



























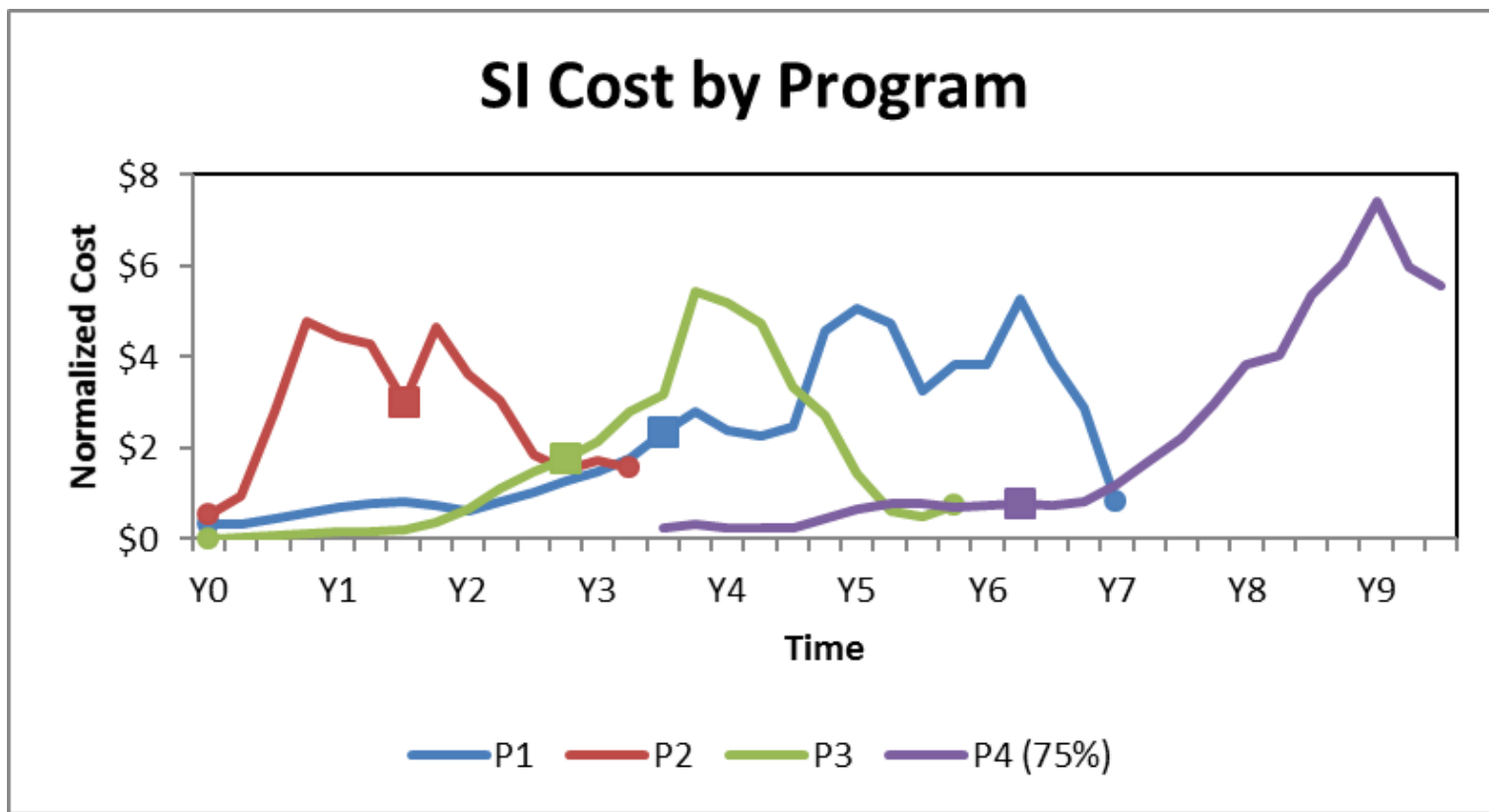
- SI measured as a function of ESLOC
  - Removes DCTI productivity from the equation
  - Large ESLOC may relate to large integration efforts

$$SI = f(ESLOC)$$

- Findings
  - To avoid potential disclosure of proprietary information, results of SI as a function of ESLOC cannot be shown
  - Two of three completed programs have very similar \$ / ESLOC cost
  - Incomplete program on track to be similar to the two programs with similar \$ / ESLOC ratios
- Other considerations:
  - Possible SI could be analyzed in groups based on similar technical specifications

