

# DAFNI

## Data & Analytics Facility for National Infrastructure



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Facilities Council



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# DAFNI

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# DAFNI Webinar

## MARS

Modelling Aviation Resilience Scenarios

Transport Sandpit: 22<sup>nd</sup> May 2024



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# The Team

- Flight Diversion Modelling for the UK Aviation System
- 1<sup>st</sup> April 2024 – 31<sup>st</sup> March 2025



**Dr Fabian Steinmann**  
Principal Investigator  
School of Management



**Dr Irene Moulitsas**  
Co-Investigator  
Centre for Computational  
Engineering Sciences



**Dr Desmond Bisandu**  
Researcher  
Centre for Computational  
Engineering Sciences



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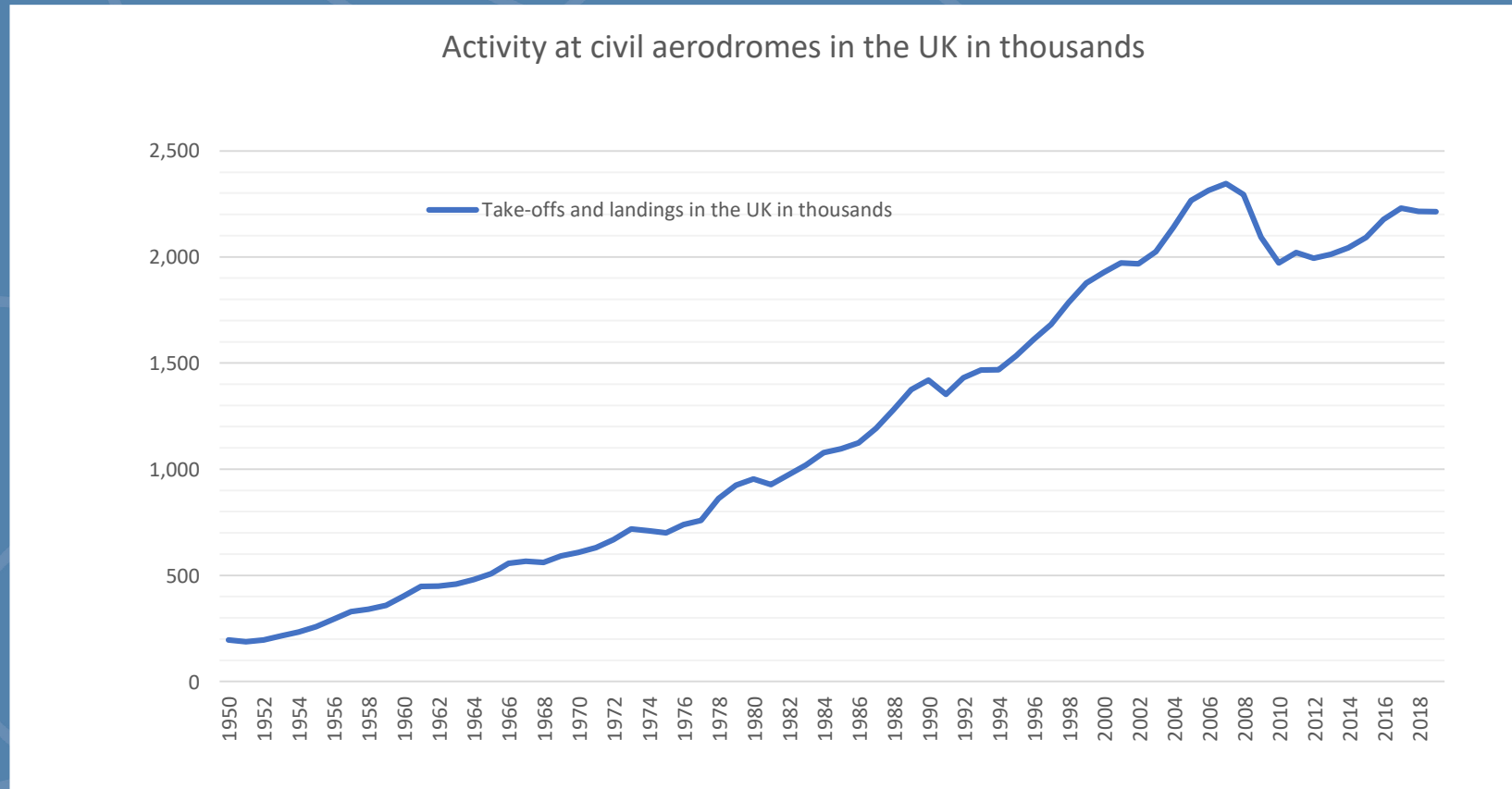
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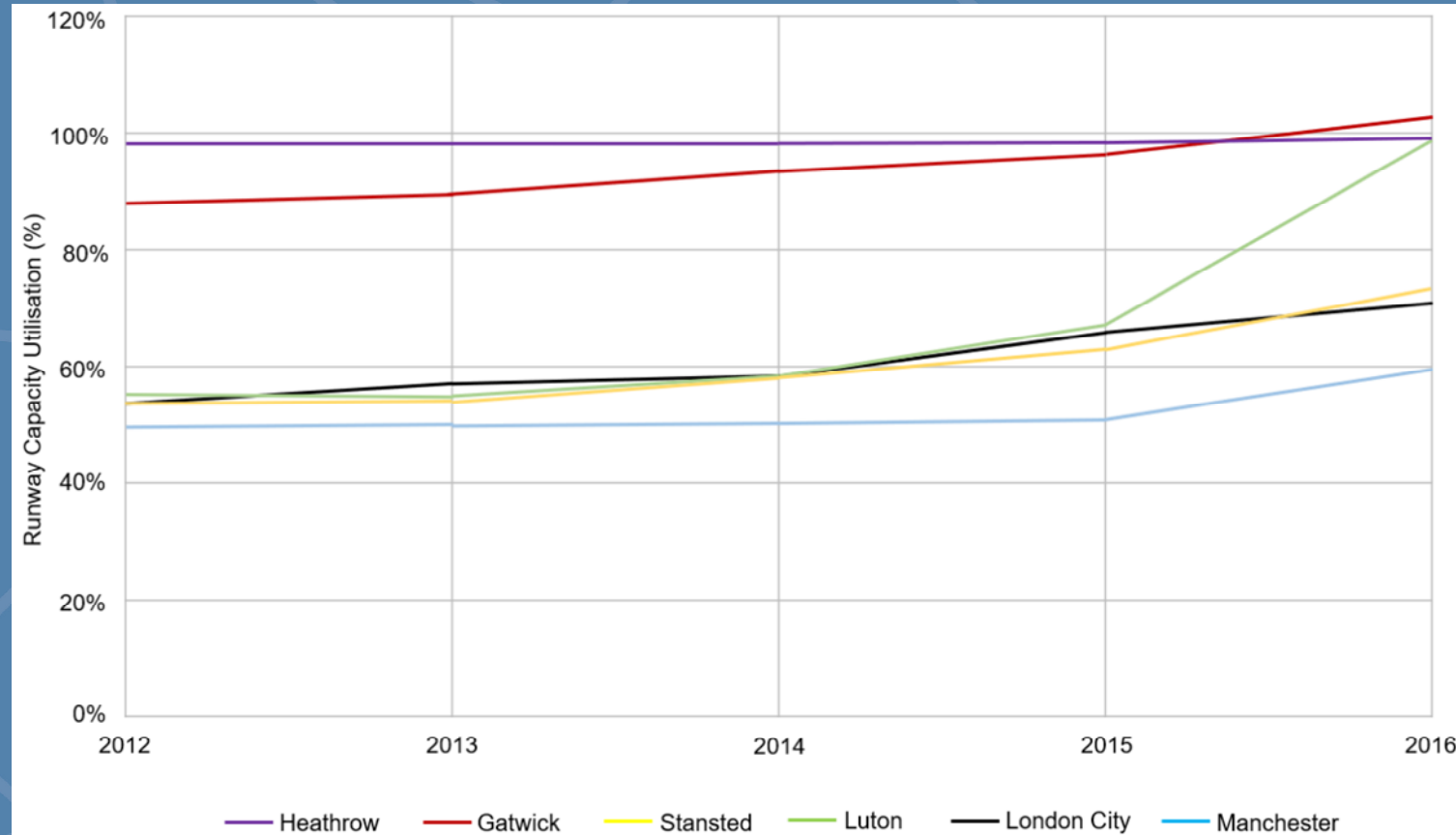
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# Background



