



TANG

TACTICAL ADVANCEMENTS FOR THE NEXT GENERATION

TANG OVERVIEW

- WHO ARE WE
- ORGANIZATION
- TANG PROCESS
- PROJECTS
- SUMMARY



WE ARE A DIVERSE TEAM OF PROBLEM SOLVERS

that tackle **mission-focused, human-centered** National Security challenges through design and systems thinking.

WE'VE LEARNED:



To respect the complexity of every challenge.



Innovation begins with seeking the right question, not forcing solutions.



Inspiration can come from anywhere.



Problems this hard can't be solved alone.



Ideas are easy but discipline delivers impact.



To learn, iterate, and evolve. Always.

IT'S ABOUT PEOPLE

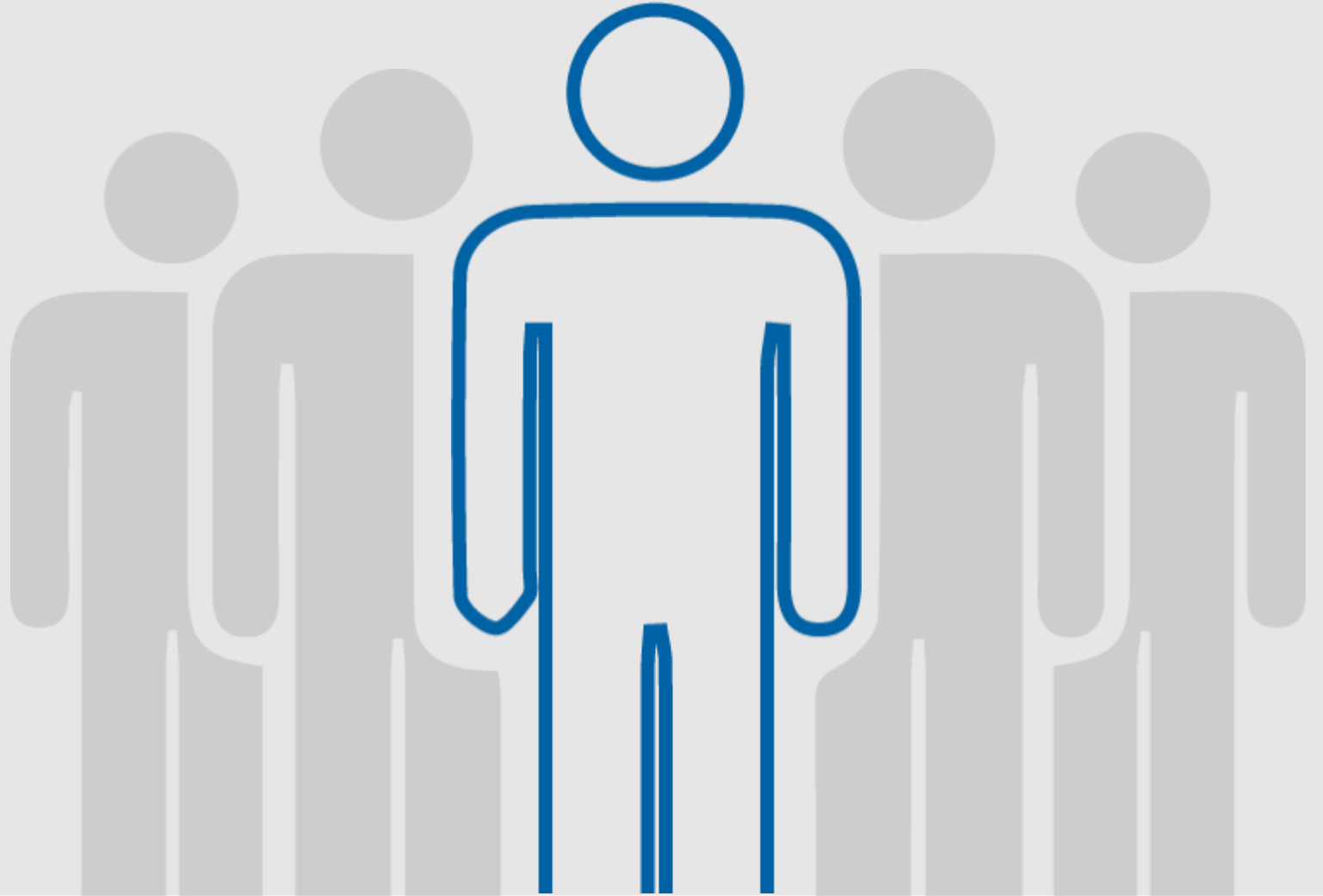
Develop
Empathy



The
