



Joint and Coalition Warfighter Experiences in Augmented Reality



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Basic Bold Quest “Who, What and Why”

Major Evolutionary Milestones

- **2001** Conceived and approved (Advanced Concept Technology Demonstration ACTD)
- **2003** First operational demonstration.
- **2011** Transition from Joint Forces Command to Joint Staff management.

Original BQ Coalition (2003)



What do they do and Why?

- Interoperability; sensor-to-shooter kill chain focused.
- Coalition network context; Federated Mission Networking (FMN) distributed to sites internationally.
- Data collection and analysis derived from scenario/vignettes representative of coalition operations.
- Air, Ground, Maritime and Cyber domains.
- Live, Virtual and Constructive forces.
- Via semi-annual capability demonstrations of varying scale, content, duration and location.
- With participants funding own costs; leveraging the collective pool of resources (people and equipment).

Current BQ Coalition (2018-2019)



(Plus continuously evolving group of observer nations considering future participation.)

BQ Coalition (2020)

Currently “Under Construction”

Where is the impact? (So what?)

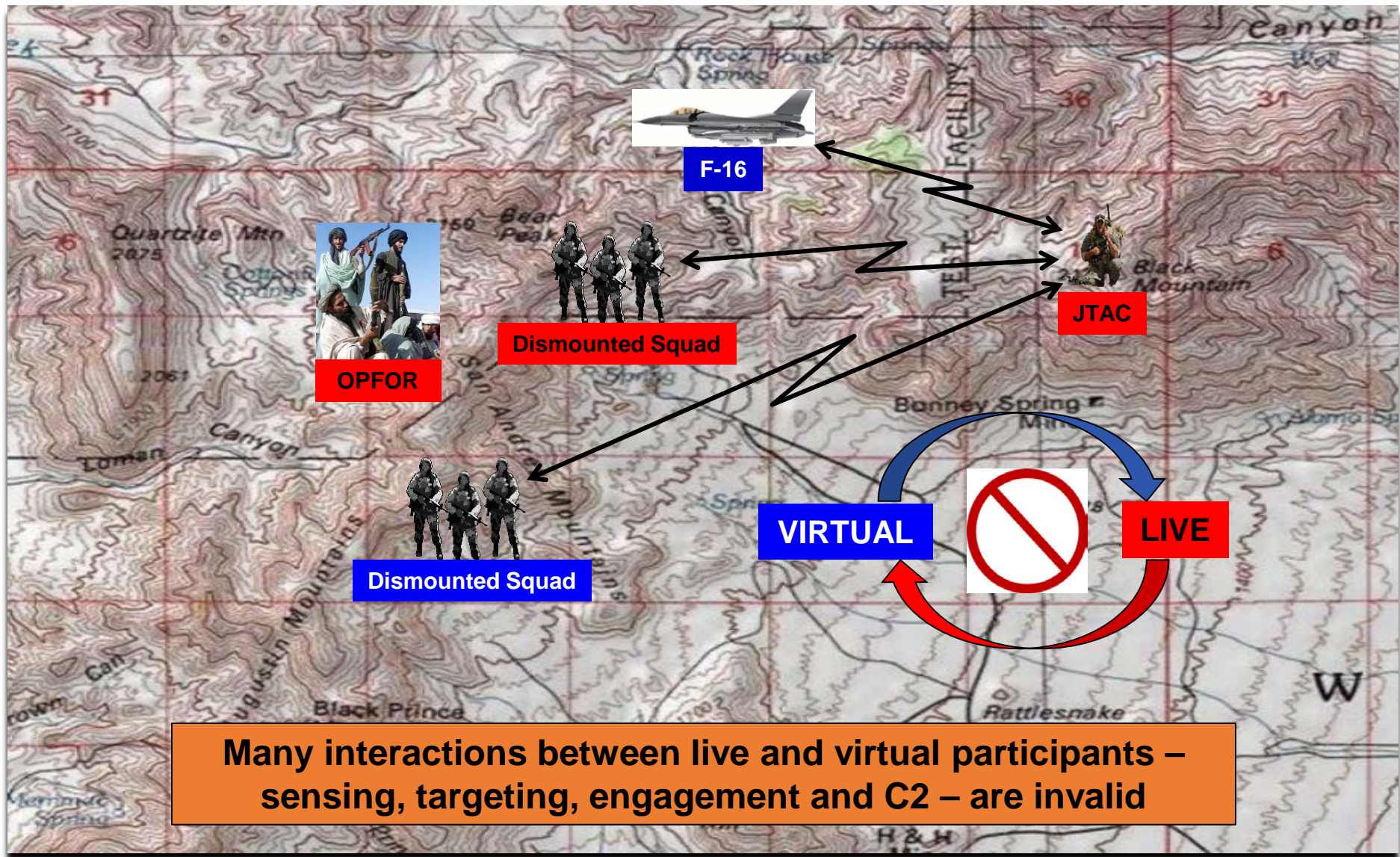
- Current operational needs (systems test & pre-deployment acceptance checks; tactics, techniques and procedures).
- Future requirements and capability development.
- Pacing and assessing progress in established Coordinated Implementation processes (e.g. Close Air Support; Fires).
- Validation of specific nation/service/program “fixes” in a coalition context.

