Science and Technology Innovation: A Challenge in Leadership

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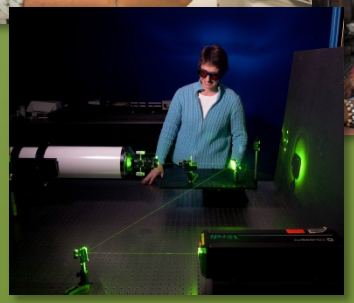
President
Winter Strategic Solutions, LLC

My Strategic Leadership Experiences

People



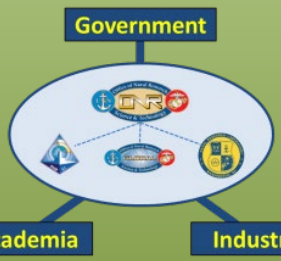


Organization





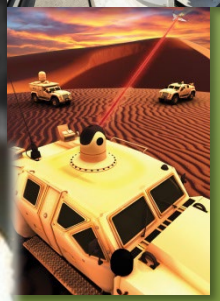





Mission








S&T Innovation: Challenges and Opportunities

- Large, bureaucratic organizations – very effective, yet inefficient
- Internal Policies and External Statutes create barriers
- Decision Makers turnover/leave frequently
- Shifting demands/requirements with volatile funding commitments
- NATO/Nations defense very complex business – increasing demands
- Very talented, resourceful and capable teams / workforce
- Strong, viable stakeholder partnerships – Gov't/Industry/Academia
- Effective technical/business/operational outcomes – daily!

But is the S&T Enterprise Considered "Innovative?"

Be Innovative: What does that really mean?

- **Technical and Business Reforms…..**
  - I have been "reformed" 9 dedicated times in my US Navy Career
- **Implement Agile Principles…..**
  - usual outcome: work harder on the same work
- **Incorporate Best Commercial Practices…..**
  - Most Government "Board of Directors" are finicky and politically motivated
- **Charter an Independent Group to "Help"**
  - Meet the boss's deadline with budget to spare

"Bring the best and brightest individuals, with measured diversity of thought/experience, together in an open, inclusive environment working on our Nation's toughest challenges to frame viable solution space through high-velocity-learning that generates disruptive, innovative outcomes." – Vadm Winter

High Velocity Learning Enables Successful Outcomes

(Technical, Business, Programs, Operations)

