

A decorative graphic on the left side of the slide shows a portion of a globe with a grid of latitude and longitude lines. A white jet airplane is flying across the sky, leaving a white contrail that extends across the globe.

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# **Execution of Flow Strategies aka “Go Button”**

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**Randy L. McGuire**

**May 15, 2003**

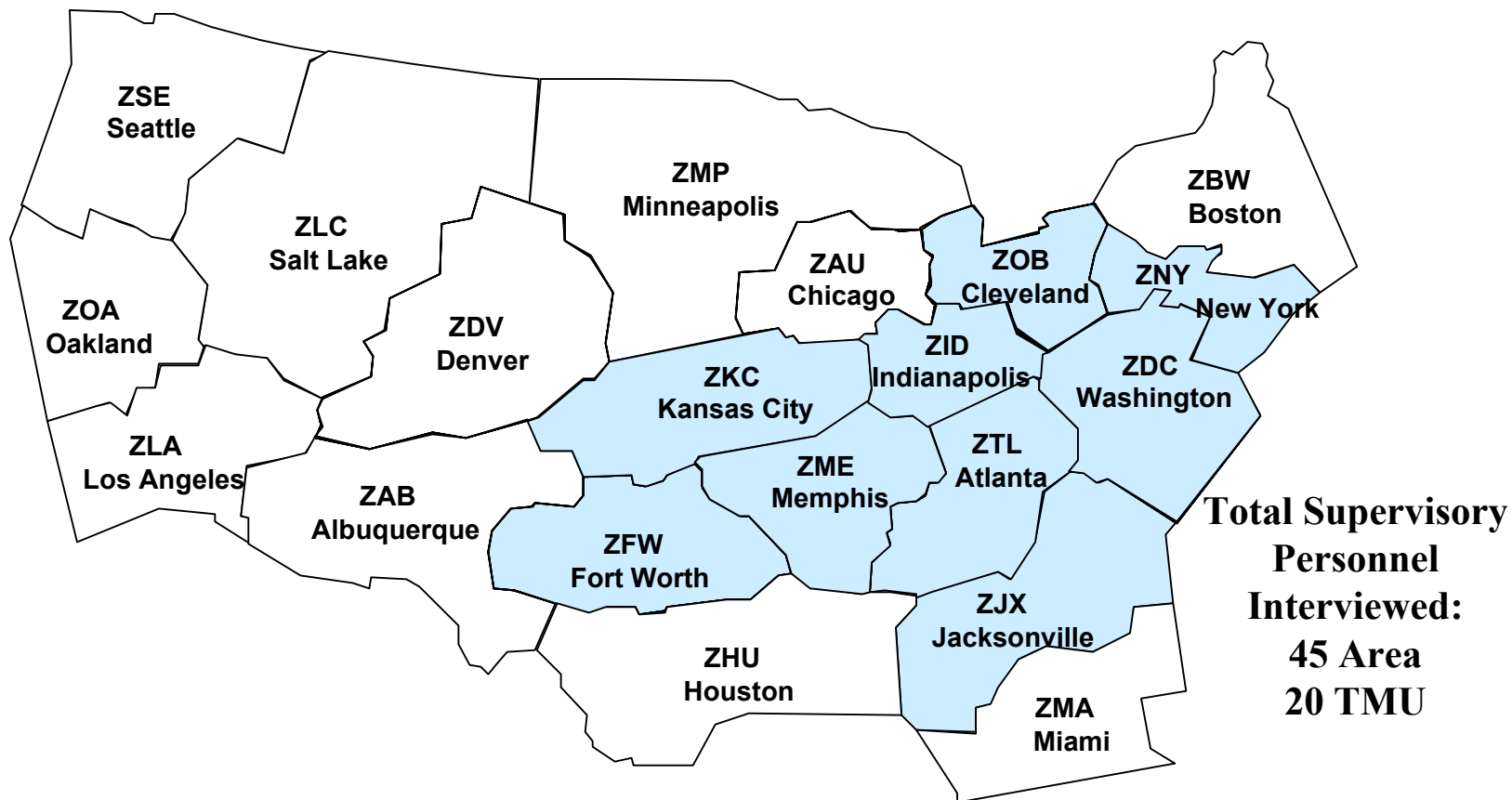
# Research Objective

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- **Scope**
  - **TFM Rerouting Initiatives can be more effective through increased information sharing and capability integration**
