SATURN 2016

12th Annual SEI Architecture Technology User Network Conference

CUTTING-EDGE METHODS AND ESSENTIAL SKILLS FOR SOFTWARE ARCHITECTS

May 2–5, 2016

San Diego, California

KEYNOTE SPEAKERS

Grady Booch, IBM Research
Daniel Jackson, MIT Computer Science and Artificial Intelligence Laboratory
Linda Northrop, Carnegie Mellon Software Engineering Institute
Joe Salvo, GE Global Research and Industrial Internet Consortium

COURSES

Designing Modern SOA Systems
DevOps and Continuous Delivery: Practices, Architecture, and Security
Managing Technical Debt for Software

TALKS

Talks by leaders including George Fairbanks, Amit Fisher, Ben Hindman, Rick Kazman, Michael Keeling, John Klein, Patrick Kua, Ipek Ozkaya, Eltjo Poort, Jamie Smith, and Eoin Woods and speakers from organizations including Capital One, Deloitte Consulting, GE Digital, Intel, and many more…

Software Engineering Institute
Carnegie Mellon University

IEEE Software

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.

SATURN 2016, the 12th annual SEI Architecture Technology User Network Conference, 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.

At SATURN 2016, you will see, hear, learn from, and participate in

Keynote addresses from **Grady Booch,** Chief Scientist for Software Engineering and Watson/M at IBM Research, co-author of the Unified Modeling Language (UML), and a founding member of the Agile Alliance; **Daniel Jackson,** Professor of Computer Science at MIT, a MacVicar teaching fellow, and Associate Director of the Computer Science and Artificial Intelligence Laboratory, MIT's largest laboratory; **Linda Northrop,** Fellow at the Carnegie Mellon Software Engineering Institute and co-author of *Ultra-Large-Scale Systems: The Software Challenge of the Future,* which has motivated research around the world; and **Joe Salvo,** Director and Founder of the Industrial Internet Consortium at GE Global Research, which aims to connect brilliant minds and machines in powerful value-creation networks

Talks and sessions led by luminaries in the field including George Fairbanks, Amit Fisher, Ben Hindman, Rick Kazman, Michael Keeling, John Klein, Patrick Kua, Ipek Ozkaya, Eltjo Poort, Jamie Smith, and Eoin Woods

Additional speakers from organizations including Capital One, Deloitte Consulting, GE Digital, Intel, Jet Propulsion Laboratory/ California Institute of Technology, Robert Bosch LLC, Sandia National Laboratories, Siemens AG, SoftServe, Travelers, and the U.S. Air Force

Software Architecture Boot Camp series, including Architecture 101 (offered Monday evening and during Tuesday's program), Architecture Evaluation, and How to Document the Architecture of Your Application Using UML and More. These sessions are designed to provide essential introductory information about software architecture. In 2015, *CNN Money* identified software architect as the "best job in America"

Sessions exploring a broad range of topics in four tracks: Architecting for the Internet of Things, Architecture Methods and Design Patterns, Technology and Tools, and Leadership and Business

Three one-day SEI courses on service-oriented systems, DevOps, and technical debt offered on Monday, May 2, 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

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

Testimonials from SATURN 2015 attendees:

"This conference was the best technical conference I have ever attended."

—Will Chaparro, IBM Watson Group, SATURN 2015 attendee

"It inspired me to be a software architect. Good design is about doing things right; architecture ensures you are doing the right thing. Both are needed!"

—Gloria Ingabire, Carnegie Mellon University, Rwanda, SATURN 2015 attendee

"Level of presenters and attendees very high, resulting in great knowledge exchange!"

—Andriy Shapochka, SoftServe, SATURN 2015 attendee

"At SATURN, I have developed some concrete ideas for improving legacy architectures in my own product line, and a resolve to address technical debt in a more systematic way."

—SATURN 2015 attendee

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.

