Pushing the Acquisition Innovation Envelope at the Office of Naval Research

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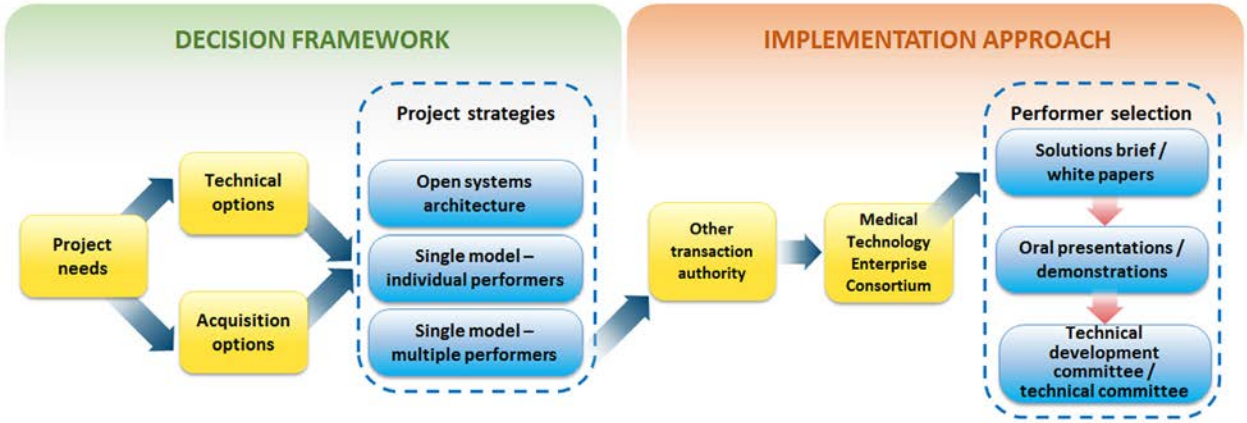
Simultaneously addressing technical complexity while maximizing acquisition flexibility is problematic

This research developed a methodology for:

1. Bringing acquisition and technical expertise to bear in a collaborative partnership
2. Leveraging the Medical Technology Enterprise Consortium (MTEC) Other Transaction Authority for future Medical Technology prototyping at ONR
3. Streamlining the acquisition process thereby reducing acquisition lead-time and delivering solutions to the Warfighter faster
4. A three-phase acquisition approach to establish a technical committee of performers to work collaboratively with the Government on requirements development and ultimately deliver solutions
5. Building a bridge over the *"valley-of-death"*



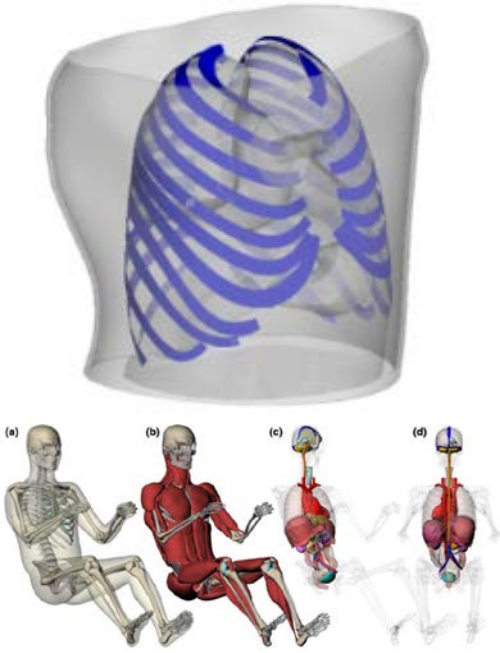
ONR Future Naval Capabilities (FNC) program accelerates transition of R&D to the fleet

- **FNCs mature complex technologies from Technology Readiness Level (TRL) 3/4 to TRL 6 for transition to acquisition program managers for integration with the fleet/force**

- **FNCs address one of the eight pillars:**
  - *Warfare Enterprise*: Air Warfare; Information Warfare; Expeditionary Maneuver Warfare; Surface Warfare; and Undersea Warfare
  - *Warfighting Support*: Capable Manpower; Energy, Logistics, and Platform Enablers; and **Force Health Protection**

Injury predictions due to military hazards are currently educated guesses at best

- **Validated human body computational models provide the ability to predict injury and incapacitation**
- **Currently available whole human body computational models were developed for the automotive community**
  - Material characteristics and validation data used within these models may not be appropriate for military hazards

