

# Assuring safety of autonomous systems in dynamic environments

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Structured assurance cases based on the goal structuring notation (GSN) or similar notations are a promising means for assuring safety objectives for autonomous system behavior in dynamic environments. In standardization, e.g., UL 4600 or VDE-AR-E 2842-61, and current research projects like V&V Methoden, it is considered as core concept for assurance and certification. However, it is still unclear how to assure and certify that an autonomous system will always understand the current situations good enough to manage all risks. This talk will discuss promising approaches to deal with this issue like the SINADRA approach for situation-aware dynamic risk assessment, Digital Dependability Identities for assured shared perception, uncertainty monitoring of AI-based perception and safety performance indicators for gaining confidence in claims and assumptions about the dynamic environment. Further, it will structure and relate these approaches to advanced systems engineering and continuous safety management of socio-technical systems.