Speech interaction

——Applications in vehicle-multimedia

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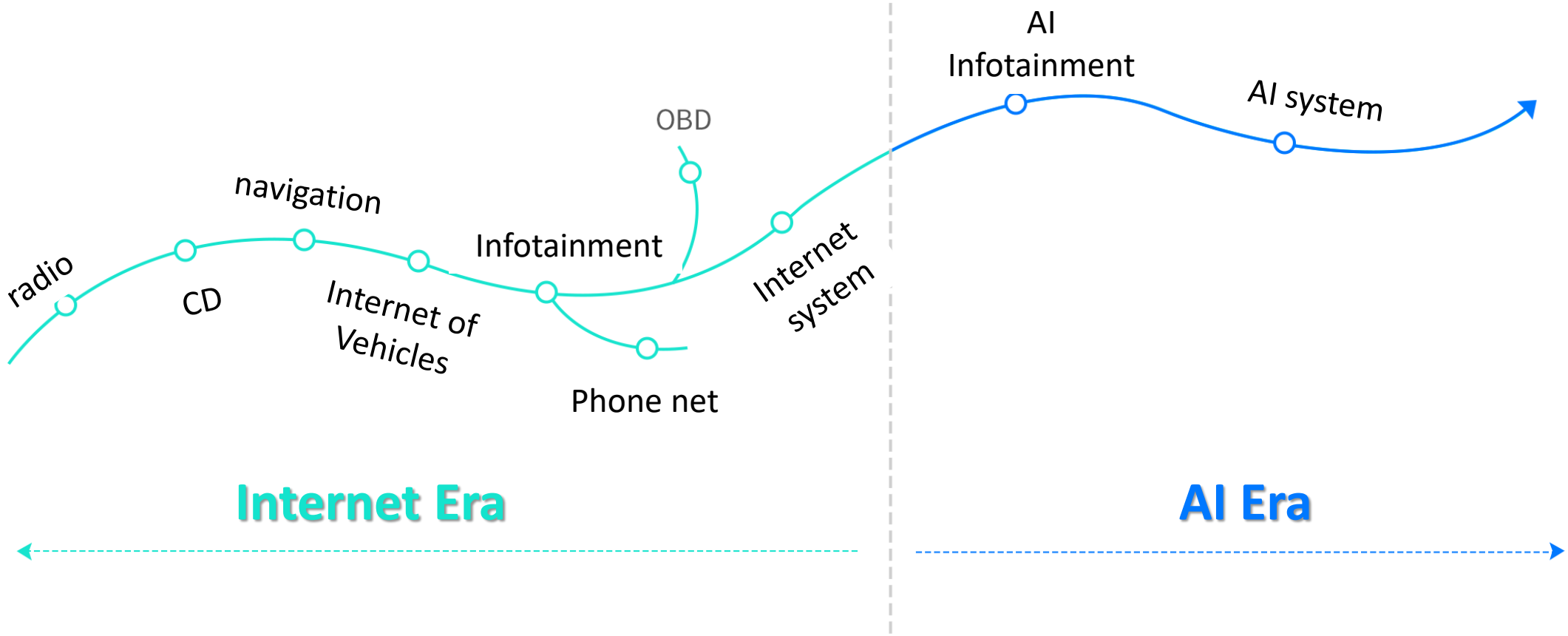
4 Future evolution

Smart phone vs. smart vehicle

Use during driving :	**NO**	Use during driving :	**YES**
Ways of interaction :	Touch & slide	Ways of interaction :	Speech
Connection abilities :	Blue tooth , NFC , Wifi + cellular	Connection abilities :	Blue tooth , NFC , LAN (CAN/LIN/FlexRay)
Number of users :	1	Number of users :	N


radio
CD
navigation
Internet of Vehicles
Infotainment
OBD
Phone net
Internet system
AI Infotainment
AI system
Internet Era
AI Era

What indeed is an “A.I. vehicle”

What we enjoyed：

- Journey, scenery on the road
- Music、news and stories
- Social media
- Feeling of speed and control

What needs to be free：

- Repetitive operation
- Ads that have nothing to do with needs
- Meaningless reminding
- 500 pages of vehicle manuals

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Listening

Listen clearly | Well understand | Natural conversation

Connecting

Speech & control | Information sharing

Understanding people & vehicles

Know who you are through listening | Memorize & analyze users' speech interaction habits

Understand vehicle knowledge | Knowledge retrieval through speech interaction

Listening

Full closed loop speech capability

+

Interaction designing

Microphone array noise reduction ability;
Robust speech recognition ability;
High timbre naturalness of speech synthesis ability;
Natural Language Understanding ability;
Biometric recognition ability

