



# ***THE FULLY NETWORKED CAR***

**The ITU-T focus group „from/in/to  
cars communication” - FITCAR**

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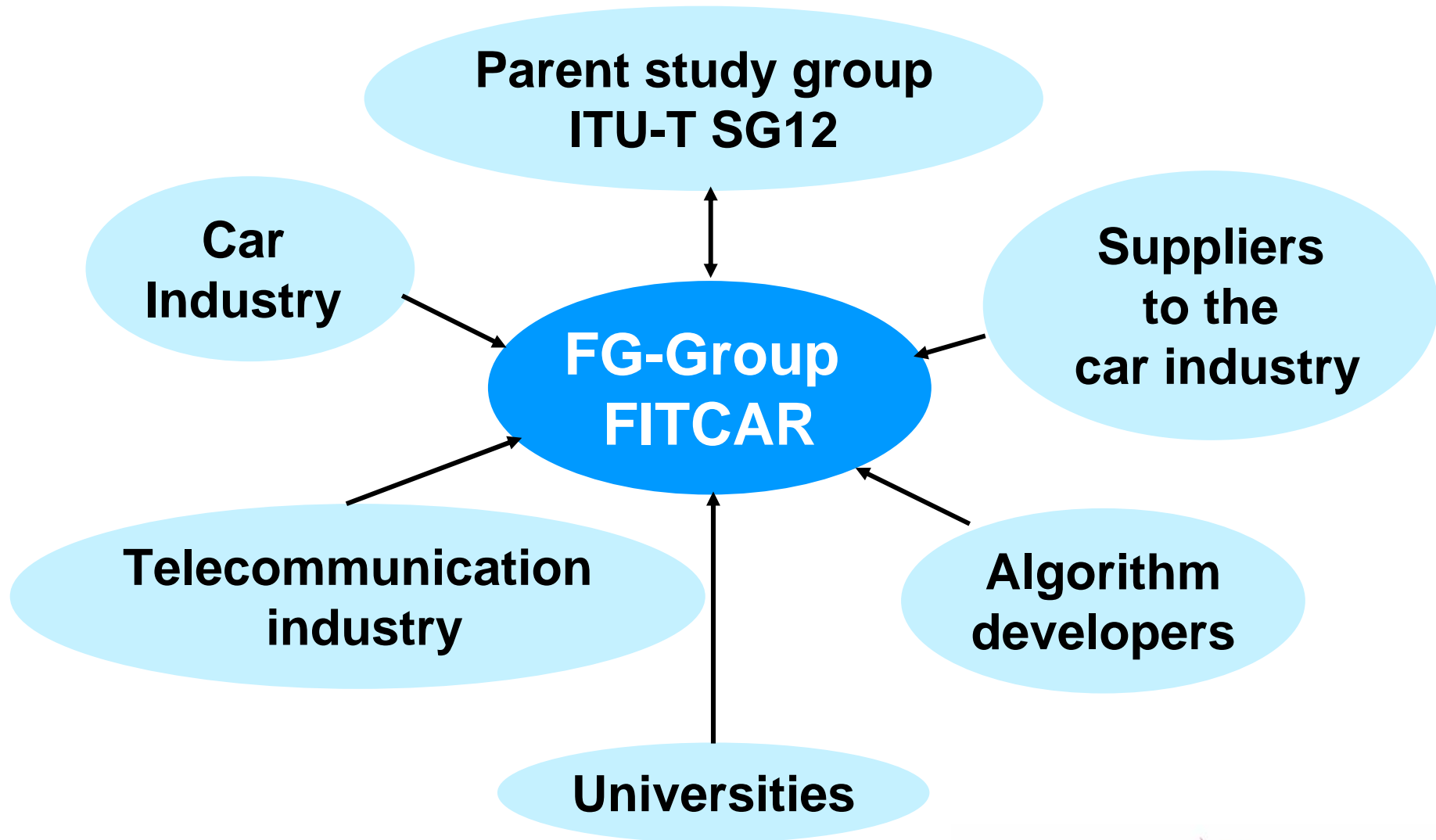
HEAD acoustics GmbH

