

Combining CNS Capabilities: A Key Step Toward NextGen

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NextGen Needs

Capacity

Efficiency

Safety



NextGen Needs

Airport Capacity

Controller Efficiency

Surface Safety



Key CNS Enablers

Air-Ground Data Comm

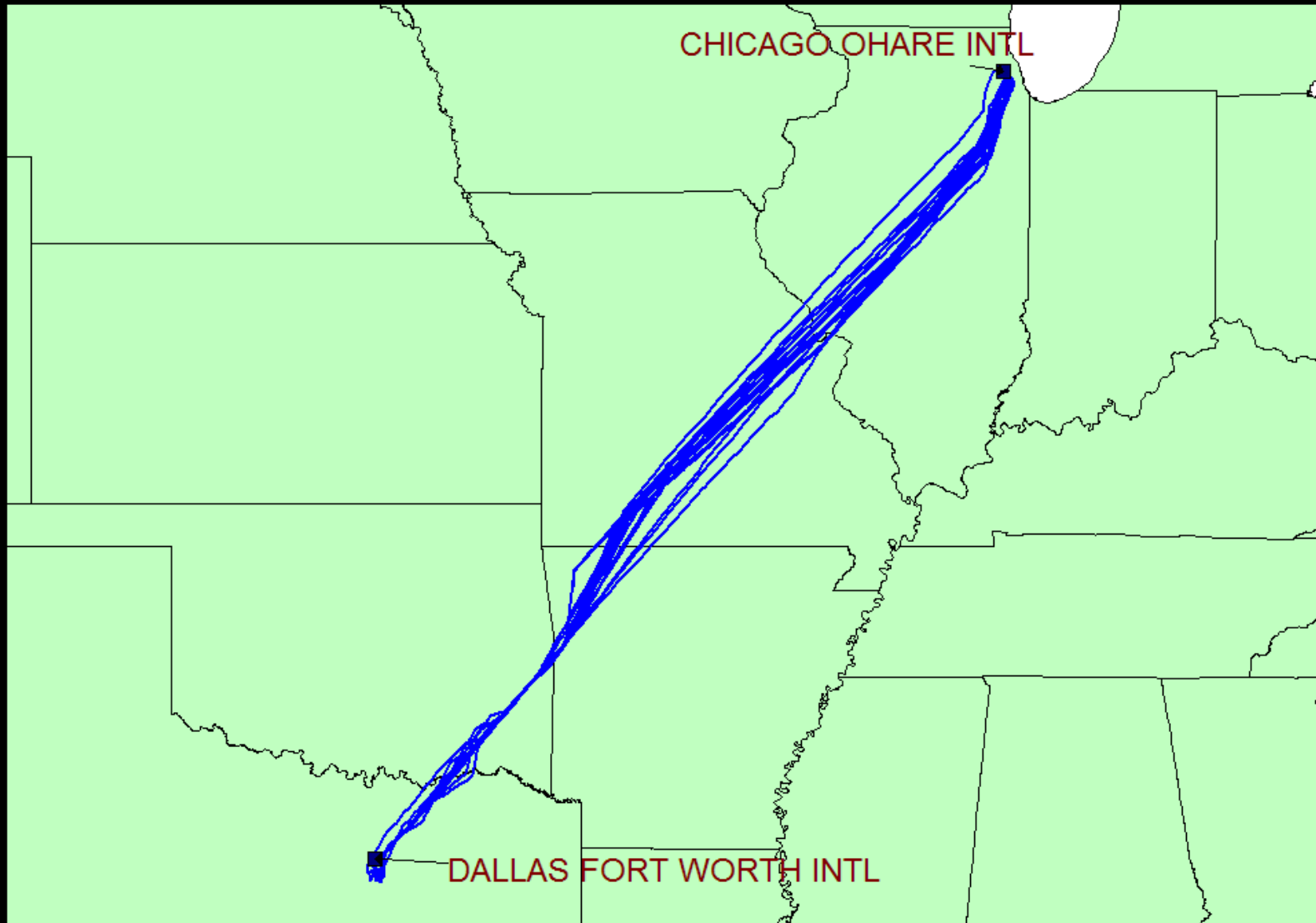
RNAV / RNP

ADS-B / CDTI

**Each Capability Brings
Benefits by Itself**

