



FoF.NMP.2013-7

New hybrid production systems in advanced factory environments based on new human-robot interactive cooperation

AR Enhanced Human Robot Interaction

Efficient use of Augmented Reality in Assembly Automation

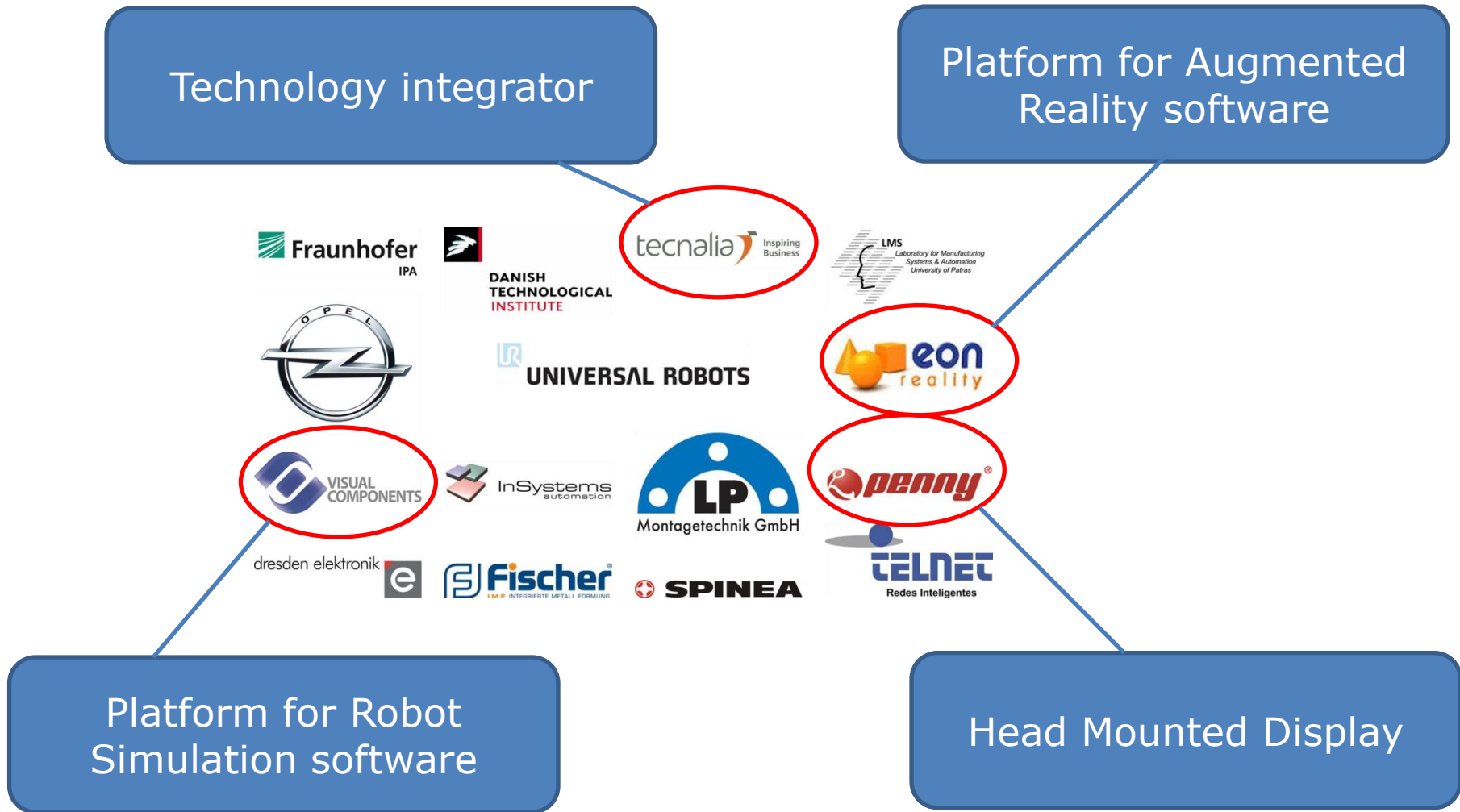
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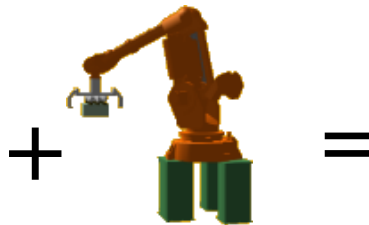
- What is Augmented Reality?
- Examples of how Augmented Reality has been used in the past and is used today
- Where is the technology today?
- How will LIAA use Augmented Reality?

