FCS Program Overview

Mr. Steve Marion
Sr. Program Director
FCS Supplier Management
The Boeing Company
13 November 2008
FCS Brigade Combat Team...

**Manned Ground Vehicles (MGV)**
- Mounted Combat System (MCS) XM1202
- Infantry Combat Vehicle (ICV) XM1206
- Command and Control Vehicle (C2V) XM1209
- Non-Line of Sight Cannon (NLOS-C) XM1203
- Medium Range Munitions (MRM)
- Reconnaissance and Surveillance Vehicle (RSV) XM1201
- Field Recovery and Maintenance Vehicle (FRMV) XM1205
- Non-Line of Sight Mortar (NLOS-M) XM1204
- Common Chassis

**Unmanned Aircraft Systems (UAS)**
- Class I Unmanned Air Vehicle (UAV) XM 156
- Class IV Unmanned Air Vehicle (UAV) XM 157
- Class I Unmanned Air Vehicle (UAV) XM 156
- Class IV Unmanned Air Vehicle (UAV) XM 157
- Centralized Controller

**Unattended Systems**
- T-UGS (AN/GSR-10 (T))
- U-UGS (AN/GSR-9 (U))
- Non-Line of Sight Launch System (NLOS-LS) XM 501
- Tactical and Urban Unattended Ground Sensors

**Unmanned Ground Vehicles (UGV)**
- Medical Vehicle Treatment (MV-T) XM1208
- Medical Vehicle Evacuation (MV-E) XM1207
- Armed Robotic Vehicle – Assault Light (ARV-AL) XM1219
- Multifunctional Utility/Logistics and Equipment Countermine and Transport
- Small UGV (SUGV) XM1216
- MULE-T XM1217
- MULE-C XM1218

29 Jul 08
Manned Ground Vehicle (MGV) Family

- C2V XM1209
- RSV XM1201
- MCS XM1202
- NLOS-C XM1203
- MV(E/T) XM1207/1208
- ICV XM1206
- FRMV XM1205
- NLOS-M XM1204

MGV Fleet
As of: 10 SEP 08
UAS Overview

XM 156 Class I UAS

- Dedicated UAS capability at the lowest echelon
- Hover & Stare Capability enabling observation of urban infrastructure
- EO/IR/LD/LRF Sensor
- 10 hp Heavy Fuel Engine (HFE)

XM 157 Class IV UAS

- Reconnaissance, Surveillance, and Target Acquisition (RSTA) with Aided Target Recognition (AiTR)
- Video/sensor data distribution on FCS network (HNW)
- Wide Band Communications Relay (WNW and SRW)
- Manned/Unmanned (MUM) Teaming
- Autonomous flight and navigation, and takeoff and landing at unprepared landing zones

Unmanned Aerial Vehicle (UAV)
Unmanned Aircraft System (UAS)
UGV Systems Overview

XM 1217 MULE Transport
- Supports two dismounted infantry squads
- Transports 1900 lb
- Mobility for Complex terrain

XM 1219 ARV-A(L)
- Provide RSTA/lethality for Dismounted, Mobile & Air Assault operations
- Javelin/M240
- MR EO/IR sensor

XM 1218 MULE-C
- Supports BCT assured mobility
- AT mine detection, marking and neutralization

XM 1216 SUGV
- Reconnaissance in urban and subterranean spaces
- 32 lbs, Lightweight & Man-Packable
- Day/night operation
- Modular sensor payloads

MULE Common Mobility Platform
- Common chassis to support three variants
- Articulating Suspension Arms
- Power and Propulsion to support 65 kph
- Transport 2 per CH47

Autonomous Navigation System (ANS)
- Provides autonomous mobility control of UGV’s
- Situational awareness for MGV Indirect driving

UGV Systems Overview

MULE Common Mobility Platform
- Common chassis to support three variants
- Articulating Suspension Arms
- Power and Propulsion to support 65 kph
- Transport 2 per CH47
XM501 NLOS-LS System Overview

