

Recent Advances in Vehicle Dynamics Data Acquisition

Vehicle Dynamics Expo

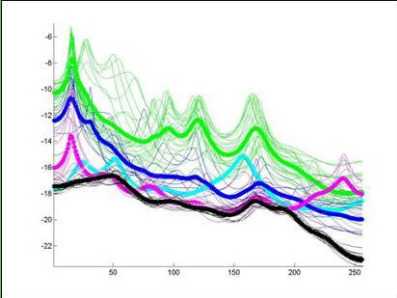
Robert Hoffman

October 23, 2008

Signal.X Technologies, LLC

Signal.X Overview

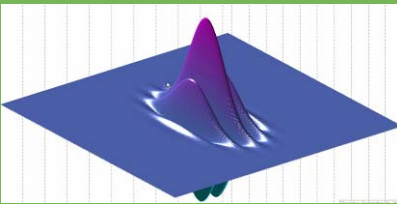
Signal Processing



Mobile Acquisition



NVH Training



Signal.X
Technologies

NVH Engineering Services

Custom Application Development

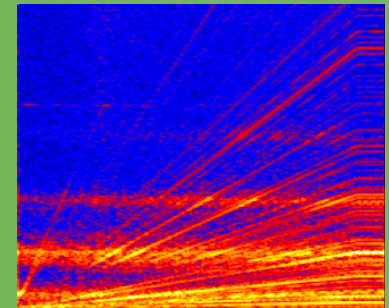
Specialized Training Courses

NVH Signal Processing

www.signalxtech.com



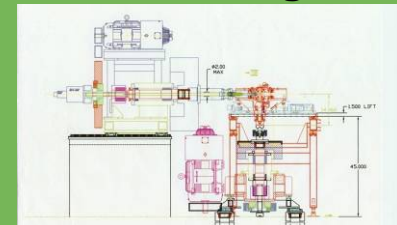
NVH Diagnostics



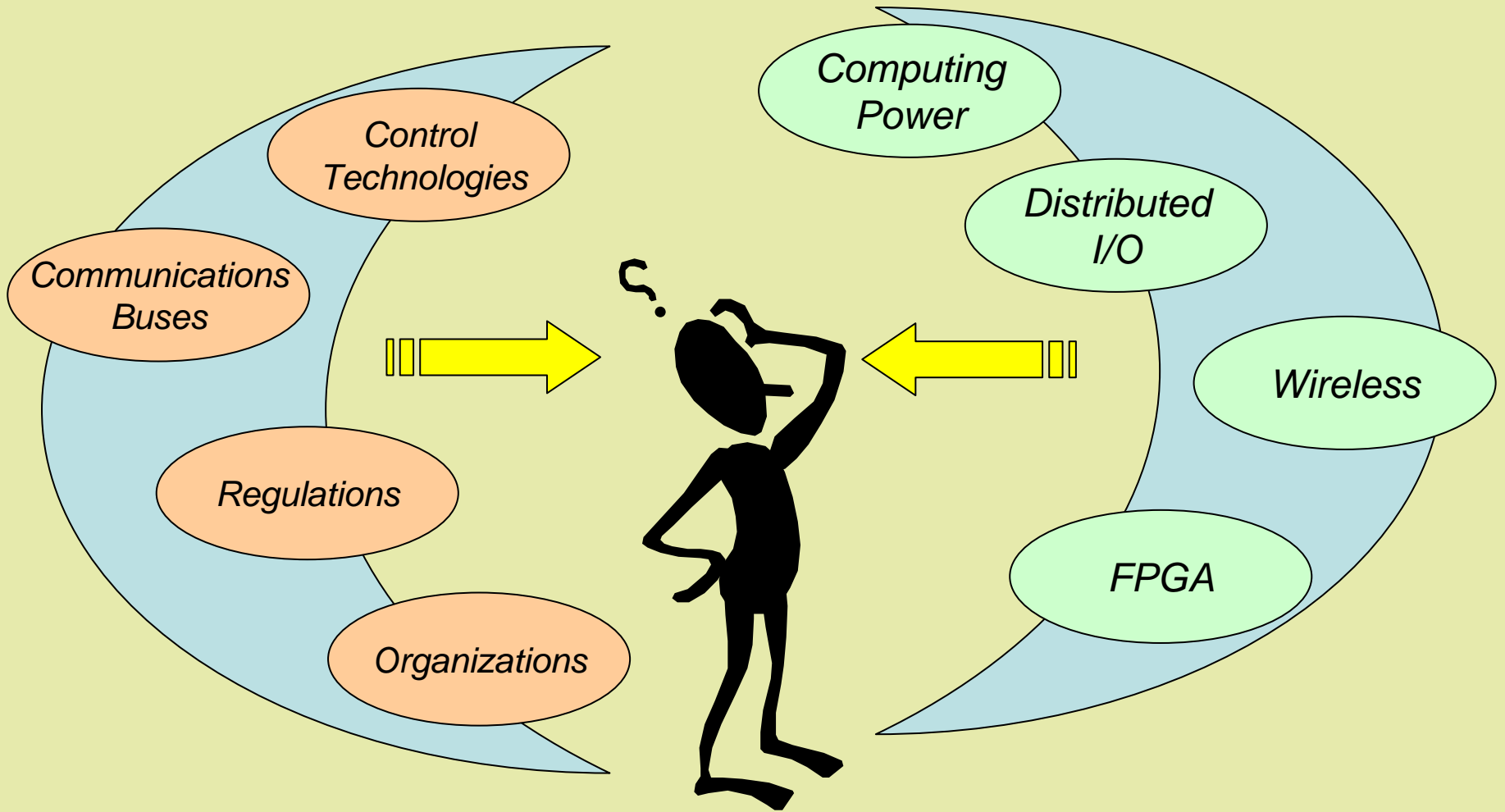
Production Test



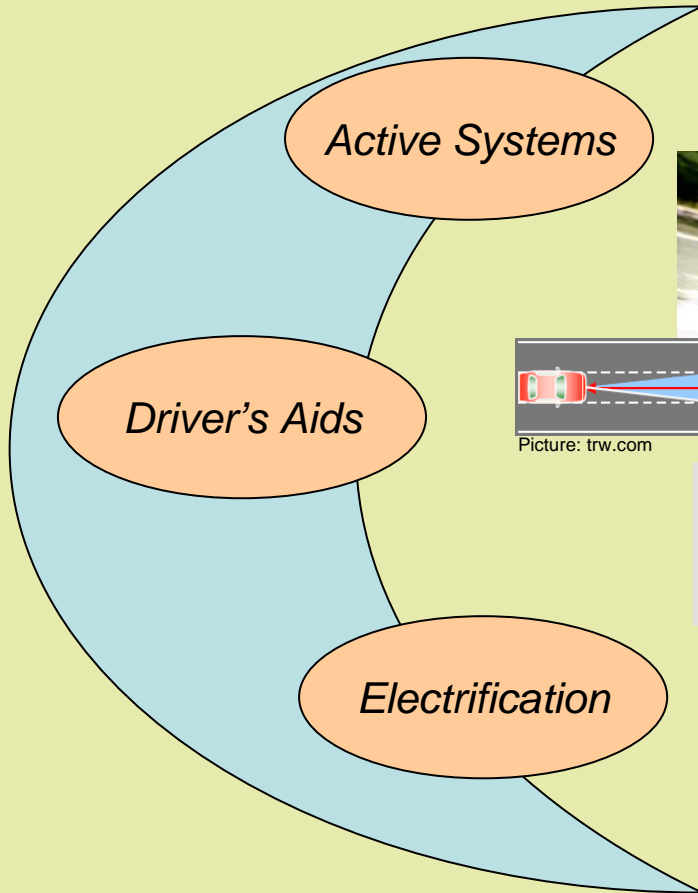
Machine Design Aid



Challenges and Solutions



Control Technologies



Picture: trw.com



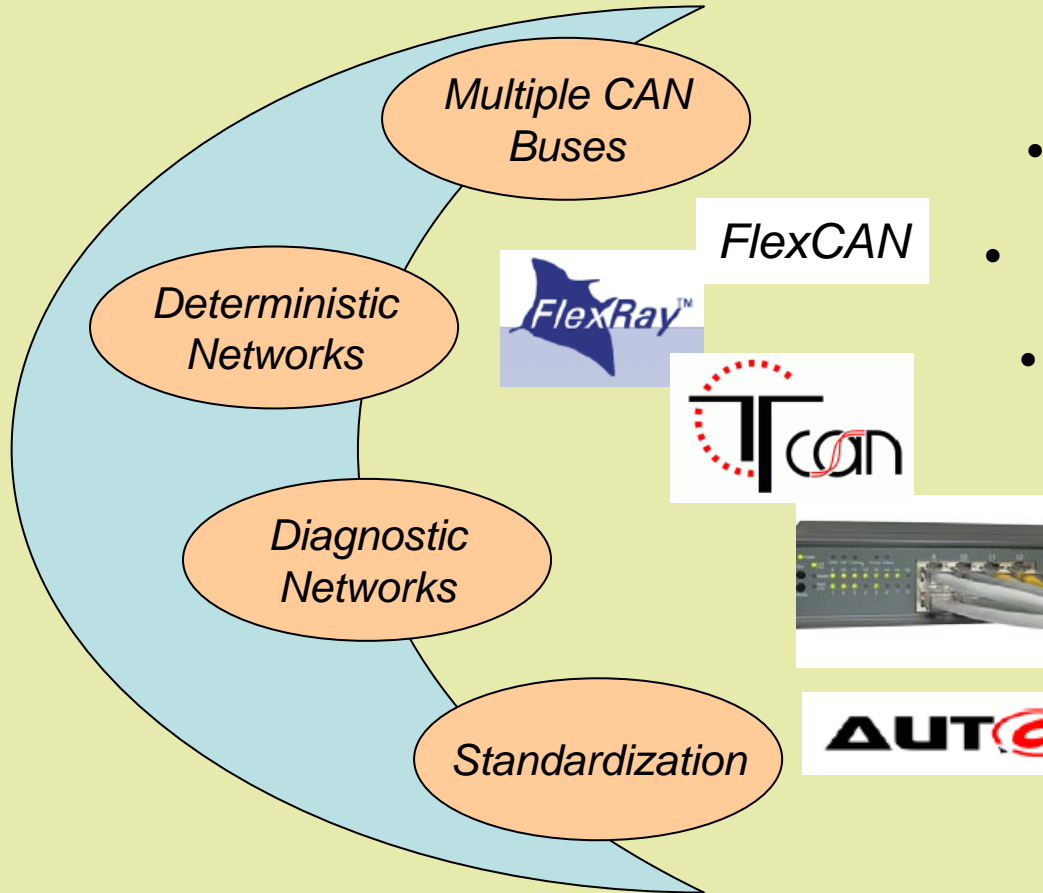
Picture: zf.com



Picture: arvinmeritor.com

- Higher levels of ECU interaction
- Increased bandwidth requirements
- Increased number of ECU's
- Increased supplier interaction
- Vision systems

Communications Buses



- Minimum of two CAN buses
- Multiple speed networks
- Access information through gateways
- Diagnostic vs. passive listening
- Timing information critical
- Increased bandwidth