Correct: adjust and reengage

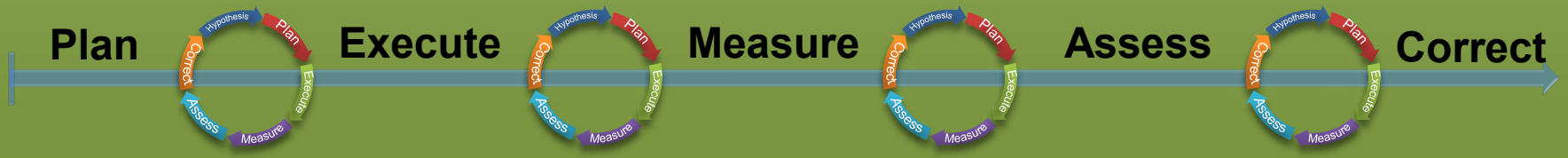
Assess: what we learned so far

Measure: progress on predicted results

Hypothesis: proposed solution

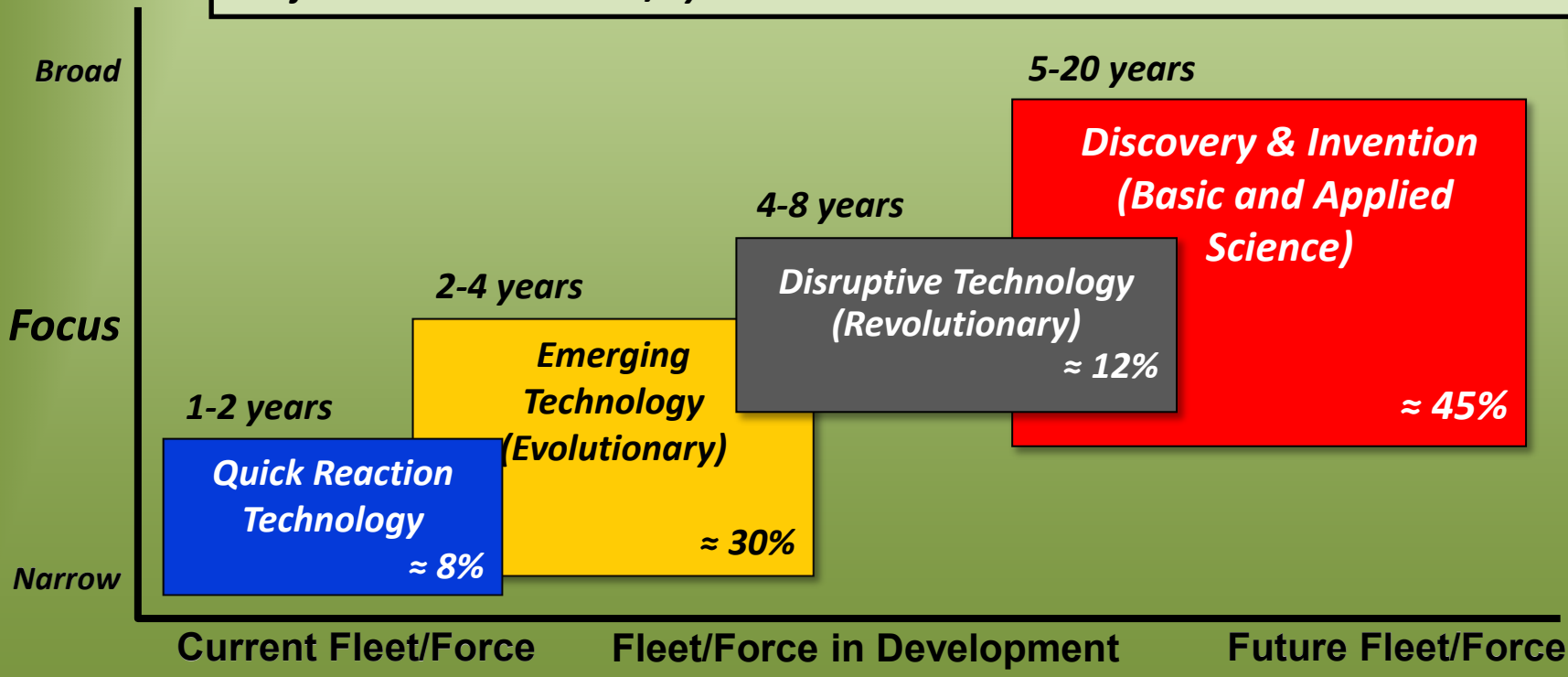
Plan: strategy for way ahead

Execute: details of implementation



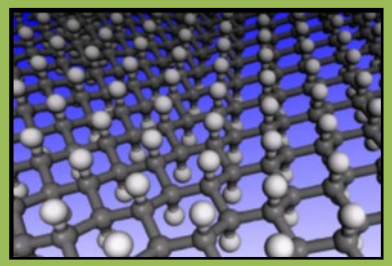
S&T Investments Phased to Enable Capability Deliveries

- *Assure Access to Maritime Battlespace*
- *Autonomy & Unmanned Systems*
- *Electromagnetic Maneuver Warfare*
- *Expeditionary & Irregular Warfare*
- *Information Dominance/Cyber*
- *Platform Design & Survivability*
- *Power & Energy*
- *Strike & Integrated Defense*
- *Warfighter Performance*



Balanced and Phased S&T Investment Portfolios are Most Effective

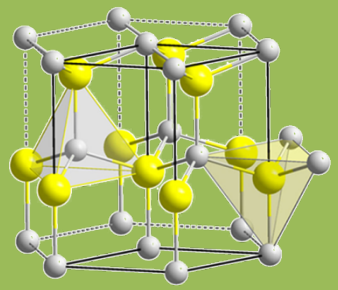
S&T Innovation Life Cycle:
From Test Tubes to Launch Tubes



