



Science and Technology Development

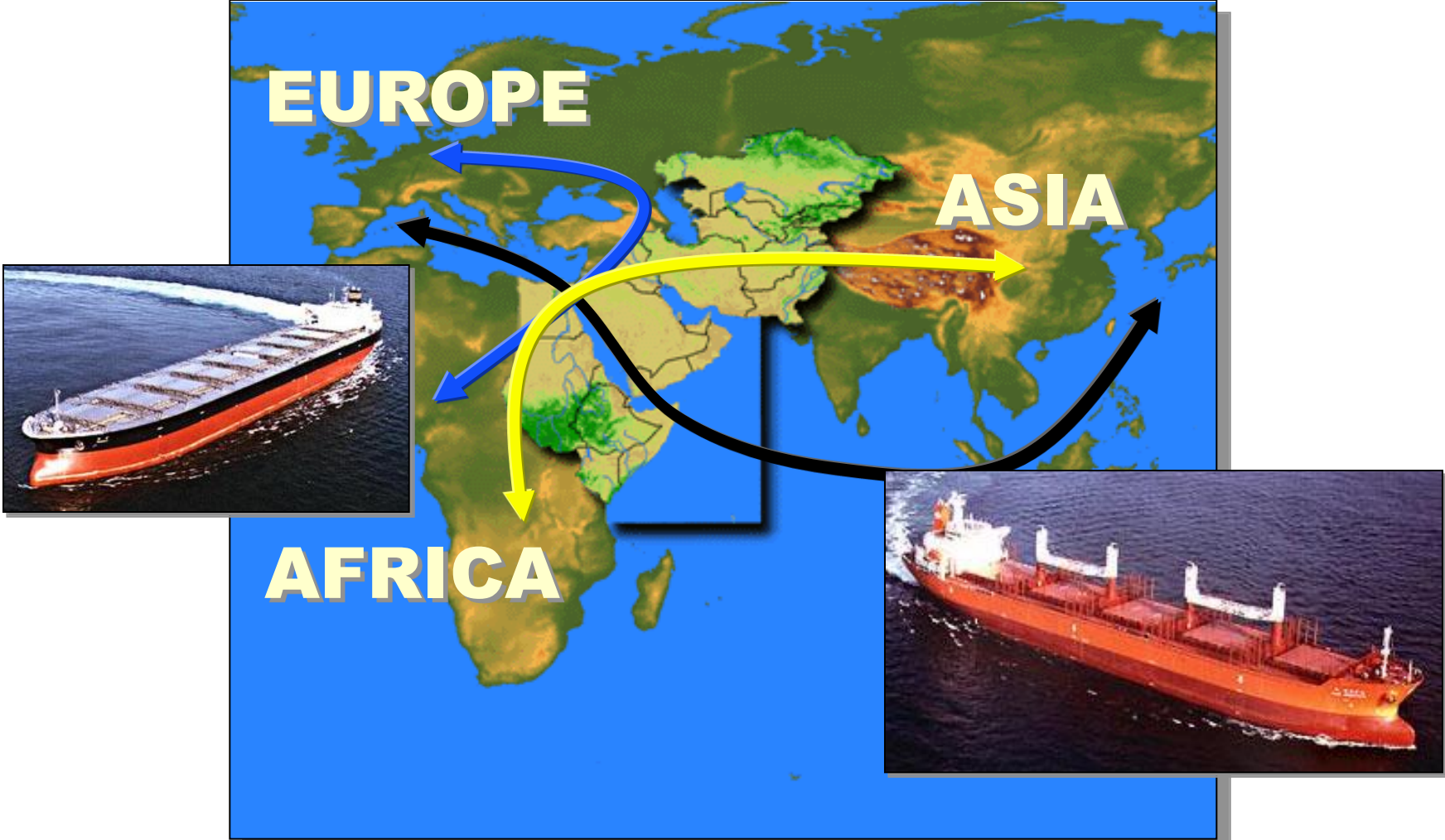
From the Combatant Command Perspective

Where we fit in with the rest of the COCOMs



Central Region

Crossroads of Three Continents



Strategic Interests & Mission

- **Security of the U.S. citizens & the U.S. Homeland**
- **Regional stability**
- **International access to strategic resources, critical infrastructure, & global markets**
- **Promotion of human rights, rule of law, responsible & effective governance, & broad-based economic growth & opportunity**

