

# Program Best Practices Symposium

## Which metrics and why?

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The Boeing Company

Manager, F-22 Training Systems

2016  
Program Excellence  
Awards



**Honeywell**



**Rockwell  
Collins**



## Program Overview

The United States Air Force awarded the F-22 program a contract to upgrade five F-22 Mission Training Centers (MTC) with the Boeing-patented Constant Resolution Visual System (CRVS) to provide high definition visuals and night vision goggle capability for pilot training.

- Each F-22 MTC is equipped with four Full Mission Trainers (FMT), totaling 20 devices that were upgraded.
- F-22 MTC helps prepare pilots for solo flights by supporting a complete range of tactical training scenarios

## Overarching Need

Prior to the installations, the legacy visual system inhibited the realistic visual acuity needed for critical training tasks.

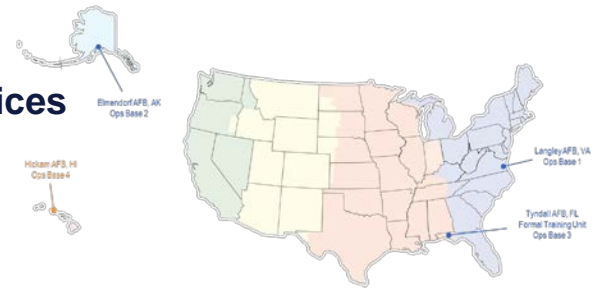


*Constant Resolution Visual System  
(CRVS)*

## Scope of Work

The installations occurred at four different U.S. Air Force base locations over a period of 21 months.

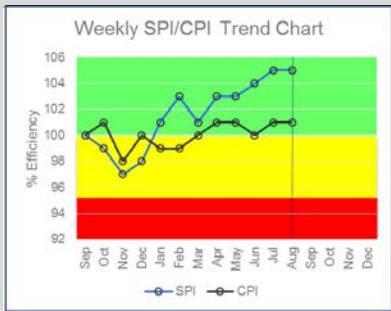
- Replaced the legacy visual systems at three MTCs at Tyndall, Elmendorf and Langley
- Two additional MTCs were being installed with CRVS at Tyndall and Hickam
- Additional pilot training capacity required
- Facility modifications required to support the retrofitted devices
- Full-system integration and testing
- Contract dependencies presented significant schedule risk



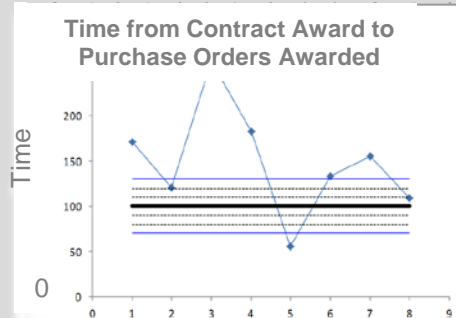
Schedule execution was critical to minimize pilot training schedule interruptions

## Metrics were used along the way to improve overall speed and reduce cycle times

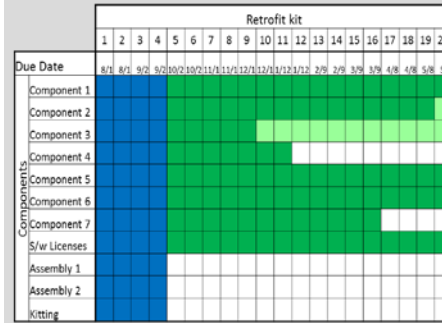
Earned Value Management metrics provided high level cost and schedule visibility



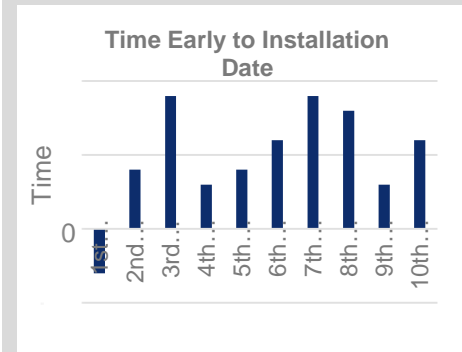
$\bar{X}$  and R Chart provides information on the stability of the process and a significant reduction in non-value added labor



Line of balance charts tracked availability of major components



Bar charts highlighted need to meet contractual installation completion dates



## Efficient

- **Reduction in Cycle Time**
  - Tracking and Forecast Tool
  - Integrated Master Schedule
- **Metrics were developed on existing office software**
  - Minimal added cost

## Planning, Monitoring, and Controlling

- **Metrics facilitated daily or weekly discussions**
  - Provided emphasis on schedule performance
- **Metrics selected focused attention on important steps in project execution**
  - Non-Advocate Review

## People Development

- **Tie individual performance assessments to metrics to which they directly contribute**
  - Motivates and rewards individuals when they understand how they affect the big picture

*"The final installation of the Boeing Constant Resolution Visual System improves the realism of ground-based training and increases mission readiness for pilots. This is paramount for Tyndall's mission of training and projecting unrivaled combat airpower."*

**- Lt. Col. Matthew Zamiska, 325th Training Support Squadron Commander**



## Results

- **Nine of 10 installations completed ahead of schedule**
- **Project completed under budget due to early completions**
- **Customer was delighted with product and project execution**
- **End user can now train in a high-density visual environment; increasing mission readiness**



*An F-22 Raptor simulator equipped with Boeing's Constant Resolution Visual System at Tyndall U.S. Air Force Base.*