How Technology Has Changed Today's Warfight

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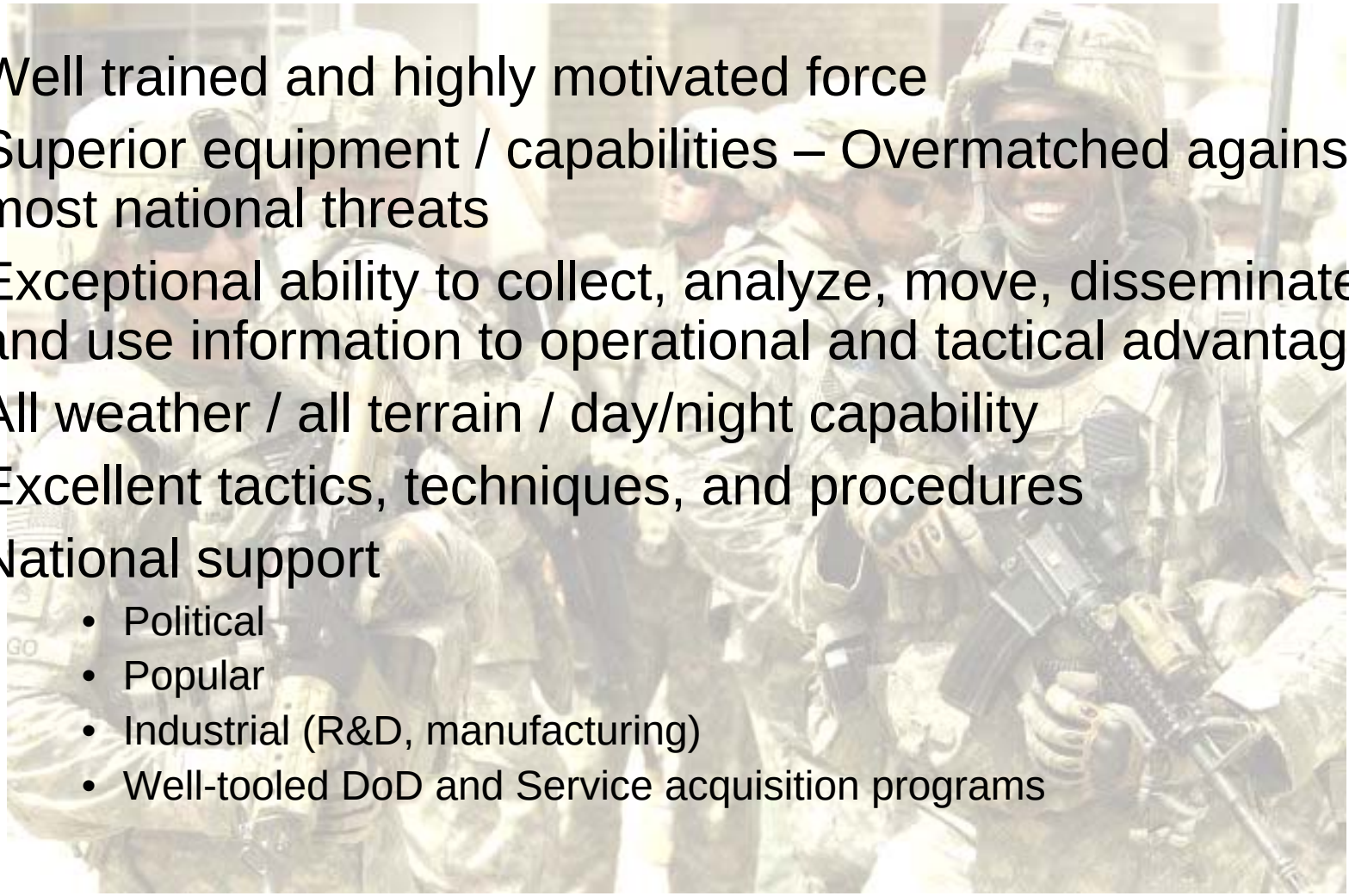
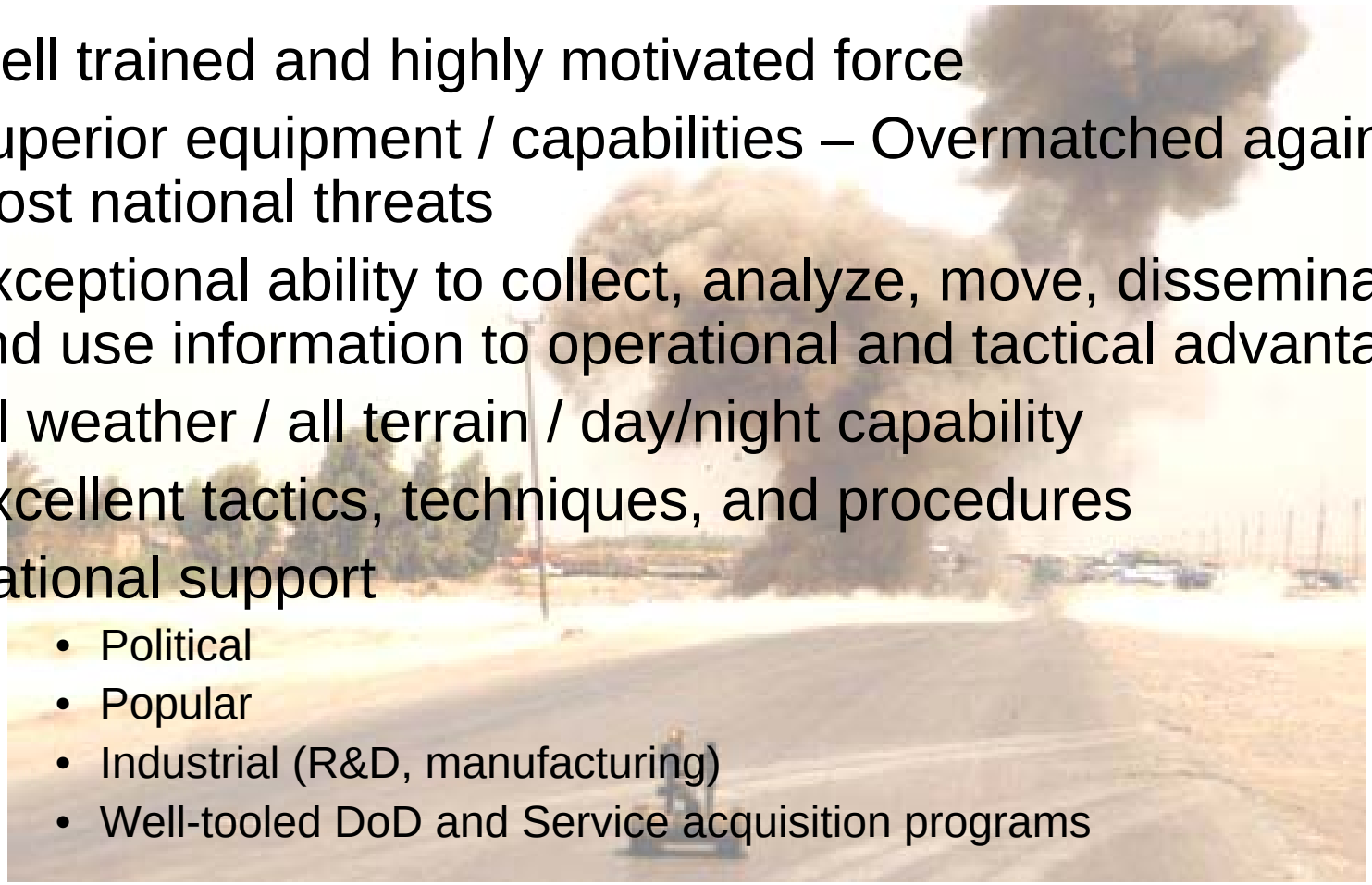
Pre-9/11 U.S. Military Strengths