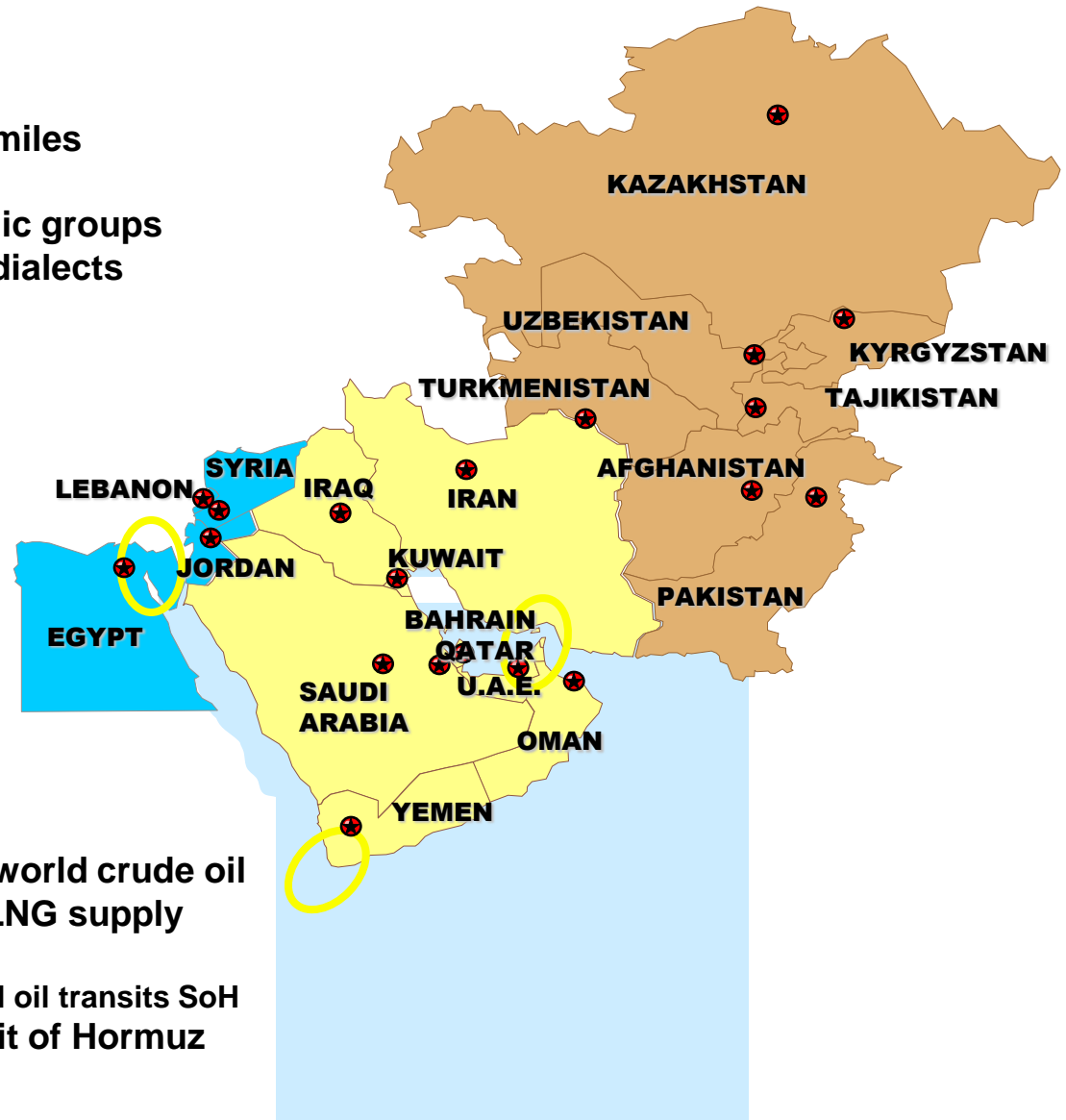
With our national & international partners CENTCOM will:

- **Promote security & cooperation among nations**
- **Respond to crisis**
- **Deter & defeat state and non-state aggression**
- **Support development & reconstruction to establish conditions for regional security, stability, & prosperity**

CENTCOM - Area of Responsibility

Complex

- 20 Countries, 4.5 million square miles
- 1.1 Million square miles of ocean
- 531 Million people, 16 major ethnic groups
- 7 Major languages, hundreds of dialects
- 4 Major religions



Global Economic Impact

- Arabian Gulf produces ~ 31% of world crude oil
- Region exports ~ 26% of global LNG supply
- 3 x Strategic Choke Points
 - Appx 40% internationally traded oil transits SoH
 - 21% of LNG goes through Strait of Hormuz

Vision – We seek a region:

- **At peace with itself & its neighbors**
- **Focused on common security & cooperation**
- **With stable governments responsive to the needs of the people**
- **With economic development that advances the population's well being**
- **Free of nuclear weapons & where nuclear energy use is verifiable & for peaceful purposes**
- **With unhindered international access to strategic resources, critical infrastructure, & global markets**
- **Which does not allow the safe haven of extremists which threaten Americans or our friends & allies**

Challenges

- **Lack of progress in the Middle East Peace Process**
- **Extremist ideological movements & militant groups**
- **Proliferation of WMD**
- **Ungoverned, poorly governed, & alternatively governed spaces**
- **Terrorist & insurgent financing & facilitation**
- **Piracy**
- **Ethnic, tribal, & sectarian rivalries**
- **Disputed territories & access to vital resources**
- **Criminal activities: weapons smuggling, narcotics, human trafficking**
- **Uneven economic & employment opportunities**
- **Lack of regional & global economic integration**

