Examining the use of operational analysis across BAE Systems. Present day and into the near future

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BAE Systems at a glance

- Third largest global defence supplier and world-leading innovator
- Established positions in air, maritime and land domains
- Growing position in cyber security
- Principal markets – US, UK, Saudi Arabia and Australia
- 83,100 employees in over 40 countries
- Customers in around 80 countries
- 2016 sales of £19,020 million
- £80m+ invested annually in education and skills globally
- £9bn+ spend with around 27,000 suppliers globally

Operational analysis (OA) is used throughout the company, but not always badged as such

- Cost estimators & project planners use Monte Carlo analysis to quantify the risks and uncertainty on project completion dates and cost estimates.
- There are OA teams within some business units supporting concept and assessment for new product innovation. Approaches include assessing capability and optimising product design
- Industrial engineers use discrete event simulation to test out improvements to production lines
- Systems engineers consider systems thinking and system dynamics to be part of their toolkit

The role of OA on support contracts

Availability contracts means the company is incentivised on platform availability, not spares consumption

The key areas that OA helps with:

- Demand forecasting and planning
- Forecasting service performance
- Data analytics

The impact is:

- Better performance on the contract
- Better performance of the equipment

Demand forecasting and planning

Ensuring that the right parts are available in the right place at the right time at the right cost

We want to get the spares holding right:

- Too few – penalties on performance
- Too many – costly inventory and high working capital

Often "small data", so forecasting is difficult

- Past and designed performance is not necessarily a good indication of future performance

OA helps measure the risks associated with a buy recommendation, not just set the recommendation

Forecasting service performance

Helping managers decide on how to optimise the service

The complete service solution can be dynamic and complex – no one individual will understand how it is all interconnected.

Managers what to know:

- The possible KPI performance in the future
- The risk to financial performance
- The options available to improve performance
  - In the short term via re-allocating resources
  - In the long term via investments

Data analytics

Extracting value and actionable insights from the data we collect

The platforms are becoming large, complex data loggers collecting "big data" on:

- System performance
- User performance
- Environmental context

Analysis is closing the loop

- Identifying improvements to training
  - Business case for changes to training content and methods
- Offering advice on how to best use the equipment
- Identifying needs to enhance capability
- Helping understand system interactions

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What more could be done in the near future?

That's the "Crystal Ball" question

- The same but more and better
  - The desire for improved reliability at lower cost won't go away
  - Can we re-interpret the questions and better balance risk and cost?

- Enterprise-wide information and digital vision
  - Information must be at the heart of a transformed service across the enterprise
  - Analysts, IT, engineers and operators working hand-in-hand for mutual benefit
    - Data-led and hypothesis-led analysis alongside each other

- Increased currency of data and faster analysis
  - Traditionally there is a lag between event and analysis, that is eroding but there are challenges
  - A move in expectations from reporting last week to reporting this week to predicting next week
  - Better advice, better diagnostics, better safety, better performance

Thank you

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