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## Keynote Speaker

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EVP/ CIO

Aviation Industry Corporation of China



### Keynote Title:

Co-Evolution of Complex Aeronautical System & Complex System Engineering

### Biography:

Zhang Xinguo (Ph.D. & DBA) , Executive Vice President and CIO of Aviation Industry Corporation of China Ltd. (AVIC), President of Chinese Aeronautical Establishment (CAE). As EVP and CIO of AVIC, Dr. Zhang is responsible for the R&D, technology innovation, architecture centric/model-based system engineering at AVIC. Since 2010, he has been in charge of innovation and sustainable development of complex system engineering through the application of Enterprise Architecture (EA), System of Systems Engineering (SoSE), Model-Based Systems Engineering (MBSE).

Dr. Zhang is also Vice President of Chinese Society of Aeronautics & Astronautics (CSAA), Executive Committee Member of the International Council of Aeronautical Sciences (ICAS), President of Beijing Chapter of the International Council on Systems Engineering (INCOSE), Fellow of The Royal Aeronautical Society (RAeS) and Associate Fellow of the American Institute of Aeronautics and Astronautics (AIAA). In addition, he is the Joint Professor at Tsinghua University and Member of Industry Advisory Committee at The Hong Kong University of Science and Technology (HKUST).

### Abstract:

As the evolution of the aeronautical systems from mechanical to mechatronics, then to smart connected systems, to product systems, and finally to system of systems, the system complexity has been growing exponentially. The traditional system engineering has been facing severe challenges, because the old way of "divide then conquer" does no longer work well in complex systems, and it does not completely comply with the system principles. Therefore, the paradigm shifting from traditional document-based system engineering to the model-based system engineering is very much necessary to deal with the system complexity. In the MBSE paradigm, the new way makes early validation available in conceptual phase, keeps continuous verification through every phase in the systems engineering processes, and ensures the requirement traceability to accommodate any change as new requirements and technologies are needed during the whole life cycle of the systems. This change from the traditional way of "Design-Build-Test" to the new way of "Design-Virtual Test-Build" by digital model-based system engineering methodology is the core part of the Industry 4.0 transformation as well.