# Background



# Challenges

- 1<sup>st</sup> & 2<sup>nd</sup> declared diversion priority
- Stand availability
- Runway utilization
- Contractual agreements



→ Computationally Complex Problem



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# Approach - Example

- Declared 1<sup>st</sup> and 2<sup>nd</sup> diversion priority in the flight plan

	<b>UTC</b>	<b>Flight No</b>	<b>Origin</b>	<b>Destination</b>	<b>Airline</b>	<b>Aircraft</b>	<b>Reg</b>
<b>Original data</b>	7:15	U28671	Amsterdam	Gatwick	Easyjet	A20N	OE-LSJ
<b>Anonymized</b>	7:15	001	Amsterdam	Gatwick	Airline 01	Code C	-

- Stand availability at the diversion airport

Airport: STN	<b>Code B</b>	<b>Code C</b>	<b>Code D</b>	<b>Code E</b>	<b>Code F</b>
<b>Stands</b>	5/7	17/21	7/9	4/4	2/4

- Runway utilization

Airport: STN	<b>Number of movements</b>
<b>Runway utilization</b>	28/34

# Approach

Airline \ Airport	London Heathrow	Manchester	London Gatwick	Birmingham Int	Glasgow Int	Newcastle	Edinburgh	Aberdeen	Bristol	Cardiff Int	Leeds Bradford	East Midlands	London Stansted	London Luton	George Best Belfast City	Norwich Int	Exeter Int	Belfast Int	Southampton	Liverpool John Lennon	Bournemouth	London City	Newquay Cornwall
247 Aviation																							
2Excel Aviation																							
Ajet																							
Aegean Airlines																							
Aer Arann																							
Aer Lingus																							
Aerpartner																							
Aeromexico																							
Aeroways																							
Air Algerie																							
Air Arabia Maroc																							
Air Astana																							
Air Baltic																							



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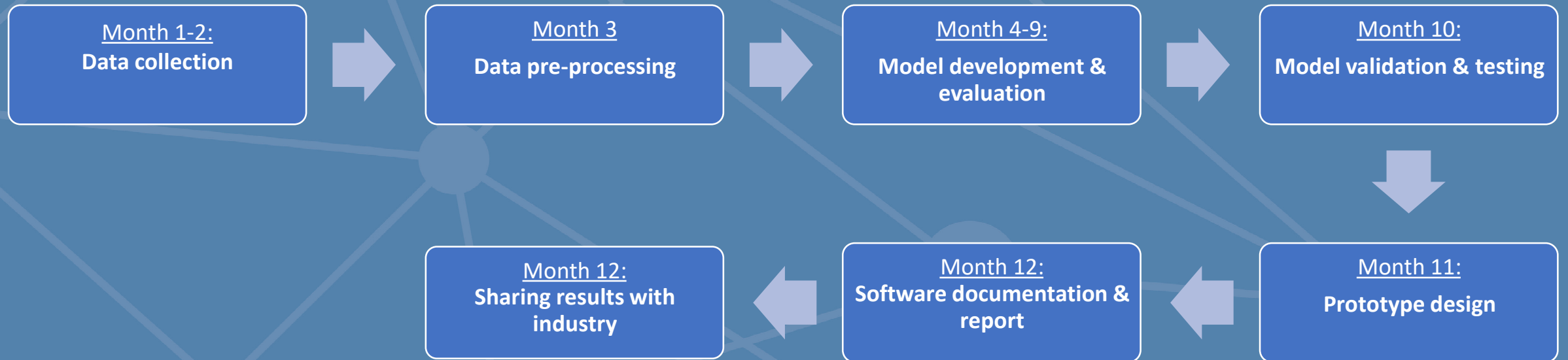


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# Workplan



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# Outputs

- Data set uploaded into the National Infrastructure Database
- Developed Model and Documentation uploaded into the Modelling catalogue
- Employment of the Visualisation Suite through Jupyter Notebook
- Model could be adapted and extended in other transportation methods
- Strong advocates of open-source software



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