Conference

$1300 Early Bird (register before April 1, 2016)
$1600 Standard

Courses

$600/Course Early Bird (register before April 1, 2016)
$750/Course Standard

- **Designing Modern SOA Systems**
- **DevOps and Continuous Delivery: Practices, Architecture, and Security**
- **Managing Technical Debt for Software**

Course registration fee includes one full day of instruction in selected course and morning beverages, lunch, and breaks on Monday, May 2.

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

REGISTER ONLINE
sei.cmu.edu/saturn/2016/registration.cfm

Or register via mail or fax. Details can be found at the registration link above.

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Collaborators CISQ Consortium for IT Software Quality, IEEE Software

Exhibit Area Sponsor HELLO2MORROW

Monday, May 2

Featured Courses

SATURN 2016 offers three SEI courses at $750, a discount from current SEI course pricing. 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 2016.

1 Designing Modern SOA Systems

Instructor: Paulo Merson, Brazilian Federal Court of Accounts (TCU)

In 15 years, service-oriented architecture (SOA) has gone from a buzzword to an established technology. But new patterns, frameworks, and standards continue to emerge in the SOA space. In this recently developed course, we will focus on design decisions and tradeoffs that SOA architects face today. Topics that will be covered include services that use REST, SOAP, or component technology; SOA solutions that include event-driven messaging, API gateways, and orchestration platforms; and microservices vs. monoliths, security, transaction management, and other design considerations for SOA solutions.

2 DevOps and Continuous Delivery: Practices, Architecture, and Security

Instructors: Stephany Bellomo, Carnegie Mellon Software Engineering Institute, and Rick Kazman, University of Hawaii and Carnegie Mellon Software Engineering Institute

This course is targeted at architects designing software-intensive systems with a goal of adopting DevOps practices to enable continuous delivery of high quality and secure software. If you know nothing about DevOps, don't fear. The course begins with a brief overview of DevOps and key concepts. If you attended last year, consider coming again since roughly half of the material is new. In addition to examples of designing for deployability from real projects, we have added deep dives and case studies that focus on variability options and the pros and cons of popular DevOps architectural patterns such as microservices, feature toggling, canary testing, and image baking. We also explore more deeply how to integrate static analysis tools into the deployment pipeline to minimize architectural drift and provide tips for how to get the best value from them. Practical takeaways include a template for specifying measurable deployability requirements and a handout with more than 20 architectural tactics successfully used on DevOps projects. To keep things interesting, we also include a facilitated discussion session on the role of the architect and Infrastructure as Code.

3 Managing Technical Debt in Software Systems

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

Technical debt occurs when a design or construction approach is taken that's expedient in the short term but that increases complexity and cost in the long term. Whether it results from ignorance, accident, or strategy, all software-reliant systems carry some technical debt. If managed well, some technical debt can accelerate design exploration. Left unrecognized and unmanaged, accumulated technical debt results in increased development and sustainment costs. This course is designed for professionals who develop and maintain software-reliant systems to gain a better understanding of

- how technical debt manifests in software
- what developers, architects, and managers need to know about technical debt
- how to manage technical debt effectively

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

Welcome Reception and New Attendee Orientation

5:30–6:30

Join the SATURN Technical Committee, speakers, and staff for a networking reception that includes light snacks and the chance to ask questions about the upcoming conference. If this is your first SATURN conference, we can help you navigate the program and find the sessions that you're really interested in attending. Plus, you can meet other attendees and make new contacts.

Software Architecture Boot Camp: Architecture 101

6:30–8:00

If you're new to software architecture or would just like to have a little refresher before SATURN gets started, join us for this boot camp session with the SEI's John Klein. We promise you'll learn something new!

Tuesday, May 3

This at-a-glance agenda provides an overview of all of the workshops and breakout sessions that are taking place at SATURN 2016.

