



## 21<sup>st</sup> Century Army

---

*Our goal is to build a versatile mix of tailorable and networked organizations, operating on a rotational cycle, to provide a sustained flow of trained and ready forces for full spectrum operations and to hedge against unexpected contingencies at a sustainable tempo for our all-volunteer force.*

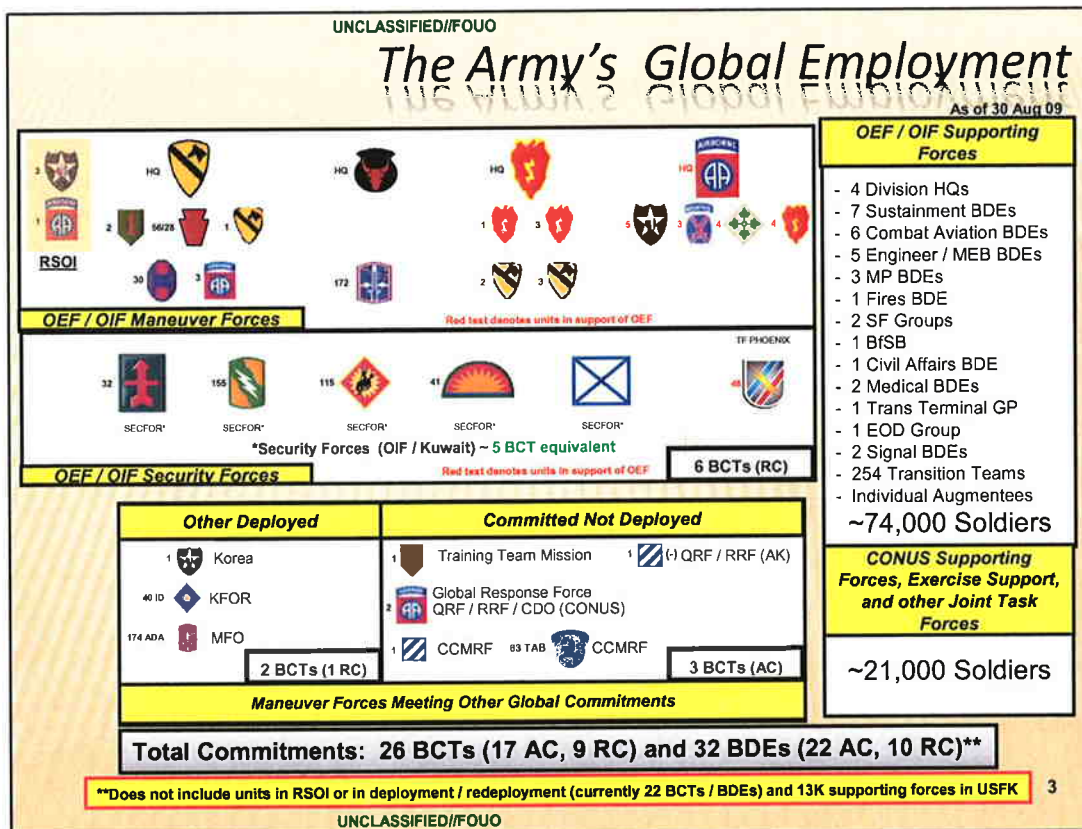
- GEN George P. Casey, Chief of Staff, Army

### Slide 1 – BLUF.....

- Here's what the Boss is saying.....
- The "What" are we doing.....

---

**Transition to next slide – it's important to understand what's going on in the world today in order to understand what's behind the Chief's intent.....**

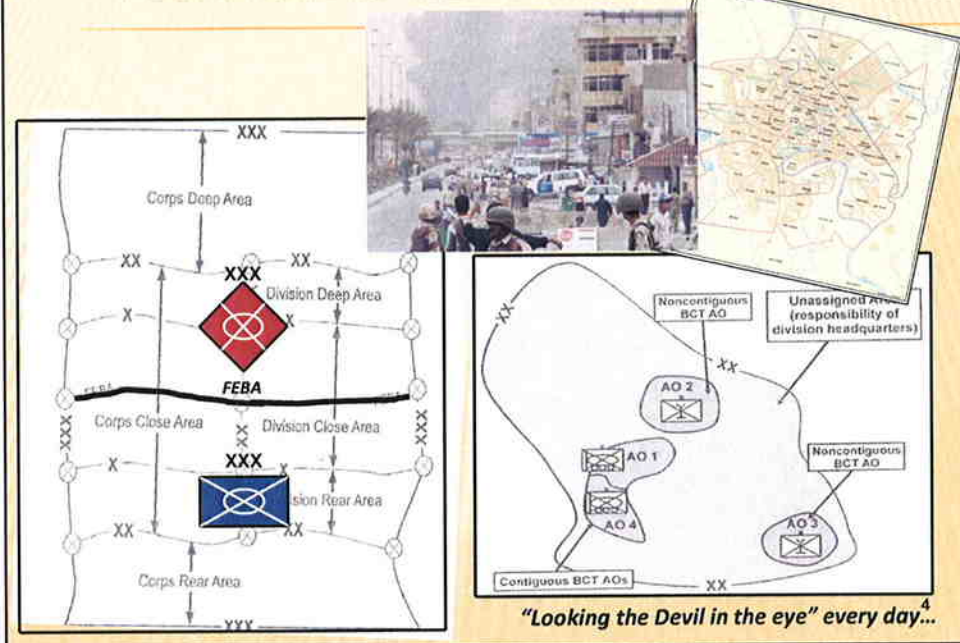


## Slide 2 – Global Commitments

- We're at war; we've been at war for eight years
  - Tomorrow is September 11<sup>th</sup> ....
- More Soldiers deployed now; greater than at height of Surge
- No indication demand will go down anytime soon; (Afghanistan)