    - **ETMS will have capability to identify flight-specific reroutes**
    - **Integration between ETMS and user and ATC capabilities:**
      - **Improves efficiencies in implementing rerouting strategy**
      - **Increases predictability of system in response to TFM initiatives**
- **Research Objective**
  - **Develop and validate concepts and requirements for integrating information between TFM, ATC, and NAS user capabilities in order to implement TFM reroutes**
- **“Go Button” is term to describe how flight-specific reroutes are integrated into ATM and User automation**

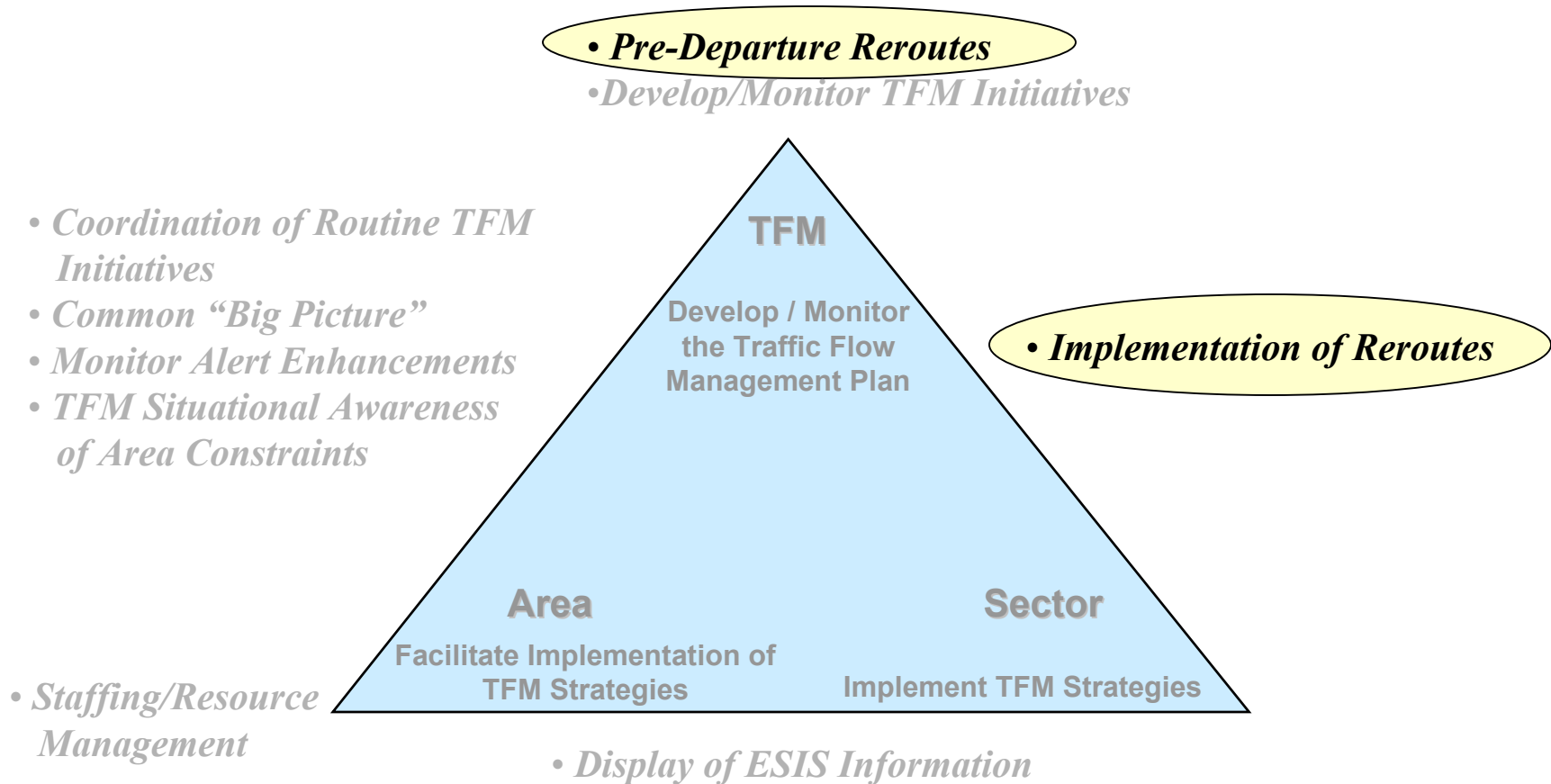
# Site Visits:

## *June 25-August 1, 2001*



**In-depth discussions with TMU and Area Operational Supervisors regarding coordination and implementation of TFM initiatives**

# 2001 Site Visits: *Information Needs*



# The Broader Reroute Picture: *The Life of a Flight Plan*



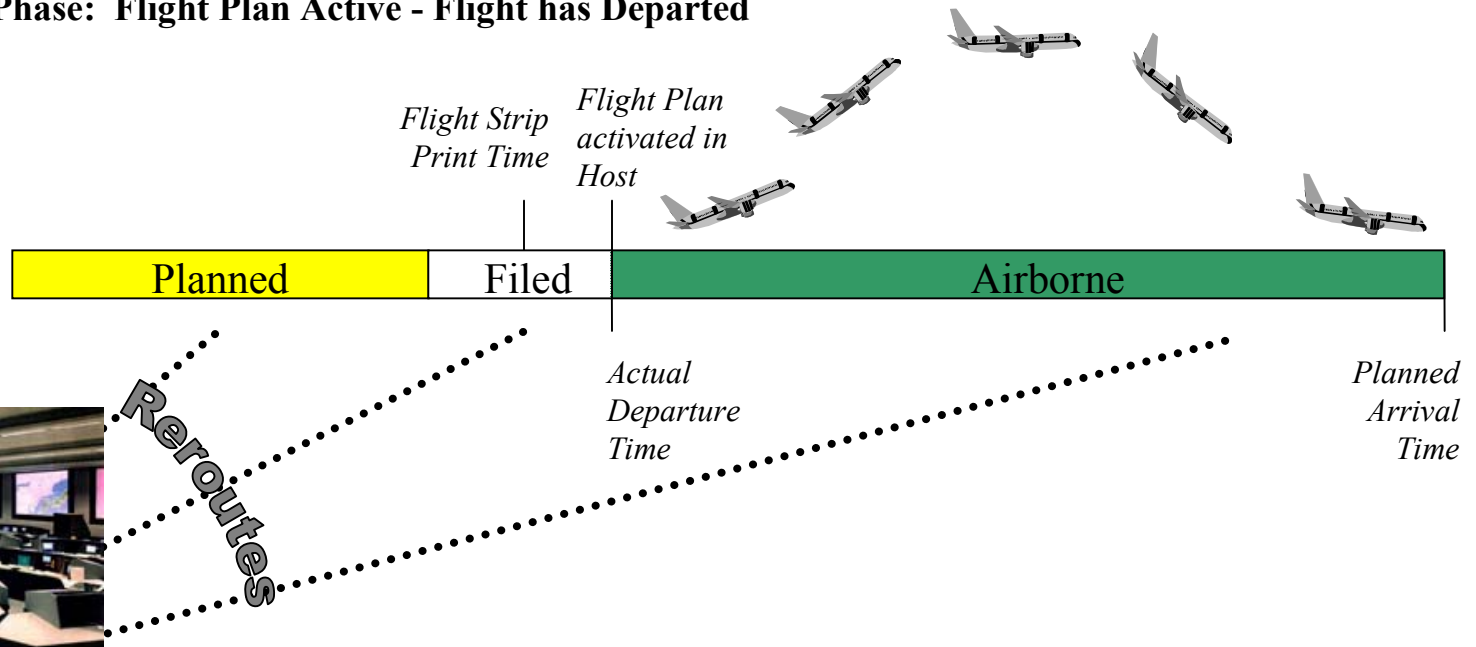
**Flight Planning Phase: Actual Flight Plan Not Yet Filed**