- Well trained and highly motivated force
- Superior equipment / capabilities – Overmatched against most national threats
- Exceptional ability to collect, analyze, move, disseminate, and use information to operational and tactical advantage
- All weather / all terrain / day/night capability
- Excellent tactics, techniques, and procedures
- National support
  - Political
  - Popular
  - Industrial (R&D, manufacturing)
  - Well-tooled DoD and Service acquisition programs

Post-9/11 U.S. Military Strengths



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If nothing has changed, why are we having so much difficulty in our current operations?

Marty's Opinion

Post-9/11 U.S. Military Strengths

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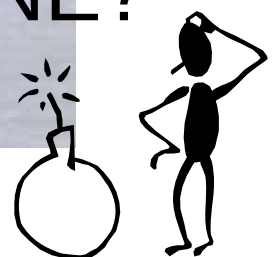
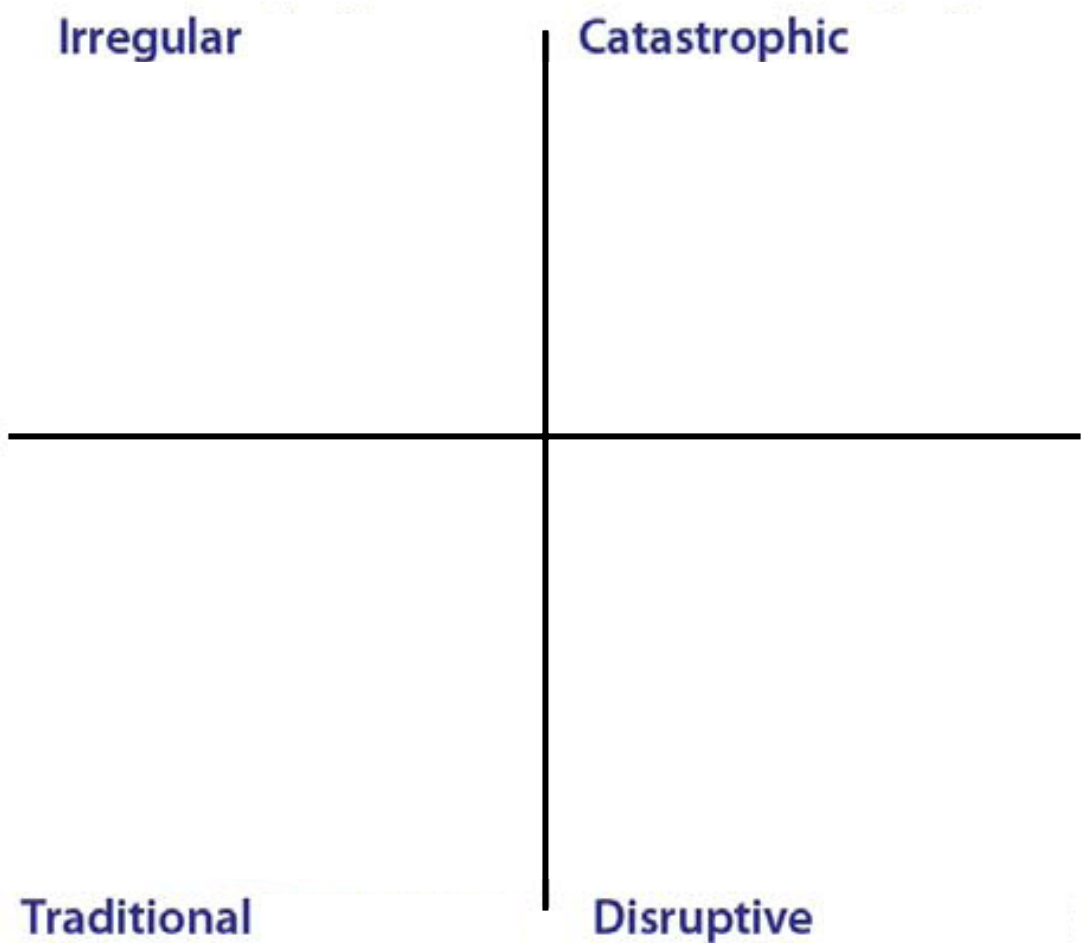
national

