Virtual-Lab: Challenges-Feature

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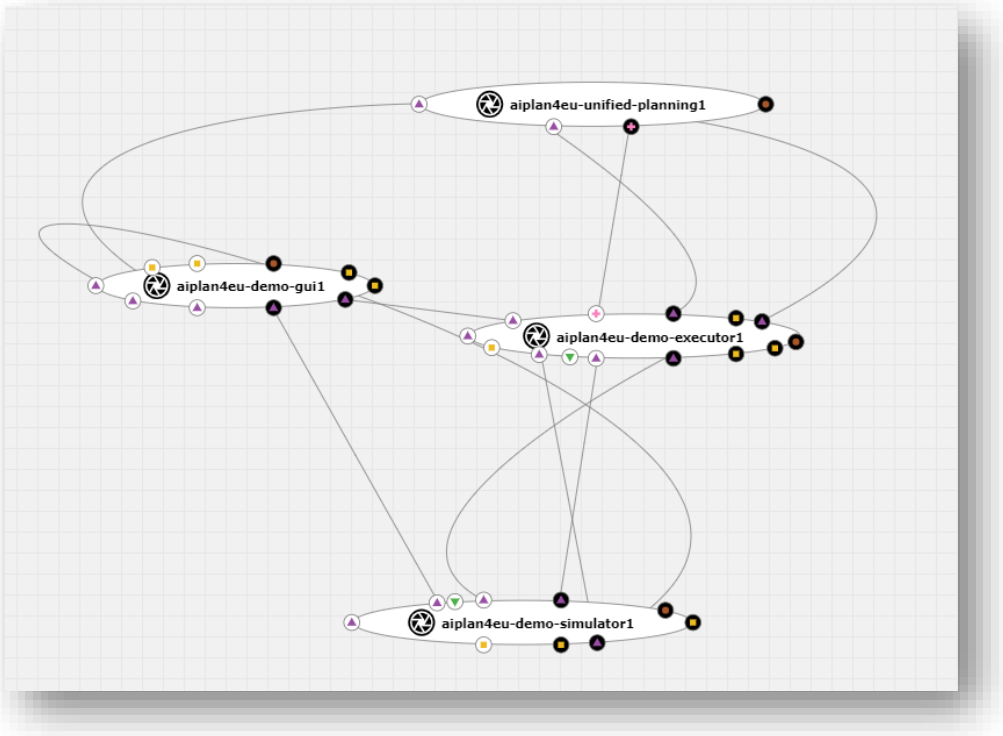
Precondition: execution-run

- Built on the reproducibility extension developed in AI4Europe
- Execution-run.json contains
  - Dataset metadata
  - Container images checksums
  - All information to re-run the pipeline
  - Pipeline topology (textual representation)


```
"dataset_features": {
    "type": "aiod-dataset/v1",
    "datasetname": "The Reuters Dataset, TensorFlow Dataset(tfds)",
    "description": "http://kdd.ics.uci.edu/databases/reuters21578/README.txt",
    "size": "4MB",
    "DOI_ID": "Not available"
}
```

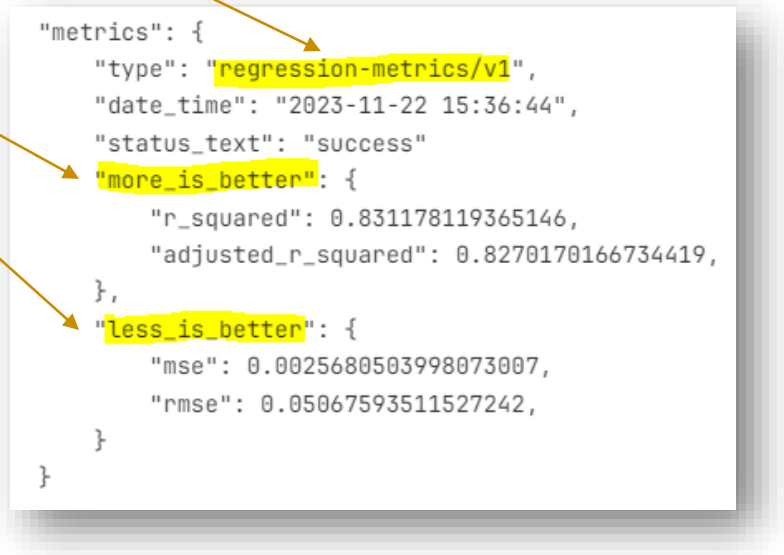

Cyclic Topologies

- Cognitive architectures and pipelines contain loops and cycles
- For training as well as inference use cases



