

Writing a Wining Proposal



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The Mysteries I Will Reveal!



- **How the BAA process works**
- **How one can effectively respond to a BAA**
- **How one engages with DARPA**



Our Story Begins With a Hero...



...The DARPA Program Manager
(A guy who lives in the fast lane)

*Must sell more
programs!*

What motivates this character?
(...beyond his fast-living life style?)



Program Managers sell programs!



Developing a DARPA Program: Our Hero's Patron Saint



George Heilmeier



- **What are you trying to accomplish?**
- **How is it done now, and with what limitations?**
- **What is truly new in your approach which will remove current limitations and improve performance? By how much?**
- **If successful, what difference will it make?**
- **What are the mid-term, final exams or full scale applications required to prove your hypothesis? When will they be done?**
- **What is the DARPA “exit strategy”?**
- **How much will it cost?**



Building A DARPA Program: A Case Study



Robustness
Linearity
Error Rate
Power Consumption
Isolation
Signal to Noise Ratio

Metrics

How do you know the hard parts have been solved?

The Big Vision

Encrypted Water

What is the hardest part?

Water Encryption

The DARPA Program

Water Electronics



Water Source
Tap Water
Fluoride



Interconnects
Read/Write Heads

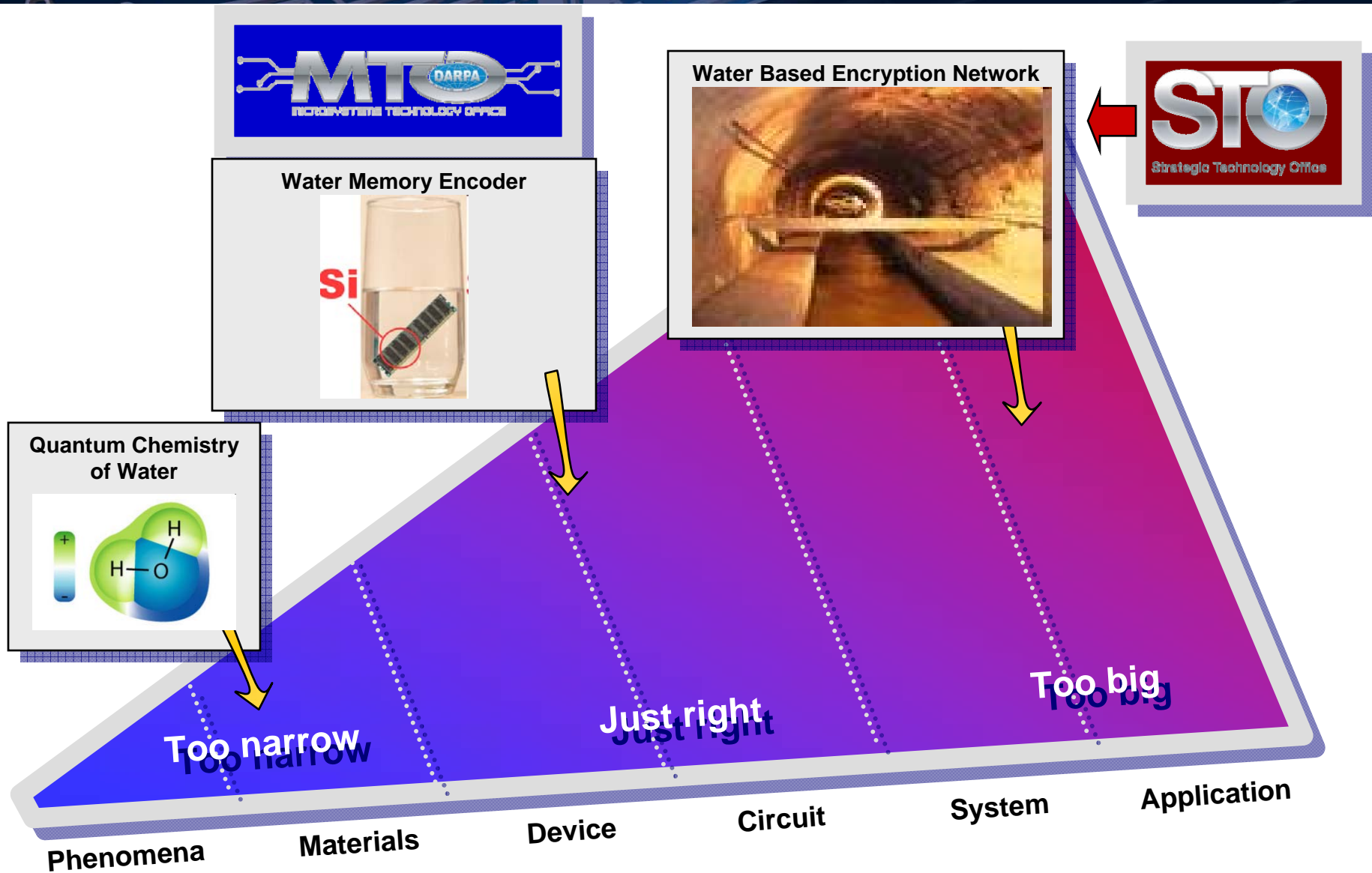


Water Stability
Error Rates





What is an MTO Program?





What Stands in Our Hero's Way?



The DARPA Director

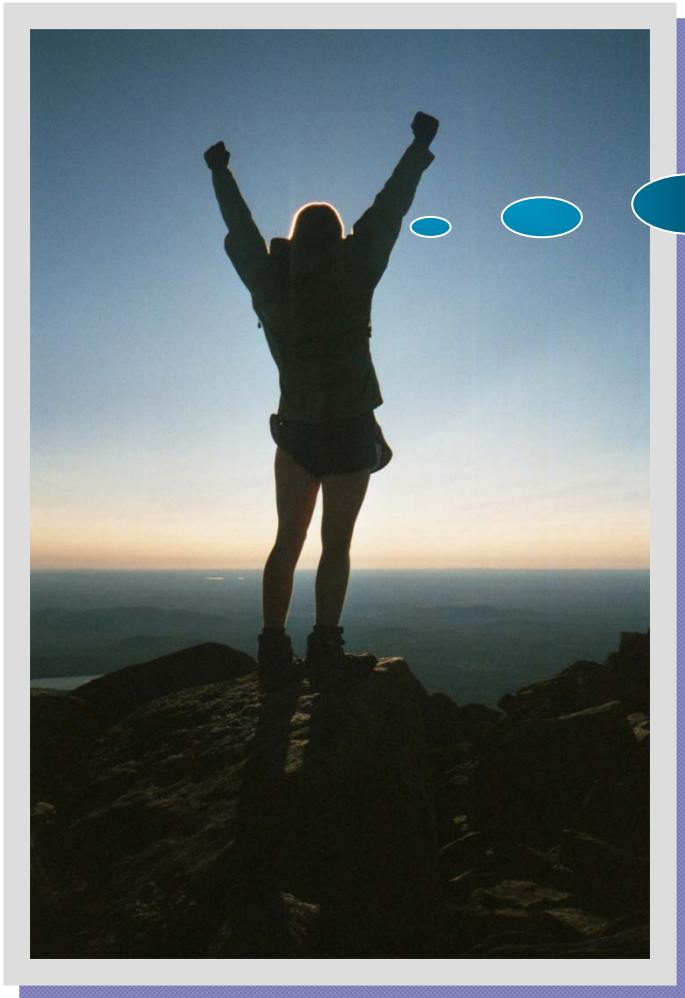


*Time to smackdown
Rosker again -
oh, yeah!*

Program Managers sell programs to this guy



The Way is Hard but, Occasionally, Our Hero Succeeds...



*I can't believe
he BOUGHT IT!*

Now, Time for the BAA!



The Broad Agency Announcement: What Is It?