and …

Shinny Toys / Big Bets

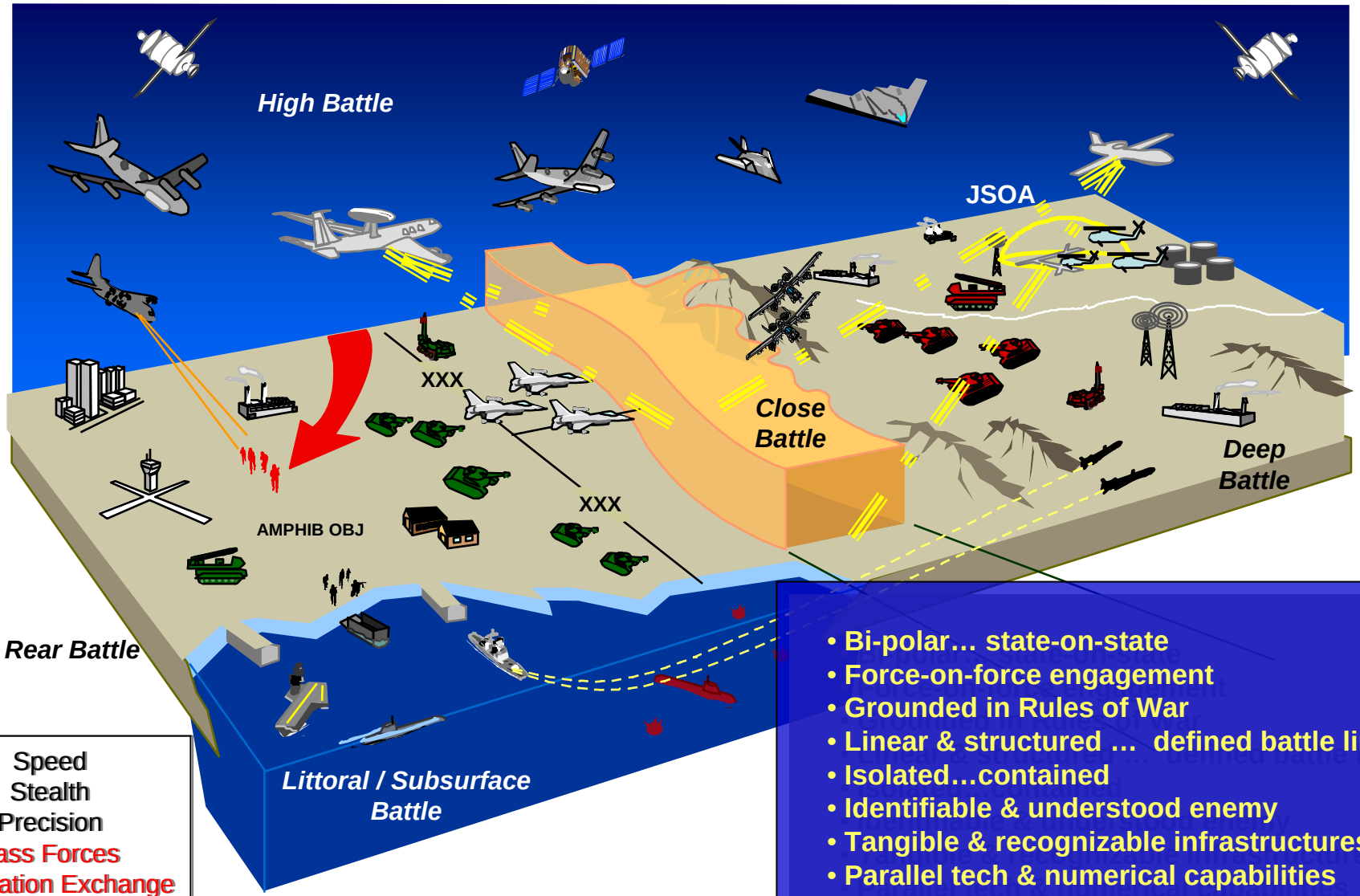
- Rallied behind the gee-wiz projects
  - [create your own list]
- Focused on WMD
  - In particular, CBRN with
  - RN as the emphasis
- Not necessarily bad … if you're going after a 'national-level' threat
- Also, what happened to the "E" in CBRNE?





2006 QDR Report

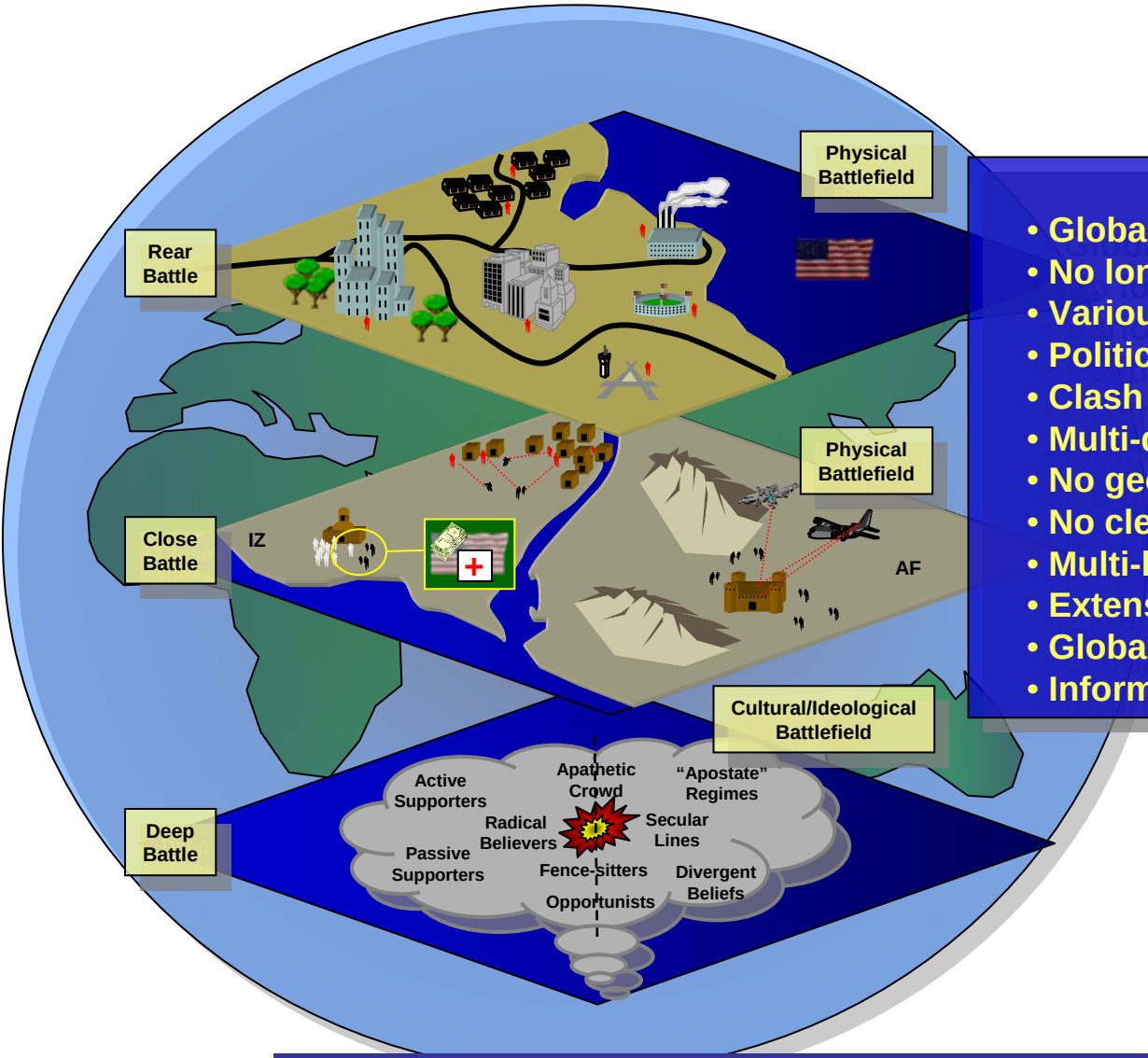
Yesterday's Battlefield…3GW



- Bi-polar… state-on-state
- Force-on-force engagement
- Grounded in Rules of War
- Linear & structured … defined battle lines
- Isolated…contained
- Identifiable & understood enemy
- Tangible & recognizable infrastructures
- Parallel tech & numerical capabilities
- Observable I&W

