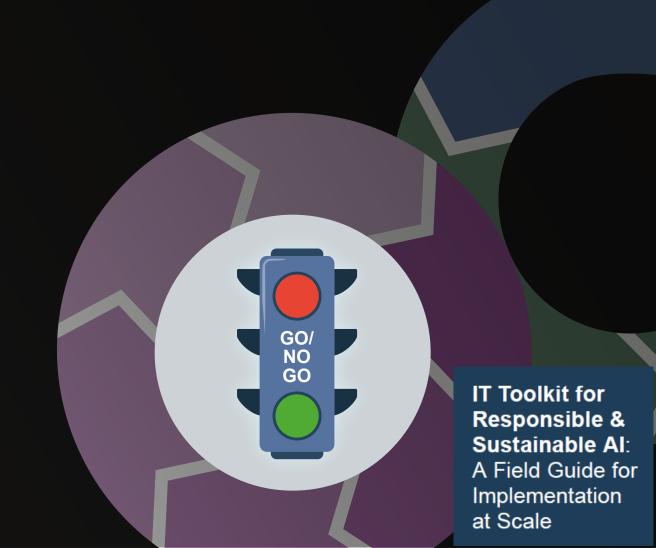
Responsible Al Governance Lifecycle

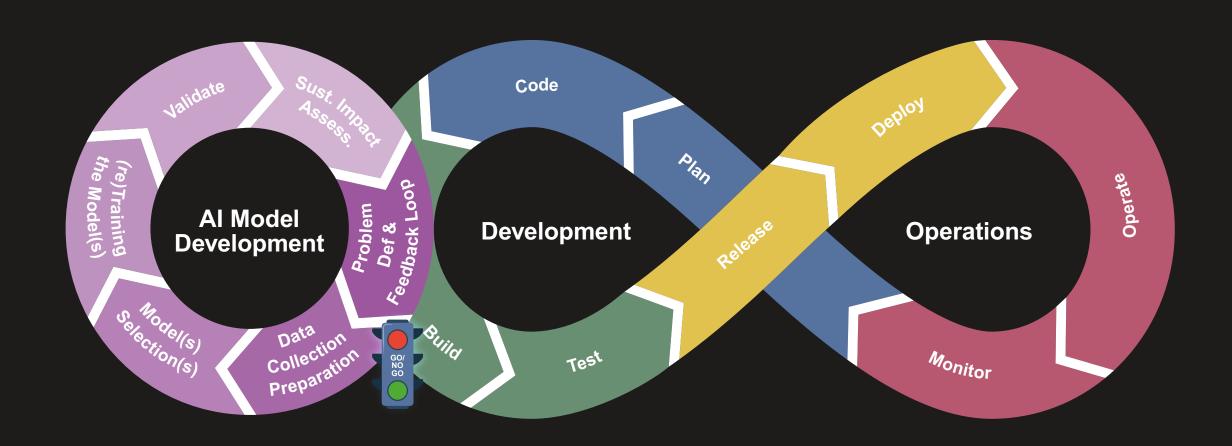
Introduction

This model series, "Responsible Al Governance Lifecycle," embeds governance practices aligned to environmental, social and sustainability objectives across the Al system lifecycle.

- » View 1 depicts the AI development lifecycle and its intersection with the enterprise DevOps model, where AI models are integrated deployed, and monitored.
- » View 2 emphasizes ESG sustainability checkpoints and actions, and maps them to the AI development cycle.
- » View 3 maps an IT Sustainability Impact Assessment to the lifecycle.
- » View 4 describes a GenAl lifecycle governance strategy, composed of "Six Rs," mapped to the most relevant stages.

Together, these complementary views allow IT and business leaders to toggle between technical and governance priorities, enabling a holistic approach to AI stewardship that aligns with sustainability goals.





