Passive to Active Safety Trends

In Crash
Manually Operated

Pre-Crash
Automatically Operated

In Crash
Automatically Operated

Vehicle Dynamics Expo 2008 – Stuttgart, Germany
Restraint Control Electronics

- Acceleration Satellite
- Pressure Satellite
- Airbag ECU
Brake-Based Stability Control Electronics

- Wheel Speed Sensor
- Brake Pedal Sensor
- Inertial Measurement Unit
- Steering Wheel Angle Sensor
- Brake + Hydraulic ECU

Vehicle Dynamics Expo 2008 – Stuttgart, Germany
Current Vehicle Architecture

- Vehicle CAN
  - Other ECUs
  - Airbag ECU
  - IMU

- Chassis CAN
  - Brake ECU
Industry Trends

• At least 3 global vehicle manufacturers already decided to integrate the IMU into the Airbag ECU.
• Several other vehicle manufacturers are planning studies/tests in 2008
Off-Zone Side Impacts

Sensing off-zone side-impacts could be improved with yaw rate data.
Side Pole Impacts

Sensing side pole could be improved with yaw rate data.
The Next Integration
Electronics Proliferation

Dozens of Stand-Alone ECUs
Two main types of electronics will emerge:

- Centralized Decision Maker
- De-Contented Slave Located at Actuator
Integration Path

Integration happens when:

- Different ECUs have same/similar components.
- Performance can improve.
- Suppliers can deliver and/or cooperate.
- OEM costs are reduced!!