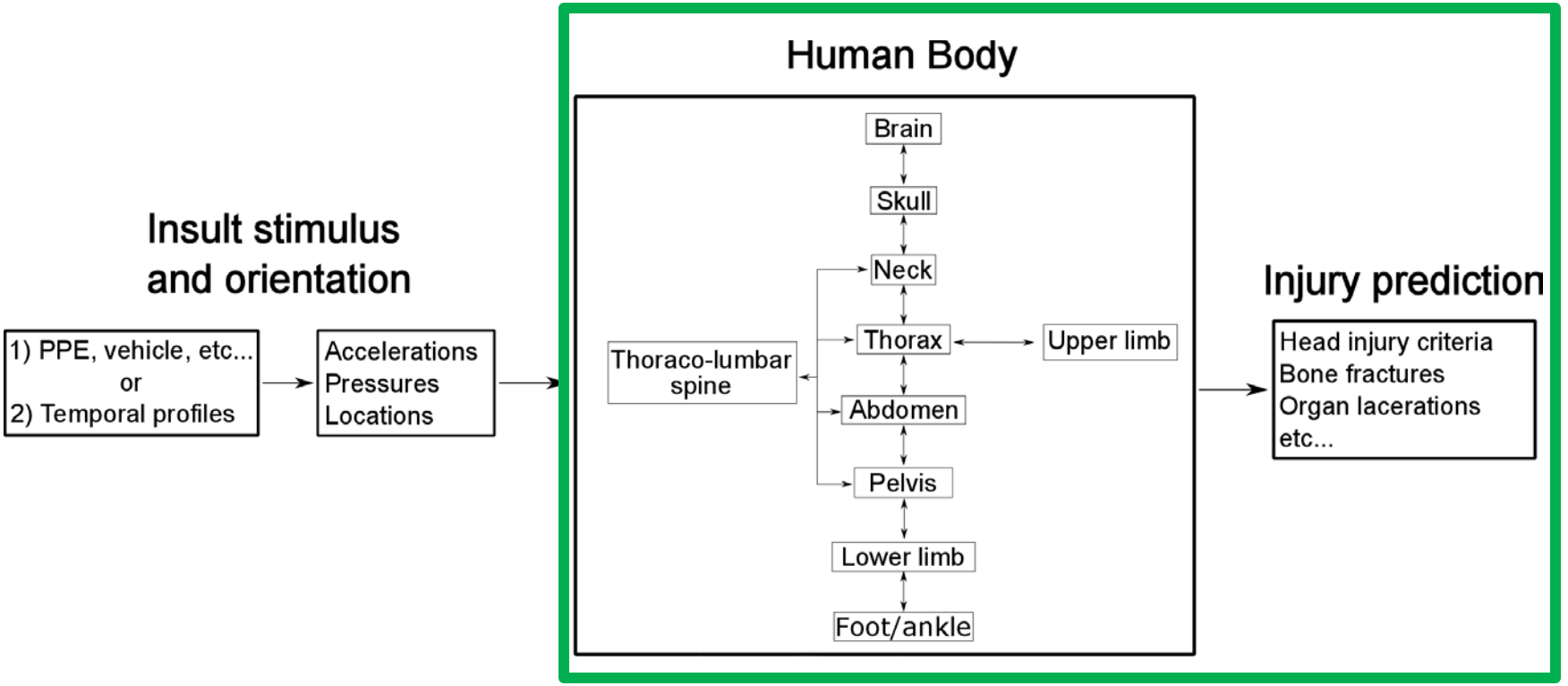


adapted from Gayzik et al., 2011

The ONR Incapacitation Prediction for Readiness in Expeditionary Domains: an Integrated Computational Tool (I-PREDICT) FNC program seeks to develop a military specific human body computational model for injury and incapacitation prediction

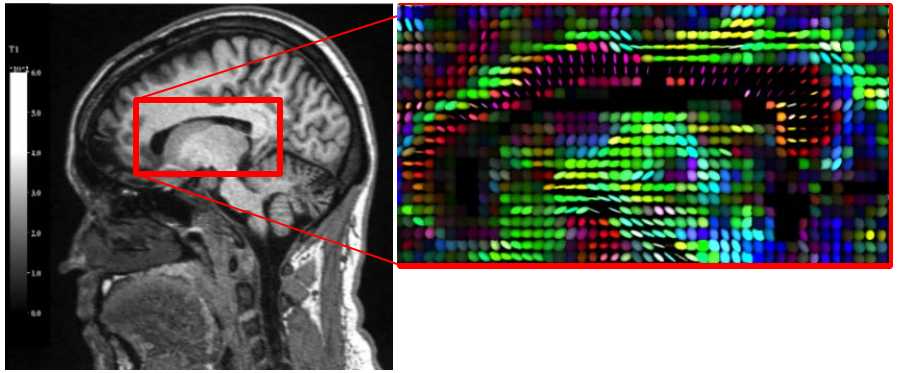
Expertise in human body computational modeling is distributed

