

Checklist Explainable AI¹

Table 1. Categories of XAI aspects.

Category	Meaning	Level
Overall XAI	General policies, principles, and ways of working on XAI	Organisation
Explainability and transparency in use case	Role and impact of explainability and transparency	Use case
AI in the use case	Role and impact of AI	Use case
Stakeholder's need for explanations in the use case	Stakeholders and their needs	Use case
XAI system in use case	Goal and approach of the XAI-system	Use case
Explanations in use case	What and how to explain	Use case
XAI methods and techniques in use case	Methods and techniques to develop the XAI system	Use case
Methods and techniques to evaluate XAI in the use case	Methods and techniques to evaluate the XAI system	Use case

Table 2. Checklist with aspects to consider on the organisational level, plotted on AI lifecycle, and with accountability.

Category	Checkpoint	Questions	AI Lifecycle ²	Responsible ³	Accountable ⁴
Overall XAI	Check principles for how to deal with XAI and explainability	What are the values for how to deal with explainability and XAI?	Overall	AI management	Senior management
		What are the principles for how to deal with explainability and XAI?			
Overall XAI	Check how to design, deliver, and evaluate XAI systems	How to elicit and document explainability requirements and XAI design decisions?	Overall	AI process owner	AI management
		How to design, develop, operate, and evaluate XAI systems (e.g., guidelines)?			
		How to define and manage the risks of XAI systems?			
		How to evaluate AI models in terms of explainability and transparency?			
		How to design and deliver explanations (including aspects such as human reasoning, and human-machine involvement)?			
		What are the applicable laws and regulations that need to be considered in the design of XAI systems?			

¹ More information and tips how to use can be found in a white paper on <https://www.hu.nl/onderzoek/projecten/uitlegbare-ai-in-de-financiele-sector-kiem>

² Overall = On organisational level, BDU = Business & Data Understanding, MD = Model Development, MO = Model Operations

³ Answers the question/performs the task: makes the choice and/or decision

⁴ Approves the choice and/or decision, is ultimately accountable

Table 3. Checklist with aspects to consider on the use case level, plotted on AI lifecycle, and with accountability.

Category	Checkpoint	Questions	AI Lifecycle	Responsible	Accountable
Explainability and transparency in the use case	Check the level of transparency and explainability	What is the required level of transparency of the AI model?	BDU	Business analyst, Model developer	Model owner
		What is the required level of explainability of the AI model?			
		What is the trade-off between the explainability and performance of the AI model?			
		What is the trade-off between explainability and other requirements of the AI model such as security and intellectual property?			
AI in the use case	Check the goal of the AI system	What is the purpose of AI in the use case?	BDU	Business analyst	Product owner
		What laws and regulations apply to the use case?			
		What principles and guidelines apply to the use case?			
	Check the stakeholders of the AI system	Which stakeholder groups are interfacing with the product/service for which the AI system is used?	BDU	Business analyst	Product owner
	Check the risks of the AI system	What are the risks of the AI system?	BDU	Business analyst	Product owner
		What is the potential harm of the AI system?			
		What are the ethical concerns regarding the AI system?			
	Check the type of the AI model	What is the impact of the explainability requirements on the type of AI model?	MD	Model developer	Model owner
		What are the benefits and costs of different types of AI models?			
		What is the preferred type of AI model and why?			
	Check the data of the AI system	What is the impact of the explainability requirements on the data used to train and test the AI system?	MD	Model developer	Model owner
		What is the quality of the data that is used to train and test the AI system?			
What are the variables to include in the AI model?					
Stakeholder's needs for explanations in the use case	Check the stakeholders of the XAI system	Who are the stakeholder groups in need of an explanation (e.g., customers, regulators, internal officers, risk managers, senior management, model validators)?	MD	Model developer	Model owner
	Check the stakeholder's needs for explanations	What are possible scenarios to prompt explanations (e.g., understanding inner workings, anticipating user questions, details about data, model mechanics at a high level, and ensuring ethical considerations during model development)?	MD	Model developer	Model owner
		What are possible questions from stakeholders regarding explanations?			
		What are the needs of stakeholder groups for explanations?			



Category	Checkpoint	Questions	AI Lifecycle	Responsible	Accountable
XAI system in use case	Check the goal of the XAI system	What is the purpose of XAI in the use case?	MD	Model developer	Model owner
		What are the reasons to explain the AI model?			
		What is the explanatory strategy (e.g., internal explanation, external or post-hoc explanation, counterfactual explanation)?			
		What are the required capabilities of XAI methods and techniques?			
Check the risks of the XAI system	What are the risks of the XAI system?	MD	Business analyst	Product owner	
	What is the potential harm of (not) providing explanations?				
Explanations in use case	Check what to explain to whom	What are the contextual factors in providing explanations to stakeholders?	MD	Business analyst	Product owner
		What kind of information to provide as an explanation and to which stakeholders?			
	Check how to deliver the explanation	How will the explanation be conveyed to stakeholders (e.g., in person, by a system)?	MD	Model developer	Model owner, product owner
		What is the degree of interaction between the human and the machine in conveying the explanation (e.g., declarative, one-way interaction, two-way interaction)?			
		What is the style of the explanation (e.g., text, visual)?			
		What is the level of detail of the explanation (e.g., sparse, extensive)?			
		What is the moment in time to provide the explanation (e.g., before or after the outcome)?			
How to give feedback if stakeholders inquire?					
XAI methods and techniques in the use case	Check XAI method	What logical method(s) to use to generate explanations (e.g., post-hoc explain local feature importance, ante-hoc explain global working)?	MD	Model developer	Model owner
	Check XAI technique	What technical method(s) to use to generate explanations (e.g., Shap, Lime, Anchors)?	MD	Model developer	Model owner
	Check XAI tool	What tool(s) to use to generate explanations (e.g., Python library, IBM AI explainability 360)?	MD	Model developer	Model owner
Methods and techniques to evaluate XAI in the use case	Check how to evaluate the XAI system	What are the evaluation measures of the XAI system (e.g., user mental model, usefulness and satisfaction, model performance)?	MO	Model validator	Product owner
		What method(s) to use to evaluate the XAI system (e.g., application grounded, human grounded, functionally grounded)?			
		How to measure stakeholder satisfaction with the explanations provided (e.g., user engagement, Likert scale questionnaires, simulated experiments)?			