Right Mix

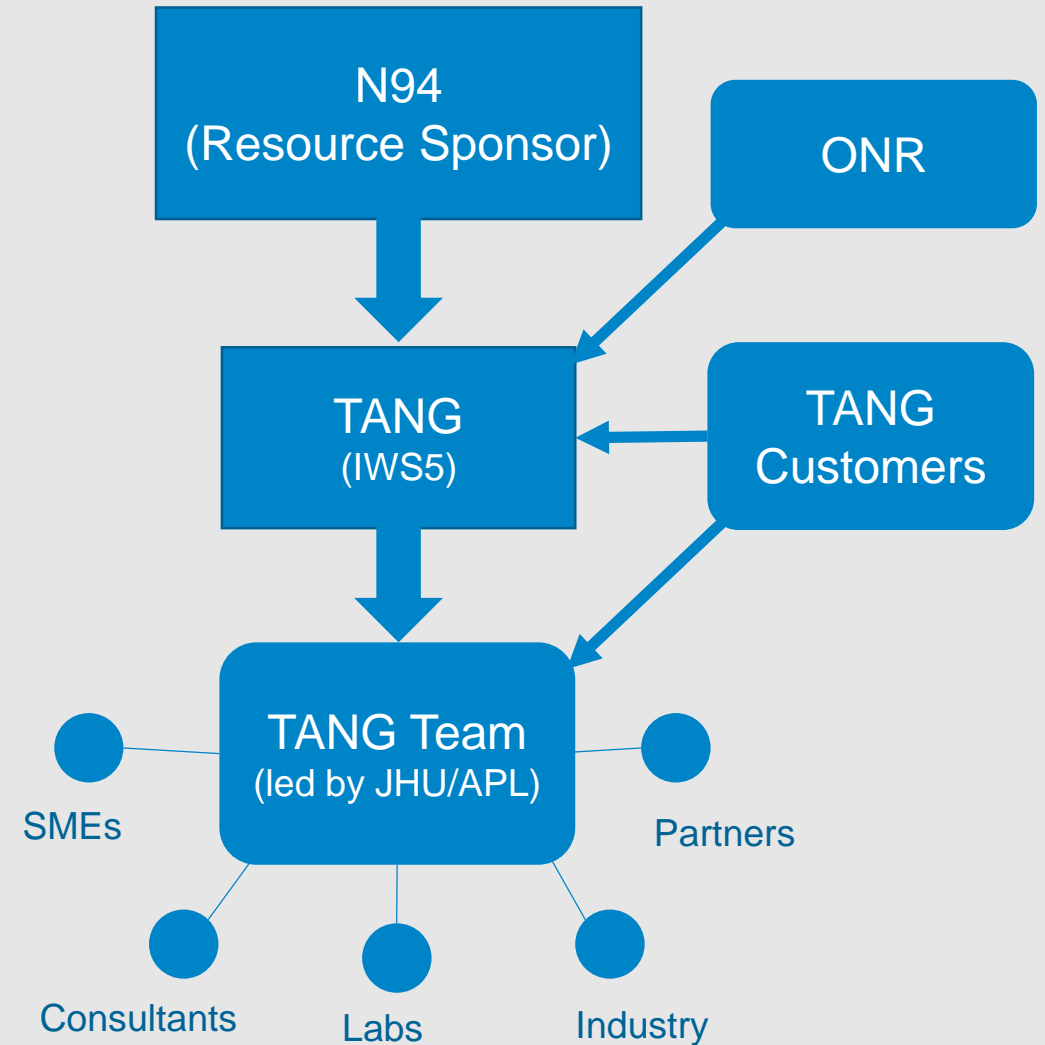


Depth +
Breadth

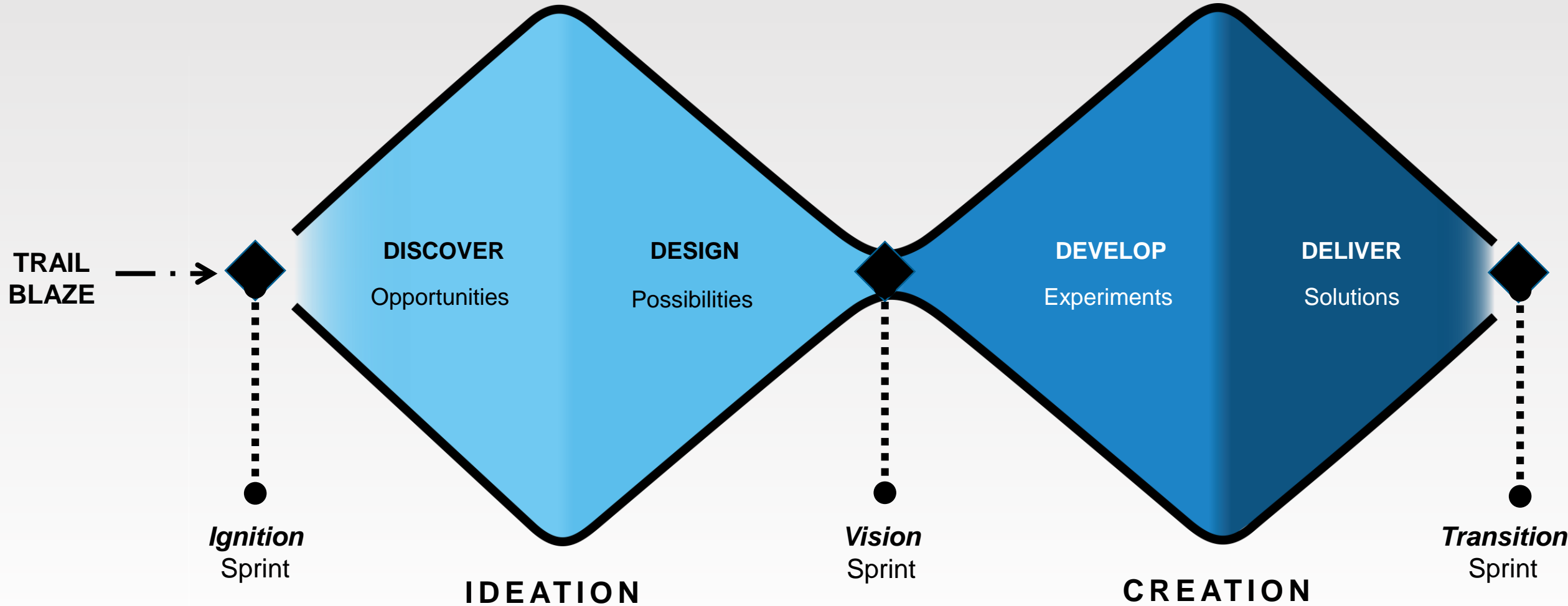


ORGANIZATION & PROJECTS

- OPNAV N9 officially established **TANG** with OPNAV N94 as the resource sponsor, in coordination with ONR, and executed by PEO IWS5.
- Provides a permanent, **Navy-wide** asset for human-centered innovative design and transition to production.
- Projects are funded by customers (sponsors) via the TANG or to APL direct.
 - Goal is **speed** to project kickoff
 - Projects may be **co-funded** by TANG program funds depending on the challenge, scope, and sponsor resources.
- The TANG Team is led by JHU/APL with a **network** of other organizations.