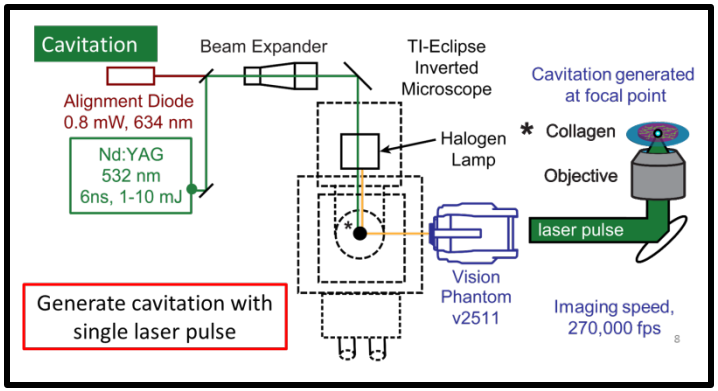
- **Discretized human anatomy allows for multiple qualified performers to be included in the creation of the I-PREDICT FNC**

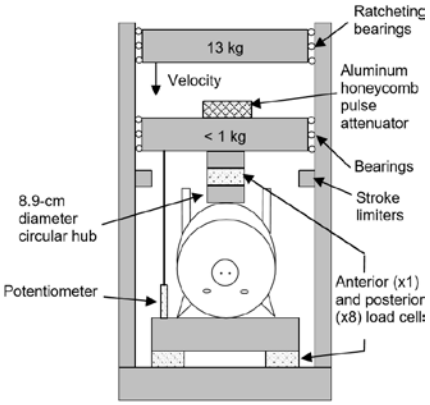


Experimentalists are needed for parameterization and validation data

- **Computational modeling must be paired with appropriate experimental methodologies to inform the development and validation of the model**







a. Schematic (cranial view)

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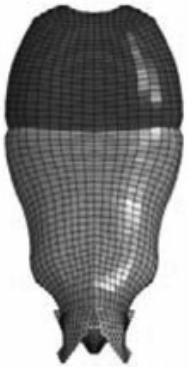
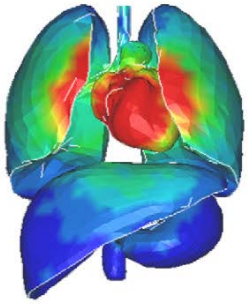
Multiple anthropometries and increased solution speed are needed

- **Applying discrete levels of fidelity provide I-PREDICT with increased technical capabilities by allowing the model to maintain accuracy while increasing computational speed**
- **Including morphing and posturing technologies increases the technical capability of I-PREDICT**



adapted from Schwartz et al 2015



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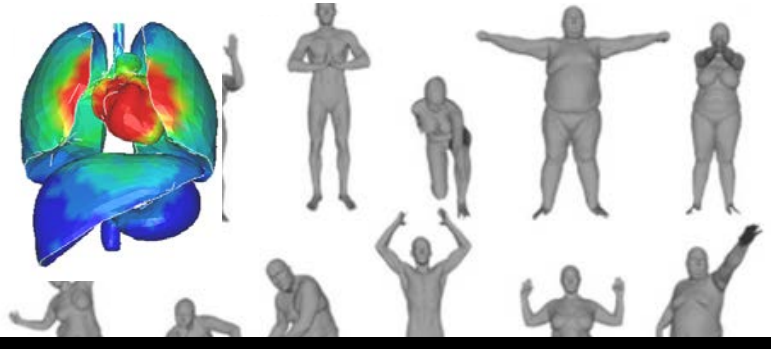
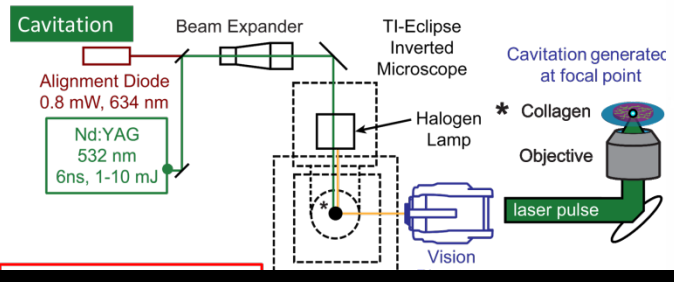
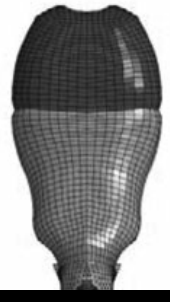
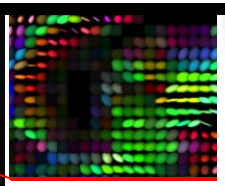
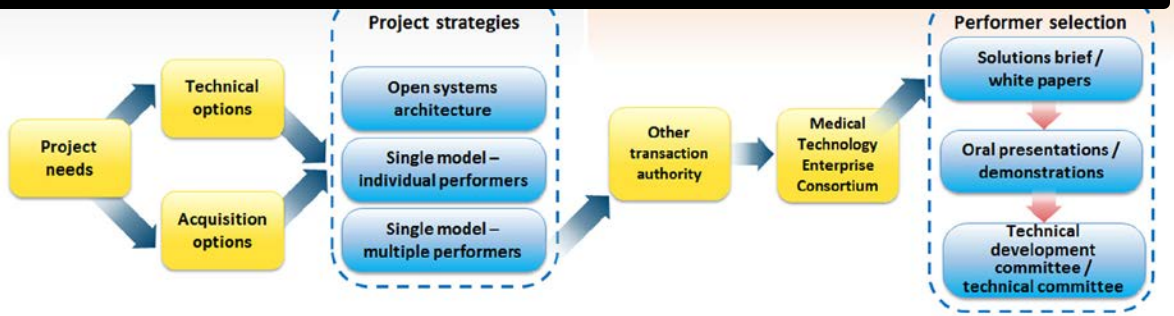