**Transition to next slide – the environment on the battlefield has changed**

## Contiguous vs. Non-Contiguous Battlefields

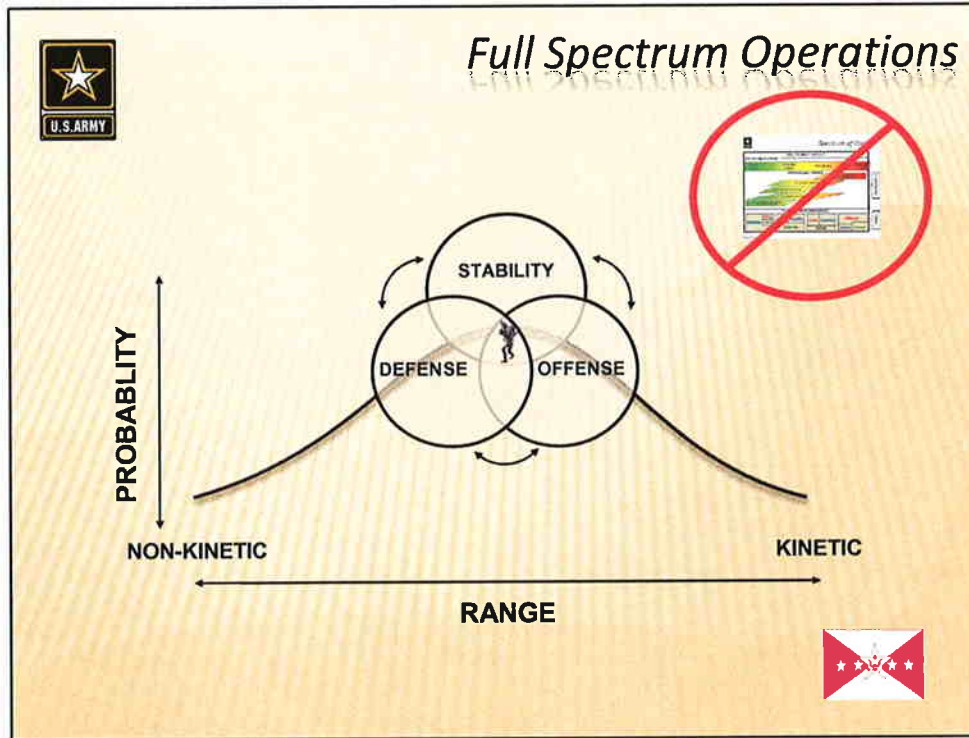


### Slide 3 - Contiguous vs. Non-contiguous Operations

- The nature of warfare has changed
- There is no "FEBA" on today's battlefield
- The enemy will purposely go where we are not

---

Transition to next slide – Nature of warfare has changed....



#### Slide 4 – Full Spectrum Operations

- Army definition of FSO is different than other Services; we see it moving up and down the spectrum, sometimes in a month, a week, a day; they see it as solely kinetic
- Warfare is a combination of kinetic and non-kinetic effects
- Most “game-changing” decisions made by the individual Soldier on the ground
- Impacts EVERYTHING we do
- We can no longer think in terms of ‘phases’ (versus transitions)
- This goes to how **we must develop platforms capable of operating in multiple environments**

**Transition to next slide – over the course of this war, we’ve made changes to our TTPs and structure on the move, in a very difficult and demanding environment; received guidance from senior leadership on how to proceed with Army Modernization on 6 April 09.....**

## Direction to Army on Modernization

Secretary Gates, 6 Apr 09:

- ✘ *Retain and accelerate the initial increment of the program to spin out technology enhancements to all combat brigades*
- ✘ *Current vehicle program, developed nine years ago, does not include a role for our recent \$25 billion investment in the MRAP vehicles being used to good effect in today's conflicts*
- ✘ *Concerned that despite some adjustments, the FCS vehicles – where lower weight, higher fuel efficiency, and greater informational awareness are expected to compensate for less armor – do not adequately reflect the lessons of counterinsurgency and close quarters combat in Iraq and Afghanistan*

*"[Canceling] FCS was the hardest decision I had to make..."*  
– Secretary of Defense, 6 April 2009

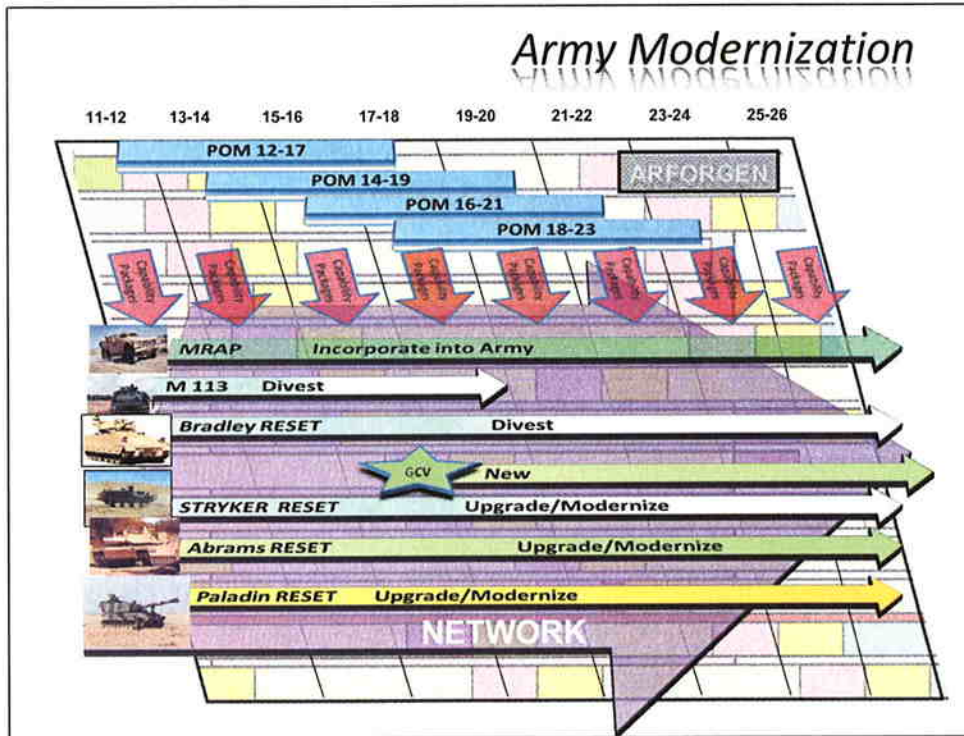
### Slide 6 – Direction to Army on Modernization

- Received very clear guidance from our senior leadership
- FCS AAR, Lessons from the Front, TF 120
- Blue Ribbon Panel; participants from DoD, industry, think tanks, private citizens, critics, combat veterans

- 
- FCS and FCS-MGV AAR
    - Requirements generation process, acquisition strategy, program affordability, adaptation to what we were learning in OIF/OEF, and strategic communications.
  - Blue Ribbon Panel
    - Operating Environment , Platform characteristics, Platform threats, COTS vs R&D, Realistic Requirements, Network Considerations

---

**Transition to next slide – We've listened to senior leaders' guidance and all input and it has shaped the Army's Modernization program – "Why"....**



