LAMP CAP1616 Compliance

Airspace Design Methodology Discussion

Tuesday 4th December 2018

NATS Participants

(Project Manager)

(Corporate Comms)

(Analytics)

(Manager Ops Concepts)

(Manager Airport Concepts)

(Senior Airspace Change Specialist)

Airspace Design Methodology

1. What is the innovative new data-driven design process?

2. How would stakeholders be engaged in this process?

3. How would it demonstrate compliance with CAP1616 Stage 2?

Airspace Data Management – Traditional Projects

Flowchart illustrating traditional, manual data processes

New Design Process - overview

Flowchart illustrating data-driven iterative processes

Airspace Data Management – new process overview

Flowchart illustrating integration of aeronautical data across tools and platforms

Tool: OPERA

- OPERA is a bespoke route positioning algorithm for en-route airspace
- The algorithm inputs demand and low-level designs below the en-route layer, and then creates routes in the en-route network
- The algorithm then optimises the network to minimise interactions and enhance environmental performance

OPERA process flowchart

OPERA output chart

Tool: DesignAir

DesignAir output chart

Current Baseline

User-Friendly Interface

Fully Configurable Airspace Objects

‘Instant’ Key Performance Metrics

Audit Trail/Version Control

Airspace Aggregator

Automated Documentation

Automatic Transfer into FTS/RTS

Design Process: Tool and CAP1616 Timeline

Flowchart and timeline as originally presented – see next slide for more up to date info

Current design (Do Nothing)

OPERA Tool

*Varying input parameters produces several **D**esign **P**riority **N**etwork **P**rototypes (DPNPs)*

DesignAir Tool:

DPNP output

Stakeholder engagement

Identify preferred DPNP

Split the preferred DPNP into manageable elements

Allocate a team to each element

Oct 18 | Nov 18 | Dec 18 | Jan 19 | Feb 19 | Mar 19+

Design Process: Tool and CAP1616 Timeline

Updated flowchart and timeline, following OPERA and DesignAir refinements

Current design (Do Nothing)

OPERA Tool

*Set parameters to produce smaller **regional** **D**esign **P**riority **N**etwork **P**rototypes (DPNPs)*

DesignAir Tool:

***Regional** DPNP output*

*Split each **regional** DPNP into manageable elements*

Allocate a team to each element

Stakeholder engagement

Engage on regional DPNP and individual element

Oct 18 → Nov 18 → Dec 18 → Jan 19 → Feb 19 → Mar 19+

Design Process: What is an Iterative Element?

Design process flowchart and timeline

Work on elements
Stakeholders invited to attend and provide feedback

Design Process: Iterative Elements for entire Network

Design process animation 1

Design Process: Iterative Elements for entire Network

Design process animation 2

Multiple elements, multiple iterations

Design Process: Creating CAP1616 Stage 2 documents

Flowchart and timeline as originally presented – see next slide for more up to date info

Network collation

Original Preferred DPNP has been developed

Optimised elements organised into one (or more) viable systemised network(s)

Stakeholder engagement

Collate and summarise metrics e.g. capacity, fuel, CO_2 etc.

Optimised network presented to stakeholders

CAP1616 Step 2A

Step 2A(i) – Airspace Design Options

Step 2A (ii) – Design Principle Evaluation

CAP1616 Step 2B

Step 2B – Options Appraisal (Phase 1 Initial) incl. Safety Considerations

Document review

Senior sign-off

Prepared for publication

Upload to CAA Portal by 10th April 2020

CAA two-week Study Period

24th April 2020 Stage 2 Gateway Assessment

Dec 19 | Jan 20 | Feb 20 | Mar 20 | Apr 20

Design Process: Creating CAP1616 Stage 2 documents

Updated flowchart and timeline, following OPERA and DesignAir refinements

Network collation

Elements of regional DPNPs were developed with stakeholder input

Optimised elements organised into one (or more) viable systemised network(s)

Stakeholder engagement **on the network(s)**

Collate and summarise metrics e.g. capacity, fuel, CO_2 etc.

