11TH ANNUAL CONFERENCE

SATURN 2015

SEI Architecture Technology User Network Conference

CUTTING-EDGE METHODS AND ESSENTIAL SKILLS FOR SOFTWARE ARCHITECTS

APRIL 27–30, 2015
BALTIMORE, MARYLAND

KEYNOTE SPEAKERS

Mary Shaw, Carnegie Mellon University
Mark Schwartz, U.S. Citizenship and Immigration Services
Gregor Hohpe, Allianz

COURSES

Big Data: Architectures and Technologies
DevOps and Continuous Delivery
Managing Technical Debt in Software Systems

TALKS

Talks by leaders including Len Bass, Simon Brown, George Fairbanks, Rick Kazman, Ariadna Font Llitjós, Sam Newman, Jeff Patton, Rebecca Wirfs-Brock, and Joe Yoder

Software Engineering Institute
Carnegie Mellon University

What Is SATURN?

Cutting-Edge Methods and Essential Skills for Software Architects

As systems grow in complexity, architecture's role becomes increasingly important at the enterprise, system, and software levels. Architecture practitioners rely on technology, research, and the knowledge and experience of peers to build predictable, high-quality systems.

The 11th annual SEI Architecture Technology User Network (SATURN) Conference 2015 is designed for practitioners who are responsible for producing robust software architectures as well as for those who view software architecture as a critical element in the achievement of their business or organizational goals.

Social events, workshops, and opportunities to network with industry leaders, SATURN speakers, and experienced innovators in the field of software architecture

At SATURN 2015, you will see, hear, learn from, and participate in

Keynote addresses from Mary Shaw, the Alan J. Perlis University Professor of Computer Science at Carnegie Mellon University, a pioneer in the field of software architecture, and recent recipient of the U.S. National Medal of Technology and Innovation; Gregor Hohpe, chief IT architect at Allianz, co-author of *Enterprise Integration Patterns*, and a frequent speaker at conferences around the world; and Mark Schwartz, chief information officer, U.S. Citizenship and Immigration Services, Department of Homeland Security

Talks and sessions led by luminaries in the field of software architecture including Len Bass, Simon Brown, George Fairbanks, Rick Kazman, Ariadna Font Llitjós, Sam Newman, Jeff Patton, Rebecca Wirfs-Brock, and Joe Yoder

An Architecture Boot Camp designed to provide developers with essential introductory information about software architecture. *CNN Money* recently identified software architect as the "best job in America."

Sessions exploring a broad range of topics, including design, patterns, microservices, legacy systems, agility, Internet of Things, cloud computing, continuous delivery, refactoring, technical debt, architecture evaluation, and technical leadership

Three one-day SEI courses on big data, DevOps, and technical debt offered on Monday, April 27, at a discounted rate

Social events, workshops, and opportunities to network with industry leaders, SATURN speakers, and experienced innovators in the field of software architecture

Registration

Available Discounts

Employees of U.S. government organizations receive a 25% discount on conference registration and courses with the use of a valid email address ending in .gov or .mil during the registration process.

Students at accredited academic institutions with proof of current enrollment receive a 50% discount on conference registration and, subject to availability, registration for courses.

Attendees from any organization that registers three or more people for SATURN receive a 10% discount on conference registration and course fees.

Discounts available for U.S. government personnel, students, and organizations that send three or more attendees

**REGISTER ONLINE
www.sei.cmu.edu/saturn/2015/registration**

Via Mail or Fax
Send the completed form and any payment papers (such as a check or purchase order) to:

SATURN 2015
c/o Registration Systems Lab
779 East Chapman Road
Oviedo, FL 32765 USA
Fax: +1 (407) 366-4138

Full Conference
Fee after Early Bird Closes Only $1,500

Courses: $500 per course

- Big Data: Architectures and Technologies
- DevOps and Continuous Delivery: Software Architecture, Security, and Interactive Learning
- Managing Technical Debt in Software Systems

Course registration fee includes one full day of instruction in selected course and morning beverages, lunch, and breaks on Monday, April 27.

Silver Sponsors	Bronze Sponsors
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Reception and Web Sponsors	Collaborators
Methods & Tools, Google, Runscope	SPIN, IEEE Software, AFEI

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Featured Courses

SATURN 2015 offers three SEI courses at the discounted fee of $500. Conference attendees can optimize their SATURN experience by attending one of these courses, conveniently adding a full day of professional development. You can register for a course when you register for SATURN 2015.