Priority Tasks for CENTCOM

- **Reversing the momentum of the insurgency in Afghanistan**
 - **Regain the initiative**
 - **Restore public confidence in the GoA**
- **Maintain kinetic / non-kinetic pressure against threats to National security and our Allies**
- **Expand our partnership with Pakistan**
 - **Support their operations against militants**
 - **Assist in developing their counterinsurgency capability**
- **Counter malign Iranian activities & policies**
- **Counter proliferation of WMD & build partner capacity to prevent and/or respond to WMD events**
- **Bolster military & security capability of our regional partners**
- **With our partners counter piracy, illegal narcotics, & arms smuggling**
- **Ensure responsible expenditure of funds**
- **Reduce strain on the force & the cost of our operations**

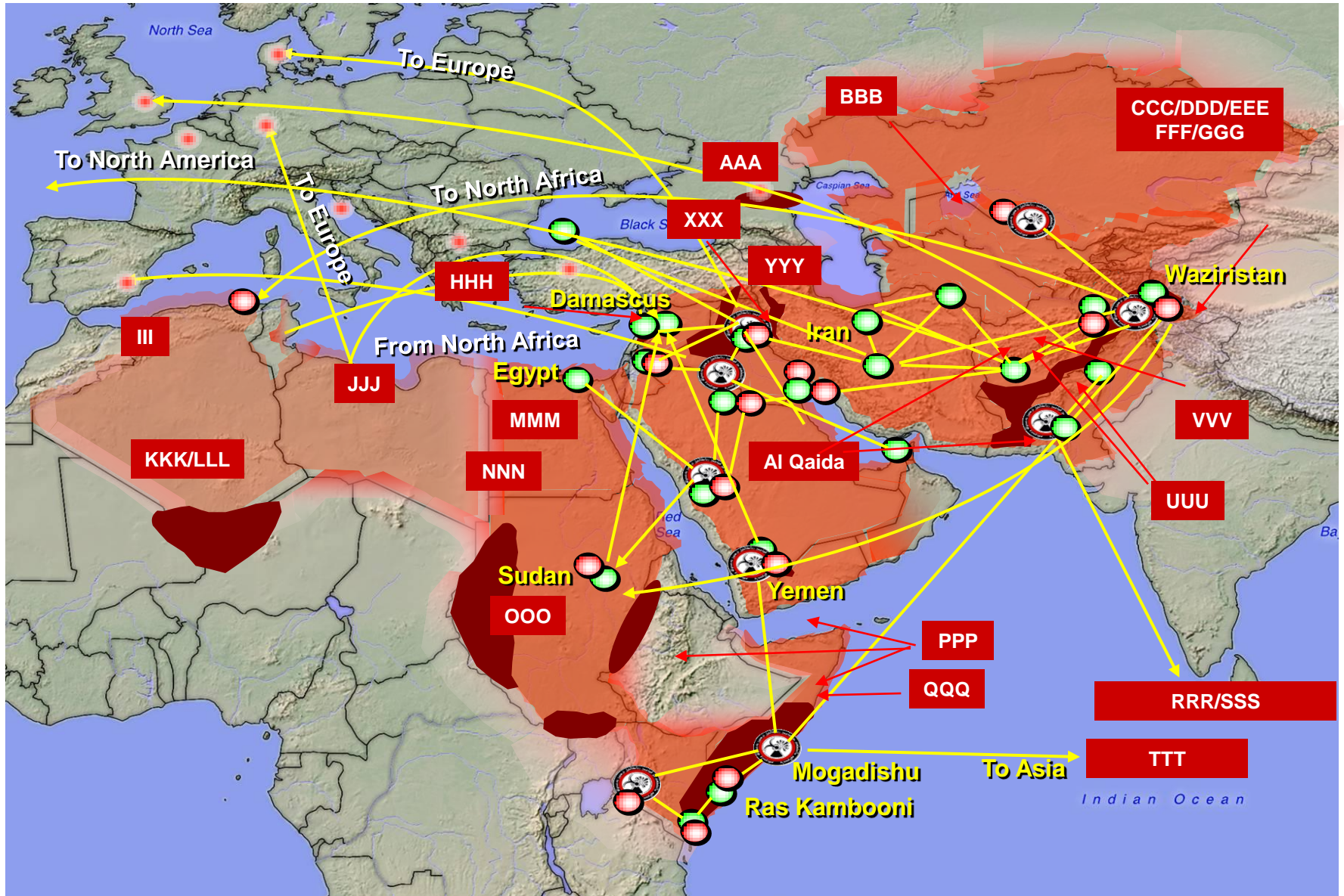
Major Activities

- **Defeat al-Qaeda & associated movements**
- **Deny sanctuary & support for violent extremist groups**
- **Counter proliferation of WMD & associated technologies**
- **Deter & counter state-based aggression & proxy activities**
- **Support peaceful resolution to long-standing conflicts**
- **Build bi-/multi-lateral partnerships**
- **Develop partner nation capacity**
- **Assist nations in their ability to protect their critical infrastructure & support robust infrastructure development**
- **Bolster at-risk states**
- **Respond to humanitarian crisis**
- **Counter arms smuggling**
- **Protect freedom of navigation**