Speed
Stealth
Precision
Mass Forces
Information Exchange

Today's Battlespace…4GW

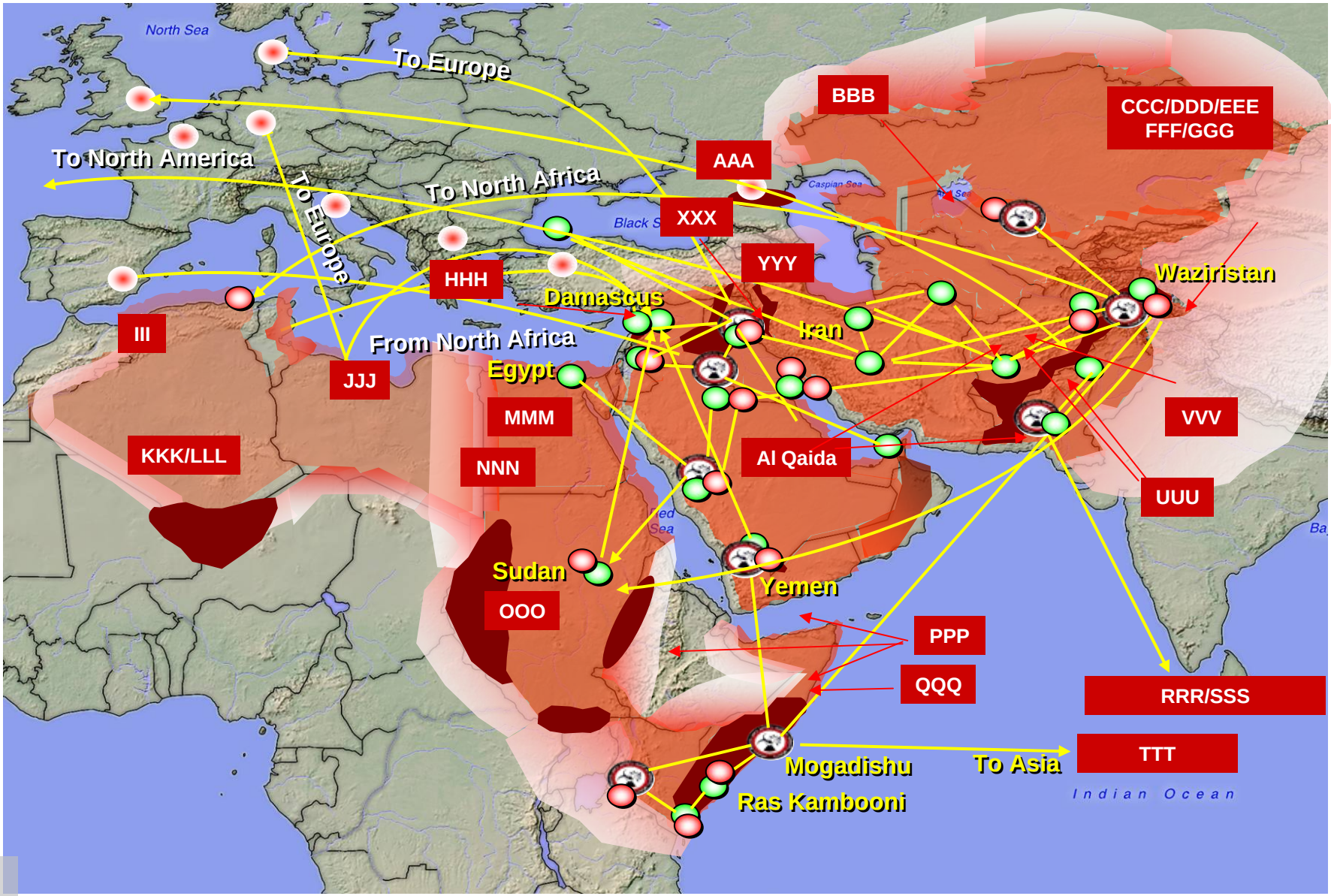


- Global vs. regional threat
- No longer state-on-state
- Various & variable "polarities"
- Politically and spiritually charged
- Clash of values / ideology
- Multi-dimensional…noncontiguous
- No geospatial boundaries
- No clear battle lines
- Multi-lateral
- Extensive cause & effect relationships
- Global connection thru mass media
- Information overload

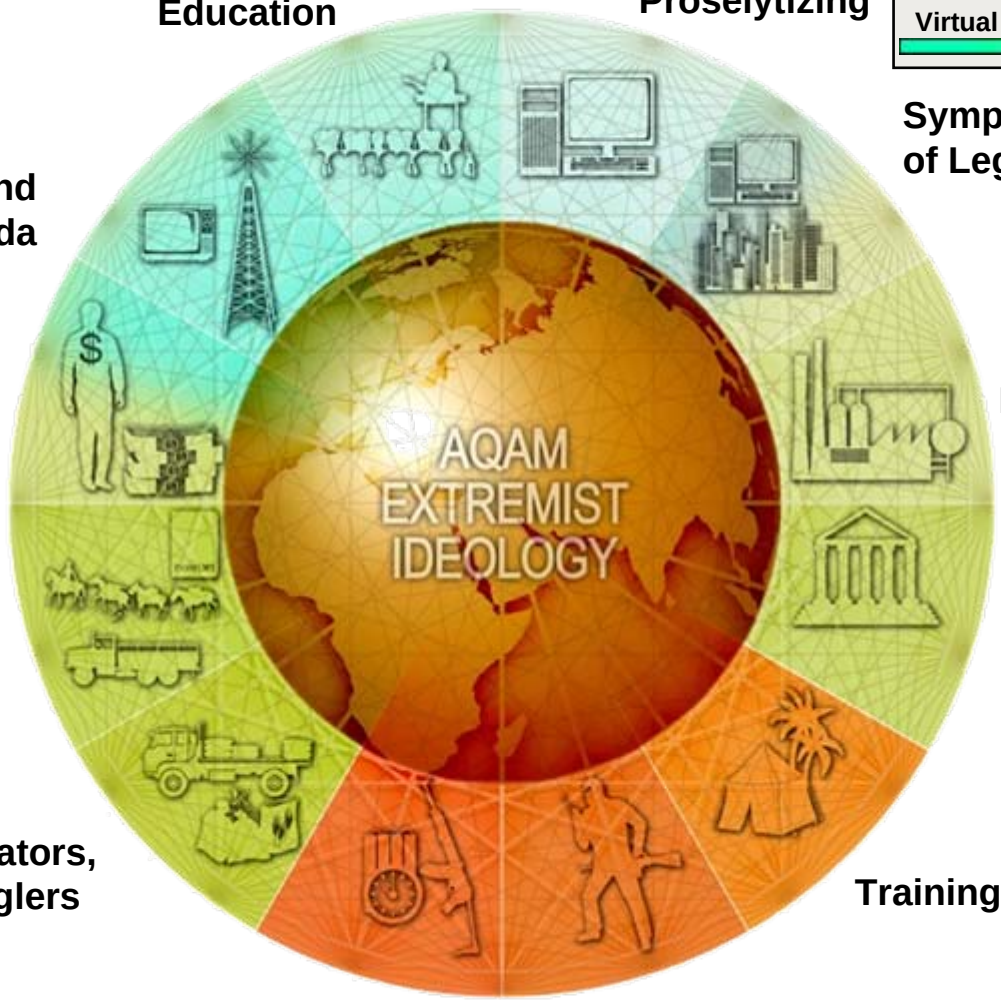
Speed
Stealth
Precision
Mass Effects
Information Sharing
Persistence
Identity Dominance