Program subject to change

7:30–8:30	Registration Opens and Morning Beverages Served			
8:30–9:00	**Welcome and Opening Remarks,** *Bel Aire Ballroom*			
9:00–10:00	**Keynote: Abstracting the Unknown,** Grady Booch, IBM Research, *Bel Aire Ballroom*			
10:00–10:30	Morning Break			
Fairbanks A		**Fairbanks B**	**Fairbanks C**	**Fairbanks D**
10:30–12:00 **Cognitive IoT** Amit Fisher		10:30–12:00 **Architecture-Led Pedagogical Artifacts as a Unifying Theme** John D. McGregor and Roselane Silva	10:30–12:00 **TBA** Patrick Kua	10:30–12:00 **Software Architecture Boot Camp: Architecture 101** John Klein
12:00–1:00	Lunch			
1:00–2:30 PM **IoT in Statoil: Present and Future** Jørn Ølmheim, Jarle Kallevik, Einar Landre, and Harald Wesenberg		1:00–1:30 **Architectural Refactoring** David Adsit	1:00–1:30 **Microservices Beyond the Hype** Paulo Merson	1:00–2:30 **Software Architecture Boot Camp: Architecture Evaluation** Robert Nord
		1:30–2:00 PM **Frankensteining Software: Recycling Parts of Legacy Systems** Jennifer Manning and Joseph Kramer	1:30–2:00 **12 Factor Apps: A Scorecard** Matt Momont	
		2:00–2:30 **Code Review Is an Architectural Necessity** Colin Dean	2:00–2:30 **Architecting for Application Security** Tim Kertis	
2:30–3:00	Afternoon Break			
3:00–3:30 **Software Architecture and Design Practices for Industrial IoT** Alisher Maksumov and Michelangelo Russo		3:00–3:30 **Model-Minded Development** George Fairbanks	3:00–3:30 **Growing Up with Globalization** Andrew Turgeon	3:00–4:00 **Office Hours**
3:30–4:00 **What Did the Smart Thing Say? Semantic Interoperability for the IoT** Cory Henson and João de Sousa		3:30–4:00 **Flow Mapping: Visualizing User Stories Against Complex Interactions** Amber Haley	3:30–4:00 **Beyond REST** Yogeshwar Srikrishnan	
4:00–4:30 **IoT Reference Architectures and Case Studies** Serhiy Haziyev and Yulian Slobodyan		4:00–4:30 **Chasing Critical Code Anomalies with JSpIRIT** J. Andres Diaz-Pace, Santiago Vidal, and Claudia Marcos	4:00–4:30 **Introduction to Scala and Spark** Brad Rubin	
4:45–5:00	**Ethics as a Quality Attribute,** Michael Keeling, *Bel Aire Ballroom*			
5:00–5:15	**Love Your Architecture!,** Alexander von Zitzewitz, *Bel Aire Ballroom*			
5:30–10:00	**SATURN Celebration Reception at Petco Park,** followed by San Diego Padres vs. Colorado Rockies baseball game			

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Wednesday, May 4

7:30–9:00	Registration Opens and Morning Beverages Served			
8:30–9:00	**Morning Remarks,** *Bel Aire Ballroom*			
9:00–10:00	**Keynote: Rethinking Software Design,** Daniel Jackson, MIT, *Bel Aire Ballroom*			
Fairbanks A		**Fairbanks B**	**Fairbanks C**	**Fairbanks D**
10:00–10:30	Morning Break			
10:30–12:00 **IoT Lab** Paul Langdon		10:30–11:00 **How to Manage a Network of Software Architects Within Your Company** Frances Paulisch and Ruediger Kreuter 11:00–11:30 **Can't Find Superheroes to Help You Out of a Crisis? How About Some Architecture and Lots of Superglue?** Adam Bar-Niv and Amir Shenhav 11:30–12:00 **Bridging System Architecture** Charles Chow	10:30–12:00 **Getting Your System to Production and Keeping It There** Eoin Woods	10:30–12:00 **Software Architecture Boot Camp: How to Document the Architecture of Your Application Using UML and More** Paulo Merson
12:00–1:00	Lunch			
1:00–2:00	**Keynote: The Influence of System Architecture on Innovation: The Industrial Internet and Cloud Manufacturing Meet the Block Chain,** Joe Salvo, GE Global Research, *Bel Aire Ballroom*			
2:00–2:30	Afternoon Break			
2:30–4:00 **Big Analog Data™, New Architectures to Realize New Insights** Jamie Smith		2:30–3:00 **The Business Model Canvas Pattern: From Concept to Product Architecture in an Agile World** Arila Barnes 3:00–3:30 **Architecting Agile Businesses: A Guideline for the Business-Oriented Software Architect** Kaine Ugwu 3:30–4:00 **Applying Architecture Techniques to Anchor System Evolution Roadmaps** Alejandro Bianchi and J. Andres Diaz-Pace	2:30–4:00 **Centralized vs. Decentralized Approaches to SOA: Hamilton vs. Jefferson** Michael Keeling and George Fairbanks	2:30–4:00 **Draw It Out: The Power of Visual Communication** MJ Broadbent and Amine Chigani
4:15–4:30	**The Demise of Enterprise IT,** Jørn Ølmheim, *Bel Aire Ballroom*			
4:30–4:45	**Going Bezirk: Things Plus Cloud Do Not Equal IoT,** João de Sousa and Cory Henson, *Bel Aire Ballroom*			
4:45–5:00	**Zen of Software Architecture,** Bett Bollhoefer, *Bel Aire Ballroom*			
5:00–6:00	Catered Break (light refreshments served)			
6:00–8:00	**Kids and IoT: An Integrated IoT Educational Platform**			