# System Integration Phasing

- Phasing Analysis
  - SI phasing displays ramp up/ramp down with peaks and valleys
  - More cost in the second half than the first half

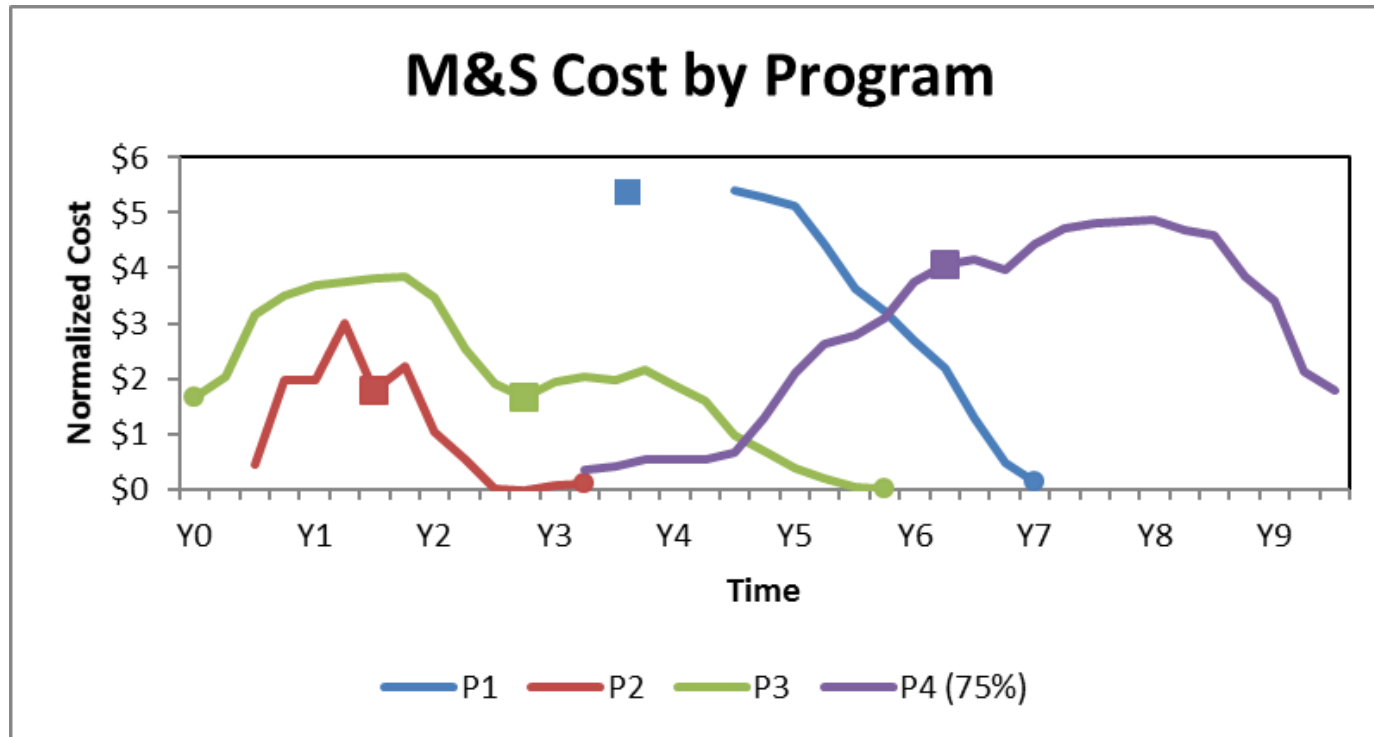


- M&S comprises the effort to develop simulated environments within which a computer program can be tested

$$\mu = 11.83\%$$
$$CV = 59.3\%$$

- Fourth project currently **11.08%** of DCTI; program 75% complete
- Evaluation of CV
  - DCTI may not be a good BOE for MS
  - MS effort involves developing a synthetic environment within which the primary program can be operated and tested
  - Likely requires ESLOC inputs and unique DCTI type calculations