Orange – FT Group

**Geneva, 7-9 March 2007**

- o The participants of the focus group
- o The goals
- o The areas of work
- o The draft specification
- o Schedule and future work
- o Conclusions

# The stakeholders

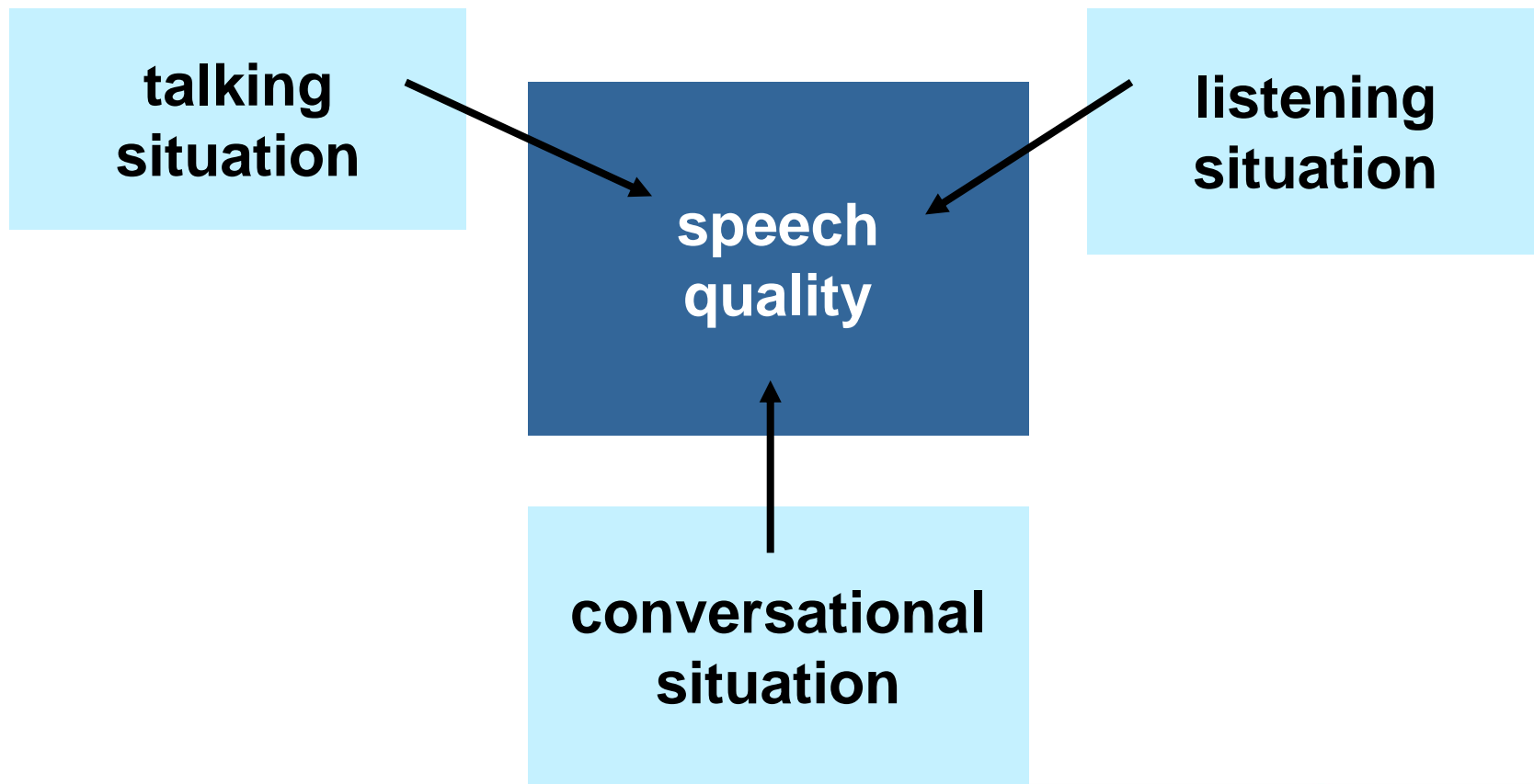


- o Development of standards for testing and optimization
  - The communication quality
    - from cars to the mobile/fixed network
    - inside Cars
  - Speech recognition systems
  - Wideband communication

- o Main topics to be considered
  - All conversational aspects
  - Background noise scenarios
  - Interaction of the car hands-free system with the radio channel
  - Requirements for wideband communication (> 3.4 kHz)
  - IP based transmission
  - Test methods for speech recognition

- o The participants of the focus group
- o The goals
- o The areas of work
- o The draft specification
- o Schedule and future work
- o Summary

... from the user's perspective



- Auditory perceived parameters which determine the speech quality of hands-free terminals:
  - Quality of background noise transmission
  - (Speech) sound quality
  - Delay and echo
  - Double talk capability
  - Switching and echo during double talk
  - Loudness
  - (System) noise

