
Vehicle Automation: An Enabling Technology for Wireless Power Transfer

Kevin Heaslip, Ph.D., PE

Associate Professor

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Via Department of
Civil & Environmental
Engineering

What are the benefits of driver automation?

- **Increased**
 - **Safety**
 - **Capacity**
 - **Speed**
 - **Freedom**



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- **Challenge Quantifying Benefits**

Where we are today!

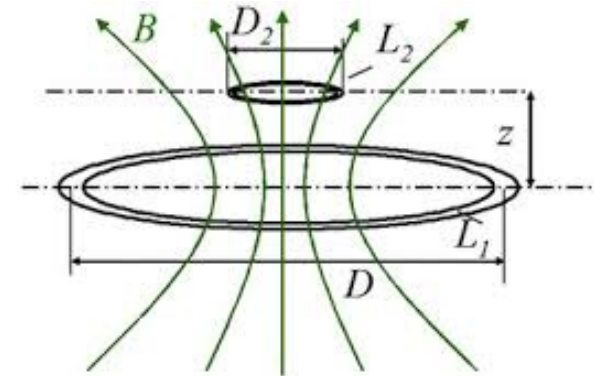
- **Stationary charging is being rolled out**
- **Limited testing of in-motion charging**



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Automation's Role in Stationary Charging

- Better alignment with the transmitting coil
- Auto Valet Service

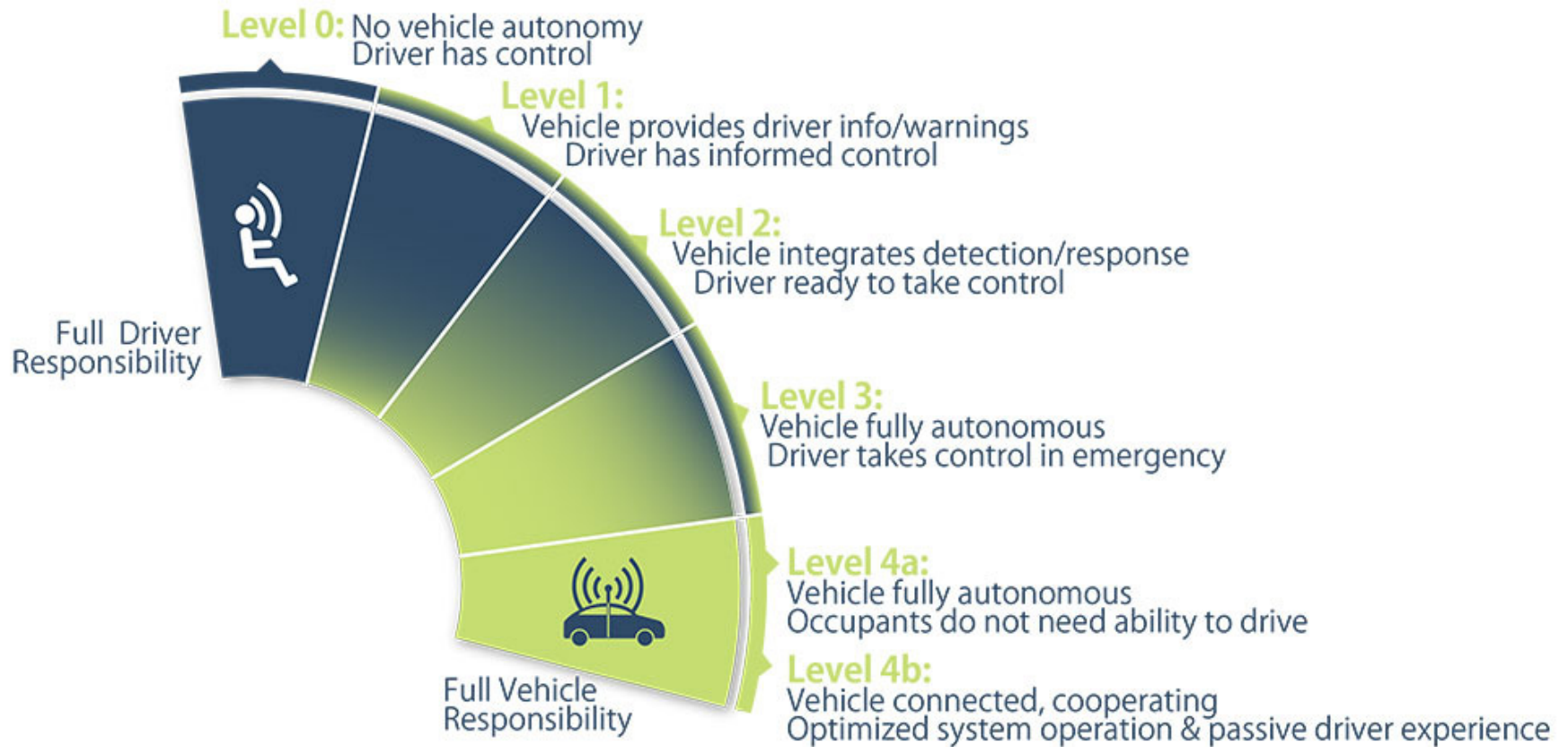


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Automation's Role in In-Motion Power Transfer