**Filed Phase: Flight Plan has been Filed**





**Airborne Phase: Flight Plan Active - Flight has Departed**



# Related Efforts



Planned	Filed	Airborne
 <ul style="list-style-type: none"> <li>- RAT Prototype</li> <li>- FCA Rerouting Capability</li> </ul>	<p>-TFM-M</p>	 <p><b>Automated Assisted Dynamic Rerouting (AADR)</b></p> <ul style="list-style-type: none"> <li>- Automate delivery of applicable TFM reroutes on URET CCLD</li> </ul>

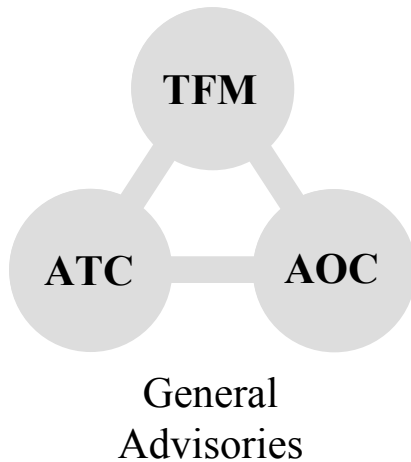
## Status

- On-going testing
- RAT List available in ETMS 7.6
- Users receive electronic flight lists
- Use of FPPP being explored

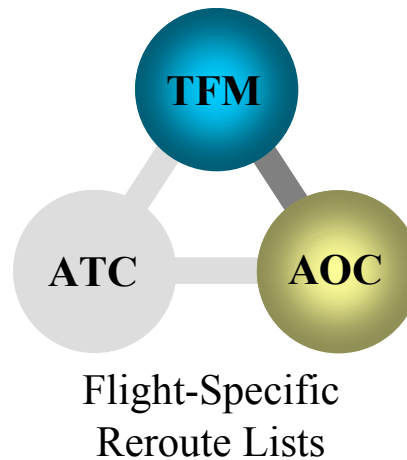
- RAT List available in ETMS 7.6
- TFM receives electronic flight lists
- Concepts for TMU integration being explored
- Initial TFM-M requirements defined

