



**ABSTRACT:**

**Design-driven Development of Dependable Applications: A Case Study in Avionics**

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Making an application dependable demands that its functional and non-functional requirements be stringently fulfilled throughout its development process. In this context, a design-driven development approach has the key advantage of enabling requirements to be traced from their high-level design forms to the resulting executable artifact. However, because such approaches are mostly general purpose, they provide little design guidance, if any. This situation makes unpredictable the coherence and the conformance of an application with respect to its requirements.

To address this situation, we propose an approach that leverages a design-driven development process dedicated to a specific paradigm. This approach guides the verification of the coherence and conformance of an application throughout its development. We demonstrate the benefits of our approach by applying it to a realistic case study in the avionics domain.

About:

Consel is a professor of Computer Science at University of Bordeaux I. He served on the faculty of Yale University, Oregon Graduate Institute and the University of Rennes. He leads the Phoenix group at INRIA. He has been designing and implementing Domain-Specific Languages (DSLs) for a variety of areas including device drivers, programmable routers, stream processing, and telephony services. These DSLs have been validated with real-sized applications and showed measurable benefits compared to applications written in general-purpose languages. His research contributions cover programming languages, software engineering, operating systems, pervasive computing, and assisted living.