International Symposium on Grids & Clouds (ISGC) 2026

Sunday, 15 March 2026 - Friday, 20 March 2026

BHSS, Academia Sinica

Scientific Programme

Track 1: Physics and Engineering Applications

Submissions should report on research for physics and engineering applications exploiting grid, cloud, or HPC services, applications that are planned or under development, or application tools and methodologies. Topics of interest include: (1) Data analysis and application including the use of ML/DL and quantum calculation algorithms; (2) Management of distributed data; (3) Performance analysis and system tuning; (4) Workload scheduling; (5) Management of an experimental collaboration as a virtual organization, in particular learning from the COVID-19 pandemic; (6) Expectations for the evolution of computing models drawn from recent experience handling extremely large and geographically diverse datasets,and (7) Expectations for the evolution of computing operations etc. towards the carbon neutral.

Track 2: Health & Life Sciences Applications

During the last decade, research in Biomedicine and Life Sciences has dramatically changed thanks to the continuous developments in High Performance Computing, highly Distributed Computing and the raise of AI which was rewarded recent year with Nobel prizes in both chemistry and physics.. This track aims at discussing problems, solutions and application examples in the fields of health and life sciences, with a particular focus on non-technical end users. We invite submissions in the areas of e.g. Drug discovery, Vaccine design, Structural biology, Bioinformatics, Medical imaging, Epidemiological studies and other Public health applications.

Track 3: Earth & Environmental Sciences & Biodiversity Applications

Earth system and environmental sciences go far beyond investigating physical sub-systems of our planet: increasingly, we develop an understanding of the Earth as a single, highly complex, coupled physical system with living and dead organisms. For this purpose, information technology is widely used, for tasks from data taking and analysis to modelling of large parts of the earth system. Climate change has made research in this field mandatory, and supercomputing centres are getting involved in addressing the mitigation of natural hazards - in particular in Asia. This track as a part of ISGC 2026 not only invites contributions from the classical simulation or data analysis sectors: it encourages presentations on works that involve artificial intelligence (AI). Thus, we reflect that earth system and environmental sciences have been considerably enriched by AI techniques, in fields from weather-model downscaling over anomaly detection in measurements to surrogate models in digital twins of the earth system. Projects that emphasize open science, open/FAIR data, and effective communication with stakeholders are particularly encouraged to submit their work.

Track 4: Social Sciences, Arts and Humanities (SSAH) Applications

Disciplines across the Social Sciences, Arts and Humanities (SSAH) have critically engaged with technological innovations such as grid- and cloud computing, and, most recently, various data analytic technologies. The increasing availability of data, ranging from social media text data to consumer big data has led to an increasing interest in analysis methods such as natural language processing, multilingualism and (semi-)automatic AI-powered translations, social network analysis, usage data analysis, machine learning and text mining, and data sharing. These developments

pose challenges as well as opening up a world of opportunities. Members of the SSAH community have been at the forefront of discussions about the impact that novel forms of data, novel computational infrastructures and novel analytical methods have for the pursuit of science endeavours and our understanding of what science is and can be. The ISGC 2026 SSAH track invites papers and presentations covering applications demonstrating the opportunities of new technologies or critically engaging with their methodological implications in the Social Sciences, Arts and Humanities. Innovative application of analytical tools or international data space for survey and usage data, social media data, and government (open) data are welcomed. We also invite contributions that critically reflect on the following subjects: (1) the impact that ubiquitous and mobile access to information and communication technologies have for society more generally, especially around topics such as smart cities, civic engagement, and digital journalism; (2) philosophical and methodological reflections on the development of the techniques and the approaches by which data scientists use to pursue knowledge.

Track 5: Virtual Research Environment (including tools, services, workflows, portals, … etc.)

Virtual Research Environments (VRE) provide an intuitive, easy-to-use and secure access to (federated) computing resources for solving scientific problems, trying to hide the complexity of the underlying infrastructure, the heterogeneity of the resources, and the interconnecting middleware. Behind the scenes, VREs comprise tools, middleware and portal technologies, workflow automation as well a security solutions for layered and multifaceted applications. Topics of interest include but are not limited to: (1) Real-world experiences building and/or using VREs to gain new scientific knowledge; (2) Middleware technologies, tools, services beyond the state-of-the-art for VREs; (3) Science gateways as specific VRE environments, (4) Innovative technologies to enable VREs on arbitrary devices, including Internet-of-Things; and (5) One-step-ahead workflow integration and automation in VREs.