- URET build 6 (2006) to include AADR
- ERAM Requirements defined

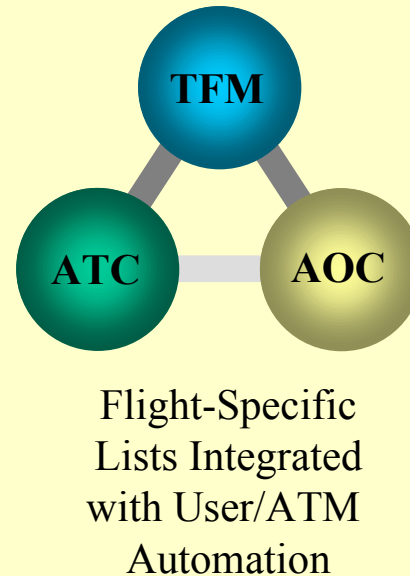
# Evolution of Rerouting Capabilities



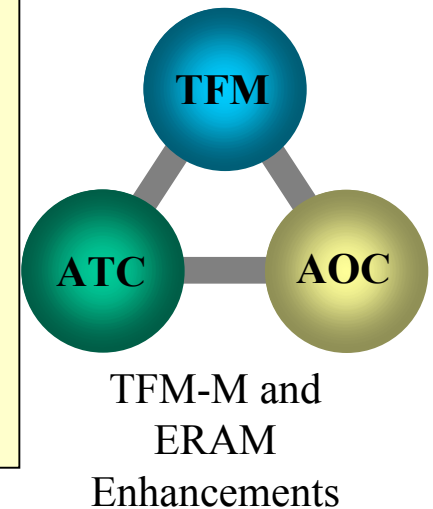
*Flight-Specific  
Manual Rerouting*



*Flight-Specific  
Automated Rerouting*



*TFM/ATC Integration*



↑  
**You  
are  
Here**

# Reroute Implementation by Phase of Flight



*Flight Strip  
Print Time*

*Flight Plan  
activated in  
Host*



**Dispatcher**



**Traffic Management  
Coordinator**



**Controller**

*Planned  
Arrival  
Time*

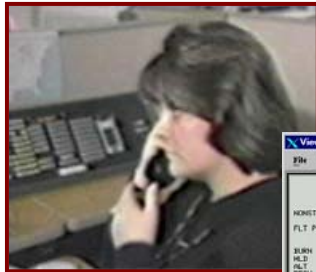


# Dispatcher Receives Flight-Specific Reroutes and Replans Flight



```

ATISCC ADVZ027 DCC 10/24/02 J6 REROUTE ADVISORY 1145Z
IMPACTED AREA: ZID
REASON: THUNDERSTORMS
INCLUDE TRAFFIC: TRAFFIC ON J6 OVER BWG CAN EXPECT REROUTE OVER BNA
VALID TIMES: 241200 - 241700
FACILITIES INCLUDED: ZOB/ZAU/ZNY
PROBABILITY OF EXTENSION:
ASSIGNED REROUTE:
*****
AIRLINE AAL
ACID TYPE DCENTR ACENTR ORIG DEST ETD ETA PGTD IGTD IGTA
AAL1035 MD80 ZNY ZFW JFK DFW P1609 E1642 1552 171552 171644
REROUTE: DRCT..BNA.LIT.BYP4.DFW
AAL1373 MD80 ZNY ZFW PHL DFW P1630 E1713 1609 171609 171715
REROUTE: DRCT..HVQ.J6.RYANS..BNA..LIT.BYP4.DFW
AAL15 MD80 ZNY ZFW EWR DFW P1638 E1732 1639 171639 171736
REROUTE: PARKE.J6.RYANS.BNA.LIT.BYP4.DFW
    
```



**Dispatcher**

```

ATCSCC ADVZ027 DCC 10/24/02 J6 REROUTE ADVISORY 1145Z

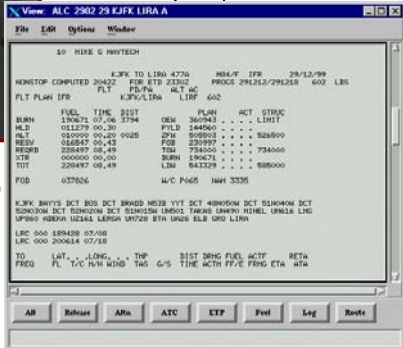
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INCLUDE TRAFFIC: TRAFFIC ON J6 OVER BWG CAN EXPECT REROUTE OVER BNA
VALID TIMES: 241200 - 241700
FACILITIES INCLUDED: ZOB/ZAU/ZNY
PROBABILITY OF EXTENSION:
ASSIGNED REROUTE:
*****
AIRLINE AAL

ACID TYPE DCENTR ACENTR ORIG DEST ETD ETA PGTD IGTD IGTA

AAL1035 MD80 ZNY ZFW JFK DFW P1609 E1642 1552 171552 171644
REROUTE: DRCT..BNA.LIT.BYP4.DFW

AAL1373 MD80 ZNY ZFW PHL DFW P1630 E1713 1609 171609 171715
REROUTE: DRCT..HVQ.J6.RYANS..BNA..LIT.BYP4.DFW

AAL15 MD80 ZNY ZFW EWR DFW P1638 E1732 1639 171639 171736
REROUTE: PARKE.J6.RYANS.BNA.LIT.BYP4.DFW
    
```



