



Crewman's Associate Advanced Technology Demonstrator Briefing

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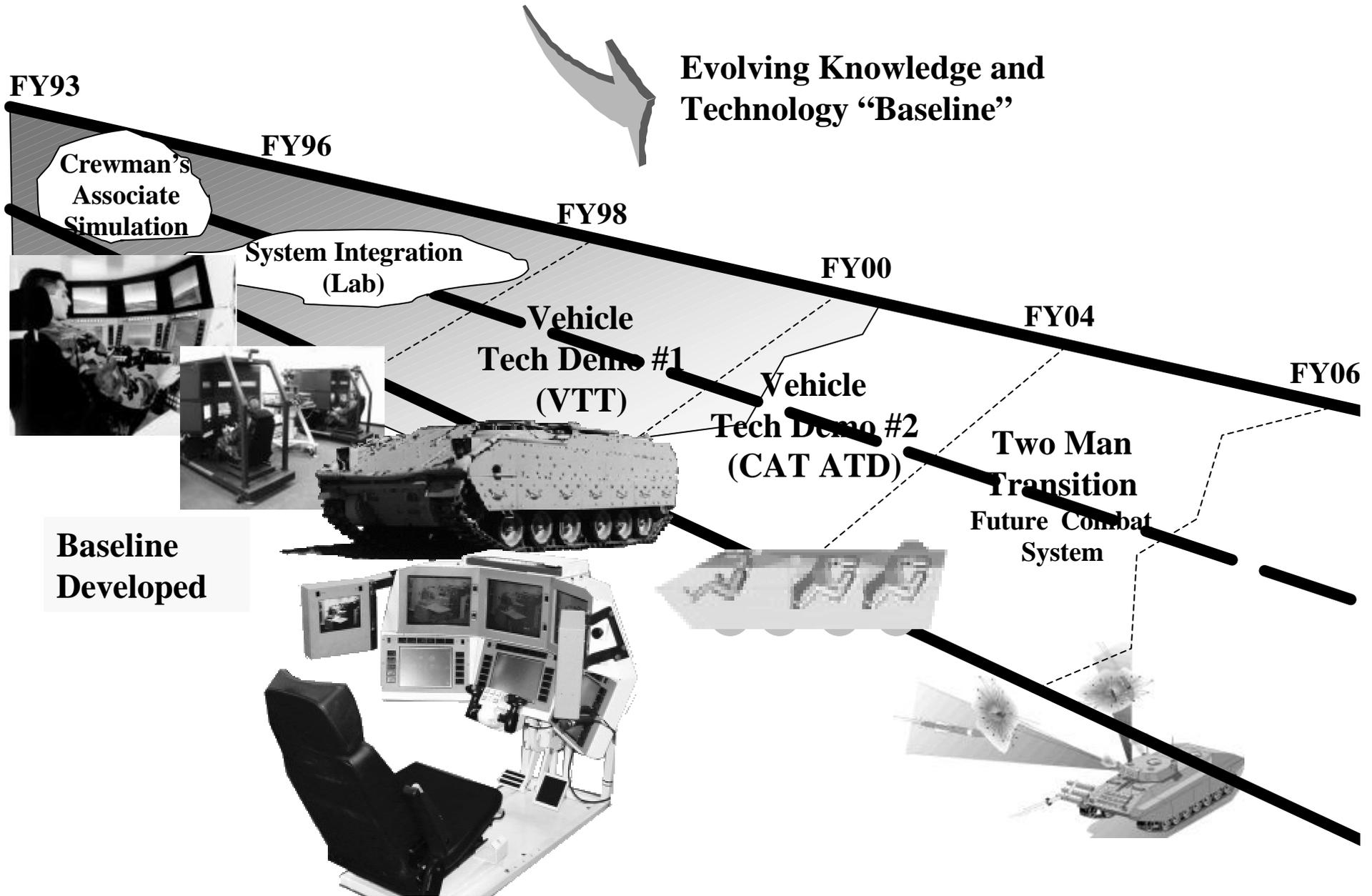