Regulations

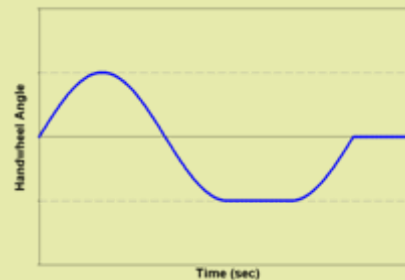
ESC Standard



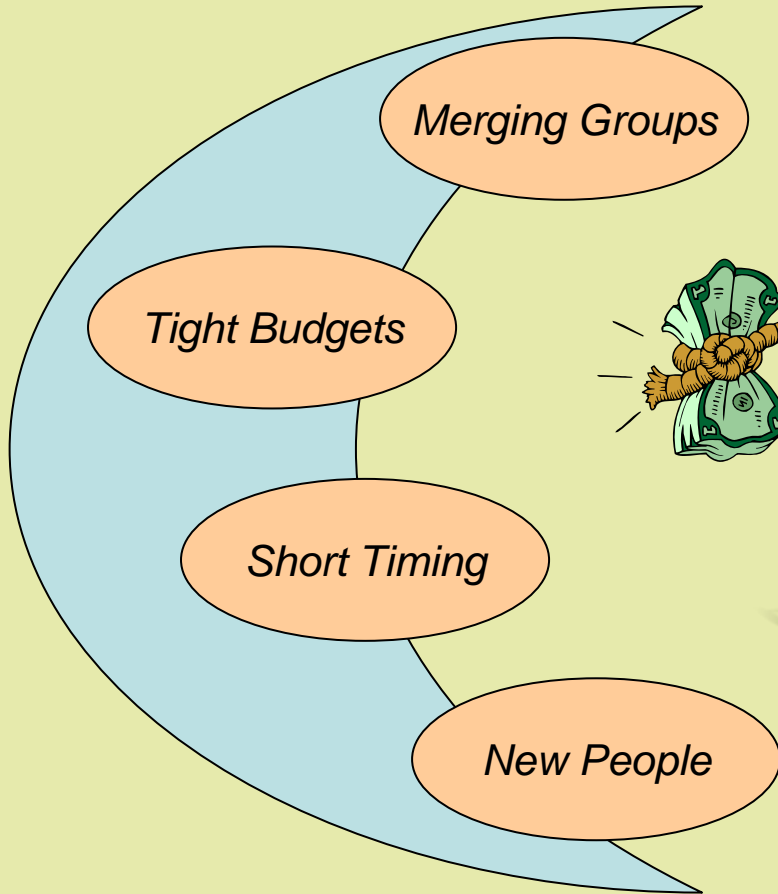
FMVSS 126



- Steering controller
- Integrated data acquisition
- Data integrity



Organizations



- Different data needs
- Reduced investment
- Do more with less
- Inexperienced technicians/drivers

Solutions

Computing Power



- Embedded capability
- Multi-threaded processing
- In-vehicle power
- Advanced triggering
- Higher channel counts
- Higher bandwidth