THE PROCESS





DISCOVER

Discover through
building **empathy**
and diverging to find
unexpected
insights

Frame the challenge and **customize** our approach

Engage end users and **align** key stakeholders

Explore diverse perspectives and **inspire** what's possible



IN DOMAIN

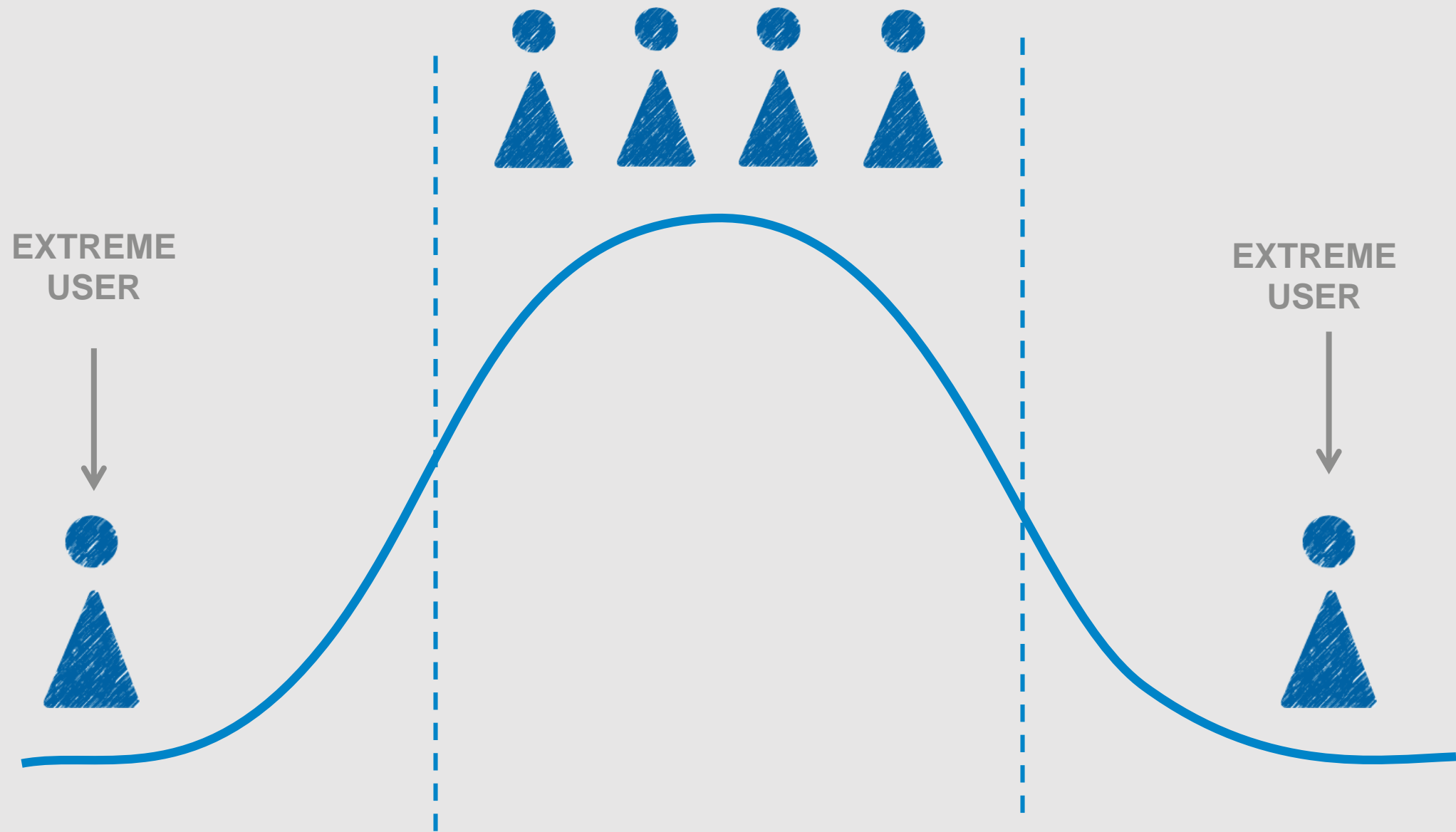


“Deep empathy for people makes our observations powerful sources of inspiration.”

