

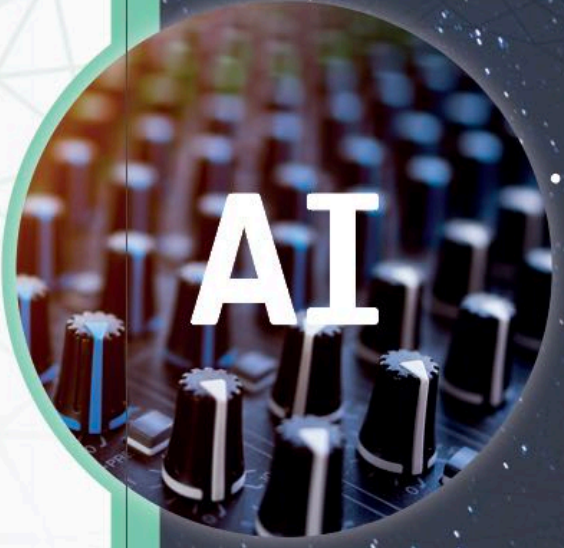
# AI4EO

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Pierre-Philippe Mathieu, March 2021,  
Earth Observation Info Days 2021



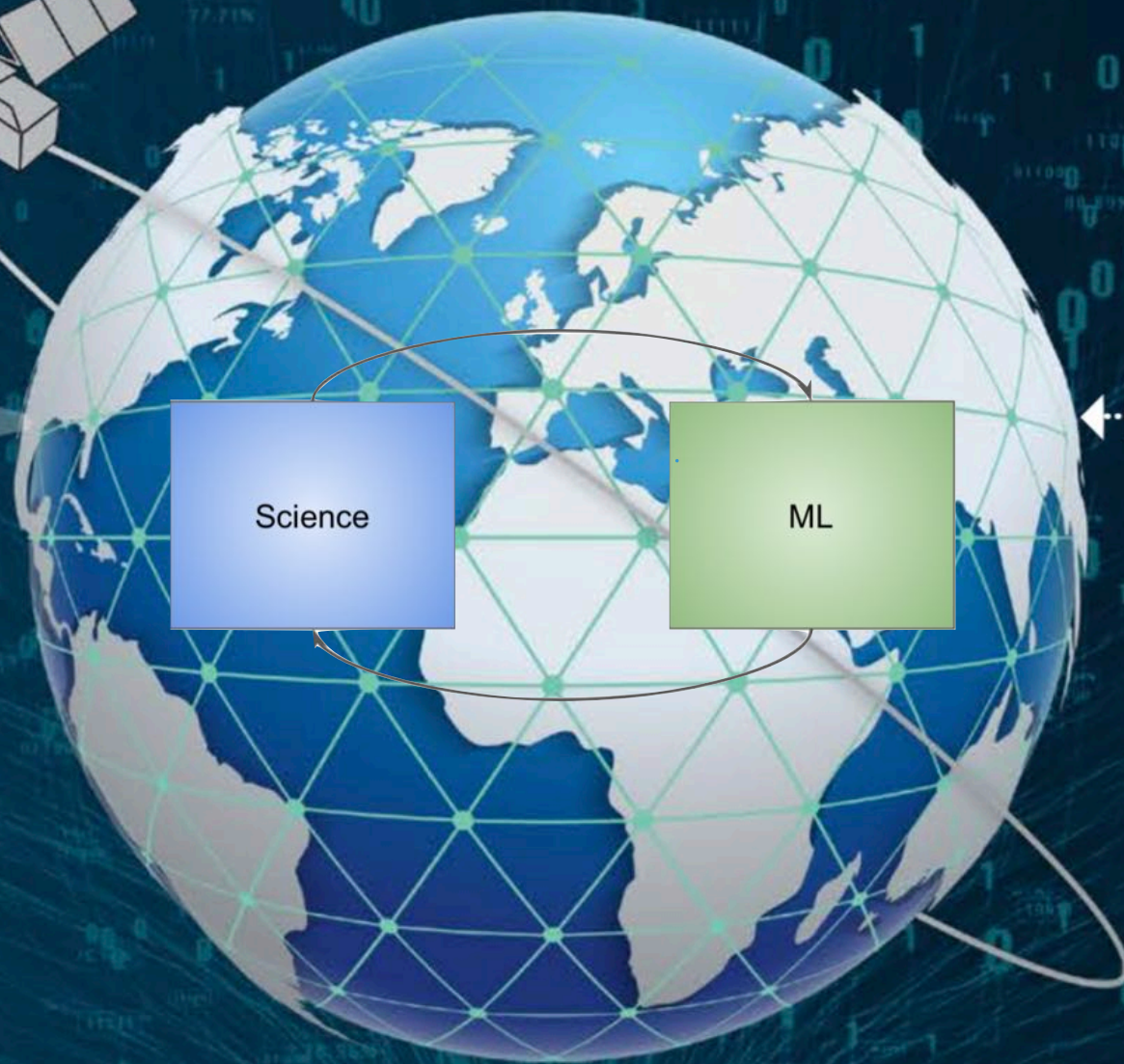
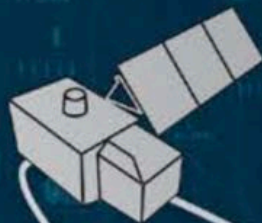
0 Stack to query our planet



