A Small Business Paradigm
For Sustainable Technology Insertion

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Pacific Defense Solutions, LLC (PDS)
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
Technology Transition Keys

• Thoroughly understand customer base needs, 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 “Unfunded”
Know the "Must Have" Requirements

• In 2006, AF had 

• Transitioning Technology is difficult

• Focus on solid opportunities

• Don't assume "build it and they will come"

• Know the customer needs and what will be funded

From: DAU/Acquisition Community Connection

Know the “Must Haves” or “Most Dear”

Requirements

Fundeds
Simple Paradigm We Use for Guidance

- Current Customer Base
  - Current Technologies
    - (Funds On-contract)
- New Customer Base
  - Current Technologies
    - (Marketing)
- Current Customer Base
  - New Technologies
    - (IRAD)
- 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
    - **Planning (P)** - creating a strategy for future needs/capabilities and anticipated receipts
    - **Programming (P)** - deciding what needs to fund and where to accept risk
    - **Budgeting (B)** - detailed pricing of the things you will put resources against
    - **Execution (E)** - 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