New Military Capability
• 15 missiles ready for launch
• Vertical launch with 360 degree coverage
• Laser guided, IR and grid attack modes
• Attack of moving targets
• Joint Program with Navy

Designed for Deployability
• Platform Independent -- 2 CLUs on FMTV
• Sling load forward
• C-130 transportable

Current and Future Force Compatible
• Command and Control with AFATDS; full ORD threshold capability for sensor-shooter link with FCS Battle Command
• Two-Way Network Radio Link
• On-board Mission and Launch Processing

Family of Missiles
Precision Attack Missile (PAM)
• 40 km Range
• Automatic Target Acquisition
• In-flight target location updates
UGS Overview

T-UGS (AN/GSR-9 (V) 1)

- Provides unattended Intelligence Surveillance Reconnaissance
- Detects & classifies heavy tracked vehicles at 350m
- Detects dismounted personnel at 50m
- Hand emplacement
- 13 sensors in a T-UGS kit
  - 2 Gateways
  - 8 ISR sensors
  - 1 RN sensors
  - 2 EO/IR sensors

U-UGS (AN/GSR-10 (V) 1)

- Supports clearing operations in complex urban terrain and provide extended surveillance of cleared structures
- Detects a person in motion within 15 meters of the sensor
- Provides an alert to the operator in less than 2 seconds
- 17 sensors in a U-UGS kit
  - 2 Gateways
  - 5 Imaging sensors
  - 10 Intrusion Detection Sensors
Program Accomplishments

- ICS Mounted in Bradley
- JTRS GMR in M1151A1
- C2V Demonstrator
- JEFX08
- Class IV UAV
- MULE
- Unattended Ground Sensors
- NLOS – LS Transport
- NLOS – LS Test
- MCS Ammo Handling System

Demonstrations and Technologies On Track

SUV Video Imagery Sent to B-Kitted HMMWV During Spin Out P-LUT

Spin Out P-LUT at AETF

NLOS-C Army Birthday

APS Intercept

NLOS-C Army Birthday

JTRS GMR in M1151A1

C2V Demonstrator

JEFX08

Class IV UAV

MULE

Unattended Ground Sensors

NLOS – LS Transport

NLOS – LS Test
**Adjusted Program**

**Current**
- Most vulnerable force (Infantry Brigade Combat Team) not getting Spin-Outs until FY14
- Spin-Outs were focused on the most capable force – Heavy Brigade Combat Teams
- Not achieving integration of the Soldier in the network fast enough
- Not getting Spin-Outs to current force fast enough
- Size, weight, & power challenges with current heavy platforms (Tank, Bradley, Stryker, M113, & Paladin)
- Multiple Battle Command Systems

**Proposed**
- Spin-Outs focused on most vulnerable force (Infantry Brigade Combat Team) first – FY11
- Willing to accept risk, Heavy Brigade Combat Teams are good enough for now
- Soldier in the network with Ground Soldier Ensemble – FY11
- Accelerating and adding needed capabilities to the current force
- Integrated Battle Command System

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All 43 Army and National Guard IBCTs Fully Equipped with Spin-Outs by FY25
Capability You Get

FCS-Enabled Infantry BCT
IBCT Spin Out

- 105 mm Howitzer
- Raven Unmanned Aerial Vehicle
- Blue Force Tracker
- Shadow Unmanned Aerial Vehicle
- Class I Unmanned Aerial Vehicle
- Small Unmanned Ground Vehicle
- Network Integration Kits
- Tactical Unattended Ground Sensors
- Urban Unattended Ground Sensors
- Command Post of The Future
- Non Line of Sight Launch System

Merging the Modular Force with FCS Capability Yielding a Networked and Precision Capable Force
### Spin Out Program - What’s Changed

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**Spin Out 1-HBCT (OLD)**
- TFT/FDT&E/LUT HBCT
- LRIP
- MS C
- Prod TFT/ FDT&E
- IOTE
- FUE

