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There Is Only One Time in Software (Language) Engineering! (Keynote)

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Abstract

Software engineering is a complex endeavor that encompasses various socio-technical activities. These activities are traditionally orchestrated over a development life cycle from development time to operation time, and applying engineering processes both at design and run times, and at the application and domain levels. Software Language engineering follows a similar pattern, including the development of domain-specific languages, and all the required tools to support the various language-related activities.

This organization, often working in silos, structures the available tools and methods we use, and even the various communities of software engineering (i.e., Conway's law applied to our own discipline!). While this "divide and conquer" approach was crucial in the early days of software engineering, I argue that it now limits the adaptability required to address what I refer to as software hyper-agility. Modern software systems evolve at an accelerating pace, operate in dynamic environments, and face growing uncertainty.

To manage such complexity, a shift towards continuous engineering of cyber-physical and socio-technical ecosystems is necessary, along with more adaptable DSLs. In this talk, I will present the concept of (self-)adaptable languages. I then explore the future of the developer experience with the support of a continuous, feedback-driven, software engineering, with challenges related to abstraction engineering, variability management and digital twins.

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Biography

Benoit Combemale is Full Professor of Software Engineering at the University of Rennes where he is co-leading the research team DiverSE joint to the IRISA and Inria labs. He is also adjunct researcher in the SM@RT team of the IRIT labs in Toulouse, and Chief Science Advisor for TwiinIT, a startup specializing in Digital Twins. He is currently serving as Editor-in-Chief for the International Journal on Software and Systems Modeling (SoSyM), editorial board member for the journals SQJ and JOT, and steering committee member for the conferences MODELS, SLE, ICT4S and EDT-Conf. Prof. Combemale specializes in software engineering, including model driven software and systems engineering (MDE) and software language engineering (SLE), applied to scientific computing, cyber-physical systems and digital twins. Prof. Combemale has been a Full Professor at the University of Toulouse, and a Visiting Professor at Colorado State University and McGill University. More information at <http://combemale.fr>

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