Overview:
The need for new research projects at NPS covering everything from Cyber to Infrastructure Security is great. Unfortunately, the time required by faculty to create the case statements and project plans is limited as they continue their existing research and teaching requirements. However, without these project details and sometimes proof of concepts, the ability to get funding from DoD, industry or the community is limited.

The Seed Program at the NPS Foundation helps eliminate these roadblocks by providing the modest funding necessary for faculty to create the detailed project information necessary to seek funding. With about 20 seed projects a year, there are expected to be a range of outcomes similar to VC seed funding. Projects can be of any size, but always start with concrete objectives that can be delivered on in the first year with some spanning a longer term of 3 years. It is envisioned that as projects progress and achieve results, additional funding may be warranted to continue the research impact and maintain a high degree of excellence in the area. Often, funding from non-government sources provides the proof of impact that brings in additional funding from government agencies like the DoD to provide sustainability to these projects long term.

Initial Process:
Each year in October, the Foundation puts out a ‘Call for Seed Projects’ with the school. Faculty are required to provide a one page description of their project and submit it to the Dean of Research by the end of November. Approved projects are provided with the funds in January and are expected to complete their project plan within that calendar year.

Projects are evaluated and approved by the Dean and Foundation Funding leaders based on criteria such as:
- Faculty existing Seed Projects and success.
- Ability to execute within any constraints from NPS.
- Impact to National Security.

Each Seed Project is provided with $10K of unrestricted funds that are used to create the project plan material including:
- ‘Seed Project Standard’ Presentation
- Project Plan (Deliverables, Sustainability, Resource requirements etc.)
- Case Statement (Marketing material for Foundation fundraising.)
- Article for Publication to NPS Foundation supporters.
Project Funding:
Seed Projects are expected to be categorized as either complete or in a funding phase. A project plan can be considered complete if it is either:

- Unsuccessful... no further investigation. (Per Faculty evaluation.)
- Unsuccessful... need for redirection/resubmittal. (Per NPS Funding Committee & Faculty evaluation.)

A project plan that is ready for funding and hasn’t yet received funding from another source has a few potential funding options:

- DoD, DoN Funding
- NPS Foundation General Fund
- NPS Foundation Defense Innovation Fund

Some projects may be funded from the beginning by DoD, DoN or other government organizations based on the Seed Project Plan alone. Others may acquire funding from these sources at a later time thus leveraging foundation early investments.

The NPS Foundation General Fund includes funds that come from investments and donations that are either unrestricted or restricted to research that could be applied to a Seed Project.

The NPS Foundation Defense Innovation Fund is a fund created by the Foundation to fund research projects at NPS that make an impact on our National Security and provide the margin of excellence within NPS. The NPS Foundation raises money for this fund throughout the year at events across the nation. Funds raised might be used for specific projects or made available to projects selected by the Foundation.

Project Execution:
With funding, the research is performed according to the developed project plan and put into action at the earliest possibility to have the greatest impact. The Foundation acts as a steward through this phase by:

- Establishing Advisory Groups of interested parties and donors where appropriate.
- Receiving document updates and presentations on the research progress.
- Assisting in establishing industry collaborations where appropriate.
- Assisting in additional funding if needed as the project succeeds and is expanded.

Summary:
As with other institutions of higher learning, external funds are essential to creating the margin of excellence that delivers competitive and impactful results. With the Seed Program, each year we are providing new research ideas with the ability to create plans that can be used to raise the funds for actual execution. Over the years, the program creates a pipeline full of projects at various phases from creation to completion that otherwise might never be developed. Our National Security is dependent upon state-of-the-art research that can be applied immediately both in the field and in the classroom. The Seed Program provides the significant early capital that then provides this return for our Nation.
2016 Seed Program ROI:

30 Seed Project Proposals

21 Seed Projects Funded ($210K Investment)

Note that it is not expected for each project to be a success. We fully expect some failure each year. Lessons can still be learned from these and applied to future projects, so even failure has an ROI. It is better to fail here at an early stage, before going public.