THE EUROPEAN SPACE AGENCY 15



OBSERVATION



Science

ML

MODELS

LEARNING

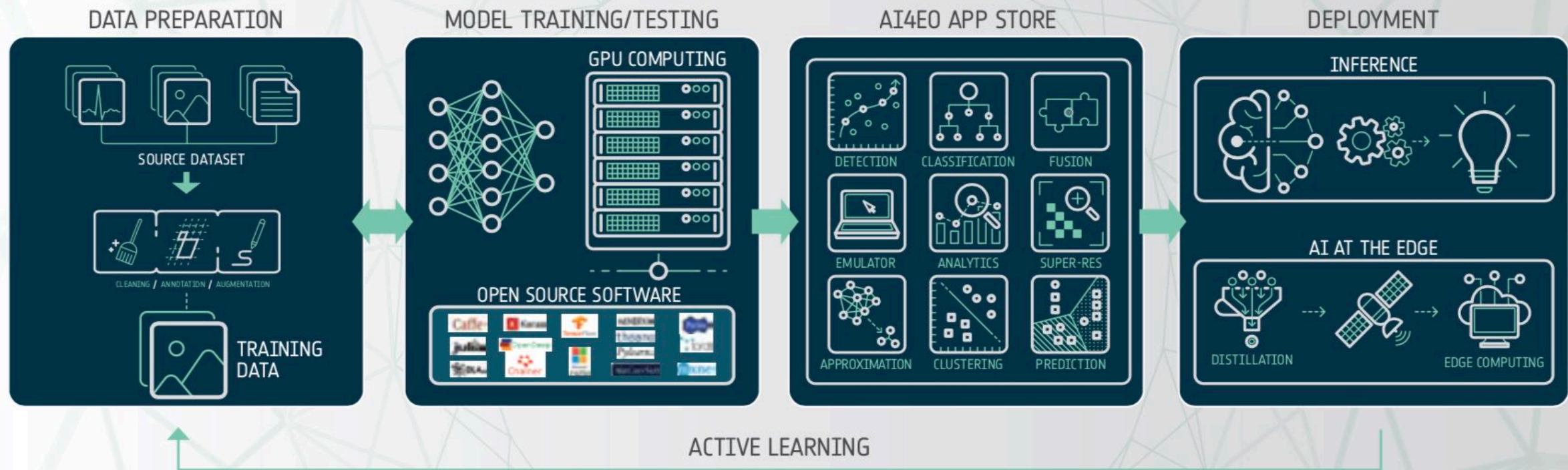
AI

INFERENCE

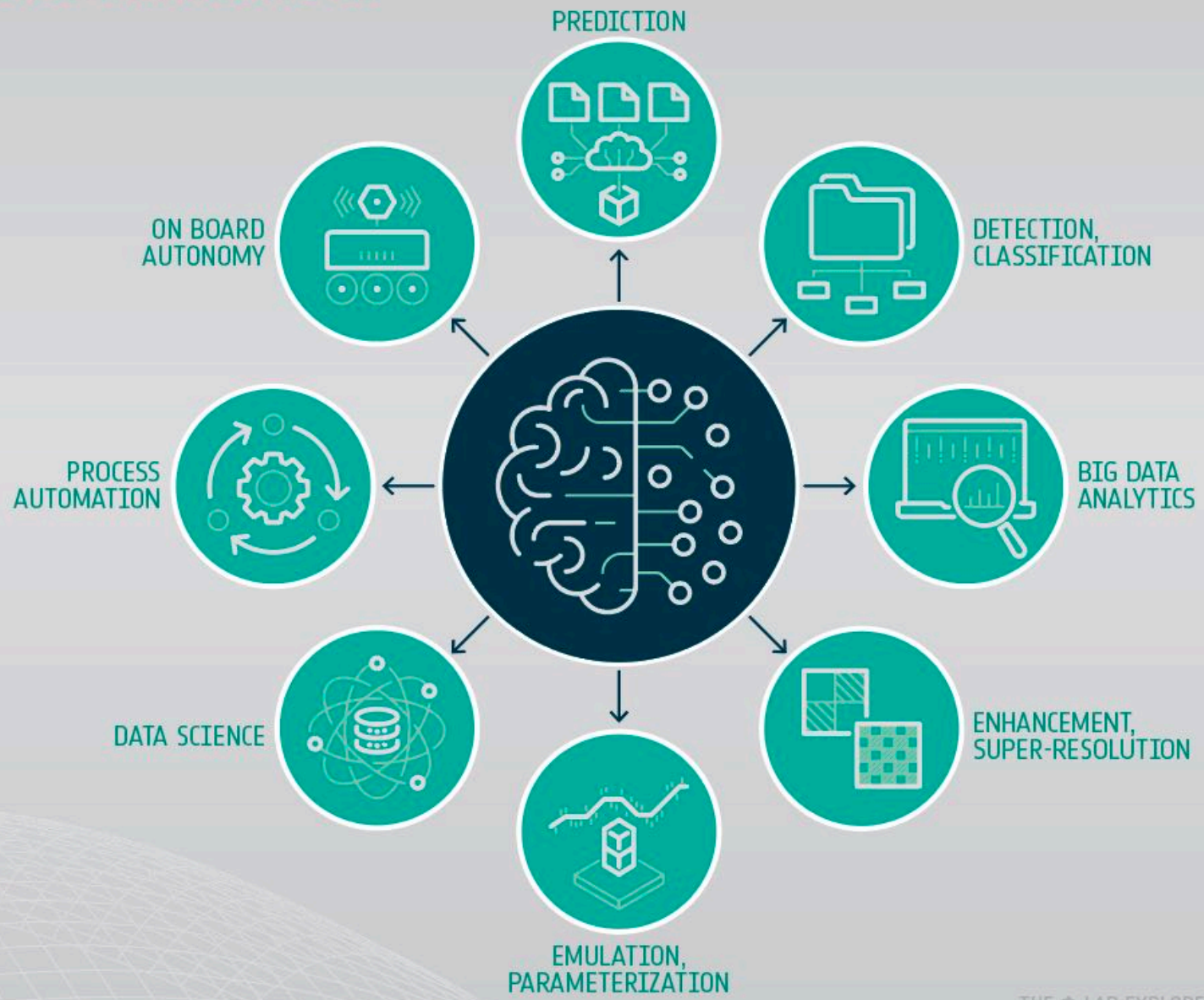
INSIGHT



# AI4EO App Store







- Family of activities
- Exploratory / Demo
  - Capacity Building
  - Ecosystem Building



**[AI-6] *AI4EO Challenge - Non-supervised learning. Q1 2021. 250K.*** Maximise use non-labelled images, 3 use cases with unsupervised learning, auto-ML

**[AI-14] *Theory-guided and explainable AI4EO. Q2 2021. 250K.*** One of the key issues in adoption of AI is the lack of trust in the “black box”. This activity aims to develop some tools and methodology to enhance confidence in the results and better quantify uncertainties, and be demonstrated through a suite of explainable AI4EO use cases. This activity will also address how to merge physics with the statistical approach of AI to build “physics-aware” Machine Learning and emulators.

**[AI-15] *European Network of AI4EO labs. Q2 2021. 600K.*** This activity aims to foster the development of an European network of AI4EO labs, which will capitalize on national capabilities in AI (leading AI centers and universities) to tackle a suite of AI4EO societal and scientific challenges.

**[AI-16] *Demonstrator Digital Assistant interface for DTE. 300K. Q2 2021.*** This activity will address how to integrate principles of Natural Language Processing (NLP) in the search and discovery of EO and other data, in order to develop a kind of digital assistant which enables to interrogate and identify the right information in big data.



**[AI-17] *Call for AI4EO Fellowship and Visiting Profs. Q2 2021. 300K.*** This activity capitalizing on the Living Planet scheme aims to attract AI talents to ESA, perform research and help shape future AI4EO strategy.

**[AI-18] *AI4DTE software stack. Q3 2021. 350K.*** Expand the set of AI activities responding to the recommendations of the phi-week 2020, with special focus on the applications of AI to DTE.

**[AI-19] *AI training dataset platform implementation. Q2 2021. [budget tbc].*** Training data curation mechanism and dedicated processing services, fully compliant to sound data principles, address the lack training of high-quality training datasets for AI, considered a major obstacle preventing the step-change impact that can be expected from AI in EO.

**[AI-20] *AI-enhanced revisit of the Sentinel Archive feasibility study. Q3 2021. 300K.*** . Exploring use of new AI scheme to enhance the value of Sentinel, e.g. data fusion optical/radar, super resolution, and extract more value from the archive