

## Aims and Scope

Service-Oriented Computing exploits services as the fundamental elements of computer-based systems. It has been applied to various areas and promotes fundamental changes to the way software systems are being analyzed, architected, designed, implemented, tested, evaluated, delivered, consumed, maintained and evolved. Consequently, a new paradigm of software and system engineering discipline, i.e., Service-Oriented Engineering, has emerged and advanced rapidly in the past decade. Among many remarkable milestones in the development of this new paradigm are the wide adoption of the Microservices architectural style supported by Docker and other container-based virtualization techniques in the design of cloud native applications in the industry, and the DevOps movement in the organization of development processes supported by automated tools for continuous testing, continuous integration, and continuous delivery. Recent advances in Service-Oriented Computing (SOC), in particular Internet-of-Things, Industry 4.0, Edge and Fog computing, mobile and cloud computing combined with Big Data analytics, robotics, quantum computing, blockchain and decentralized ledger applications, and application of artificial intelligence and deep learning techniques, etc., have provided exciting opportunities to make significant progress in understanding and solving complex real-world challenges. Such challenges typically require a system-level approach that models a complex system at different levels of abstraction, helps to develop sound architectures for addressing separate system requirements and concerns, and integrates diverse sources of knowledge in the system's components and their interactions. Therefore, the revolution of the software and system engineering paradigm brought by service-orientation is still unfolding, with each new technology development bringing new challenges and opportunities.

Starting from 2005, SOSE is a pioneering IEEE sponsored international conference devoted to the research in engineering service-oriented systems. It covers all aspects of Service-Oriented Engineering from architectures, techniques, tools and languages to methodologies. Continuing the tradition of the last seventeen editions of SOSE Symposia, the 18th SOSE intends to provide a forum for researchers and practitioners to exchange latest observations, insights, achievements and visions in Service-Oriented System Engineering. SOSE 2024 invites original submissions in all the areas of the system engineering and software engineering methods, techniques, tools, applications, and experiments for software services.

## Topics of Interest

### Track 1: Advanced Models for Service Engineering

- Microservices
- Serverless Computing
- DevOps and service engineering
- Model-driven development of service-oriented systems
- End-user development and mashup of software services

- Lifecycle models, reusability, and scalability for services
- Coordination and cooperation of services
- Efficient scheduling of services
- Services infrastructure for big data
- Service ecosystem models and analytics

### **Track 2: Computing Environments and Virtualization**

- Container-based virtualization
- Programming models, languages, tools and platforms
- Architecture of Internet-based virtual computing environments
- Large scale computing and analytics
- Architectural and detailed designs of services and code generation of service software
- Cloud-based services
- Quantum-based services & services for quantum applications

### **Track 3: Methods, Languages & Tools for Service-Based Systems**

- APIs for service-based systems
- Transboundary service innovation models
- Business process integration, alignment & management in SOAs
- Methods, languages & tools for building SOC systems
- Metrics and measurement of services, QoS, and QoE
- Runtime verification, validation, and monitoring
- Service Engineering for Systems with AI components
- Dynamic service delivery and evolution
- Service customization and personalization
- Service mobility, scalability, elasticity, and security
- Operation and governance for large-scale service-oriented systems
- Adaptation, control, and optimization of service-oriented systems
- Modernization, migration, and servitization of legacy systems
- Service-oriented system engineering for large-scale analytics
- Service-oriented engineering and clouds
- DevOps environments for service-based systems
- Construction, deployment, operation, and maintenance of service-oriented systems

### **Track 4: Service-based Cyber-Physical Systems (CPS)**

- Edge computing, fog computing, mobility computing, and Cloud-IoT continuum
- Paradigms, concepts, and services for Osmotic Computing and Liquid Software
- Software and system engineering for CPS
- APIs and services for CPS
- Mobile services for CPS

- System modelling and simulation
- Data management for CPS
- Dependable network and system architectures for CPS

#### **Track 5: Intelligent Services for a Smart World**

- Smart home, smart office, smart city, smart industry
- Intelligent services architectures and provisioning models
- Smart systems programming models and methodologies
- Swarm intelligence
- Context-aware services
- Nature-inspired intelligent services
- Knowledge representation and reasoning
- Quality of data (QoD)
- Intelligent conversational bots
- Deep learning & services

#### **Track 6: Security Engineering for Service Systems**

- Security, dependability, and reliability
- Trust, reputation, and incentive mechanisms
- Blockchain-enabled mechanisms and infrastructure
- Enterprise business architecture and solution frameworks
- Case studies, experiments, and evaluation of service-oriented system
- Testing, verification, validation and QA in the development of service-oriented systems
- Measurements and metrics of QoS in SOA-based application systems
- Governance and policies in service-oriented software development
- Post-quantum security for service-based systems

#### **Track 7: Practical Experiences**

- Innovative service applications and experiences
- Service-oriented systems for next-gen applications, e.g., Industry 4.0
- Methodology and engineering principles of service-oriented systems
- Engineering techniques and tools to support the publishing, discovery and composition of services

<b>Important Dates</b>
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- Submission deadline: **April 1, 2024**
- Author's notification: **June 1, 2024**
- Final camera-ready paper submission: **June 15, 2024**
- Conference registration: **June 15, 2024**
- Conference dates: **July 15-18, 2024**

## Submission Guidelines and Types of Papers

### Regular Research Papers

*Research papers must be written in English and be no more than 10 pages in length, report on new research not published elsewhere. The topics of research papers may of any topic or related theme as listed above.*

### Work in Progress and Vision Papers

As the field covered by SOSE develops rapidly it is always useful to provide authors with an opportunity to present early ideas to the community and obtain feedback and guidance on direction. SOSE 2024 also encourages vision papers which discuss future and emerging issues, including emerging paradigms, technologies, and applications. To enable this dimension, we are inviting work in progress paper submissions *not exceeding 5 pages in length* and cognate with any of the topics mentioned above. The title in the submission for review should be prefaced with “WIP” to aid reviewers.

### Industry Practice / Case Study Papers

SOSE 2024 encourages papers reporting on industrial practice, case studies, empirical research and practical experiences in service engineering. Industry papers and case studies should be between *6-10 pages in length*. The topics should relate to the set of topics of the research papers in order to initiate discussions among practitioners and academics.

All papers must be written in English. Manuscripts must include a title, an abstract, and a list of 4-6 keywords. All papers must be prepared in the IEEE double-column proceedings format. Please see:

<https://www.ieee.org/conferences/publishing/templates.html>

Authors must submit their manuscripts via the following link by **April 1, 2024, 23:59**

**AoE**. For more information, please visit the conference website at:

<https://ieeesose.com/call-for-papers/>

## Paper Publication

All accepted papers will be published by IEEE Computer Society Press (EI-Index) and included in the IEEE Digital Library. The best papers will be invited to submit an extended version (with at least 30% novel content) to selected special issues (TBA).