Thursday, May 5

	Fairbanks A	Fairbanks B	Fairbanks C	Fairbanks D
7:30–9:00	Registration Opens and Morning Beverages Served			
8:30–10:00	**Building a Data-Friendly Platform for a Data-Driven Future** Ben Hindman	**Security Design Refinement Through Mapping Tactics to Patterns** Jungwoo Ryoo and Rick Kazman	**Agile Architecture Roadmapping** Eltjo Poort	**Open Space**
10:00–10:30	Morning Break			
10:30–11:00	**Strategic Prototyping for Developing Big-Data Systems** Rick Kazman, Serhiy Haziyev, Hong-Mei Chen, and Olha Hrytsay	**The Tale of Three ATAMs for the Same Project** Andrzej Knafel	**Continuous Architecture** Pierre Pureur and Murat Erder	**Open Space**
11:00–11:30	**A Platform for Provisioning Integrated Data and Visualization Capabilities** Gerry Giese	11:00–11:15 **A Quality Attributes Guide for Space Flight Software Architects** Lorraine Fesq, Jonathan Wilmot, and Dan Dvorak		
11:30–12:00	**Evolution of a Data-Streaming Solution** Joseph Paulchell	**An Inverse Evaluation of Netflix Architecture Using ATAM** Stefan Toth		
12:00–1:00	Lunch			
1:00–2:30	**MarshmalloWars: A Gamification Experience** Marcelo Luis Walter and Juliano Ribeiro	**Discover Quality Requirements with the Mini-QAW** Will Chaparro, Michael Keeling, and Thijmen De Gooijer	1:00–1:30 **U.S. Air Force Software Engineering Efficiency and Productivity for Information Operations** Paul Braden	**Office Hours**
			1:30–2:00 **The Journey to Hybrid Cloud: Considerations for Architecting Your Enterprise Roadmap** Tracy Bannon, Jacques de Villiers, and Sebnem Tokcan	
			2:00–2:30 **UPDATE Your VIEW on DELETE: The Benefits of Event Sourcing** Sebastian von Conrad	
2:30–3:00	Afternoon Break			
3:00–4:00	**Linda Northrop Architecture Award Keynote: Reflections on Software Architecture**, *Bel Aire Ballroom*			
4:00–4:30	**Presentation by the Winner of the First Linda Northrop Architecture Award (to be announced)**, *Bel Aire Ballroom*			
4:30–5:00	**Conference Awards, SATURN 2017 Announcements, and Closing,** Ipek Ozkaya, *Bel Aire Ballroom*			