Precondition: Metrics and Metadata

- Metrics data format developped in AI4Europe
  - Supports different types (regression, classification,…)
  - Support for automatic comparison
  - Important for ranking
  - Integration with central Metadata-Service for of other services

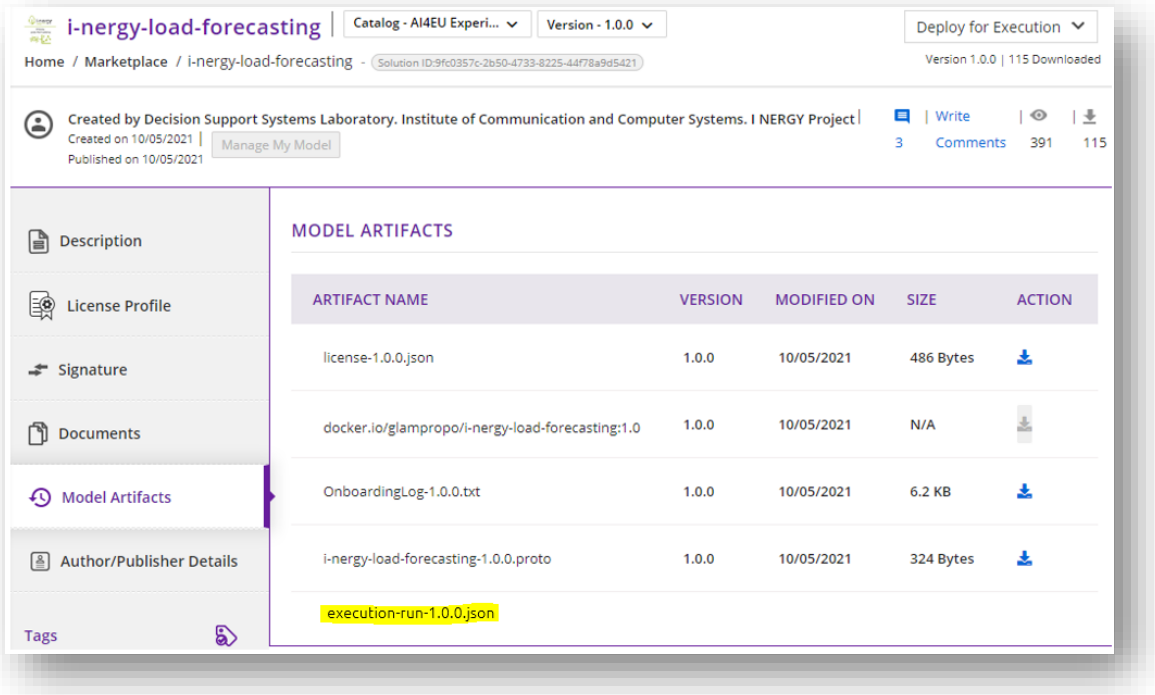


Tutorials: Metrics and Metadata

- Metrics and other execution metadata already implemented in some tutorials:
  - News-Trainer Pipeline
  - Houseprices-Prediction Pipeline
  - Sentiment-Analysis Pipeline
  - Updated Container Specification
  - https://gitlab.eclipse.org/eclipse/graphene/tutorials