BAA 09-99 Water Encryption



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The Defense Advanced Research Projects Agency (DARPA) often selects its research efforts through the Broad Agency Announcement (BAA) process. The BAA will appear first on the FedBizOpps website, <http://www.fedbizopps.gov/>. This BAA document constitutes the entire solicitation.

DARPA is soliciting innovative research and development (R&D) proposals in the area of water based encryption systems. Areas of interest include writing information onto the electronic structure of water, lifetime of that information in pure water, encryption algorithms for encoding water information, water repeaters to transfer information, and electronics for reading water memory to form a secure encryption device from a glass of water. The program will culminate in an objective demonstration that a secure encoding device has been fully integrated into a typical restaurant size glass of tap water (bottled water from exotic locals is explicitly excluded).

Proposed Water Memory R&D should investigate innovative approaches that enable revolutionary advances in science, materials, devices, and circuits. Specifically excluded is R&D that primarily results in incremental or evolutionary improvements to the existing state of practice.

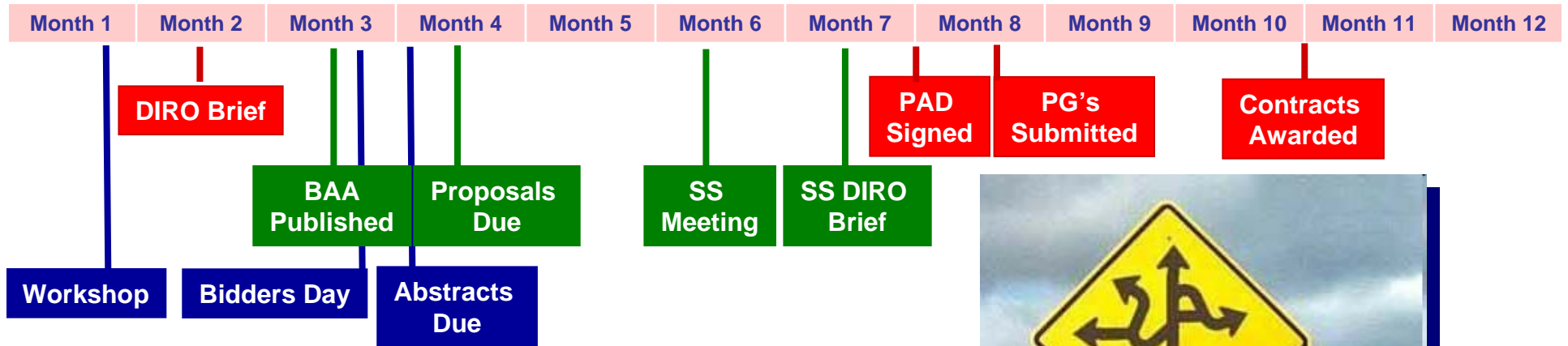
1. Background and Description

- Found at:
<http://www.fedbizopps.gov>
- Items typically included
 - Background/description
 - Areas of interest
 - Program objectives and structure
 - Deliverables
 - Program scope
 - Proposal management
 - Include very specific instructions about how to respond to the BAA

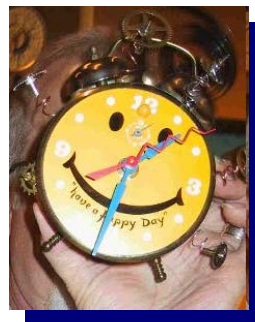
BAAs are the primary means by which DARPA does business



Ideal New Start Timeline



Seedling?