Interacting

Natural speech interaction designing – as a conversation

Full duplex interaction

Enhance the coherence of the dialogue

Multi-rounds interaction

Improving the accuracy of interactive information

Active interaction

Improving the fun and care during the speech interaction

Connecting

Connect APPs through a standard interface

Navigation +

Music +

Telephone +

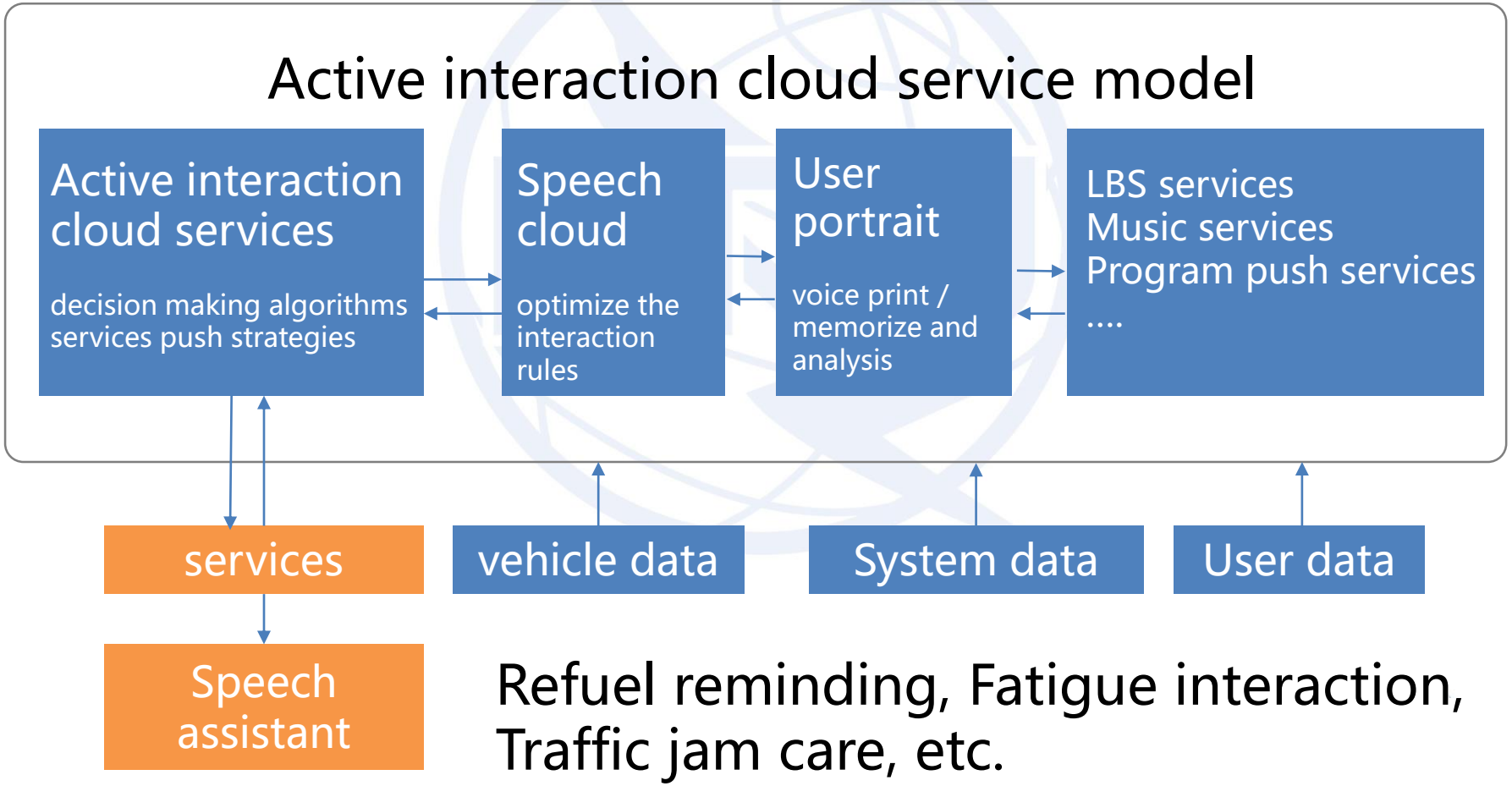
Climate inquiry +

Ticket booking +

...