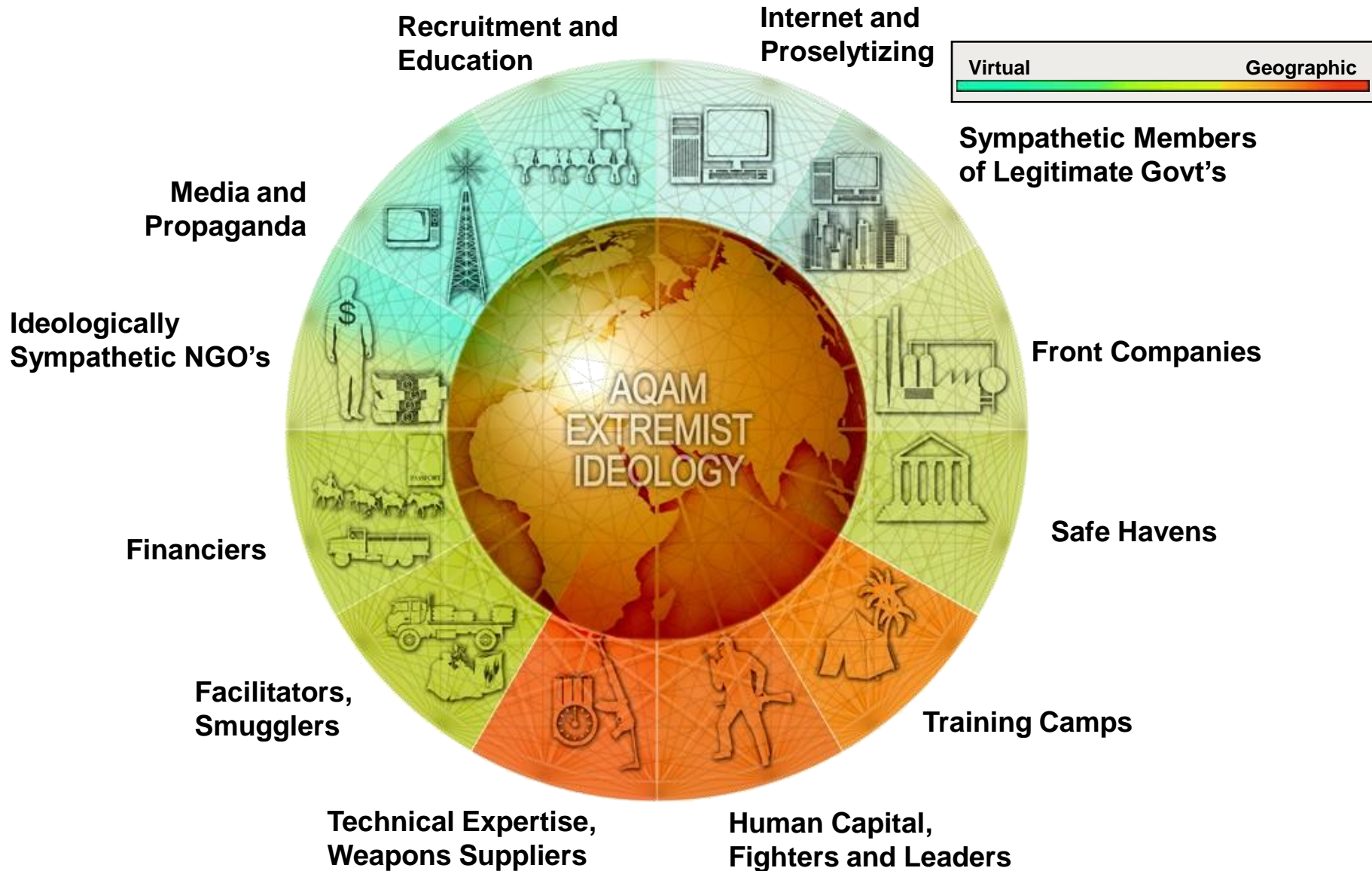
The Nature of the Enemy

- A network guided by ideology
- Amorphous worldwide network which operates as a web of cells
- Fueled by militant Islamic zeal
- Anti-Zionist
- No state boundaries
- Powerful virtual element
- “Virtual Caliphate” - All directed toward the eventual establishment of a pan-Islamic state - the “Physical Caliphate”
- Seek safe-havens, physical footholds for recruitment, training, financing, and propaganda initiatives which complement its virtual element
- Well financed and has a simplified acquisition/training/fielding strategy

Al Qa'ida and Associated Movements (AQAM)