Track 6: FAIR, Sovereign & Trusted Data

The exponential growth of research data is reshaping the scientific landscape. What once came mainly from controlled experiments is now complemented by continuous streams from sensors, simulations, and digital interactions. This track addresses how such data can be organized, governed, and used responsibly at scale. A central focus is the need for trustworthy and sovereign data ecosystems that allow researchers to retain control over sensitive resources while enabling collaboration across disciplines and borders. At the same time, the rise of AI-driven discovery and decision-making places new demands on data quality: models require information that is not only accurate but also transparent in origin, rights, and conditions of use. Making data FAIR in a machine-actionable way is therefore essential. Automated metadata generation, semantic enrichment, and interoperable catalogues are key to ensuring that data can be reliably found, interpreted, and reused—not only by humans but also by algorithms. By fostering sovereignty, trust, and FAIRness, this track invites contributions on methods, infrastructures, and policies that prepare data to be the backbone of both human and machine intelligence in research.

Track 7: Network, Security, Infrastructure & Operations

Networking and the connected e-Infrastructures are becoming ubiquitous. Ensuring the smooth operation and integrity of the services for research communities in a rapidly changing environment are key challenges. This track focuses on the current state of the art and recent advances in these

areas: networking, infrastructure, operations, security and identity management. The scope of this track includes advances in high-performance networking (software defined networks, community private networks, the IPv4 to IPv6 transition, cross-domain provisioning), the connected data and compute infrastructures (storage and compute systems architectures, improving service and site reliability, interoperability between infrastructures, data centre models), monitoring tools and metrics, service management (ITIL and SLAs), and infrastructure/systems operations and management. Also included here are issues related to the integrity, reliability, and security of services and data: developments in security middleware, operational security, security policy, federated identity management, and community management. Submissions related to the general theme of the conference are particularly welcome.

Track 8: Infrastructure Clouds and Virtualizations

This track will focus on the development of cloud infrastructures and on the use of cloud computing and virtualization technologies in large-scale (distributed) computing environments in science and technology. We solicit papers describing underlying virtualization and "cloud" technology including integration of accelerators and support for specific needs of AI/ML and DNN, scientific applications and case studies related to using such technology in large scale infrastructure as well as solutions overcoming challenges and leveraging opportunities in this setting. Of particular interest are results exploring the usability of virtualization and infrastructure clouds from the perspective of machine learning and other scientific applications, the performance, reliability and fault-tolerance of solutions used, and data management issues. Papers dealing with the cost, price, and cloud markets, with security and privacy, as well as portability and standards, are also most welcome.

Track 9: Converging High Performance Computing Infrastructures: Supercomputers, clouds, accelerators

The classical simulation-oriented computing is nowadays complemented by the machined deep learning approaches. This requires novel approaches to build and integrate high performance computing infrastructures, combining supercomputers, clouds, and specialized accelerator and artificial intelligence hardware. The integration of these different systems, often provided by different owners and different location, requires new ideas for distribution and federation. This track solicits recent research and development achievements and best practices in building and exploiting these converging high performance infrastructures or their components. The topics of interest include, but are not limited to the followings: (1) Building and use of modern high performance computing systems, including special support for AI and DNN in particular; (2) Experiences, use cases and best practices on the development and operation of large-scale heterogeneous applications; (3) Integration and interoperability to support coordinated federated use of different e-infrastructures (supercomputers, accelerated clouds, …) and their building blocks; (4) Use of virtualization techniques and containers to support access to and portability across different heterogeneous systems; (5) Performance of different applications on these integrated high performance infrastructures.

Track 10: Artificial Intelligence (AI)

During the last decade, Artificial Intelligence (AI) and statistical learning techniques have started to become pervasive in scientific applications, exploring the adoption of novel algorithms, modifying the design principles of application workflows, and impacting the way in which grid and cloud computing services are used by a diverse set of scientific communities. This track aims at

discussing problems, solutions and application examples related to this area of research, ranging from R&D; activities to production-ready solutions. Topics of interests in this track include: AI-enabled scientific workflows; novel approaches in scientific applications adopting machine learning (ML) and deep learning (DL) techniques; cloud-integrated statistical learning as-a-service solutions; anomaly detection techniques; predictive and prescriptive maintenance; experience with MLOps practices; AI-enabled adaptive simulations; experience on ML/DL models training and inference on different hardware resources for scientific applications.