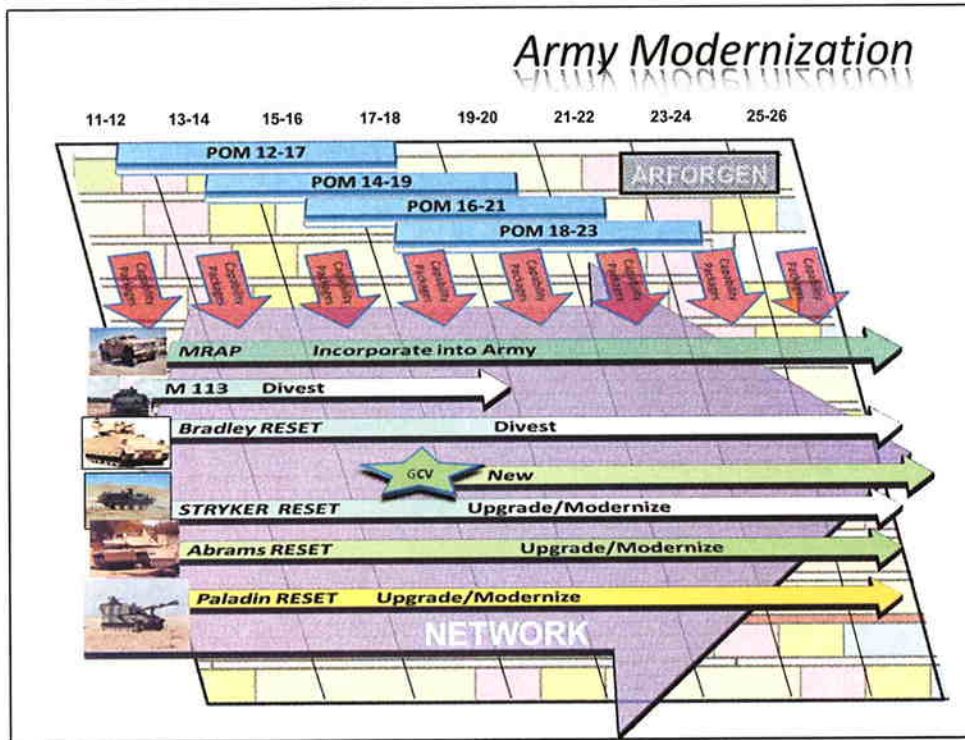
1 of 4

### Slide 7 –Army’s Modernization Program- “The Why”

- **Challenge: balance modernization vs. personnel costs**
- Intent of Army’s Modernization Program: improve Soldier survivability and ensure a decisive advantage over whatever enemy we face
- Although the platform receives much of the attention and focus, the most critical component is the network
- That being said, the new GCV represents one of the most important combat development and acquisition decisions we’ll make

---

Transition to next slide – “The Why” (cont’d)....



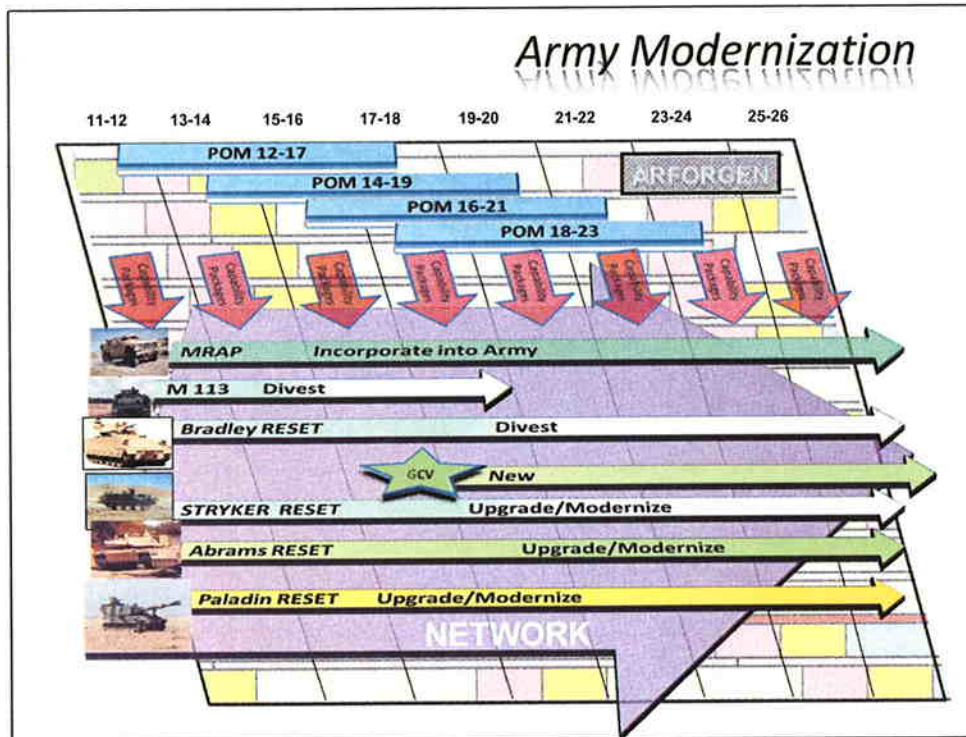
2 of 4

### Slide 7 –Army’s Modernization Program- “The Why”

- The way we think about modernization has changed
- We’re going to field what’s available, affordable, and technologically feasible in two-year increments (capability packages); Incremental Modernization
  - All aligned to POM Cycle, ARFORGEN
- Will allow upgrades and modifications, keeping pace with changing technologies and operational needs
- Three components: BCT Capability Sets, Network, Vehicle Strategy

---

Transition to next slide..... “The How”.....



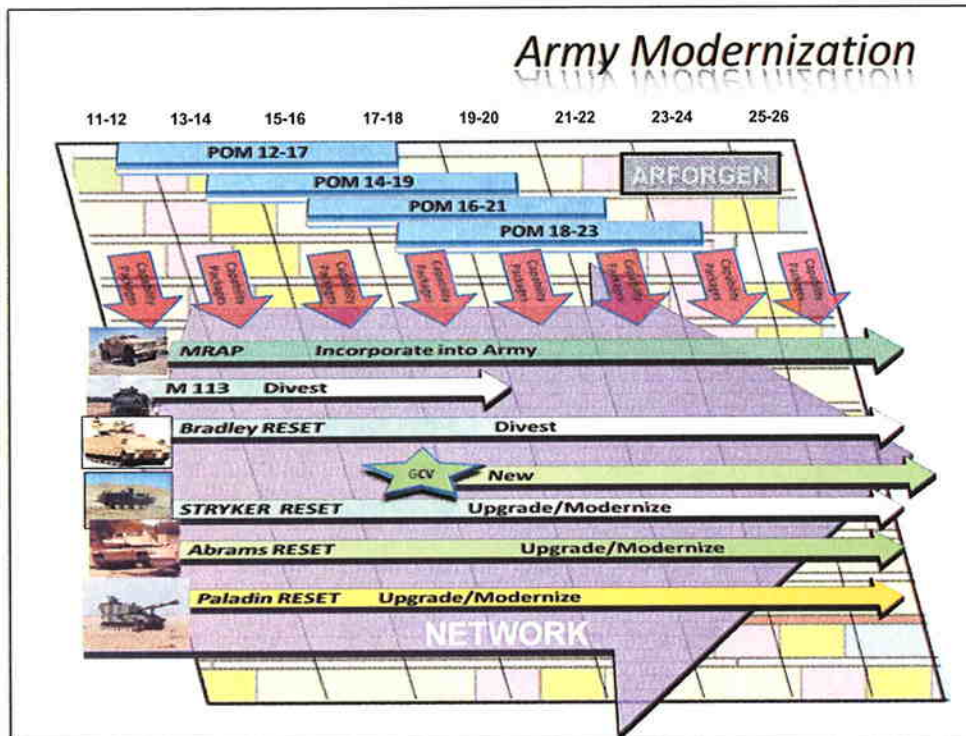
3 of 4

### Slide 7 – Army’s Modernization Program – “The How”

- Explain the chart – left to right... top to bottom
- Across the top – Army Modernization in two-year increments
- The background (colored blocks) represents ARFORGEN Cycle
- POM Blocks (blue at the top) – Inside the Budget Cycle
- Red Arrows – envision pushing capability packages out in two-year increments

---

Transition to next slide – “The How” (cont’d)....



