

MPAI-CAE & MPAI-MMC Calls for Technologies and their Framework Licences

Teleconference

2021/03/10T15:00 UTC



Standards help industry and consumers

- **Digital media boomed** thanks to media **compression standards**

- Low resolution TV sets → high resolution handsets
- The vinyl/cassette experience → music anytime anywhere experience

- **Artificial Intelligence (AI)**

- The next revolution after the digital revolution
- Promises but no standards

- Moving Picture, Audio and Data Coding by Artificial intelligence – MPAA – develops **AI-centred data coding standards**

- **MPAA standards** will **positively affect** industry and consumers as media standards have done

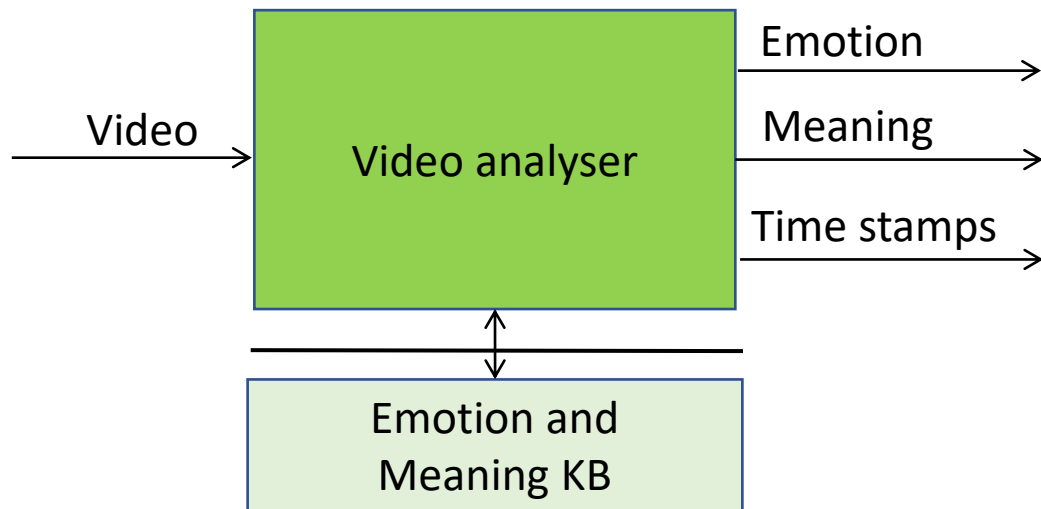
The MPAI foundations

- Moving Picture, Audio and Data Coding by Artificial intelligence (MPAI) is an international unaffiliated not-for-profit organisation.
- MPAI operation is based on 5 pillars

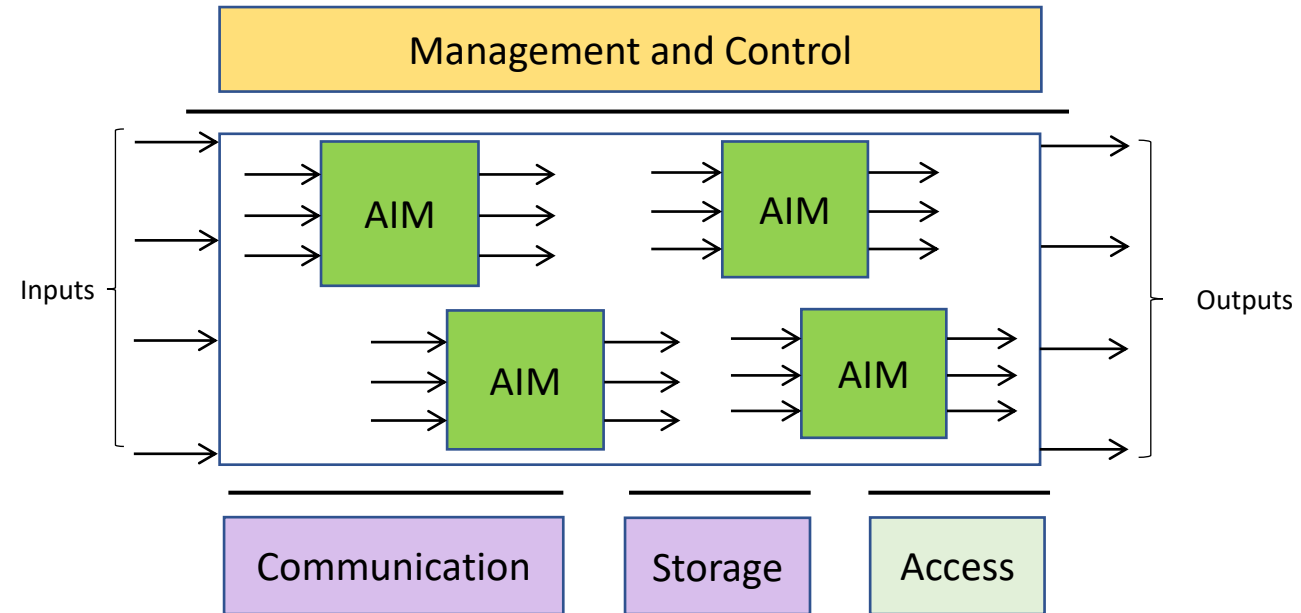
#	Pillar
1	MPAI standards grow from use cases → functional requirements → commercial requirements → Calls for Technologies → development → standard
2	MPAI standardises the I/O data of basic units called AI modules (AIM)
3	Aggregated AIMs are executed in a standard AI Framework (AIF)
4	A Framework Licence is defined before a Call for Technologies is issued
5	MPAI standard should include ethical considerations (under development)

