

Virtual Reality

PROJECTS & ASSETS

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- Leader of the Advanced Interaction Systems platform
- Head of technology Augmented / Virtual / Mixed Reality
- Senior Researcher

- Previously:

Independent Expert for the European Commission



Teacher in the VR MASTER Deusto University



Teacher in the "Supply Chain 4.0 University Expert" at the University of Zaragoza



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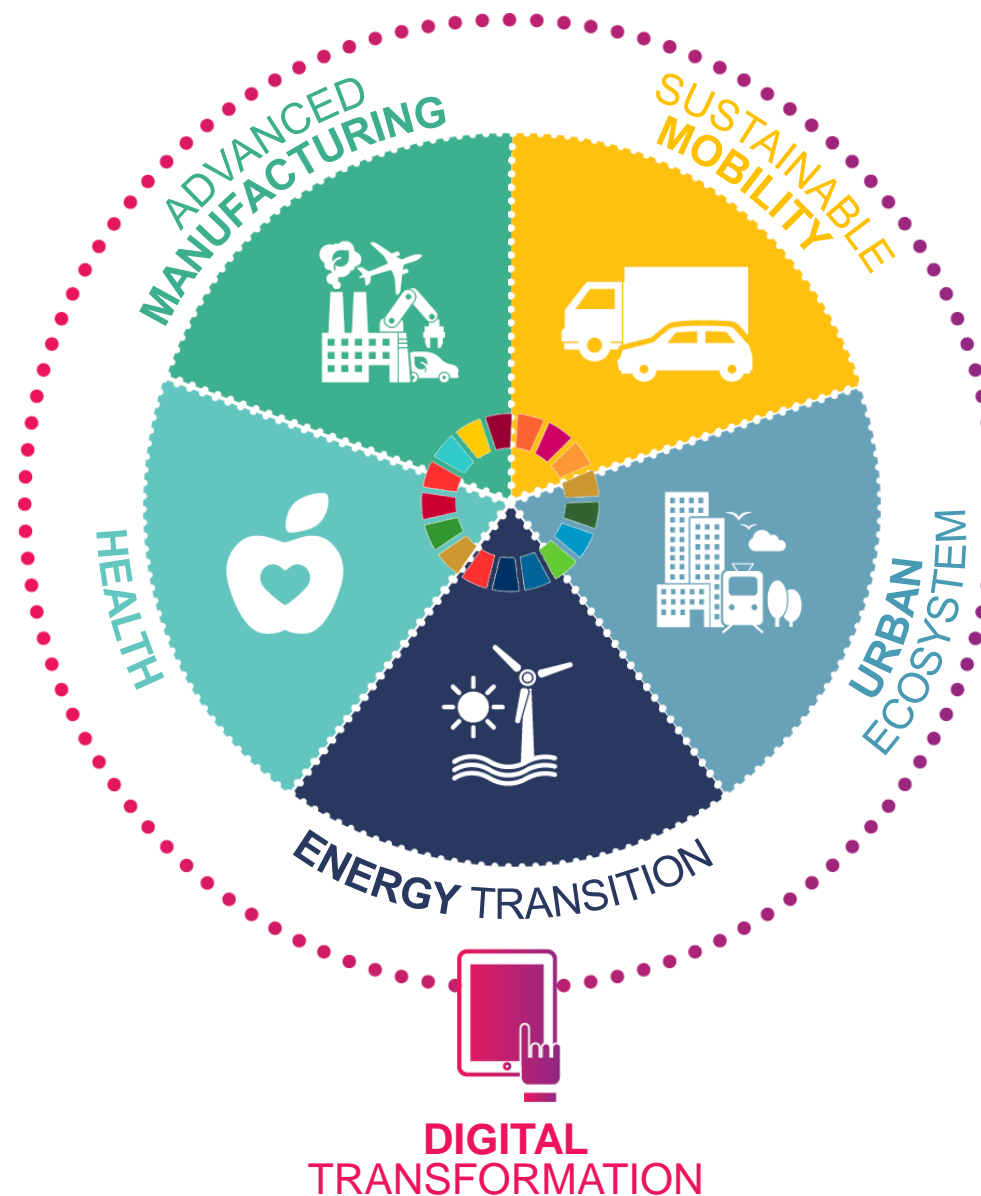
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EU Research Project: HR-Recycler (WIP)



Hybrid Human-Robot RECYcling plant for electriCal and eLEctRonic equipment

- GOAL: To develop a system to measure the trust between human and robot (co-bot), in collaborative robotics working environments.
- We test & train in controlled virtual reality environments.
- Using VR glasses + hand tracking devices, together with biometric signal meters such as EEG readers, heart rate and sweat readers.