**Reroutes integrated into flight planning system**

# TMC Receives Flight-Specific Reroutes and Enters Amendments

Filed



```

ATISCC ADVZY 027 DCC 10/24/02 J6 REROUTE ADVISORY 1145Z
IMPACTED AREA: ZID
REASON: THUNDERSTORMS
INCLUDE TRAFFIC: TRAFFIC ON J6 OVER BWG CAN EXPECT REROUTE OVER BNA
VALID TIMES: 241200 - 241700
FACILITIES INCLUDED: ZOB/ZAU/ZNY
PROBABILITY OF EXTENSION:
ASSIGNED REROUTE:
*****
ACID TYPE DCENTR ACENTR ORIG DEST ETD ETA PGTD IGTD IGTA
AAL1011 MD80 ZNY ZFW JFK DFW P1609 E1642 1552 171552 171644
REROUTE: DRCT..BNA.LIT.BYP4.DFW
USA1373 MD80 ZNY ZFW PHL DFW P1630 E1713 1609 171609 171715
REROUTE: DRCT..HVQ.J6.RYANS..BNA..LIT.BYP4.DFW
UAL15 B737 ZNY ZFW EWR DFW P1638 E1732 1639 171639 171736
REROUTE: PARKE.J6.RYANS.BNA.LIT.BYP4.DFW
...
    
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ATISCC ADVZY 027 DCC 10/24/02 J6 REROUTE ADVISORY 1145Z

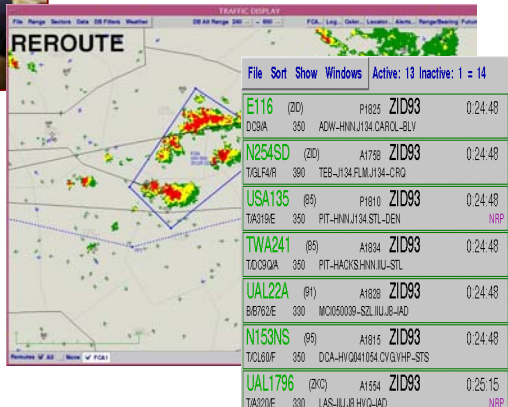
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 REASON: THUNDERSTORMS  
 INCLUDE TRAFFIC: TRAFFIC ON J6 OVER BWG CAN EXPECT REROUTE OVER BNA  
 VALID TIMES: 241200 - 241700  
 FACILITIES INCLUDED: ZOB/ZAU/ZNY  
 PROBABILITY OF EXTENSION:  
 ASSIGNED REROUTE:  
 \*\*\*\*\*

ACID	TYPE	DCENTR	ACENTR	ORIG	DEST	ETD	ETA	PGTD	IGTD	IGTA
AAL1011	MD80	ZNY	ZFW	JFK	DFW	P1609	E1642	1552	171552	171644
REROUTE: DRCT..BNA.LIT.BYP4.DFW										
USA1373	MD80	ZNY	ZFW	PHL	DFW	P1630	E1713	1609	171609	171715
REROUTE: DRCT..HVQ.J6.RYANS..BNA..LIT.BYP4.DFW										
UAL15	B737	ZNY	ZFW	EWR	DFW	P1638	E1732	1639	171639	171736
REROUTE: PARKE.J6.RYANS.BNA.LIT.BYP4.DFW										

...



TMC



Reroutes integrated into TFM Automation system as flight plan amendments

# Controller Receives Flight-Specific Reroutes and Enters Amendments

Airborne