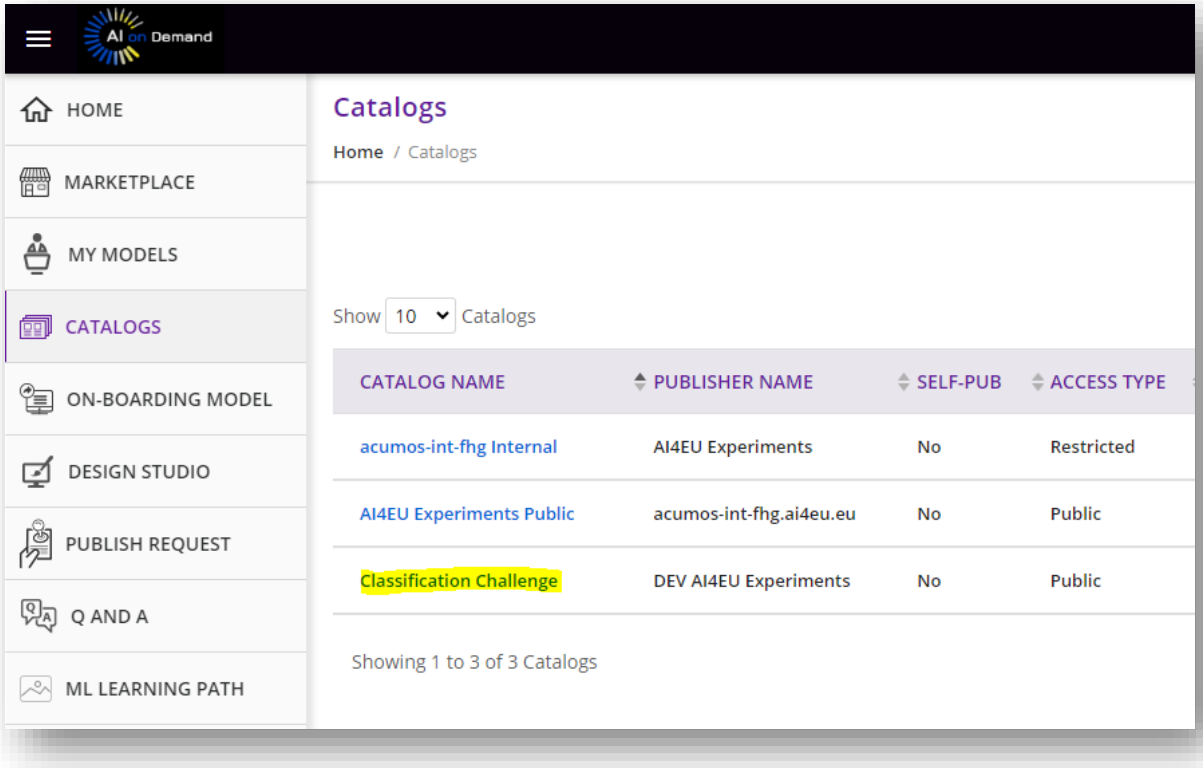
- The AI Playground supports creation of the execution-run.json datastructure

Collecting Execution Metadata



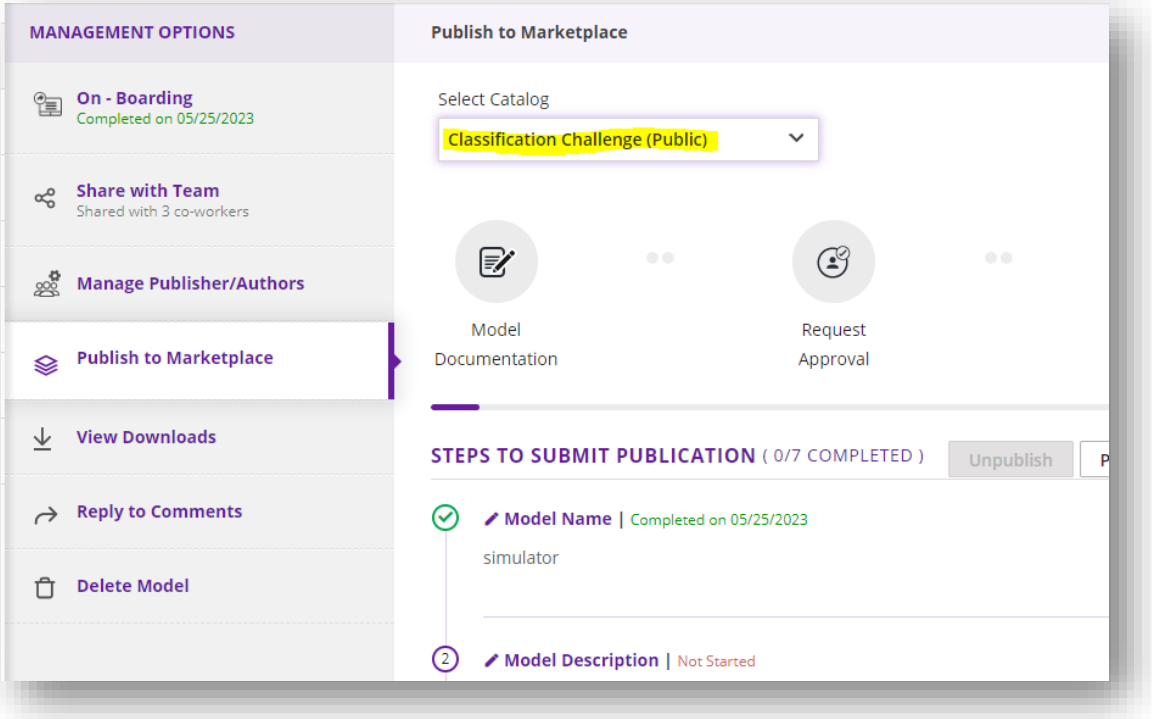
- execution-run.json can be received from different execution environments
- It will be associated with the respective model in the catalog