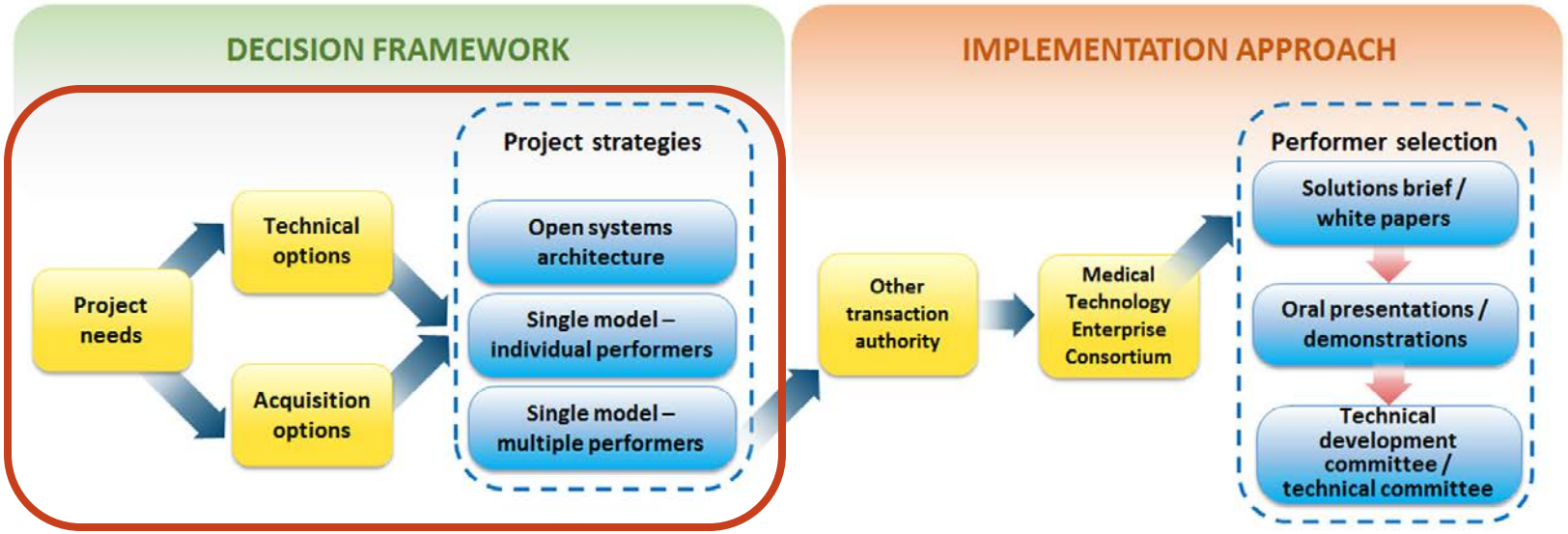
A methodology was developed for aligning a project strategy with the technical needs and a cutting-edge acquisition approach allowing the project to manage technical complexity, maintain acquisition flexibility, and ensure delivery of a TRL-6 computational model.





