Electronics and assembler-supplier relations

The growing role of electronics in automobiles
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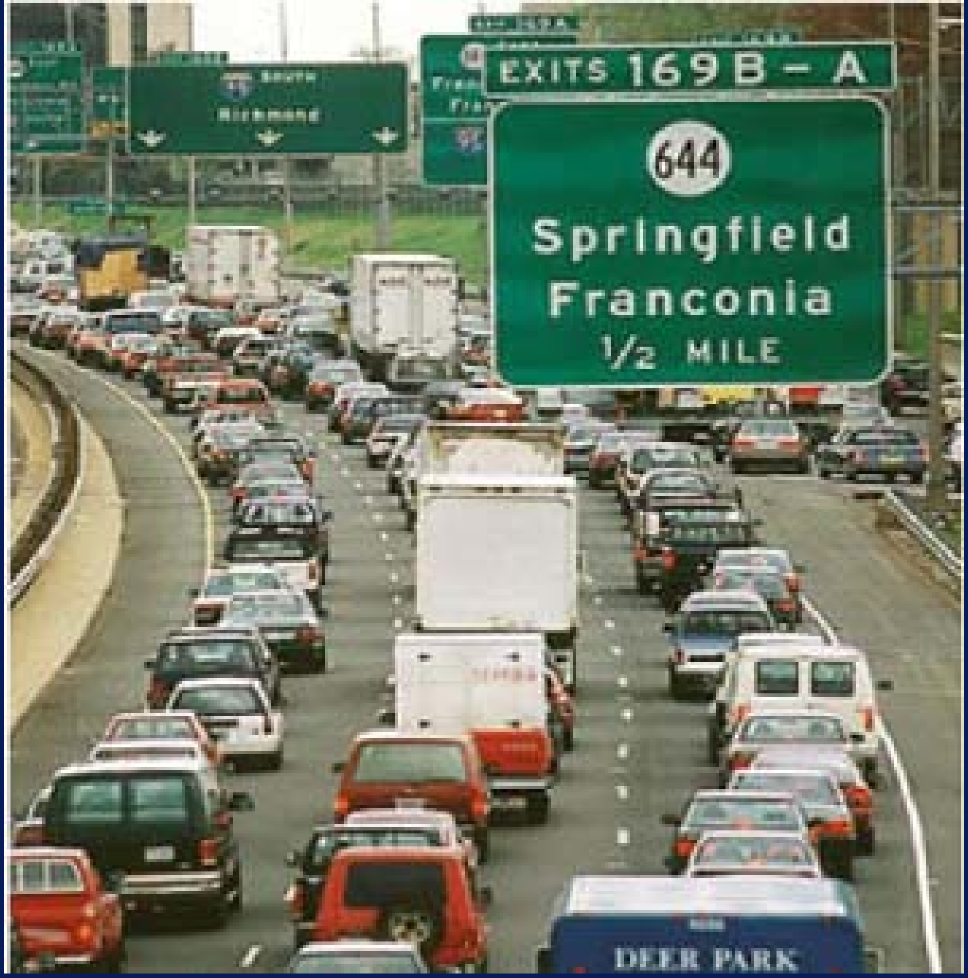
Outline

- Consumer perspective - Why do we buy cars?
- Production/ development of cars - Role of carmaker - supplier relationships
- Role of electronics

It is all about transportation



Or is it?

Stay tuned

First step to the "I-Car" ?

Stay connected

Why do we buy cars?

As consumers we value:

- Mobility
- Connectivity*

* Some more than others

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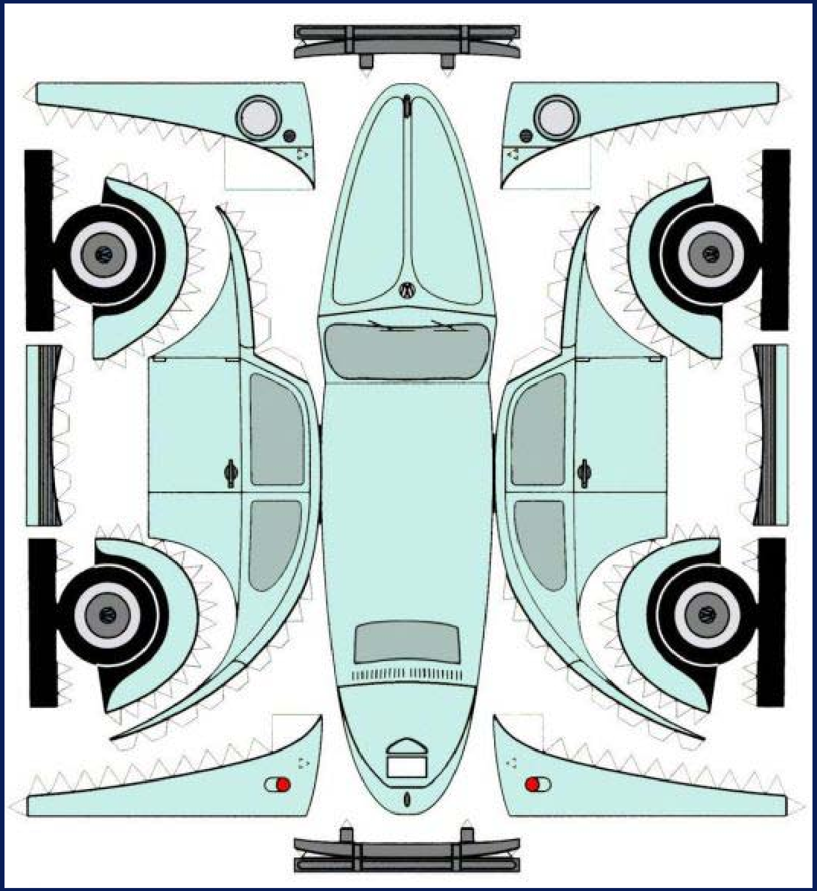
A car consists of many parts

Emergence of 5 major subsystems

- Chassis
- Interior
- Exterior
- Powertrain
- Electronics



Assembler-supplier relationships crucial

- Large literature makes that point (e.g. Helper, Dyer, Planning Perspectives annual supplier ratings).
- 3 decades of increased outsourcing established a tiered supply base.
- Today independent suppliers represent nearly ¾ of vehicle's value added.

Outline

- Consumer perspective - Why do we buy cars?
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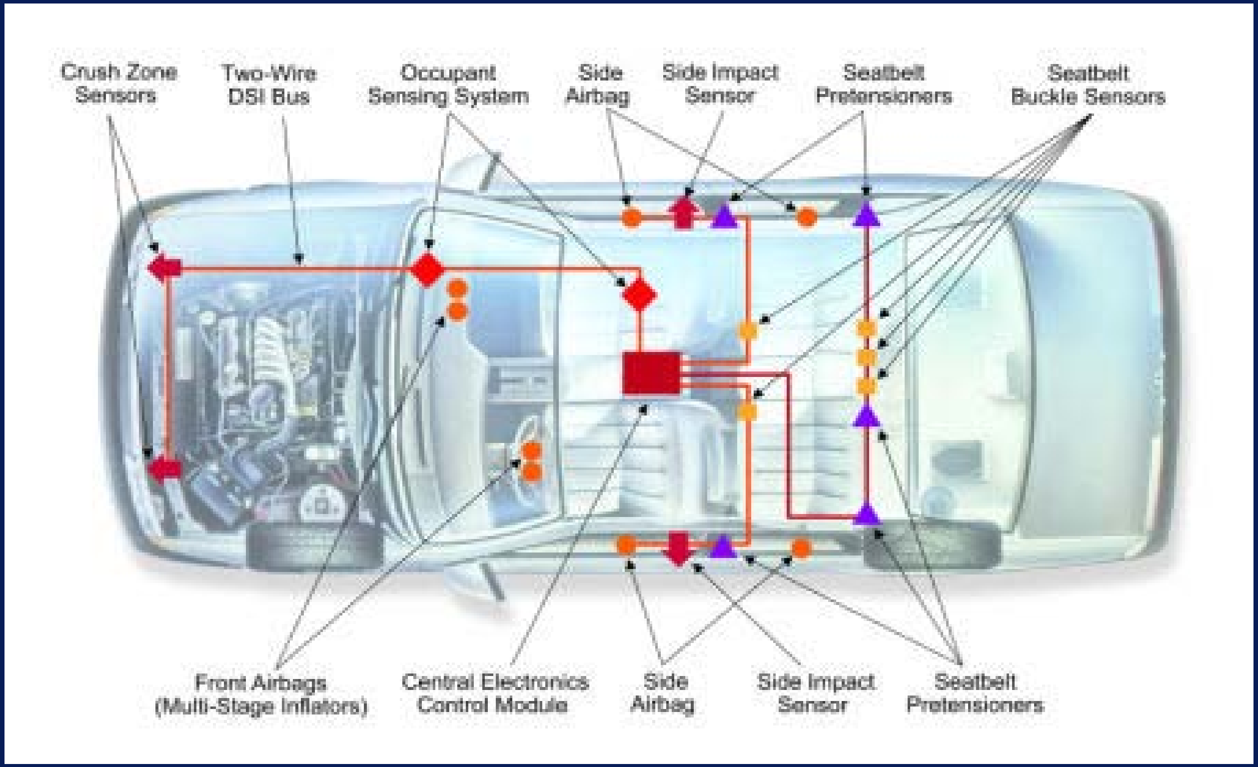
- Role of electronics
  - Electronics and mobility
  - Electronics and connectivity