1 Big Data: Architectures and Technologies

Instructor: John Klein, Carnegie Mellon Software Engineering Institute

Scalable big-data systems are significant long-term investments that must scale to handle ever-increasing data volumes, and therefore represent high-risk applications in which the software and data architectures are fundamental components of ensuring success.

This one-day course is designed for architects and technical stakeholders such as product managers, development managers, and systems engineers involved in the development of big data applications.

2 DevOps and Continuous Delivery: Software Architecture, Security, and Interactive Learning

Instructors: Stephany Bellomo, and Aaron Cois, Carnegie Mellon Software Engineering Institute

This one-day course is designed for architects and technical stakeholders such as product managers, development managers, and systems engineers who are interested in adopting DevOps practices and continuous-delivery workflows.

The architecture component of the course focuses on the relationships among application software, the deployment environment, and the supporting tooling.

3 Managing Technical Debt in Software Systems

Instructors: Robert Nord and Ipek Ozkaya, Carnegie Mellon Software Engineering Institute

Technical debt occurs when a design or construction approach is taken that's expedient in the short term, but increases complexity and cost in the long term. Whether it results from ignorance, accident, or strategy, all software-reliant systems carry some technical debt.

This one-day course provides guidance for the intentional and strategic management of technical debt that is supported by architecture-focused practices.

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Tuesday, April 28

This at-a-glance agenda provides an overview of all of the workshops and breakout sessions that are taking place at SATURN 2015

7:30–8:30	Registration Opens and Morning Beverages Served

8:45–9:00	**Welcome and Opening Remarks**, *General Session Room*

9:00–10:00	**Keynote: Progress Toward an Engineering Discipline of Software**, Mary Shaw, Carnegie Mellon University

10:00–10:30	Morning Break

Salon B	Salon D	Salon E	Baltimore Theatre
10:30–12:00 **Software Architecture Boot Camp: Software Architecture 101**	10:30–12:00 **Maximize Your Business Impact as an Architect** Eltjo Poort	10:30–11:00 **Injection, Modularity, and Testing: An Architecturally Interesting Intersection** George Fairbanks 11:00–11:30 **Introduction to Architecture-Centric Design Thinking** Michael Keeling 11:30–12:00 **Systems of Action: A Stack Model for Capability Classification** Einar Landre, Jørn Ølmheim	10:30–12:00 **Sustainably Supporting Data Variability** Rebecca Wirfs-Brock, Atzmon Hen-Tov, Jordan Menzin, Joseph Yoder

12:00–1:00	Lunch

Salon B	Salon D	Salon E	Baltimore Theatre
1:00–2:30 **Software Architecture Boot Camp: All About QA Requirements**	1:00–2:30 **ADD 3.0: Rethinking Drivers and Decisions in the Design Process** Humberto Cervantes, Rick Kazman	1:00–1:30 **The Value of Architects** Paul Preiss 1:30–2:00 **The Business Side of a Software Architect** Tomer Peretz 2:00–2:30 **A Partner Is Good to Have, but Difficult to Be** David Kane, Dave Dikel	1:00–2:30 **DevOps Essentials for Software Architects** Len Bass, Sascha Bates, Sam Newman

2:30–3:00	Afternoon Break

Salon B	Salon D	Salon E	Baltimore Theatre
3:00–4:30 **Software Architecture Boot Camp: Architecture Evaluation**	3:00–4:30 **From Monolith to Micro-Services: A Leadership Perspective on Legacy Application Modernization** Einar Landre, Jørn Ølmheim, Harald Wesenberg	3:00–3:30 **Building Smarter Microservices with Scale-Oriented Architecture** Ryan Park 3:30–4:00 **Improving Architectural Refactoring Using Kanban and the Mikado Method** Paul Boos 4:00–4:30 **What Coderetreats Have Taught Us About Design** Jim Hurne, Joseph Kramer	3:00–4:30 **Design Thinking Is for You** Ariadna Font Llitjós, Jonathan Berger, Jeff Patton