Decision framework and implementation strategy were established

- **Technical Considerations:**
  - Leadership Structure; solvers; anatomy; variations in anthropometry; interfaces between component pieces; variations in component fidelity; test harness
- **Acquisition Considerations:**
  - Flexible contracting; source selection; incentives; intellectual property



Acquisition options were aligned with the project strategies

Open Systems Architecture Approach

Acquistion Options

Contracting	ID/IQ
	C Contract
	Other Transaction Authority
	BAA
	Existing Vehicle
Soure Selection Evaluation	White paper / Paper proposal
	Oral proposal /Demonstration
	Challenge Event
	Combination
Incentive	Cost plus fixed fee
	Cost plus incentive fee
	Time and materials
	Firm fixed price
	IP licenses
	Combination
Intellectual property	Restricted proprietary model
	Open competitive model

Single Model – Individual Performer Approach

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Single Model – Multiple Performer Approach

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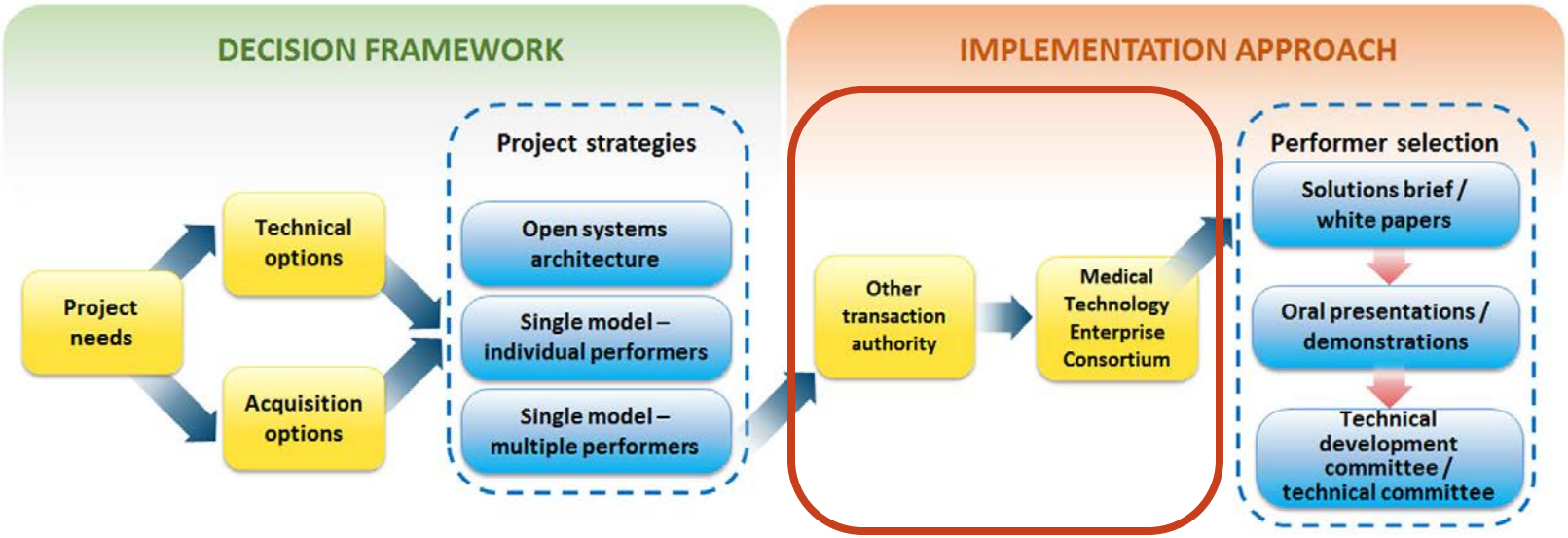
Single model – multiple performer approach achieves technical needs and allows program flexibility

- **Open Systems Architecture Approach:**
  - A technical architecture that adopts open standards supporting a modular, loosely coupled, and highly cohesive system structure that includes the publishing of key interfaces within the system and relevant design disclosure.
- **Single Model – Individual Performer Approach**
  - A single performer executing or sub-contracting all of the tasking related to the development of the I-PREDICT FNC
- **Single Model – Multiple Performers Approach**
  - A consortium of performers executing explicitly defined tasking to deliver the I-PREDICT FNC using an Other Transaction Authority (OTA) as the contracting vehicle
- **3 Phase Acquisition Process**
  - Phase I: White Paper
  - Phase II: Oral Presentations / Demonstration
  - Phase III: RFP with Technical Development Committee Refinement