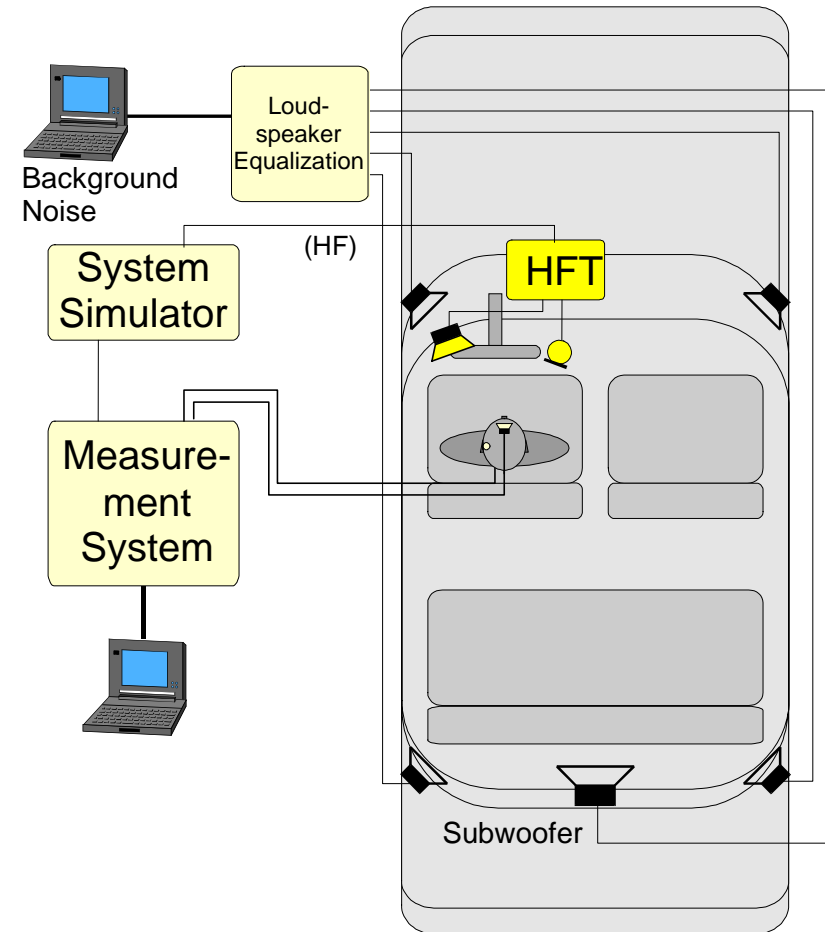


# Contributions to speech quality

