



International Telecommunication Union

Mobile Device Integration

Opportunities and Risks

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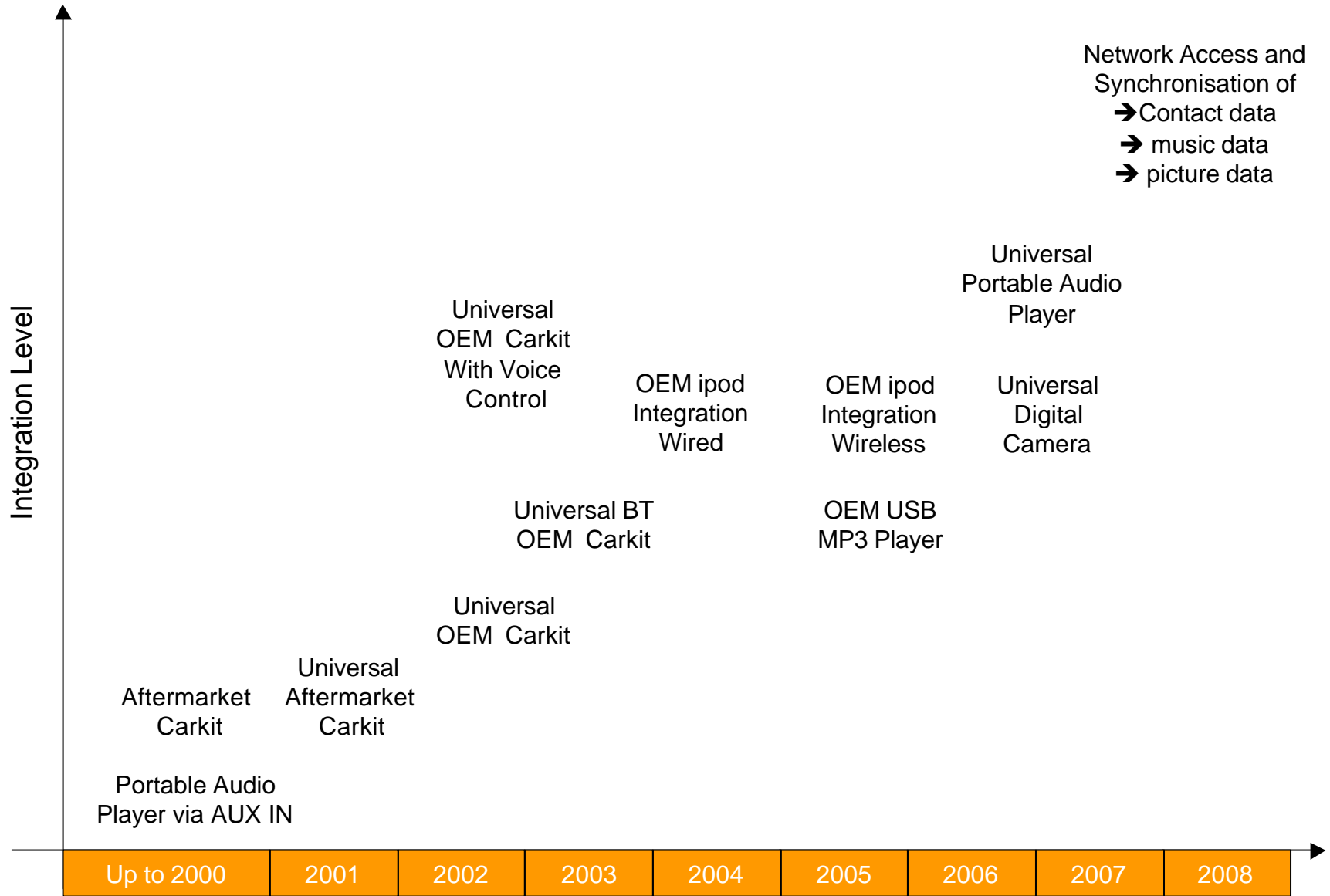
"The Fully Networked Car, A Workshop on ICT in Vehicles"
ITU-T Geneva, 2-4 March 2005