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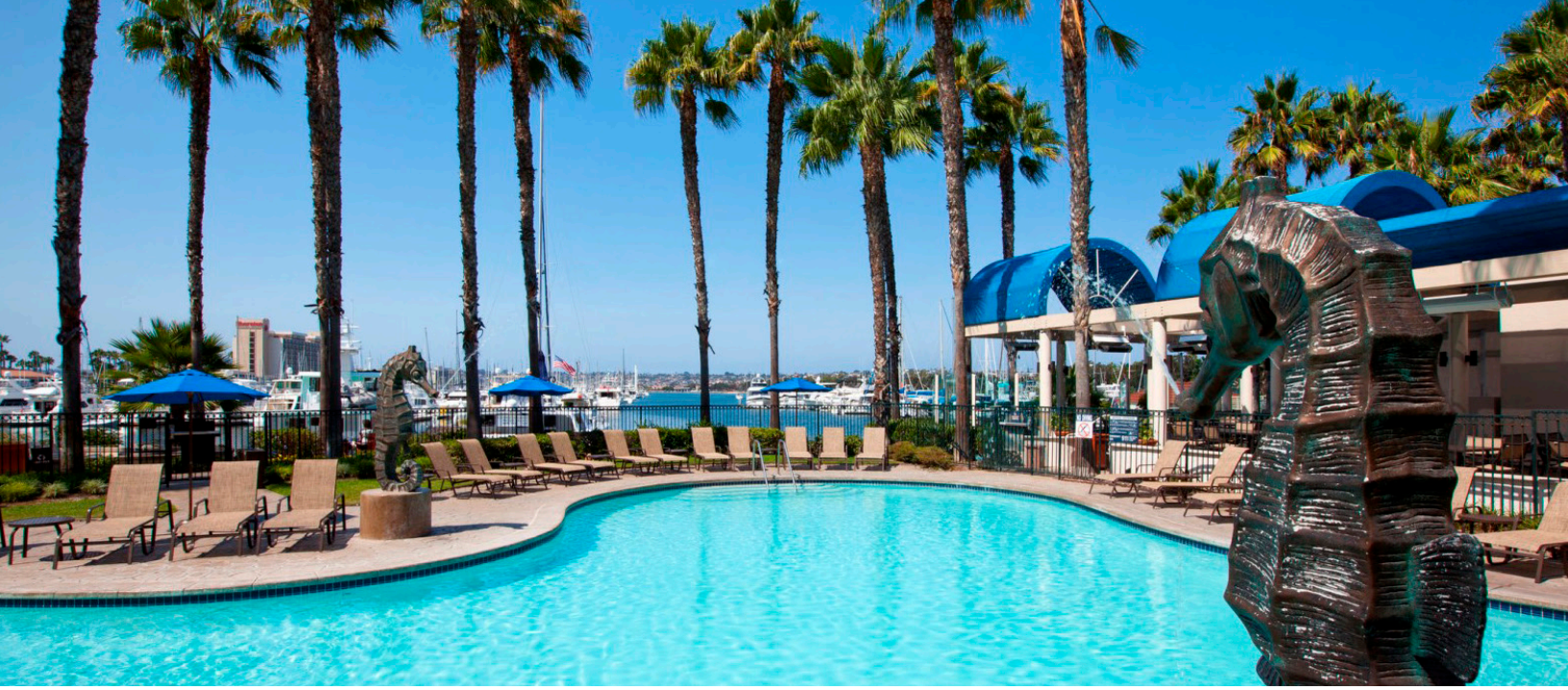


Venue: Sheraton San Diego Hotel & Marina

The 12th SATURN Conference will be held at the Sheraton San Diego Hotel & Marina in San Diego, California. Inspired by nautical influences and nestled on the San Diego Bay, the Sheraton San Diego Hotel & Marina offers breathtaking panoramic views. Enjoy easy access to great waterfront restaurants and celebrated attractions, including the San Diego Zoo, Gaslamp Quarter, and Sea World Park.

The Sheraton San Diego Hotel & Marina is approximately one mile from San Diego International Airport with a complimentary shuttle service.