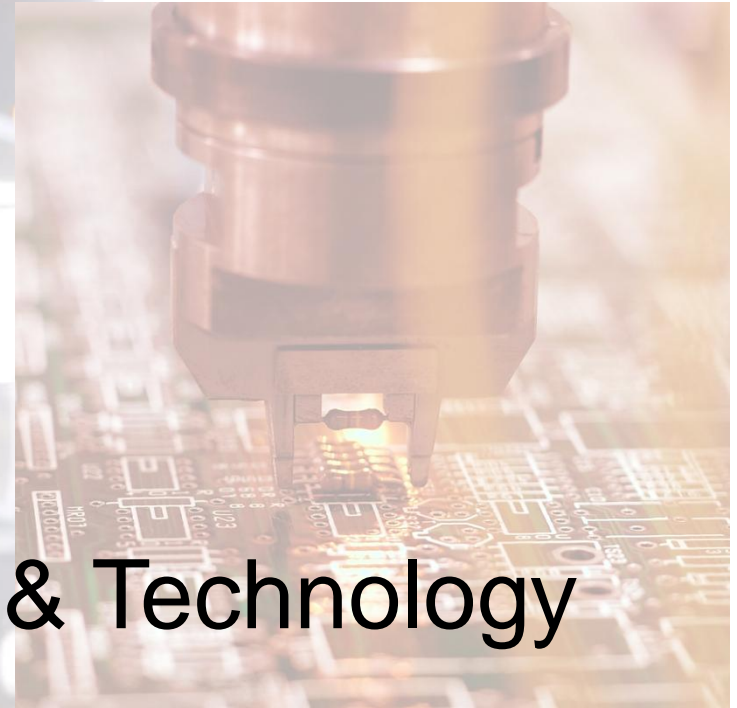
AQAM: A Threat in All Realms



It Takes a Network ... To Defeat a Network



The Role of Science & Technology



Charter

Conduct ***discovery, research, analysis***, and ***sponsor development*** of new and emerging technologies which have the ***potential to provide material solutions*** to Headquarters and Component validated Joint needs.

Review USCENTCOM and Component ***plans, operations***, programs, policies and activities for areas where technology will improve efficiency and effectiveness.

Integrate across USCENTCOM headquarters and Component staffs for transformational, integrating, and experimentation activities.

What we do

- **Technology discovery, research & analysis, and inform the staff & OSD on promising initiatives**
 - **Attend technology symposiums / reviews**
 - Service Labs, DARPA, FFRDCs
 - Private industry & Academia
 - **Conduct global market research**
 - **Provide initial feasibility / technical merit on proposals**
- **Needs pull**
 - **Conduct HQ USCENTCOM Leadership, Directorate, & Component outreach**
 - **Participate in planning, operations, & exercises**
 - **Review submissions from the requirements generation processes for technology needs to support the Warfighter**
- **Operationally Manage technologies we sponsor**
- **Participate in limited objective experiments**

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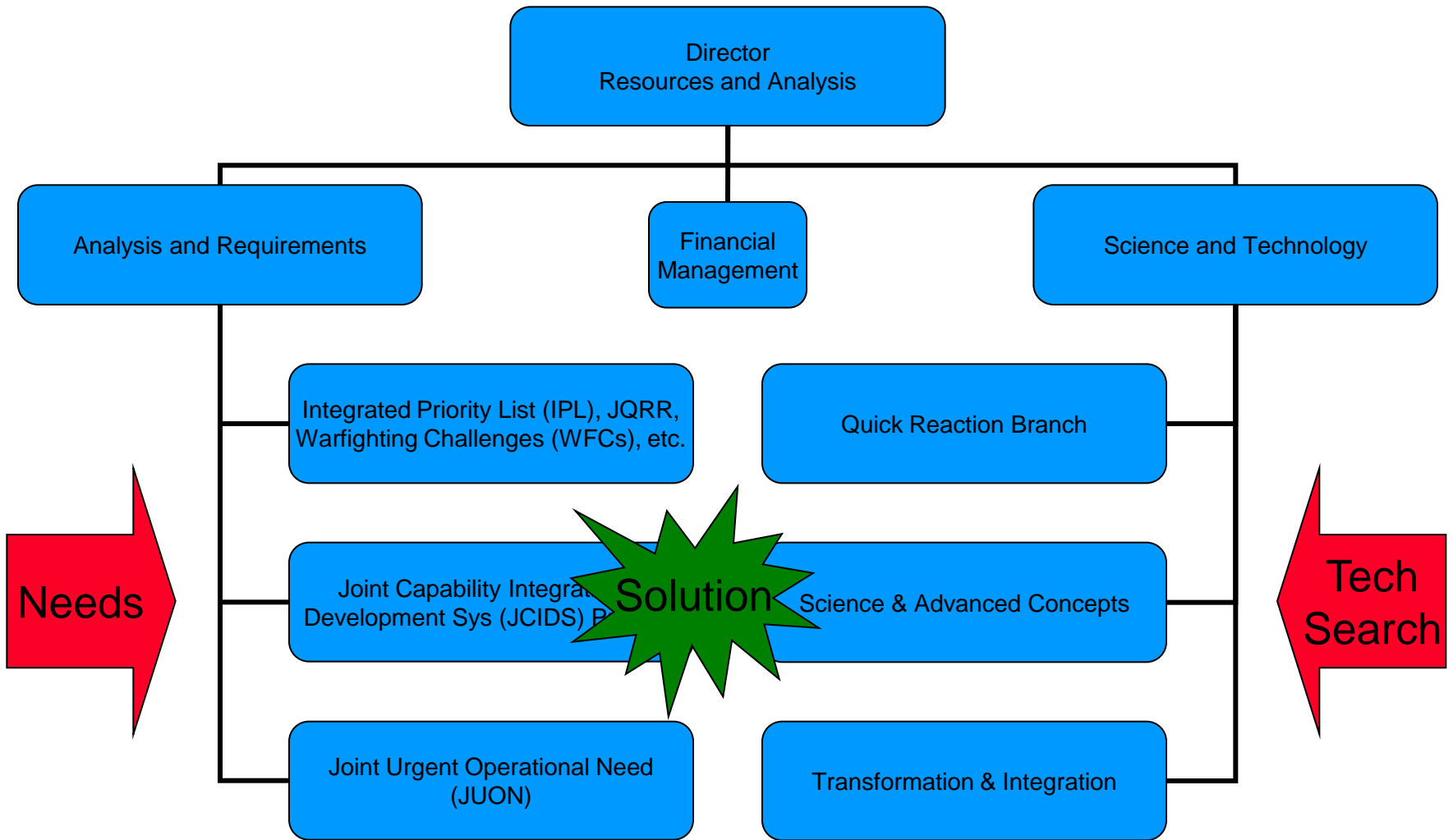
JCTD OPS Mgrs