6:00–8:00	**Welcome Reception** sponsored by IBM/Watson Group

Wednesday, April 29

7:30–8:30	Registration Opens and Morning Beverages Served		

Salon B	Salon D	Salon E	Baltimore Theatre
9:00–10:30 **Software Architecture Boot Camp: Documenting Software Architecture**	**9:00–10:30** **Architecting Public Facing Website Software for High Concurrent User Load** Derrick Lau	**9:00–9:15** **Cost-Benefit Analysis in Technical Debt Reduction** Andriy Shapochka	**9:00–10:30** **Open Systems Architecture: Progress and Challenges** Forrest Shull, Thomas Dubois, Nickolas Guertin, Michael McLendon, Douglas Schmidt
		9:15–9:45 **Why They Just Don't Get It: Communicating Architecture to Business Stakeholders** Eelco Rommes, Jochem Schulenklopper	
		9:45–10:15 **Quality Requirements on a Shoestring** Thijmen De Gooijer	
		10:15–10:30 **Keeping the Beat: Rhythm and Trust in Architecture** David Kane	

10:30–11:00	Morning Break		

Salon B	Salon D	Salon E	Baltimore Theatre
11:00–12:30 **Office Hours** **Design Thinking Is for You** Ariadna Font Llitjós **Sustainably Supporting Data Variability** Rebecca Wirfs-Brock	**11:00–12:30** **Smart Decisions: An Architecture Design Game** Serge Haziyev, Olha Hrytsay, Humberto Cervantes, Rick Kazman	**11:00–11:30** **Living a Nightmare, Dreaming a Dream: A Drupal Deployment Dilemma** Gail E. Harris	**11:00–12:30** **Software Architecture as Code** Simon Brown
		11:30–12:00 **NASA Data Acquisition Software Suite** Phillip Hebert, Jonathan Morris, Alex Elliot, Lauren Underwood	
		12:00–12:30 **Open Medical Record System Plus (OpenMRS+): OpenMRS for Non-Communicable Diseases** Gloria Ingabire	

12:30–1:30	Lunch		
1:30–2:30	**Keynote: It's Good to Be an Architect,** Gregor Hohpe, Allianz		
2:30–3:00	Afternoon Break		

Salon B	Salon D	Salon E	Baltimore Theatre
3:00–4:30 **Office Hours** **Software Architecture as Code** Simon Brown **Software Architecture Boot Camp** John Klein, Robert Nord, Ipek Ozkaya	**3:00–4:30** **QA to AQ: Shifting from Quality Assurance to Agile Quality** Joe Yoder, Rebecca Wirfs-Brock	**3:00–3:30** **Never Again Offline?!? Experiences in the Outstanding Role of Data in a Large-Scale Mobile App Ecosystem** Matthias Naab, Ralf Carbon, Susanne Braun	**3:00–4:30** **Applying Ontologies to Software Architecture** Ian Maung, Richard Beatch, Mike Bennett
		3:30–4:00 **Architecting Hybrid Cloud Solutions with Watson Developer Cloud** Will Chaparro	
		4:00–4:30 **Does Your Cloud Solution Look Like a Mushroom?** Kim Carter	

6:00–9:00	**SATURN Reception**		

Thursday, April 30

7:30–8:30	Registration Opens and Morning Beverages Served		
Salon B	**Salon D**	**Salon E**	**Baltimore Theatre**
9:00–10:30 **Office Hours** **Open Systems Architecture: Progress and Challenges** Forrest Shull	9:00–10:30 **Exploiting Fast and Slow Thinking** Rebecca Wirfs-Brock	9:00–9:30 **Systems Characterization: An Approach to Modernizing Disparate Legacy Systems** Jane Orsulak, Julie Kent	9:00–10:30 **Perspectives on the Modern Practice of Software Architecture** Jeromy Carriere
		9:30–10:00 **Enterprise Applications Health Improvement Program** Eswaran Thandi	
		10:00–10:30 **Using Hazard Analysis to Make Early Architecture Decisions for an Autonomous Automotive Application** Joakim Fröberg	
10:30–11:00	Morning Break		
11:00–12:30 **Understanding Quality** David Gelperin	11:00–12:30 **My Silver Toolbox** Michael Keeling	11:00–11:30 **Agilizing the Architecture Department** Eltjo Poort	11:00–12:30 **Programming in the 1960s: A Personal History** Len Bass
		11:30–12:00 **Maturing Agile Teams and Driving Quality Through Architecture Principles** Amine Chigani, Yun Freund	
		12:00–12:30 **Locating the Architectural Roots of Technical Debt** Rick Kazman, Serge Haziyev, Yuanfang Cai, Volodymyr Fedak	
12:30–1:30	Lunch		
1:30–3:00 **Office Hours** **DevOps Essentials for Software Architects** Len Bass **Perspectives on the Modern Practice of Software Architecture** Jeromy Carriere	1:30–3:00 **Leading Change: Engaging Critical Stakeholders for Project Success** Marisa Sanchez	1:30–2:00 **Making Better Architectural Choices with the Architecture Valuation Framework** Voytek Janisz	1:30–3:00 **Taming Big Balls of Mud with Agile, Diligence, and Hard Work** Joe Yoder
		2:00–2:30 **The Architectural Analysis for Security (AAFS) Method** Jungwoo Ryoo, Rick Kazman	
		2:30–3:00 **When and Where to Apply the Family of Architecture-Centric Methods** Tim Morrow, Mike Gagliardi, Bill Wood	
3:00–3:30	Afternoon Break		
3:30–4:30	**Keynote: Rethinking Architecture in the Context of DevOps,** Mark Schwartz, U.S. Citizenship and Immigration Services		
4:30–4:45	**Conference Awards and Closing**		