The foundations of MPAI standards

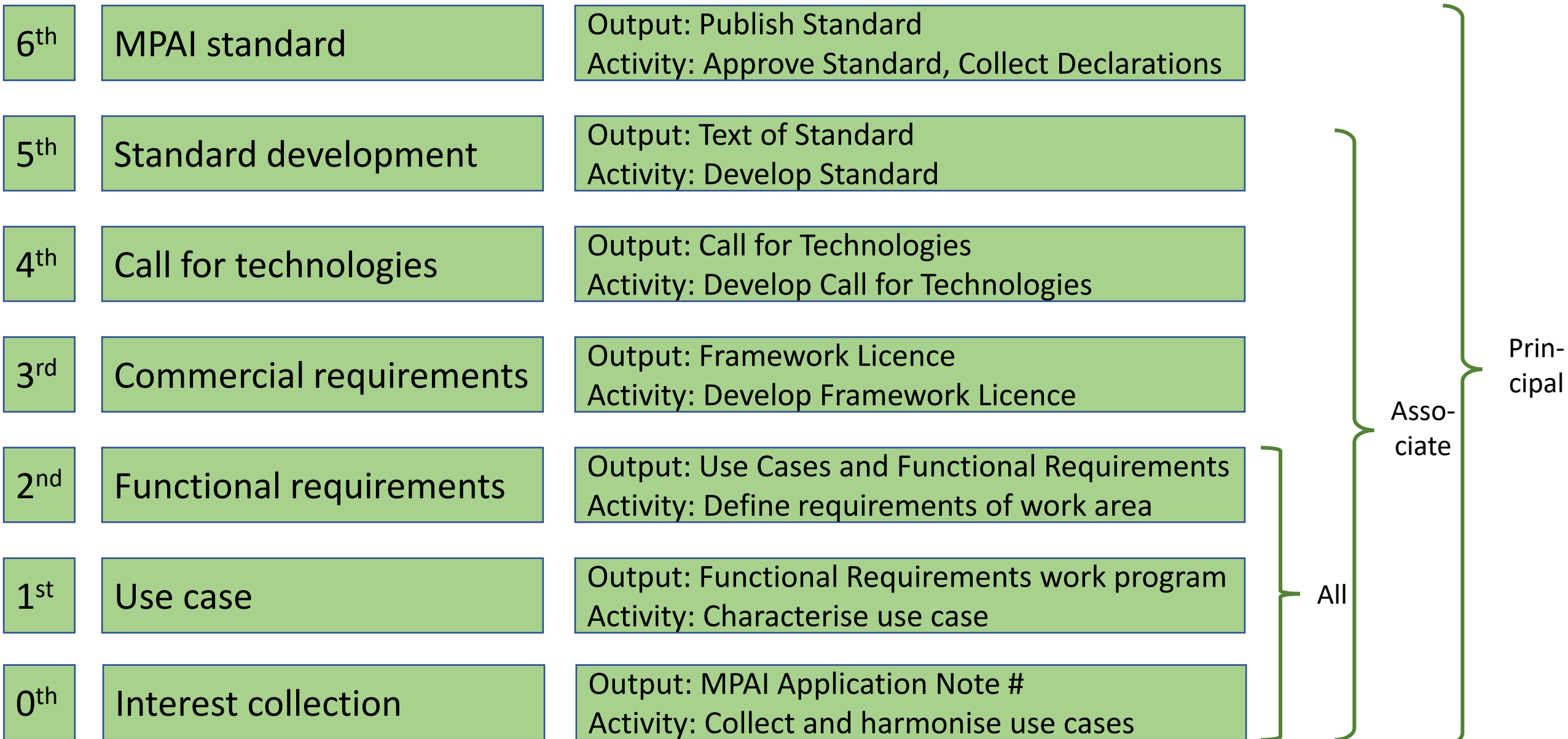
AI modules



AI Framework



Pillar #1 – Standard development process



Pillar #4: Framework Licences

- A framework Licence is the **IPR holders' business model** to monetise their IP in a standard without *values: \$, %, dates etc.*
- Process
 - **Before:** Active members **develop & adopt** the Framework Licence
 - **During:** Active members **declare** to make available their licences according to the FWL after the standard is approved
 - **After:** All members **declare** they will get a licence for other members' IPRs, if used, within 1 year after publication of IPR holders' licensing terms
- **Non members** get licence from IPR holders to use an MPAl standard
- MPAl Members have already developed 3 Framework Licences

Pillar #5: Ethics (under construction)

- MPAI is aware of the **impact** AI will have on **humans** and **society**
- When a Framework Licence of a project is ready, MPAI issues
 - The Call for Technologies of a standard, MPAI
 - The Framework Licence related to the standard
 - The Ethic Guideline (under discussion)
- MPAI's AIM-AIF approach already enhances explainability of MPAI standards' implementations
- Ethic issues in AI are hard to solve with a top down approach
- MPAI is considering a more promising bottom-up approach

Benefits of MPAI standards

- **Component providers** can offer conforming AIMS to an open competitive market
- **Application developers** can find the AIMS they need on the open competitive market
- **Consumers** have a wider choice of better AI applications from competing application developers
- **Innovation** is fuelled by the demand for novel/more performing AIMS
- **Society** can lift the veil of opacity from large, monolithic AI-based applications.

We already had 1 CfT

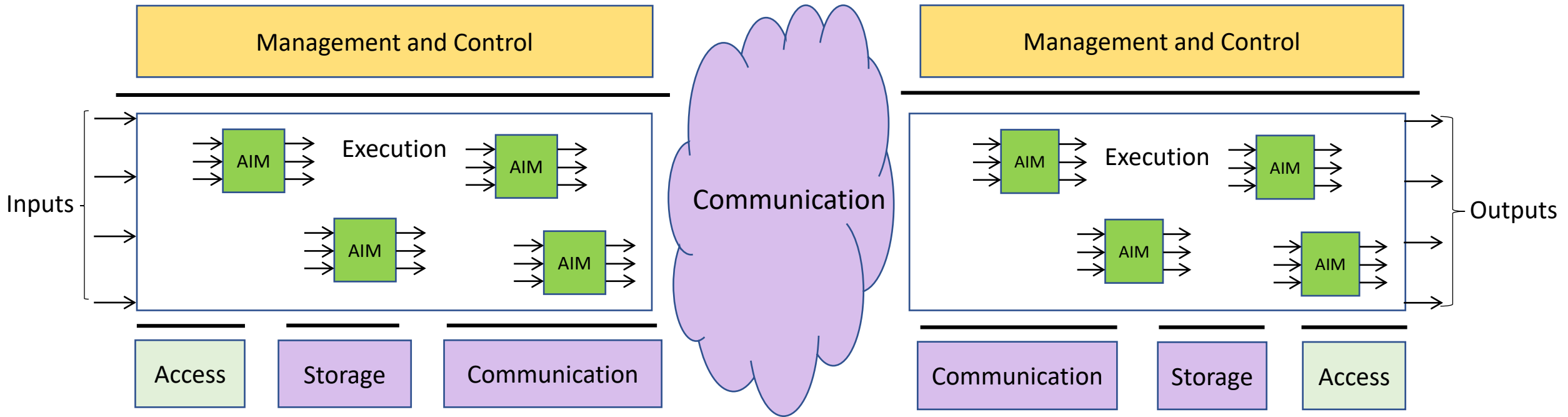


Table of Contents of the MPAI-AIF standard

1. Scope of the standard
2. Execution model
3. HW/SW interoperability
4. AIF Framework creation and management
5. Usage of Context / Metadata
6. Registration
7. Context/metadata
8. Managing the execution of AIFs
9. Management of resources
10. Connection of AIFs
11. Signaling
12. Support for Machine Learning
13. Shared storage and communication
14. Pseudocode implementations of MPAI use cases

The current MPAI Calls for Technologies

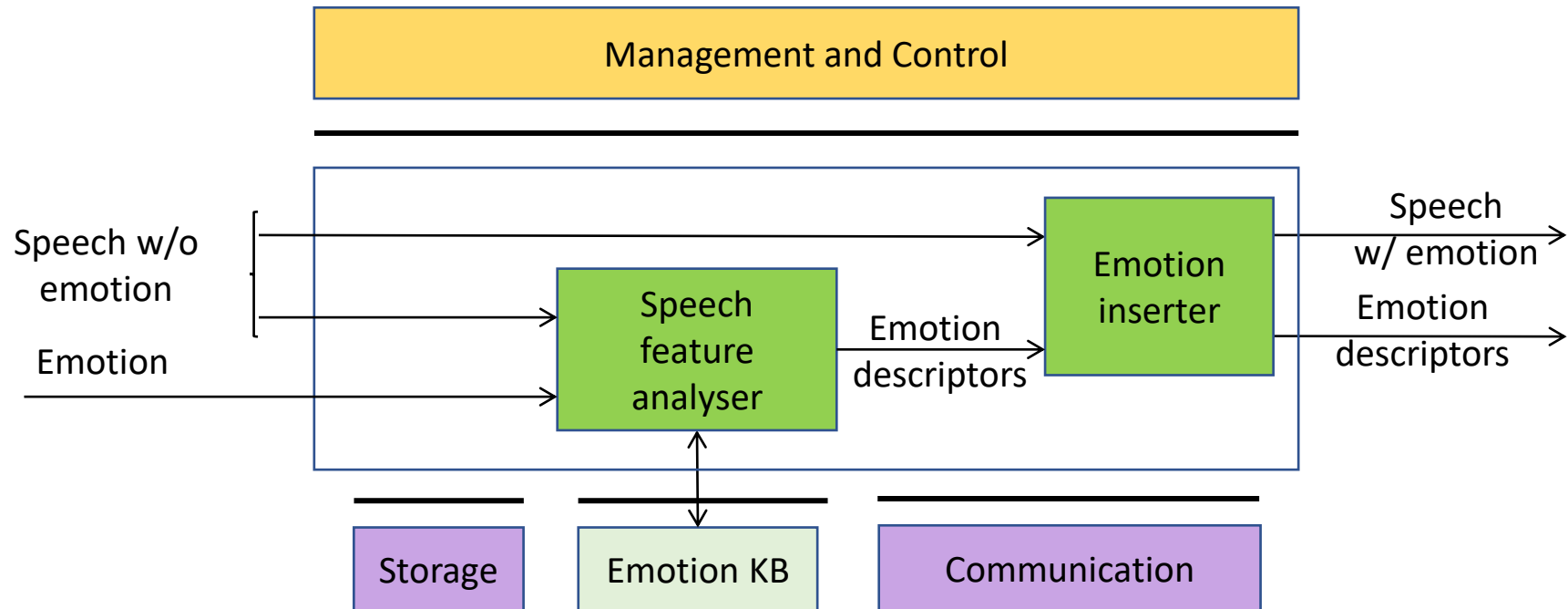
- Targeted to two application areas
 - CfT#1: Context-based Audio Enhancement (CAE)
 - CfT#2: Multimodal Conversation (MMC)
- Both CfTs request technologies supporting use cases
 - CfT#1: Emotion-Enhanced Speech (EES)
 - CfT#1: Audio Recording Preservation (ARP)
 - CfT#1: Enhanced Audioconference Experience (EAE)
 - CfT#1: Audio-on-the-go (AOG)
 - CfT#2: Conversation with Emotion (CWE)
 - CfT#2: Multimodal Question Answering (MQA)
 - CfT#2: Personalised Automatic Speech Translation (PST)