**IBCT Early Spin Out (NEW)**
- CDD Update
- CPD Approval
- LRIP
- MS C
- Tech Test
- DA
- IVT
- SO DAB Update
- FDT&E/IOTE IBCT

**FCS Core Program**
- DAB
- SoS PDR
- DAB
- SoS CDR
- SoS DRR

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- **Suspends**
  - All Bradley and Abrams work after June 08 – PM MBE requirements after June 08, all SO1 HBCT testing
- **Adds**
  - 3 tests for IBCT Early SO – Preliminary LUT in Jul 08, SO1 Early TFT, FDTE and LUT in FY09, SO1 Early OT in FY10 (GMR radios)
  - Development of BFT HMMWV Kit (antenna and new cable) for both sets of GMR 4 channel radios (one with an EPLRS and SRW and the other with 2 SRWs)
  - Development of integration into FBCB2 JCRs software
  - Integration of SUGV and Class 1 into bigger network (share pictures)
  - Update B2E software to included SUGV and Class 1 integration in FQT
### IBCT Spin Out

#### Early IBCT

<table>
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<tr>
<th>Component</th>
<th>Quantity</th>
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<tr>
<td>B-Kit / B-Kit Light</td>
<td>81/0</td>
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<tr>
<td>NLOS-LS</td>
<td>6</td>
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<tr>
<td>T-UGS</td>
<td>12</td>
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<tr>
<td>U-UGS</td>
<td>29</td>
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<tr>
<td>Ground Soldier Ensamble / Rifleman Radio</td>
<td>268/648</td>
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<tr>
<td>SUGV Blk1</td>
<td>38</td>
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<tr>
<td>CL I UAV Blk0</td>
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</table>

#### B-Kit For Early IBCT (HMMWV)
- 4 Channel GMR
- ICS Type VI with FCS BC B2E
- JCR running on v5 appliqué with display

#### B-Kit For Threshold IBCT (HMMWV, Stryker CV)
- 2 Channel GMR
- 2 Channel HMS Manpack
- ICS Type VI running UBC-P with display
- Note: Replaces 2 SINCgars radios in HMMWVs and EPLRS, Near Term Digital Radio (NTDR), and two SINCgars from Stryker CV

#### B-Kit Light for Threshold IBCT (HMMWV, FMTV)
- 2 Channel HMS Manpack
- V5 appliqué with display running UBC-P
- Note: Retains SINCgars on HMMWVs, FMTVs

#### Threshold IBCT

<table>
<thead>
<tr>
<th>Component</th>
<th>Quantity</th>
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<tr>
<td>B-Kit / B-Kit Light</td>
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<tr>
<td>NLOS-LS</td>
<td>6</td>
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<tr>
<td>T-UGS</td>
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<tr>
<td>U-UGS</td>
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<tr>
<td>Ground Soldier Ensamble / Rifleman Radio</td>
<td>268/648</td>
</tr>
<tr>
<td>SUGV (T)</td>
<td>38</td>
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<tr>
<td>CL I UAV (T)</td>
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<tr>
<td>MULE-C (T)</td>
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<td>ARV-A-L (T)</td>
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<tr>
<td>Centralized Controller (T)</td>
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<tr>
<td>Class IV UAV (T)*</td>
<td>16</td>
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#### Average Procurement BCT Cost (FY03C$)
- Spin Out Early = $181.4M
- Spin Out Threshold = $370.1M
- Excludes radios & GSE
- Includes ORFs