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Venue: Lord Baltimore Hotel

The 11th SATURN Conference will be held at the Lord Baltimore Hotel in Baltimore, Maryland. Baltimore's Inner Harbor is the city's premiere tourist attraction and a waterfront shopping, dining, and entertainment destination.

Housed in a stunning French Renaissance building and located in the heart of downtown Baltimore, Maryland, the hotel is just three blocks from the famous Inner Harbor.

Guests at this grand hotel enjoy easy access to area attractions including the National Aquarium, Baltimore Museum of Art, and concert venues.

Lord Baltimore Hotel
20 West Baltimore Street
Baltimore, Maryland 21201 USA
Telephone 1-855-539-1928

In addition to the Lord Baltimore's usual amenities, SATURN attendees who book within our room block will also receive

• complimentary internet
• complimentary access to the fitness center
• breakfast voucher for a hot breakfast each day of their stay
• discounted self-parking

There are many options for how to spend your time before or after SATURN 2015.

National Aquarium, Baltimore
With a collection of more than 16,500 specimens representing 660 species, National Aquarium, Baltimore, is the city's most-visited attraction. Exhibits include a multi-story Atlantic coral reef, an open ocean shark tank, a 4-D immersion theater, a tropical rain forest, a glass pavilion with Australian wildlife, and a mammal pavilion that holds Atlantic bottlenose dolphins.

Historic Ships
In lieu of a traditional maritime museum, several historic ships are permanently docked in Baltimore's Inner Harbor. Visitors can climb aboard and experience four historic ships—a U.S. Navy tall ship first launched in 1854, a U.S. Coast Guard lightship from the 1930s, a submarine that took two war patrols in Japan during World War II, and the last ship floating that fought in the attack on Pearl Harbor—and a lighthouse.

Maryland Science Center
Three levels of exhibits, a planetarium, and an IMAX theater draw crowds to the Maryland Science Center. Kids will love learning about physical science, space, Earth science, and the human body. There's also a special exhibit on blue crabs, giving the museum some local flavor.

Oriole Park at Camden Yards
Oriole Park at Camden Yards, the beautiful baseball facility in downtown Baltimore, is 12 minutes west by foot from the City's Inner Harbor and only two blocks from the birthplace of baseball's most legendary hero, George Herman "Babe" Ruth. The Orioles are at home during SATURN 2015, playing the Boston Red Sox April 24–26 and the Chicago White Sox April 27–29.

Keynote Speakers

Progress Toward an Engineering Discipline of Software

Tuesday, April 28 9:00 a.m. – 10:00 a.m.
Is "software engineering" really engineering? The term was coined in 1968 to call attention to problems with software production. Both theory and practice for software have evolved since then, but do we yet have a true engineering discipline? Classical engineering disciplines have emerged from craft practice and commercialization through the infusion of codified knowledge and science. Using this emergence pattern as a point of reference, I will sketch the evolution of software engineering, drawing on civil engineering and software architecture for examples that show the progressive codification of informal knowledge toward rigorous models and tools. This will provide the basis for assessing the maturity of the field and identifying our next challenges.

Mary Shaw, Carnegie Mellon University
Mary Shaw is the Alan J. Perlis University Professor of Computer Science in the Institute for Software Research at Carnegie Mellon University, where she has been a member of the faculty since completing her PhD in 1972. For pioneering leadership in the development of innovative curricula in Computer Science, Dr. Shaw received the National Medal of Technology and Innovation from President Barack Obama during a White House ceremony in November 2014. The medal is the nation's highest honor for achievement in the field of technology, innovation, and invention.

