

# FedEx FRMS Journey from Experience to Evidence



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Richard Lewis (Federal Express Corporation)



# FedEx Flight Operations

## By Numbers, Fleet and Operating Statistics

220 Countries and Territories

17000+ flights a month

12 global sort hubs

375+ airports

5 different aircraft types

340+ trunk aircrafts

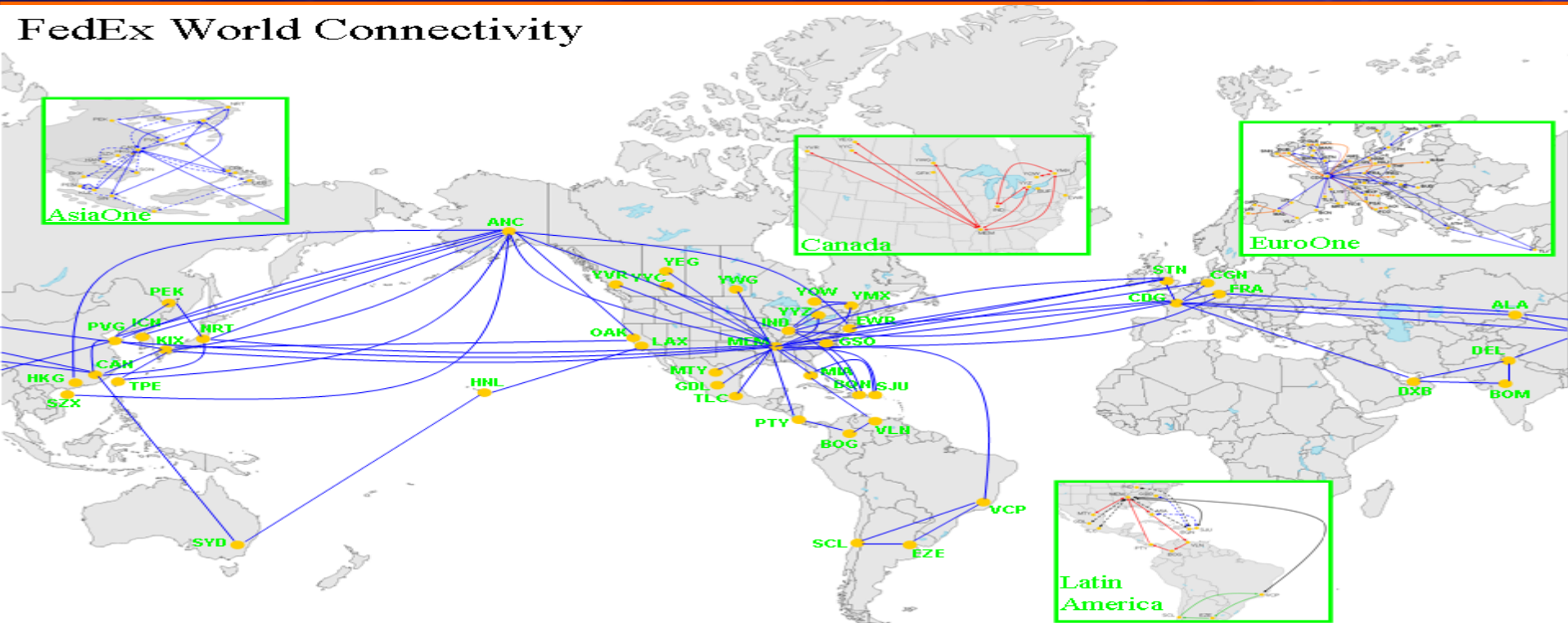
Operated by

More than  
4,600  
Pilots

6 Crew  
Bases World  
Wide

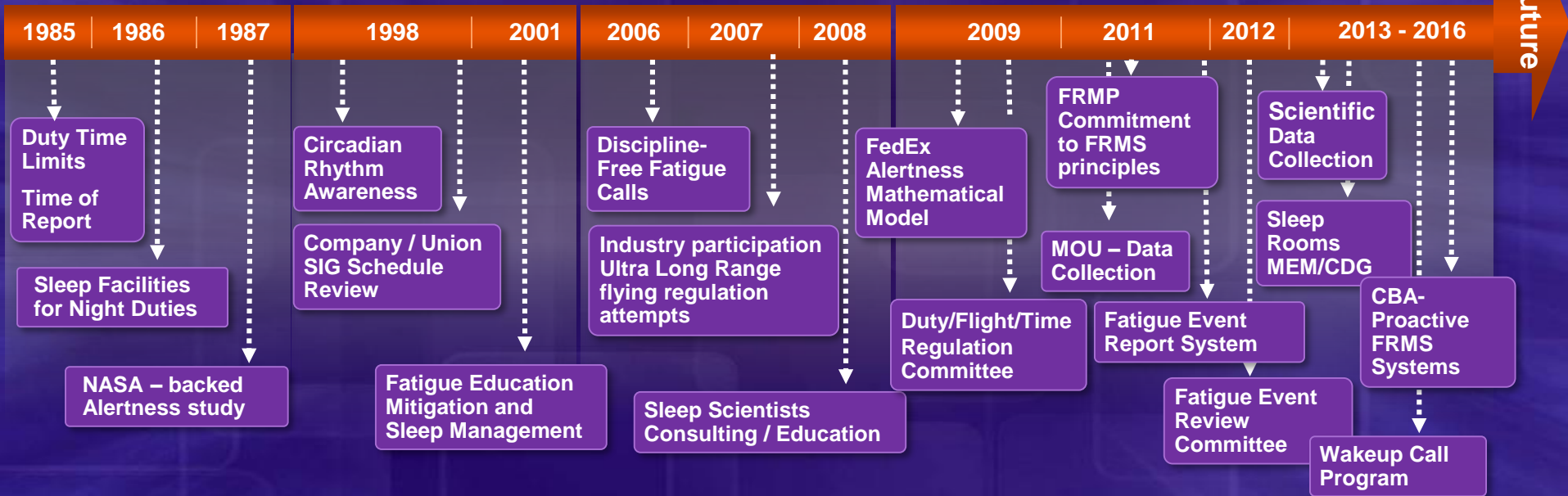
# Global Air Network

## FedEx World