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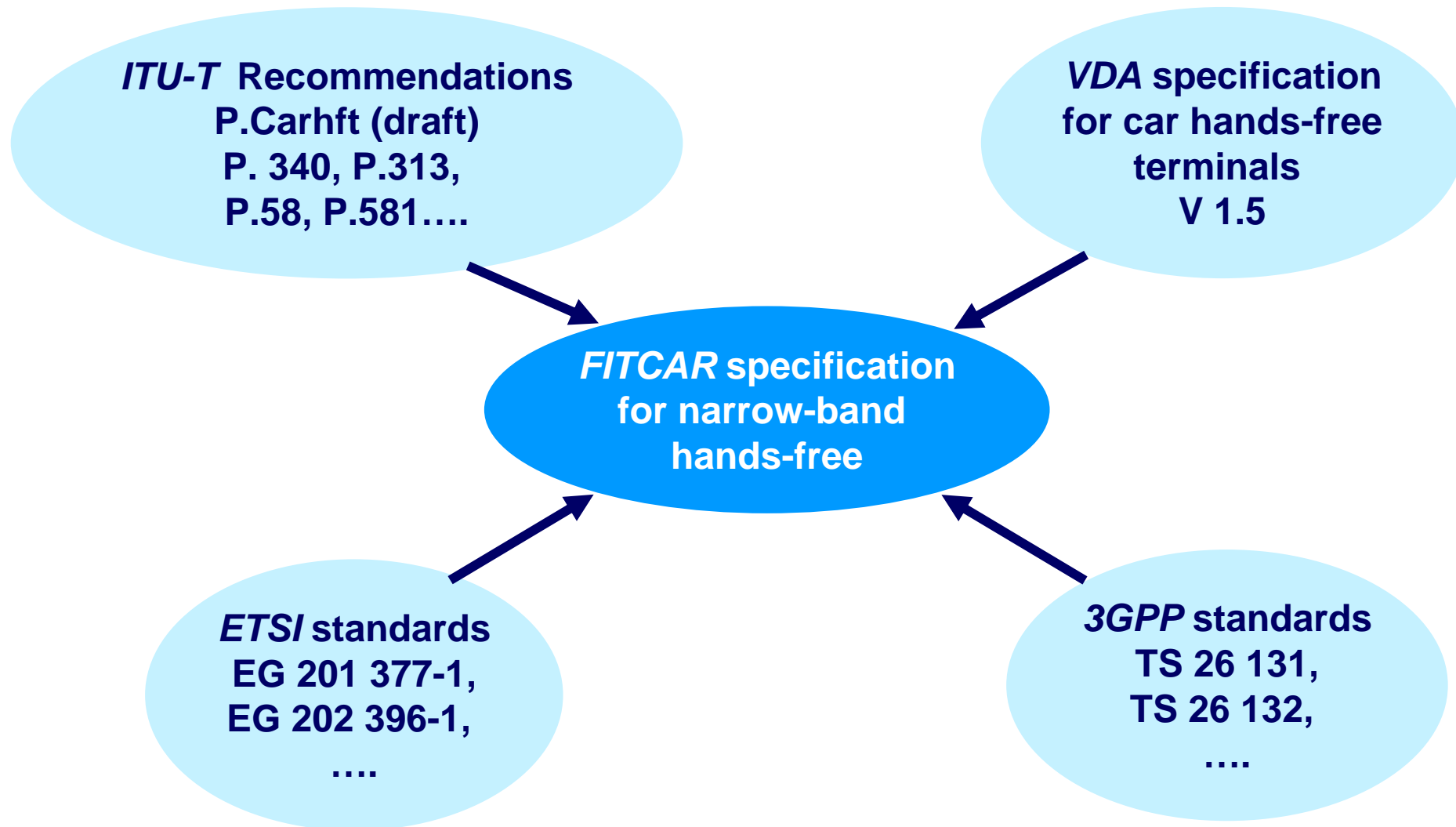


