

## Special Issue

# Sustainable Air Transport Operations and Planning: Digital Twin Pathways to Net-Zero Aviation

### Message from the Guest Editors

Achieving net-zero aviation requires more than cleaner fuels or efficient aircraft; it demands a digital transformation of the entire air transport ecosystem. Digital twins and their foundational layers, digital models and digital shadows, are emerging as critical enablers of this transition, enhancing system understanding, operational efficiency, and lifecycle optimisation across aircraft, airport. This Special Issue focuses on how digital technologies and data-driven systems engineering can accelerate the aviation sector's path to net zero by integrating AI, IoT, cyber-physical systems (CPS), and real-time analytics into planning and operations. It seeks contributions that demonstrate how digital models support emission forecasting, scenario analysis, and strategic planning. Research topics may include green fleet and infrastructure management, sustainable MRO, intelligent routing and scheduling, energy and fuel integration, and whole-system lifecycle analysis. This Special Issue aims to bridge engineering innovations, data science, and operational excellence, establishing a digital foundation for resilient, efficient, and truly net-zero air transport operations.

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### Guest Editors

Dr. Maryam Farsi  
Dr. Christina Latsou  
Dr. Bernadin Namono

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### Deadline for manuscript submissions

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## Editor-in-Chief

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