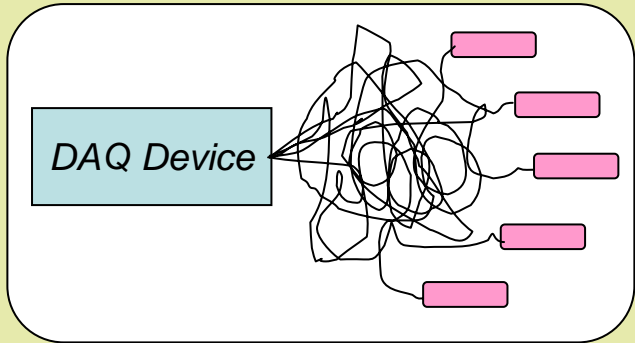
*Do More
With Less*

Multi-Core

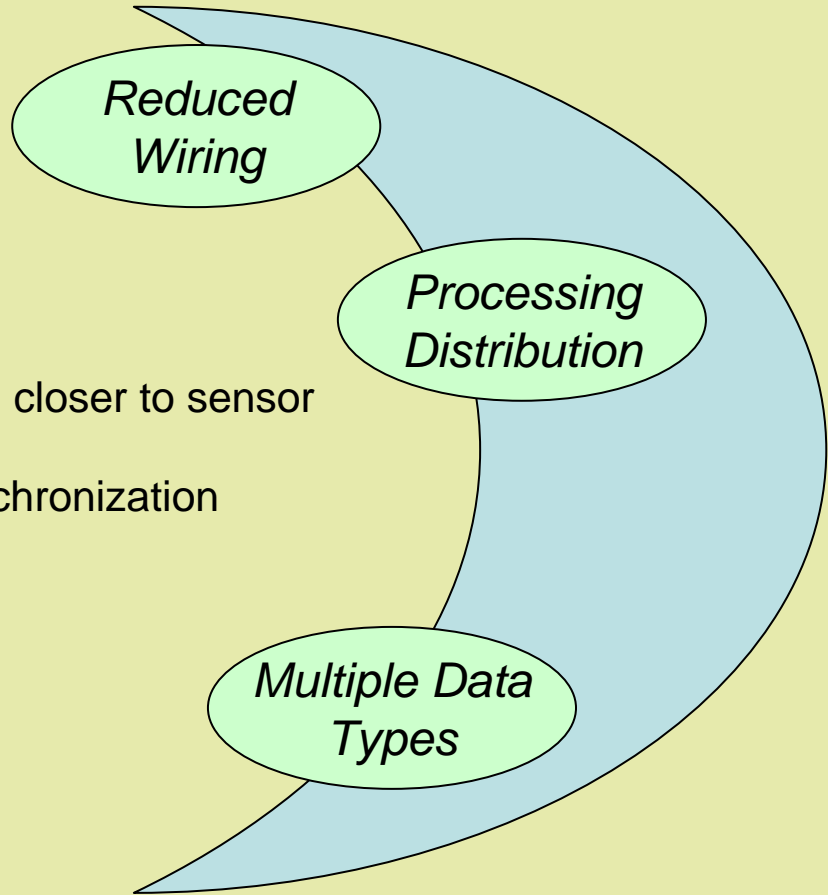
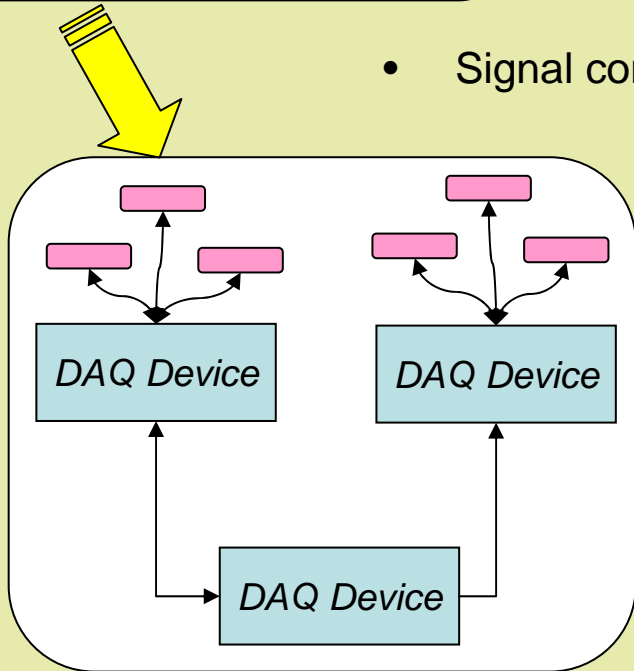
Power Usage

*Onboard
Processing*

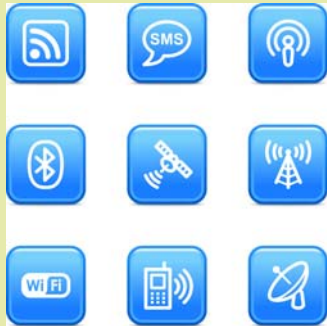
Distributed I/O



- EtherCAT
- Signal conditioning closer to sensor
- Synchronization



Wireless



- Fleet testing
- Automatic data retrieval

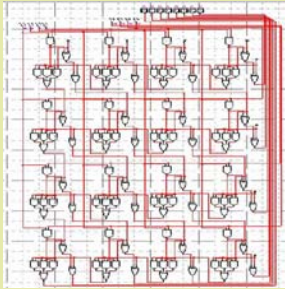
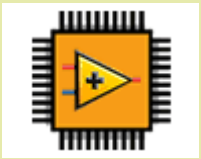
Synchronization