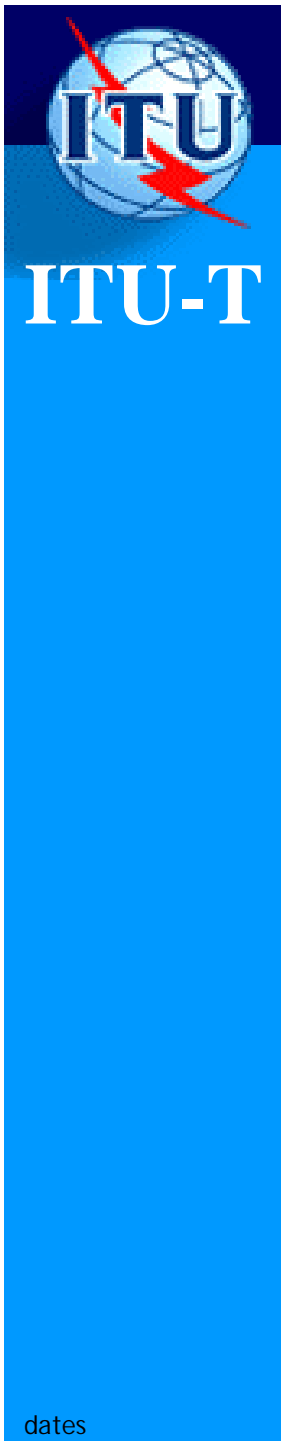


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Levels of mobile device integration





Challenges of HMI design when integrating mobile devices

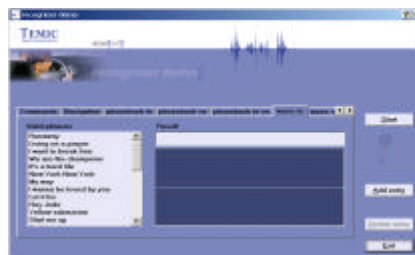
- The HMI of the mobile device is not accessible
During driving
- The HMI of the mobile device is not suitable for use
During driving (e.g. search in a phonebook)
- The HMI of the car infotainment system is owned
by the car OEM
- The car OEM has a stronger brand name than the
mobile device OEM
- Mobile Device industry is moving fast in terms of
new features and new products
- Mobile Device industry has not agreed on
interface standards for their products

How can these challenges be overcome ?

The HMI of the mobile device is not accessible during driving

The HMI of the mobile device is not suitable for use during driving (e.g. search in a phonebook)

- ➔ Add functionalities of the mobile device HMI to the car HMI where appropriate
- ➔ Do not try to rebuild functions of the mobile device HMI in the car HMI where not appropriate
- ➔ Add speech recognition as a means to ease access to data that have been stored on the mobile device (e.g. access to phonebook data via speech recognition)



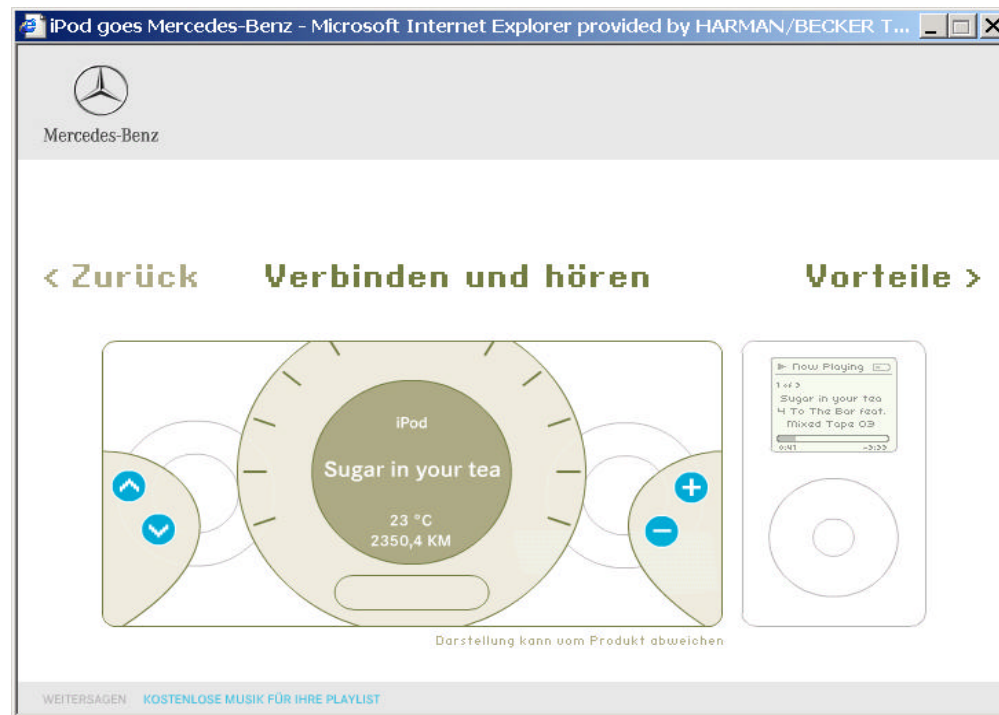
Example

- ➔ Add other HMI elements for further passengers if extended functionalities might be used (e.g. a handset or keypad connected via BT could be used to write SMS or email)

How can these challenges be overcome ?

