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# The Ontology of Assurance

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**Abstract :** This paper explores the ontology of assurance in safety-critical systems, emphasising the importance of knowledge and confidence in system behaviour. Assurance is defined as providing grounds for justified confidence in system properties, such as safety and security. The paper discusses the main concepts of assurance, including system requirements, confidence, and justification. It discusses the CESM metamodel for understanding system behaviour and emergent properties. The paper also highlights the importance of objectivity in assessing the strength of knowledge and the role of verification in generating evidence as a part of the argumentation. The assurance case is presented as a systematic way to represent knowledge and support decision-making.

**Keywords :** assurance, CESM metamodel, confidence, emergent properties, knowledge, objectivity, risk, system behaviour, system safety
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