Understanding people

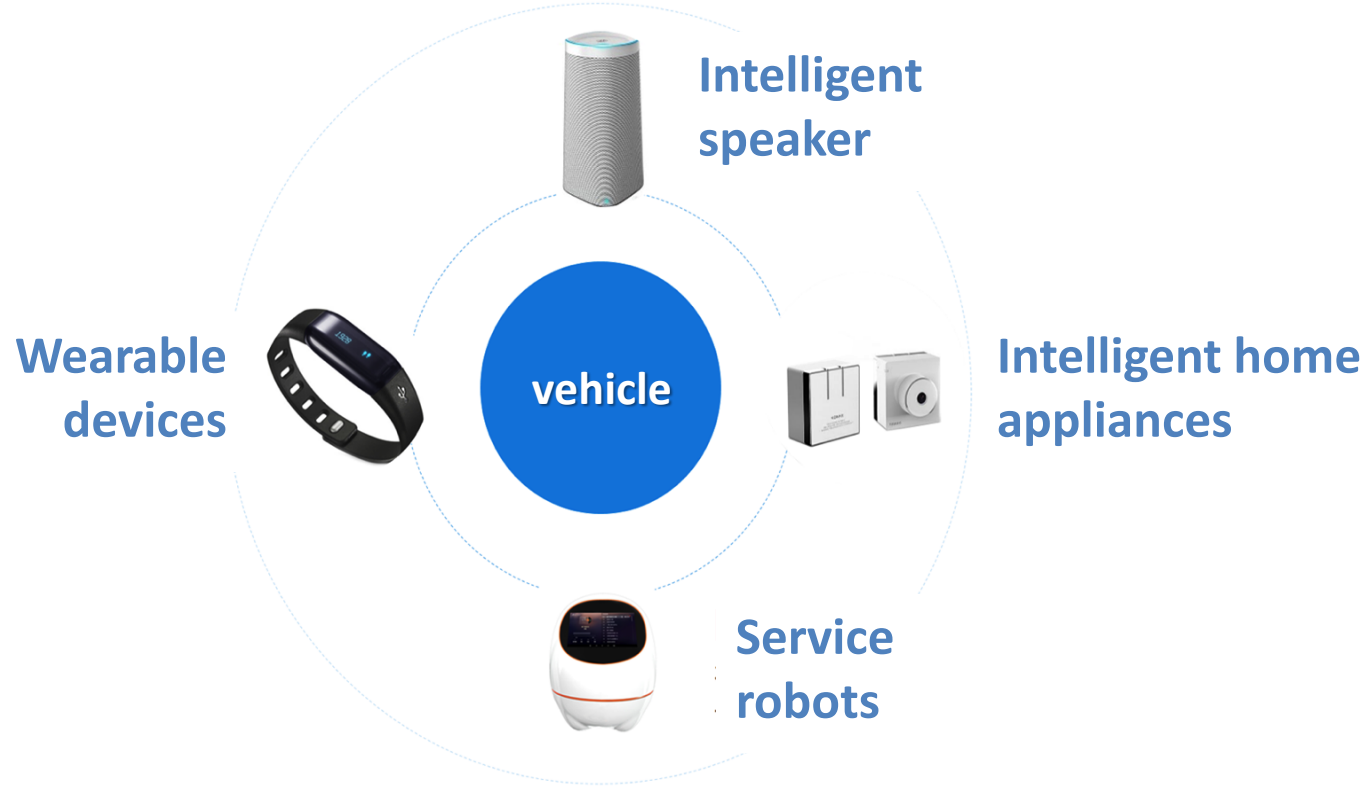
Active interactions: know and know you better



Refuel reminding, Fatigue interaction, Traffic jam care, etc.