Puts more and different people and organizations at risk

Al Qa'ida and Associated Movements (AQAM)



AQAM: A Threat in All Realms



Recruitment and Education

Internet and Proselytizing

Virtual — Geographic

Sympathetic Members of Legitimate Govt's

Media and Propaganda

Ideologically Sympathetic NGO's

Front Companies

Financiers

Safe Havens

Facilitators, Smugglers

Training Camps

Technical Expertise, Weapons Suppliers

Human Capital, Fighters and Leaders

Technology Changes the Battlespace

- Boundless in any direction
- Time is generally irrelevant
- Weather factors much less into our operations; but it still does
- Information measured in terabytes and growing; but what to do with all this info
- Our forces are offered the greatest level of protection; but it comes at a price:
  - Speed, mobility, endurance, sustainability
  - Ability to influence the populace
- And technology can be obviated …

Disruptive Technology

Disruptive – an adjective of Disrupt

Disrupt:
1 a: to break apart **: rupture**
b: to throw into disorder **<agitators trying to *disrupt* the meeting>**
2: to interrupt the normal course or unity of [Merriam-Webster]

Technology

1 a: the practical application of knowledge especially in a particular area **:** engineering 2 **<medical *technology*>**
b: a capability given by the practical application of knowledge **<a car's fuel-saving *technology*>**
2: a manner of accomplishing a task especially using technical processes, methods, or knowledge **<new *technologies* for information storage>**
3: the specialized aspects of a particular field of endeavor **<educational *technology*>** [Merriam-Webster]

Warfighter Translation

Strategic:

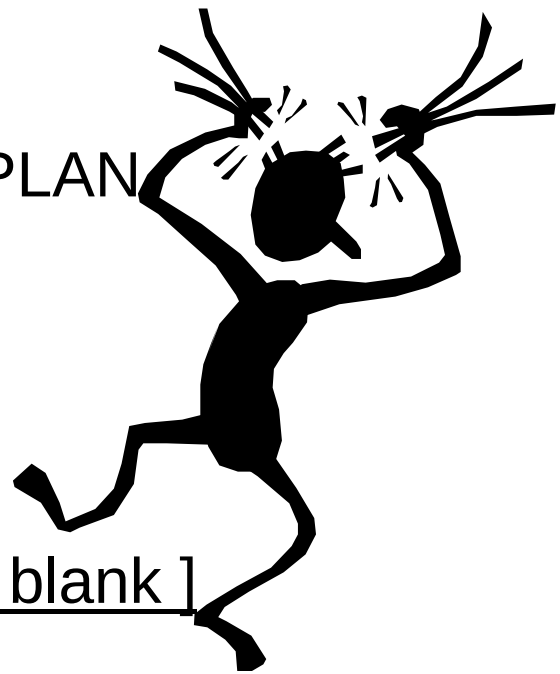
- The assessment is flawed
- Planning assumptions are no longer valid

Operational:

- Current CONOPS / TTP won't work
- Call in the Planners and scrub the OPLAN
- Issue a FRAGO

Tactical:

- They did WHAT???!!!
- Quick, I need more / better [fill in the blank]



Two Sides of Disruptive Technology

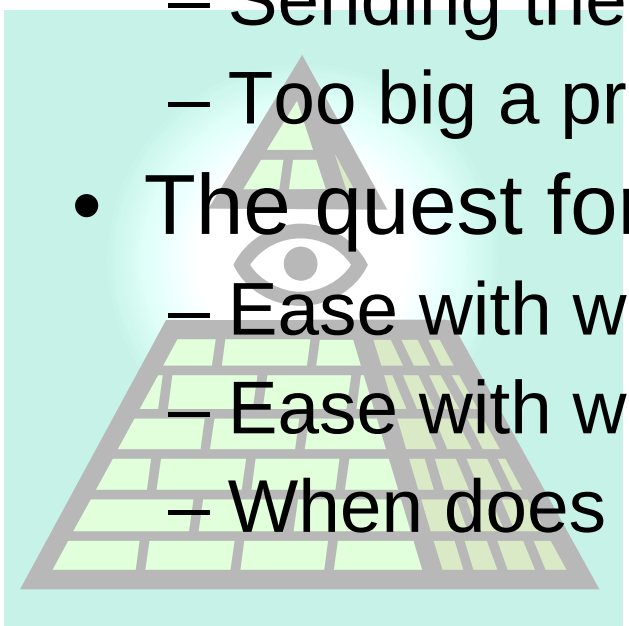
(RED disrupting BLUE – BLUE countering RED)

- **RED (current 'fight')**
  - Generally low tech
  - Easily assembled from common parts
  - Streamlined acquisition and fielding strategy
  - Only has to work once to achieve its effect
  - If 'it' fails, move to another strategy – not bound by legacy systems approach
  - Generally well resourced
- **BLUE**
  - High tech
  - Complex multi-function systems
  - Lengthy acquisition process
  - Must work every time against all threats
  - Failure is not an option, but if it does we first attempt to 'improve' the legacy system
  - Resource limited

Audience Participation Event

But Sometimes BLUE 'Disrupts' BLUE

- Unintended consequences
  - Complexity may lead to non-use
  - Not interoperable
  - Sending the 80pct solution
  - Too big a problem; too many vendors
- The quest for all-seeing; all-knowing
  - Ease with which we can collect data
  - Ease with which we can move data
  - When does more just become more?



