

# Keynote

## The Essential Structure of Software

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### Abstract

Structure is at the heart of everything we do in software. And yet we don't have a compelling answer to the most obvious question: what is the structure of an app? We have user interface structure (e.g. pages and components), and we have internal structure (modules and subsystems). But we don't have a way to describe the essential structure, which would reveal what an app does, how it compares to other apps, and how a user should make sense of it.

In this talk, I'll present a radical new way to think about software structure in terms of concepts: independent and reusable units of dynamic functionality that can be combined in flexible ways. I'll show how this perspective helps ground familiar intuitions but also exposes new insights.

### About the Speaker

Daniel Jackson is professor of computer science at MIT, and associate director of CSAIL. For his research in software, he won the ACM SIGSOFT Impact Award, the ACM SIGSOFT Outstanding Research Award and was made an ACM Fellow. He is the lead designer of the Alloy modeling language, and author of the book *Software Abstractions*. He chaired a National Academies study on software dependability, and has collaborated on software projects with NASA on air-traffic control, with Massachusetts General Hospital on proton therapy, and with Toyota on autonomous cars. His new book, *The Essence of Software*, was recently published.