```
*****
ACID TYPE DCENTR ACENTR ORIG DEST ETD ETA PGTD IGTD IGTA
*****
COA101 MD80 ZNY ZFW JFK DFW P1609 E1642 1552 171552 171644
REROUTE: DRCT..BNA.LIT.BYP4.DFW
*****
AAL123 MD80 ZNY ZFW PHL DFW P1630 E1713 1609 171609 171715
REROUTE: DRCT..HVQ.J6.RYANS..BNA..LIT.BYP4.DFW
*****
COA101 MD80 ZNY ZFW JFK DFW P1609 E1642 1552 171552 171644
REROUTE: DRCT..BNA.LIT.BYP4.DFW
*****
AAL123 MD80 ZNY ZFW PHL DFW P1630 E1713 1609 171609 171715
REROUTE: DRCT..HVQ.J6.RYANS..BNA..LIT.BYP4.DFW
*****
COA101 MD80 ZNY ZFW JFK DFW P1609 E1642 1552 171552 171644
REROUTE: DRCT..BNA.LIT.BYP4.DFW
*****
AAL123 MD80 ZNY ZFW PHL DFW P1630 E1713 1609 171609 171715
REROUTE: DRCT..HVQ.J6.RYANS..BNA..LIT.BYP4.DFW
*****
```

```
*****
ACID TYPE DCENTR ACENTR ORIG DEST ETD ETA PGTD IGTD IGTA
*****
COA101 MD80 ZNY ZFW JFK DFW P1609 E1642 1552 171552 171644
REROUTE: DRCT..BNA.LIT.BYP4.DFW
*****
AAL123 MD80 ZNY ZFW PHL DFW P1630 E1713 1609 171609 171715
REROUTE: DRCT..HVQ.J6.RYANS..BNA..LIT.BYP4.DFW
*****
```



Sector Controller



Plans Display

C Plan Options... Show Show All Resolve Resl Sort... Send AM Send Coordination... Tools... Clean Up

FP Msg... Host AM... Uplink

**UAL7.T1** CLRD HNN FFT CAROL 2:00

TFM Reroute

AM 102 FIX HVQ055037 TIM E2006 RTE HVQ055037..

HNN..FFT..CAROL.J134.BUM.J110.GCK.J28.

HVE..OAL.MOD2.SF0↓

Reroutes integrated into URET as trial plans

# Reroute Implementation by Phase of Flight



*Flight Strip  
Print Time*

*Flight Plan  
activated in  
Host*



**Dispatcher**



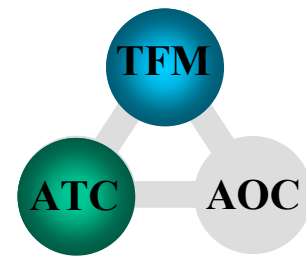
**Traffic Management  
Coordinator**



**Controller**

*Planned  
Arrival  
Time*

# Option 1: TMC Amends Flight Plans



General Route  
Advisory and  
New Departure  
Strips

## Clearance Delivery



Clearances

*Tower Controller*



*TRACON Controller*



*En Route Sector Controller*



*Flight Crew*

## Flight Plan Amendment via:

- Existing Keyboard Entry *or*
- ETMS/TFM-M Amendment Capability *or*
- URET *or*
- Automatically by Host/ERAM



# Option 2:

# TMC Delegates Flight Plan Amendments



General Route Advisory and Flight-Specific Routes

## Manual Flight Plan Entry and Clearance Delivery



Clearances

*Tower Controller via keyboard entry*



*TRACON Controller via keyboard entry*



*En Route Sector Controller via URET*



**Flight Crew**

**TMC delegates entry of flight plan amendments**

# Summary of Concept for “Filed” Phase

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- **Flight plan amendment responsibility**
  - **Before flight strip print time or XX minutes before departure – dispatchers**
    - Accommodate reroute by re-filing flight plan
    - Cancel flight or request exemption
  - **After flight strip print time – Air Traffic Management personnel**
    - TMCs or departure controllers
      - Review electronic reroute messages and send them to Host as flight plan amendments, or
      - Manually locate affected aircraft and manually enter flight plan amendments
    - Departure controllers issue departure clearances
- **Benefits of this approach**
  - **Manual entry of flight-specific reroutes significantly reduced through electronic message communication**
  - **Today’s clearance-delivery process maintained**

# CAASD Concept Evaluation Plans

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- **Discuss concept with operational personnel to address issues and questions**
- **Create lab capability for concept evaluation**
  - **Human-in-the-loop evaluations of enhanced TFM automation**