Top Five ‘Disruptive’ Challenges

- Identifying the “combatant”
- Detection of explosive material or assembled explosive devices at tactically significant distances
- Creating ISR persistence in immature environments with less resources
- Making sense of the data we obtain, and feeding only what is needed to the tactical edge
- True sharing of information across the entire battlespace, independent of existing infrastructure

Any target, Any place, Any time, Any environment, Any sensor, Any Shooter, Any warfighter

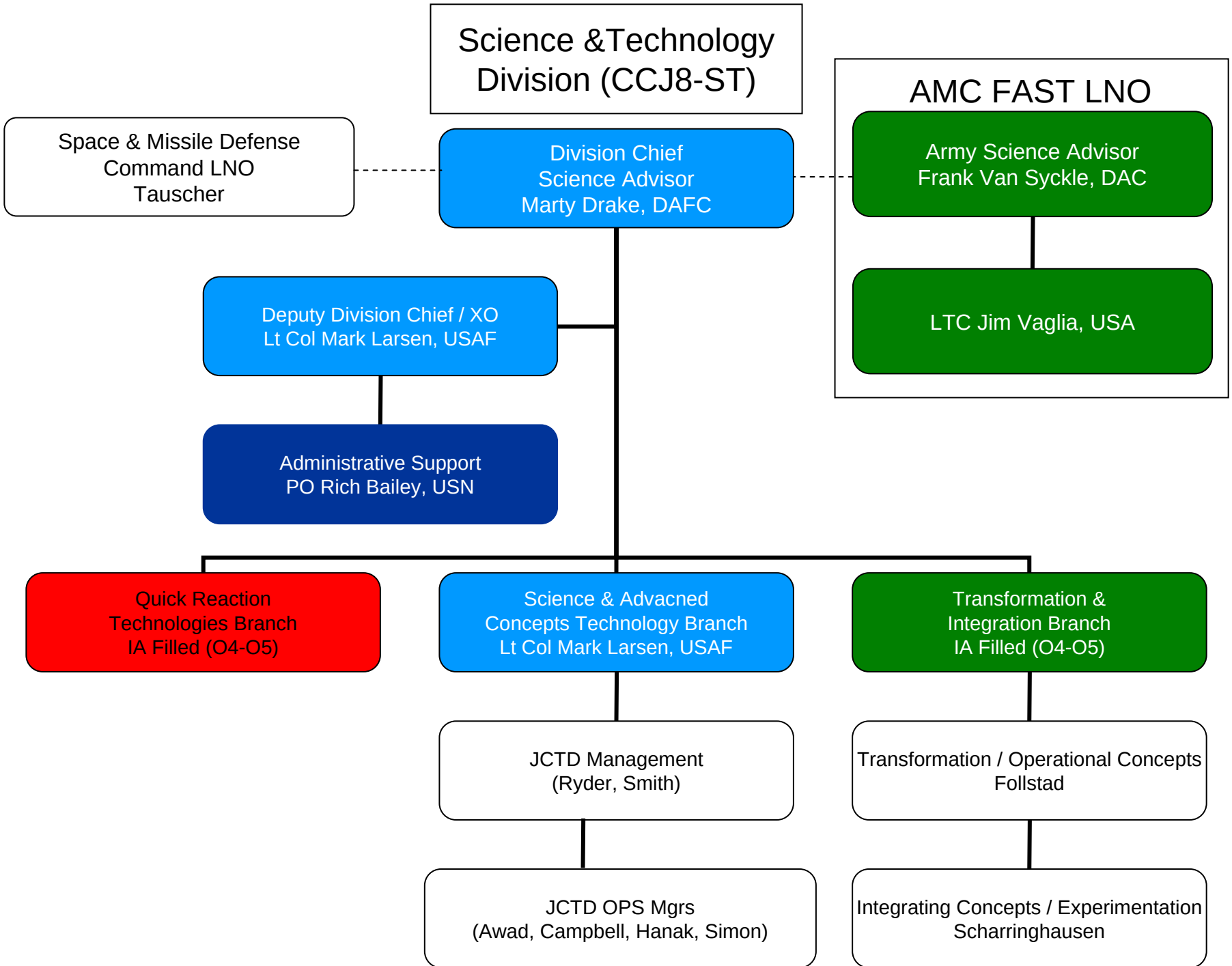
Lunchtime!

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.


