

MeMAD project

Broadcasting archives, research and
increasing automation
in the media industries

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Lauri Saarikoski





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Have you ever..

- .. Searched for archive content?
- .. Entered metadata to archive / library / content management systems?
- .. Edited video, audio or text?
- .. Translated or subtitled content?



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Research and innovation project 2018-2020:
multimodal content analysis and language technologies

- Video and sound description
- Speech recognition
- Machine translation

Combining automated methods with human work

Domain: **Media industries**

- media distribution (incl. broadcasting)
- media production (incl. archives)
- translation, subtitling, audio descriptions



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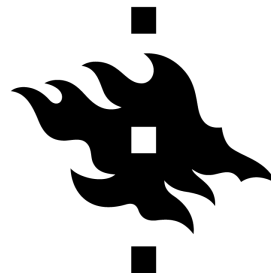
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MeMAD consortium

Aalto University, Finland (Coordinator)



University of Helsinki, Finland



EURECOM, France



University of Surrey, UK



UNIVERSITY OF
SURREY



Yle, the Finnish Broadcasting Company



Limecraft, Belgium

Lingsoft, Finland



Institut national audiovisuel, France

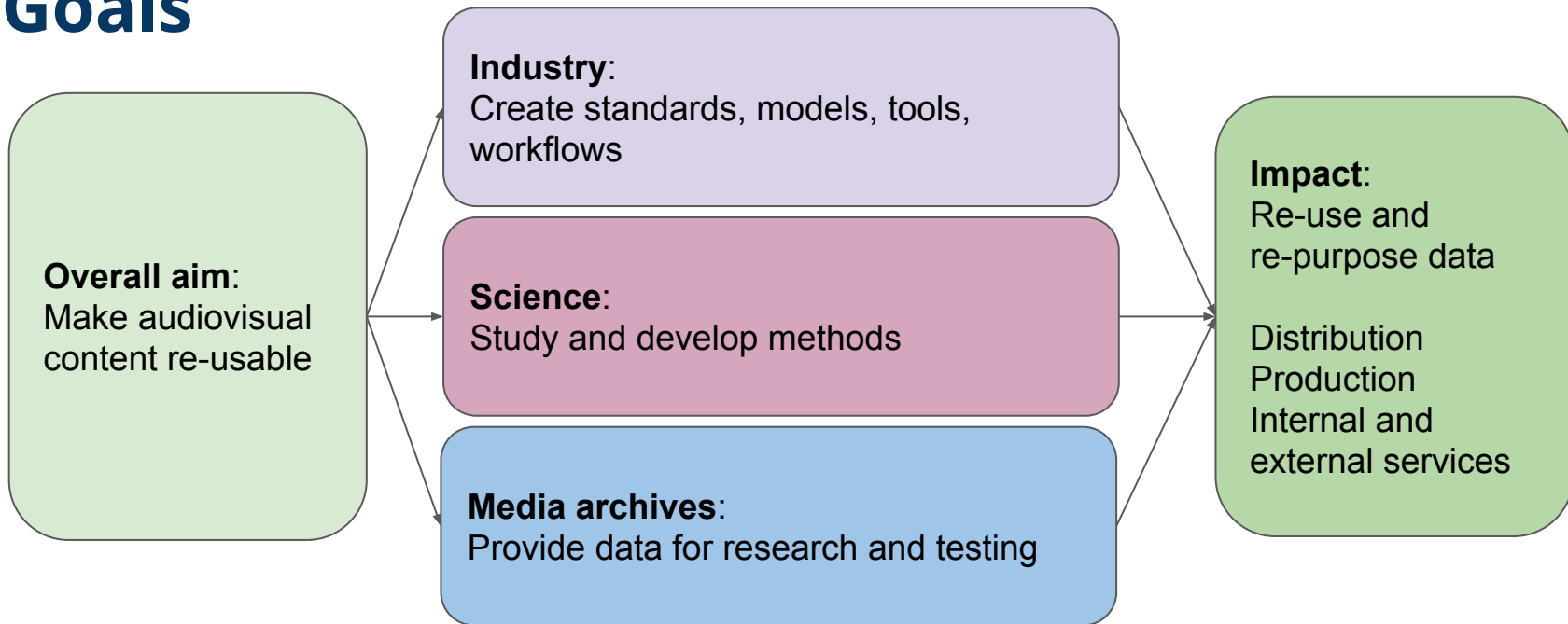


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Goals



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Some technology components this far