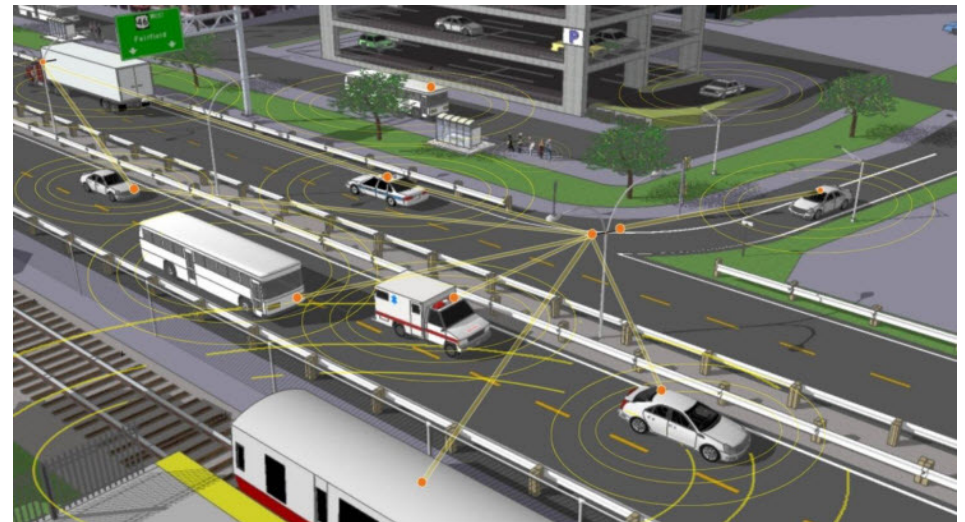
- Driver automation is an enabling technology for in-motion IPT, especially at high speeds
- Power transfer rate are dependent on the amount of time transmitter and receiver are aligned