- 3 DoD Funded
- 6 Seeking DoD Funding
- 1 Canceled (Funds Returned)
- 1 Unfunded (No Funding Committee approval.)
- 1 Redirection with Potential
- 8 Seeking NPS Funding
- 1 Large Projects in planning stage for additional year.

Highly Leveraged Investments: Bringing significant government funding.

- Proof of Concept provides government funding for sustainability.
- DoD and DoN Funding
- 3 Projects ($30K)
  - Produced $570K year 1 Funds
  - Expected $2.56M over 3 years.
- 85.3% ROI

Great Breadth within NPS

Operations Research / Computer Science / Defense Analysis / Ocean / Physics / Acquisitions / HADR

1 Humanitarian Aid Disaster Relief
Diversity in Project Size: Creating a Funding Need of over $5M / YR

2016 RESULT: Example Impacts on National Security

- **Terrorism Networks**
  Establishment of Dark Network archives used by researchers and analysts. Providing the ability to access and analyze social networks, geospatial and temporal data on these networks with a smart user interface to provide quick turnaround of results for impact in near real-time.

- **Cyber Attacks**
  Creation of interactive, artificial cyber networks and information used to draw in the enemy, learn about their operations and distract them from real targets.

- **Under Water Warfare**
  Climate change has affected the water chemistry in key areas of International significance such as the South China Sea. This impacts equipment and communications used by the Navy. Chemistry’s are evaluated, alternative technology and approaches developed to ensure operational performance.

- **Big Data Analysis**
  The digital age creates more data than can be dealt with in real-time with existing software and hardware architecture. A platform is developed to provide big data analysis in a timely fashion, simple interface for analysts, and informational results without programming.

- **Communication in Infrastructure-Less Environments**
  FOBs (Forward Operating Bases), HADR (Humanity Aid Disaster Relief) and operations within failed states or conflict areas cannot rely on existing communications infrastructure, yet it is critical for operational and mission success. Creation of technology to solve this problem to be deployed with NPS students.
• **Energy Security**
  
  Energy usage can create a weak link to be exploited by the enemy. Gas convoys are targets. Fuel consumption and storage can be critical to the success of a mission. Education of the fleet on the trade-offs, alternatives and best practices defends against this exploitation.

### 2016 RESULT: Areas of Impact on National Security

- **Cyber / Network Security**
- **Terrorism**
- **Engineering**
- **Education**
- **Business Organization / Process**

![Bar chart showing areas of impact and investments](image)

**Note:** 1 All numbers in thousands of dollars.

The modest investments in the early years work to show success before making the larger and longer term investments. This allows failure to happen quickly and redirection with minimal loss of investment.
Seed Program

Phases and Responsibilities for NPS Primary Investigators

The intent of the Foundation’s Seed Program is:

- To create the best possible and practical process for NPS world class faculty to continuously generate new and impactful ideas!
- Receive Foundation “start-up” funds to translate those ideas into executable project plans.
- Put those projects plans forward to NPS and the Foundation as candidates for major, long term funding.

Seed Projects should stand out in terms of impact and significance on national defense/security, scientific/research innovation and merit in terms of addressing compelling needs of NPS as an institution or of key NPS constituents and sponsors.

Seed Projects could also provide opportunities for NPS to demonstrate core competencies and significant abilities to contribute to shared, critical public/private challenges that include opportunities for long-term learning, outreach or partnerships.

The Process Overview:

1. Yearly, at the beginning of October, the Foundation asks for seed project overviews, expected to be about one page in length. All are due by the end of November.
2. The Dean of Research gathers them up and filters those that are deemed executable.
3. The Foundation and Dean of Research then determine which projects to get ‘seed funding’.
4. Funds are granted and distributed to the Faculty in January. Projects are expected to typically complete the full project plan during the year.
5. A Funding Committee Steward assigned to each Seed Project for assistance and presentation prep.
6. Funding Committee Presentation at one of four Funding Committee meetings throughout the year.
7. Board of Trustee Presentations... for those recommended by the Funding Committee.
8. NPS Foundation board vote on project funding.
9. Funding Phase.
10. Execution and Stewardship Phase.
**Phase 1: Seed Project Submission**

- 1 Page project description & Primary Investigator Bio
- Review by Funding Committee & School Leadership.
- General Qualifications and Requirements:
  - One Seed project per PI at a time. Once a project is approved and in funding or funded, then other applications are ok.
  - Demonstrated Expertise.
  - Clear delineation/description with difference between current work and new deliverables.
  - In ‘good standing’ with any other projects being funded by NPSF.