<https://www.hr-recycler.eu/>

<https://cordis.europa.eu/project/id/820742/es>

EU Research Project: HR-Recycler (WIP)



Current Status: 3D Scenario, and disassembly process

<https://youtu.be/AAbajM6pebY>

EU Research Project: REMODEL (WIP)



Robotic tEchnologies for the Manipulation of cOmplex Deformable Linear objects

- GOAL: Make use of and adapt VR tracking (6D + hand/ginger tracking) systems to control robotic arms and teach a robot tasks from human behaviour.
- Proprietary development to abstract the glove model from the behaviour. (Right now testing/comparing simple feedback vs haptic-feedback gloves)

<https://remodel-project.eu/>

<https://cordis.europa.eu/project/id/870133/es>



EU Research Project: REMODEL (WIP)



Regular glove (vibrating feedback)



Sense Glove (set of 2)

Features



Force feedback



Physics based SDK



Haptic feedback



20 DoF hand tracking



10 ms latency



Usb & power Link

EU Research Project: REMODEL (WIP)



Current Status: Tracking part

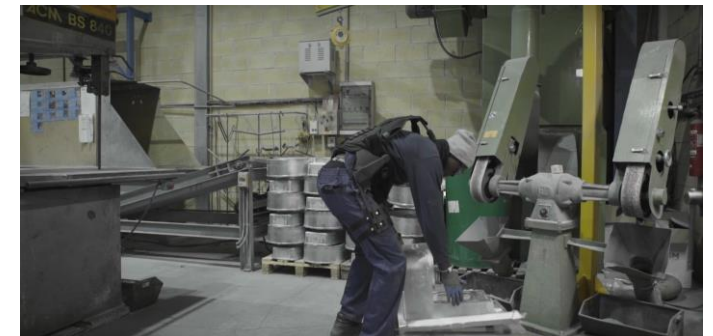
<https://youtu.be/ZJSEcjg4y1M>

Research Project: EXOsasun (WIP)

Research on new generation exoskeletons for the prevention of musculoskeletal disorders in the work environment

- GOAL: investigate, through the concept of virtual test bench, immersive virtual reality scenarios for the prevention of occupational hazards (specifically focusing on musculoskeletal disorders) where we can measure and compare how the use of exoskeletons influences these virtual test benches. **It compares situations with and without exoskeleton.**
- **Virtual working scenarios** are for example **new (non-existent) production lines** and we want to foresee future **postural problems for example**. Or also manufacturing lines or work stations that exist but are too expensive to stop/pause for this type of study.
- Motion tracking system, VR glasses & haptic devices are used.

