DIAL Introduction

Prof Duncan McFarlane
Distributed Information & Automation Lab
University of Cambridge
Department of Engineering

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Themes

AUTOMATION

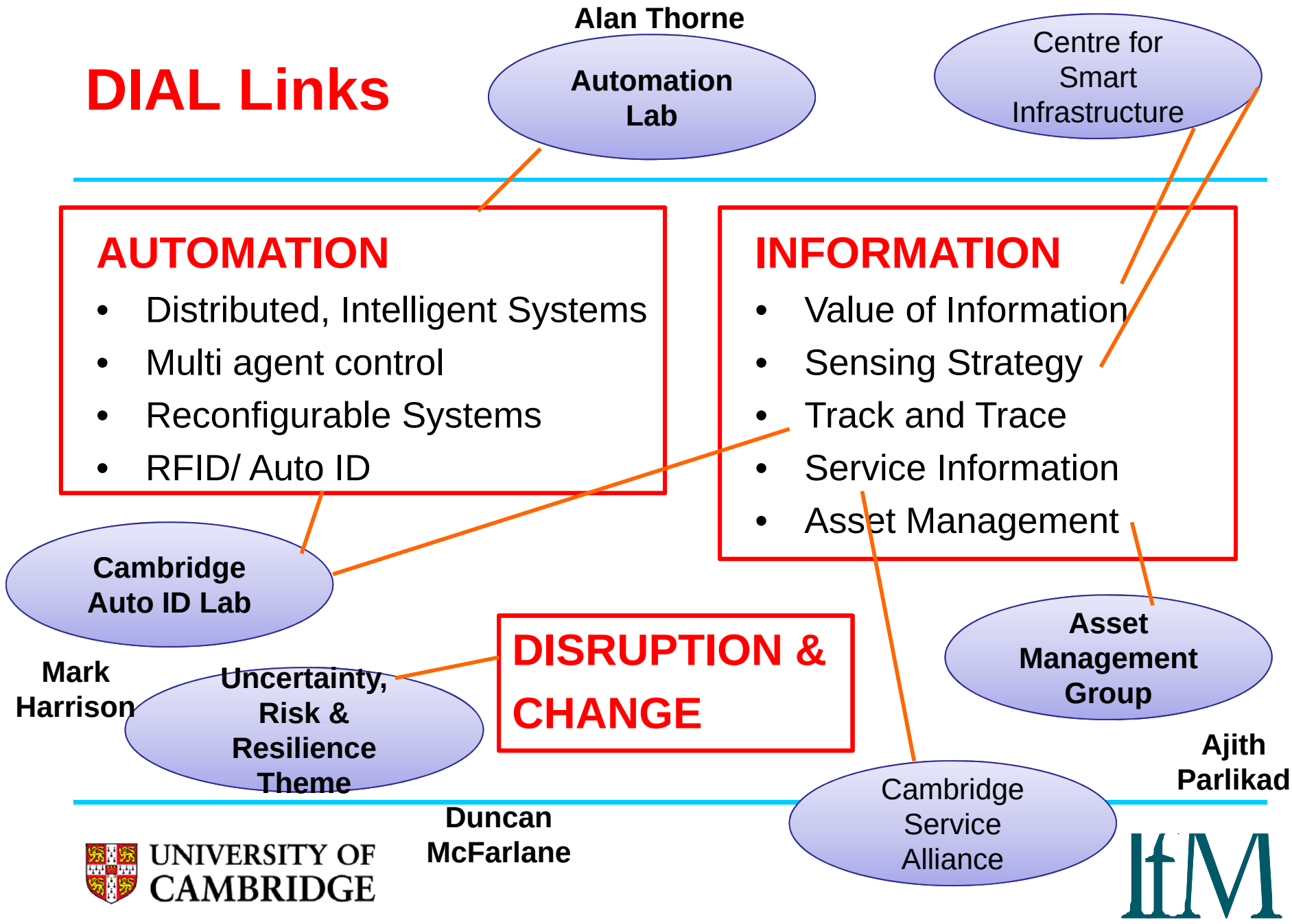
- Distributed, Intelligent Systems
- Multi agent control
- Reconfigurable Systems
- RFID/ Auto ID