- Sound classifier - What is audible at a given moment: a woman speaking, sound of wind etc.
- Speech / music / silence -classifier + speaker gender recognition
- Speech to text in alternative languages
- Finding corresponding image-text -pairs (same content in text and visuals)
- Face recognition
- Named entity recognition
- Multimodal translation (translation making use of e.g. visual cues also)

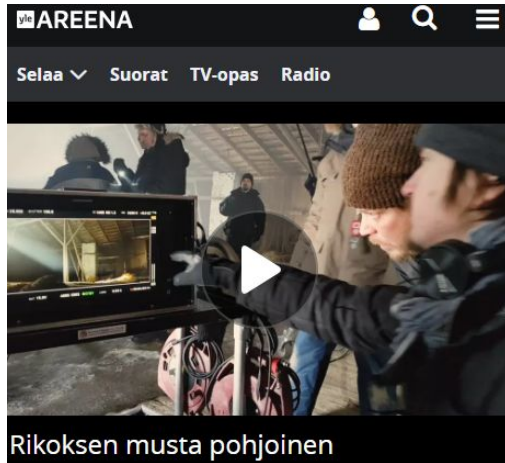


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More information by automation



Audio, additional languages and audio description

Subtitles, additional languages

ASR, NER..

Structural analysis, themes, narration..

Visual analysis, faces, objects, actions..

Content descriptions: topics, subjects, visual content etc.

Semantic linking to other parts,
programs and resources



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Main use cases

Consumer media services

E.g. find or skip parts of a program

Linking data between services

E.g. enriching services with 3rd party data and information

Media production

E.g. create descriptive metadata for archive content

Translation, subtitling and accessibility

E.g. easily produce subtitles in additional languages



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Evaluation through prototyping

- Prototype platform combines the project's technologies
- New version each year
- Put to test by media professionals at Yle and external partners

Key questions:

- **Where should we use automation?**
- **How to combine human work with automated analyses?**



Media and data for the project



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Datasets fueling research

1. Research and open access datasets: TRECVID, MS-COCO etc.
 - a. standard reference points for research groups
 - b. generic annotation available, but possibly biased

2. Proprietary datasets: INA, Yle
 - a. **existing contracts and rights issues affect availability**
 - b. real-world examples of the targeted domain
 - c. real-world annotations [both good and bad]



Rights, limitations and duties

- **Contracts**
 - Production contracts, Distribution contracts, etc.
- **Framework agreements**
 - E.g. Copyright societies and broadcasters agree on rights concerning their main processes
- **Legislation (incl. copyright)**
 - EU and national, differences between countries
 - Duties, limitations and privileges of e.g. national archives
 - Role of research? What is available by default?



Extended collective licensing

- Extended collective licensing:
 - A copyright society may grant licenses on behalf of all rights holders for some specific purposes
 - One contract instead of, say, 2500 individual contracts with each rights holder
 - E.g. making copies for research use
- Do not be afraid of lawyers and copyright. Focus on finding and negotiating solutions.
- Long term licenses and data availability?



Lessons learned on data and rights

- Well-chosen data can support research and development
- One size does not fit all. Different datasets for different research topics
- Subsets of data might be enough for some research teams.
E.g. subtitles in parallel languages instead of media files
- Distribution and management of video datasets takes time, storage and bandwidth
- Copyright negotiations take their time.
 - Aim for standard license templates
- This is still new to copyright societies and rights holders. Explain what you wish to do.
- Documentation on data structures, provenience and conventions are essential when sharing data



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Yle wishes to open datasets

Media + other data

audio, video, text, images

subtitles, program metadata, program manuscripts etc

Smart subsets to power the R&D ecosystem

E.g. language and speech technologies for minor languages.

What is needed the most at the moment?



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Facts, contacts

Yle, the Finnish
Broadcasting Company



<https://yle.fi/aihe/about-yle>

<https://areena.yle.fi/tv>

Lauri Saarikoski

Yle Archives

Development manager

lauri.saarikoski@yle.fi

+358 40180 5646



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Thank you!



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