The 5G-ENCODE Briefing

March 2022

Hi All,

We're sharing a slightly different update this time as we conclude the 5G-ENCODE project.

We set out to develop clear business use cases for using 5G in the manufacturing industry. Led by **Zeetta Networks**, in collaboration with **National Composites Centre**, **Mativision**, **Solvay**, **Plataine**, **Toshiba**, **Accedian**, **Telefonica** and the **University of Bristol**, we're proud to share that we've done just that.

Specifically, we wanted to improve:

- Application of Virtual Reality, Augmented Reality to support design, training and advanced Human–Machine interfacing to enhance quality of manual layup of composites
- Condition monitoring and tracking of time sensitive assets i.e. composite materials to enhance shop floor operational efficiency and compliance
- Wireless real time in process monitoring inside harsh process environment such as ovens as a stepping stone to full machine autonomy

Following our successful use case demonstration event back in November, we can now share the results with you in our media and publications page.

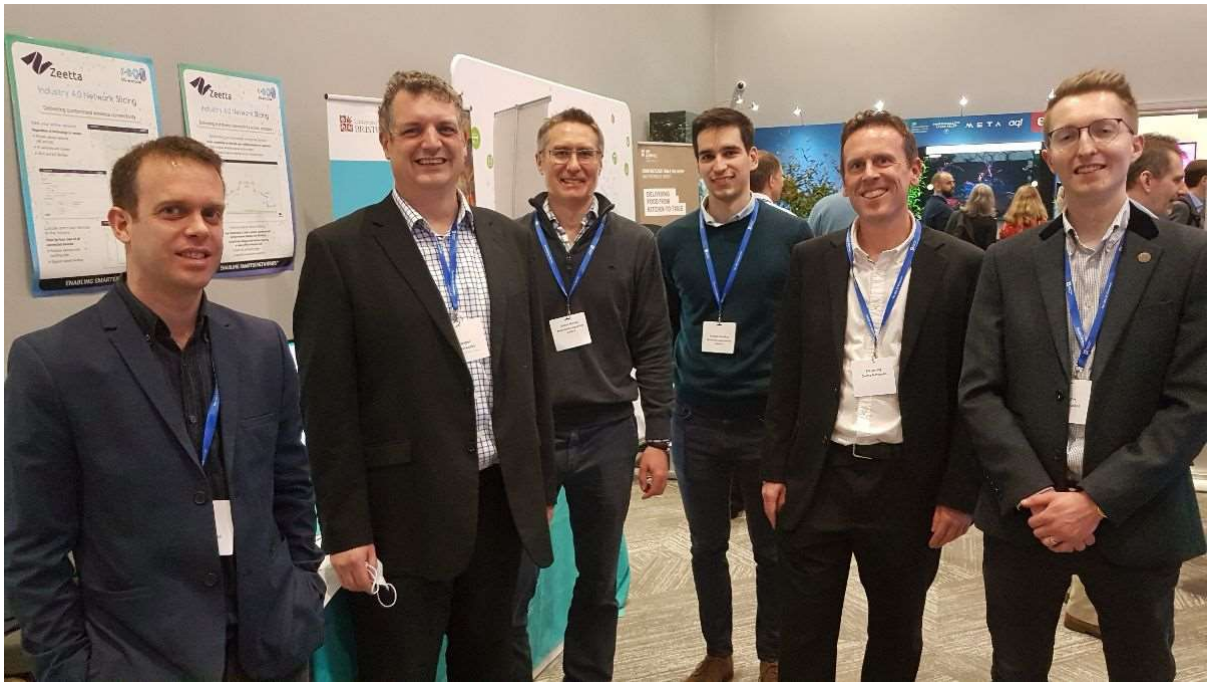
Thanks for all the support along the way, here's to 5G revolutionising the manufacturing industry as we know it.

The 5G-ENCODE team.

Concluding the 5G-ENCODE project

Sachin Sree Raman, Technology Programmes Manager at National Composites Centre, shares a few words on 5G-ENCODE's project results: "*5G-Encode, one of the UK Government's biggest investment in 5G for manufacturing to date is live at the National Composites Centre. A state-of-the-art 5G test bed, it underpins the NCC's Digital Engineering offering to market, providing open technology access to a range of virtual and physical industrial test beds in a secure environment with expert knowledge and skills. The NCC is engaged in partnerships and collaborations to build further industrial test beds in the region in line with the West of England Industrial Strategy, that will help businesses to maintain engineering leadership and develop sustainable products and processes aligned to the global sustainability challenge.*"

Ed Dening, Delivery Manager, Zeetta Networks shares: *"It is with great pride that Zeetta Networks led this project consortium to investigate cutting edge 5G use cases within the manufacturing sector. Our software was utilised to configure network slices across multiple network domains to simplify network management and reduce operational costs. The final private 5G network, hosted at the National Composites Centre in Bristol, was launched successfully leading to our 5G showcase event in November, 2021."*