4 of 4

**Slide 7 – Army’s Modernization Program – “The How”**

- Colored arrows – vehicle modernization program
  - Incorporate MRAP
  - Divest M113
  - Reset/Divest Bradley
  - Build GCV
  - Reset and Update/Modernize Stryker
  - Reset and Update/Modernize Abrams
  - Reset and Update/Modernize Paladin
- The Centerpiece of the Army Modernization is the Network (purple arrow) – everything must be built on the bedrock of a robust network

**Transition to next slide – The key to Army Modernization:  
The Network....**

## The Hub of Army Modernization – the Network



The Soldier is the Heart of the Network

1 of 3

### Slide 8 –The Network

- Network is the “Hub” of Army Modernization
- As General Creighton Abrams said: “People aren’t in the Army, people are the Army.”
- Needed network capability: Interoperable, Affordable, and Capable of Incremental Upgrades
- **Soldiers – at what we refer to as the “edge” – are now the source of most intelligence and most “game-changing decisions”**
- Info isn’t simply ‘nice to have’ to Soldiers – can often mean the difference between living and dying on today’s contiguous battlefield
- Goal: Right information – Right Place – Right Time

---

Transition to next slide – Anecdote: Importance of Network....

## *The Hub of Army Modernization – the Network*



*The Soldier is the Heart of the Network*

2 of 3

### **Slide 8 –The Network**

- **Anecdote:**

- Two units end up in the same location – one unit may have gotten lost/delayed by circumstances, and the unit/individual assigned to that location is often taken by surprise.
- For centuries, this type of battlefield fog or friction has led to fratricide.
- Making sure this type of “*just-in-time*” information is available and disseminated at the user level – and beyond – is critical.
- Over the last few years, the Army has developed several technologies to help with this.

---

**Transition to next slide – Must build a ‘plug and play’ network....**

## *The Hub of Army Modernization – the Network*



*The Soldier is the Heart of the Network*

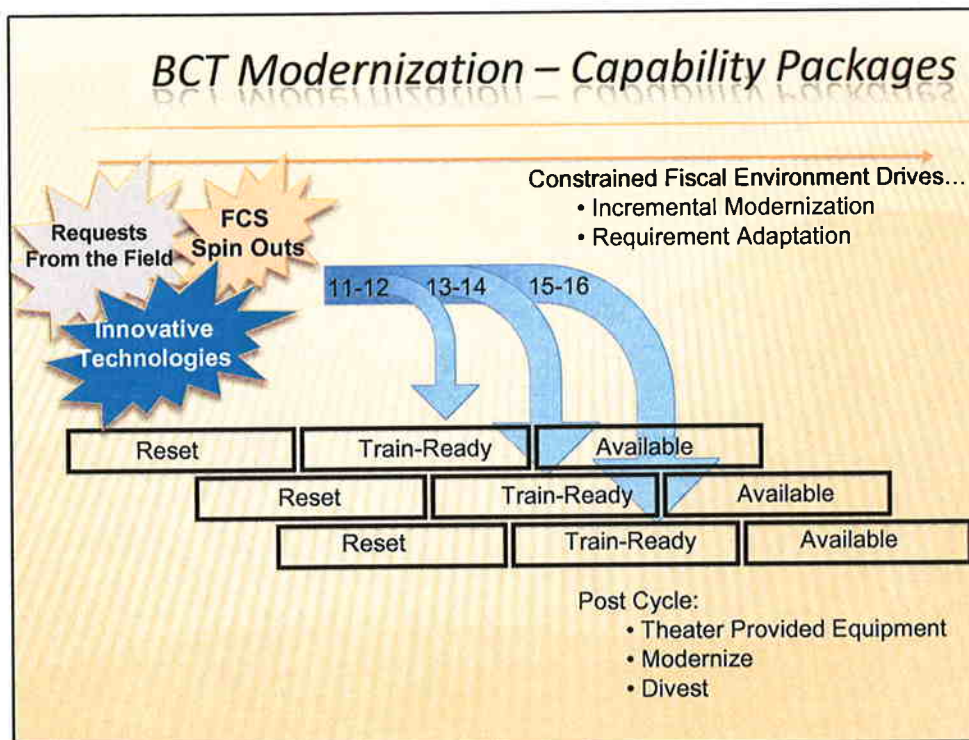
**3 of 3**

### **Slide 8 –The Network**

- Will combine a network and radio strategy in feasible and affordable increments
- Key is to build a single network across the Joint, Interagency, Intergovernmental, and Multi-National (JIIM) environment with a common set of operating procedures capable of connecting the separate systems and receiving additional systems or programs in the future
  - The Army will continue to share the battlefield....
    - Sister Services
    - Interagency – State, DHS, USAID
    - NGOs – US Institute for Peace, Peace Corps
    - Allies and friends

---

**Transition to next slide – Will continue to mature Network with incremental capability packages every two years.....**



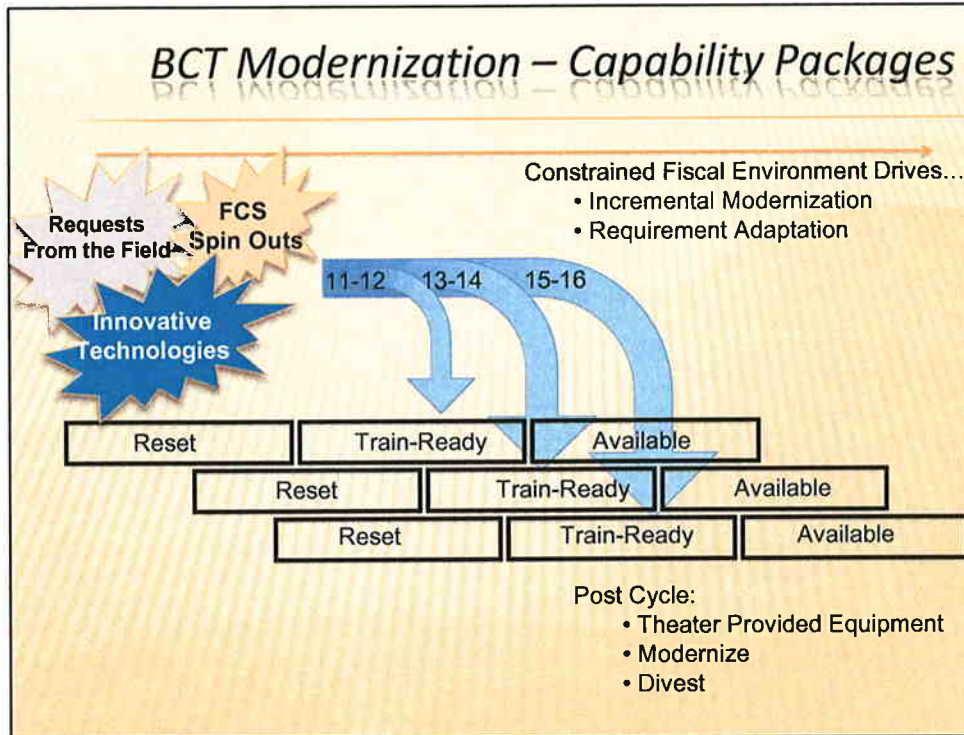
1 of 2

## Slide 9 – Capability Packages

- Leveraging what we've learned from Rapid Fielding and ARFORGEN
- Incremental targeted modernization tied to fiscal reality
- FCS spin-outs, field requests, new/modified technologies
- Goal: continually improve Soldier capability to ensure decisive advantage over the enemy
- The equipment we field is a function of what is affordable and feasible; The choice becomes one for the Nation
- We cannot be inefficient in our fielding; goes back to personnel costs
- Moving away from unit set fielding