Sheraton San Diego Hotel & Marina
1380 Harbor Island Drive
San Diego, California 92101 USA
Telephone 619.291.2900

In addition to the Sheraton San Diego Hotel & Marina's usual amenities, conference attendees who book within the SATURN 2016 room block will also receive complimentary high-speed wireless internet access.

When booking, guests can make special requests, such as room type and accessibility, in the "My Stay Preferences" section of the reservation form.

There are many options for how to spend your time before or after SATURN 2016.

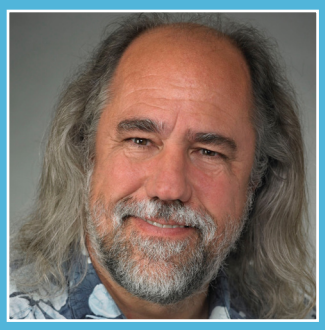
Balboa Park
Balboa Park is a San Diego must-see, just minutes from downtown, and ranked as one of the Best Parks in the World. The park is home to 15 major museums, several performing arts venues, beautiful gardens, and many other cultural and recreational attractions. With 1,200 lushly planted acres, Balboa Park is the nation's largest urban cultural park.

Old Town State Park
What was it like in California in 1850? History is waiting for you in Old Town, with over 17 historic points of interest and theatre, museums, artisans, galleries, and shops all within easy walking distance. Old Town also has free live entertainment, mariachis, dancers, and docents in period attire to provide tours and answer your questions.

San Diego Zoo
Located near downtown San Diego in Balboa Park, the San Diego Zoo is 100 acres in size and is home to more than 4,000 animals representing more than 800 species from around the world. The zoo is a unique experience that exhibits animals in the most natural way possible. Shows and animal presentations occur throughout the day.

SeaWorld San Diego
One of the world's largest marine-life amusement parks, SeaWorld is spread over 189 tropically landscaped bay-front acres. Exhibits include the Shark Encounter, Turtle Reef, the Penguin Encounter, and many freshwater and saltwater aquariums holding underwater creatures from around the world. The park also offers a variety of amusement rides.

Keynote Speakers



Grady Booch, IBM Research

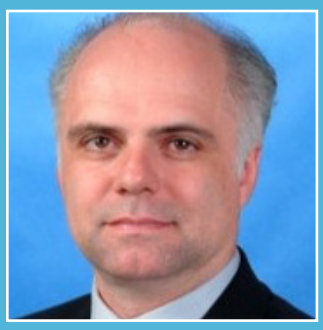
Keynote: Abstracting the Unknown
Tuesday, May 3, 2016, 9:00–10:00
There are many systems that we know how to architect (usually because we've built them many times before). There also many systems for which we know a process that will lead us to a reasonable architecture (usually because the forces on our project permit incremental and iterative development). There are even some things we know how not to architect (because we've tried before). However, there are some systems for which we hardly know where to begin (because not only are they wickedly hard, they are also far beyond our current art and science). These are the classes of systems that most interest me: how do we architect the unknown? In this presentation, we'll start by laying a foundation of what we know we know about software architecture, and then we'll consider what we know we don't know. Following that, we'll take a leap into the unknown and look at the kinds of systems that will stretch us both technically, socially, and ethically.

Grady Booch is Chief Scientist for Software Engineering as well as Chief Scientist for Watson/M at IBM Research. Having originated the term and the practice of object-oriented design, he is best known for his work in advancing the fields of software engineering and software architecture. A co-author of the Unified Modeling Language (UML), a founding member of the Agile Alliance, and a founding member of the Hillside Group, Grady has published six books and several hundred technical articles, including an ongoing column for *IEEE Software*. Grady is also a trustee for the Computer History Museum. He is an IBM, ACM, and IEEE Fellow; has been awarded the Lovelace Medal; and has given the Turing Lecture for the BCS. He is currently deeply involved in the development of cognitive systems and is developing a major trans-media documentary for public broadcast on the intersection of computing and the human experience.