Dr. Shaw's research interests are in software engineering and software systems, particularly software architecture and design of sytems used by real people. She is co-author with David Garlan of *Software Architecture: Perspectives on an Emerging Discipline* and is considered to be one of the founders of the field of software architecture. She has received the U.S. National Medal of Technology and Innovation, the ACM SIGSOFT Outstanding Research Award (with David Garlan), the IEEE Computer Society TCSE's Distinguished Educator Award, CSEE&T's Nancy Mead Award for Excellence in Software Engineering Education, the Stevens Award, and the Warnier Prize. She is a fellow of the ACM, the IEEE, and the AAAS.

It's Good to Be an Architect

**Wednesday, April 29 1:30 p.m. – 2:30 p.m.**
Many companies and communities associate the title "architect" with negative connotations: architects are people who live in the ivory tower, are out of touch with reality, and make poor decisions driven by the quest for irrelevant and unobtainable technical ideals. Because these architects can't code, they relentlessly bestow their thoughts upon developers with diagrams and wall-sized posters.

Still, architecture is more relevant than ever. New digital business models require new architectures: many advances in distributed architectures are driven by the internet giants, who are building infrastructures to support their fast-moving businesses at the bleeding edge of innovation. Not too far behind, "traditional" corporate IT is also moving from a mere cost center to a business enabler and driver, with architects playing a key role as the connecting element between business and IT.

Is being a software architect not so bad after all? Or are we just getting cozy in the world of perfect, but irrelevant, designs? The anecdotes and war stories from a Silicon Valley developer turned corporate IT architect aim to provide some insights into our field and our mission.

Gregor Hohpe, Allianz
As Chief IT Architect at Allianz, Gregor Hohpe is responsible for driving the digital transformation of the Allianz IT. Gregor draws on 15 years' experience in Silicon Valley and 5 years in Tokyo, where he optimized mobile advertising and connected online and physical worlds for Google. He is widely known as a co-author of the seminal book *Enterprise Integration Patterns* and as a frequent speaker at conferences around the world. His accessible but technically accurate essays were republished in *97 Things Every Software Architect Should Know* and *The Best Software Writing*. He is an active member of the *IEEE Software* editorial advisory board.
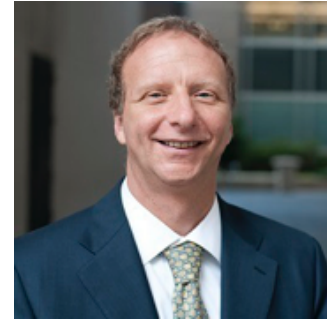
Rethinking Architecture in the Context of DevOps

Thursday, April 30   3:30 p.m. – 4:30 p.m.
Current approaches to software delivery require thinking differently about architecture. Old approaches emphasized consistency and standardization, well-considered interactions between components and systems across the enterprise, and centralized control to avoid inefficiencies that would result if different system teams made decisions independently. Increasingly, enterprises are complex adaptive systems in which centralized "omniscient" control is ineffective. New delivery techniques like DevOps, with a focus on lean and agile processes, are a poor fit with the classic architecture approach. By reducing stage-gate reviews and cycle time, such approaches make it difficult to impose architectural standards on individual projects.

We need to re-think architecture in light of agile and DevOps approaches. At USCIS, we are experimenting with ways of doing this by moving toward more loosely coupled architectures to allow more flexibility. We encourage collaboration across teams on architectural questions to help ensure that architectural decisions support all systems with their differing needs without imposing external constraints. We created a team called Architecture and Design Services whose role is to support teams as they evolve architectures, doing research, pilots, reference implementations, and so on. This team exerts subtle standardization control by advising teams on other enterprise needs that they should factor into their designs. These are all intended, in agile spirit, as experiments – we will see what works and try to evolve our new approach to architecture

Mark Schwartz, U.S. Citizenship and Immigration Services
Mark Schwartz is the Chief Information Officer (CIO) of U.S. Citizenship and Immigration Services (USCIS), a component of the Department of Homeland Security. He works to increase the IT organization's responsiveness to mission needs by reducing time from concept to deployment for new capabilities. To support this goal, he has introduced agile and lean development, continuous delivery, and DevOps. Before USCIS, Mr. Schwartz was CIO of Intrax Cultural Exchange, where his innovative Family Room application drove dramatic market share, revenue, and profit growth and was recognized by *CIO Magazine* with a CIO 100 award in 2006. In 2010 he was named one of the Premier 100 IT Leaders by *Computerworld Magazine.* Mr. Schwartz holds a BS in computer science from Yale University, an MA in philosophy from Yale University, and an MBA from Wharton.