Partners for Augmented Reality in LIAA



What is Augmented Reality?

- One image from the real world and an overlay of some data.
- Many times we mean that we overlay some 3D object on top of a video image, but it can also be 2D (text, images) overlay.

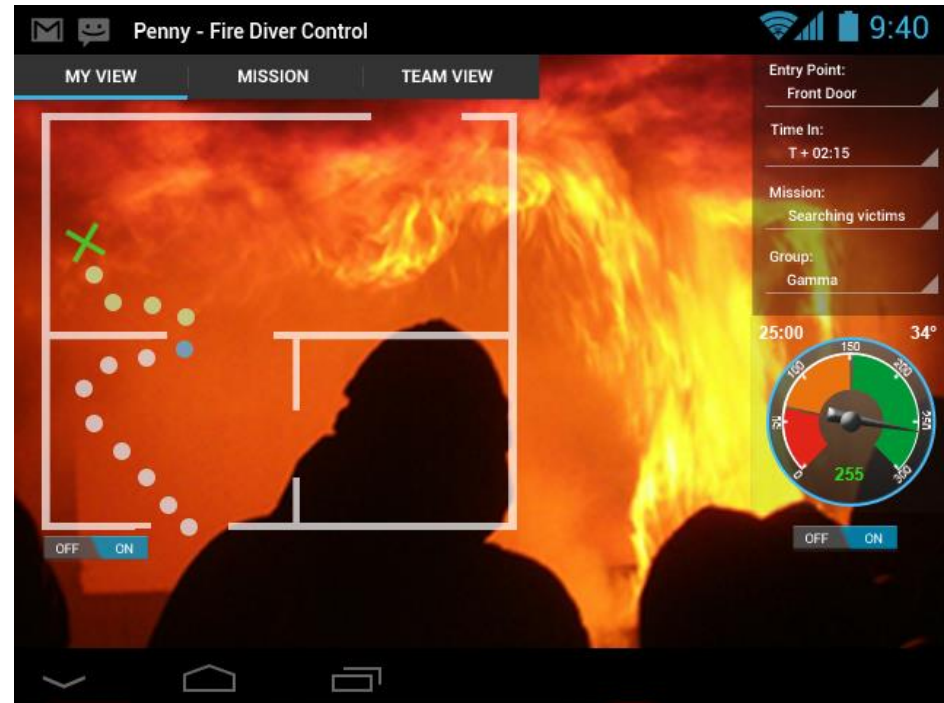


What is Augmented Reality?

- It can also mean that we see through glasses and overlay a 2D or 3D object as head up display information



What is Augmented Reality?



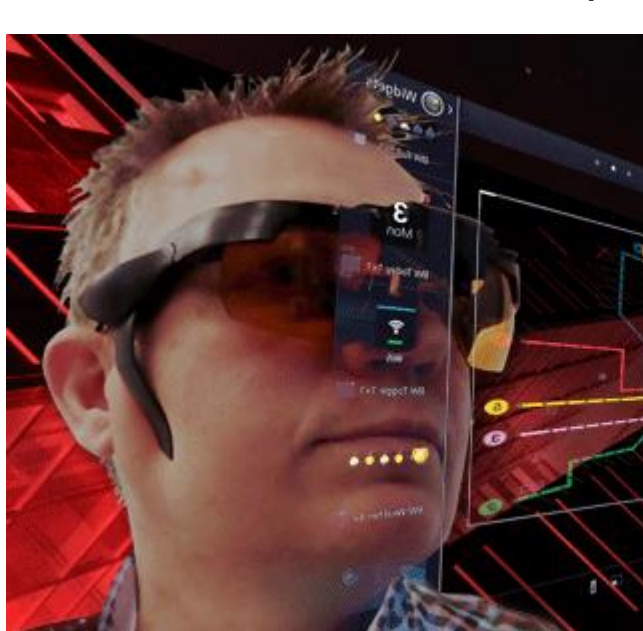
How does it work?

