IEEE-P7001 Transparency of Autonomous Systems

**Scope:**This standard describes measurable, testable levels of transparency, so that autonomous systems can be objectively assessed and levels of compliance determined.

**Purpose:**A key concern over autonomous systems (AS) is that their operation must be transparent to a wide range of stakeholders, for different reasons. (i) For users, transparency is important because it builds trust in the system, by providing a simple way for the user to understand what the system is doing and why. If we take a care robot as an example, transparency means the user can quickly understand what the robot might do in different circumstances, or if the robot should do anything unexpected, the user should be able to ask the robot ‘why did you just do that?’. (ii) For validation and certification of an AS transparency is important because it exposes the system’s processes for scrutiny. (iii) If accidents occur, the AS will need to be transparent to an accident investigator; the internal process that led to the accident need to be traceable. Following an accident (iv) lawyers or other expert witnesses, who may be required to give evidence, require transparency to inform their evidence. And (v) for disruptive technologies, such as driverless cars, a certain level of transparency to wider society is needed in order to build public confidence in the technology. For designers, the standard will provide a guide for self-assessing transparency during development and suggest mechanisms for improving transparency (for instance the need for secure storage of sensor and internal state data, comparable to a flight data recorder or black box).

**Need for the Project:**This standard is needed to set out expectations for transparency of AS, to the range of stakeholders outlined above, in order to build trust, provide the means to assure safety, and allow accountability and traceability. The standard will articulate a range of levels of transparency, from the minimum acceptable to ‘gold’ standards.

**Stakeholders for the Standard:**The stakeholders including users, certification, regulation or accident investigation agencies, expert professionals and society at large, are outlined above, in addition to AS designers.