Tom Kelley, IDEO

Creative Confidence: Unleashing the Creative Potential Within Us All







IN DOMAIN



ANALOGOUS



SAILOR TOUGHNESS



**National
Football League**



**NFL
Players Association**



**New York City
Fire Department**



**National Aeronautics and
Space Administration**



**United States
Secret Service**



**San Francisco
Homeless Coalition**



Team Rubicon



**New York City
Police Department**



**Emergency Room
Pacific Palisades Hospital**

FUTURE SUBMARINE DESIGN



**DIGITAL
DESIGN**



PHYSICAL BUILD



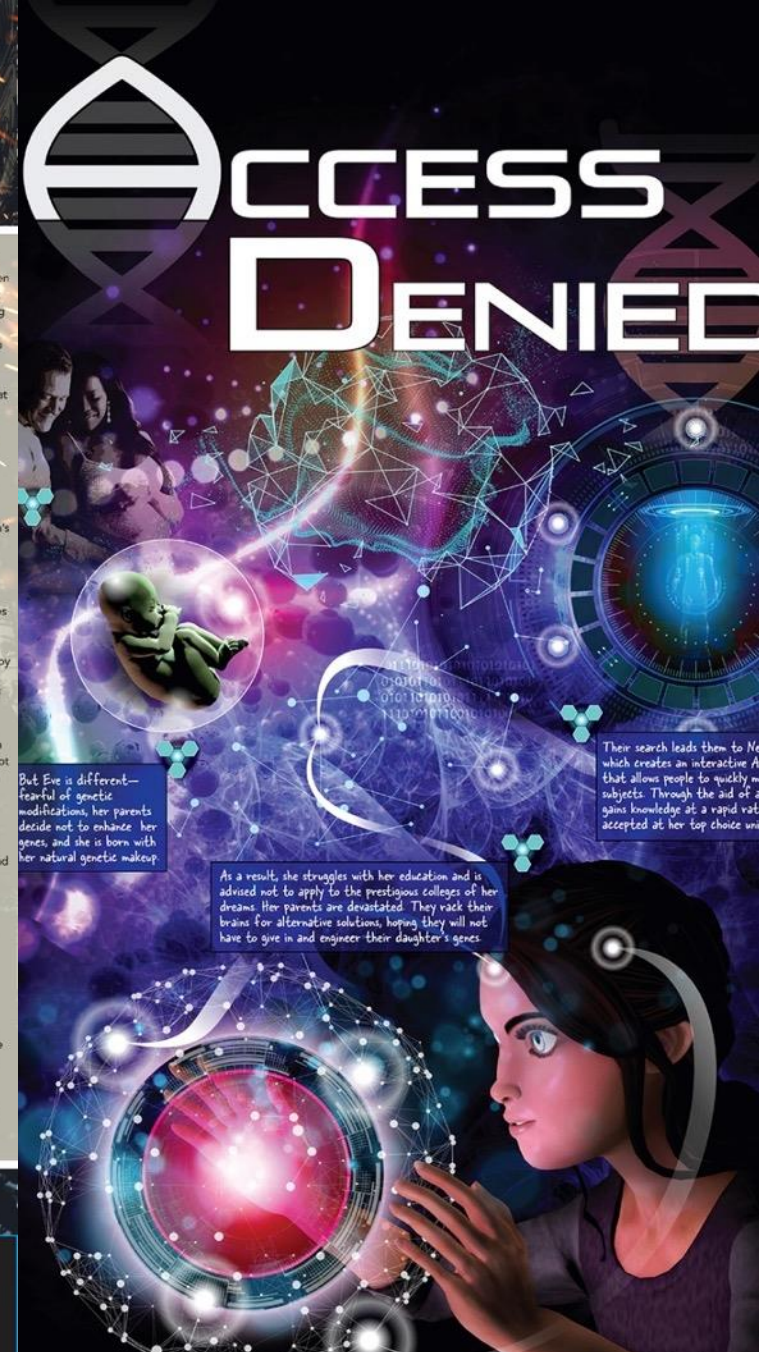
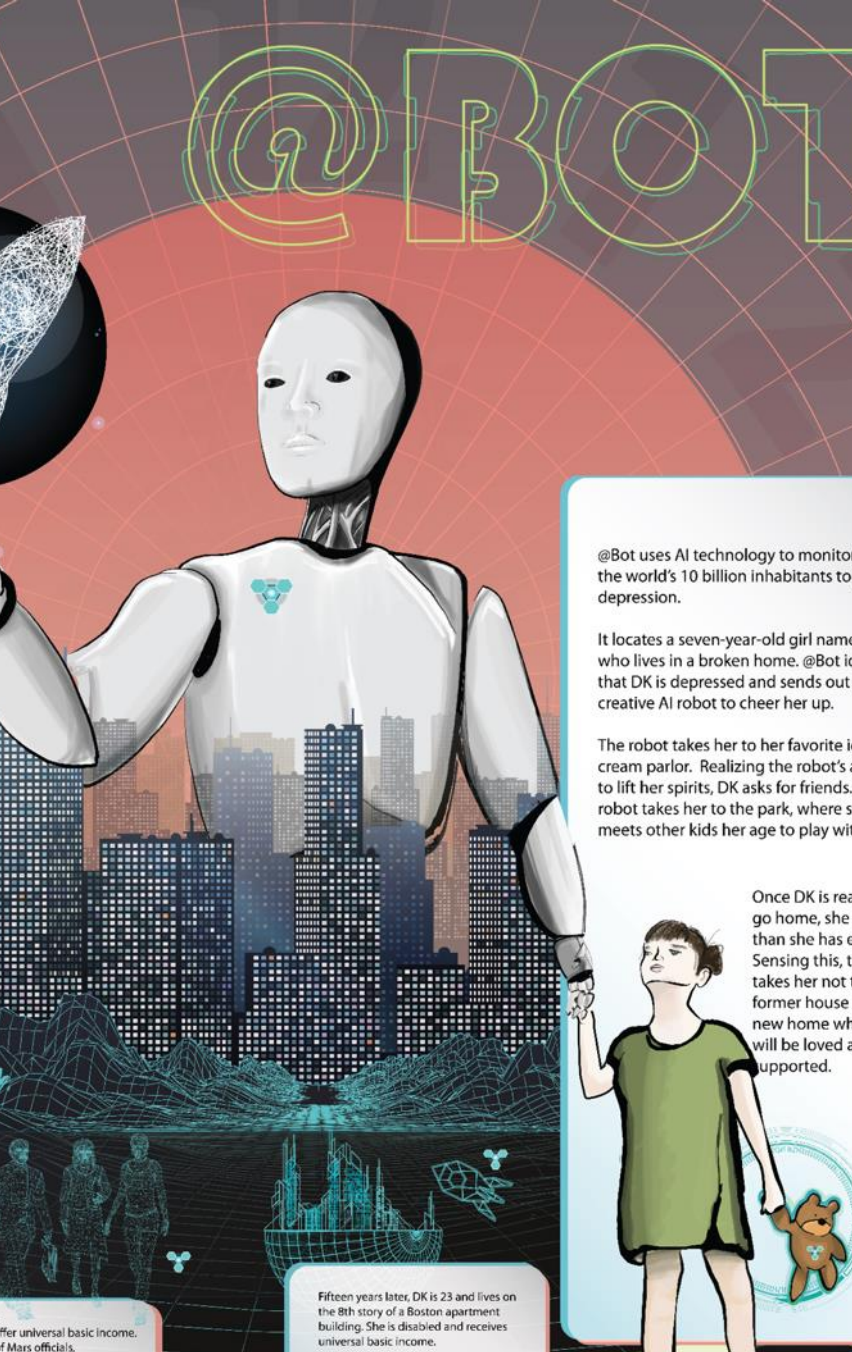
**RECRUIT
'PASSENGERS'**