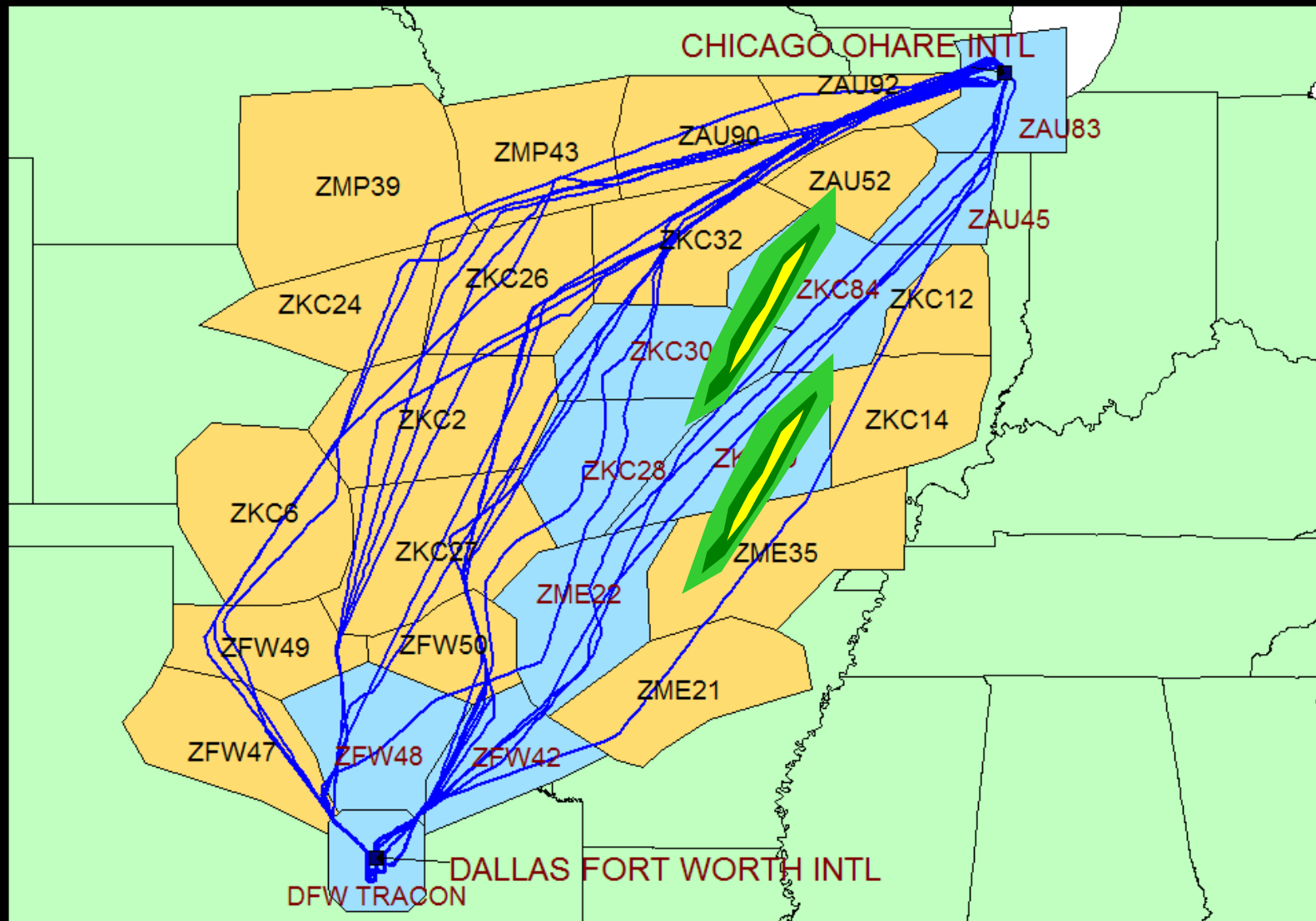


Air-Ground Data Comm





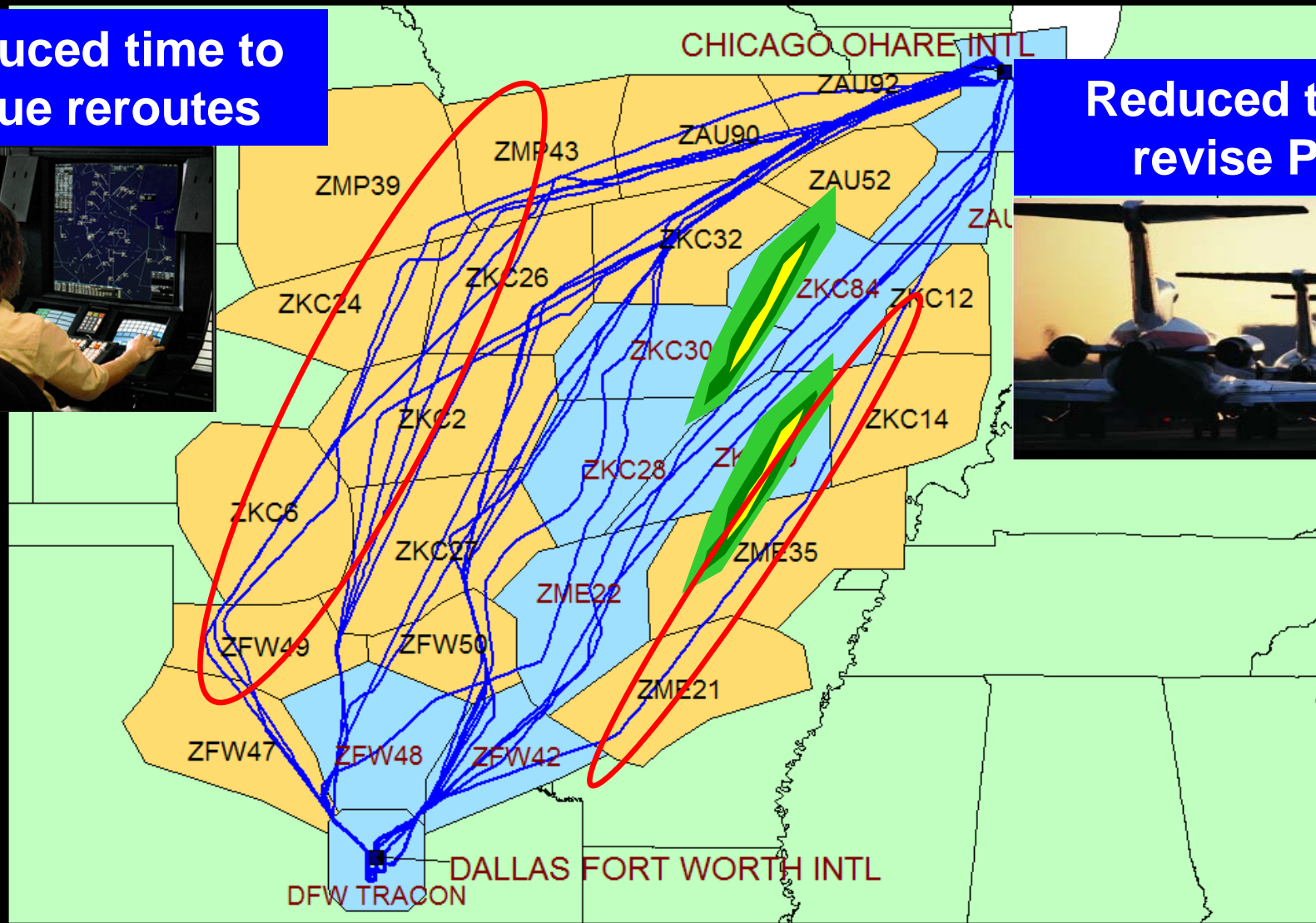
Air-Ground Data Comm





Air-Ground Data Comm

Reduced time to
issue reroutes