MPAI-CAE Functional Requirements

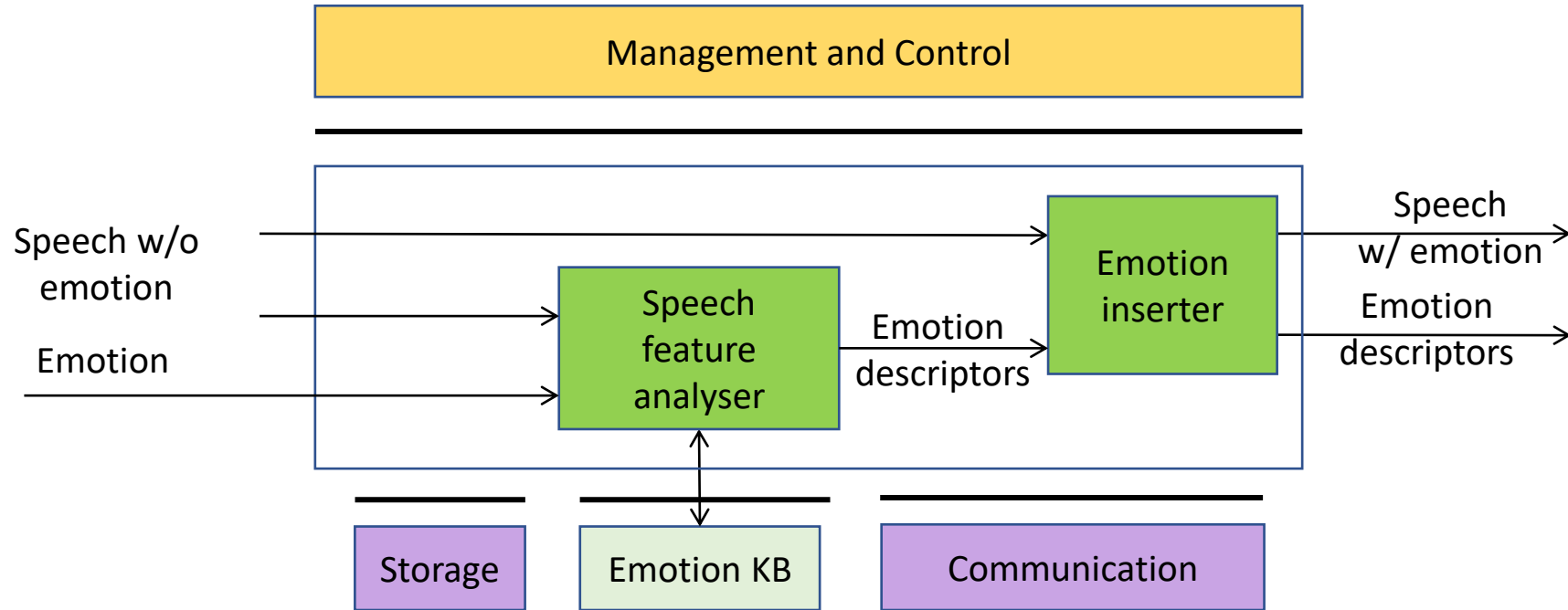
Marina Bosi

Chair, MPAI-CAE Development Committee (CAE-DC)

