

# ISO/IEC TS 6254:2025-09 (E)

## Information technology - Artificial intelligence - Objectives and approaches for explainability and interpretability of machine learning (ML) models and artificial intelligence (AI) systems

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vi
1	Scope .....	1
2	Normative references .....	1
3	Terms and definitions .....	1
4	Symbols and abbreviated terms .....	5
5	Overview .....	6
6	Stakeholders' objectives .....	6
6.1	General .....	6
6.2	AI user .....	7
6.3	AI developer .....	7
6.4	AI product or service provider .....	7
6.5	AI platform provider .....	8
6.6	AI system integrator .....	8
6.7	Data provider .....	8
6.8	AI evaluator .....	8
6.9	AI auditor .....	8
6.10	AI subject .....	8
6.11	Relevant authorities .....	8
6.11.1	Policy makers .....	8
6.11.2	Regulators .....	8
6.11.3	Other authorities .....	9
7	Explainability considerations throughout the AI system life cycle .....	9
7.1	General .....	9
7.2	Inception .....	10
7.3	Design and development .....	10
7.3.1	General .....	10
7.3.2	Development of the explainability component .....	10
7.3.3	Explainability's contribution to development .....	11
7.4	Verification and validation .....	11
7.4.1	General .....	11
7.4.2	Evaluation of the explainability component .....	11
7.4.3	Explainability's contribution to evaluation .....	13
7.5	Deployment .....	14
7.5.1	General .....	14
7.5.2	Deployment of the explainability component .....	14
7.5.3	Explainability's contribution to deployment .....	14
7.6	Operation and monitoring .....	14
7.7	Continuous validation .....	14
7.8	Re-evaluation .....	14
7.9	Retirement .....	15
8	Property taxonomy of explainability methods and approaches .....	15
8.1	General .....	15
8.2	Properties of explanation needs .....	16

8.2.1	General .....	16
8.2.2	Expertise profile of the targeted audience .....	16
8.2.3	Frame activity of interpretation or explanation .....	17
8.2.4	Scope of information .....	17
8.2.5	Completeness .....	17
8.2.6	Depth .....	18
8.2.7	Reasoning path .....	18
8.2.8	Implicit and explicit explanations .....	19
8.3	Forms of explanation .....	19
8.3.1	General .....	19
8.3.2	Numeric .....	19
8.3.3	Visual .....	19
8.3.4	Textual .....	20
8.3.5	Structured .....	20
8.3.6	Example-based .....	20
8.3.7	Interactive exploration tools .....	20
8.4	Technical approaches towards explainability .....	20
8.4.1	General .....	20
8.4.2	Empirical analysis .....	21
8.4.3	Post hoc interpretation .....	21
8.4.4	Inherently interpretable components .....	21
8.4.5	Architecture- and task-driven explainability .....	22
8.5	Technical constraints of the explainability method .....	22
8.5.1	General .....	22
8.5.2	Genericity of the method .....	22
8.5.3	Transparency requirements .....	23
8.5.4	Display requirements .....	23
9	Approaches and methods to explainability .....	23
9.1	General .....	23
9.2	Empirical analysis methods .....	24
9.2.1	General .....	24
9.2.2	Fine-grained evaluation .....	25
9.2.3	Error analysis .....	25
9.2.4	Analysis-oriented datasets .....	25
9.2.5	Ablation .....	26
9.2.6	Known trends .....	26
9.3	Post hoc methods .....	27
9.3.1	Local .....	27
9.3.2	Global .....	32
9.4	Inherently interpretable components .....	36
9.4.1	General .....	36
9.4.2	Legible models .....	37
9.4.3	Meaningful models .....	39
9.4.4	Models with explicit knowledge .....	41
9.5	Architecture- and task-driven methods .....	43
9.5.1	General .....	43
9.5.2	Informative features .....	43
9.5.3	Rich and auxiliary inputs .....	44
9.5.4	Multi-step processing .....	44
9.5.5	Rich outputs .....	45
9.5.6	Rationale-based processing .....	46
9.5.7	Rationale generation as auxiliary output .....	46
9.6	Data explanation .....	47
Annex A (informative)	Extent of explainability and interaction with related concepts .....	48
Annex B (informative)	Illustration of methods' properties .....	51
Annex C (informative)	Concerns and limitations .....	61
Bibliography	.....	65