*Exoskeleton Partner: **GOGOA***

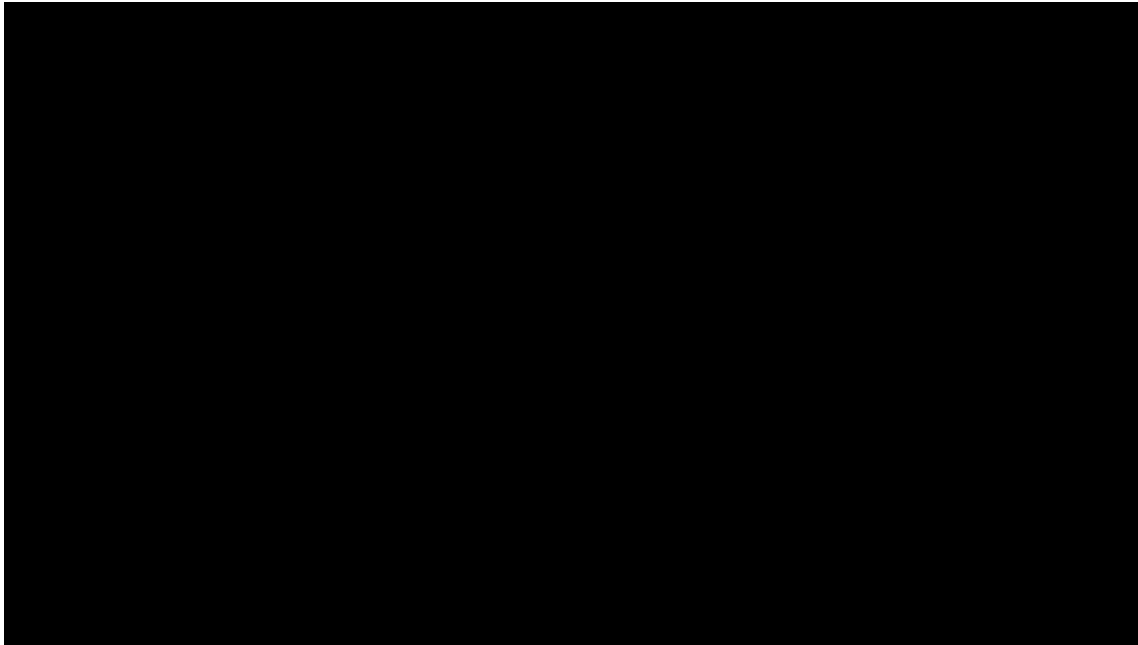


TIWP (ASSET)

Tecnaia Immersive Web Platform

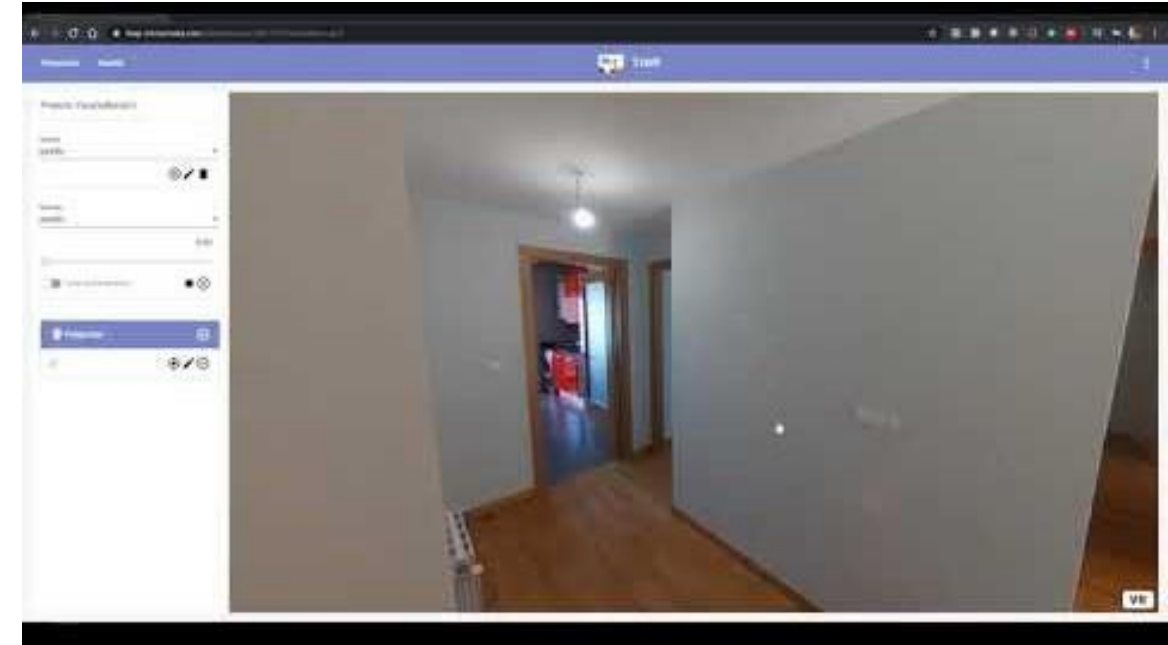
- TIWP is a web-oriented solution to create virtual reality and mixed reality experiences in an agile way and for non expert users. It has the same dynamics as an office-based tool like MS Power Point.
- Its origin comes from student needs and employee training. Regarding VR projects, training experiences can be generated based on abc questions, or questions related to the content in 360 or 3D environments. Regarding mixed reality, augmented manuals can be generated. But it can be used for other type of projects such as tourism, real state, etc...
- Compared to other similar solutions on the market, the creation from experiences can be done from the browser of a computer, but also from the browser inside the immersive glasses themselves, achieving a much more reliable final result
- In addition, we will integrate in the short term a proprietary development that offers a cloud rendering service to work with “heavy” content (4K and 8K videos, large 3D files...) in the cloud and relieve the final devices (mobile phones, tablets) from this immersive processing.

TIWP (ASSET)



Use case 1 – 3D: Space Geometry exercise

<https://youtu.be/CXVfjLHFbGA>



Use case 2 - 360: Real estate sale

<https://youtu.be/dorOL3oR0hY>

VR – Teleassistance (ASSET)

Training VR - Evolution to remote collaboration/assistance on the go.