Optimised network presented to stakeholders (engagement items considered and addressed)

CAP1616 Step 2A

Step 2A(i) – Airspace Design Options

Step 2A (ii) – Design Principle Evaluation

CAP1616 Step 2B

Step 2B – Options Appraisal (Phase 1 Initial) incl. Safety Considerations

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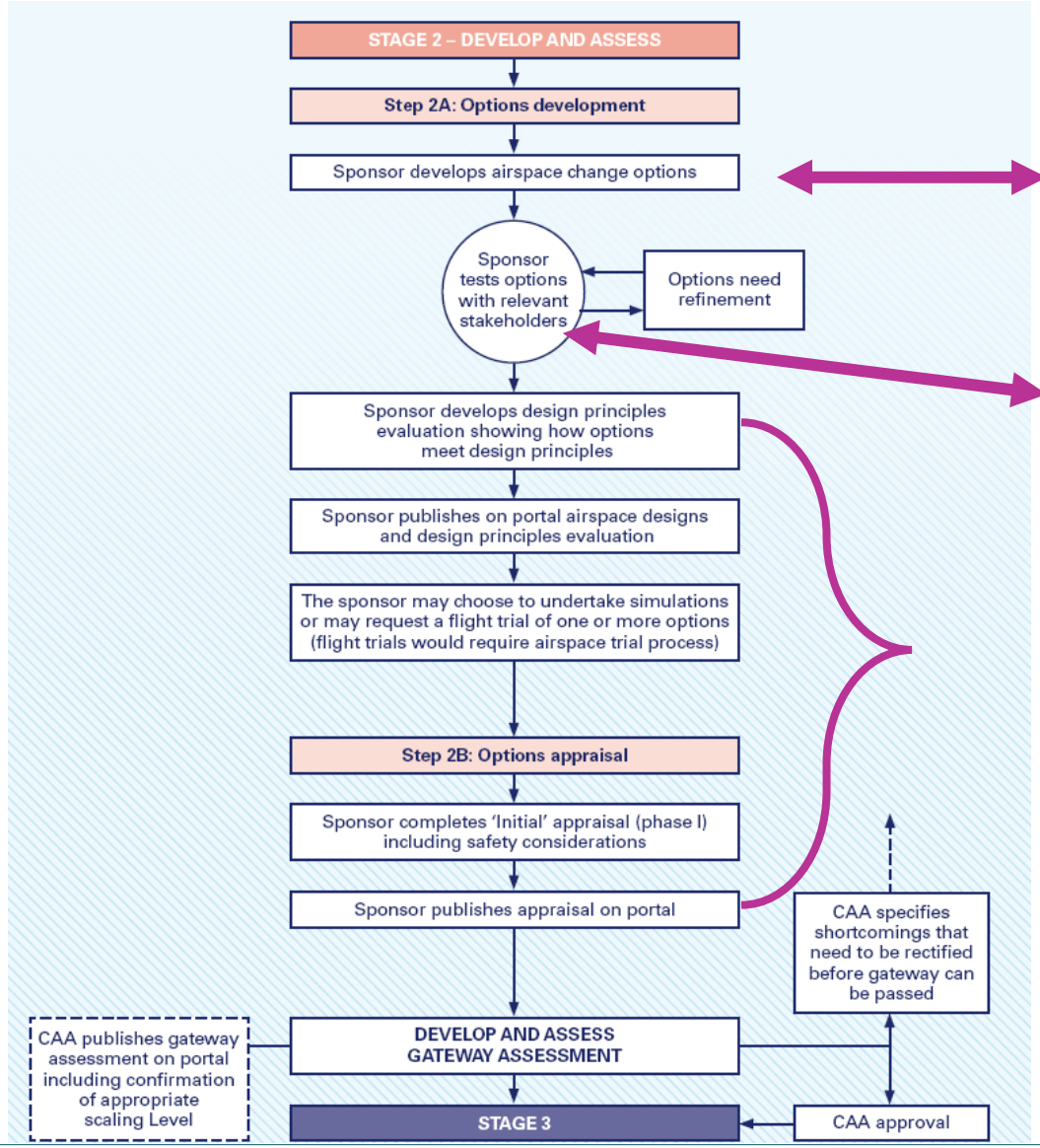
How this all fits with CAP1616 Stage 2

Originally presented



Design process animation, covering:

Develop DPNP with stakeholders

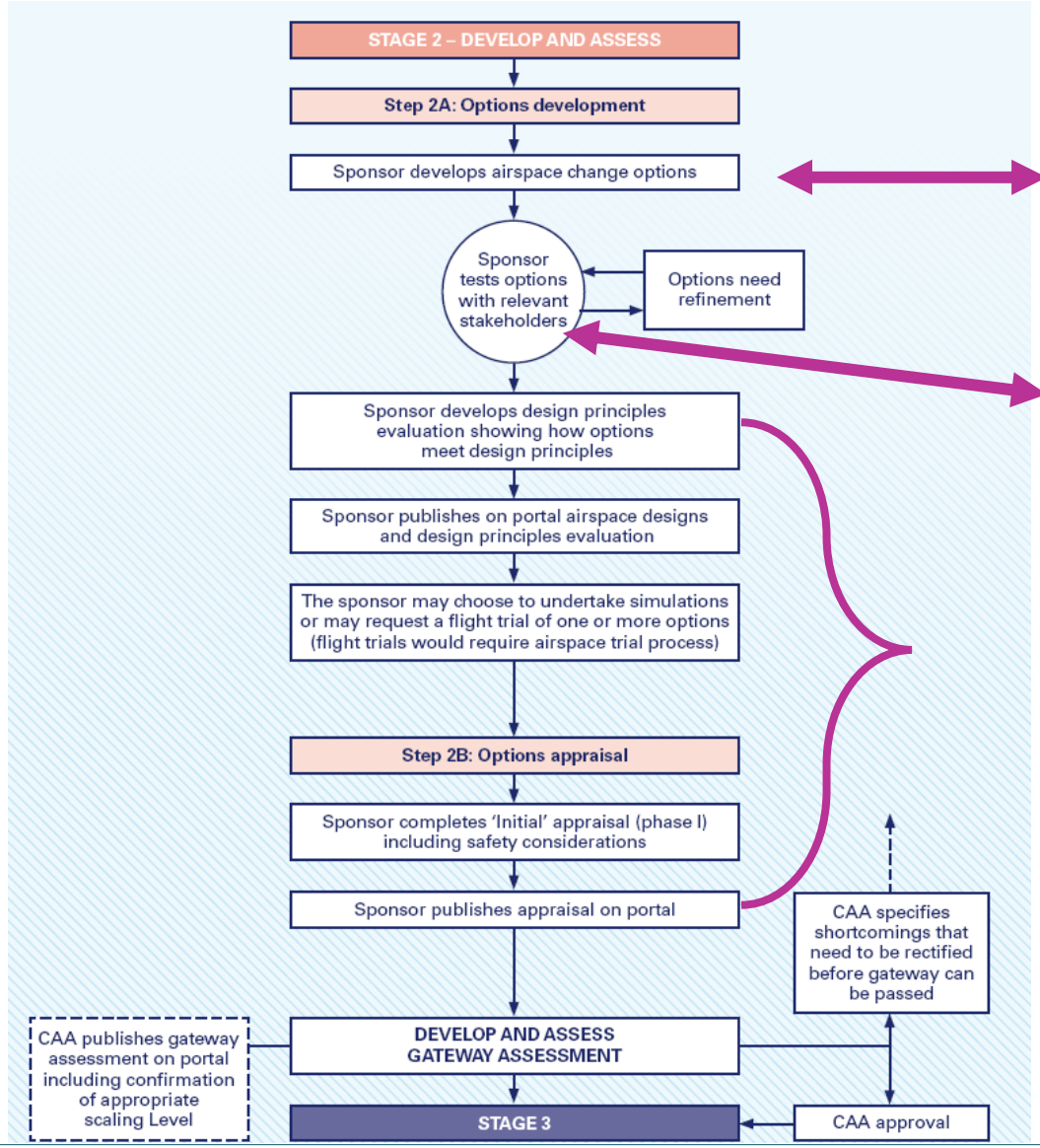
Develop iterative elements with stakeholders

Develop final network option(s) with stakeholders

Documentation & Submission

How this all fits with CAP1616 Stage 2

Updated wording



Design process animation, covering:

Engage on regional DPNP with stakeholders

Develop iterative elements with stakeholders

Develop final network option(s) with stakeholders

Documentation & Submission

Airspace Design Methodology

1. What is the innovative new data-driven design process?
   We have demonstrated the tools, methods and data transfer protocols

2. How would stakeholders be engaged in this process?
   Design Priority Network Prototypes (DPNPs), iterative design elements, output optimised network options

3. How would it demonstrate compliance with CAP1616 Stage 2?
   As per previous slide

End of Design Methodology presentation

Thank you