Decision framework and implementation strategy were established

- **Other Transaction Authority:**
  - Maximizes flexibility and responsiveness for technically complex government research or prototyping requirements
- **Medical Technology Enterprise Consortium (MTEC):**
  - An OTA that is a collaboration between industry, academia, and the Government to enable biomedical research



Other Transaction Authority (OTA) Definition and Requirements

- **OTA is:**
  - Exempt from many provisions of the FAR
  - A legally binding instrument
  - Similar to a commercial-sector contract
- **OTA is NOT**
  - A standard procurement contract, grant, or cooperative agreement
  - Protestable
- **OTA Key Requirements:**
  - Must be for development of a prototype
    - Can be analysis, process improvement, and/or hardware/software
    - Follow-on production is now acceptable
  - Must be directly relevant to enhancing mission effectiveness
  - Must address at least one of the OTA Technology Objectives
  - Must meet one of the following conditions:
    - Non-traditional Defense Contractor (NDC) participating to a significant extent
    - One-third cost-share requirement for Traditional Defense Contractors

OTAs have significant benefits beyond standard FAR based contracts

- Projects under $50M can be obligated and awarded in 90 days
- Ability to reach innovators in Small Business and Non-Traditional Defense Contractors
- Flexibility in crafting Intellectual Property provisions
- Promotes Public/Private cooperative relationships
- Government program managers retain total project management control
- Project payments are made based on measurable milestone achievement
- FAR and other regs not applicable
- Can implement innovative business models
- Flexible and efficient … can use best parts of current process to establish some discipline, reporting requirements
- No mandatory Cost Accounting Standards or certified cost/pricing data
- “Baskets” for proposals – Gives offerors additional bites at the apple during the same solicitation cycle

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What is a Consortium?

- **Generic** - An association of two or more individuals, companies, organizations or governments (or any combination of these entities) with the objective of participating in a common activity or pooling their resources for achieving a common goal.
- **Specific** - An "enterprise partnership" between the Government and a consortium of technology developers/providers in a specific domain where….
  - The "Government" partner can be a single sponsor (program executive officer) or multiple sponsors coordinated through a lead agency
  - The "Consortium" partner is a group of for-profit, not-for-profit and/or non-profit companies, universities and other academic research organizations having competence in the technical domain of interest
- The parties are connected through a binding "contract-like" instrument called an "Other Transaction" that operates outside the FAR

Medical Technology Enterprise Consortium (MTEC)

- **Operates an OTA with the U.S. Army Medical Research and Materiel Command (USAMRMC)**
- **Used for the development of prototypes**
- **I-PREDICT falls under two of the 6 technology areas of interest**
  - **Military Operational medicine** – *"Develop effective countermeasures against stressors to maximize health, performance, and fitness. This includes injury prevention and reductions, … and environmental health and protection"*
  - **Medical training and health information sciences** – "*Develop products and processes that increase patient safety and quality of care through simulation-based technologies … to include … decision support tools and physiological models*"

Documentation Requirements for Joining MTEC

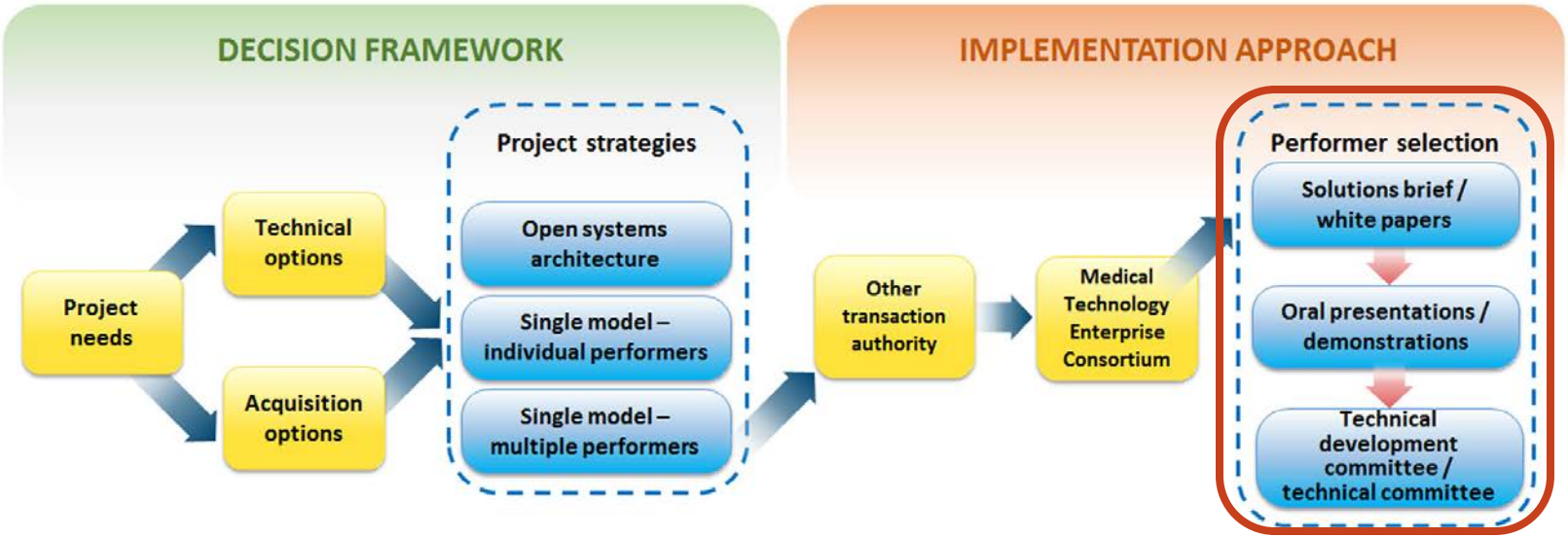
MTEC
Medical Technology Enterprise Consortium