Speakers

Here are just a few experts speaking at SATURN 2015.

SATURN speakers come from a wide range of geographical locations and application domains to share the knowledge and skills they have gleaned from their experience as practicing software architects and leaders.
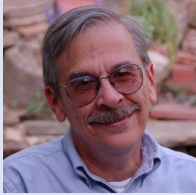
Len Bass was a Senior Principal Researcher at National ICT Australia Ltd. (NICTA). He joined NICTA in 2011 after 25 years at the Carnegie Mellon Software Engineering Institute. He is the coauthor of two award-winning books in software architecture, *Software Architecture in Practice* (3rd ed.) and *Documenting Software Architectures: Views and Beyond* (2nd ed.), as well as several other books and numerous papers in computer science and software engineering on a wide range of topics. Len has more than 50 years' experience in software development and research including papers in operating systems, database management systems, user interface software, software architecture, product line systems, and computer operations. He has worked or consulted in multiple domains including scientific analysis, embedded systems, and information systems. His new book, *DevOps: A Software Architect's Perspective*, will be published by Pearson in 2015.

Sascha Bates, Chef Prior to becoming an automation junkie, Sascha built plenty of complex systems by hand, as well as the script suites to manage them. She learned the hard way that the more you need to control your processes, the more brittle they become and the less control you actually have. A DevOps and automation enthusiast, Sascha has brought her blend of scripting and sanity to companies for more than 10 years, across all levels of abstraction: bare metal, virtual machines, clusters, deployment pipelines, and performance optimization.

Richard Beatch, PhD, is currently the semantic and metadata architect for Bloomberg LP, based in Princeton, NJ. He holds a PhD in ontology and has worked extensively in the field in roles ranging from Knowledge Architect to various senior management roles at multiple companies. Much of his work has focused on the intersection of well-managed data and findability across a range of domains. For much of the past decade, his work has focused on financial data and the development of semantics models aimed at optimizing the efficacy of that data.

Mike Bennett is the semantics expert and ontologist for the EDM Council. He is the originator and editor of the Financial Industry Business Ontology (FIBO) and represents the Council within the Object Management Group and on ISO technical standards committees. He has over 15 years of financial industry experience with investment management software, data management systems design, messaging standards, product testing, and project management. Mike is well regarded as both a resource and speaker within the semantic technology community.
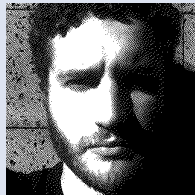
Jonathan Berger is a designer, developer, and technologist who has been active in the NYC technology scene since 2005, helping to organize events like the Startup Weekend, Barcamp, and IgniteNYC. As a consultant, he's been on the team with almost 30 startups and enterprises in the past few years, and he spends his days building software and an agile design practice at Pivotal Labs. As a startup founder, he helped build Market Publique, an online vintage fashion marketplace and community. Prior to that, he earned a bachelor's degree in philosophy at Vassar College and a master's degree in media studies at the New School, where he also spent quite a bit of time at Parson's Design + Technology program. He has worked as a designer, developer, video editor, animator, and technology consultant for institutions as diverse as Eyebeam, MTV Networks, Yahoo!, Ogilvy, and the American Museum of Natural History.
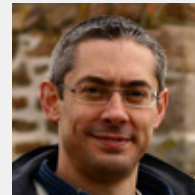
Simon Brown is an independent consultant and helps organizations build better software by adopting a lightweight, pragmatic approach to software architecture. He is the creator of the C4 software architecture model and the author of *Software Architecture for Developers*, a developer-friendly guide to software architecture, technical leadership, and the balance with agility. Simon regularly speaks at software development conferences around the world, and in 2013 he won the IEEE Software-sponsored SATURN 2013 "Architecture in Practice" Presentation Award for his presentation about the conflict between agile and architecture. Simon lives in Jersey (the largest of the Channel Islands), and his client list spans over 20 countries, including organizations ranging from small technology startups to global household names. He still codes too.