Connectivity



# FRM Timeline

## Fatigue Mitigation – experience based to evidence based

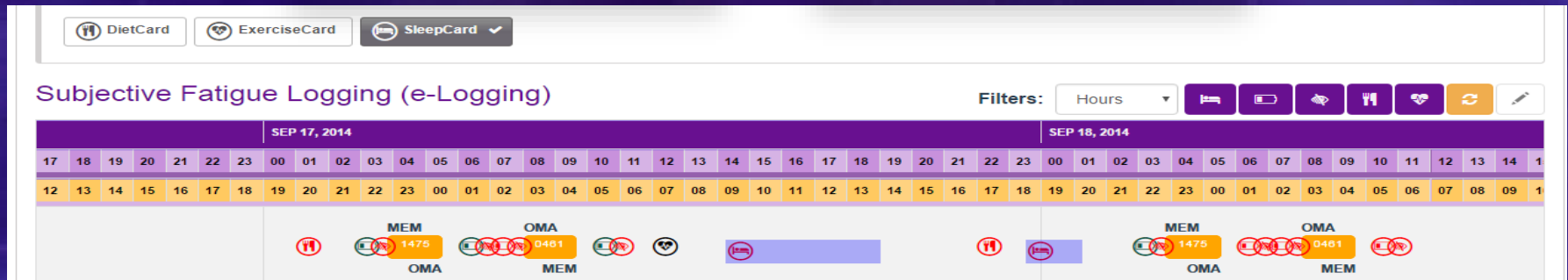


# Data Collection / Validation / Base Lines

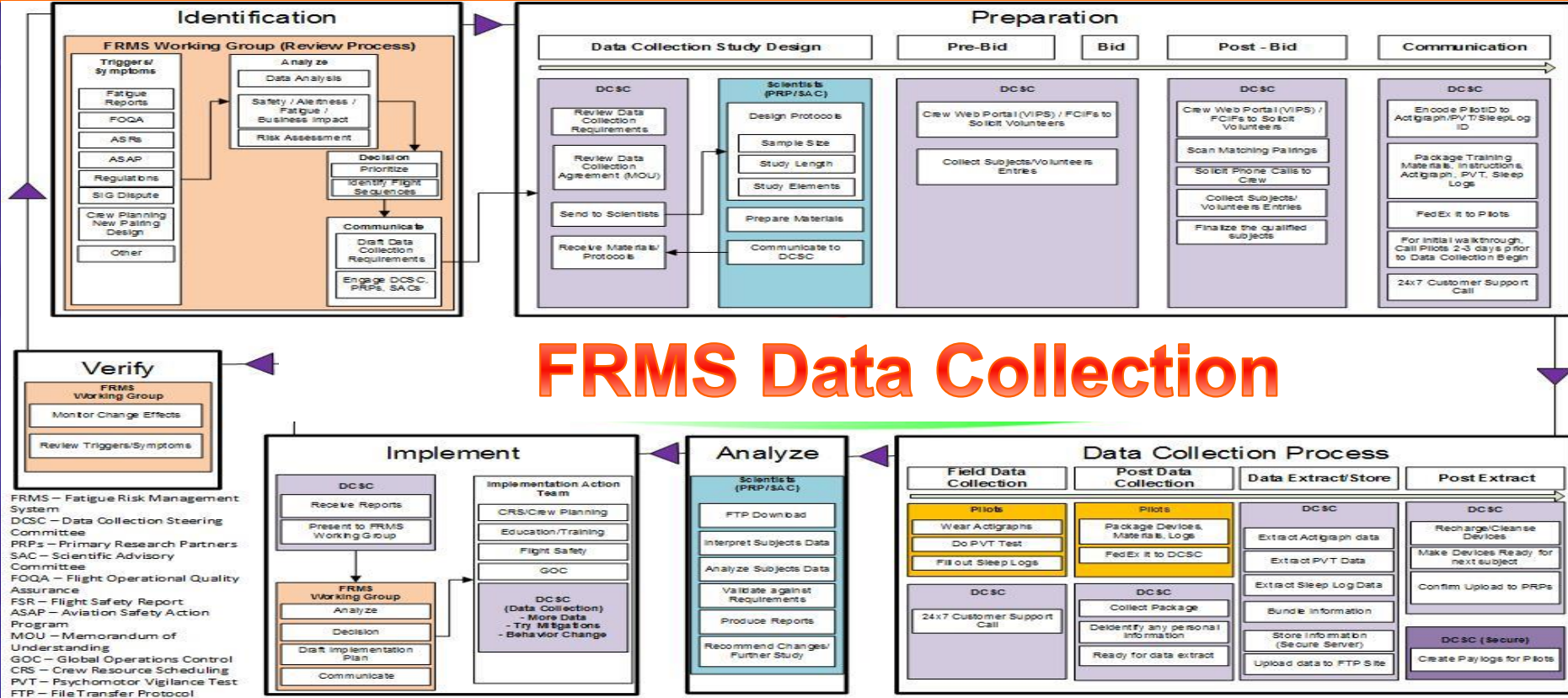
Negotiated Letter of Agreement with pilot union for data collection

