Expert matching at RCN
– from evaluation to experimentation

AFIRE AI sprint GRAIL workshop
24 June 2025

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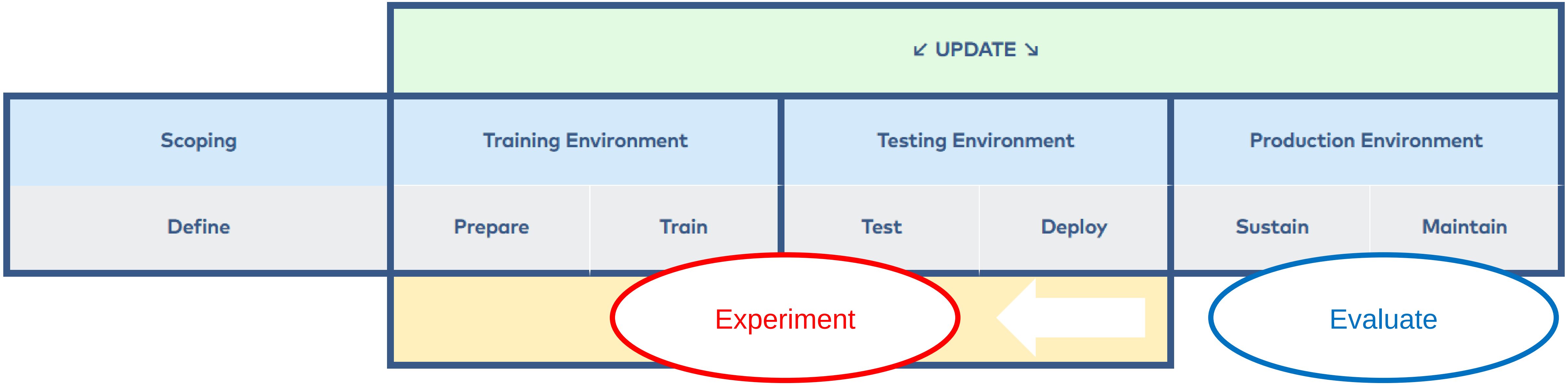
The Research Council of Norway

AI lifecycle process flow

The AI lifecycle describes the different phases from the inception of AI systems to operation and is an iterative process



The **Definition phase** is important for scoping the intended use and setting internal requirements (for, e.g., performance and availability), but also for making sure potential fairness issues (if applicable) will be addressed properly.

The **Training environment** contains data management, data preparations, and model building activities (including algorithm selection, training, and optimization).

The role of the **Testing environment** is to test data quality, model performance, prediction uncertainty, to make decisions whether to deploy or not, and to deploy models for production if tests pass.

The **Production environment** contains activities required for flawless operation; monitoring, logging, model update logic, drift detection & countermeasures, provision of robust inference service, and mechanisms for failure recovery

Development process for RCN AI/ML team

Phase	Milestone	Responsible	Result
Start	**Submission** of needs from the business Clarify priorities with the product owner	Team Leader	**Description of needs** using user stories, etc. **Cost/benefit** assessment
Start	**Decision** on concept development	Product Owner	Project created in **Jira.** Planning documents in **Confluence**
Concept	**Development Lead** appointed by Team Leader (responsible for epic)	Team Leader	Development lead describes **function, available data,** and creates an **initial cost estimate** for the development of the service
Concept	**Decision** to start development	Product Owner	**For larger projects:** Costs accepted by the department director
Risk and Effects	Planning and conducting a **workshop for Responsible AI**	Evaluation Lead	Relevant parts of the organization are involved in assessing the risk associated with different types of use of the service and its results
Risk and Effects	**Assessment of risk, intended effects, and possible unintended effects**	Product Owner	Report on **anticipated effects and risk mitigation**
Technical Development	**Model development** and testing **Documentation** for the service	Development Lead	Detailed planning in Jira. Completed **Data Sheets** and **Model Cards** Documentation with guidance for use and **plan for follow-up**
Technical Development	**Final approval** report to oversight committee	Product Owner	Updated plan for **periodic follow-up** of services: Monitoring, evaluation, and retraining