ROLE-PLAY



da Vinci Xi
SURGICAL SYSTEM

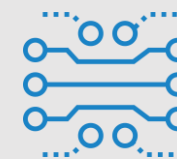




IN DOMAIN



ANALOGOUS



TECHNOLOGY





Design many
possible solutions
through **ideation** and
collaboration

Synthesize our findings and **converge** on a narrative

Brainstorm ideas and **visualize** concepts

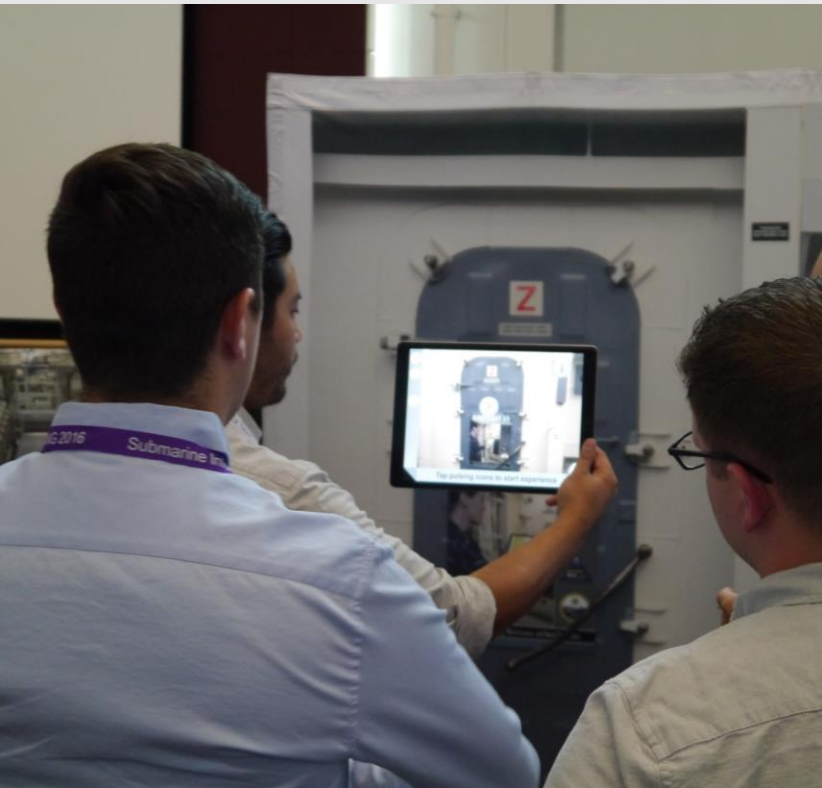
Test early designs and **iterate** based on feedback