The HMI of the car infotainment system is owned by the car OEM
 The car OEM has a stronger brand name than the mobile device OEM

➔ The car HMI wins and needs to be consistent over all applications (navigation, phone, audio, media player, ...)

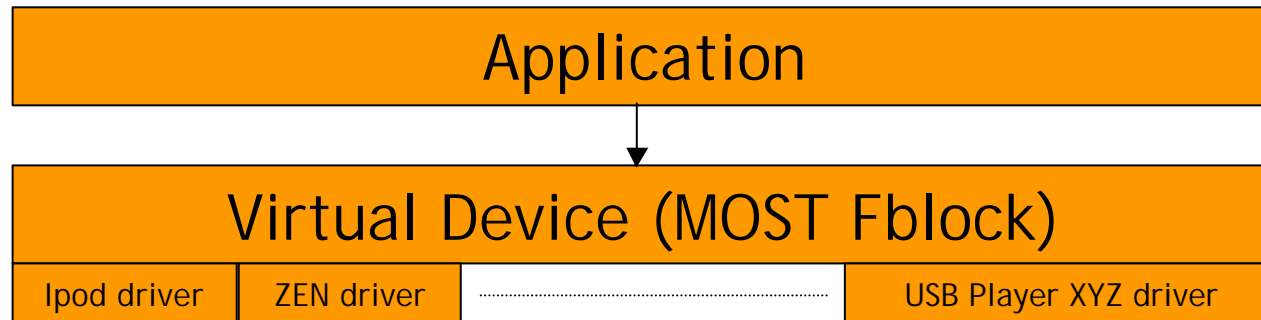


The Fully Networked Car, A Workshop on ICT in Vehicles
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How can these challenges be overcome ?

Mobile Device industry is moving fast in terms of new features and new products - Mobile Device industry has not agreed on interface standards for their products

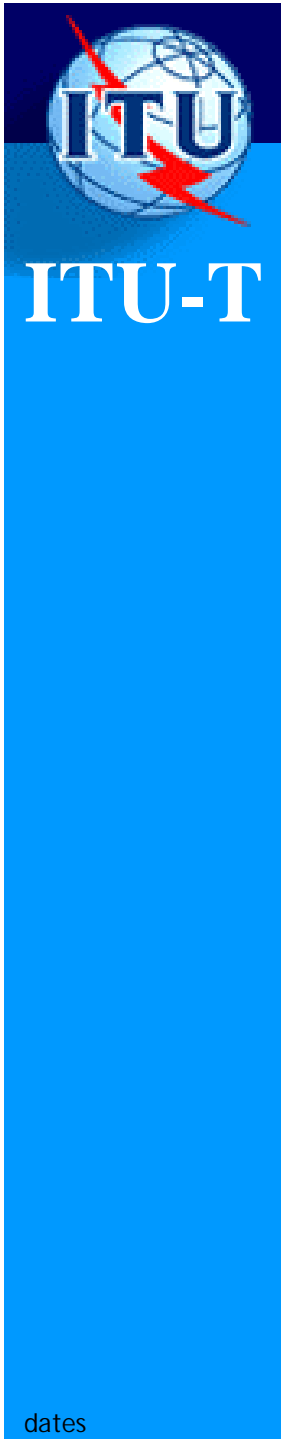
→ Define a virtual device and Separate abstract function from underlying physical device (ipod, Creative Labs ZEN player, ...)