View 1: Responsible Al Governance Lifecycle

Train Model Responsibly

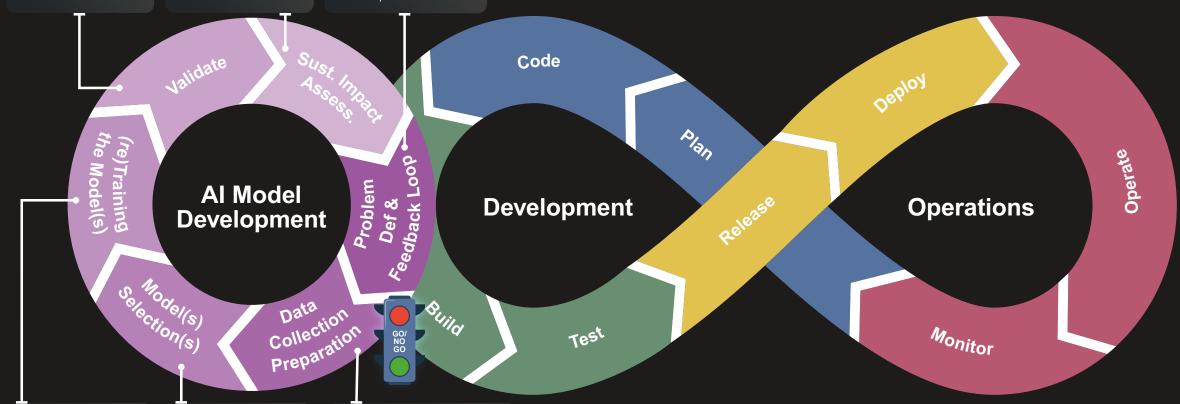
- Ethical and inclusive training data
- Resource-aware hyperparameter tuning
- Performance, fairness, energy demand monitoring

Evaluate on Test Sets and POCs

- Outcome accuracy and fairness
- Cost/Risks—operational and ESG
- Impact on sustainability KPIs

Host, Use and Monitor Model

- Low-carbon cloud or green Infrastructure
- Risk safeguards, documentation, explainability APIs
- Monitor performance, fairness, drift to improve model



Choose Al Models/ Algorithms

- Fit-for-purpose Energyefficient
- Transparent, interpretable
- Pretrained models assessed for bias & harm potential

Raw Data Gathering

- · Licensed privacy compliant
- Pre-model quality and bias audits

Preprocessing

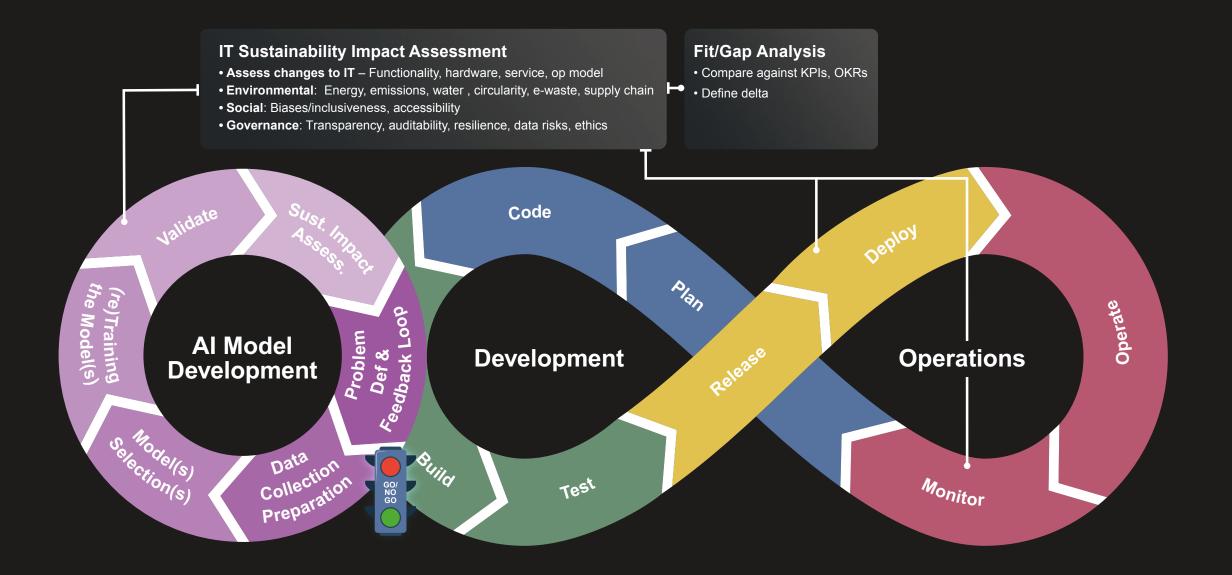
- Cleaning, labelling with human-in-loop
- Transformation, splitting low foot-print formats

Understand the Problem

- What are we trying to do/solve?
- Is an AI solution appropriate?
- What should Al achieve?
- What is the necessity and feasibility?