The Results

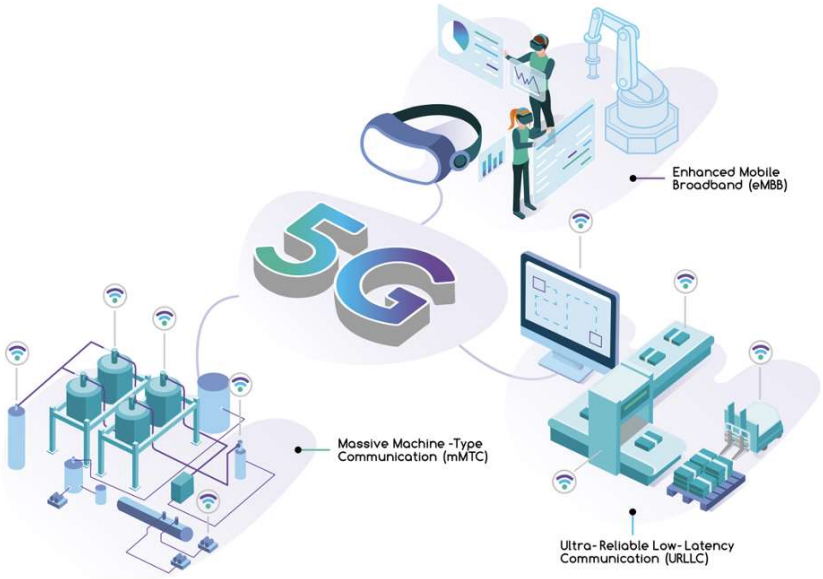
As you know, the project set out to prove three core use cases. We've captured the highlights from our findings below:

Liquid Resin Infusion
To create efficiency and productivity in Liquid Resin Infusion (LRI) composite manufacturing we wanted to get to 'right first time', 'right every time' to minimise waste when developing new processes to make parts. Using 5G to transfer high volumes of data to the central data server we proved that businesses can lower the cost of labour by up to 25%, and in this case reduce oven cure cycle time by up to 50% thus reducing the energy needs of the process. Using more sensors to monitor and manage the manufacturing process itself a reduction in scrap parts generated whilst developing the process was reduced.

In Factory Asset Tracking
Increased productivity efficiency leaving to reduced costs managing digital asset passports using RF tagging and a 5G mobile network. 5G-ENCODE has successfully proved that this technology can provide accurate location and condition information for tracked materials and tools. Using 5G to transfer tracking data to the central asset management server realized up to 93% reductions in search times per job leading to cost savings in operational processes. The 5G radio was also noted to be more reliable when compared with the 4G radio.

Virtual and Augmented Reality
Business efficiency improvement and trainee satisfaction using immersive and interactive virtual and augmented reality classrooms over a 5G mobile network. 5G-ENCODE has successfully proved that through this technology, distance learning manufacturing orientated classrooms can be similar to being with the trainer. Using augmented reality a richer experience can be achieved when practising learning. 91% of participants indicated the new 5G solution was an enhancement over the previous 4G solution thanks to greater download speeds improving viewing quality.

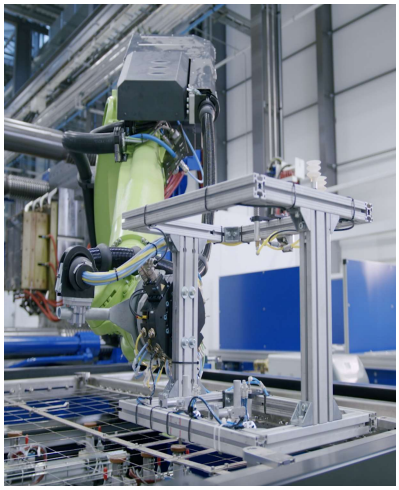
During the project several other use cases were implemented including; out-of-factory asset tracking, remote automated preforming control, asset tracking and neutral hosting, probing a network to manage application performance and network slicing. The **Detailed Reports** for all uses are available on our **media and publications** page.



Looking to the future

When beginning this project we all had high ambitions, and we knew that with determination and teamwork we could achieve great results. We're so proud to have played an integral role in the UK's 5G story, and we are excited for the innovations that are still to come from 5G's integration with the manufacturing industry.

By proving how integral 5G can be for smart business use cases we've paved the way for future smart factory and smart city projects that will help supercharge UK industry. In the coming weeks we'll be sharing a project summary with more detail on our original mission and the journey we've been on - keep your eyes peeled!



Learn more about 5G-ENCODE and how to get involved by visiting our website

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