Jeromy Carriere is an engineering director at Google, leading a number of teams that develop core components of Google's production infrastructure. Prior to joining Google, Jeromy was chief architect for the X.commerce business unit at eBay, Inc., where he was the technical lead for the design and development of an open-commerce platform, incorporating open-source cloud, big data, and messaging technologies into a unified offering for merchants and developers. Jeromy has held various positions from senior architect to co-founder to CTO at Yahoo!, Vistaprint, Fidelity Investments, Microsoft, Kinitos, America Online, and Quack.com. Jeromy earned his bachelor's of mathematics in computer science from the University of Waterloo and is a member of the *IEEE Software* Advisory Board.
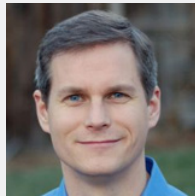
George Fairbanks has been teaching software architecture and design since 1998, is the author of the book *Just Enough Software Architecture,* has a PhD in Software Engineering from Carnegie Mellon University, and is a software engineer at Google.
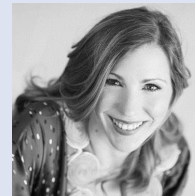
Ariadna Font Llitjós is a Design Principal and Manager at IBM Watson Group, where she works with cross-functional teams to define, design, and implement the next generation of cognitive systems. She is spearheading the adoption of Lean UX and user-centric design and development to empower teams, help them gain shared understanding and focus, and improve communication. She is a regular speaker at Lean UX and Agile conferences and enjoys facilitating collaborative design workshops. In her previous life, her research focused on improving machine-translation quality and accuracy by developing a largely automated approach that used online post-editing feedback to refine translation rules. She obtained her PhD in Language and Information Technologies at Carnegie Mellon University.

CNN Money says Software Architect is the best job in America. Learn the basics in our Architecture Boot Camp at SATURN, the longest-running conference in North America for practicing software architects.

Atzmon Hen-Tov is the Vice President of R&D at Pontis, where he leads the development of the company's Customer Engagement platform, based on the ModelTalk executable modeling platform and Big Data technologies. Formerly, Atzmon was the Chief Software Architect at Pontis, where he led the development of their executable modeling platform, ModelTalk. Atzmon uses his 30+ years' experience in software development to build architectures and development pipelines that maximize business value.

Dr. Rick Kazman is a professor at the University of Hawaii and a research scientist at the Software Engineering Institute. His primary research interests are software architecture, design and analysis tools, software visualization, and software engineering economics. He is the author of over 150 papers and co-author of several books, including *Software Architecture in Practice* and *Evaluating Software Architectures: Methods and Case Studies*. Kazman was one of the creators of the SAAM (Software Architecture Analysis Method) and the ATAM (Architecture Tradeoff Analysis Method). Dr. Kazman received a PhD from Carnegie Mellon University. He is a Senior Member of the IEEE.

Michael Keeling is a software engineer at IBM, where he develops data-intensive systems built using IBM's Watson Explorer and Watson platforms. Michael is an experienced software architect, agile practitioner, and programmer with experience throughout all phases of the software lifecycle, having worked on projects ranging from combat systems to search to web apps. He holds a Master of Software Engineering from Carnegie Mellon University in Pittsburgh, PA, and a Bachelor of Science in Computer Science from the College of William and Mary in Williamsburg, VA.

Ian Maung is the Senior Vice President of Enterprise Data Management at Citi, where he leads the team responsible for Citi's enterprise information model and ontology. Ian represents Citi at international standards bodies such as the EDM Council and the OMG. He has over a decade of enterprise software architecture experience spanning multiple domains and platforms. Formerly, Ian was an assistant professor of computer science at the University of Warwick and holds a doctorate in mathematics from the University of Manchester.

Michael McLendon currently serves as the Associate Director, Software Solutions Division, for the Carnegie Mellon Software Engineering Institute. In this role, he leads the delivery of technical assistance to clients engaged in the acquisition and life cycle support of software-reliant systems. Prior to assuming this position, Mr. McLendon served as Senior Advisor in the Office of the Assistant Secretary of Defense for Systems Engineering, as a member of the Better Buying Power, the DoD IT Acquisition Reform, and the DoD Open Systems Architecture Task Forces. He also served as a principal in the Office of the Assistant Secretary of Defense for Program Analysis & Evaluation and in the Office of the Under Secretary of Defense for Policy. He later was a Professor at the Defense Systems Management College. He served as a career Air Force officer in a range of leadership and management positions in system and technology development and acquisition as well as in leadership positions at the federal level and in the private sector.
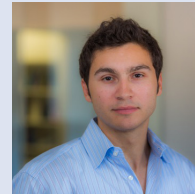
Jordan Menzin serves as Software Architect and Product Lead at Boston Health Economics. His areas of interest include software design and programming, health informatics, and economic modeling. He has been successful in building and maintaining BHE's software systems and simulation models. Of note, he led the design and implementation of Instant Health Data (IHD), which enables life sciences companies to perform rapid analysis across disparate datasets. He received his Bachelor's degree in economics from McGill University.