Today's car is a network of computers

Example: Airbag electronics



Source: SAE, 2009

Electronics and mobility

- Electronics are being added to all major car systems.
- Applications are geared to enhance performance and safety.
- These changes tend to operate hidden from driver, as they enhance the provision of mobility.
- Example: integration of electric motor and conventional powertrain.

Supplier relations

- Despite growing electronics content, prevailing assembler-supplier relationships persist.
- Traditional parts suppliers, e.g. Bosch, Delphi, Denso, acquire and enhance electronics capability.
- Continued central role of OEM. E.g. Toyota holds key patents for hybrid powertrain technology
- Examples
  - evolution of seats
  - from hydraulic brake to “brake by wire”

Electronics and connectivity

- Connectivity is consumer-driven. It motivates applications, such as navigation systems (Dashboard electronics or telematics).
- Connectivity applications tend to originate outside of car (e.g. continue phone call while entering car) and before driving age is reached.
- Connectivity resides mostly in vehicle dashboard. It is therefore very visible to the driver. “Apple”, “Google”, “Blackberry” are highly visible brands.

Battleground dashboard

- Big boys of electronics meet big boys of autos
- Who will provide the value added?
  - car makers — all major OEMs
  - parts suppliers — Visteon, Renesas
  - electronic hardware suppliers — Pioneer, Apple
  - software companies — Microsoft, QNX

Supplier relations

- Much faster product cycles in consumer electronics (several generations within ownership spell of car).
- Branding can be powerful (I want to use my i-pod in my car). OEMs pursue similar strategy (MyFord Touch vs MyLincoln Touch).
- Bottom line: At this stage, carmakers do not appear to be in driver’s seat (remember the “i-drive” debacle?).

Summary (1)

- Electronics content in vehicle is growing fast.
- Electronics support two distinctly different applications. Each has different implications for carmaker – supplier relations:
- 1. Mobility
    - Cars have become networks of microchips. Electronics are being integrated into the provision of mobility by way of existing supplier relationships.

Summary (2)

- 2. Connectivity
  - Today's driver wants to stay connected while in the car. Cars are becoming extensions of existing electronic devices. Carmakers need to interact with the electronics industry, which moves at a much faster pace. Seamless provision of connectivity by the carmaker can be a powerful branding and differentiation device.

Outlook – will there be an “I-car”?

- Parts of cars have been branded before: Body by Fisher, Hydramatic transmission, Bosch antilock brakes.
- These supplier brands ultimately disappeared (e.g. ABS became a commodity part). The carmaker’s brand has come out on top each time.
- Dashboard electronics might well be different due to the prevalence of non-auto applications. To be continued.

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