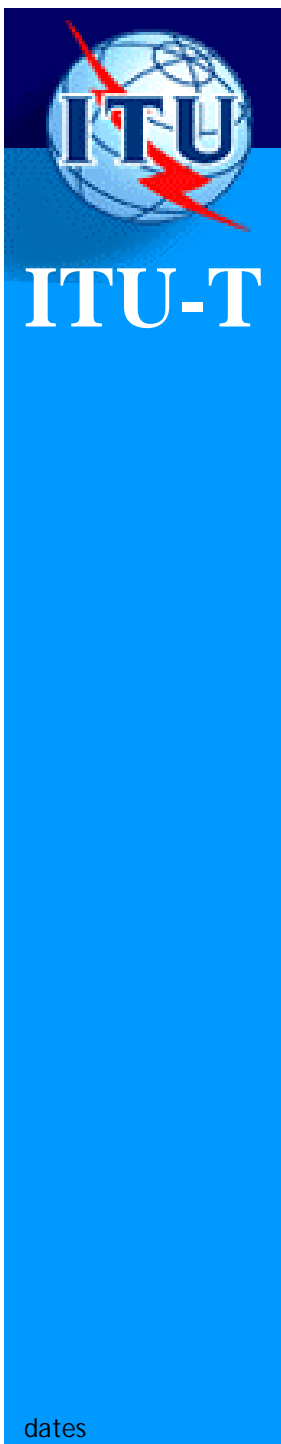
→ Define a universal physical interface, e.g.

- wireless technology like Bluetooth
- wired technology (e.g. USB) with adapter extensions specific to dedicated physical devices

Risks for car OEMs



- Extended development work to keep track with the mobile device industry
- Compatibility issues with mobile devices
- Customers complaining about incompatibilities or malfunctions due to errors in the mobile devices
- Mobile devices can replace functions that have been originally located in the car (e.g. navigation systems) and thus might reduce business.

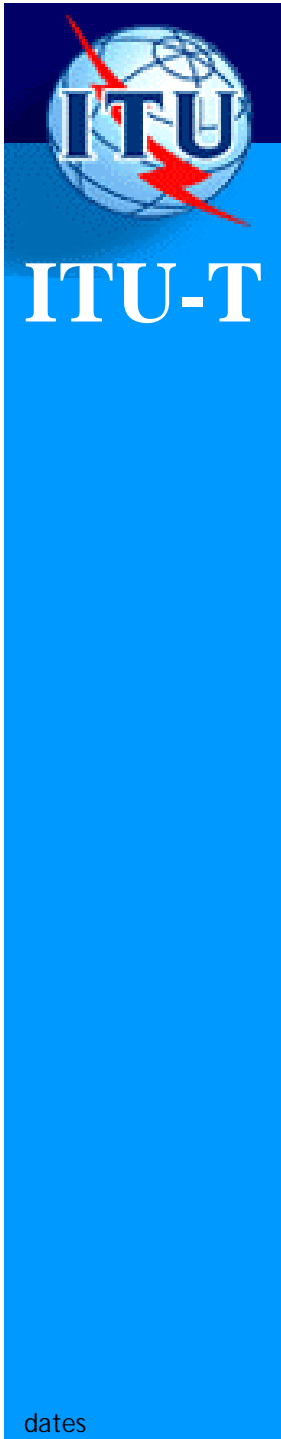


Opportunities for car OEMs

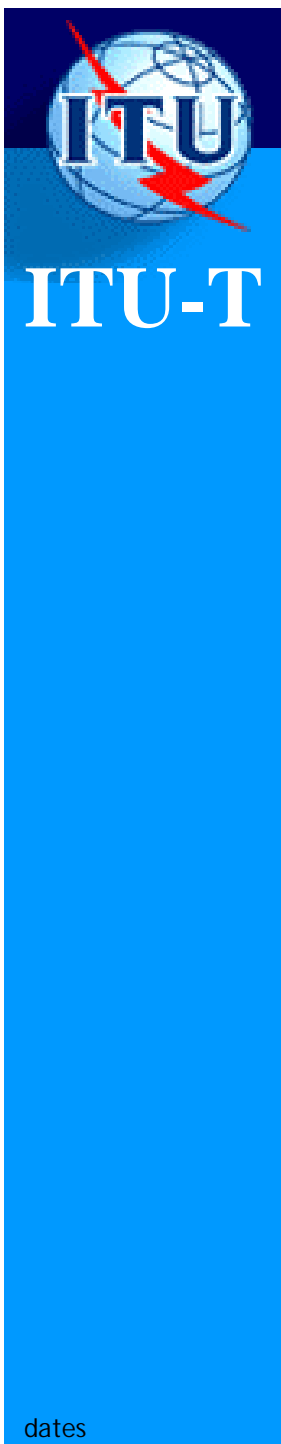
- Satisfy the user expectation of bringing personal content into the car
- Differentiate from competitors
- Generate new products (optional equipment or even standard equipment)
- Generate new revenue
- OEMs might profit from the marketing campaigns of mobile device manufacturers

- DRIVE Telematics applications

Opportunities vs. Risks



- New business opportunities clearly outperform potential risks
- There is no alternative to mobile device integration as customers will require this.