- **Department of the Treasury Interagency Agreement (2700a Instructions and 2700b form)**
- **ONR Inter-Service Support Agreement (DD1144)**
- **Department of the Navy General Terms & Conditions (GT&C)**
- **Annual Contracting / Assistance Agreement Workload Estimate**
- **pOTA – Project description overview for approval and acceptance by MTEC**
  - Clearly define the prototype and collaboration plans
  - Detailed requirements for the MTEC solicitation
  - Funding Plan and any specific cost-share or private funding requested
  - Evaluation Plan; criteria and plan for whitepaper/proposal evaluation
  - Project management plan with a Sponsor Office Technical Representative (SOTR); who will manage your MTEC projects?
  - End Game; what's your end goal with your requirement and MTEC? Any follow-on actions?

Decision framework and implementation strategy were established

Performer selection

- Solutions brief / white papers
- Oral presentations / demonstrations
- Technical Development Committee / Technical Committee



Phase I: Request for White Papers

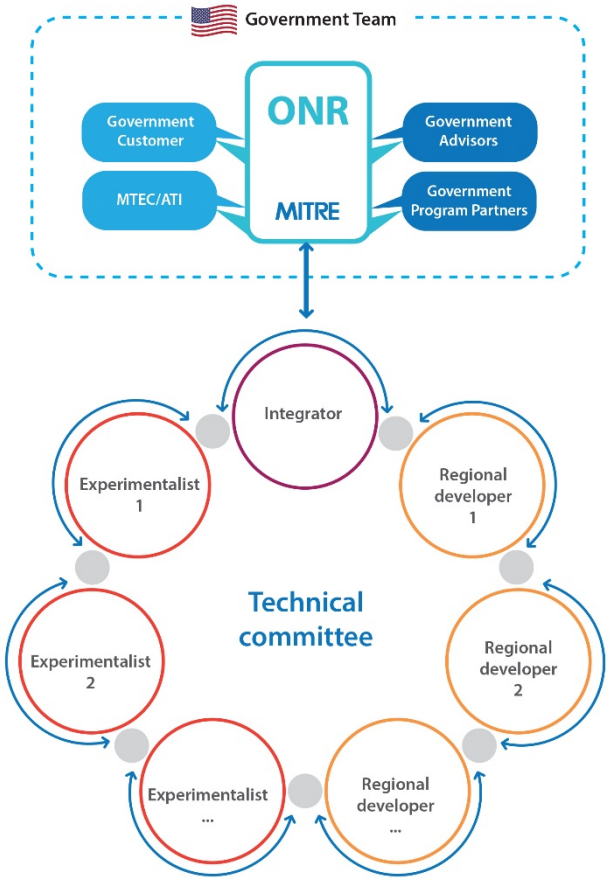
- **Technical Approach in Request for White Papers:**
  - Experimental work
  - Regional model developers
  - Whole-body model integrator
  - Software tools used to posture and morph models
  - Development of pre- and post-processing tools
  - Delivery of a Computer Aided Design (CAD) anatomy
- **Acquisition Approach in Request for White Papers:**
  - Six technical needs, Offerors can propose against multiple
  - Evaluations will be used for down selection to Phase II
  - Three factor evaluation:
    - Cost sharing
    - Technical benefit
    - Technical collaboration