- Use a tracking image or a 3D object as a reference

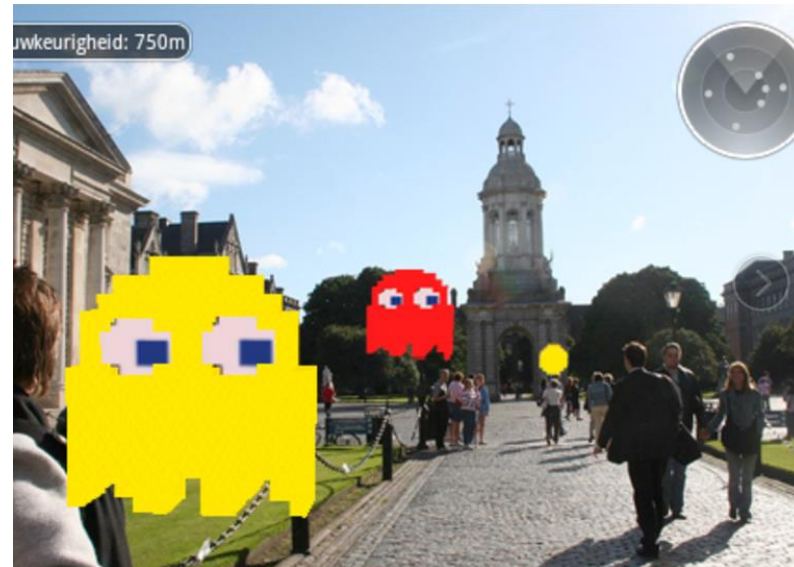


Which display devices can be used?

- Phone
- Tablet device
- Normal display (built in to laptop or standalone for desktop)
- Head up display like Penny
- Head Mounted Display, HMD