Reduced time to
revise PDCs





Air-Ground Data Comm

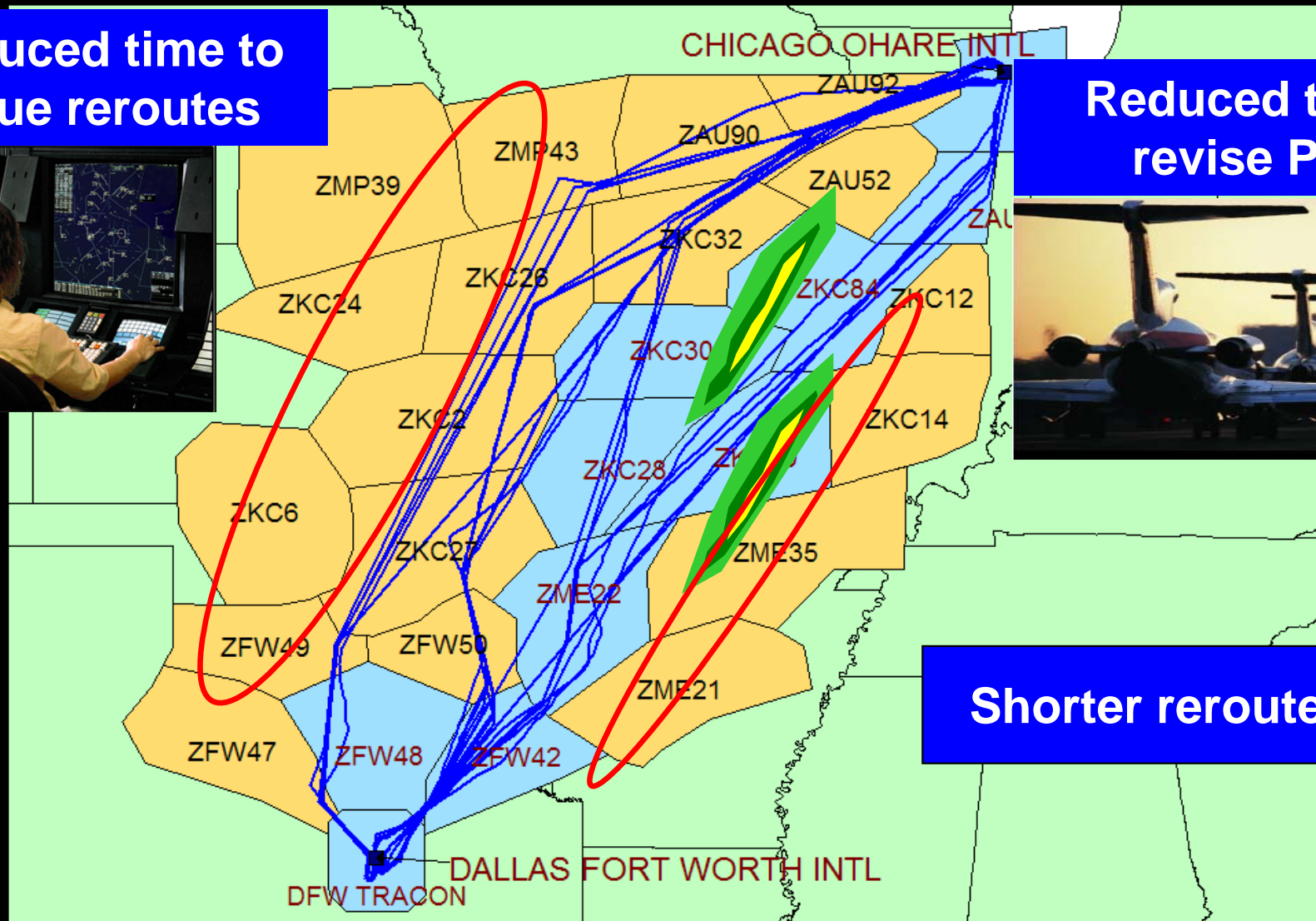
Reduced time to issue reroutes



Reduced time to revise PDCs



Shorter reroutes!





