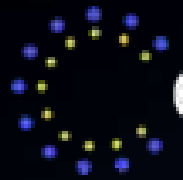


IEEE 7001:2001 - STANDARD FOR TRANSPARENCY OF AUTONOMOUS SYSTEMS



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GENERAL REMARKS ON IEEE STANDARDS



- **Compliance with IEEE standards does not constitute compliance to regulatory frameworks**
- **The use of IEEE std is wholly voluntary**
- **Users of IEEE std should rely on their own independent judgement**
- **IEEE standards are reviewed after 10 years**

IEEE 7001-2021 STANDARD FOR TRANSPARENCY OF AUTOMATED SYSTEMS



IEEE SA
STANDARDS
ASSOCIATION

IEEE Standard for Transparency of Autonomous Systems

IEEE Vehicular Technology Society

IEEE Robotics and Automation Society

Developed by the
Intelligent Transportation Systems Committee
and the
Standing Committee for Standards

IEEE Std 7001™-2021

STANDARDS



TARGET AUDIENCE

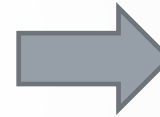


1) Designers, developers, builders, maintainers, operators, and decision-makers and procurers of AIS



2) STAKEHOLDERS: groups who benefit from transparency

• **Directly benefited**



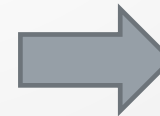
• **Direct users**



• **Wider society**



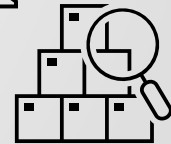
• **Expert stakeholders**



• **Certification or regulatory bodies**



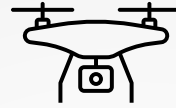
• **Incident investigators**



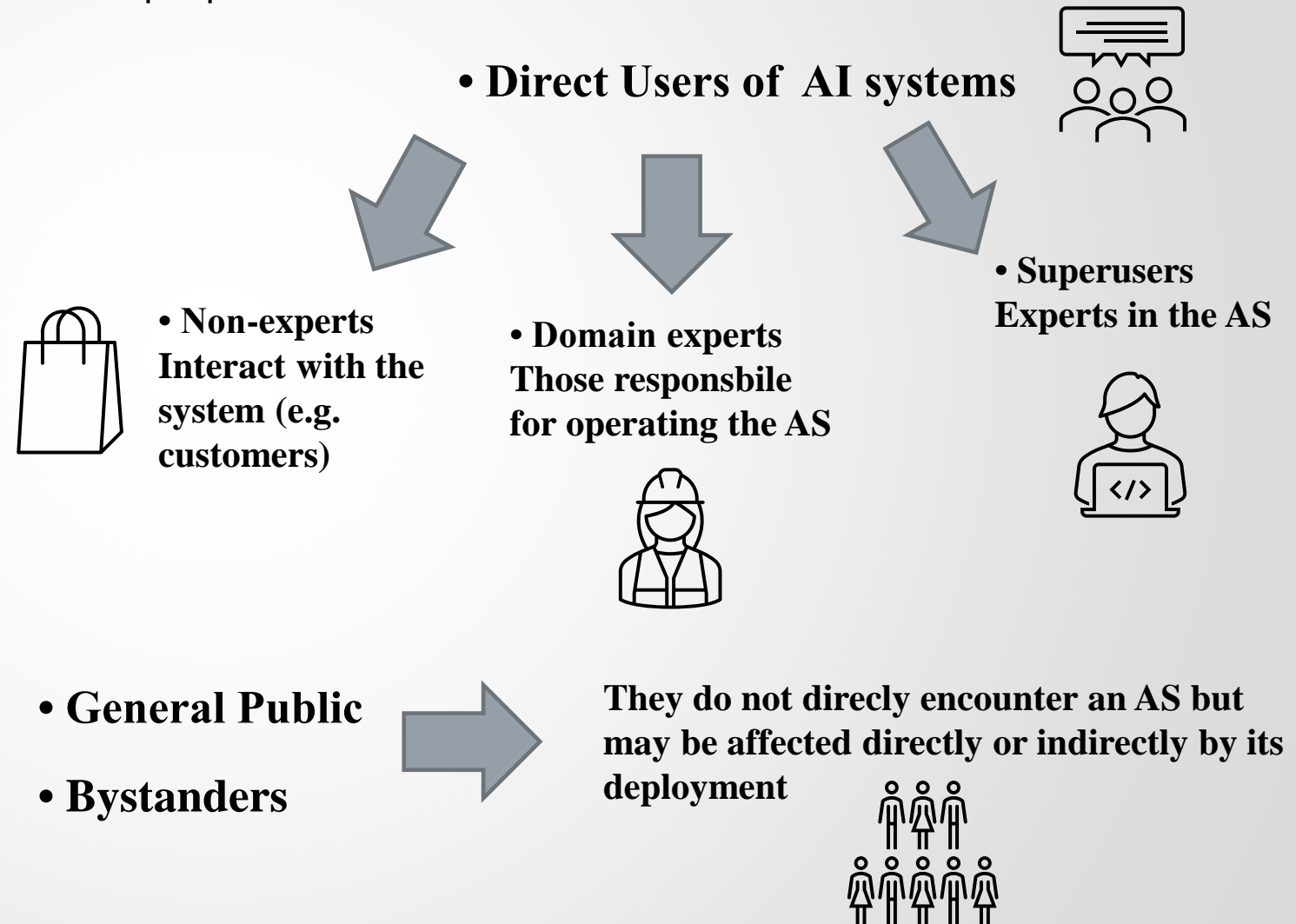
• **Expert advisors in administrative actions or litigation**



