

A Generic Trustor Model

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ABSTRACT

From sociology to cyber or economic sciences the concept of Trust appears to be a pivotal ingredient of Homo Sapiens as a social agent. The definitions of trust are highly domain dependent and many studies focus either on a specific approach (sociology, cognitive psychology, . . .) or on the applied domains of trust (management, cyber-security . . .). The aim of this paper is to propose a generic conceptual model allowing to describe both everyday life situations (as driving) but also high-tech professional operations (as aircraft piloting).

The notion of trust nowadays affects many fields, and in particular public transportation. Indeed, technological advances allow drivers (of cars or trains) or pilots to delegate the steering: autopilot, driverless shuttle, autonomous car ... Thus, the problem of trust in the various systems for an human operator is crucial. The Trustor is the one who have to trust the other agents, say: the *Trustees* who conversely need to be trusted. Whether she/he is a pilot of a fighter plane, a train driver or a person going to work with her/his car, the Trustor has to cope the problem of trust in different sources and means. In aeronautics most of the studies focus on the pilot's trust in the source of information rather than in the means. The GTM model takes into account both of those trust chanel.

The Trustor activity is captured within a classical OODA loop (Observe, Orient, Decide, Act). Thanks to a grounded theory approach, two statements emerged:

- 1) In the decision-making process, the notion of **Trust is a meta-concept**: i.e. trust does not concern the information processing at a standard level.
- 2) **Trust can only be applied to agents**, i.e. the trustees. The notion of trust never concern information or any piece of knowledge by itself but the agent who provides or processes it.

The GTM, Generic Trustor Model, allows to emphasize where in the OODA loop the trust level could be qualified:

The Source-Trustees set = Passive-sources¹, Humans, Machines, AIs.

The Trustor functions set: - Perceptual, - Memory-Reasoning, - Effectors.

The Effector-Trustees set: Human, Machines, AIs.

A significant amount of aerial and automotive events have been GTM analyzed, they revealed where the impact of trust is crucial in decision-making, highlighting the elements on which trust acts, doesn't act or would be decisive for the goal of the situation.

Moreover this model intends to induce recommendations in terms of learning and training of the operators and to determine what can be done to alleviate the trust problem.

¹traffic signs,...

Finally, thanks to GTM, the concept of **Cognitive Welfare** emerged: it is defined as the optimal conditions of trust levels so as to ensure a safe and efficient working environment of the human operator. In other words: the 'decision powerness' of any Trustor appears to be highly dependent of the CW, which is based on the trust as a social fluid.

483 words

Some References

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