---

**Transition to next slide – Anecdote: Afghanistan (4/4 BCT)/ "Lighten the Load" .....**

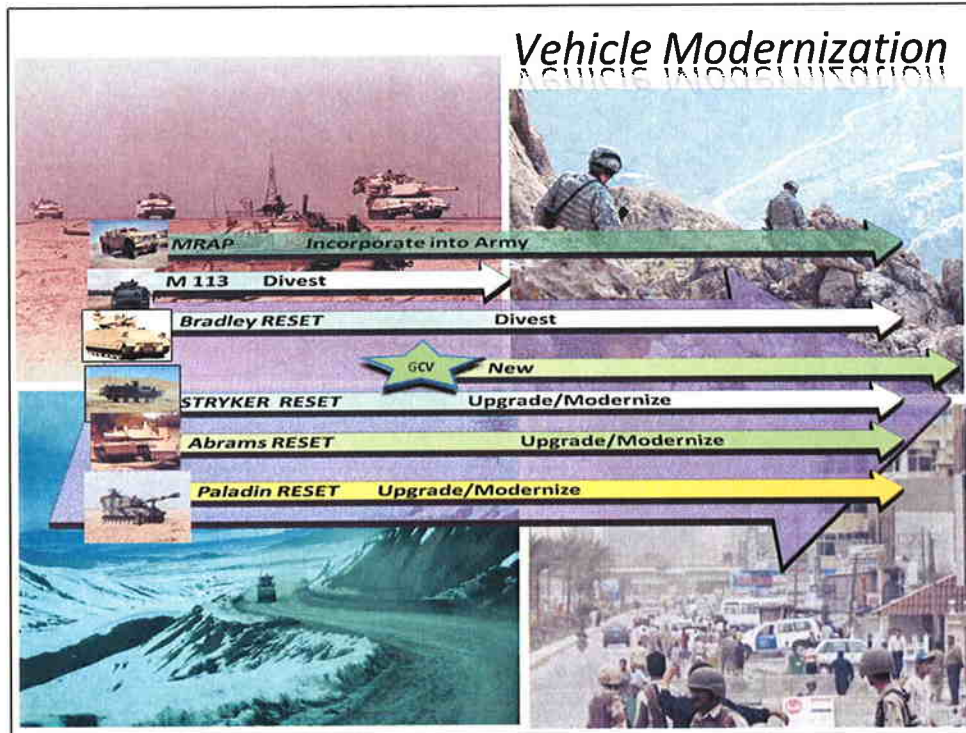


2 of 2

### Slide 9 – Anecdote – 4/4 BCT.....”Lightening the Load”

- The concept of incremental capability packages is being tested today; cooperative effort between REF, AWG, PEO Soldier, and AMC
- 4/4 BCT is our test unit in lightening the load in some of the harshest terrain imaginable
- We worked hard with industry to modify, buy, and procure everything from boots to Armor to reduce Soldier Load
- We got some right, we got some wrong (boots - not durable enough; lighter weapons - require increased sustainability...)
- Leverage what we've learned to provide capability to the rest of the Army
- 4/4 BCT represents the approach we aim to provide to the entire Army: Spin-outs from FCS, requests from the field, innovative technologies – to incrementally provide capability

**Transition to next slide – Vehicle Modernization....  
Incorporate into the Army**

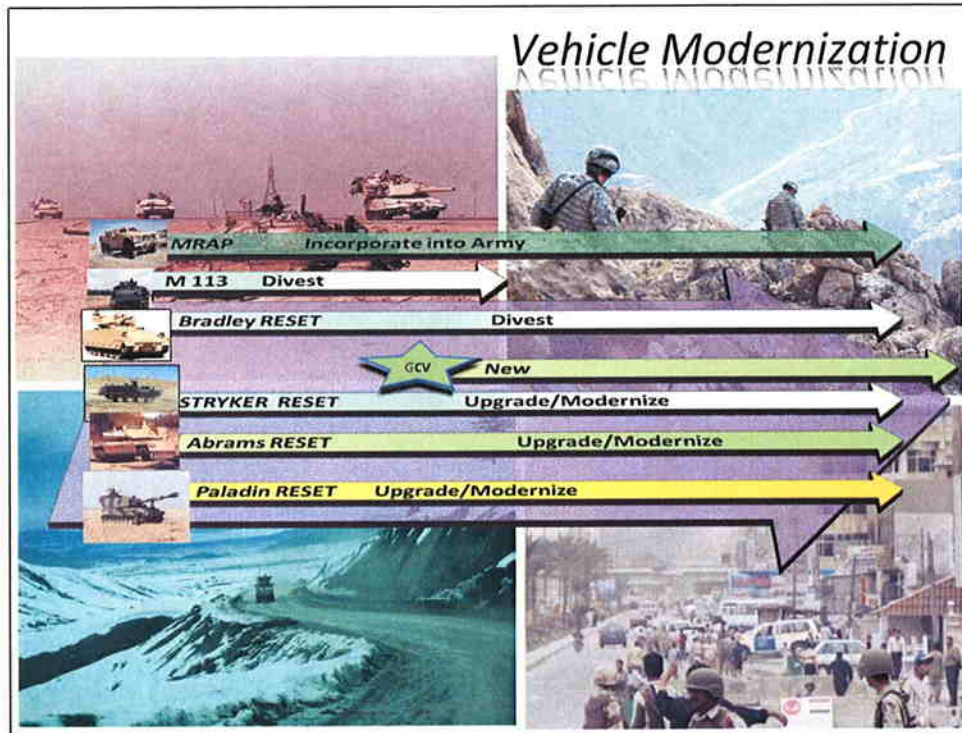


1 of 4

## Slide 10 – Vehicle Modernization

- Incorporate into the Army
    - Efficient use of limited assets to benefit the entire Army (MRAP); will need to align to ARFORGEN cycle
- 
- MRAP (80% at 11,635) ATV's incorporated into the calculus
  - Making sure every Soldier has a protected seat
  - Becomes committed BCT-specific capability sets; ~ 3,700 will be integrated into MTOEs for sustainment and medical brigades (route clearance, convoy security, medical evacuation, etc.)

Transition to next slide – Divest....



