

## Data: Central to Innovation

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The Naval Air Systems Command (NAVAIR) issued a data challenge throughout the organization just 9 months ago. The results are now in and the findings merit sharing. The Data Challenge called for our teammates to answer the question “Using historic data (e.g., parts, reliability, aircraft usage rates, repair rates, and sparing data), develop a visualization tool and algorithms to determine which parts need immediate attention and which should be added to a watch list.”

The Data Challenge purpose was simple.

1. Use data to address an important NAVAIR issue
2. Understand our current data state and data science expertise

In planning the Data Challenge, we decided we would call it a success if we got 4 to 6 teams to participate. We ended up with 33 teams volunteering, consisting of 178 individuals with representation from all NAVAIR sites. It was a tremendous response based on interest around data, a chance to innovate, and making a difference for the Fleet.

The starting data set was messy and large. All teams were provided 8 years of Naval aircraft maintenance data for all type, model, and series as a starting point (152 GB in 4 different formats). A Subject Matter Expert (SME) answered questions bi-weekly relating to data meaning and use within the starting data set. Data Challenge rules and guidance were kept to a minimum to encourage innovation and exploration. Two checkpoints were used to gain insight into progress and problems. Between checkpoints, the number of teams decreased to 29 while the number of participants increased as teams brought in specific expertise, if needed. By the second checkpoint 19 teams remained to down-select to 5 finalists in preparation for the Data Challenge Summit. Necking down the teams from 19 to 5 was incredibly difficult as most teams identified one or more areas to improve Fleet readiness. These “quick wins” were shared with Senior Leadership even as the Finalists teams continued to work towards prototyping and demonstrating their solutions at the Summit.



*(Sep 13, 2016) MONTEREY, CA Members of Team DINO [Derrick White, Chris Parry, Andrew Hunter, Pam Lawley, Jonathan Markl, (Glenn Pangburn couldn't attend the Summit)] pose after having been announced as the winning team.*

At the Data Challenge Summit held at the Naval Postgraduate School in Monterey, CA, there was curiosity about approaches, algorithms, and sharing ideas on how to make the data and solutions better. Teams saw where one team's solution could build upon a previous team's, where ideas diverged and understanding impacted efforts. While the Summit included a competition, the participants were much more interested in connecting and improving NAVAIR data use through group effort; it was much less about "me" and more about the collective wisdom of "we" in solving an important data-centric issue. The winning team (Team DINO (Data Innovations Negating Obsolescence) from Cherry Point) has updated their solution to include ideas from another Finalist team, and uses it in their daily tasking. Implementation plans for elements of multiple teams' solutions are being developed now.

We gained the key insights below as a result of the Data Challenge.

- We need to change how we talk about data. Data is a resource and one that's just as important as people, product, and technology.
- NAVAIR has data science skills, we need to connect individuals with these diverse skills and expand their experience.
- Navy Marine Corps Intranet (NMCI) is a constraint. We need to expand NMCI analysis tool offerings. There are open source tools that could be made available within NMCI.
- Our cross-site, real-time collaboration environment needs work in multiple dimensions (culture, infrastructure, and enabling tools).
- Data access, understanding, and quality are limiting our ability to provide actionable information. We'll continue to improve our data governance and accessibility.
- A challenge approach provides diverse and creative ideas to solving problems.

What comes next is simple; we take action on our learnings. First, we congratulate Team DINO members; Jonathan Markl, Chris Parry, Pam Lawley, Derrick White, Andrew Hunter, and Glenn Pangburn. We work to implement one or more of the Challenge Teams' solutions. We advance our culture to recognizing data as an asset. We have already proven we have data and innovative teammates to solve our problems. Now let's put them to work in solving more data-centric issues.

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For more on the NAVAIR Data Challenge:

<https://www.youtube.com/watch?v=KWTjYqsGXfQ>.

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\*\* = The opinions expressed here are solely those of the author, and do not necessarily reflect those of the Department of the Navy, Department of Defense or the United States government.