- Phasing Analysis
  - The effort to development simulated environments within which a computer program can be tested
  - No obvious common pattern
  - May require unique phasing based on program requirements





- Sites comprises the effort to integrate, install, and test the designed system at both training and test site facilities

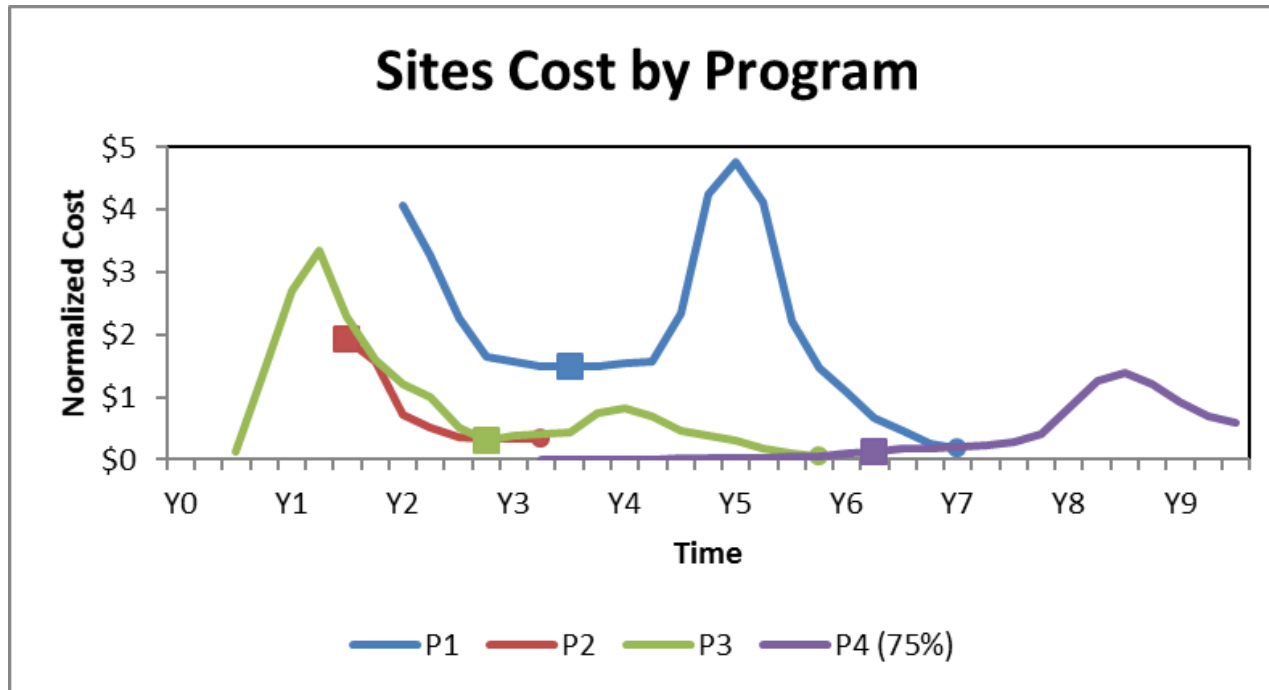
$$\mu = 6.32\%$$
$$CV = 19.49\%$$

- Fourth project currently **1.29%** of DCTI; program 75% complete
  - Sites costs typically incurred near the end of the program
  - Expect fourth project final Sites cost to be in line with completed projects

# Training & Test Sites Phasing

Presented at the ICEAA 2017 Professional Development & Training Workshop - [www.iceaaonline.com/portland2017](http://www.iceaaonline.com/portland2017)