Actigraph

KSS / SP



# Data Collection Management Process @ FedEx

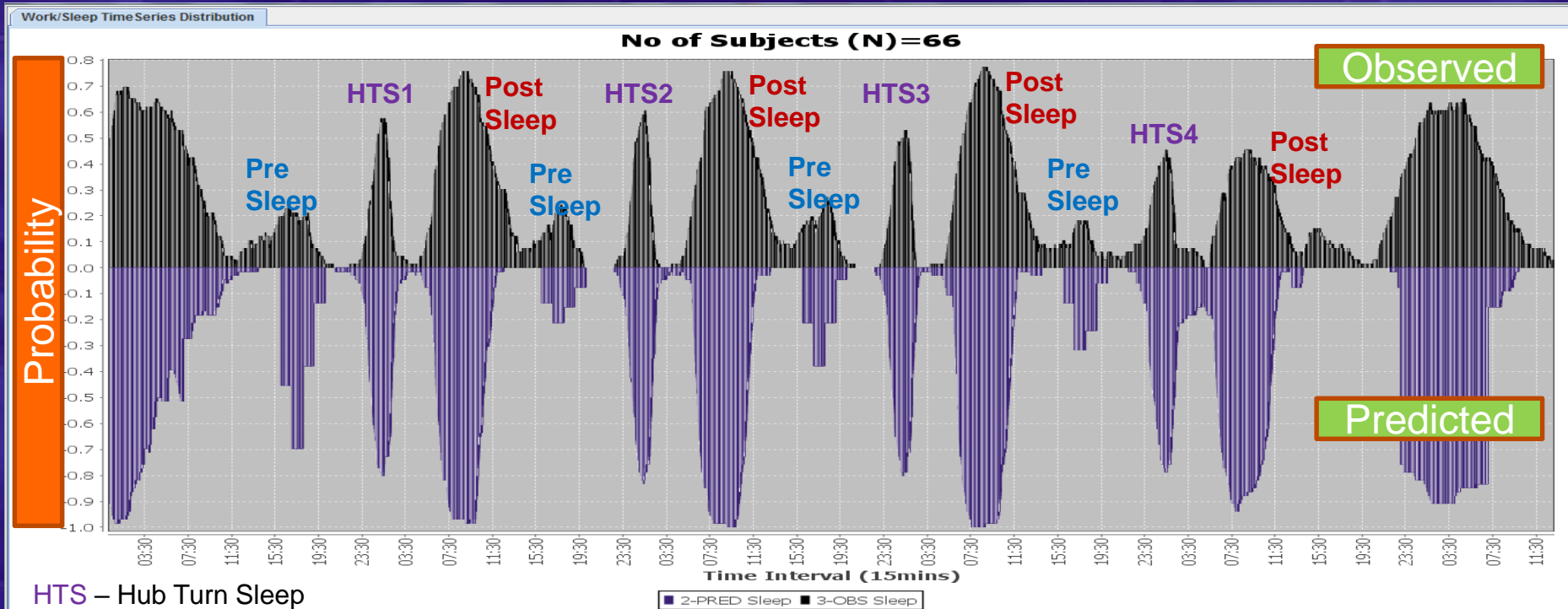


## FRMS Data Collection

# Data Collection Status

Study Design	# Of Subjects	Status of Study
IND 4 Consecutive Nights	54 Pilots	Review Complete
AFW 4 Consecutive Nights	17 Pilots	Review Complete
CDG 4 Consecutive Nights	33 Pilots	Review Complete
Memphis – AM Out and Backs	45 Pilots	Review Complete
HKG multiple nights design	40 Pilots	Review Complete
Go Around the World – Westwards	94 Pilots	Data Collection – In Progress
Go Around the World – Eastwards	81 Pilots	Data Collection – In Progress
Sling Shot Designs	25 Pilots	Data Collection – In Progress
International – Any Augmented Ops	20 Pilots	Data Collection – In Progress
5 Night Sequence	15 Pilots	Data Collection – In Progress
FERC Pairings	60 pilots	Data Collection – In Progress
<b>Total - 484</b>		