Driver Automation Levels

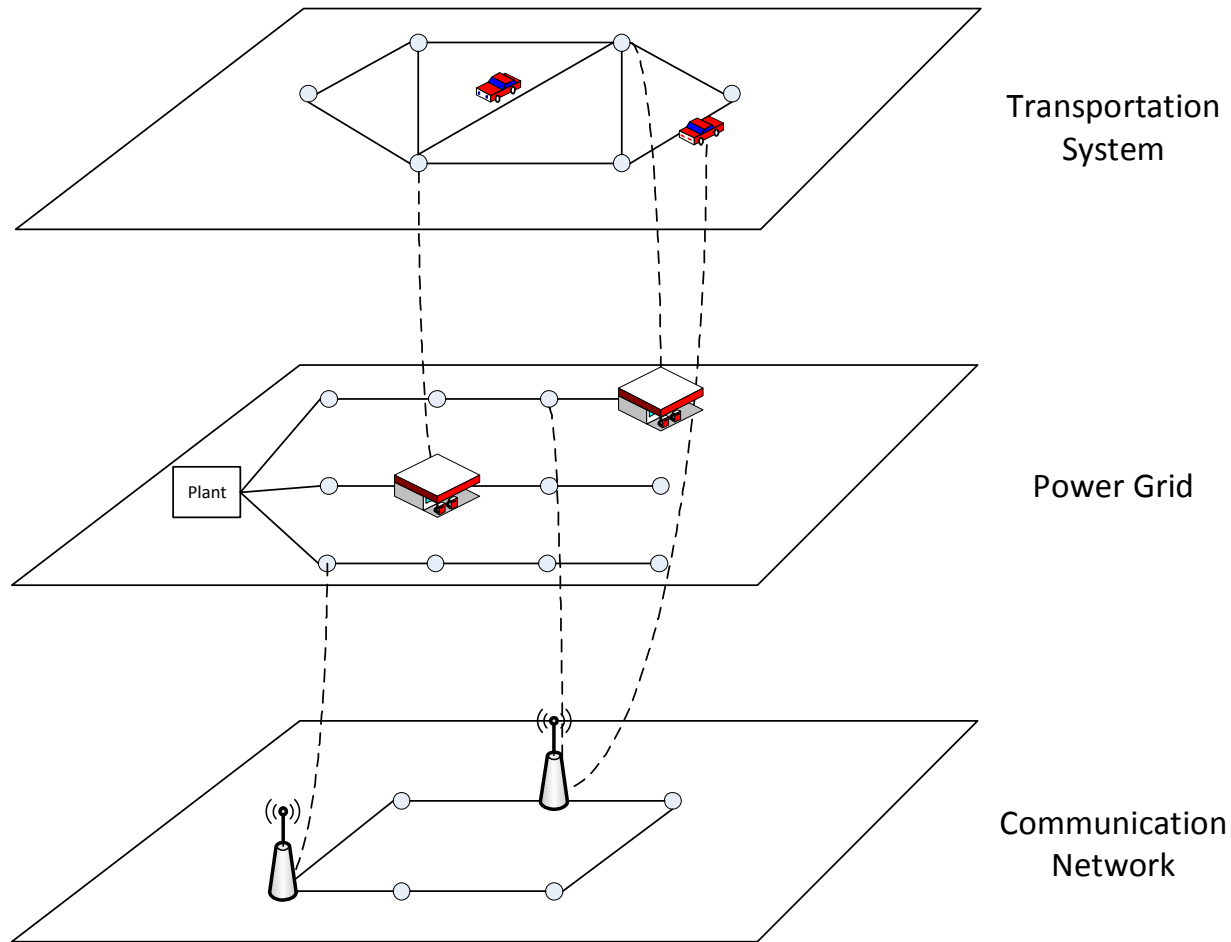


Vehicle Communication

- **Vehicle to Infrastructure Communication**
- **Vehicle to Vehicle Communication**