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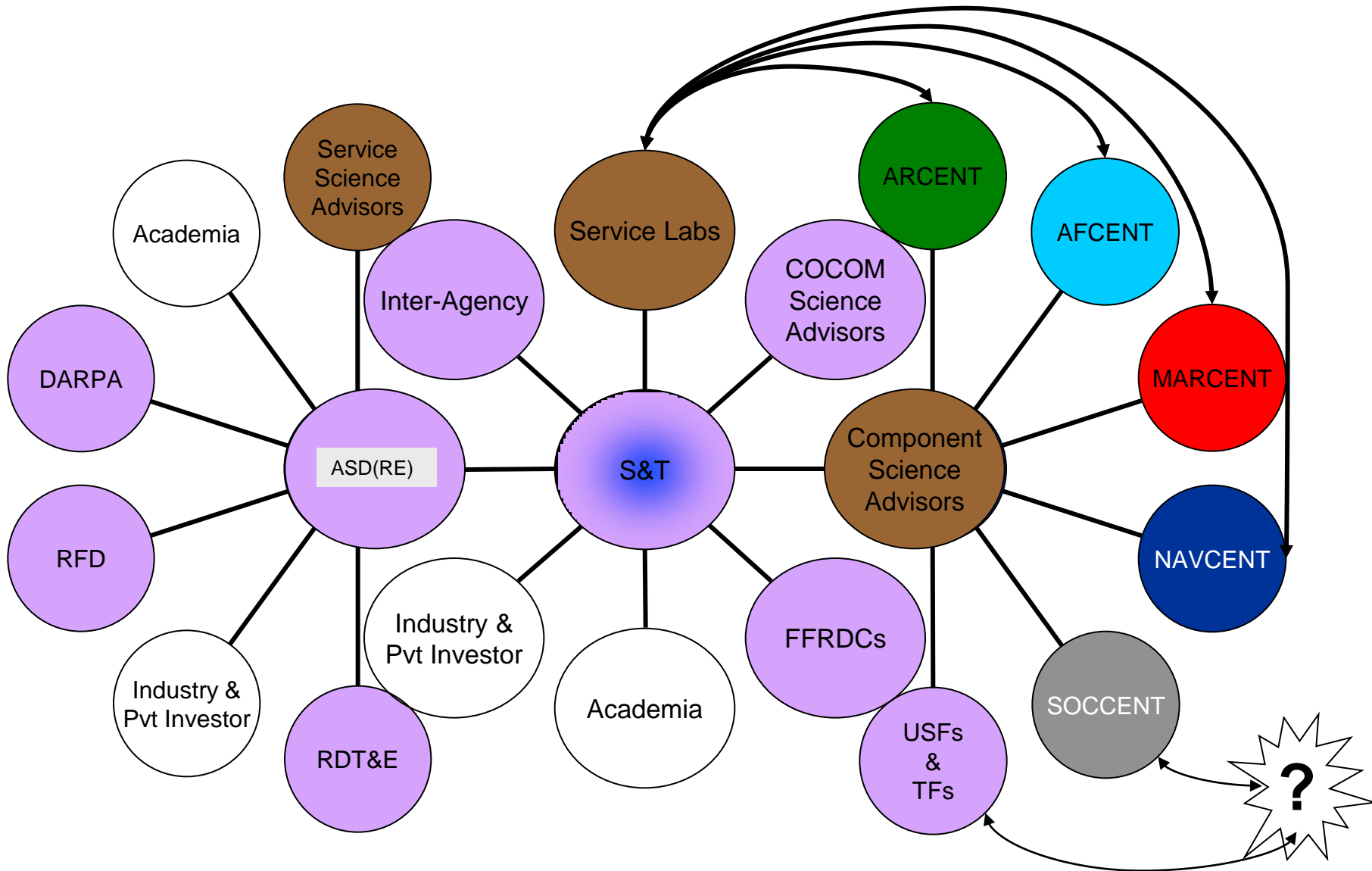
COTS
GOTS