2 of 4

## Slide 10 – Vehicle Modernization

- Divest
  - Replace vehicles that have exceeded growth potential

---

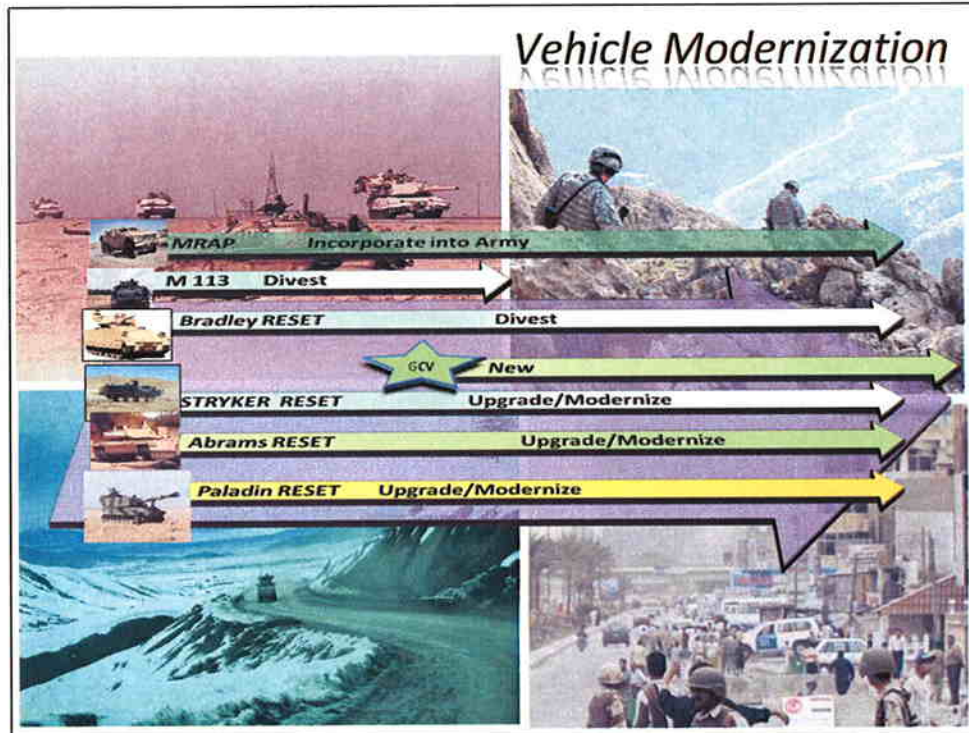
Why: Need platforms versatile in complex environments; leverage the power of the network; give crews confidence by surviving first strikes

Current fleets served us well; however, platforms created for a linear based, un-networked world, are not suitable in a non-linear, networked world

Anecdote: 6,000 M113s currently in service, unused

---

**Transition to next slide – Reset/Recap....**

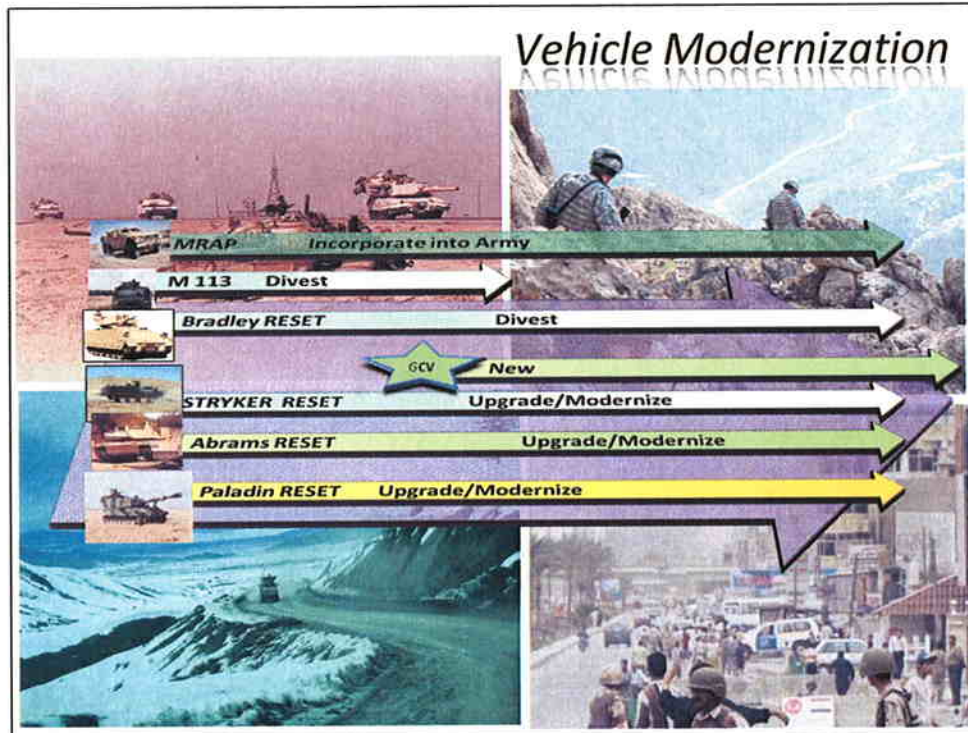


3 of 4

## Slide 10 – Vehicle Modernization

- Upgrade / Modernize
    - Extend the lifecycle where suitable and affordable
- 
- Must keep industrial base in mind – we're sensitive to industrial base
  - Requirements coming out of the field
  - Vehicle modernization will be balanced against what we can afford

**Transition to next slide – New Start / Force Mix....**



4 of 4

## Slide 10 – Vehicle Modernization

- New Start
  - Technology is changing too fast to allow us to field equipment in traditional 10-15 year cycles
  - Must build a platform that can be adapted over time to accommodate future technological innovation

—

- Force Mix
  - Formation versatility for the strategic environment

**Transition to next slide –Army Modernization has largely been shaped by the experience of 8 years of war....**

## *Incorporating Lessons Learned from 8-Years of War*

- High risk capability gaps exist across current fleets of combat vehicles; **most significant** in **Protection, Network, and Mobility**.
- Protection gaps, directly related to **Soldier survivability**, account for three highest risk gaps and four of thirteen total identified gaps. Warfighters always rated **protection** as **first or second most important** attribute category, regardless of vehicle role, scenario, or BCT type.
- Warfighters also gave high ratings to **mobility** attributes; cross-country speed represented most critical mobility gap stemming from reliance on primary roads, more predictable travel patterns, and greater vulnerability to enemy action.
- Combat vehicle employment in **infantry carrier role** is a challenge for most current platforms; many vehicles are not well suited to transport infantry.
- **Unplanned combat vehicle weight growth** has impacted reliability and maintainability of current fleet of combat vehicles.

**Soldiers' #1 Priority is Survivability!**

### **Slide 11 – Incorporating Lessons Learned**

- What should our priority be – deployability vs. survivability, on this side of the next war
  - Soft-skinned HMMW-V
  - Up-armored HMMW-V
  - Incorporated Homogeneous Armor
  - Interim Frag Kit 5
  - Objective Frag Kit 5
  - Frag Kit 6 for EFP Protection
  - MRAP
  - Now we're building on MRAP
-

## Ground Combat Vehicle Operational Design Principles

### ✦ Versatility

- ✦ Configuration and employment options for commanders
- ✦ Employed by BCTs across full range of military operations in combination with other vehicles and task-organized based on mission requirements
- ✦ Growth potential to adapt as technologies mature and enemies learn

### ✦ Force Protection

- ✦ With blast protection equivalent to MRAP
- ✦ Base level protection scalable to threat and mission
- ✦ Ability to observe 360 degrees (closed or open hatch)
- ✦ Integrate improved protection measures when they are ready (passive and active)
- ✦ Fire protection equal to or better than any current combat platform

### ✦ Expeditionary

- ✦ Deploys by land, sea, and air for projection and sustainment of Army forces
- ✦ Modular design reconfigured to support different lift assets and mission profiles

### ✦ Lethality

- ✦ Lethal self-protection with each variant able to defeat like systems
- ✦ Hosts non-lethal systems to enable operations among population