Daniel Jackson, MIT Computer Science and Artificial Intelligence Laboratory

Keynote: Rethinking Software Design
Wednesday, May 4, 2016, 9:00–10:00
The essence of design is structure: What parts comprise the whole and how are they related? In the field of software, we have ways to structure implementation—with functions and datatypes, design patterns, architectures, and so on—but we lack a way to structure behavior. Witness the way we sometimes talk of having "thousands of requirements," although a requirement is usually little more than a transition in a state machine. To make software that is more usable and more robust, we need a way to structure behavior. Just as architects design the structure of a building in terms of light and space and flow, leaving to engineers the task of designing the physical structures that will support their visions, so we need software architects who can shape software independently of its realization. In this talk, I'll present the elements of a new theory of software design that provides a structuring principle for behavior, criteria for identifying good and bad structures, and patterns to emulate. I'll also report on our experience applying the theory on a variety of systems.

Daniel Jackson is Professor of Computer Science at MIT, a MacVicar teaching fellow, and Associate Director of the Computer Science and Artificial Intelligence Laboratory, MIT's largest laboratory. He is the lead designer of the Alloy modeling language and author of *Software Abstractions: Logic, Language, and Analysis* (MIT Press, 2nd ed., 2012). He was chair of the National Academies study *Software for Dependable Systems: Sufficient Evidence?* (2007). His research currently focuses on a new approach to software design, on new programming paradigms, and on cybersecurity.



Joe Salvo, GE Global Research and Industrial Internet Consortium

Keynote: The Influence of System Architecture on Innovation: The Industrial Internet and Cloud Manufacturing Meet the Block Chain
Wednesday, May 4, 2016, 1:00–2:00
Descriptive text for Dr. Salvo's abstract is coming soon.

Dr. Salvo is the Director and Founder of the Industrial Internet Consortium, which connects brilliant minds and machines in powerful value-creation networks. For 15 years, he and his laboratory have developed a series of large-scale Internet-based sensing arrays to manage and oversee business systems and deliver a portfolio of information-based services. Some of their commercial business releases include complex decision platforms—including GE Veriwise™, GE Railwise™, Global Vendor Managed Inventory, Ener.GE™, and E-Materials Management—that deliver near real-time customer value through system transparency and knowledge-based computational algorithms. Dr. Salvo's group provides the core Digital Market Commons to UI Labs for the Digital Manufacturing and Design Innovation Institute recently announced by President Obama at a press briefing at the White House. He is interested in how systems architecture influences the rate of innovation and believes that crowdsourcing and cloud-computing platforms promise to further democratize the flow of information, computation, and ideas.

Keynote Speakers, *continued on next page*

Keynote Speakers, continued

Linda Northrop, Carnegie Mellon Software Engineering Institute

Architecture Award Keynote:
Reflections on Software Architecture
Thursday, May 5, 2016, 3:00–4:00

Software architecture has enormous influence on the behavior of a system. For many categories of systems, early architectural decisions can be a greater influence on success than nearly any other factor. After more than 20 years of research and practice, the foundations for software architecture have been established and codified, but challenges remain. Among other trends, increased connectivity, a shift to the cloud and to mobile platforms, and increased operational and market tempos have precipitated the need for changes in architectural practices and decisions. This talk shares a perspective on the history of software architecture, trends influencing the need for change and the related architectural challenges, and some applicable research and practices.

Linda Northrop has 45 years of experience in the software development field as a practitioner, researcher, manager, consultant, author, speaker, and educator. She is a Fellow at the SEI, where she is currently working for the CTO on strategic technical activities. During her tenure at the SEI, she held many leadership positions, collaborated with academic and industrial researchers, and worked with federal, energy, healthcare, and computational science agencies as well as commercial organizations. Under her leadership, the SEI developed software architecture and product line methods that are used worldwide, a series of five highly acclaimed books, and software architecture and software product line curricula. She led a cross-disciplinary research group on ultra-large-scale systems that resulted in the book *Ultra-Large-Scale Systems: The Software Challenge of the Future,* which has motivated research around the world. Her professional interests include software architecture, software product lines, ultra-large-scale systems, and software innovations to aid disabled children.

Speakers

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.

We welcome our new technical co-chairs for SATURN 2016, Amine Chigani and Jørn Ølmheim.