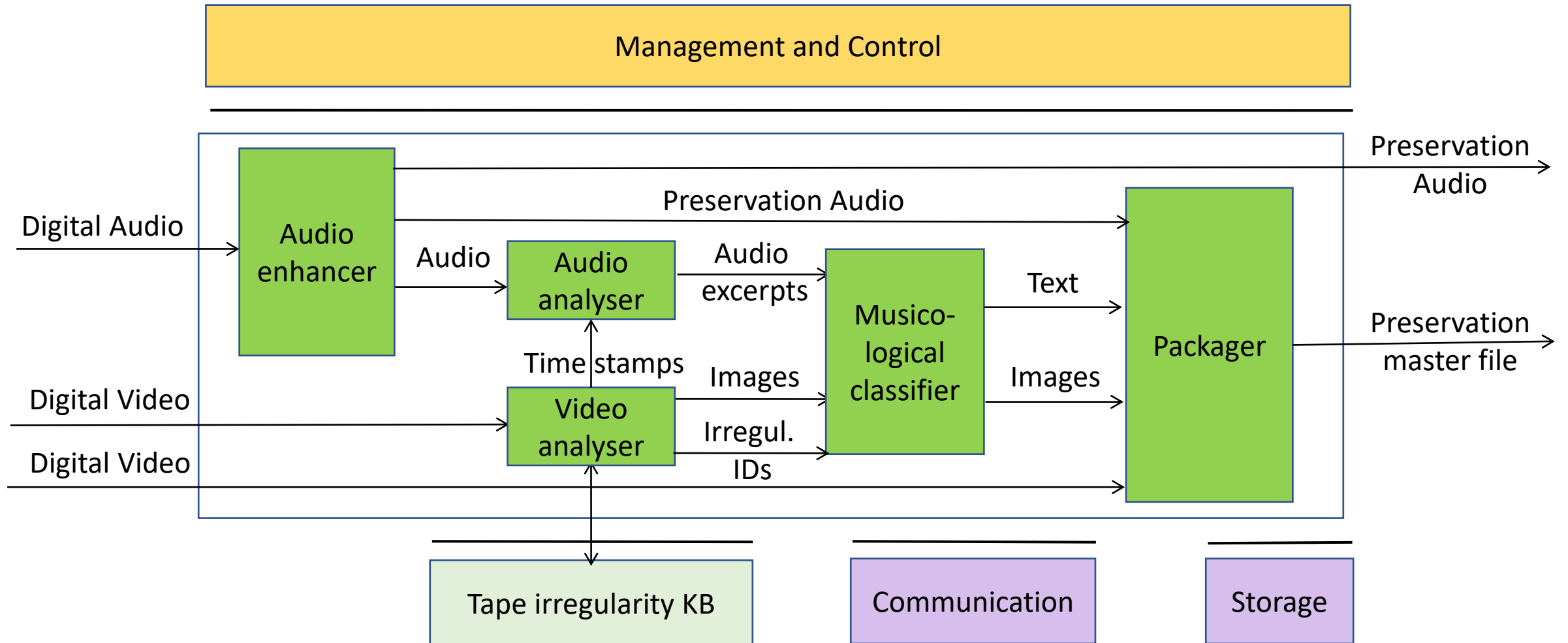
Emotion enhanced speech



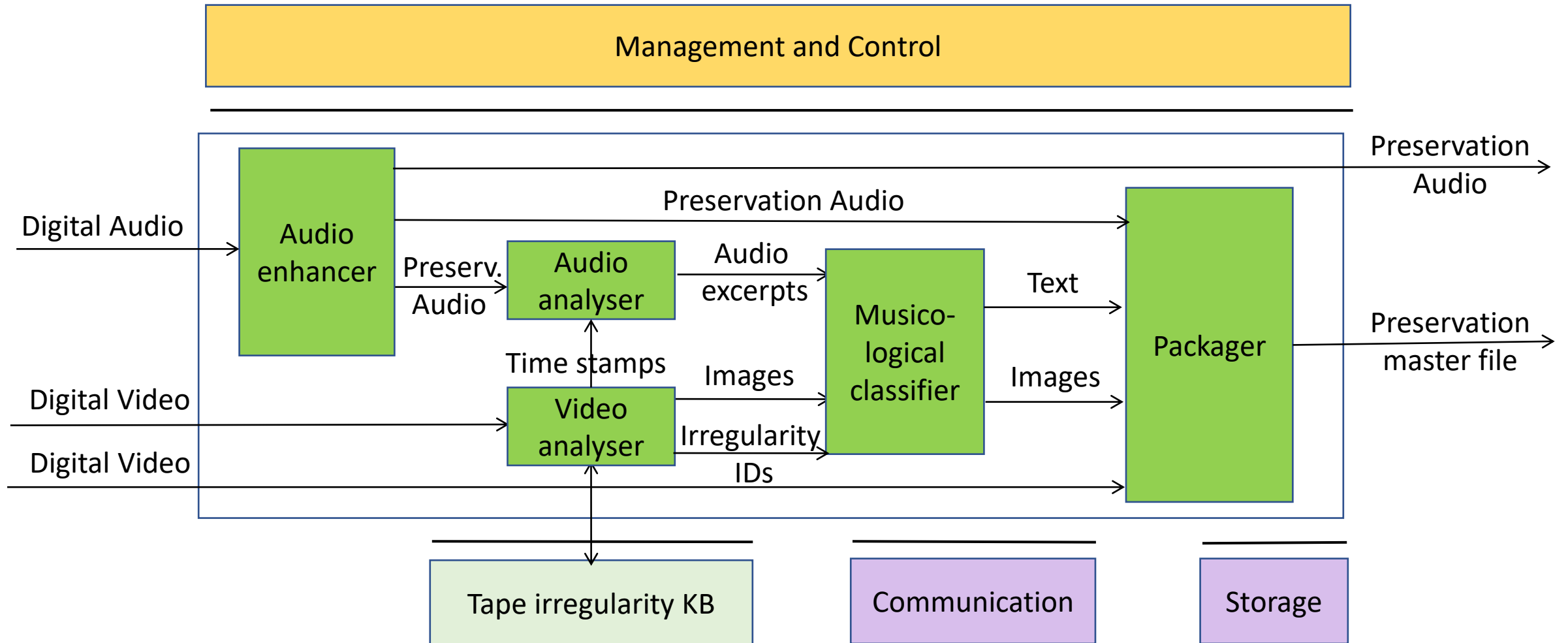
Emotion enhanced speech



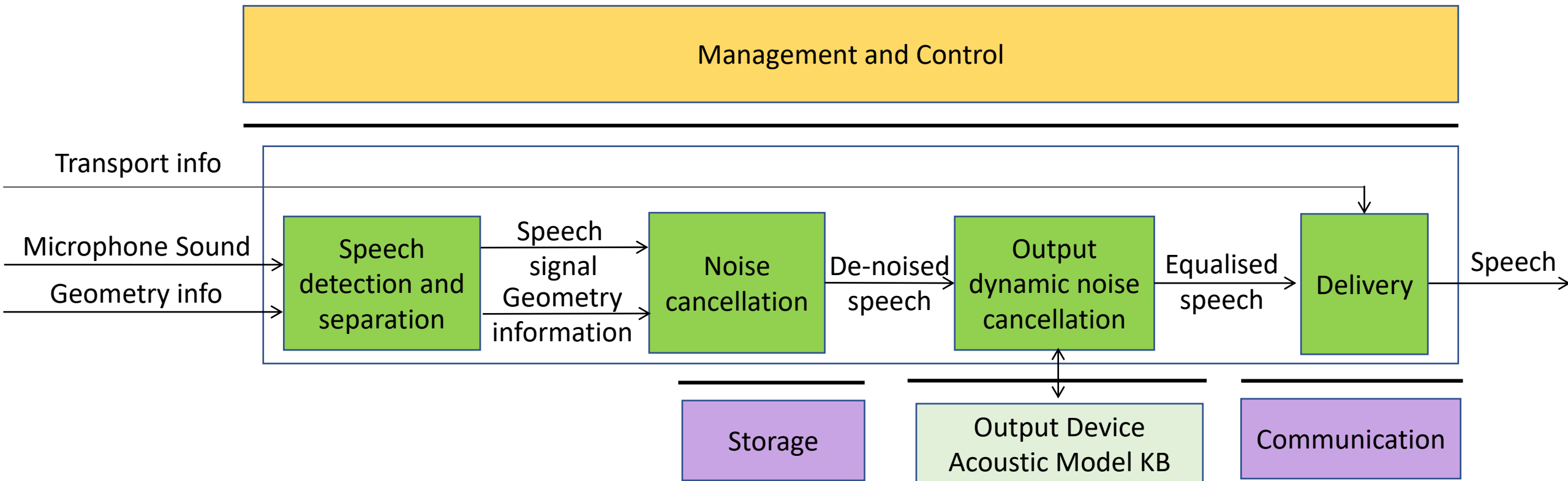
Audio Recording Preservation



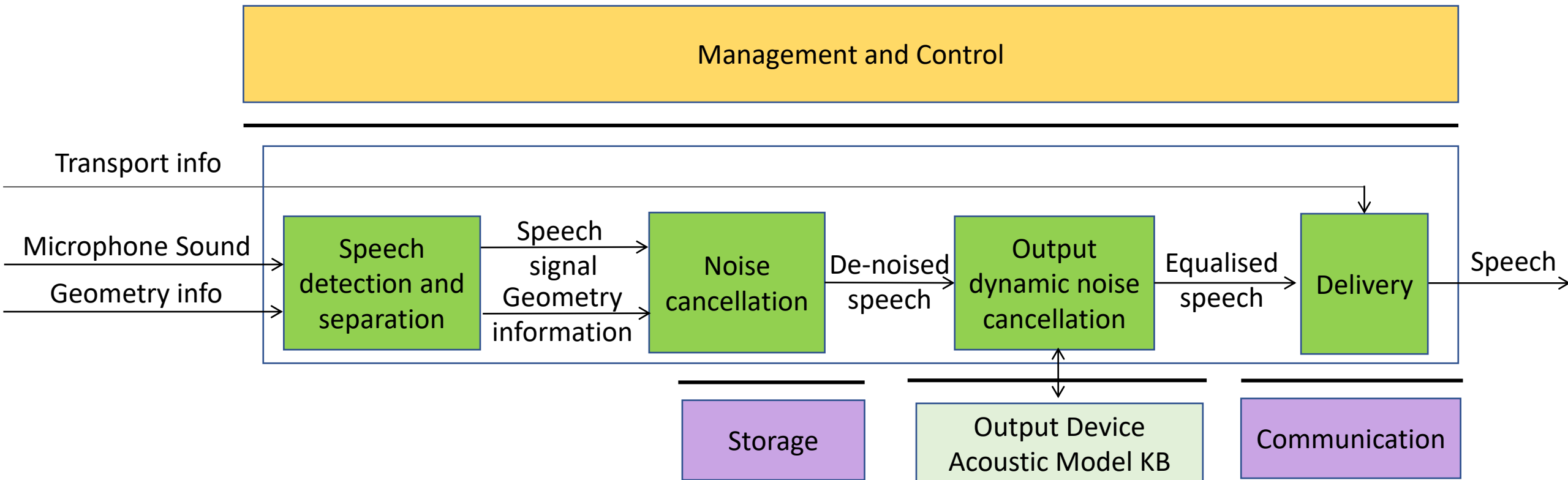
Audio Recording Preservation



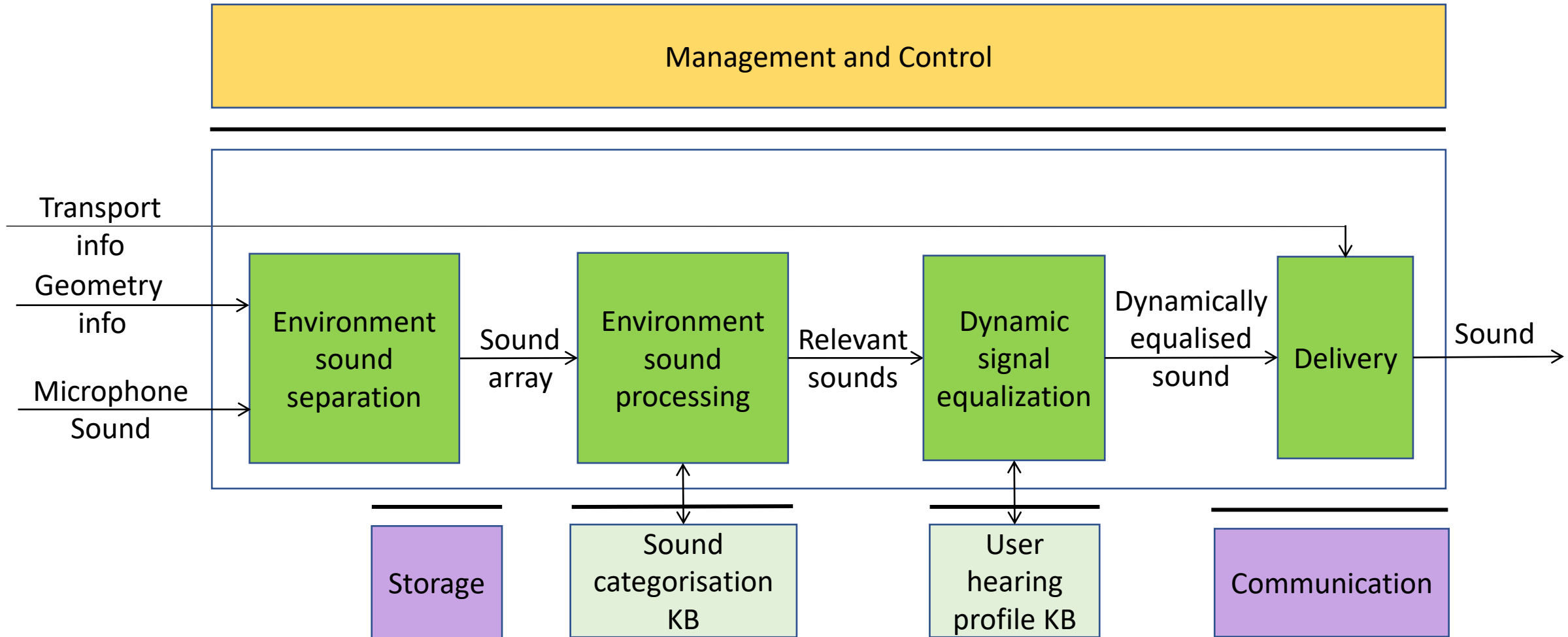
Enhanced audioconference experience



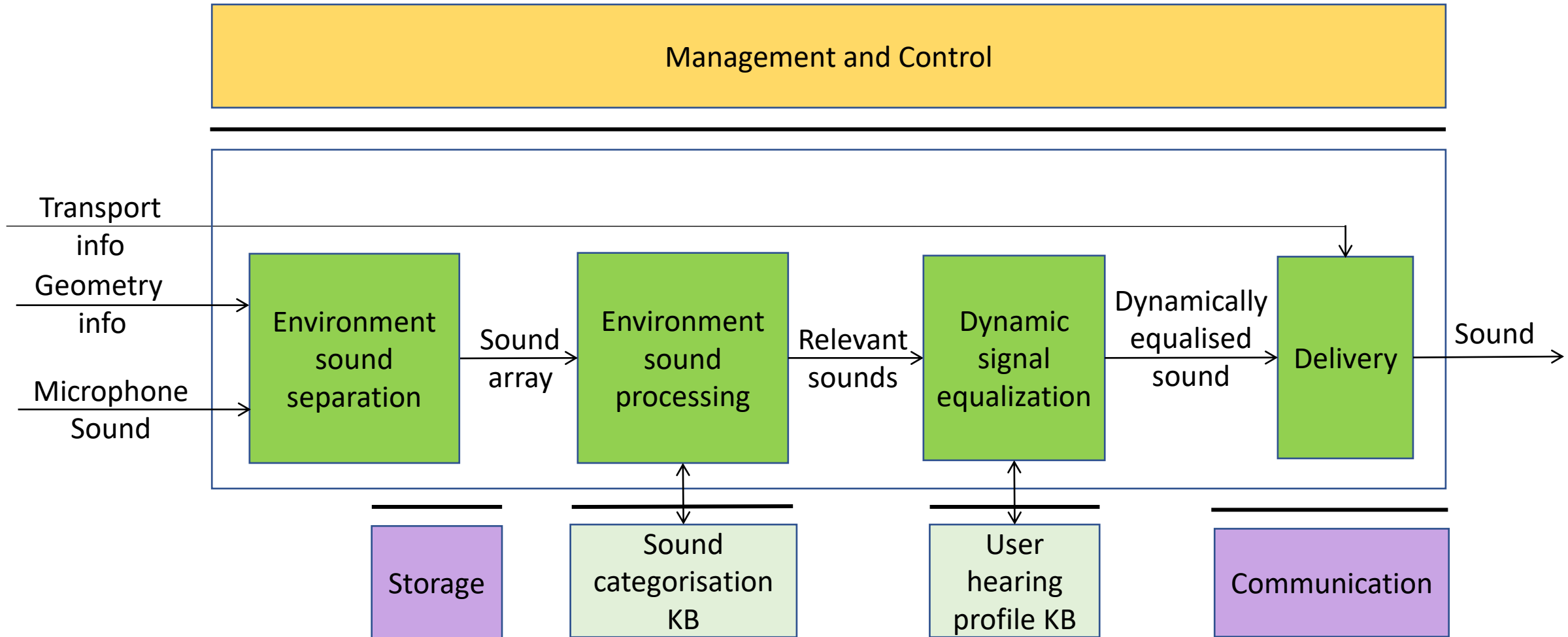
Enhanced audioconference experience