Understanding people +

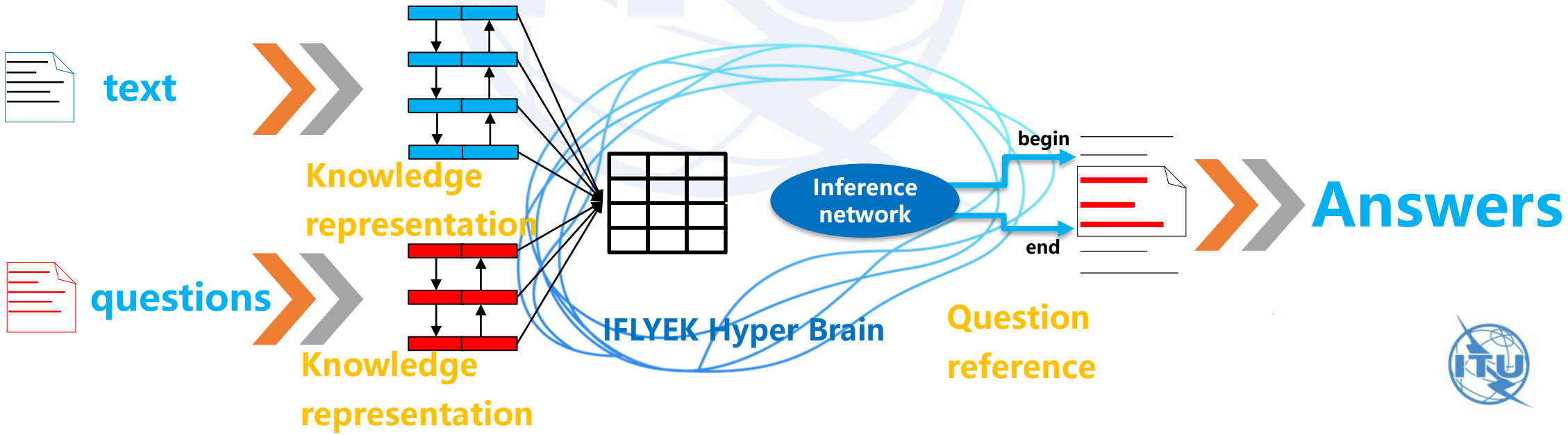
Cross-scenario interaction:
link your vehicle with your home



Understanding vehicles

Knowledge modeling based on reading comprehension;
Providing fast speech retrieval ability;
Knowledge base extension and iterative updating

Vehicle manual | Maintenance knowledge | Traffic knowledge…



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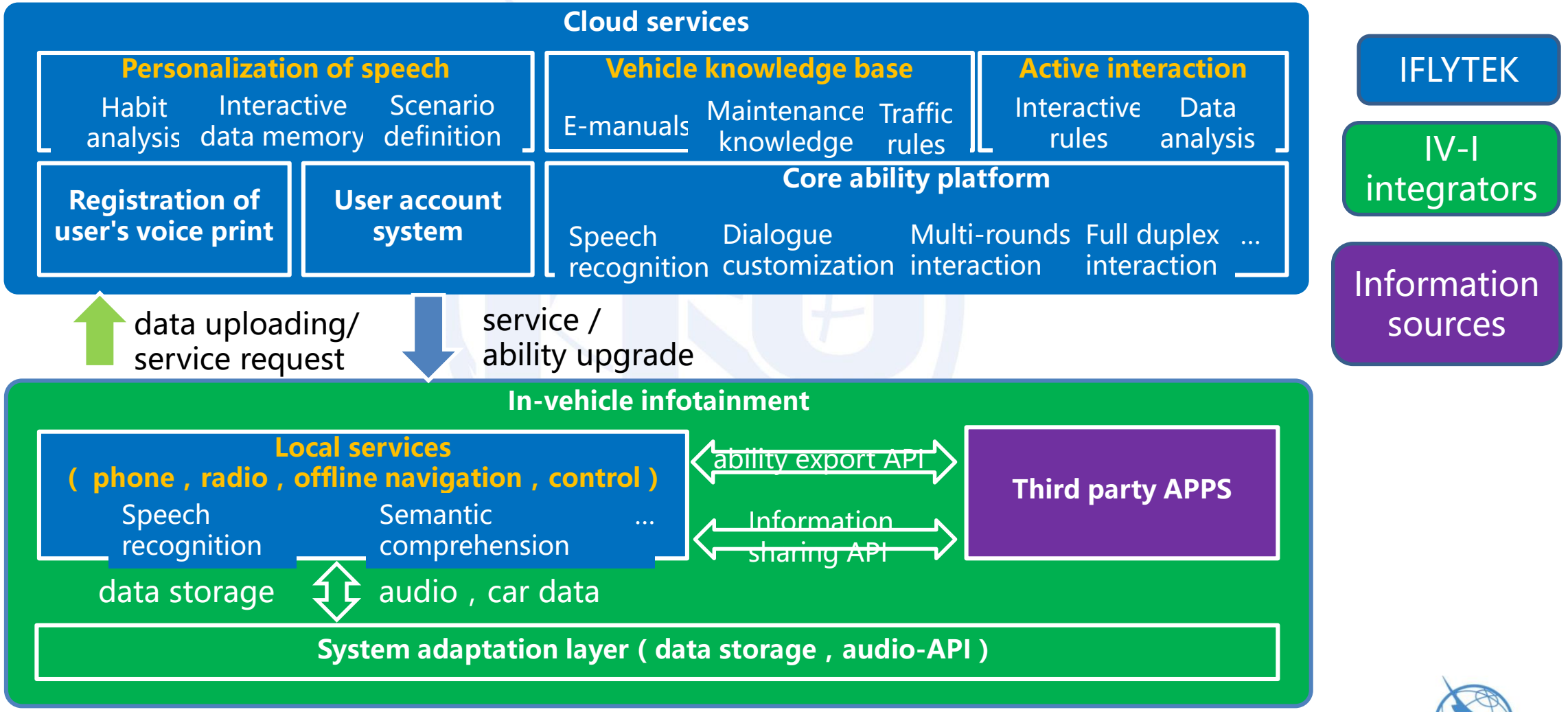
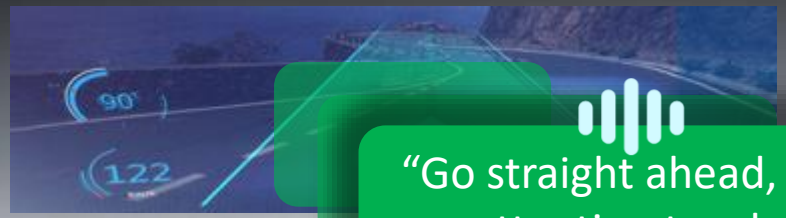
Framework of speech interaction + vehicle-multimedia



