CAPI — CENTER FOR ADVANCED PRECLINICAL IMAGING

FIRST FACULTY OF MEDICINE — Charles University

CZECH BIOIMAGING — Imaging principles of life

EURO BIOIMAGING

FAIRIFICATION IN A MULTIMODAL IN-VIVO IMAGING CENTRE

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1 INTRODUCTION

Preclinical in-vivo imaging creates **complex multimodal datasets**, but applying FAIR principles to longitudinal animal studies is **VERY challenging**. Current metadata standards **lack support** for multimodal preclinical imaging as well as dedicated **data repository** beyond PIDAR.

2 AIM

- Design a **practical FAIRification workflow** for in-vivo imaging studies.
- Align internal practices with **REMBI** while **keeping it simple** for researchers and operators.
- Prepare data and metadata for **future EOSC integration**.

3 MULTIMODAL IMAGING

Multimodal workflows combine:

- **Biosample** preparation
- **Chemistry** (contrasts, drugs)
- **Animals** & applications
- Longitudinal **imaging sessions**
- Large **image** stacks & **quantification**
- Data **FAIRification** and **publication**

Ultrasound & Photoacoustics

Optical Imager
- Fluorescence
- Luminiscence
- Reflectance
- Cherenkov radiation
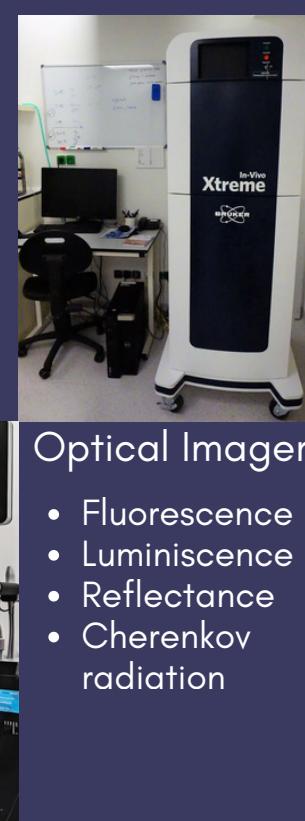
1T Magnetic Resonance

7T Magnetic Resonance
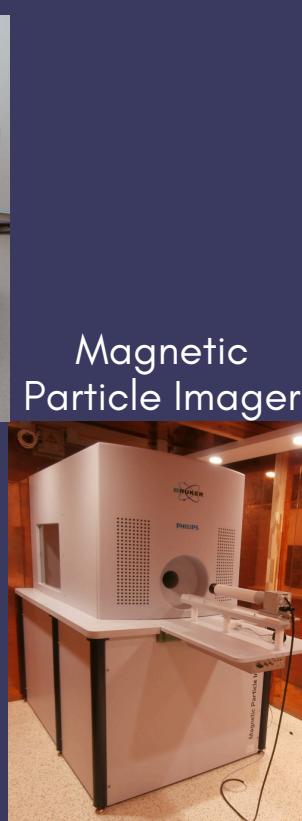
Magnetic Particle Imager
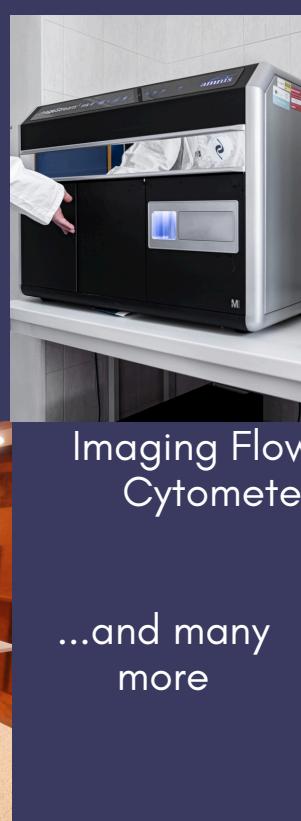
Imaging Flow Cytometer

...and many more

4 FAIRIFICATION STRATEGY

- FAIR Wizard: Study & DMP
- REMBI-based metadata template
- Acquisition: Images & Diaries
- Automated metadata extraction
- Data curation
- EOSC & Repositories
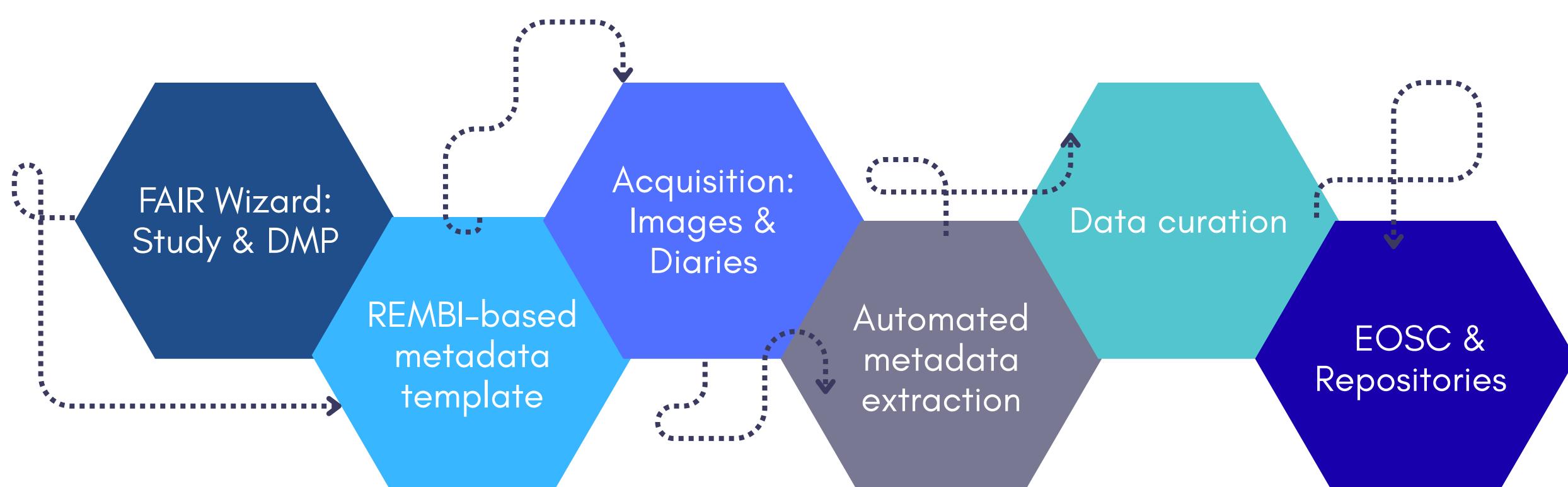
5 KEY CHALLENGES

Metadata depth vs. practical **usability**

Human factor vs automation **SW**

Microscopy-driven metadata **templates** vs. **preclinical** in-vivo imaging **reality**

6 CURRENT STATUS

- Available **templates** tested on pilot projects
- **Extended REMBI mapping** for specific modalities
- Developing **automated** metadata extraction **software**
- Internal workflow ready – public datasets coming soon
- First PIDAR upload planned for Spring 2026