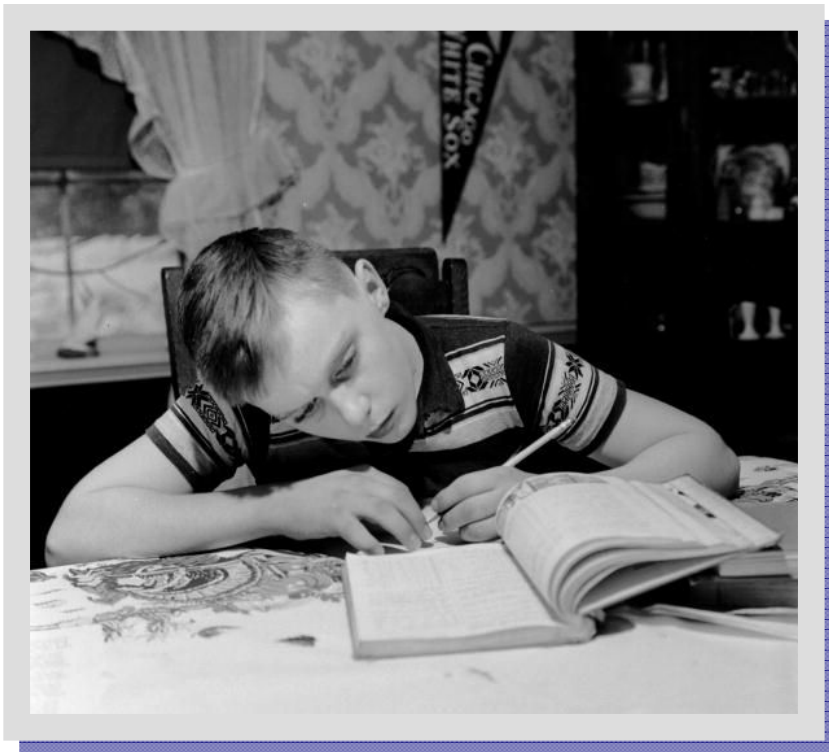
Typical new start program takes about a year to put in place... provided all goes well!



How To Be Effective Interacting With DARPA



Preparing His First Program Pitch



Rosker's Theorem

The most effective way for you to interact with DARPA is...
do the program manager's homework for him/her

Rosker's 1st Lemma

You can't do too much

Rosker's 2nd Lemma

You can't start too soon

You are most effective when you help Mark do his homework!



How Can I Do Mark's Homework?



The Top 5 Things to Do

- Defining the technical challenges
 - Not what will be *easy*; what will be *hard*!
 - Why will it be hard?
- Defining the metrics
 - Linking the metrics to the technical problems
 - Explaining what is possible and why
- Fundamental limits and the SOA
 - Show graphically where technology is now
 - Where the SOA breaks down and why
 - Where the new approach can go
- Showing why *this* 10X
 - Is the improvement a game-changer?
 - A clear, simple story
- Showing “Why now?”
 - What technical advancement has makes now an opportune time for this new program?



The Top 5 Mistakes

- Failing to link technical idea to a program
 - Technology that does not relate to a program idea is of limited value to DARPA
 - Proposal to “explore” some subject area
- Linking the idea to some existing program
 - PM wants to sell the *next* program
- Failing to focus on the key points
 - The PM needs to be able to show only that a feasible technical approach exists
 - PM doesn't need to know the setting of every oscilloscope knob
- Too little / too late
 - Remember the 2nd Lemma!
- The “Seedling Exception Fallacy”
 - *All these principles apply to seedlings, too!*
 - Seedling should relate to a potential program
 - Need to clearly state a seedling “question”
 - Need to explain why answer to this question is critically required for the potential program

Mark will need all the help he can get to convince the Director!



How Can One Effectively Respond to a BAA?



Like Mark, Be Prepared!



- **Prepare in advance to respond**
 - Technical approach
 - Form/join your team
- **Follow the rules in the BAA**
 - Goals, organization, metrics:
Don't try to change them!
- **Write well. Be as clear and concise as you can**
- **Ok to contact the PM with questions *at any time!***

Just waiting for an interesting BAA to be released is not effective



The BAA Process is Not So Hard



- **Understand what PMs need**
 - PMs sell *programs*...
 - ...to the DARPA Director
- **To effectively couple to a PM, do his/her homework for them**
 - Map your technical ideas into the *program elements* a PM needs to persuade the Director to invest in
 - This includes seedlings (and YFAs!)
- **Be proactive about BAAs**
 - Encourage the PM to develop programs that relate to your (exciting!) technical ideas
 - Engage with the PM often

DARPA exists to turn great ideas into reality