INFORMATION

- Value of Information
- Sensing Strategy
- Track and Trace
- Service Information
- Asset Management

UNCERTAINTY, CHANGE

DIAL Links


Alan Thorne
Automation Lab
Centre for Smart Infrastructure
AUTOMATION
• Distributed, Intelligent Systems
• Multi agent control
• Reconfigurable Systems
• RFID/ Auto ID
INFORMATION
• Value of Information
• Sensing Strategy
• Track and Trace
• Service Information
• Asset Management
Cambridge Auto ID Lab
Mark Harrison
Uncertainty, Risk & Resilience Theme
DISRUPTION & CHANGE
Asset Management Group
Ajith Parlikad
Cambridge Service Alliance
Duncan McFarlane
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Project Areas [Aerospace, Infrastructure, Logistics, Agriculture]

- Resilient, manufacturing
- Inteilligent data systems

- Agricultural resilience
- Flexible automation

- Value of info & Smart infrastructure

- Airport information & performance, resilience

- Intelligent Warehouse &
- Transportation

- Asset information management for utilities and infrastructure

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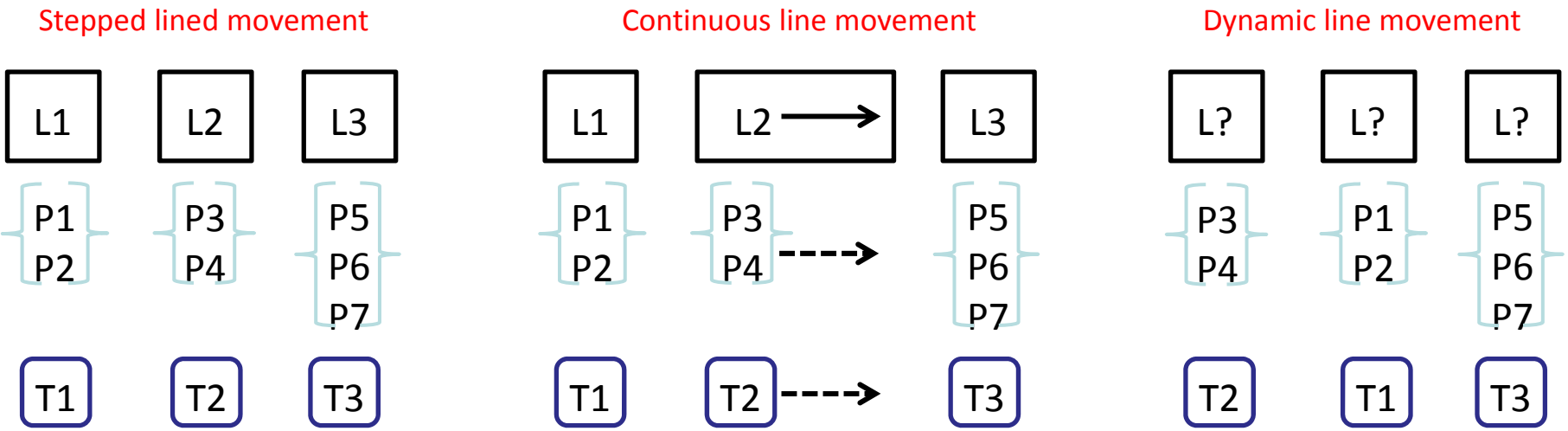
Project Snapshots

- Duncan McFarlane: Resilience
- Ajith Parlikad: Asset Management
- Mark Harrison: Auto ID
- Alan Thorne: Automation Lab

DisTAL: What?

Issue: Improve disruption tolerance of loosely coupled manufacturing job shops, implementing lean

Challenge: Creating a resilient manufacturing operation without excess inventory by detecting and responding to disruptions.