RNAV / RNP

Newark

LaGuardia

Standard Arrival Paths

Kennedy

Airspace Boundary

RNP Arrival Procedure

ASALT

0.60

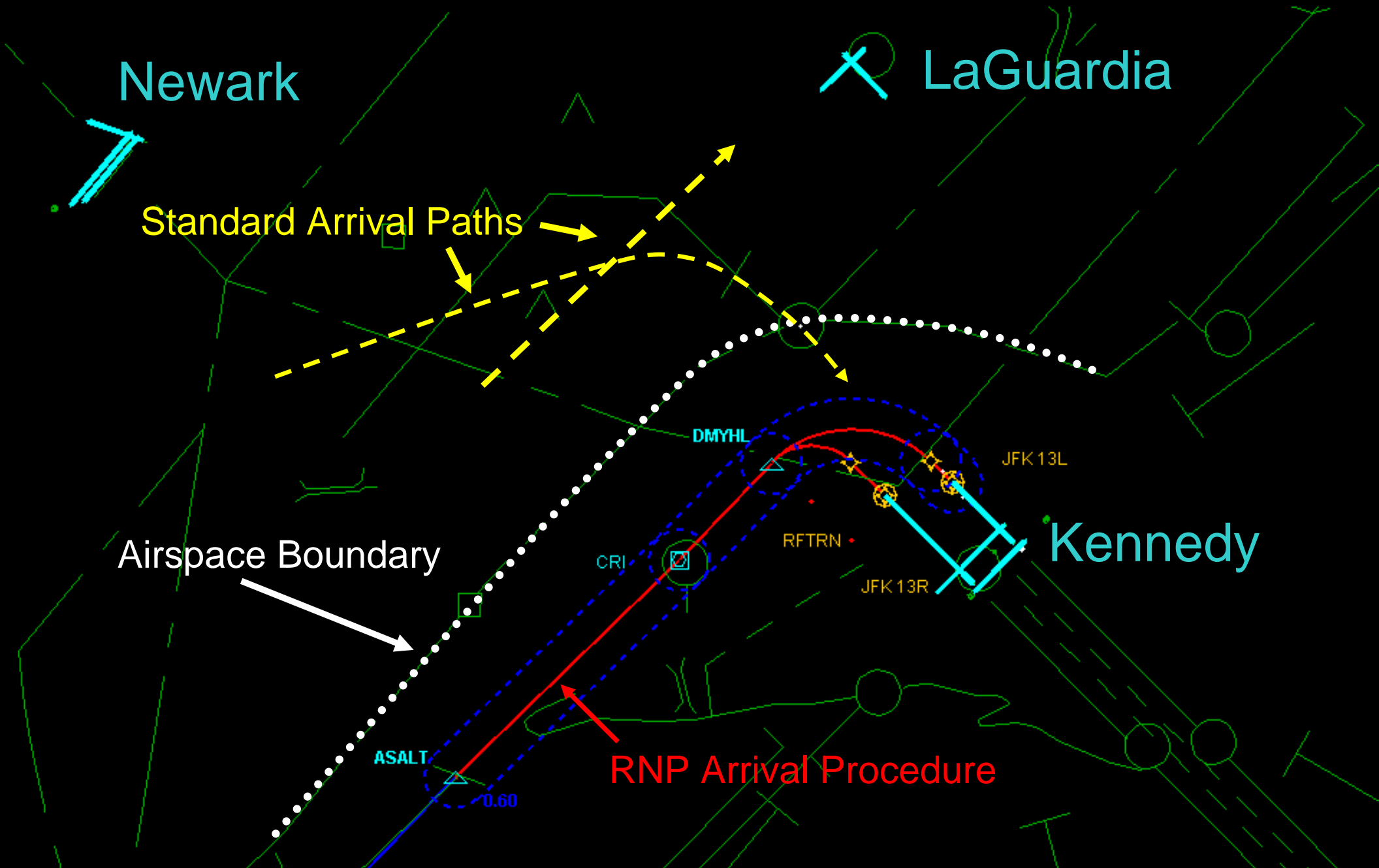
DMYHL

CRI

RFTRN

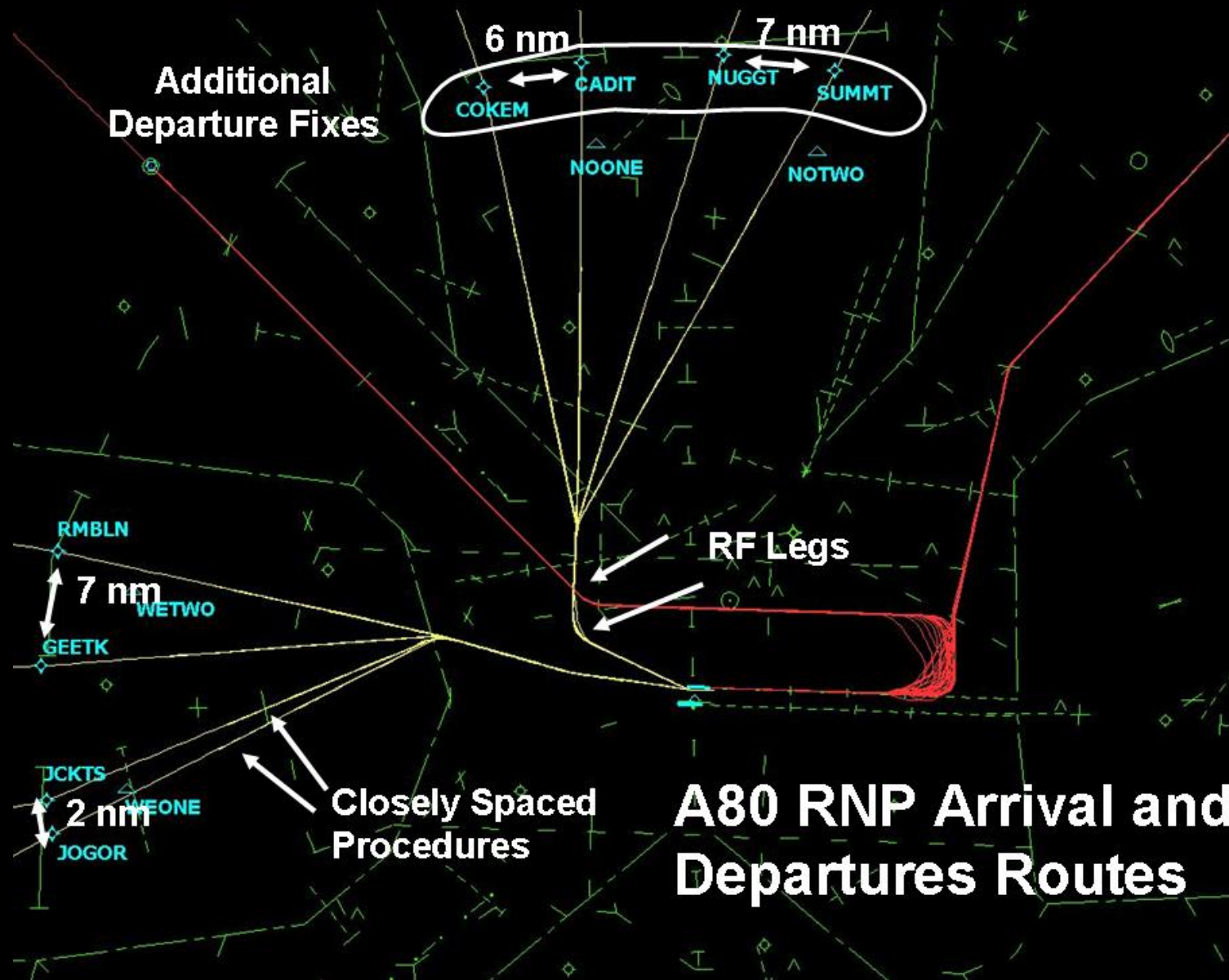
JFK 13R

JFK 13L





RNAV / RNP





ADS-B / CDTI

Own-ship moving map display with aural alerts and other traffic

49% effective in mitigating wrong runway and runway incursion events



**In Combination, They Can
Bring Even More Benefit**

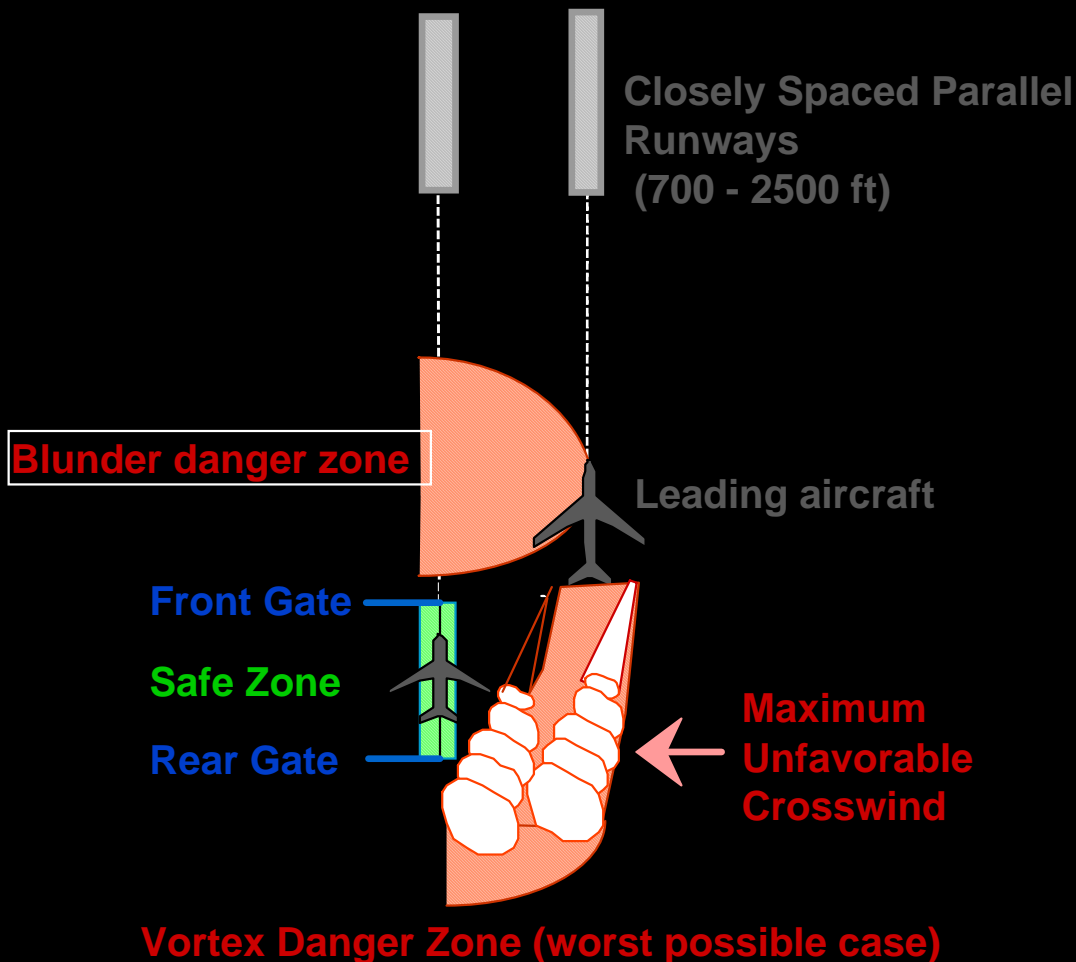


ADS-B and RNP for Airport Capacity

RNP provides defined approach paths to Closely-Spaced Parallel Runways

ADS-B/CDTI provides safety zone

Maintains dual runway operations in IMC