Multi screen link multiple space

Safe and reasonable interactive experiences



"Go straight ahead, and pay attention to a bend"

"Rear vehicle approaching, opening traffic recorder mode"

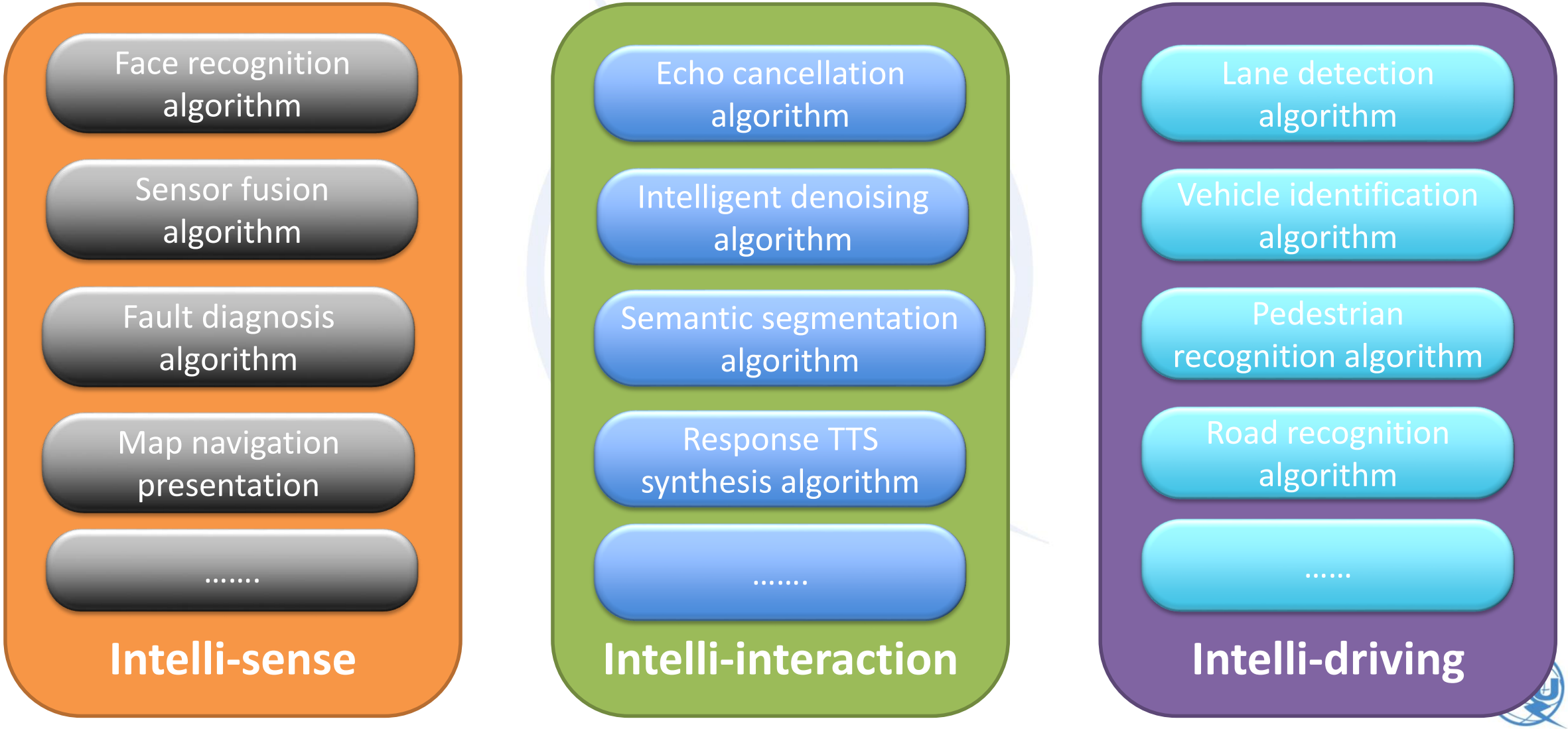
"Please pay attention to the shortage of oil"