- Target car with hands-free installed
- Background noise simulation installed
- Speaker/listener substituted by an artificial head
- Network substituted by a network system simulator



# Contributions to the *FITCAR* specification

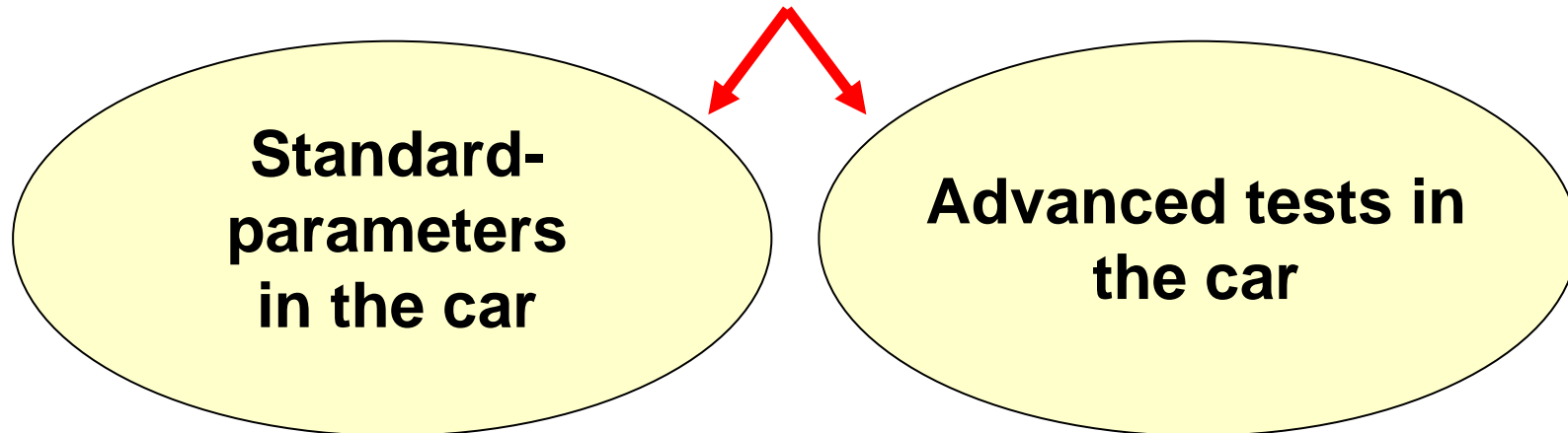
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## Focus of the first specification

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- Narrowband hands-free terminals (3,4 kHz)
- First priority: Speakerphone hands-free terminals
- Headset telephony may be considered, based on contributions
- Test methods for wideband extension of narrowband signals
- Enhanced echo and double talk testing procedures
- Interaction of terminals with network signal processing



- Frequency Response
- Loudness Ratings
- Distortions
- Noise
- Out of Band signals
- Terminal Coupling Loss

- Delay
- Background Noise suppression (DeLSM)
- Echo performance
- Double talk performance
- Switching performance
- Background noise performance
- Comfort noise insertion

# Schedule and future work

- o "Kick off" - meeting Jan. 07
- o 2nd meeting March 15, Ulm
- o 3rd meeting June 22, Geneva
- :  
:
- o Beginning 2008
  
- o Mid 2008

First  
Year



2nd  
Year  
?

- o *Input from ITU SG12  
First Draft  
Narrowband Hands-  
Free*
- :  
:
- o *First Specification,  
Narrowband*
  
- o *Work on wideband,  
speech recognition*



- o The ITU-T focus group *FITCAR* is an excellent forum to join forces for standardization
  - From the telecom industry
  - From the car industry
  - Suppliers
  - Universities
- o Participants are welcome, more information can be found here:

<http://www.itu.int/ITU-T/studygroups/com12/fqfit/index.html>