*“If a picture is worth 1000 words,
a prototype is worth a 1000 meetings.”*

WORKSHOPS



INSPIRATION EXPO



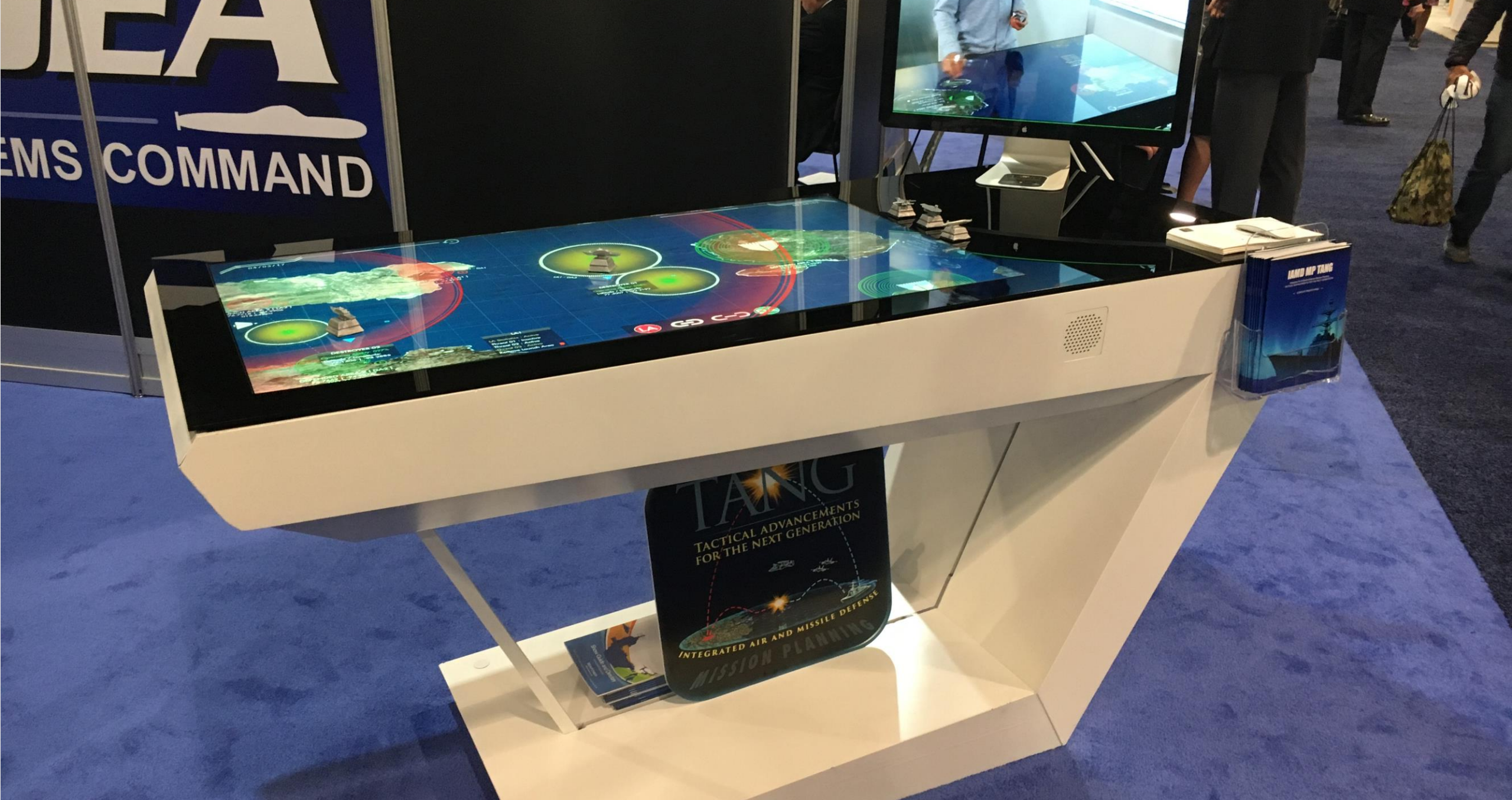


Develop the
possibilities through
experimentation
and **iteration**

Assemble the right team to **craft** the right solution

Build simple prototypes and **measure** user value

Learn from feedback and **refine** the concept





DELIVER

Deliver user-
focused solutions to
impact the mission

Architect the implementation plan and **integrate** the prototypes

Build a feedback loop and **measure** solution impact

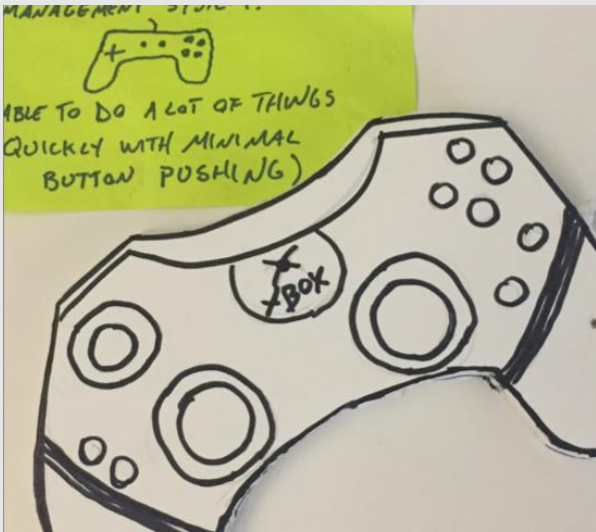
Iterate the solution and **ensure** successful delivery

XBOX CONTROLLER STORY

DISCOVER



DESIGN



DEVELOP



DELIVER



PAST PROJECTS



 GENERAL  UNDERSEA  SURFACE  AIR  OTHER

CURRENT PROJECTS

**Future
Vertical Lift
Phase II
(NAVAIR)**

**Naval Intel
(ONI)**

**Surface
Training and
Readiness
Phase II
(CNSF)**

**Submarine
EW Phase II
(IWS5 /PMS435)**

**Naval
Oceanography
(CNMOC)**

**Strategic
Weapons
Situational
Awareness
(SSP)**

**RAK PACK
(OSD &
BUMED)**

UPCOMING PROJECTS

**SSTP
Watchfloor
(SSTP)**

POTENTIAL PROJECTS

**Submarine
Navigation**

Aegis BMD

**Submarine
US-UK**