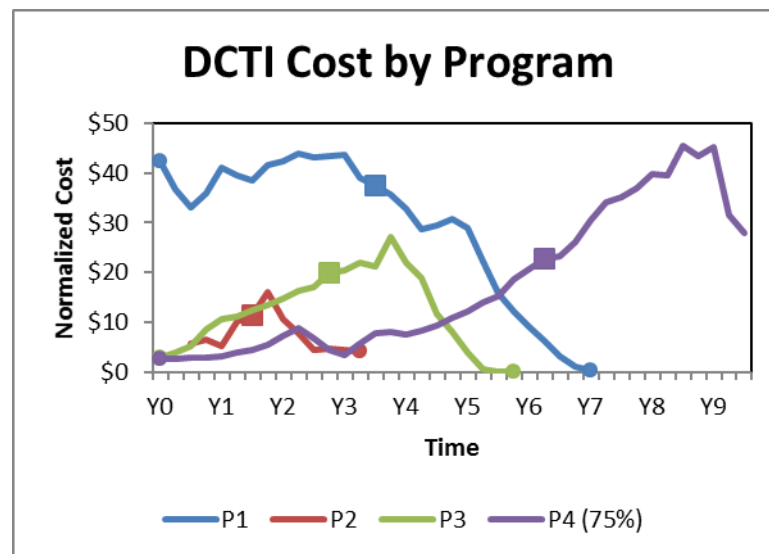
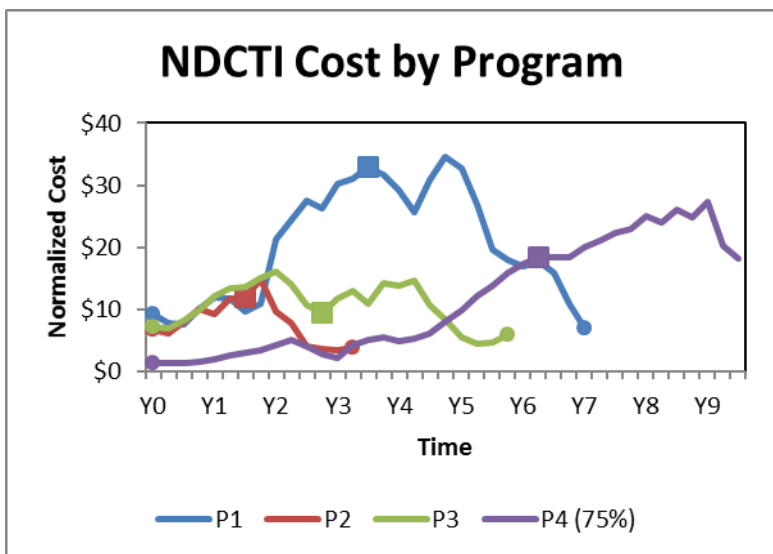
- Phasing Analysis:
  - Sites cost phasing shows peaks and valleys
  - Schedule based phasing best approach



# NDCTI vs DCTI Phasing

Presented at the ICEAA 2017 Professional Development & Training Workshop - [www.iceaaonline.com/portland2017](http://www.iceaaonline.com/portland2017)

- More likely variable and/or schedule based phasing than fixed, or level of effort, type phasing
- As a composite, NDCTI cost tracks closely to DCTI cost
- Variable cost phasing may be due to corporate strategy to develop functional teams



# Conclusion

Presented at the ICEAA 2017 Professional Development & Training Workshop - [www.iceaaonline.com/portland2017](http://www.iceaaonline.com/portland2017)

- Five of six NDCTI CRs recommended for general use
- SI requires additional analysis
- Cost phasing shows variable patterns rather than fixed, or level of effort, type phasing
- Larger data set would likely improve results

	Mean	St. Dev.	CV
Program Management	15.31%	0.87%	5.7%
System Engineering	36.48%	2.91%	8.0%
Integrated Logistics	2.85%	1.77%	62.2%
Modeling and Simulation	11.83%	7.02%	59.3%
System Integration*	20.91%	19.21%	91.9%
Training and Test Sites	6.32%	1.23%	19.4%

\*Not a recommended cost relationship

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## About Herren

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