ADS-B and RNP for Airport Capacity

**Potential
new 7,000 ft
runway, 700 ft
from current
main transport
runway**





ADS-B and RNP for Airport Capacity

**Potential
new 7,000 ft
runway, 700 ft
from current
main transport
runway**

**Potential new
10,000 ft runway**

**~50% capacity
increase for large
transport**





ADS-B and Data Comm for Surface Safety

Own-ship moving map
display with aural
alerts, other traffic, and
taxi route to runway

80 % effective in
mitigating wrong
runway and runway
incursion events



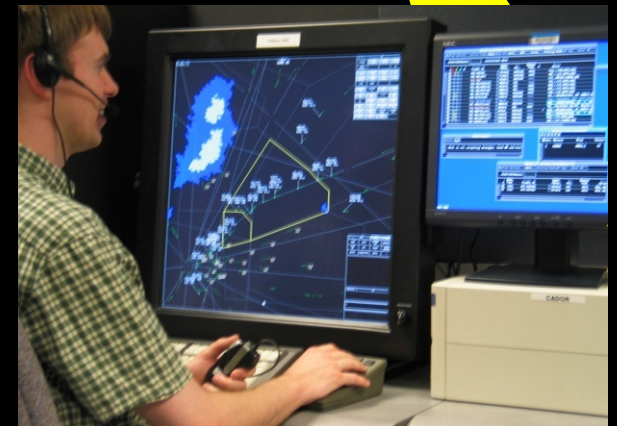


Data Comm and Navigation for Controller Efficiency

- **Enables more precise ATM and increased controller productivity**
 - Increased use of direct routes
 - Fewer and more efficient reroutes for traffic avoidance
 - Improved en route merging and spacing
 - Improved metering



**4-D Intent
Downlink**





Recommendations

- **Identify a small set of critical NextGen needs**
- **Determine practical concepts to meet them, utilizing C, N, and S capabilities**
- **Define a coordinated set of requirements for these capabilities**
 - Leverage existing standards and capabilities
 - Build a strong foundation for future applications
- **Obtain government and industry agreement and commitment on path forward**

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