21

## Slides 12 and 13 – GCV Design Principles

- Versatile design; key: GROWTH POTENTIAL – Size/Weight/Power
  - A platform able to span the spectrum of complex terrain (urban, desert, mountains, etc.)
    - Anecdote: experience in Sadr City in April/Oct 2004
  - A vehicle built for the fight today; can leverage the technology developed tomorrow
  - GCV of 2017 will not be the same vehicle in 2027 or 2037
  - Future improvements in technology in armor packages and active protection systems may further improve capability while reducing weight – will increase range of deployability options
  - Backup chart: evolution of M1 Tank

–

- We're not saying this vehicle has to fit in a C-130
- Hosts non-lethal systems to enable operations among population

Transition to next slide: Design principles (cont'd)

## Ground Combat Vehicle Operational Design Principles

### ✘ **Mobility**

- + Negotiates the confined spaces presented in complex urban terrain
- + Cross country mobility precludes being restricted to existing road networks
- + First GCV increment provides mobility equivalent to the Bradley with better protection

### ✘ **Sustainability**

- + Reduces the BCT sustainment burden (reliability, availability, maintainability, energy efficiency)
- + Initial increment of GCV has an availability rate equivalent to Stryker
- + Consumes 10% less fuel than current vehicles of similar weight and power
- + Provides exportable electrical power and battery charging capability for Soldier systems

### ✘ **Network Integration & Interoperability**

- + Hosts the Army's battle command network systems
- + Growth potential in electrical and computing power
- + Retain mission functionality with a degraded or interrupted network
- + Facilitates Soldier integration in the network, employment of robotic systems, access to joint capabilities

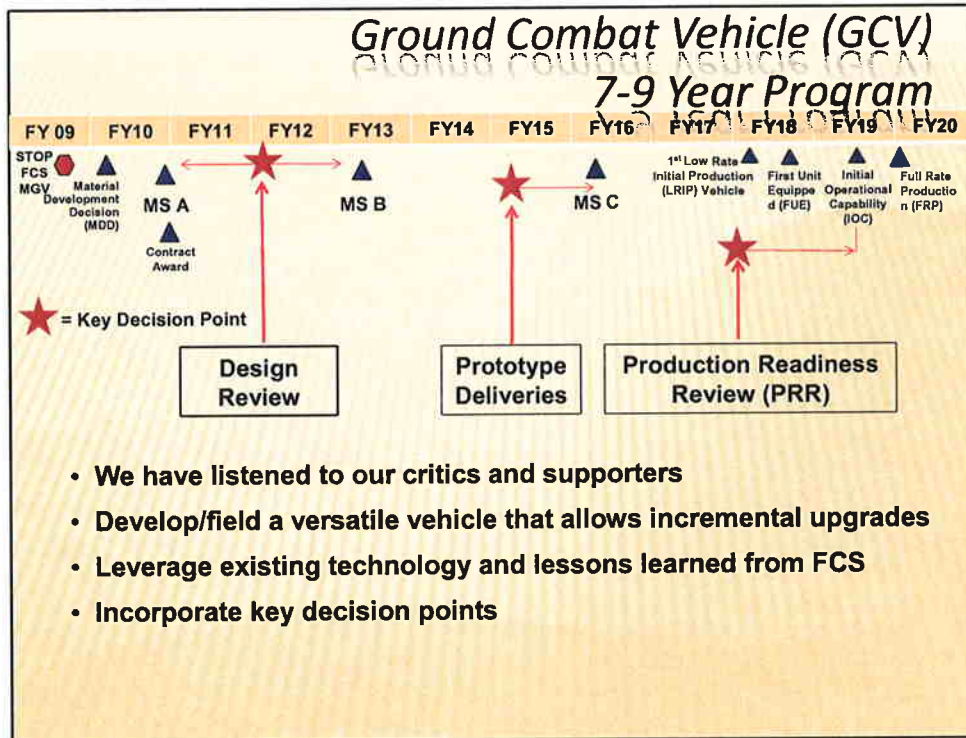
22

## Slides 13 – GCV Design Principles (cont'd)

- Mobility as a characteristic – building to accommodate complex terrain environments
- GCV will focus on sustainability more than we have ever done in procuring an Army major weapons systems
- Network Open architecture – plug and play development
- Incremental in fielding – prioritized by need / affordability

---

Transition to next slide – “How” we intend to do it / timeline...

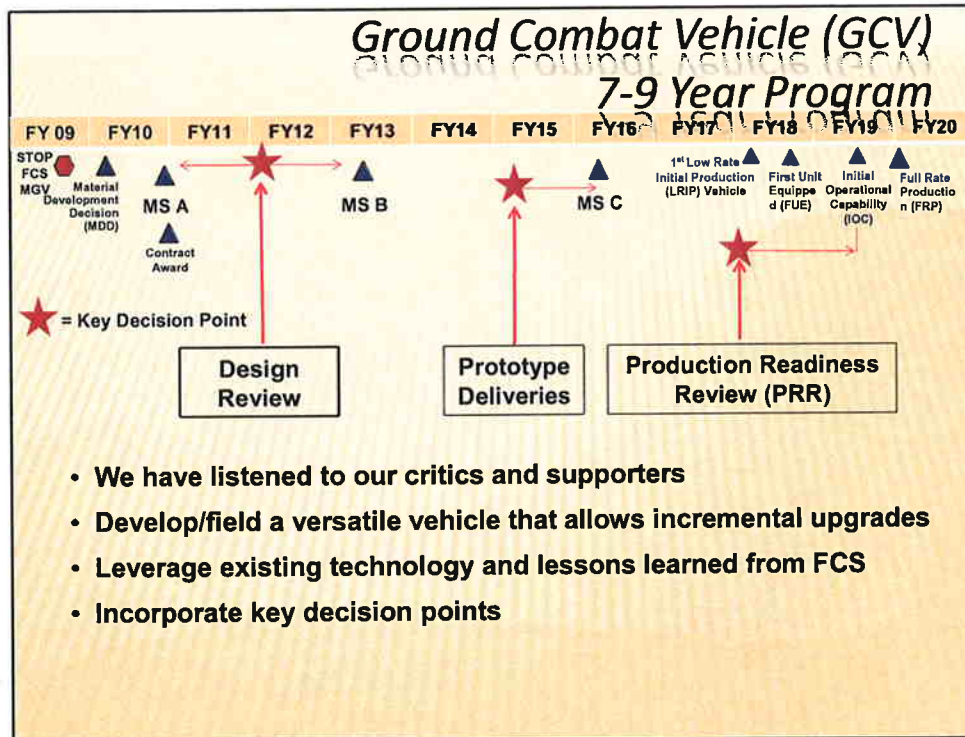


1 of 2

## Slides 14 – GCV 7-9-Year Timeline

- *{Speak off bullets on slide.....}*
- Details on key decision points....
  - The first opportunity to accelerate the GCV program would be at one of the early design reviews
  - The second opportunity to accelerate the program is at prototype delivery
  - The third opportunity is at production readiness review