Joint Test & Experimentation Branch
Dan Calderala GS14/IPA

The Far Side



How we connect



U.S. Central Command Tech Focus

- We focus on the **JOINT** solution that has the potential to satisfy a **JOINT validated** need
- Separate from the many technology needs of our customer(s) those technology challenges which:
 - *Do not have a readily available solution*
 - For high-impact needs there is *insufficient activity pursuing a solution*
- Seek out game-changing technologies which our customer(s) don't know they need

Some technology areas we “pursue”:

- **Detection of CBRNE at tactically significant distances; with emphasis on the “E”**
- **Pre-shot counter-sniper, counter-mortar, counter-RPG technologies; with emphasis on automated systems**
- **Technologies which enable the transfer of information more securely, more quickly, to a wider set of users, to include the warfighter when it makes sense, with less bandwidth and dedicated support resources, e.g.:**
 - **Multi-level Security over single architectures**
 - **Bandwidth compression / reduction techniques**
 - **Data reduction [data=>info=>knowledge=>understanding=>wisdom]**
- **Through automation, remote action, new and novel techniques, technologies which reduce risk and / or stress on the force and / or improve the efficiency and effectiveness of our action(s)**
- **Technologies which allow for greater persistence over the battlespace with fewer platforms; employing improved sensor technology providing greater fidelity of information**

Common thematic areas of concern

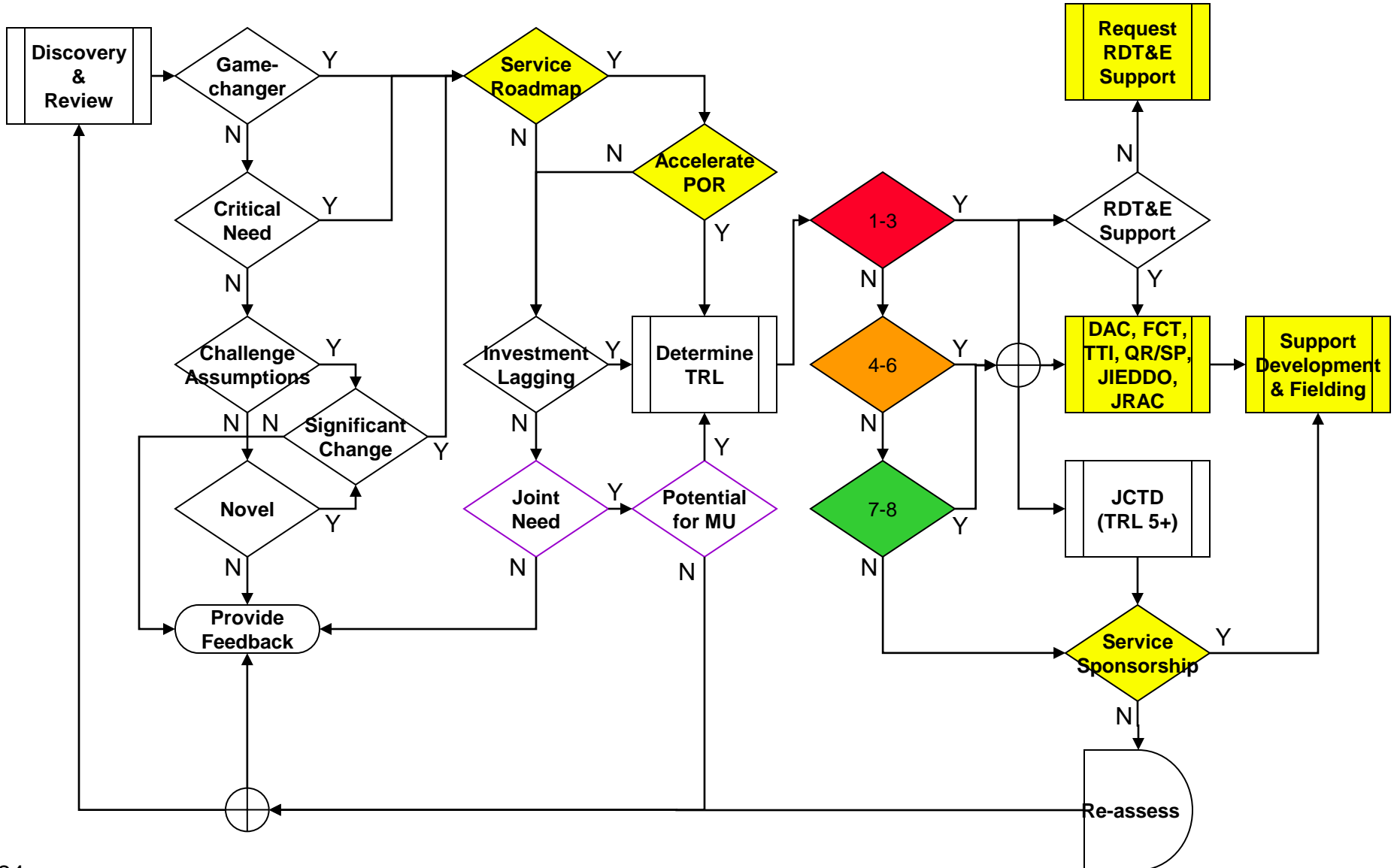
(not in priority order)

