A Small Business Paradigm
For Sustainable Technology Insertion

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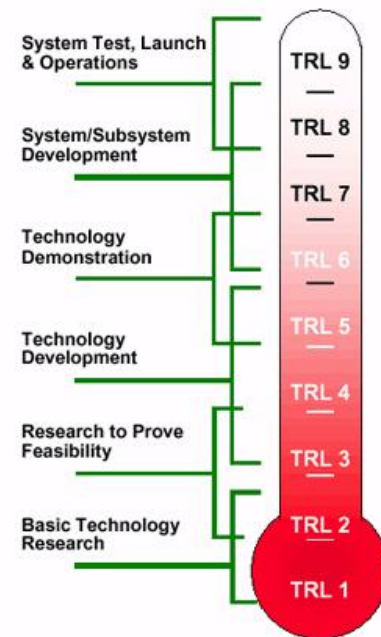
A Hawaii Company

Background

- **Incorporated in Hawaii in 2006**
- **Began business in earnest in fall of 2006**
  - **Founders came from large Aerospace**
- **Major motivation was more flexibility to grow in the Pacific region market**
- **Another motivation was to provide a greater sense of stewardship to the technology community**
- **Started with five employees, now in the process of hiring numbers 24 & 25, could pass 30 within next year**

Focus

- **Focus on what we know – specifically the DoD customer base**

- **Compete with mainland companies for POM programs**

- **Don't desire venture capital (VC) infusion**

- **Prudent but moderate growth strategy**
  - **Reduce risk, focus on high TRL transition**

- **Other important considerations**
  - **Credit and Member capital is tight**
  - **Typical profit margins for defense contractors relatively small therefore development of cash flow takes time**

System Test, Launch & Operations — TRL 9

System/Subsystem Development — TRL 8

— TRL 7

Technology Demonstration — TRL 6

— TRL 5

Technology Development — TRL 4

Research to Prove Feasibility — TRL 3

Basic Technology Research — TRL 2

TRL 1

Technology Transition Keys

- **Thoroughly understand customer base <u>needs</u>, including *Requirements, Shortfalls, Schedules and Budgets***

- **Continuously seek intersecting points of capabilities and technologies with customer base needs**

- **Don't stretch far from core technologies and capabilities**

- **Avoid the "build and peddle it" philosophy**
  - **We take this a step further and focus on "Must Haves"**
  - **"Nice to Haves" often become "Unfundeds"**

Simple Paradigm We Use for Guidance

Current Customer Base **Current Technologies** **(Funds On-contract)**	**Current Customer Base** **New Technologies** **(IRAD)**
New Customer Base **Current Technologies** **(Marketing)**	**New Customer Base** **New Technologies** **(Marketing & IRAD)**

Technology Transition Strategies have been Developed for Product
Concept (Research) to Market (Operations)

- **Technology Transition Strategies**
  - **Product Development Institute**
  - **Harvard (I/II)**
  - **National Research Council**
  - **LeanTEC/AFRL, NASA, etc, etc**
- **Common Factors Amongst Technology Transition Strategies include**
  - **Early market feedback**
  - **Iterative Development**
  - **Flexible processes**
  - **Rapid prototyping**

Know The Market – Assume The Competitors Do

- **Is the technology important? Has it been done?**
- **Successful technology transition requires "a thorough understanding of the stakeholders needs" - MIT/LL**
- **Tie to specific needs, i.e., Roadmaps, Strategic Plans, Shortfalls, etc:**
  - **Strategic Planning Guidance (SPG)**
  - **Joint Programming Guidance (JPG)**
  - **Combatant Command (COCOM) Integrated Priority Lists (IPLs)**
  - **Capabilities Investment Strategy**
- **You'll hear a lot about needs at this conference**

Additional Market Considerations

- **Does technology fit within Service/Agency policies?**
  - **Example: New chemical could reduce wear on operational equipment, but disposal regulations and/or associated costs may be prohibitive**
  - **Example: Use of pulsed lasers for ranging of satellites, however, policy forbids laser illumination of most satellites**

- **Does technology fit within existing CONOPS?**

Small Business

- **Flexible, Responsive**
  - Opportunity identification to proposal submittal in < 24hrs
- **Not process encumbered**
  - Manage our own rates, cost structures, etc – no "flow downs"
- **SB programs**
  - SBIRs, Subcontracting to primes
- **Primes with large contracts are in excellent position for next generation of systems they are delivering**
  - Work with primes to become a "preferred provider"
- **Work with multiple primes**

Suggestions for Small Businesses

- **Understand the processes and timelines**
  - **Planning, Programming, Budgeting and Execution (PPBE) Process**
    - <u>**Planning (P)**</u> **- creating a strategy for future needs/capabilities and anticipated receipts**
    - <u>**Programming (P)**</u> **- deciding what needs to fund and where to accept risk**
    - <u>**Budgeting (B)**</u> **- detailed pricing of the things you will put resources against**
    - <u>**Execution (E)**</u> **- approval and funding of the budget and the actual outlay of capital**
- **Encourage staff involved with managing or developing business to take DAU courses**

Summary

- **Transitioning Technology is difficult**
  - **Focus on solid opportunities**
  - **Don't assume "build it and they will come"**
  - **Know the "Must Haves" … this is hard work!**
- **Even with customer pull and funding, transition is hard**
  - **"Less than 40% of [R&D] technology projects that are intended to transition actually do so" – AFRL**
- **Performance is crucial**
  - **"Technologies that transition must transition on schedule … and meet technical and cost goals" – AFRL**

Backup

TRL Levels

TRL 9 - Actual system "mission proven" through successful mission operations

TRL 8 - Actual system completed and "mission qualified" through test and demonstration in an operational environment

TRL 7 - System prototyping demonstration in an operational environment)

TRL 6 - System/subsystem model or prototyping demonstration in a relevant end-to-end environment

TRL 5 - System/subsystem/component validation in relevant environment

TRL 4 - Component/subsystem validation in laboratory environment

TRL 3 - Analytical and experimental critical function and/or characteristic proof-of- concept

TRL 2 - Technology concept and/or application formulated

TRL 1 - Basic principles observed and reported