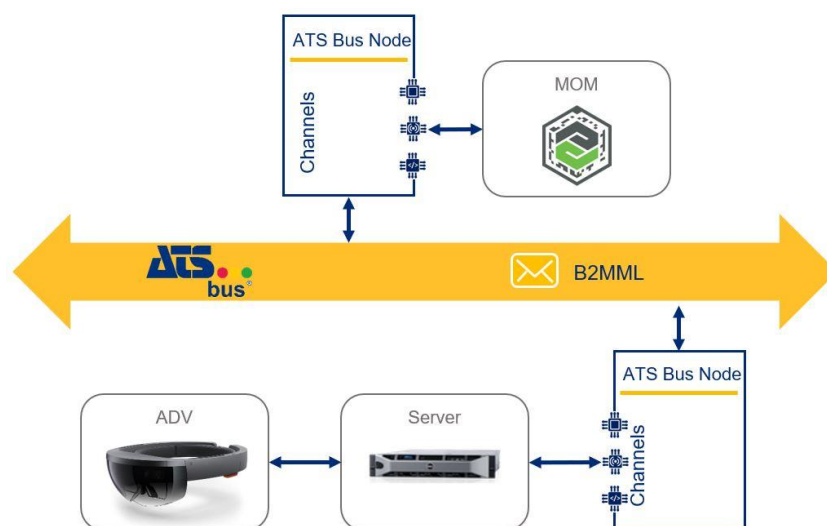
### ATS Bus – Bringing Technology Together

The role of ATS Bus within the project was to combine and exchange data between the MES system and the Augmented Reality display server. The ATS Bus was used as it is technology independent which provides the flexibility in the system to extend out to different AR and VR systems. It also enables MES applications to be swapped out with minimal disruption if needed.

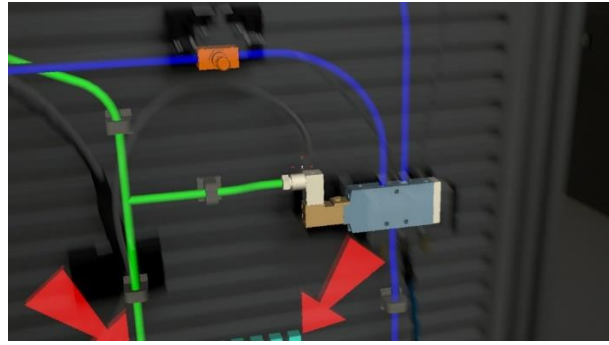
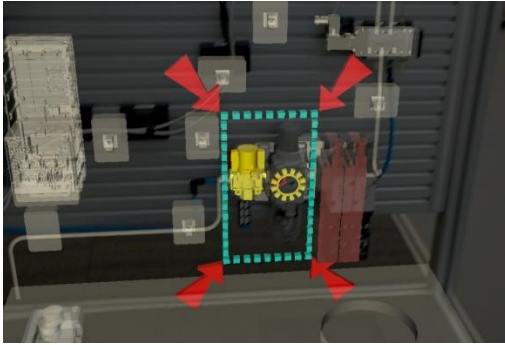
Every system connects to ATS Bus which securely transfers data and carries out all data translation requirements. It also provides edge computing capabilities by carrying out data-driven tasks close to the production line without needing to send data to the Business layer and back.

### Connecting All Levels of the Automation Hierarchy

ATS Bus provides an interface to the Business layer applications, which in this case are the MES and the PLM systems. The work orders received from the MES are translated by ATS Bus into a standard data format (the XML-based format, B2MML). They're then sent down to the shop floor where ATS Bus translates them again into the required format for use on the Adv (Advanced Display Device) server. This handles the rendering and control of the work instructions for the Augmented Reality Device.



## Work Instruction Execution in Augmented Reality



The real benefit of integrating Augmented Reality (AR) devices is the ability to display information directly to the user in a new and powerful way. The project overlays the electronic instructions onto the real world so that the operator can see where components are to be placed and what parts to manipulate to complete the work instruction.

Once the step is completed the operator can then mark it as complete using the AR device and this data is then automatically published onto ATS Bus to be sent back to the MES system to complete the transaction there.



The same approach can be taken with tablet technology. As part of the project tablets have been used with their on board cameras to display work instructions onto the real world. This is where the maximum benefit has been found to be right now. Using hardware that people are already familiar with in a new way to improve the efficiency and accuracy of manufacturing.

## About the Manufacturing Technology Centre

The Manufacturing Technology Centre (MTC) was established in 2010 as an independent Research & Technology Organisation (RTO) that bridges the gap between academia and industry and aims to raise the UK's competitive advantage by validating and implementing concepts identified from primary research.



Housed in a purpose-built facility at Ansty Park, Coventry, the centre provides a unique environment bringing the country's leading academics, engineers and industry professionals together to develop new technologies on an industrial scale.

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