Audio-on-the-go



Audio-on-the-go



Technologies requested

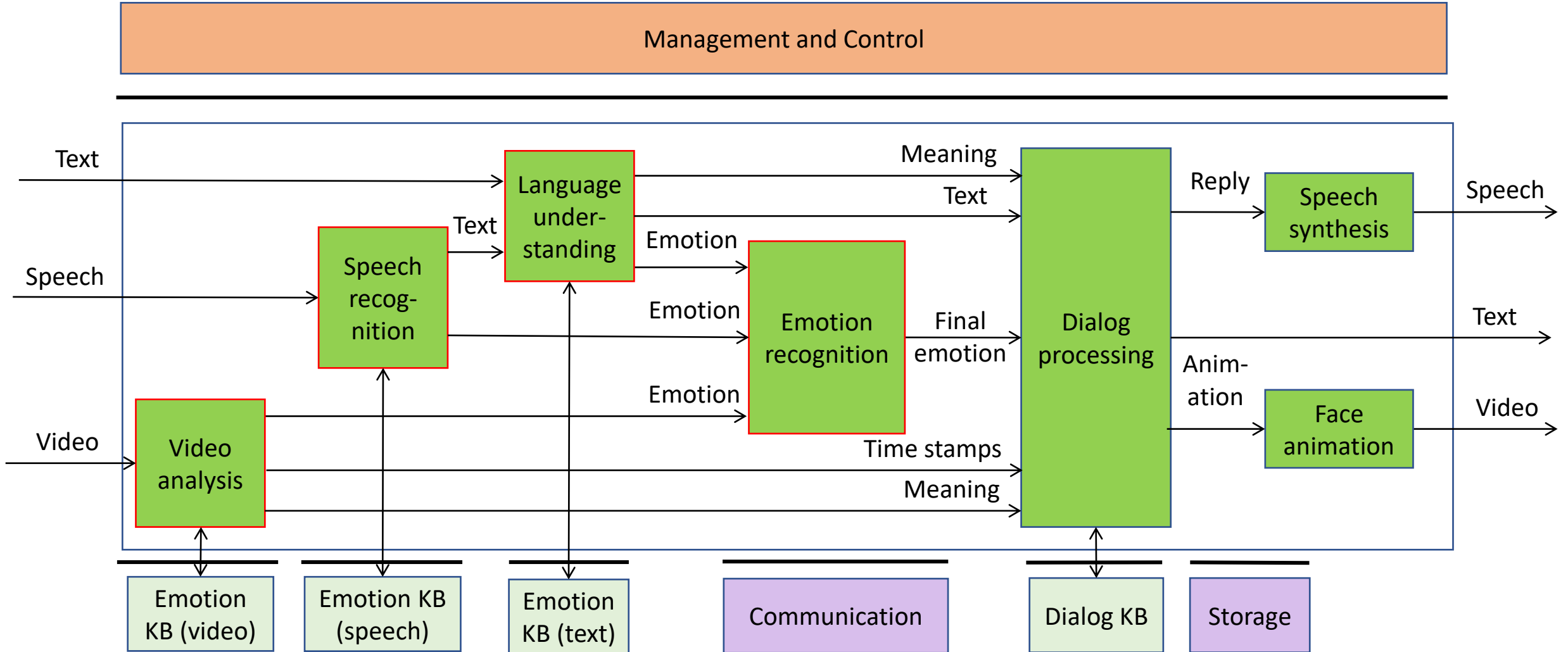
Use Case	Interfaces
Emotion-enhanced speech	Emotion
	Speech features
	Emotion descriptors
Audio Recording Preservation	Tape image features
Enhanced audioconference experience	Microphone geometry information
	Output device acoustic model KB query format
Audio-on-the-go	Sound features
	Sound Categorisation
	User hearing profile KB query format