USMC FVL PROJECT

Sponsors: NAVAIR PMA 276 and Headquarters Marine Corps

Challenge: How might we create a cockpit experience for the H-1 replacement (AURA – Attack Utility Replacement Aircraft) that can adapt to future Marine Corps missions and emerging technologies?



USMC FVL PROJECT

Phase 2: Aug '19 – Feb '20

Building **10** different rapid prototypes, appearance models, and feasibility studies to explore individual concepts in these selected areas all to benefit the cockpit experience:

- Augmented and Virtual Reality
- Controls
- Haptics
- AI & Machine Learning
- Modularity
- Mission Planning Integration

SUMMARY

- We are a diverse set of **problem solvers**.
- We tackle **mission-focused, human-centered** National Security challenges through design and systems thinking.
- Small businesses continue to inspire our warfighters with the **art of the possible**.
- Past TANG sponsors have leveraged small businesses to turn warfighter generated **ideas into reality FAST!**
- We aim to **expand our TANG network** to connect our warfighters and sponsors with the experts that can build.

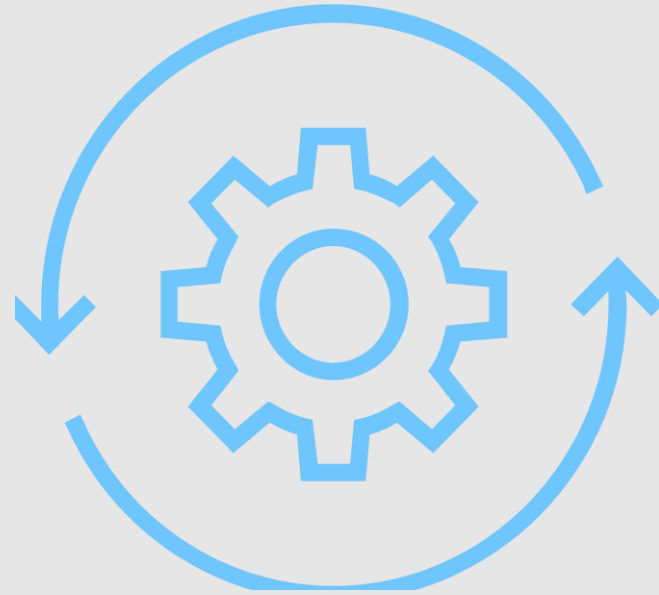
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QUESTIONS