**Phase 2: Seed Plan Creation**

- $10K in funds grated immediately.
  This follows the ‘gift’ process in accordance with the established NPS Gift procedures. The NPS Foundation will direct payment through the Comptroller with specific information required to insure funds (via JON number) go to the proper PI or team.

- Steward from the Funding committee assigned and date for Funding committee presentation set.
- Project Refinement:
  - Presentation created per Funding Committee template.
  - Project Plan created per template.
  - Ask: The amount and plan for funds.

**Phase 3: Funding Committee Review and Recommendation**

The process to select Seed Plans for follow-on funding has many variables and potentially many opportunities for PIs or terms to turn their ideas into reality. The process will be led by the NPS Foundation Funding Committee who will review the Seed Project plans and select the most promising to recommend to the Board of Trustees for follow on funding.

Funding Committee Criteria for evaluation could be but is not limited to:

- What projects resonate best with our major donors and provide opportunities for donor engagement with PI, teams, students or research outreach activities for the life of the project?
- What projects can be moved to execution in the short term with a relatively small amount of funding and no additional manpower requirements?
- What projects require substantial, long-term funding but are compelling enough to our potential major donor base for the Foundation to mount a major fundraising campaign?
- What projects can produce valuable deliverables in early phases enough though later phases are currently resource-constrained?
If the project is selected for consideration for further fundraising, the Foundation may require additional materials for the fundraising process.

The Process is:

- Presentation to the Funding Committee
- If issues:
  - Work to resolve/redirect and resubmit/represent.
- No Issues:
  - General Criteria Met
  - Recommended for funding by the Funding Committee.
- Already funded via DoD etc.:
  - 1 Page Write-up
  - Short Article for NPSF Journal

### Phase 4: NPSF Board Approval

- Presentation to the Foundation Board
- Board Vote to Fund / Develop Funding For Project
  - Approval to Fund
    - Full Project Plan & Marketing 1 pager
    - Article for NPSF Journals
    - Work with Funding Committee steward.
    - In person meetings with potential funders.
  - Government Funded
    - Might happen with or without board approval.
    - Can happen at any time in the process.
    - Article for NPSF Journals
  - Unfunded
    - Article for NPSF Journal (preferred) or Full Project Plan
- WRITTEN LETTER FROM THE FUNDING COMMITTEE TO PI confirming status.
**Phase 5: Funding**

- **Existing Funds Deployed**
  If existing Foundation funds exist that are appropriate for the project they can be deployed immediately.

- **Defense Innovation Fund**
  The Foundation has developed a fund called the ‘Defense Innovation Fund’ that it will fundraise across the Nation to endow. In parallel, as this fund is drawn down throughout the year to fund projects, it will also be augmented during the year through Foundation fundraising events. If existing Foundation funds do not exist, then the Foundation will create a fundraising plan that is appropriate for that project.

  Regardless of the approach, the Foundation will work with the PIs to have the following for fundraising purposes:
  - Case Statements
  - Presentations
  - Direct Donor Connections

**Phase 6: Funded**

- Communication to Funders twice a year. (with ED, Funding Chair Copied)
  - In person meetings or written report.
  - Make part of an ‘advisory committee’.

- Foundation Yearly Update
  - Detailed ‘paragraph’, due November 1st each year.
  - Published for the Grand Ball.
  - Increased or renewal of funding can come directly to the funding committee without having to go through the seed process again!

**Phase 7: Project Completed**

- Full project report.
- Application for renewed project support.