MPAI-MMC Functional Requirements

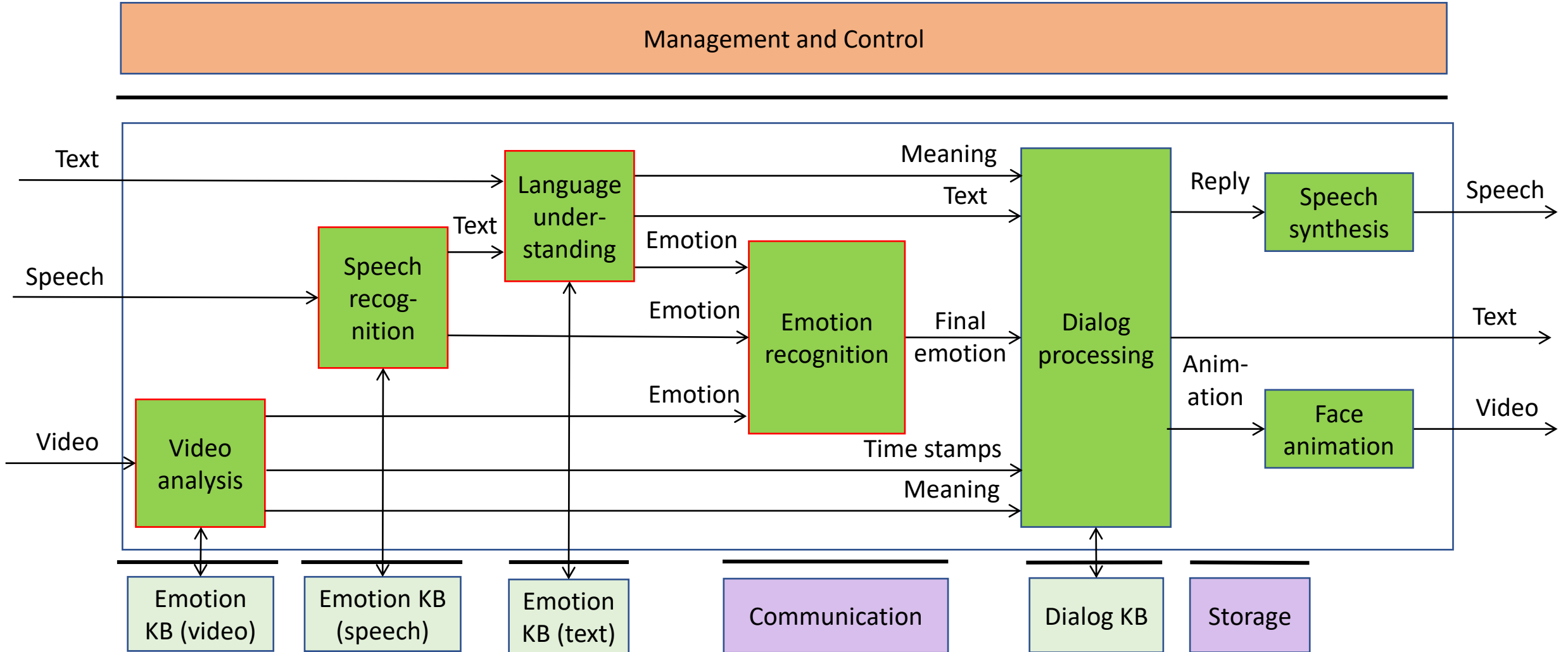
Miran Choi

Chair, MPAI-MMC Development Committee (MMC-DC)