Tools for process and documentation

Impact analysis

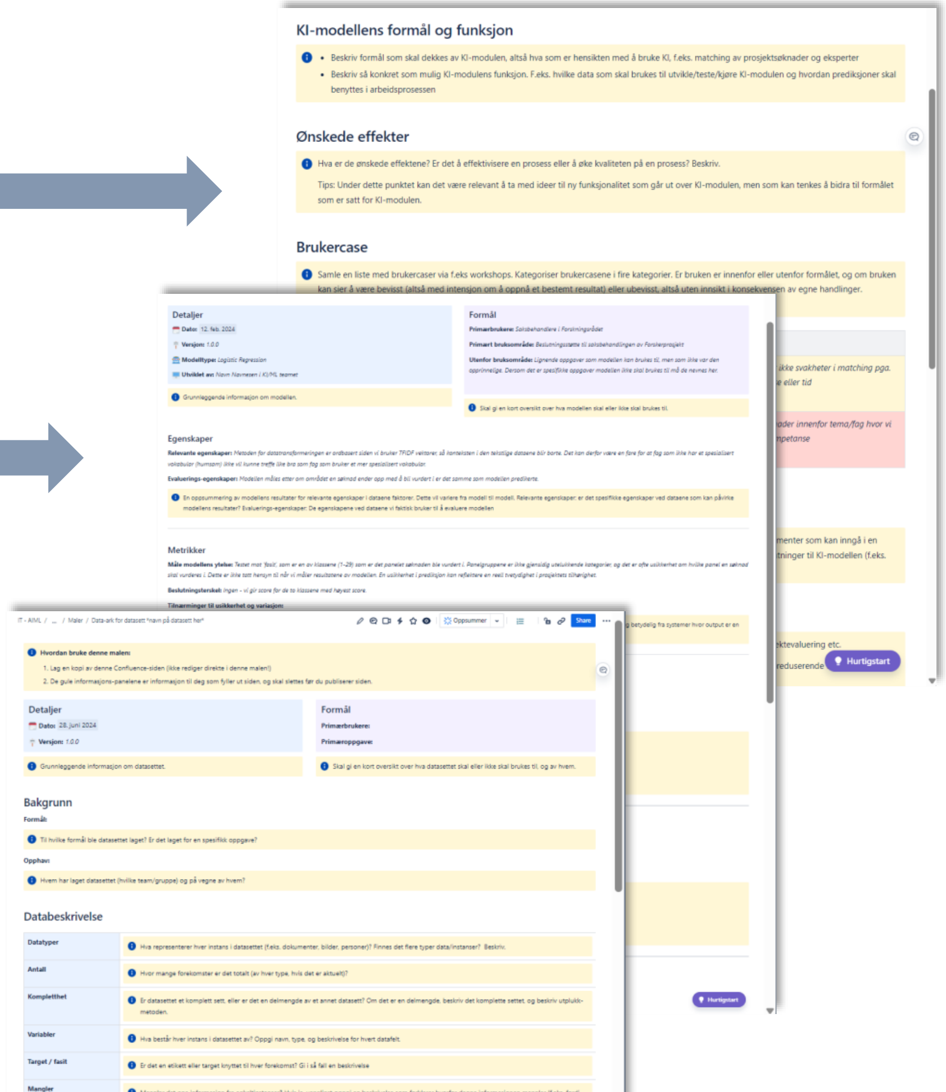
- Spengeman, Aoife, et al. "Wellcome Data Labs: An Ethics Approach to Data Science Product Development-a Intentional Work in Progress." *Available at SSRN 3974121* (2021).

Model cards

- Mitchell, Margaret, et al. "Model cards for model reporting." Proceedings of the conference on fairness, accountability, and transparency. 2019.

Datasheets

- Gebru, Timnit, et al. "Datasheets for datasets." *Communications of the ACM* 64.12 (2021): 86-92.



Follow-up of AI Services at RCN

Phase	Milestone	Responsible	Result
Monitor	**Performance data collected**	Development Lead	**Technical precision checked**
Evaluate Use & Effects	**Data on use** and/or effects on caseworkers and external stakeholders collected	Evaluation Lead	Use of the service evaluated against 'guidance for good use’ **Reassessment of the AI service as a whole**: Does it still meet the need? Is it fit for purpose?
Retrain	**Training data updated** **Model retrained**	Development Lead	**Updated documentation**

Evaluation of expert matching
DATA – MODELS – USE – EFFECTS

… and thoughts on future experiments

DATA

- How are experts identified and **recruited**?
- How is the **competence** of relevant reviewers represented in the data today?
  RCN: Publications in Scopus
- What are the known **biases** in the data sources used?
- What **other data** on reviewers' competency and appropriateness would be useful?

=>

Intervention (data): Variation in data representing expert competence

Outcome (model): Performance of model (see next slide)

MODEL

- How is **model performance** measured?
- What are the types of considerations for choosing between models?
  - **Benchmarking** towards manual selection (ground truth)
  - **Uniformity** of results across disciplines (minimise bias)
  - **Transparency** and explainability
  - **Privacy** concerns
  - **Computational cost** / environmental impact
  - …
- Which **information** does the case officer receive with the prediction?

=>

Intervention (model) : Change in AI-model

Outcome (model) : Performance measures

USE

- Do you **monitor use**? i.e. Thumbs up/down if the suggestion was useful or otherwise
- What data and knowledge is used by case-officer to **check the prediction**?
- What reasons are there for the **experts not being used**?

- What is the **response rate** of the predicted experts?
- What is the **share of precited experts** among all used experts?
- Does the prediction of experts serve **other purposes** than matching her to a proposal?
- Does the matching algorithm contribute to **good practice** in the assignment and use of experts other than speeding up the process?

=> Experiment
Intervention (model): Change information provided to case officer (availability, specialisation)
Outcome (use) : Performance measures (response rate of predicted experts)
Thumbs up/down

EFFECTS

- How can the prediction of experts **affect funding outcomes**?
  - By altering the pool of experts and their assignment to proposals: Some experts are more predicted and are used more often.
  - Can highly matched reviewers create a feedback loop?

- **Efficiency**
  - How much time do you spend recruiting experts (compared to before)?
  - Are there other changes influencing the efficiency of the review process?
  - How often do you go beyond the experts predicted by the system?
  - How many experts do you have to ask in total to recruit one expert?

=>

Intervention (model) : variation in information provided to case officer with the prediction

Outcome (effects) : time spent on recruiting experts

Scope for cooperation

1. Use some of the same questions
   in **evaluations** of existing matching algorithms

   RCN: Automn 2025

2. Test some of the same hypothesis
   in **experiments** with new matching algorithms

   RCN: Automn 2026

Empowering ideas for a better world

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