Assess Feedback or Obtain New Data to Improve the Use Case

View 2: ESG Checkpoints Responsible Al Governance Lifecycle



View 3: Sustainability Impact Assessment Responsible Al Governance Lifecycle

Sustainable GenAl Governance Strategies – Explanations

R0 Refuse



R1 Reframe



The function that GenAl is planned to perform is abandoned or performed by other means—no GenAl is deployed.

Example: A cost-benefit framework to weigh negative environmental impact of GenAl to the business-as-usual.

Reducing the resources required to fulfill a specific use-case, by reframing the project and designing the environment that the GenAl model will be embedded in (focus on strategy, organizational set-up, governance and design).

Example: Introduction of a CO2 budget, to steer all development processes within a project.

R2 Reduce





Optimizing the technological processes and mechanisms to reduce the required resources for development and operation of the technology (focus on technological process and mechanisms).

Example: Using adaptive backpropagation as a way to only tune the impactful parameters of a model instead of all parameters in finetuning.

R3 Re-Use

Leveraging preexisting models instead of creating new ones.

Example: Reusing a model in a different context, for example by finetuning it to the new use case.

R4 Release

regain their functionality.



R5 Revise



Utilization of components from a preexisting model in the development of a new one.

> **Example**: Using transfer learning, by teaching a smaller model to replicate the behavior of a pretrained, larger model and therefore reusing its knowledge structures.

Example: Include mechanisms for automated bug-fixes in the model.

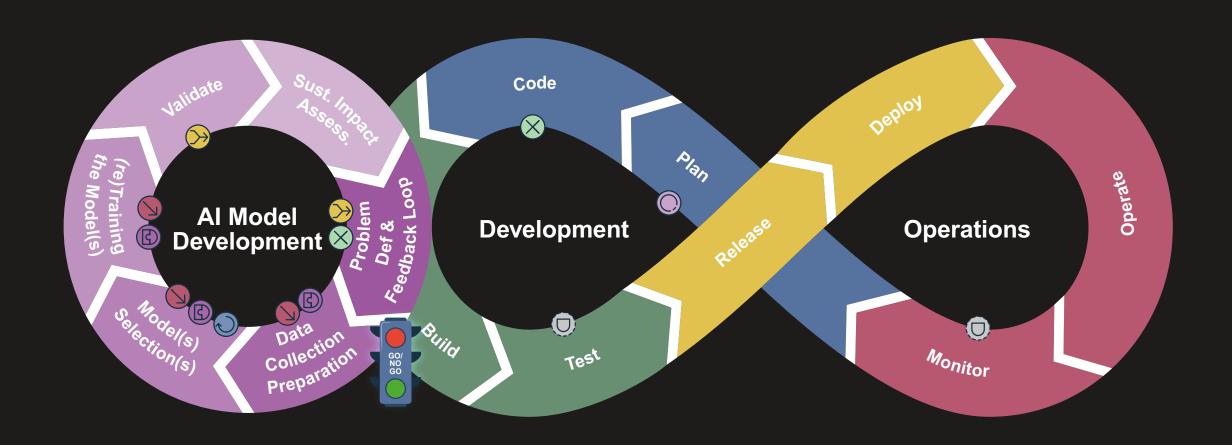
Enabling applications that fail to perform their intended function to

Support



Approaches, that indirectly affect the sustainability of GenAl applications by increasing the acceptance or implementation rate of the other sustainability strategies.

Examples: Reporting of environmental impacts, forming research consortia on sustainable AI, open sourcing.



View 4: GenAl Governance Strategy Responsible Al Governance Lifecycle