Creating Challenges



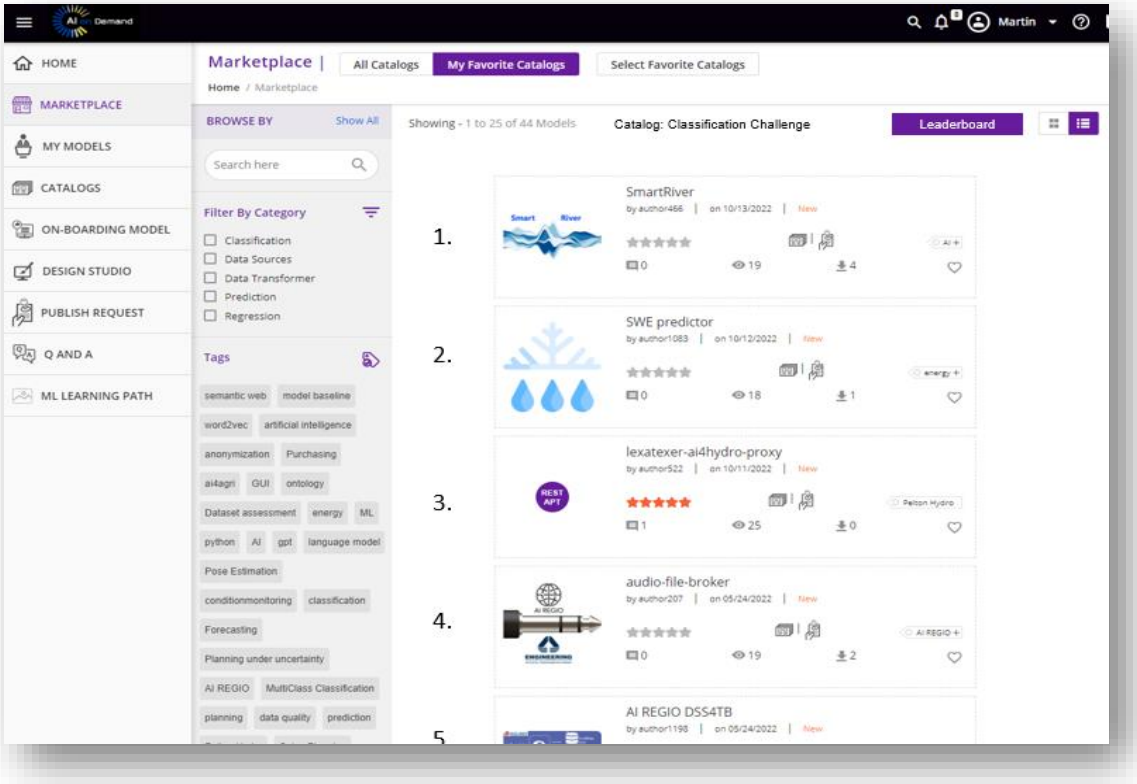
- The marketplace view consists actually of a set of catalogs
- Challenges will be special types of catalogs

Challenge Submissions



- Challenge submissions are handled just as „normal“ onboarding and publication, only the correct target catalog for the challanges must be selected

Leaderboard



- Based on the metrics format with type and comparison information the models can automatically be ranked in the Leaderboard

Timeline

- Metrics and creation of execution-run.json is already available on the production systems
- End of 2023: send execution-run.json from AI Playground to the Catalog
- May 2024: Challenges management completed