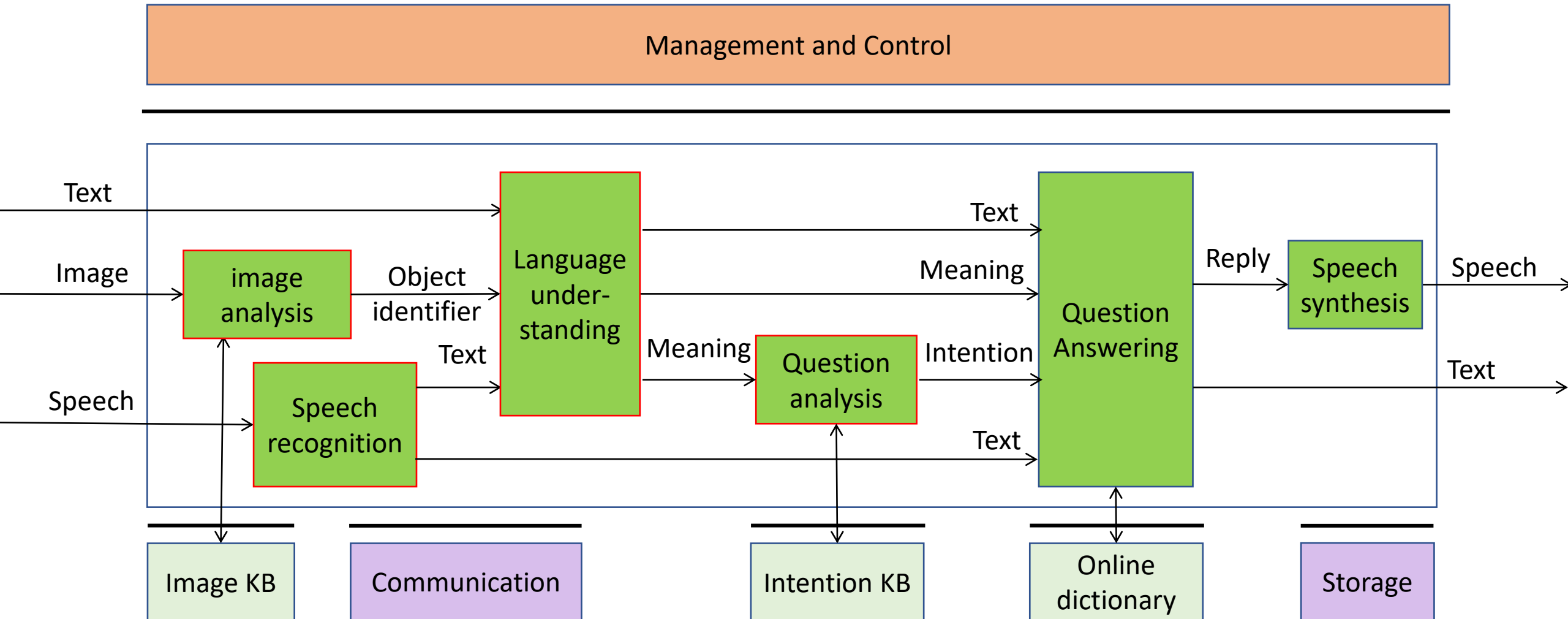
Conversation with emotion



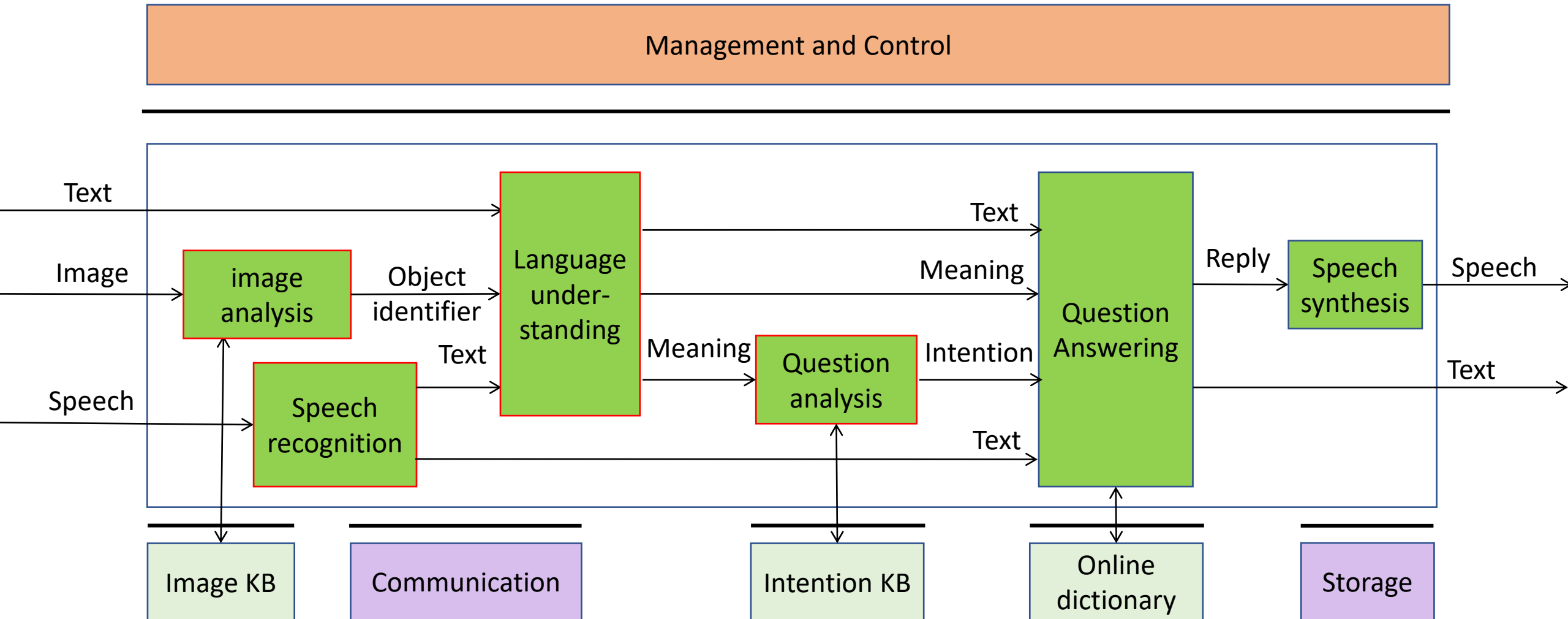
Conversation with emotion



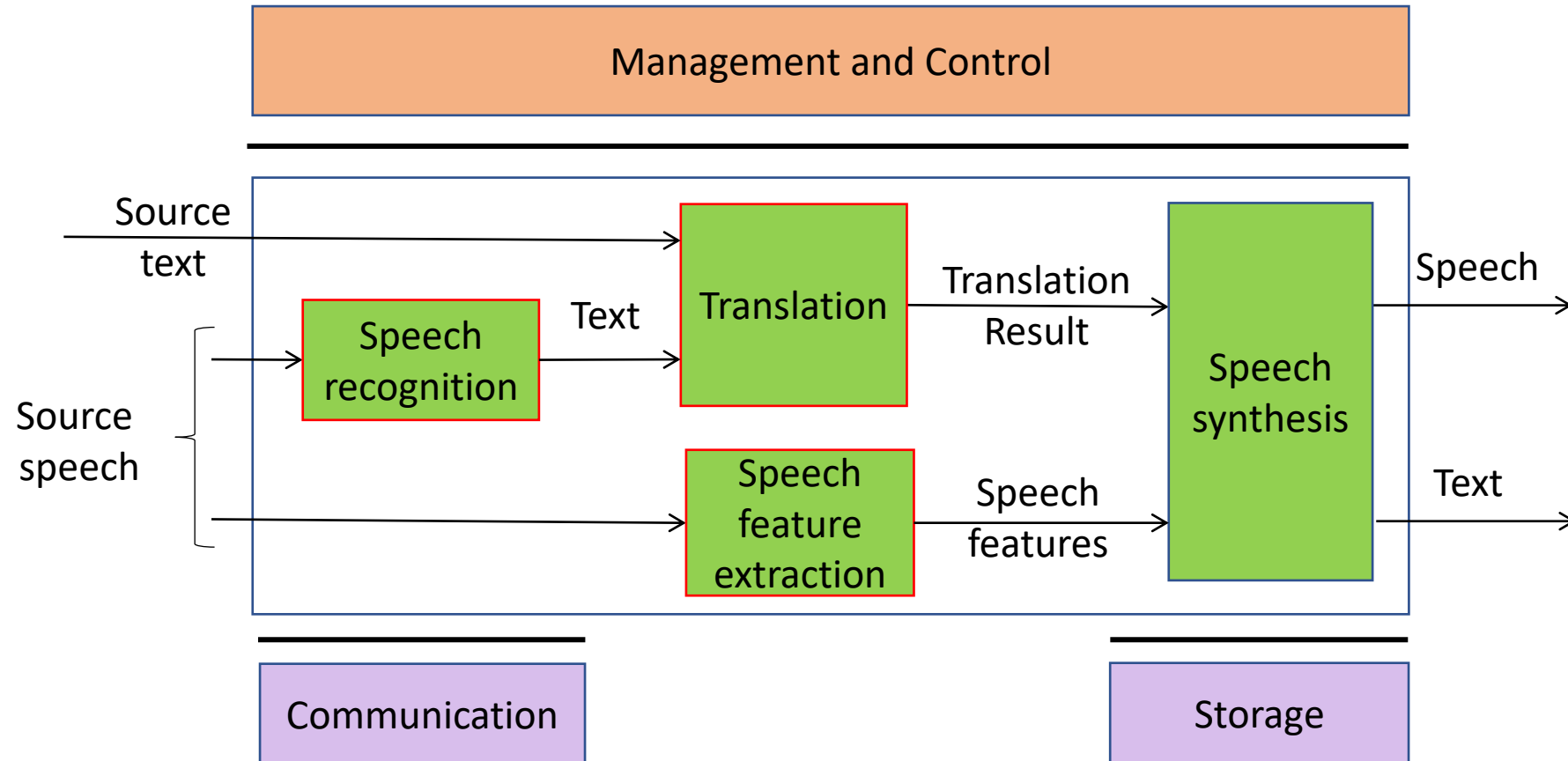
Multimodal question answering



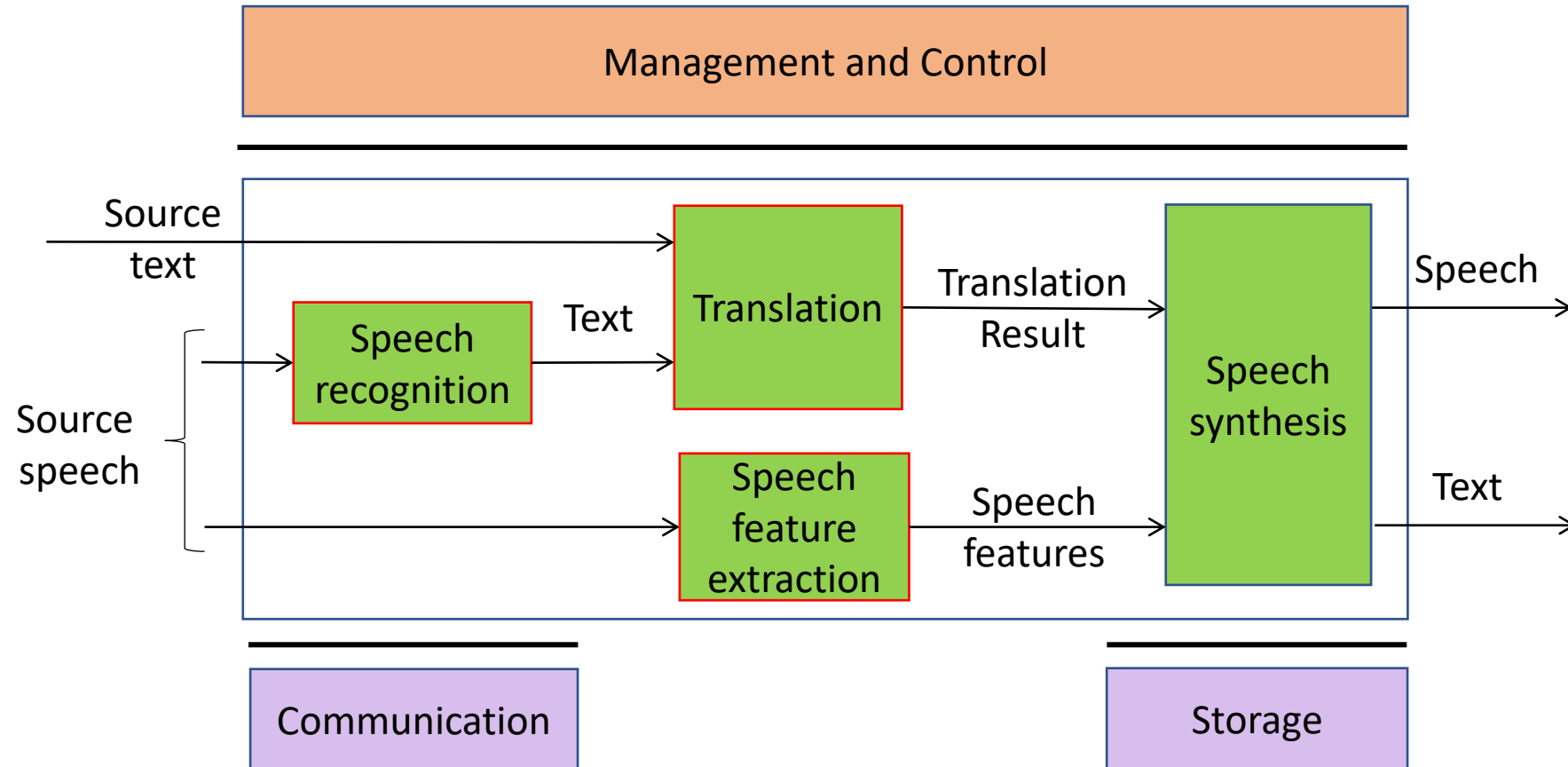
Multimodal question answering



Personalized Automatic Speech Translation



Personalized Automatic Speech Translation



Some technologies requested

Use Case	Interfaces
Conversation with emotion	Emotion
	Text features
	Speech features
	Video features
	Meaning
	Sentence features
	Text with emotion
	Concept with emotion
Multimodal QA	Image features
	Intention KB query format
	Online dictionary query format
Personalised automatic speech translation	Speech features