Mother's call， do you want to answer it？

Dashboard content delivery

Program 1： IV-I HDMI ➔ Dashboard HDMI direct delivery
Program 2： IV-I FPDlink ➔ Dashboard FPDlink direct delivery
Program 3： IV-I CSI ➔ APIX ➔ Dashboard APIX transfer module
Program 4： IV-I Ethernet/USB ➔ Dashboard loop Ethernet direct delivery

Computational approaches

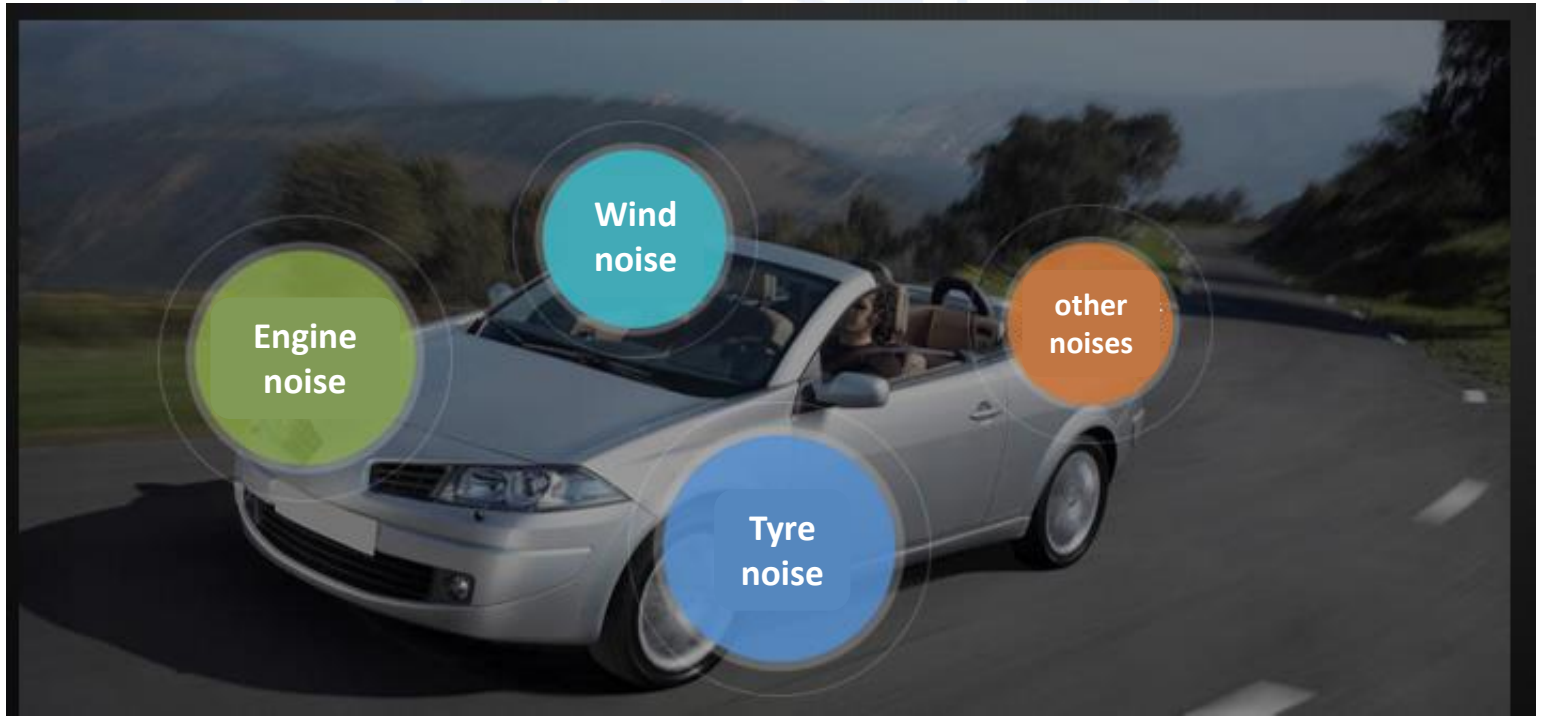


Intelligent computational approaches

Excellent algorithms × Cloud & Terminal

=

Top-level speech interaction ability under high speed scenario



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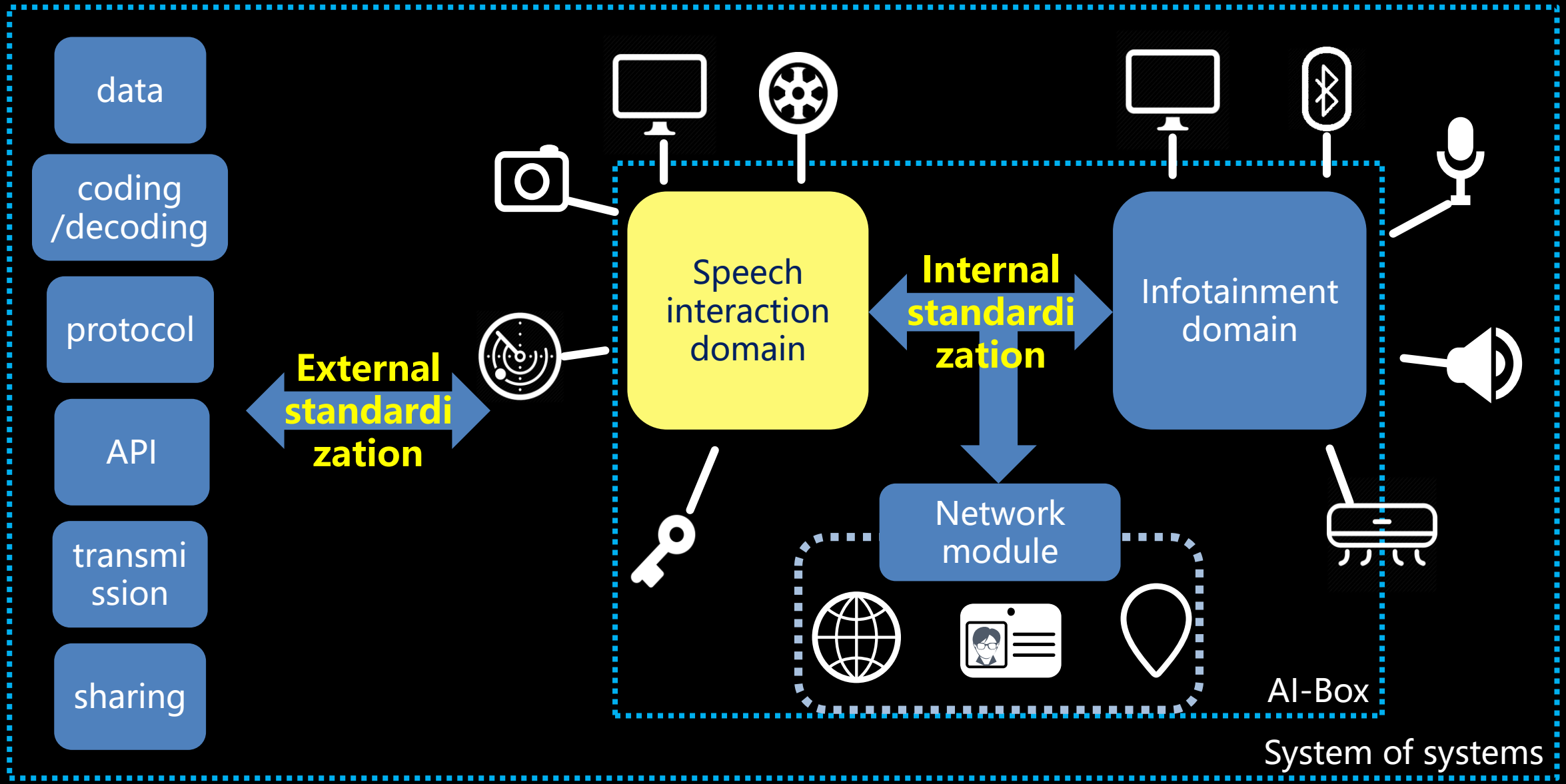
Where we head to?