Purpose of Bold Quest LVC Environment

- Provide a venue where Nations, Services and Programs can demonstrate and assess methods to create more capable and interoperable Live, Virtual & Constructive (LVC) environments that support building and maintaining combined joint fires proficiency, to include:
 - Assessing and identifying tools, methods and technologies to improve LVC capabilities and interoperability in a joint and coalition environment.
 - Determining and assessing the ability of distributed simulators to improve combined joint fires individual and collective performance.
 - Demonstrating and assessing new technologies that address current LVC shortfalls, such as Augmented Reality and simulated DACAS capabilities.
 - Bringing LVC stakeholders together in a collaborative effort that leads to long term improvements in distributed simulator interoperability.



Integrated LVC – What is the Issue?



Many interactions between live and virtual participants – sensing, targeting, engagement and C2 – are invalid

AR – Bridging the Gap in Mixed LVC Training



Fort Benning Feb 2014



Holloman AFB
May 2014

Participant Feedback

1=Not at all Adequate; 2= Generally NOT adequate; 3= Neither adequate nor inadequate; 4= Generally Adequate; 5= Very Adequate

	All simulators (N=18)	AC-130 Scenario (N=5)	Demo 14.1 (N=10)
Was the length (time) of the scenario adequate for the training exercise?	4.32	4.2	3.39
Was the scenario realistic enough for you to feel immersed in the exercise?	4	4	-
Was the scenario complex enough to challenge you?	3.78	3.25	3.48
Were the terrain, landscape, and buildings realistic enough not to cause a distraction to training?	4.17	3.5	-
Were the audio cues distinct enough to replicate patterns of life?	3.72	3.5	3.29
Were the visual cues distinct enough to replicate patterns of life?	4.22	3.75	3.1
Were the visual cues distinct enough to discriminate non-combatants?	3.83	3.75	-
Were the visual cues distinct enough to identify key individuals?	3.67	3.75	4
Were the audio cues distinct enough to identify the location of enemy forces?	3.78	3.75	3.75
Were the visual cues distinct enough to identify the location of enemy forces?	4	4	4
Was the opposing force ratio sufficient enough to evaluate the unit?	4.11	4	-

- Based on data collected over the two Bold Quest events, AR can close a large interoperability gap in how warfighters in live and virtual environments interact.
- AR technology with military applications has rapidly matured.
 - Both operational and training environments.
- We welcome the opportunity to participate in this forum.
 - We are working to bring AR technology to BQ19.1 in May 19.