Phase II & Phase III

- **Phase II – Oral Presentations / Demonstrations**
  - Presenters will provide an oral presentation of capabilities outlined in their White Paper.
  - Following receipt of the invitation to participate, Presenters will be given 2 days to ask questions. Presenters will also have 7 days to respond to questions asked during their presentations.
  - A participation stipend will be provided for each presenter.
  - Selected Presenters progress to phase three, becoming Finalists and members of the program Technical Development Committee.
- **Phase III – Technical Development Committee**
  - Members will be required to attend a Technical Development Committee kick-off meeting in the Washington DC area.
  - These Finalists will provide direct technical input on the RFP to ensure that the scope of the I-PREDICT project can reach the desired end state in the time frame allotted.
  - Stipends will be provided to all Phase 3 Finalists for their participation.
  - The Finalists who have made it to Phase 3 will develop proposals, statements of work, and cost proposals against the RFP for evaluation by ONR.

Use of a technical committee allows project to leverage extensive expertise

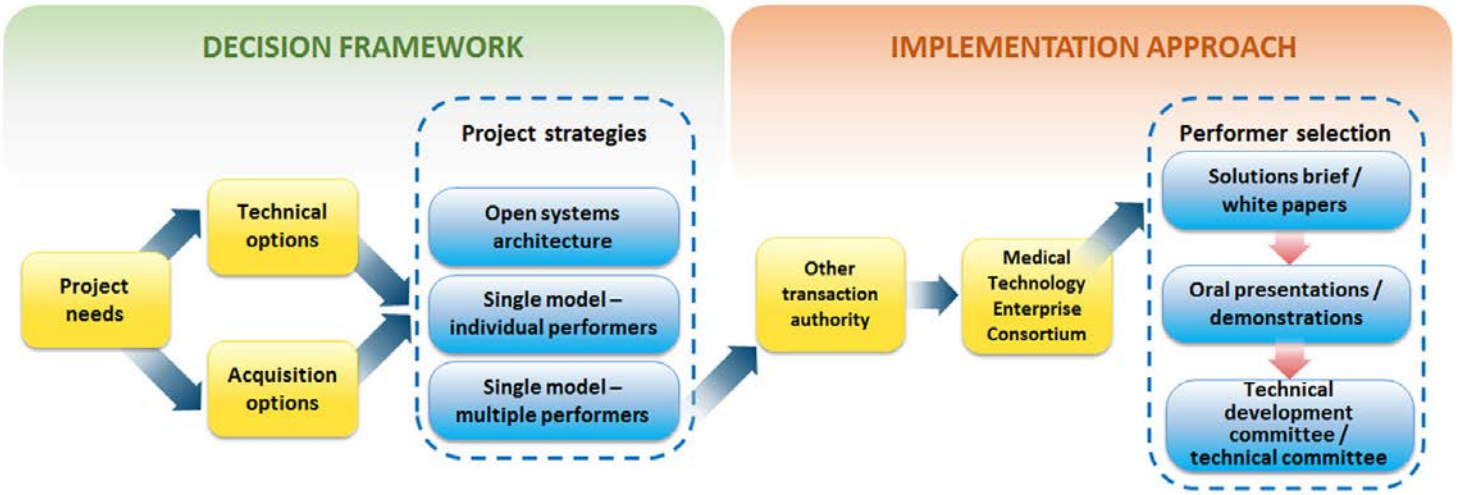
- **Use of the Technical Committee allows the project to leverage expertise across industry and academia while promoting communication among multiple performers**
- **Increased communication will result in a model with improved technical capabilities**
- **This approach has been used successfully in a previous industry/academia collaboration**



Methodology is tailorable and repeatable to provide benefits Government-wide (1/2)

1. **Strategy brings acquisition and technical expertise to bear in a collaborative partnership *(not in an arms length, stove-piped manner)***

2. **Permits ONR to leverage the MTEC OTA for future Medical Technology prototyping**
   - Provides access and flexibility for collaborative research and development beyond Broad Agency Announcements



Methodology is tailorable and repeatable to provide benefits Government-wide (2/2)

3. **First of its kind acquisition approach**
   - Three phased strategy that includes white papers, oral proposals, and a Technical Development Committee to collaboratively develop the RFP

4. **Streamlines the acquisition process thereby reducing acquisition lead-time and delivering solutions to the Warfighter faster**

http://www.nature.com/news/2008/080611/full/453840a.html

5. **Strategic combination of acquisition and technical expertise coupled with a streamlined and innovative acquisition process provides a bridge over the *"valley-of-death"***