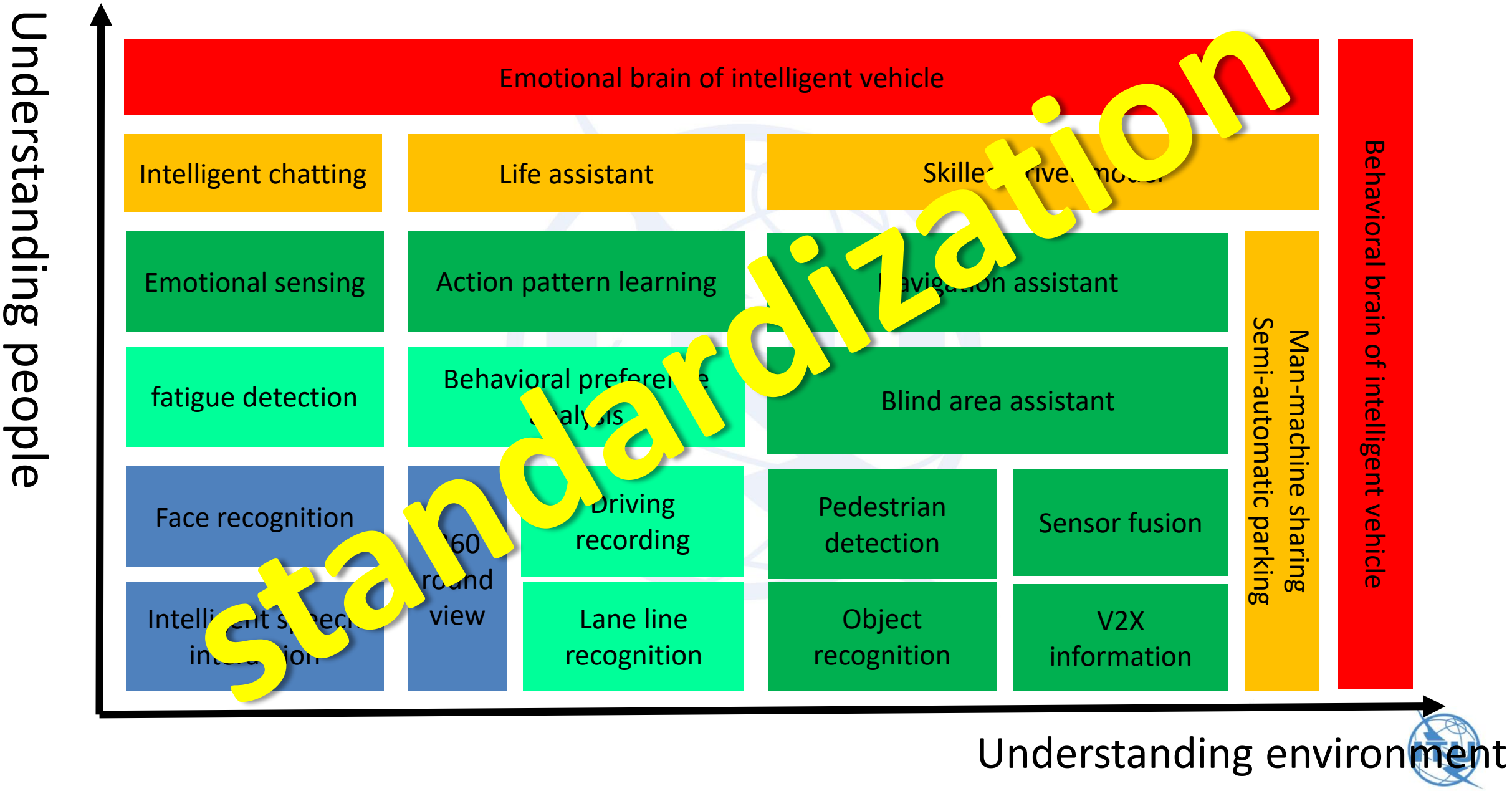
From SVM to CNN, from speech to vision, from intelligent sensing to cognitive intelligence, AI is now promoting application and development of multimedia system in automotive industry.

We are now experiencing a profound human centric intelligentized evolution.

Standards are what we need in this evolution.

Standardization: leading the future




Understanding people
Understanding environment
Emotional brain of intelligent vehicle
Behavioral brain of intelligent vehicle
Intelligent chatting
Life assistant
Skille
rive
Emotional sensing
Action pattern learning
avigation assistant
fatigue detection
Behavioral prefere
alysis
Blind area assistant
Face recognition
360
round
view
Driving
recording
Pedestrian
detection
Sensor fusion
Intelli
int
Lane line
recognition
Object
recognition
V2X
information
Man-machine sharing
Semi-automatic parking
standardization

Thanks for your attention!

Any comments please?

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