STAKEHOLDERS



Example: Autonomous delivery vehicle



USING THE STANDARD



System Transparency Specification (STS)



Definition of the transparency requirements of an AI system for each stakeholder group

System Transparency Assessment (STA)



Evaluation of the the transparency of an AI system for each stakeholder group.



Comparison of transparency requirements in the STS with measured transparency in the STA to reveal gaps that need to be addressed in an AI system for each stakeholder group

TRANSPARENCY REQUIREMENTS



- **IEEE 7001 establishes requirements for measurable, testable levels of transparency within each stakeholder category (direct beneficiaries and expert stakeholders)**
- **Levels of transparency are defined from 0 (no transparency) to 5 (maximum achievable level of transparency)**

Transparency Levels				
1	2	3	4	5
Yes	Yes	No		
- **Each definition is a requirement, expressed as a qualitative property of the system that must be met**
- **A transparency property required by a given level for a given stakeholder group is either present or not**

USING THE STANDARD EXAMPLE

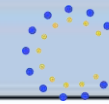


Transparency requirements for Users (illustrative sample)

Level	Definition
1	<ul style="list-style-type: none">• Explanation of the AS general principles of operation
2	<ul style="list-style-type: none">• Interactive training material for the user to rehearse its interactions with the AS
3	<ul style="list-style-type: none">• Brief and immediate explanation of the AS most recent activity
4	<ul style="list-style-type: none">• Brief and immediate explanation of what the AS does in a given situation, allowing to explore hypothetical 'what if' situations
5	<ul style="list-style-type: none">• Continuous explanation of behaviour that adapts the content and presentation of the explanation based on the user's information needs and context

5.2.1 VALIDATION AND CERTIFICATION AGENCIES

NOTE: the levels to meet are determined as follows: Level X



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Level 0	No transparency			
Level 1	Level 1 is met			Yes
	To conform level 1	<ul style="list-style-type: none">The system's developers shall provide documentation containing its specification and which of its properties were validated	Totally Compliant	
		SYSTEM DESCRIPTION <ul style="list-style-type: none">A specification of the decisions to be taken by the system	Totally Compliant	
		VALIDATION DESCRIPTION <ul style="list-style-type: none">A description of the validation processes that was followed and which standards were applied	Totally Compliant	
Level 2	Level 2 is met			Yes
	To conform level 2	<ul style="list-style-type: none">The system's developers shall provide documentation containing its specification and description of the validation process	Totally Compliant	
		SYSTEM DESCRIPTION <ul style="list-style-type: none">A specification of the system shall be supplied	Totally Compliant	
		VALIDATION DESCRIPTION <ul style="list-style-type: none">A detailed description of the validation process shall be provided (including any ongoing validation processes used during system development or after deployment) including the specifics of system-level tests considered (where relevant).	Totally	

APPLYING IEEE 7001

2	STA Scoresheet				
	STA Scoresheet				
	System:				
	Assessor:				
3	Date:				
4	Standard Clause	Transparency Levels			
5	(C = Cumulative, NC = non cumulative)	1	2	3	4
6	5.1.1 Users (NC)	Yes	Yes	No	
7	5.1.2 General Public and Bystanders (NC)	Yes	Yes	No	No
8	5.2.1 Validation and Certification Agencies (C)	Yes	Yes	Yes	No
9	5.2.2 Incident Investigators (C)	Yes	Yes	Yes	No
10	5.2.3 Expert Advisors in Administrative Actions or Litigation (NC)	Yes	No	No	

IEEE 7001 - SCORESHEET

IMPORTANCE

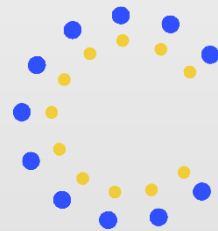


- **Compliance with regulations**
 - If your system interacts with individuals, it is highly likely that it will fall under privacy regulations
 - For instance, training an AI system with personal data or delivering a prediction concerning a person constitute processing operations
 - GDPR, CPRA, Quebec Bill 64, among others, include additional transparency requirements for automated decision-making systems
- **Ethical reasons**
 - Individuals need to be able to understand what the systems are doing and why
 - Transparency improves accountability

For more information



CONTACT US



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