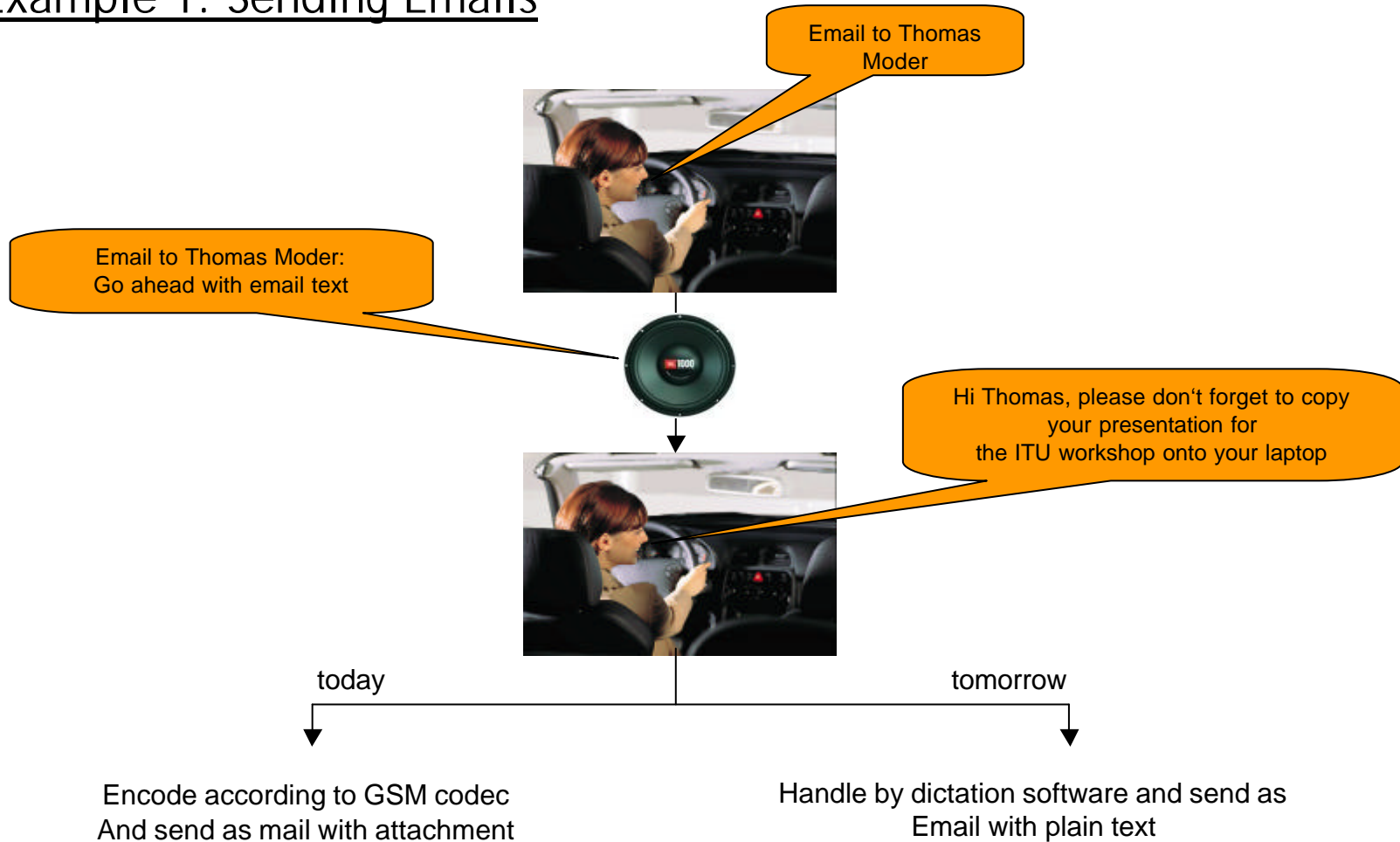
Does mobile device integration drive the telematics marketplace ?

YES, because

- ➔ The user brings not only a mobile device but he also brings content into the car
- ➔ The user might be willing to extend the content or use the content for communication (e.g. if I have Comfortable access to the email address of someone I will use that for sending emails). This however requires the smooth HMI integration of those Functions.

Does mobile device integration drive the telematics marketplace ?

Example 1: Sending Emails





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Does mobile device integration drive the telematics marketplace ?

Example 2: Download MP3 tracks