# Predicted vs Actual Sleep

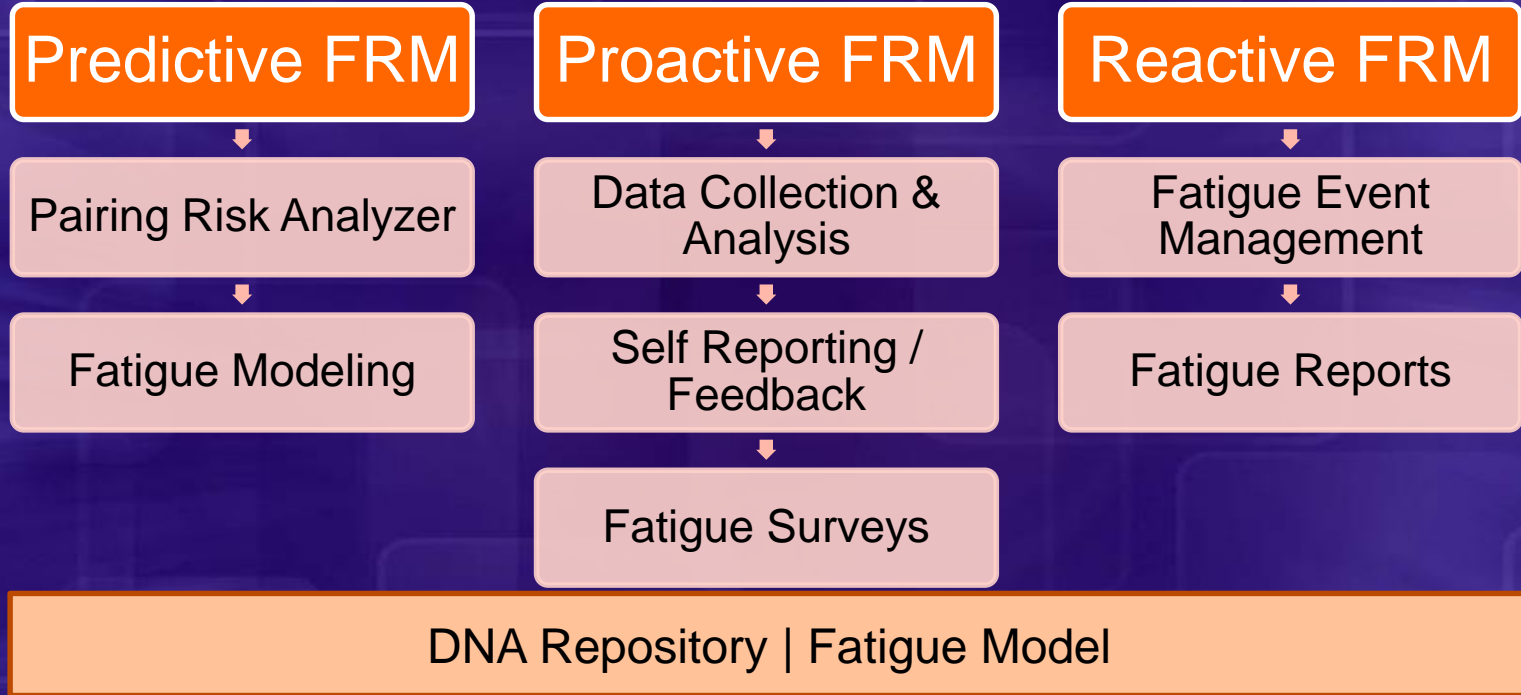




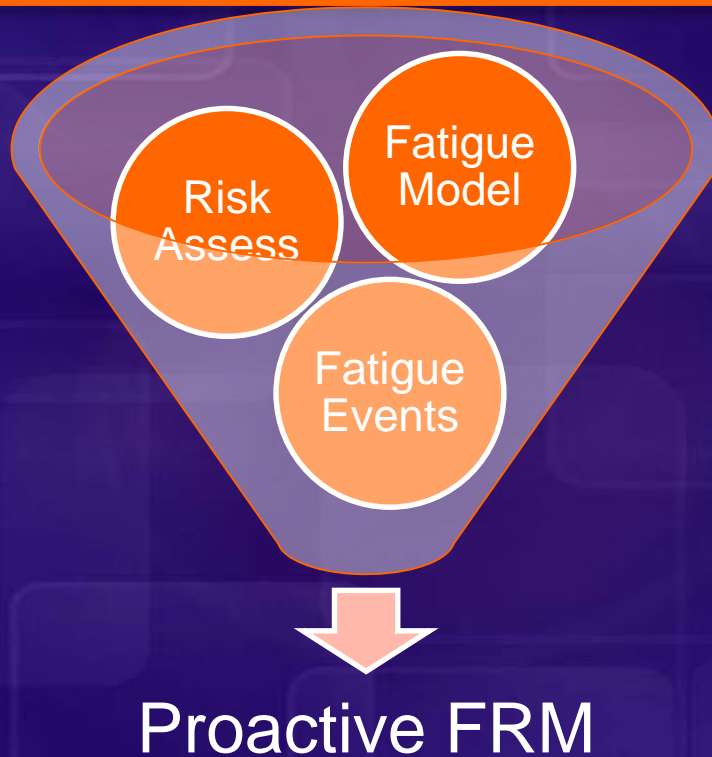
# Put Data into Use



# Predictive Proactive and Reactive FRM – Tool Set



# Hybrid Approach for Proactive FRM



# FRM Metrics

Predictive

Proactive

Reactive

Fatigue Reviews

Data Collection

Surveys

Fatigue Calls

Duty  
Ext.  
n.

Risk  
Analysis

Pairings

Lines

Study  
Types

Contributing  
Factor

Pay  
decisions

Cost

No of FERC by  
Base

Pairings and  
Status of FERC

Predicted Risk  
Score by Base

Predicted Risk  
score by Base

Number of  
Subjects

Total Cost

Analysis

Systemic

Individual

No Impact

Company

Sick

Disciplinary

Operations  
Cost

Fatigue

# Acknowledgments

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All FedEx Pilots

Rich Lewis, Federal Express Corporation, [rlewis7@fedex.com](mailto:rlewis7@fedex.com)

Paul P. Hagerty, FedEx ALPA , [pat.hagerty@fedex.com](mailto:pat.hagerty@fedex.com)