Data Management

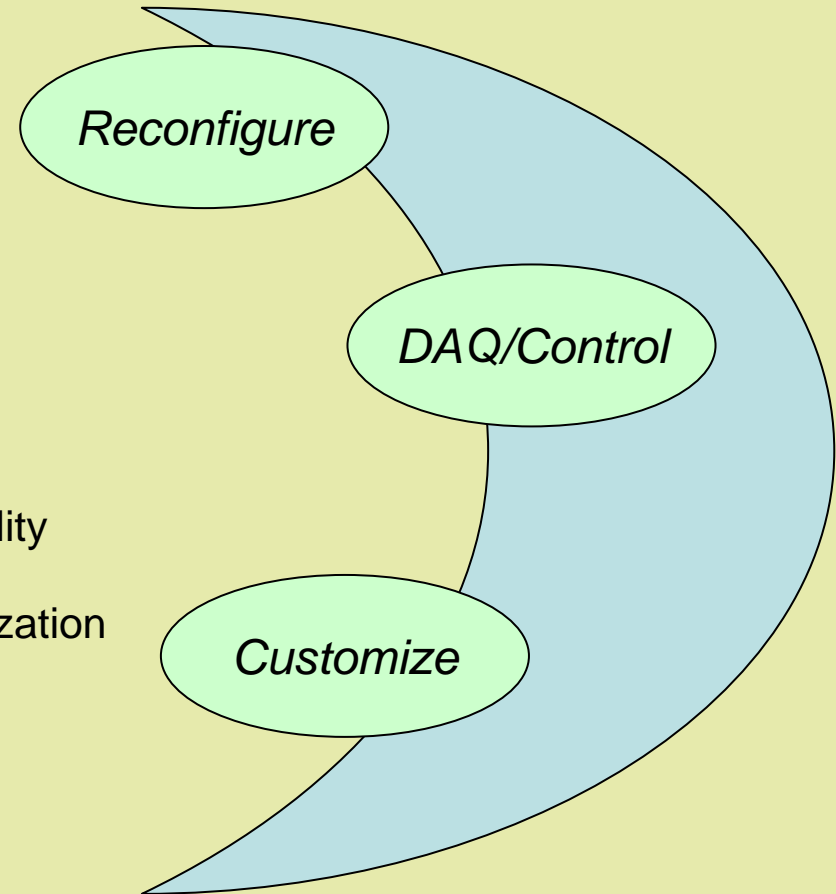
Driver's Aids

FPGA

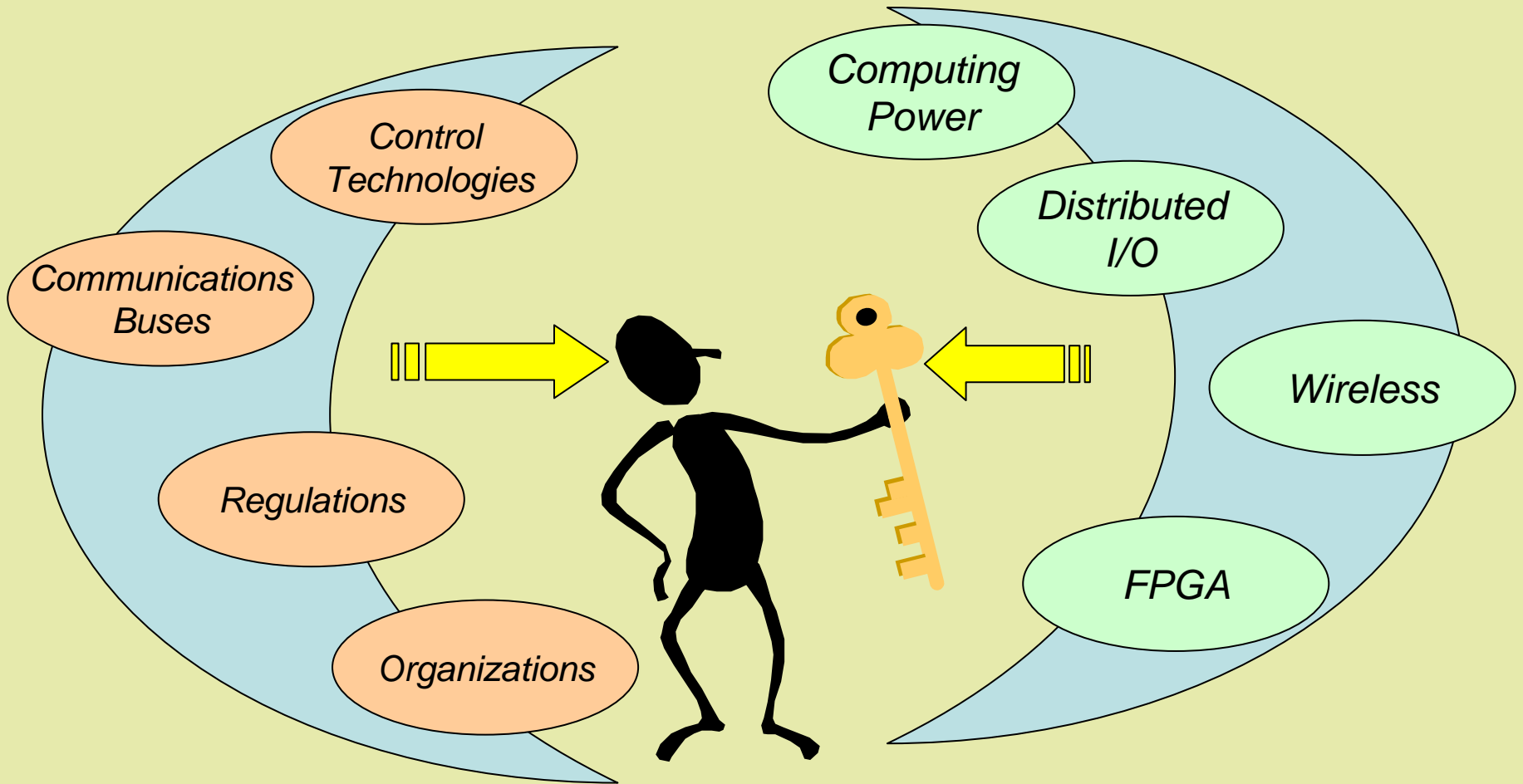
- Field Programmable Gate Array



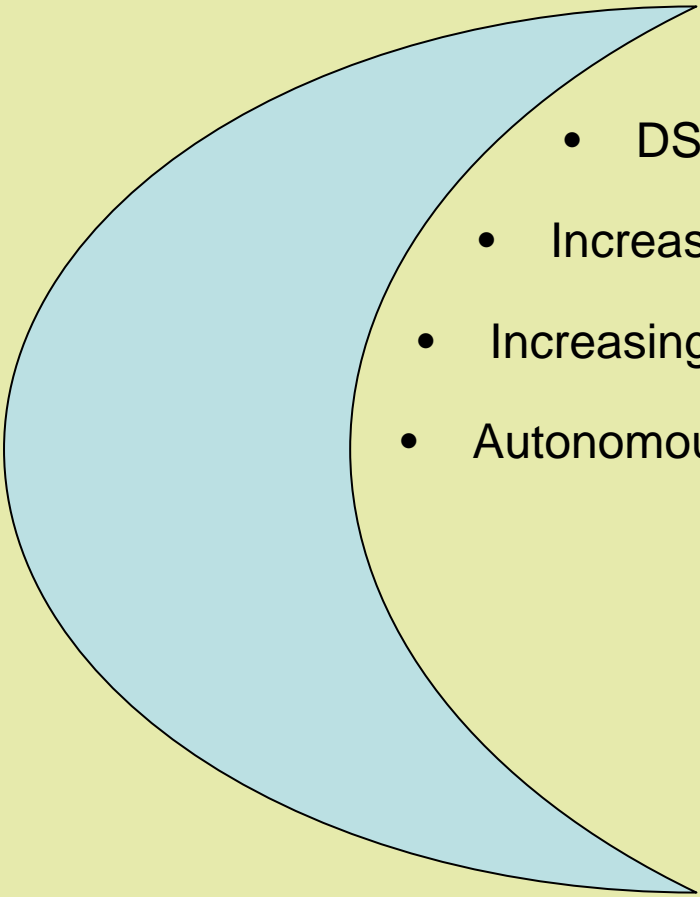
- High speed
- Mission flexibility
- Combine functionality
- Standard platform for customization



Current State-of-the-Art



What's Next

- 
- DSRC – Vehicle 2 Vehicle Communications
 - Increasing standardization
 - Increasing control and bandwidth
 - Autonomous vehicles

Thank You!

Please visit us at the Test Expo
National Instruments Booth

Signal.X Technologies, LLC