- **Detect / Defeat:**
 - IED initiators / initiator systems
 - Buried / concealed IEDs
 - Production and assembly of IEDs
- **HME production standoff detection**
- **Culvert access denial / alerting**
- **Persistence in surveillance**
- **Biometrics**
 - Identity dominance
 - Force protection / access
- **Non-lethal vehicle / vessel stop**
- **Reduce stress on the force:**
 - Force Protection requirements
 - Increased automation
- **Anti-swarm lethal / non-lethal**
- **More efficient / effective / timely trng**
- **Predictive analysis techniques**
- **Voice to text technologies**
- **C4ISR systems:**
 - Info sharing between system
 - Multi-level security
 - Cross domain solutions
 - Faster ... Better sorting / retrieval
 - On the move w/ GIG access to tactical edge
 - SATCOM, WiFi, WiMax, etc.
- **Tagging, Tracking, and Locating (TTL)**
- **Lightweight “x” with greater “y”**
- **More power per unit of weight**
- **Scalable effects – non-lethal to lethal**
 - Directed Energy
 - Kinetics
- **True SA for Blue ... Fused Red**
- **Sustaining the force – reduced size, weight, amount, and retrograde**
- **Holding all targets at risk**
- **Any sensor ... any shooter; the Soldier as a sensor; any adversary ... any battlespace ... anytime**

What would the battlespace be like if ...

- **Bandwidth could be made irrelevant**
- **Concealed / buried explosive material could be detected at significant distances**
- **Tagants in dual-use items used to make homemade explosives when combined cause the mixture to inert**
- **Intent could be pre-determined**
- **A two-way certified cross-domain exchange was available**
- **Warfighter equipment drew its power from the environment (day or night); making power storage devices optional**
- **Aural simultaneous two-way translation into any language was available in a miniature form-factor**
- **...**

Technology Review Process



When proposing a solution ... The Heilmeier Questions ... adapted

- **What are you trying to do?**
 - **Articulate your objectives using absolutely no jargon**
- **Who should care?**
- **How is it accomplished today?**
- **What are the limits of the current practice?**
- **What is new in your approach?**
- **Why do you think you will be successful?**
 - **How do you define / measure success?**
 - **What is your strategy to get there?**
- **How long will it take and at what cost?**
- **What are the risks?**
- **What is your risk reduction / mitigation strategy?**
- **What are the payoffs / return on investment?**

For Technology Developers Some Points to Consider

- **Seek to understand how your solution fits in the overall DoD system of systems**
 - Integrate with legacy systems vice replace them
 - Open architectures receive higher interest / support
- **Consider partnering with others to bring a ‘greater’ solution to the table - system best-of-breed vice at the component level**
- **Determine your relative impact to a program of record**
 - Training
 - Initial fielding
 - Sustainment
- **Substantiate your position with data**
 - Testing
 - Cost-benefit analysis

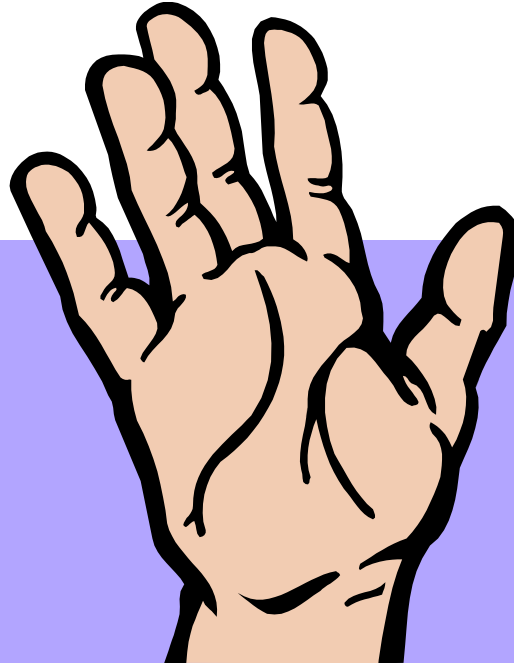
We are Venture Capitalists without any Capital. When a promising technology is discovered, we:

- **Seek OSD / Joint Staff / Service support for funding ***
 - Service programs of record (PORs)
 - Joint Rapid Acquisition Cell (JRAC)
 - Joint IED Defeat Organization (JIEDDO)
 - Quick Reaction Funds (QRF)
 - Rapid Reaction / New Solutions (RR/NS)
 - Force Transformation / Operational Experimentation (FT/OE)
 - Operational Test and Evaluation (Joint Tests & Quick Reaction Tests)
 - JFCOM Limited Acquisition Authority (LAA)
 - Defense Acquisition Challenge (DAC)
 - Technology Transition Initiative (TTI)
 - Foreign Comparative Testing (FCT)
 - Combatant Commander Initiatives Fund (CCIF)
 - Defense Venture Catalyst Initiative (DeVenCI)
- **For those technologies we desire to “sponsor”**
 - Assist the Headquarters and Components in the development of technical proposals to satisfied identified needs
 - Provide oversight management to get the technology into the hands of the Warfighter

* Not an all-inclusive list

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Raise your Hand