Robert B Bassett, FedEx ALPA, [rob.bassett@fedex.com](mailto:rob.bassett@fedex.com)

Suresh Rangan, FedEx Express Corporation, [suresh.rangan@fedex.com](mailto:suresh.rangan@fedex.com)

# APPENDIX

# Mid-Trip Rest Maximized

## Intermediate Stop

- > 1.5 hours – 4 hours rest facility
- > 1.5 hours – 5 hours (in sort) sleep room
- > 4 hours (without sleep room) hotel room

## Sleep Rooms

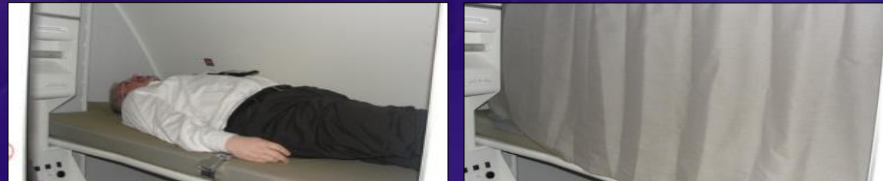


## Refreshing Facilities

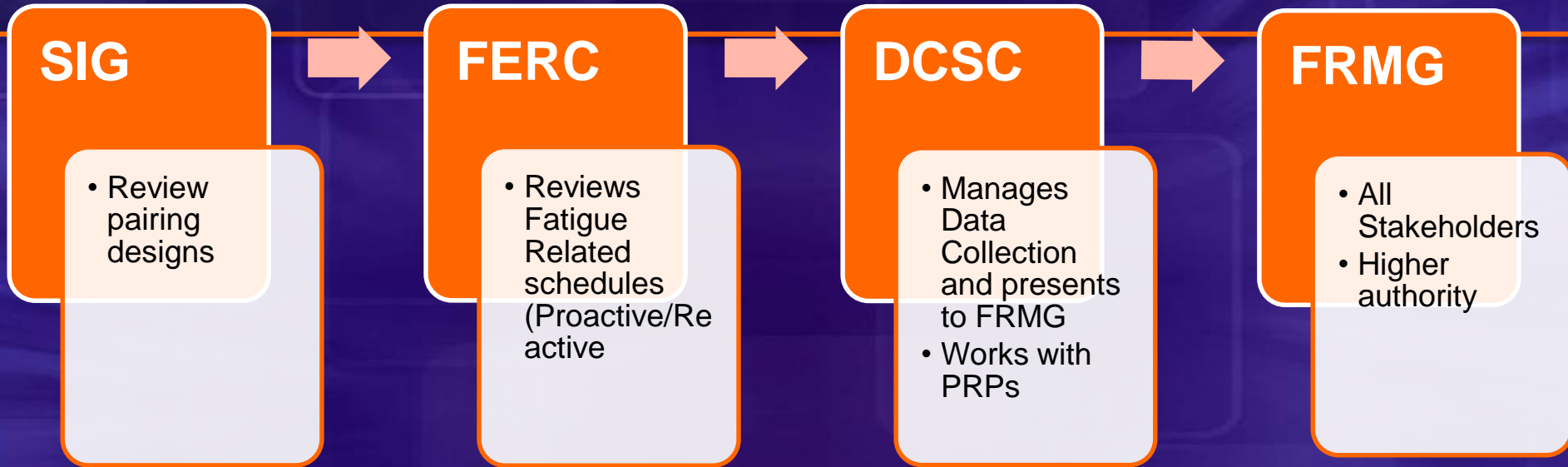


- 234 sleep rooms in Memphis (added 129 rooms at \$3.4M in 2013)
- Additional Sleep rooms in CDG, KIX
- Sleep room facilities also available in IND, AFW, OAK
- Wakeup Program for Hub Operations
- Outstation rest facilities (standardization in progress)
- Approximately 65% of hub departing trips (at night) can benefit from nap type mitigation (234 out of 350 pilots)
- Use superior hotel rooms, with monitoring of day sleep quality (monitored by committee made up of pilots and company)

## 777 Sleep Quarters



# Fatigue Working Groups



**SIG** Scheduling Improvement Group  
**FERC** Fatigue Event Review Committee  
**DCSC** Data Collection Steering Committee  
**PRP** Primary Research Partners  
**FRMG** Fatigue Risk Management Group