Graphene

Crack & Failure Prediction

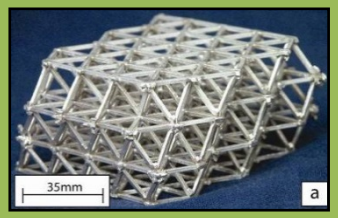
3D Printing of Veins



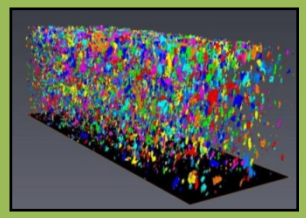
Gallium Nitride

Microbial Fuel Cells

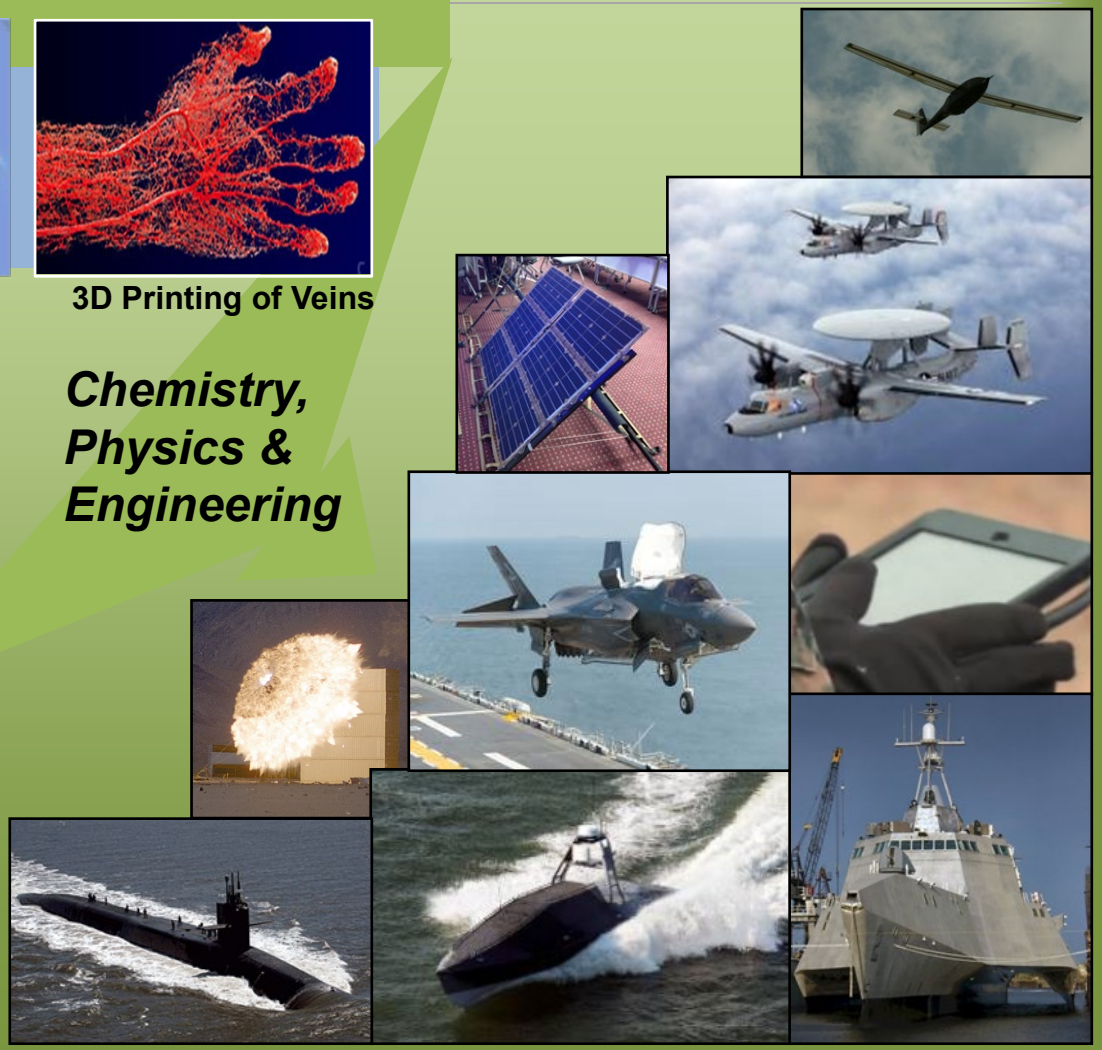
Chemistry, Physics & Engineering



Blast/Energy Absorbing Structures



Mesoscale Characterization

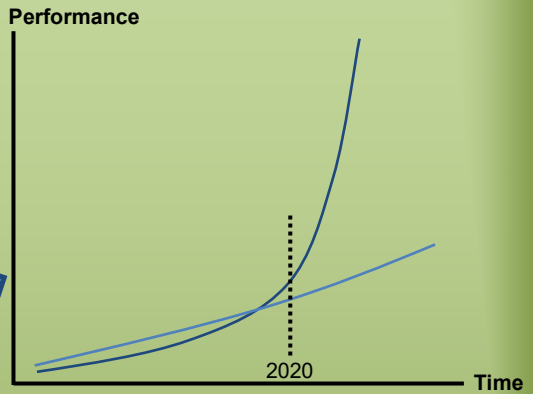


Enabling the Future Generation of Warfighting Capabilities

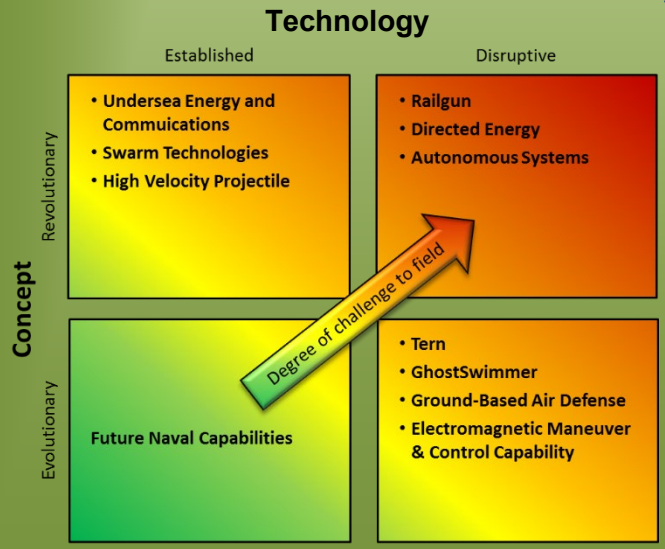
Leveraging Partnerships: Innovative Research & Business Outcomes

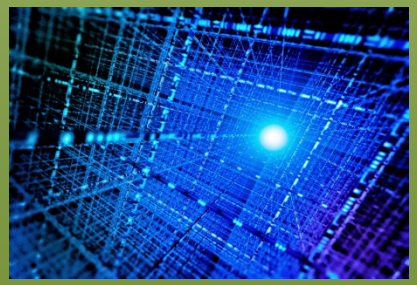
Solving the Innovator's Dilemma

Microbial Energy
Bio-Sensors
Synthetic Biology

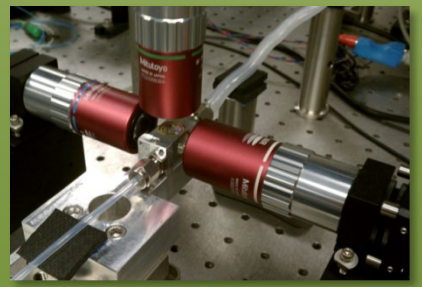


- Synthetic Biology/Bio-Inspired
- Nano-Scale Technologies
- Photonics
- Quantum Sensing / Computation
- Big Data Analytics
- Hypersonics
- Social Sciences/Medical Advances





Quantum Computation



Photonics

Innovation Enabled By……
(My Experience)

- Leadership Advocacy…….then get out of the way…..
- Culture of learning, failure, empowerment, growth
- Workforce Pedigree aligned, competent, capable
- Full Resources – tools, facilities, funding
- Flexible, Executable Timelines…….focus on SCALE and SPEED
- Clear Communications and Sound Decision Making
- Accountable Leadership Follow-Through – everywhere!

Strong NATO/Nations' Partnerships
With Bold, Visionary Leadership

Thoughts?