Example of how Augmented Reality has been used in the past



And an example of how it is in use today

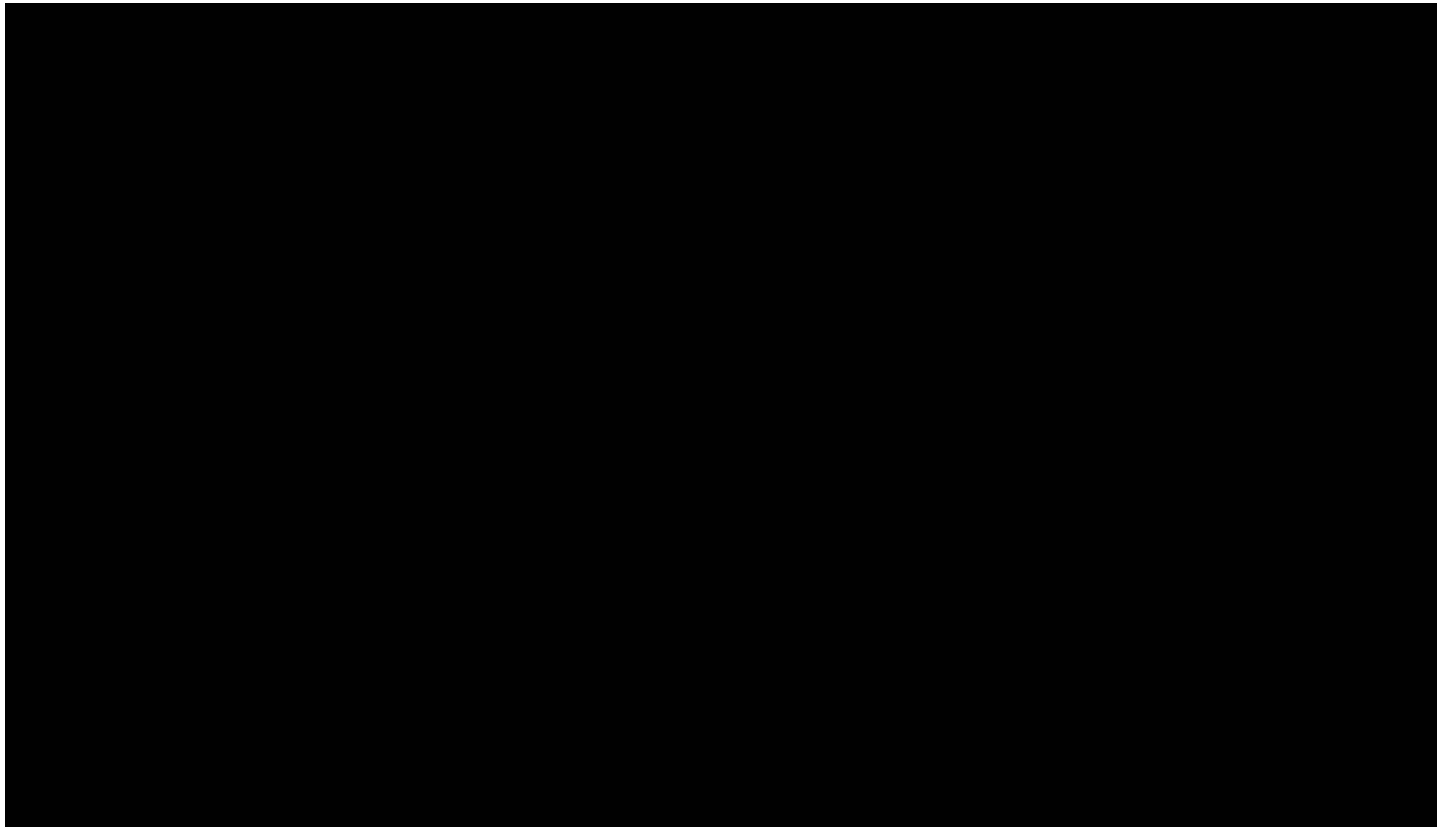


Where is the technology today?

- Google Glass – make the technology known for the masses...
- Penny – professional glasses for high end market
- Standard software implementations for most platforms



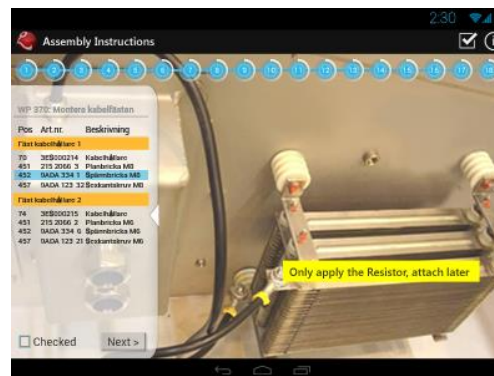
One possible idea for the future...



Source: <http://www.youtube.com/watch?v=P9KPJIA5ydsAR>

- **Objectives:**

- **AR-framework** containing different 3D-graphics and animation templates
- **AR-Hardware** that can be used in an industrial setting
- **AR-enhanced robot programming tool box** containing several programming support functionalities
- **Simulation environment** for the visual validation of the robot program using AR-Technology



**Develop – Implement – Test – Validate
the advanced user interfaces responsible
for the communication between human
operator and robot.**