Sam Newman is a technologist at ThoughtWorks, where he currently splits his time between encouraging and sharing innovation globally and helping design and build internal systems. He has worked with a variety of companies in multiple domains around the world, often with one foot in the developer world and another in the IT operations space. If you asked him what he does, he'd say "I work with people to build better software systems." He has written articles, presented at conferences, and sporadically commits to open-source projects. He is currently writing a book, *Building Microservices*, which is available in an early access form now and will appear in a dead-tree version very soon.

Jeff Patton uses over 20 years of product design and development experience to help companies create great products. Jeff started in software development in the early 1990s as a project leader and senior developer for a small software product company. There he learned that well-written code and fast delivery aren't the secrets to success; they're just table stakes. Actually, deep understanding of your customers and users coupled with a desire to create a product that's really valuable to them makes the biggest difference. Today Jeff teaches and coaches a contemporary blend of practice that incorporates Lean, Lean Startup, and Design Thinking directed at helping organizations build products their customers love. Jeff is a Certified Scrum Trainer and winner of the Agile Alliance's 2007 Gordon Pask Award for contributions to Agile Development. He is the author of the O'Reilly book *User Story Mapping,* which describes a simple holistic approach to using stories in Agile development without losing sight of the big picture.

Douglas Schmidt is a Professor of Computer Science at Vanderbilt University and Visiting Scientist at the Carnegie Mellon Software Engineering Institute (SEI). He was previously Chief Technology Officer at the SEI, a program manager at DARPA, and a member of the Air Force Scientific Advisory Board. His research focuses on software patterns, optimization techniques, and empirical analyses of middleware frameworks. He has published 10 books and more than 500 papers. Dr. Schmidt received BS and MA degrees in sociology from the College of William and Mary and MS and PhD degrees in computer science from the University of California–Irvine.

Dr. Forrest Shull is Assistant Director for Empirical Research at the Carnegie Mellon Software Engineering Institute (SEI). His role is to lead work with the U.S. Department of Defense, other government agencies, national labs, industry, and academic institutions to advance the use of empirically grounded information in software engineering, cybersecurity, and emerging technologies. He has been a lead researcher on projects for NASA's Office of Safety and Mission Assurance, the Defense Advanced Research Projects Agency (DARPA), the National Science Foundation, and commercial companies. From 2011 to 2014, Shull served as the Editor in Chief of *IEEE Software*. During his term, he launched a digital multimedia edition of the magazine, created the annual Software Experts Summit, and incorporated the free Software Engineering Radio podcast. He is the author of over 80 peer-reviewed publications and co-editor of the *Guide to Advanced Empirical Software Engineering*.
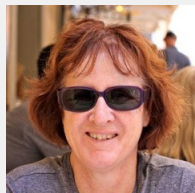
Rebecca Wirfs-Brock is an innovator in practical software architecture and design techniques and author of two popular object design books. Although best known as the creator of Responsibility-Driven Design and the xDD meme, she is also interested in simply expressing complex requirements and effectively designing and communicating software architecture. She is the Director of the Agile Alliance's Experience Report Program and a co-founder of the Agile Open Northwest Conference. She champions bringing the right balance of design and architecture to agile projects. In her consulting she helps product engineering, IT, and startups with the technical bits, as well as with effective design and architecture. If you are interested in writing about your agile experiences or sharing your wisdom in pattern form, contact Rebecca for help. She writes patterns on sustainable architecture, agile software quality, and adaptive systems, and in her spare time jogs, even when it's raining.
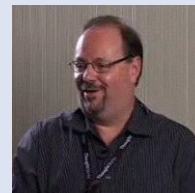
Joseph Yoder is an agilist, computer scientist, object-oriented technologist, international speaker, and pattern author. Joe serves as president of the board of The Hillside Group, a group dedicated to improving the quality of software development. He is coauthor of the Big Ball of Mud pattern, which illuminates many fallacies in software architecture. Joe teaches and mentors developers on agile methods, design, patterns, refactoring, and testing. Joe believes that using good patterns and putting the ability to change software into the hands of the people with the knowledge to change it seems to be one promising avenue toward better software.

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