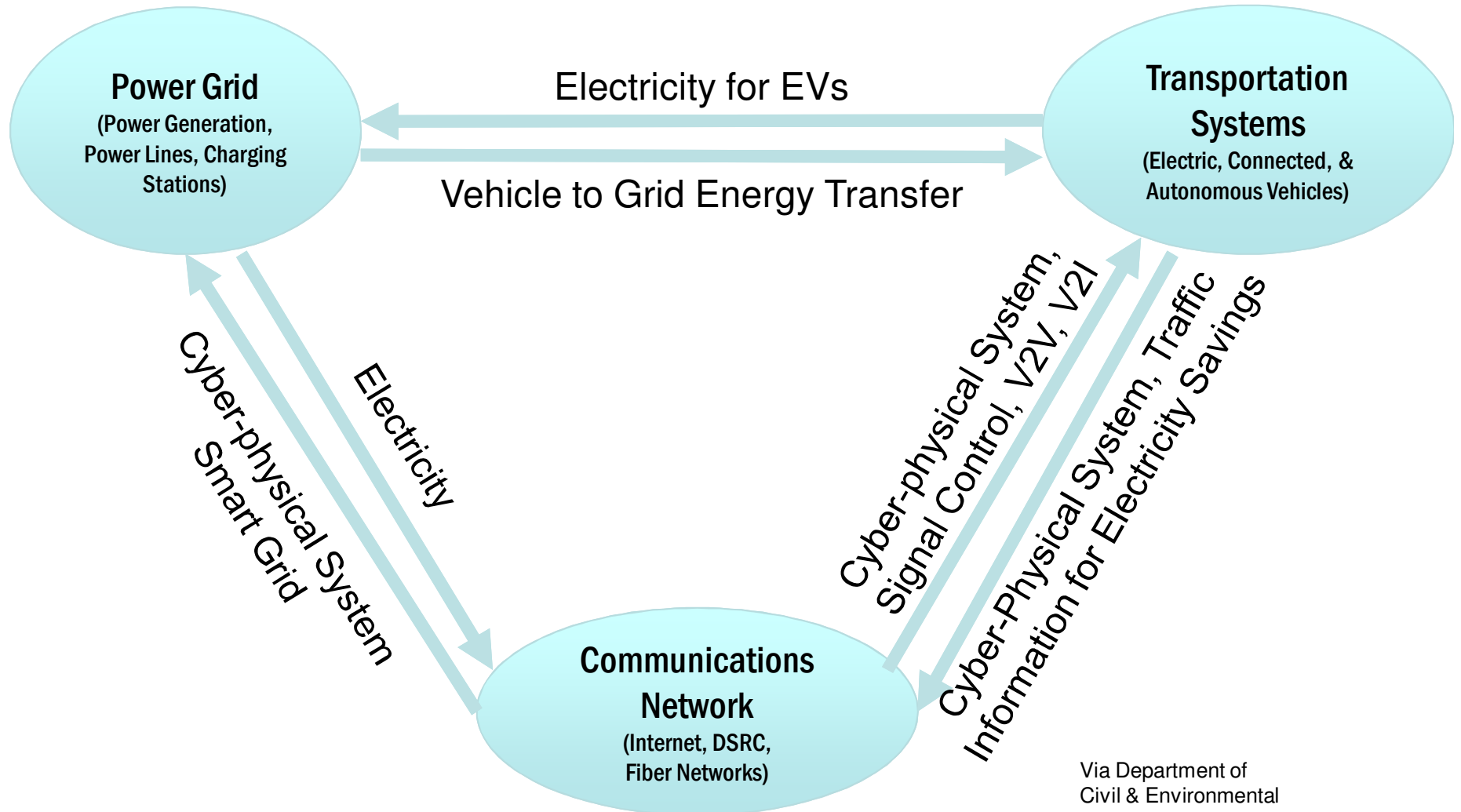


Interconnected Infrastructure



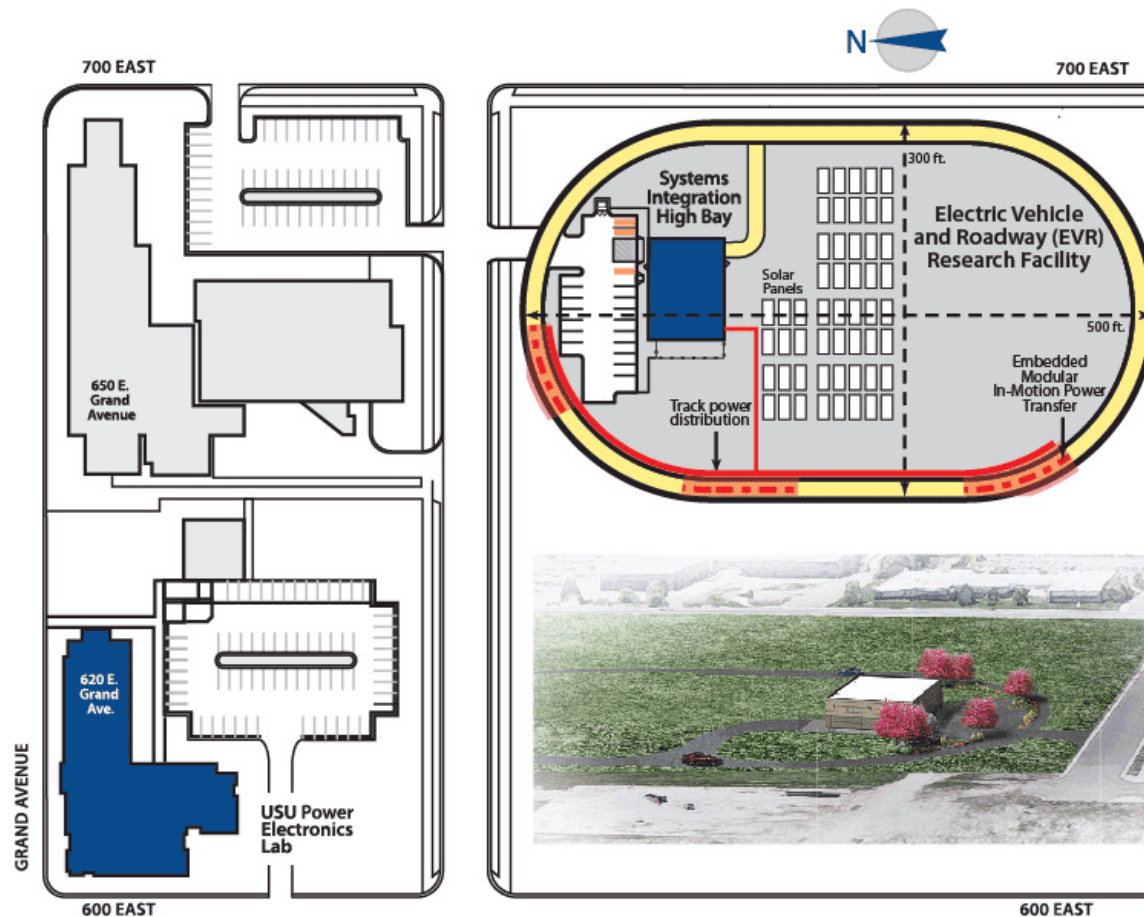
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Examples of Connections between Infrastructure



Vehicle Test Track

- Conceived by Womack, Muhs, Heaslip in 2009.
- Currently being built at USU



Conclusions

- **Stationary IPT will be a disruptive technology for vehicles**
- **Automation will be a disruptive technology for driving**
- **Combined there is great opportunities for success**
- **Many challenges still exist for in-motion charging**

Thank You for Your Time

- Kevin Heaslip
Associate Professor
900 North Glebe Road
Arlington, VA 22203
kheaslip@vt.edu
571-858-3070