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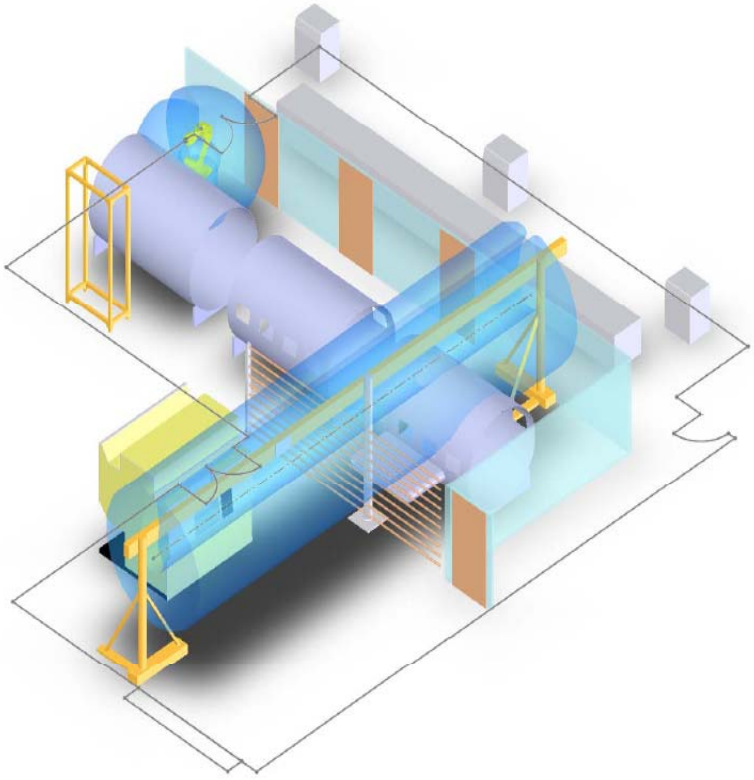
DisTAL: Why

- Improved product mix across production
- Improved use of capacity
- Reduce lost time on rework
- More effective integration of processing, machining and assembly

DisTAL: How?

Approach:

- Resilience Analysis of key operation
- Develop Control System / Tracking Architectures
- Simulate Architecture & Operations
- Demonstrate Lab based proof of concepts
- Migrate findings into Boeing



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Heathrow Operational Freedoms: What?

- Aim: To investigate how new runway operational processes can enhance airport performance.
- Focus: Specifically investigating the use of dual arrival, vectored departures
- Partners: South East Airports Task Force, DfT, CAA, NATS

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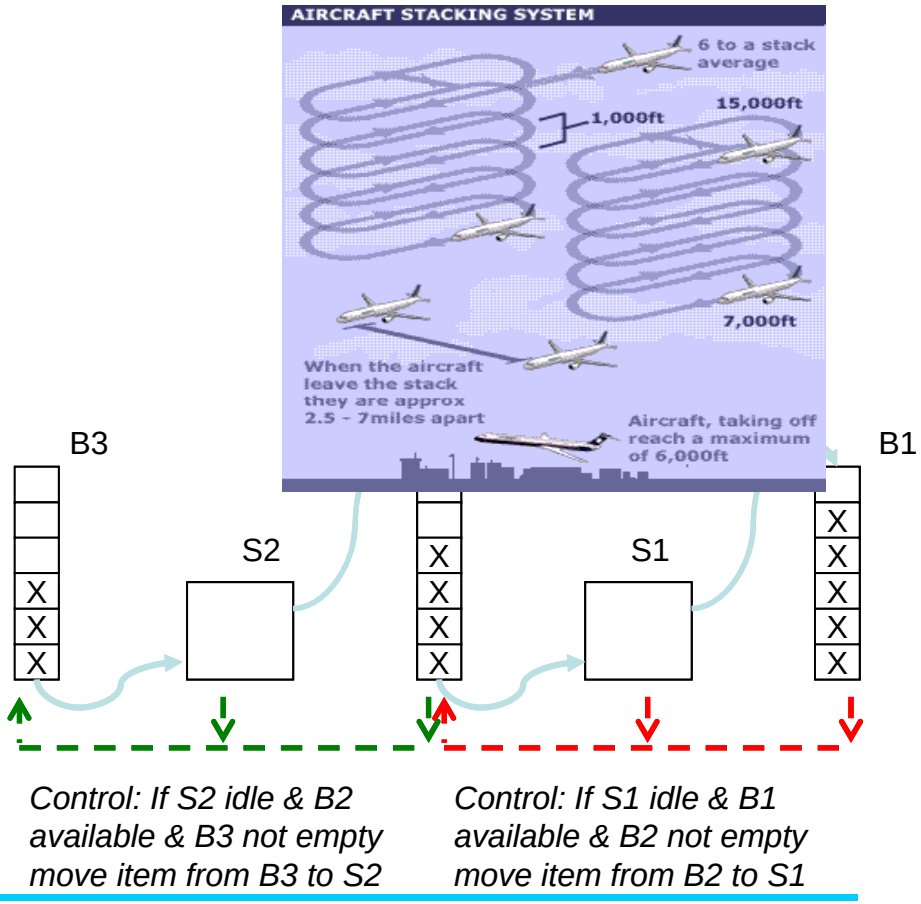
Heathrow Operational Freedoms: Why