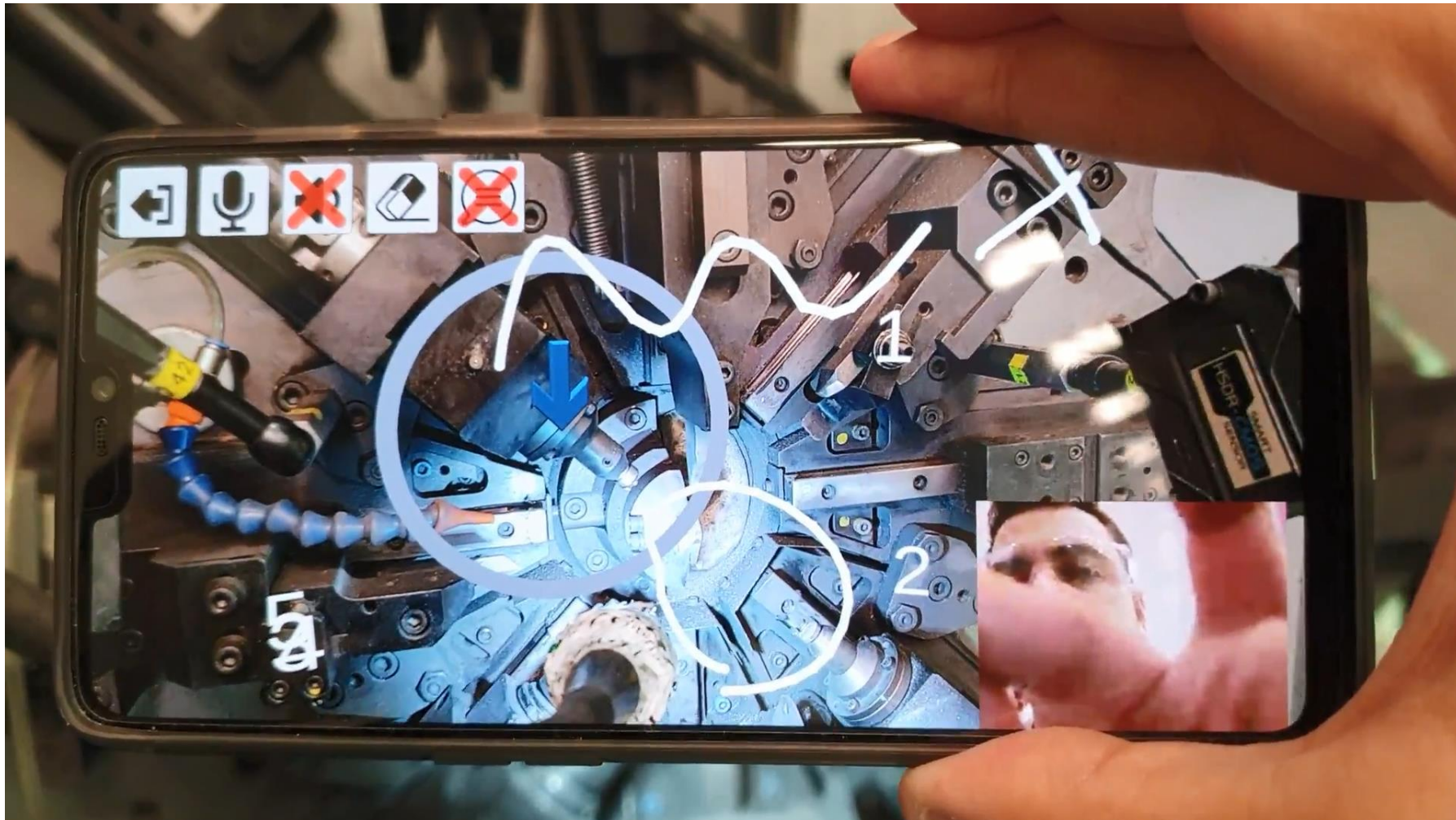
- Teleassistance system for VR environments
- Realtime 3D Experience, 3 options:
 - a. Learning alone in VR
 - b. Collaboration between Virtual Reality Users
 - c. Assistance through a non immersive device
- Full duplex audio

VR – Teleassistance (ASSET)