Science &Technology Division (CCJ8-ST)
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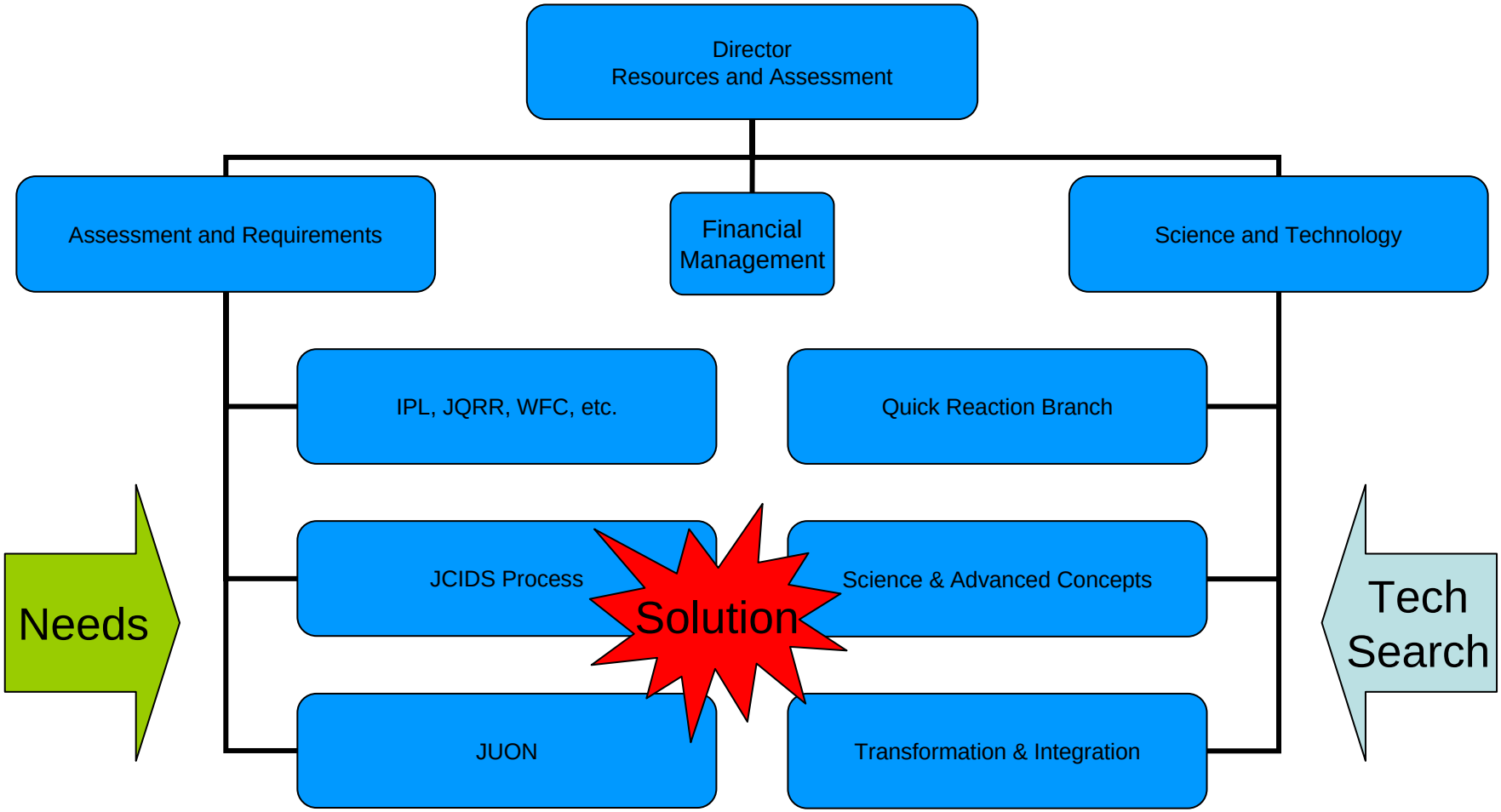
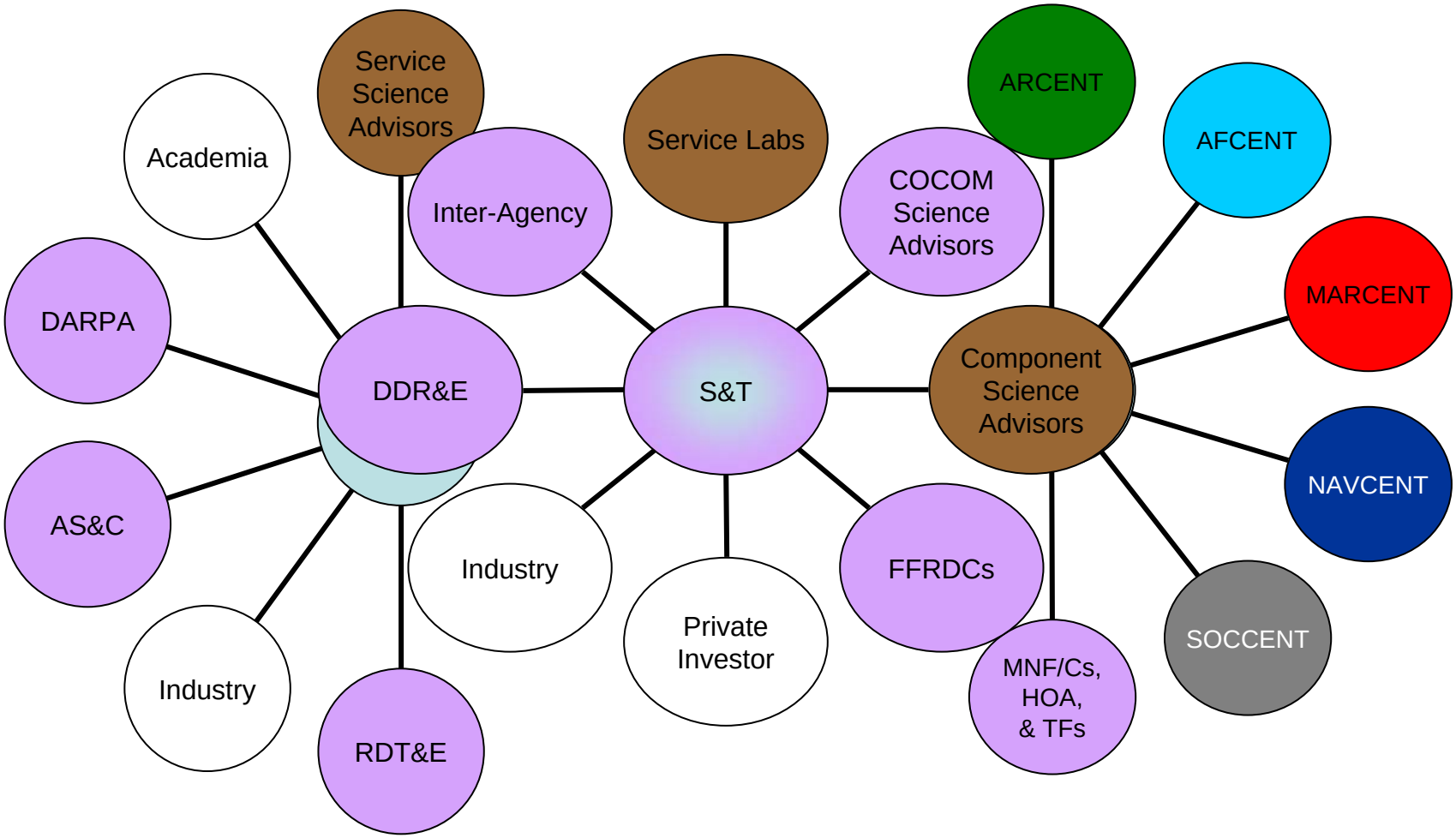
Division Chief Science Advisor Marty Drake, DAFC
AMC FAST LNO
Army Science Advisor Frank Van Syckle, DAC
LTC Jim Vaglia, USA
Deputy Division Chief / XO Lt Col Mark Larsen, USAF
Administrative Support PO Rich Bailey, USN
Quick Reaction Technologies Branch IA Filled (O4-O5)
Science & Advacned Concepts Technology Branch Lt Col Mark Larsen, USAF
Transformation & Integration Branch IA Filled (O4-O5)
JCTD Management (Ryder, Smith)
Transformation / Operational Concepts Follstad
JCTD OPS Mgrs (Awad, Campbell, Hanak, Simon)
Integrating Concepts / Experimentation Scharringhausen