Submitting a response to MPAI- CAE and MPAI-MMC CfTs

Panos Kudumakis

Purpose of MPAI-CAE & MPAI-MMC calls

- Calls for technologies that:
 - Satisfy the MPAI-CAE or MPAI-MMC Functional Requirements *_and_*
 - Released based on the MPAI-CAE or MPAI-MMC Framework Licence, if selected
- Seeking comments on technologies or architectural components:
 - Additions or removals of I/O data justifying changes and identifying formats
 - Alternative partitioning of the AIMs providing:
 - Arguments in support of the proposed partitioning
 - Detailed specifications of the I/O data of the new AIMs
 - New Use Cases fully described
- For parties having relevant technologies who should be aware that:
 - MPAI-CAE or MPAI-MMC, Use Cases and AIM internals will be *non-normative*.
 - The I/O interfaces of the AIMs will be *normative*.

Submission and assessment

1. Respondents must present their submission or proposal is discarded.
2. MPAI will select technologies on the basis of their technical merits
3. MPAI may not select a particular technology or to select any technology if those submitted are found inadequate.
4. Upon acceptance of a submission or part thereof, MPAI requires that:
 1. A working implementation be made available before the technology is accepted.
 2. Software in compiled or interpreted or hardware description languages.
 3. Implementation be suitable for operation in the MPAI-AIF Framework.
5. Implementation used to develop and publish implementation standard
6. A non-MPAI member immediately join MPAI, or submission is discarded.

Evaluation process

1. An evaluation panel will be created from:
 1. All DC members attending.
 2. Non-MPAI members who are respondents.
 3. Non respondents/non MPAI member experts invited in a consulting capacity.
2. No one from 1.1.-1.2. will be denied membership in the Evaluation panel.
3. Respondents present their proposals and Evaluation panel asks questions.
4. If required, appropriate tests and studies will be carried out
5. Evaluation panel members fill out Annex B for each proposal.
6. Respondents respond to evaluations.
7. Proposal evaluation report is produced.

Mandatory statement

- *<Company>* submits this technical document in response to MPAI Call for Technologies for MPAI project MPAI-CAE/MMC.
- *<Company>* explicitly agrees to the steps of the MPAI standards development process defined in Annex 1 to the MPAI Statutes, in particular
- *<Company>* declares that *<Company>* or its successors will make available the terms of the Licence related to its Essential Patents according to the Framework Licence of MPAI-CAE/MMC, alone or jointly with other IPR holders
 - After approval of the MPAI-CAE/MMC standards by the General Assembly and
 - In no event after commercial implementations of the available on the market.

Timeline

Step	Date	GA
Call for Technologies	2021/02/17	MPAI-5
CfT introduction conference call #1	2021/02/24T15:00 UTC	
CfT introduction conference call #2	2021/03/10T15:00 UTC	
Notification of intention to submit proposal	2021/03/16T23.59 UTC	
Submission deadline	2021/04/12T23.59 UTC	
Evaluation of responses starting on	2021/04/14	MPAI-7

MPAI-CAE/MMC Framework Licence

Davide Ferri

Chair, CAE-FWL and MMC-FWL

MPAI Framework Licence – General Principles

- In the context of new standards, IPRs are the engine that ensure and sustain technology innovation.
- **FWLs** address the problems created by FRAND declarations which have proved to be vague and inadequate in setting guidelines according to which licenses for standard essential IPRs should be granted.
- MPAI replaces FRAND declarations with FWLs defined as the set of conditions to create a subsequent **License**
- FWLs are developed by **Active** MPAI members, i.e., those who intends to contribute to the technical development of an MPAI standard

MPAI-CAE/MMC FWLs: Basic terms for future Licenses

1. The **License** will:

- ✓ be in compliance with generally accepted principles of competition law and the MPAI Statutes
- ✓ cover all of Licensor's claims to Essential IPR practiced by a Licensee of the MPAI-CAE/MMC standard
- ✓ cover Development Rights and Implementation Rights
- ✓ apply to a baseline MPAI-CAE/MMC profile

2. Access to Essential IPRs of the MPAI-CAE/MMC standard will be granted in a non-discriminatory fashion.

3. The scope of the **License** will be subject to legal, bias, ethical and moral limitations

MPAI-CAE/MMC FWLs: Basic terms for future Licenses

4. The **License** for Development and Implementation Rights, to the extent it is developed and implemented only for the purpose of evaluation or demo solutions or for technical trials, will be free of charge
5. A license **free of charge** for limited time and a limited amount of forfeited royalties will be granted on request
6. The total cost of the **Licenses** issued by IPR holders will be in line with the total cost of the licences for similar technologies standardised in the context of Standard Development Organisations
7. The total cost of the **Licenses** will take into account the value on the market of the AI Framework technology Standardised by MPAI.

See the Framework Licences at <https://bit.ly/2OB3SdC> and <https://bit.ly/3efUOWF>



Joining MPAI

Leonardo Chiariglione

If you wish to join MPAI, you should...

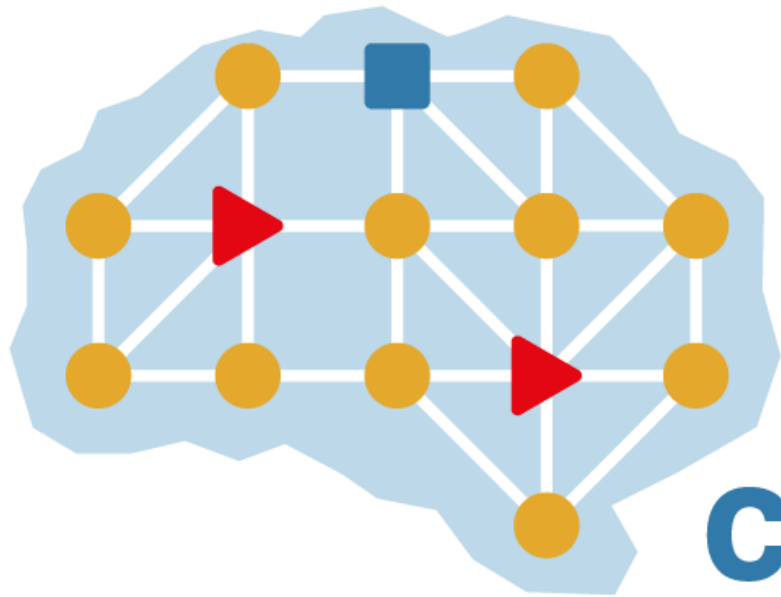
- Be a legal entity or an individual representing a technical departments of a university
 - Supporting the MPAI mission and
 - Able to contribute to the development of MPAI standards
- Choose one of the two classes of membership:
 - Principal Members, with the right to vote (2400 € p.a.)
 - Associate Members, without the right to vote (480 € p.a.)
- Send secretariat@mpai.community a copy of
 - The template for MPAI Membership applications (signed)
 - The MPAI Statutes. Each page should be signed and initialled
 - The bank transfer
- See: <https://mpai.community/how-to-join/join/>

In summary...

If you intend to make a submission

- Check the Calls web page at <https://bit.ly/2Py4h11>
- Communicate to the secretariat your intention to respond to the Call (secretariat@mpai.community) by 16th of March
- Prepare your submission using the templates at <https://bit.ly/30oCsdI> (CAE) and <https://bit.ly/2OzVHyc> (MMC), respectively
- Send your submission to the secretariat by 12th of April
- Be ready to present (online) your proposal at the time indicated to you by the secretariat
- Get familiar with the evaluation process described in the Calls
- **Regularly check the Calls web page for news** (<https://bit.ly/2Py4h11>)

Animated Conversation with Emotion



MPAI.

community

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