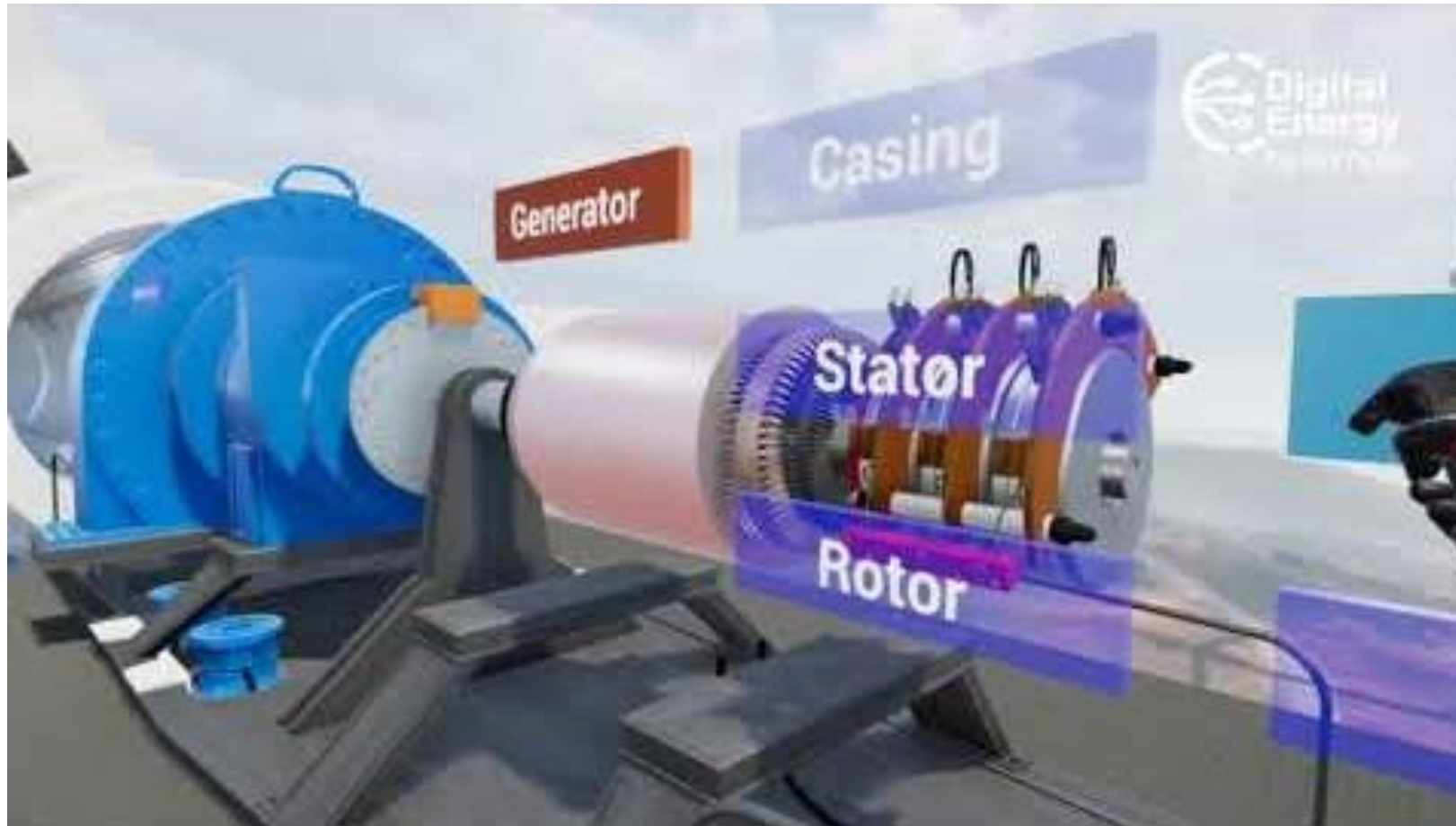
<https://youtu.be/EmxNm6ptXNU>

AR – Teleassistance (ASSET)

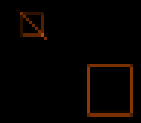
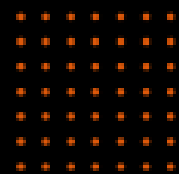
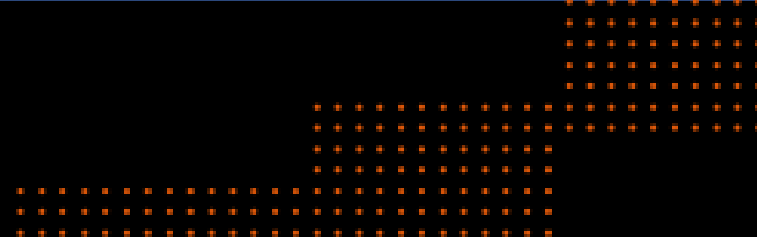


<https://www.youtube.com/watch?v=3n9QW-fv9m4>

Digital Twin of a Wind Turbine Power Train



https://youtu.be/lp2yML_tyUA



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