- Heathrow at ~ 99% capacity
- Disturbances lead to significant arrival delays
- Large CO2 expenditure in “stacks” over Heathrow



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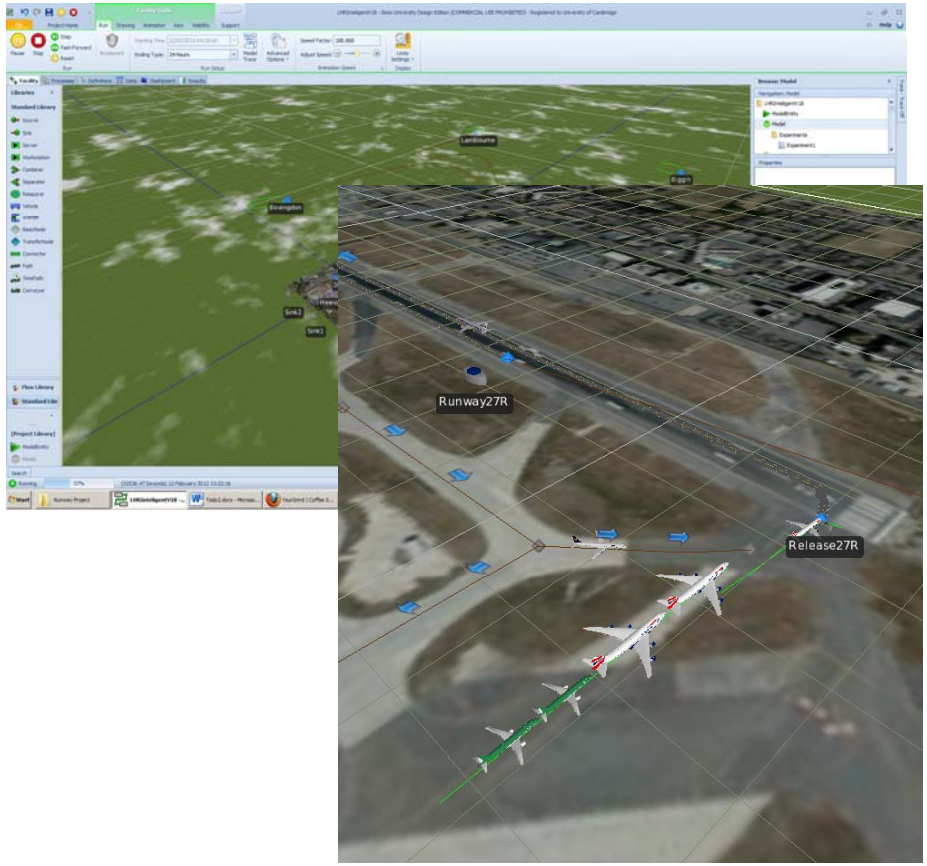
Heathrow Operational Freedoms: How

- Trialling multiple operating modes over 2011-13
- Statistical analysis of arrivals/departures performance
- Simulation studies of different landing sequences



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