Amine Chigani, GE Digital

Amine Chigani is a Principal Architect at GE Digital, where he builds Industrial IoT solutions on the Predix™ Platform for GE Businesses and their customers. He's equally passionate about the software he builds and about how architecture is employed in building such software. Amine is a founding member of the Industrial Internet Consortium's technology working group. He was previously an architecture scientist at GE Global Research, a consulting architecture scientist at the Software Engineering Institute, and a member of the computer science faculty at Virginia Tech. Amine earned a PhD in Computer Science from Virginia Tech and the Software Architecture Professional Certificate from the SEI.

Jørn Ølmheim, Statoil

Jørn Ølmheim is a practicing software professional with strong beliefs in open source and internet technology. Currently he holds the position of leading advisor in corporate IT at Statoil, focusing on the subsurface application portfolio and systems integration challenges. He holds an MSc in Computer Science from the Norwegian University of Science and Technology (NTNU).

George Fairbanks, Google

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.

Amit Fisher, IBM Watson

Amit Fisher is CTO of the IBM Watson IoT Engineering Solution. In this role, Amit promotes innovative IoT and Continuous Engineering solutions in the aerospace, defense, automotive, and electronic industries. He is a member of the IBM Industry Academy, the most prestigious IBM Industry forum. Prior to joining the IBM Software Group, Amit was a Senior Manager at IBM Research, Haifa, where he worked with select IBM clients in developing new approaches for complex systems design and analysis, business optimization, and transformation solutions. Before joining IBM, Amit served as Information Systems Engineer Officer at the Israeli Air Force.

Ben Hindman, Mesosphere

Benjamin Hindman is a Founder and Chief Architect at Mesosphere, where he leads a team that is building out core services for the Mesosphere Datacenter Operating System (DCOS). Ben co-created Apache Mesos as a PhD student at UC Berkeley before bringing it to Twitter, where it now runs on tens of thousands of machines powering Twitter's data centers. An academic at heart, his research in programming languages and distributed systems has been published in leading academic conferences.

Rick Kazman, University of Hawaii and Carnegie Mellon Software Engineering Institute

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, IBM

Michael Keeling is a senior software engineer at IBM, where he develops and maintains IBM's Watson Explorer and Watson platforms. Michael is an experienced software architect, Agile practitioner, and programmer, having worked on projects ranging from combat systems to search to web apps. He holds a Master of Science in 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. Michael regularly publishes essays on software engineering topics at his blog: http://neverletdown.net. You can find him on Twitter @michaelkeeling.

John Klein, Carnegie Mellon Software Engineering Institute

John Klein has over 20 years' experience developing systems and software. He joined the SEI in 2008, where he is a Senior Member of the Technical Staff. Before joining the SEI, John was a chief architect at Avaya, Inc., where his responsibilities included developing multimodal agents, architectures for communication analytics, and the Customer Interaction Software Product Line architecture. Prior to that, John was a software architect at Quintus, where he designed the first commercially successful, multichannel, integrated contact-center product and led the technology integration of the product portfolio as Quintus acquired several other companies.

Patrick Kua, ThoughtWorks

Patrick Kua is a Principal Technical Consultant at ThoughtWorks who is normally found leading development teams. He is a conference speaker and author of *The Retrospective Handbook* and *Talking with Tech Leads* and is passiononate about bringing a balanced focus on people, organization, and technology.

Ipek Ozkaya, Carnegie Mellon Software Engineering Institute

Ipek Ozkaya is a Senior Member of the Technical Staff at the SEI and deputy lead of the Architecture Practices Initiative. She develops effective methods for improving software development and system evolution by emphasizing software architecture practices, software economics, and agile development. Her recent research focuses on managing technical debt in large-scale, software-intensive systems. Ozkaya serves as chair of the advisory board of *IEEE Software* magazine and as an adjunct faculty member in the Master of Software Engineering Program at Carnegie Mellon University (CMU). She holds doctorate and master's degrees in computational design from CMU.

Eltjo Poort, CGI

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