1.2.2 Proof Agile Works Summary Points

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There are many stories that capture why and how Agile works. One of the most compelling is the P-80 Shooting Star, the first jet fighter, developed by Lockheed Martin's Skunkworks team:

- P-80 Shooting Star was the first Jet Fighter
- Developed in 1943 for use in WWII
- Led by Kelly Johnson using a colocated team in a tent
- Completed in 143 days

This is unheard of speed in innovation and delivery. Today similar innovation would take many years, if not a decade. Kelly Johnson did this using principles that align closely with Agile:

- Small, Strong, Self-Directed and Cross-Functional Teams
- Owners and Vendors had to collaborate and trust each other
- Managed and responded to change; any team could update the designs
- Minimize reports, but record what was important
- Incremental development by teams that could test their own work

This matches the core tenants of Agile closely:

- Shared Vision, but no fixed scope (they never built it before!)
- Whole teams (customer, builders, testers)
- Incremental delivery (as stated, they had to identify and solve problems one at a time)
- Continuous integration and testing (teams test increments early and often)

Example 2: Navy Energy Return on Investment

- Goal: select projects to reduce energy costs and use of "brown power"
- Process: evaluate and select the best projects delivering the highest "bang for the buck"
- Project: build a decision support tool quickly to enable support for selection

The scope of this project was to build decisions support systems for projects to identify and select $500M in energy investments. This project was executed iteratively over four years for about five million dollars. The team makeup included:

- 2 cross-functional teams

- 8 contract personnel from Booz Allen Hamilton (BAH)
- 5 customer personnel from the Navy

Outcomes included a fifty dollars per dollar return on investment (ROI: 50). That means the Navy gained $50M per year because of this project and its decisions support systems it developed. This was achieved through iteratively identifying and building the scope needed in multiple releases:

- $20M were gained per year in savings, by building a quality management tool for projects
- $30M were gained per year in benefits, by building systems to better select projects
- Sustainability was improved by modeling where the next best projects would be with 95% accuracy
- This enabled BAH to win $10M per year in new contracts at the Navy for renewable energy management

Large Scale Agile Examples:

- Condor Cluster - result of large amounts of reuse and modular architectures (Agile Engineering Example)
    - One of the most powerful super computers
    - Strung 2 million miles of cable to connect PlayStation 3 gaming consoles (PS3s)
    - Modular enough to be loaded into a spy plane to process images in-flight
    - Reduced aerial imagery processing from days to seconds
- NASA's Faster Better Cheaper Initiative - reduced scope and size of spacecraft (Lean/Agile Release Designs)
    - Major initiative in the 1990s
    - Costs were one-tenth the current cost of producing spacecraft
    - Achieved unheard of results by reusing old spacecraft designs
    - Stardust Mission - slung shot around the earth and sun to catchup and capture dust from a comet
    - Shoemaker - asteroid surveillance mission that landed on the asteroid to retrieve high-density readings
    - Missions were achieved under budget and on schedule, returning 10X the value of traditional NASA projects