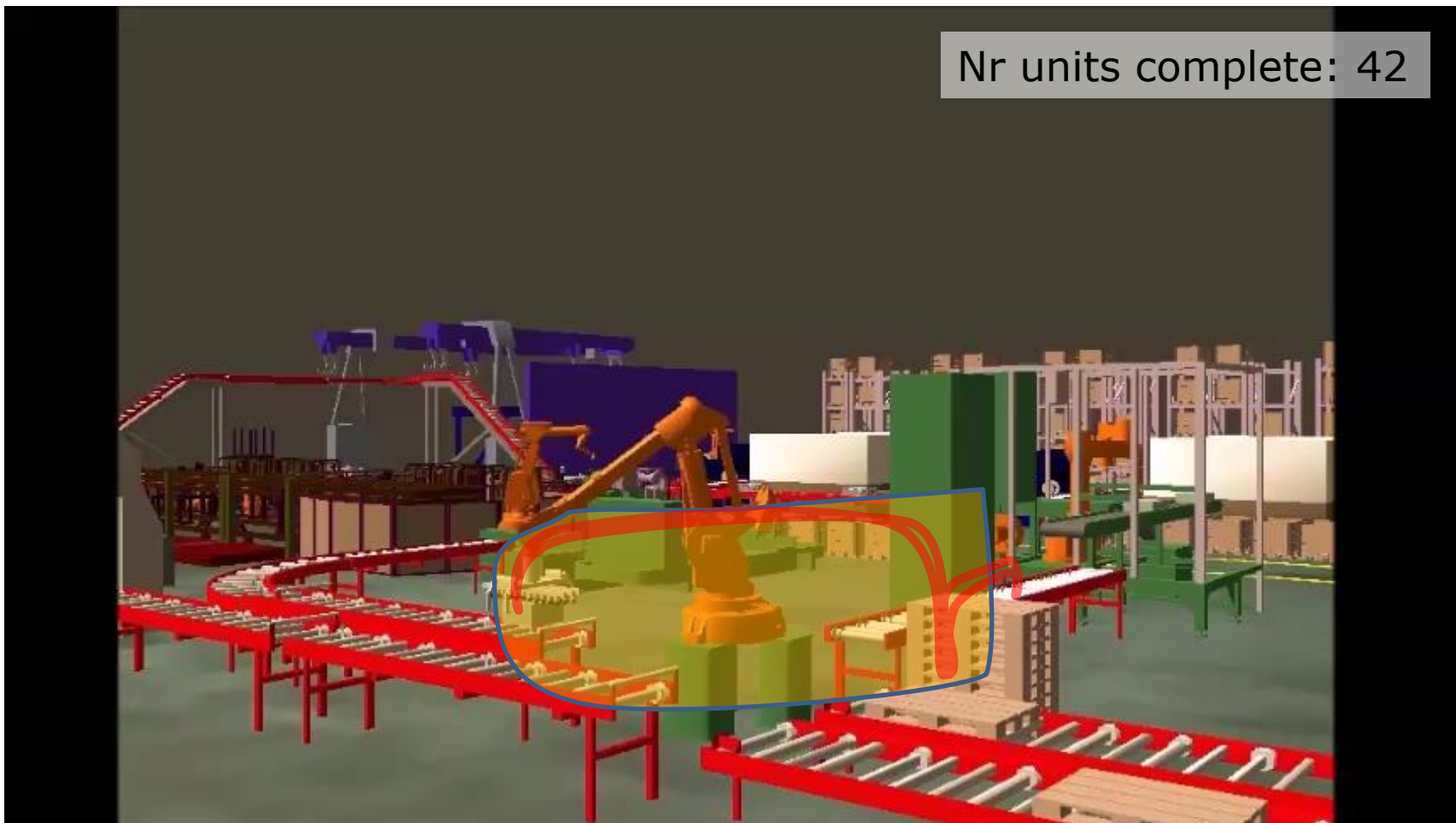
Use Augmented Reality for Intuitive programming of joining tasks

Use Augmented Reality for Intuitive troubleshooting

Use Augmented Reality for test, validation and monitoring

Use Augmented Reality for Intuitive interaction

Nr units complete: 42



Presenter

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Thank you for your Attention!

Questions?



For more information visit us at www.project-leanautomation.eu

The research leading to these results has received funding from the European Union Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 608604.