#### Spin Out Capabilities to Current IBCTs

<table>
<thead>
<tr>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
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<th>FY20</th>
<th>FY21</th>
<th>FY22</th>
<th>FY23</th>
<th>FY24</th>
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<tbody>
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<td>Production Schedule</td>
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<td>4</td>
<td>4</td>
<td>2</td>
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<tr>
<td>Procurement Dollar Rqmts (TY$M)</td>
<td>$333</td>
<td>$555</td>
<td>$852</td>
<td>$983</td>
<td>$1,126</td>
<td>$1,405</td>
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<td>$1,643</td>
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<td>$2,003</td>
<td>$2,006</td>
<td>$2,018</td>
<td>$1,881</td>
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<td>Cumulative Fielding to Current IBCTs</td>
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<td>3</td>
<td>6</td>
<td>8</td>
<td>10</td>
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<td>18</td>
<td>21</td>
<td>25</td>
<td>29</td>
<td>33</td>
<td>37</td>
<td>41</td>
</tr>
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*Threshold Production

T = Threshold  *Not Organic to IBCT / Includes 4 LCUs
FCS Program Business Opportunities
One Team

39 States, 203 Congressional Districts, 586 Suppliers

As of 31 March 2008

“One Team” Management Framework

Best of Industry Approach
Future Combat Systems Supply Base
Small Business - As of Period 9: 03/31/08

---Excludes Values---
< 5K for Small Business
< 10K for Large Business
S=Supplier D=District

35 States (Includes DC)
162 Congressional Districts
375 Suppliers
How to Get Involved with FCS

• Regularly check the FCS Website Home Page at: www.boeing.com/fcs

• Located on this website:
  - FCS Business Opportunities of the LSI and its Partners (contacts with websites)
  - Information on Submitting Inquiries
  - Partners’ Requests for Quotations / Information
  - Supplier Diversity information (specific LSI / Partner Small Business contacts provided in FCS Business Opportunities Brochure)
  - FCS calendar with upcoming conferences and events
  - On-line registration form

• Reach out to the LSI and Partners to express your interest and capability

• Focus on areas of technology and express interest across the One Team
Website for program information to engage all segments of Industry

- Business opportunities across the team including RFIs/RFPs and Industry Day announcements
Examples of Current Business Opportunities

<table>
<thead>
<tr>
<th>Supportability</th>
<th>Manned and Unmanned Ground Systems</th>
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<tbody>
<tr>
<td><strong>Logistics Data Management Service</strong></td>
<td><strong>MGV</strong></td>
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<tr>
<td>• Service Oriented Architecture</td>
<td>• Fabrication</td>
</tr>
<tr>
<td>• Systems Engineering</td>
<td>• Wiring Harnesses</td>
</tr>
<tr>
<td>• Software Development</td>
<td>• Bearings</td>
</tr>
<tr>
<td>• Modeling and Simulation</td>
<td>• Electrical and Hydraulic Components</td>
</tr>
<tr>
<td>• Systems Architecture</td>
<td>• Machined Parts</td>
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**Platform Soldier – Mission Readiness**

- Embedded micro sensors with micro transmitters for monitoring human health and physiological/psychological conditions

**C4ISR – Network Systems / Battle Command**

<table>
<thead>
<tr>
<th>Centralized Controller Device</th>
<th>Battle Command &amp; Mission Execution</th>
</tr>
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</table>
| • Procurements for Small, Hand-Held Computing Devices  
  – Helmet/Goggle Mounted Display Devices  
  – OLED Touch Screen Displays | • Software Engineering  
  • Software Coding and Development |

**Intelligence, Surveillance, and Reconnaissance**

<table>
<thead>
<tr>
<th>Air Sensor Integration</th>
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<tbody>
<tr>
<td>• Software Engineering to support porting and verification testing</td>
</tr>
<tr>
<td>• Engineering Consultants for Electro-Optics/Infrared/Laser-Designator/Laser Range-finder sensor supplier management</td>
</tr>
<tr>
<td>• Knowledgebase solutions</td>
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</tbody>
</table>
Summary

- Program keeping pace with Army needs...Maintain Velocity
- More than 60 test activities underway...All Platforms in Testing
- 2009 is a critical execution year...SoS PDR
- FY09 PB at $3.6B...RDTE & Production
- Focused on Our Soldier

...The Future is Here Now

Equipping our joint warfighters with the world’s best capability
Questions?