**Next slide – additional background information on DPs....**



2 of 2

## Slides 14 – GCV 7-9-Year Timeline

- Further specifics on Details on key decision points....
  - *DP#1: If the contractor provides drawings and supporting technical data at either the preliminary design review or critical design review that exceeds what is normally provided at one of these reviews the Army could accelerate the program to an early production decision with OSD and Congressional support. It is possible to accelerate the program as much as a year if everything aligns.*
  - *DP#2: The contractor delivers a production ready vehicle that performs during testing at a level beyond what is normally expected it is possible to accelerate the program as much as a year with the support of OSD and Congress.*
  - *DP#3: If the contractor shows that their vehicle has no design issues it is once again possible with OSD and Congressional support to accelerate the fielding of the GCV.*

**Transition to next slide – Now that I've laid out the plan,  
let me clear up any misconceptions.....**

## Clarifications...

1. *"I expect to be underwhelmed."*  
- A congressional aide who follows Son of FCS
2. Nothing the Army's history of trying to reach for the stars on programs such as the Comanche helicopter and the Crusader vehicle — *both of which were canceled* — a congressional aide suggested there are good reasons to limit expectations.
3. *"In a resource-constrained environment with competing priorities, it is unthinkable to continue to fund the programs with delays that may be headed the wrong direction, while the proven current combat systems are falling apart due to age and wear."*  
- Major, U.S. Army
4. *"Given the continued development of the network and a number of additional FCS components, it seems unlikely that the new modernization program will be substantially different from the previous one."*  
- Defense Analyst
5. The Army is looking at building a platform that is incapable of performing on tough terrain, as is found in much of Afghanistan.

1 of 2

### Slides 15 – Countering our Critics

**Response to Questions 1 and 2:** We recognize many people are skeptical after our experience with FCS; we've learned many lessons and we're incorporating them into this program

**Response to Question 3 and 4:** The key to Army modernization is "incremental modernization" – we're going to field what's available, affordable, and technologically feasible in two-year increments – identifying key decision points

Capability packages will allow us to field as much as the country can afford, recognizing there will be times – like now – when we can't afford to equip every BCT

iPhone example....

Compare 3G and 3GS – looks the same – (M1 Tank)

Affordable to replace with next iteration each time  
65,000 apps available for download/10,000 independent apps developers

## Clarifications...

1. *"I expect to be underwhelmed."*  
- A congressional aide who follows Son of FCS
2. Nothing the Army's history of trying to reach for the stars on programs such as the Comanche helicopter and the Crusader vehicle — *both of which were canceled* — a congressional aide suggested there are good reasons to limit expectations.
3. *"In a resource-constrained environment with competing priorities, it is unthinkable to continue to fund the programs with delays that may be headed the wrong direction, while the proven current combat systems are falling apart due to age and wear."*  
- Major, U.S. Army
4. *"Given the continued development of the network and a number of additional FCS components, it seems unlikely that the new modernization program will be substantially different from the previous one."*  
- Defense Analyst
5. The Army is looking at building a platform that is incapable of performing on tough terrain, as is found in much of Afghanistan.

2 of 2

## Slides 15 – Countering our Critics

**Response to Question 5:** Design criteria reflects the Army's commitment to building a versatile platform capable of operating in different complex terrain environments (*find related quote?*)

---

**Transition to next slide – What does each of us need to do to make this happen.....**

*What Next?...*



*"No one is thinking if everyone is thinking alike."*

General George S. Patton

## **Slide 16 – What Do Stakeholders Need to Do?**

- Coordinated effort between OSD/Congress/Industry/DA
  - Congress – Board of Directors – need on-time resources in order to pursue program w/ manageable risk
  - OSD – Process oversight within an executable timeline
  - Army – responsible partnership with Congress, OSD, and Industry; we are 100% committed to this program
  - Industry – Need your best ideas, brightest people, and total commitment; cost consciousness

---

# *Backups*

## Evolution of the M1 Tank....



**M1**

105mm w/growth to 120mm



**M1A1**

- Lethality improvements
- Survivability improvements



**M1A1HC**

- New "Heavy Armor" package
- Created growth margin for:
  - Commanders ITV
  - Upgrade to Gunners Sight
  - Engine upgrades
  - Allowed input of Digital appliqué
  - Upgrade to Armor



**M1A2**

Created Growth for "Digital infrastructure"

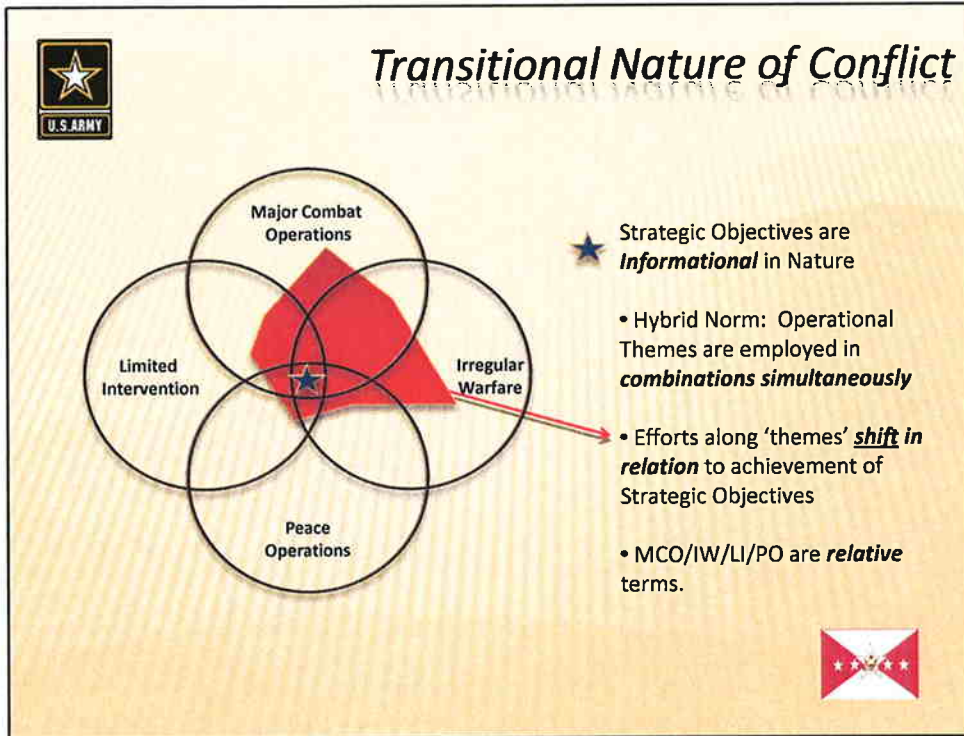
Introduced:

- FBCB2
- Commanders Independent sight
- Queuing of targets
- Allowed further input of Digital appliqué



**M1A2 SEP**

Armor upgrade  
Improved Digital C2  
Upgrade to Optics



### Slide 5 – Transitional Nature of Conflict

- Situation on the battlefield is increasingly dynamic
- We can no longer think in terms of 'phases' (versus transitions)
- This goes to how we must develop platforms capable of operating in multiple environments

## *The Ground Combat Vehicle Design Principles*

- **Versatility**
- **Force Protection**
- **Expeditionary**
- **Lethality**
- **Mobility**
- **Sustainability**
- **Network Integration & Interoperability**