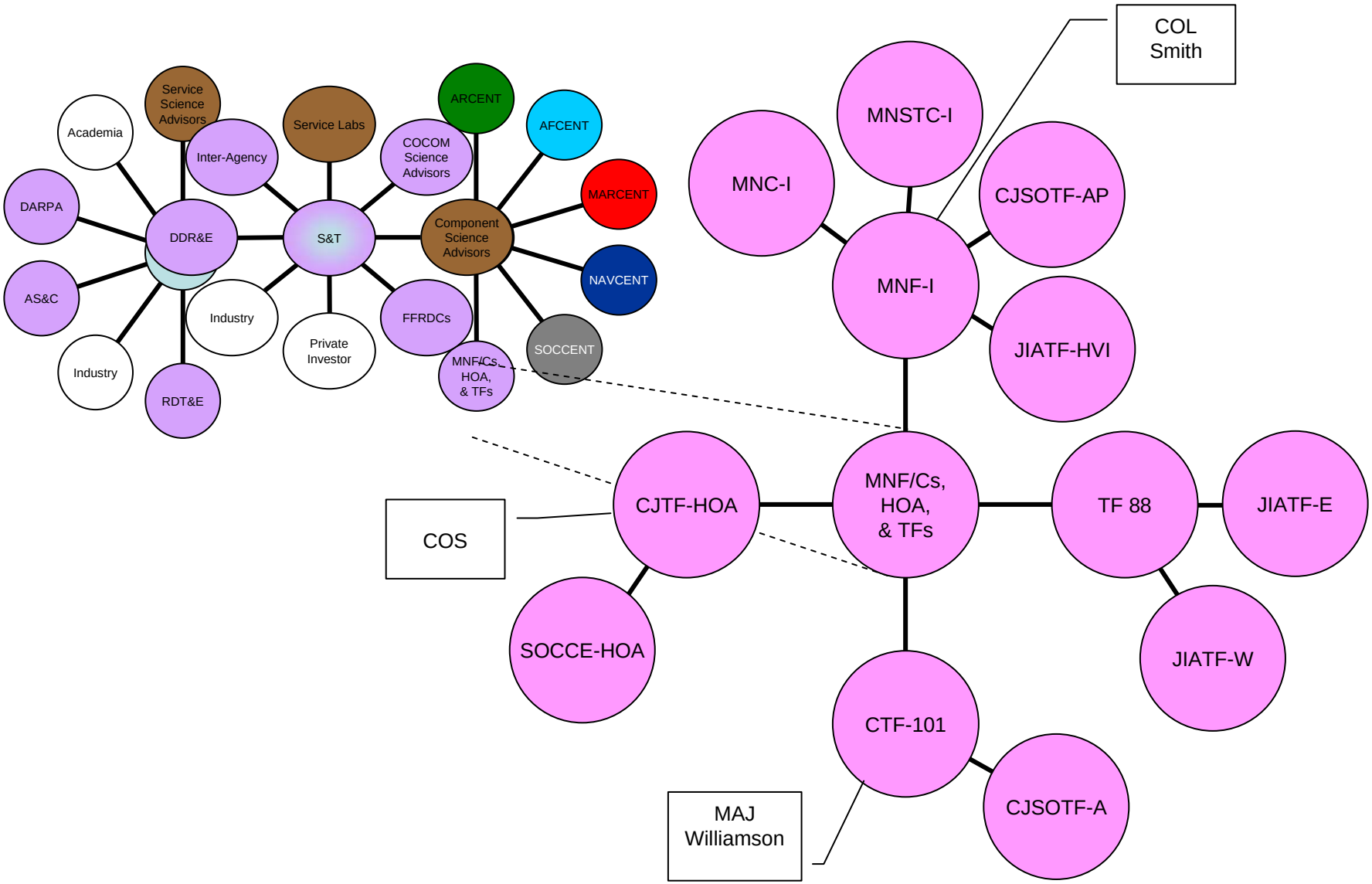
CCJ8 Directorate

[From the Technology Perspective]



How we connect




COL Smith
MNSTC-I
MNC-I
CJSOTF-AP
MNF-I
JIATF-HVI
Service Science Advisors
Academia
Inter-Agency
Service Labs
COCOM Science Advisors
ARCENT
AFCENT
MARCENT
NAVCENT
SOCCENT
DARPA
DDR&E
S&T
Component Science Advisors
AS&C
Industry
Private Investor
FFRDCs
MNF/Cs, HOA, & TFs
Industry
RDT&E
COS
CJTF-HOA
MNF/Cs, HOA, & TFs
TF 88
JIATF-E
SOCCE-HOA
JIATF-W
CTF-101
MAJ Williamson
CJSOTF-A

CENTCOM Major Focus Areas

- Expand stability, self governance, development and security in Iraq
- Set conditions for security and strengthen governance in Afghanistan
- Degrade violent extremist networks, operations, and sanctuaries with defeating al-Qaeda the priority
- Counter the proliferation of WMD
- Strengthen relationships and influence organizations and states to contribute to regional stability and the free flow of global commerce
- Posture the force to build and sustain joint and combined warfighting capabilities and readiness

U.S. Central Command 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 needs 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

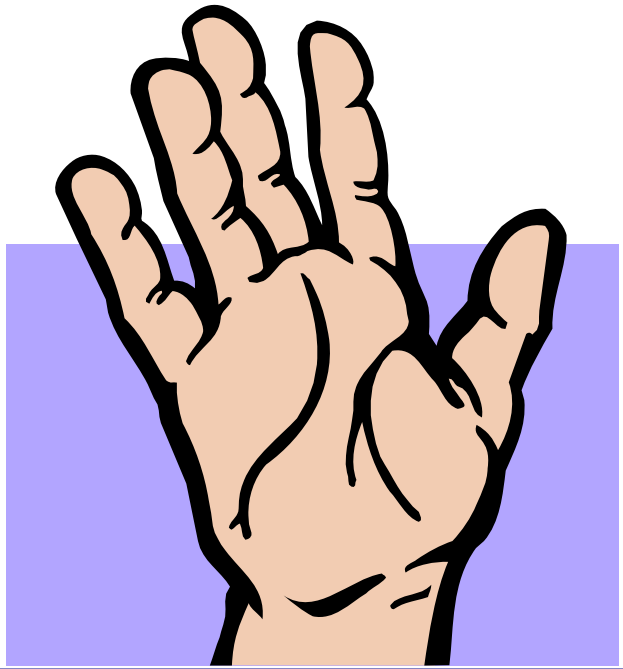
Some technology areas we "pursue":

- 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 training
- 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



Raise your Hand