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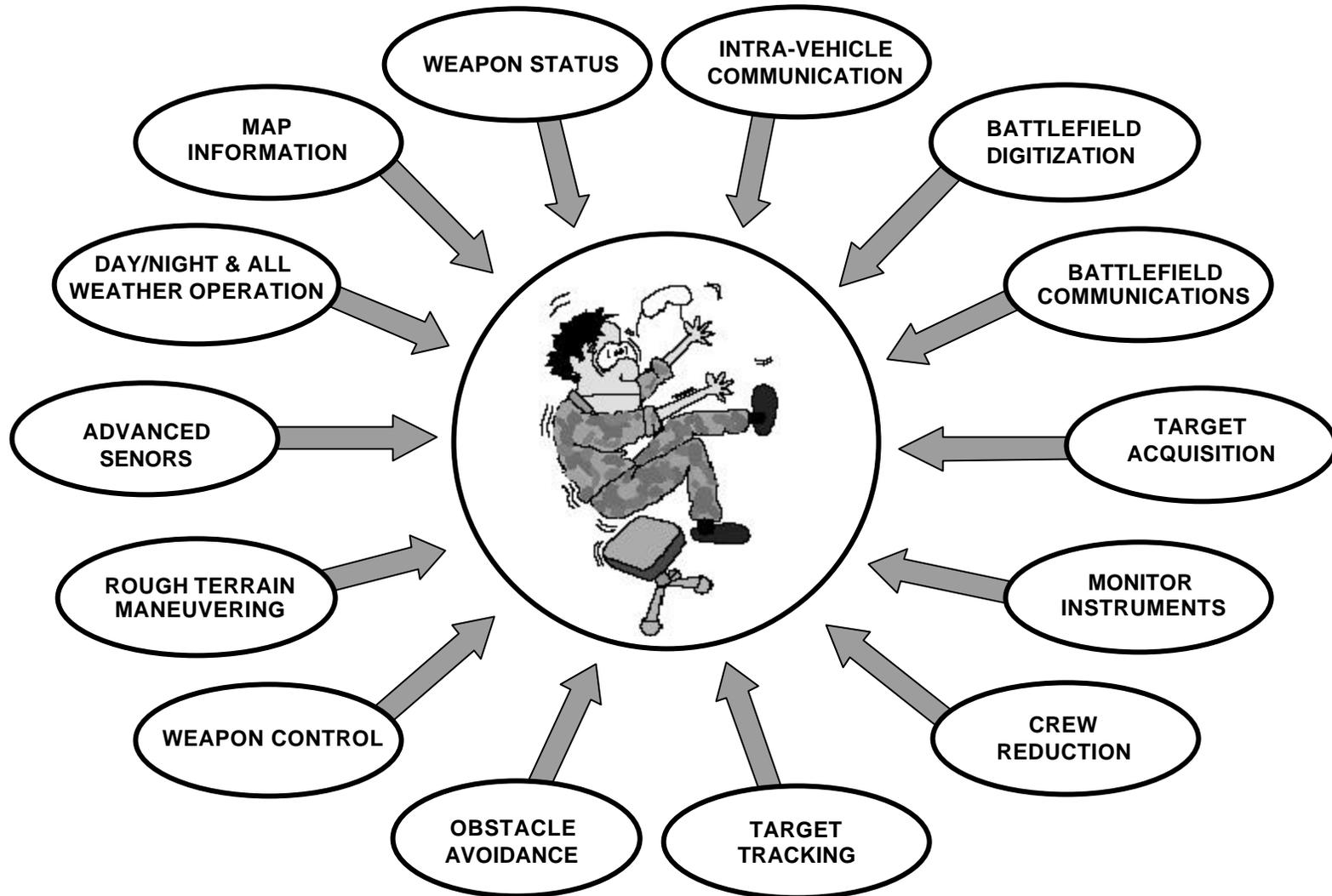
TARDEC Crew Reduction Efforts



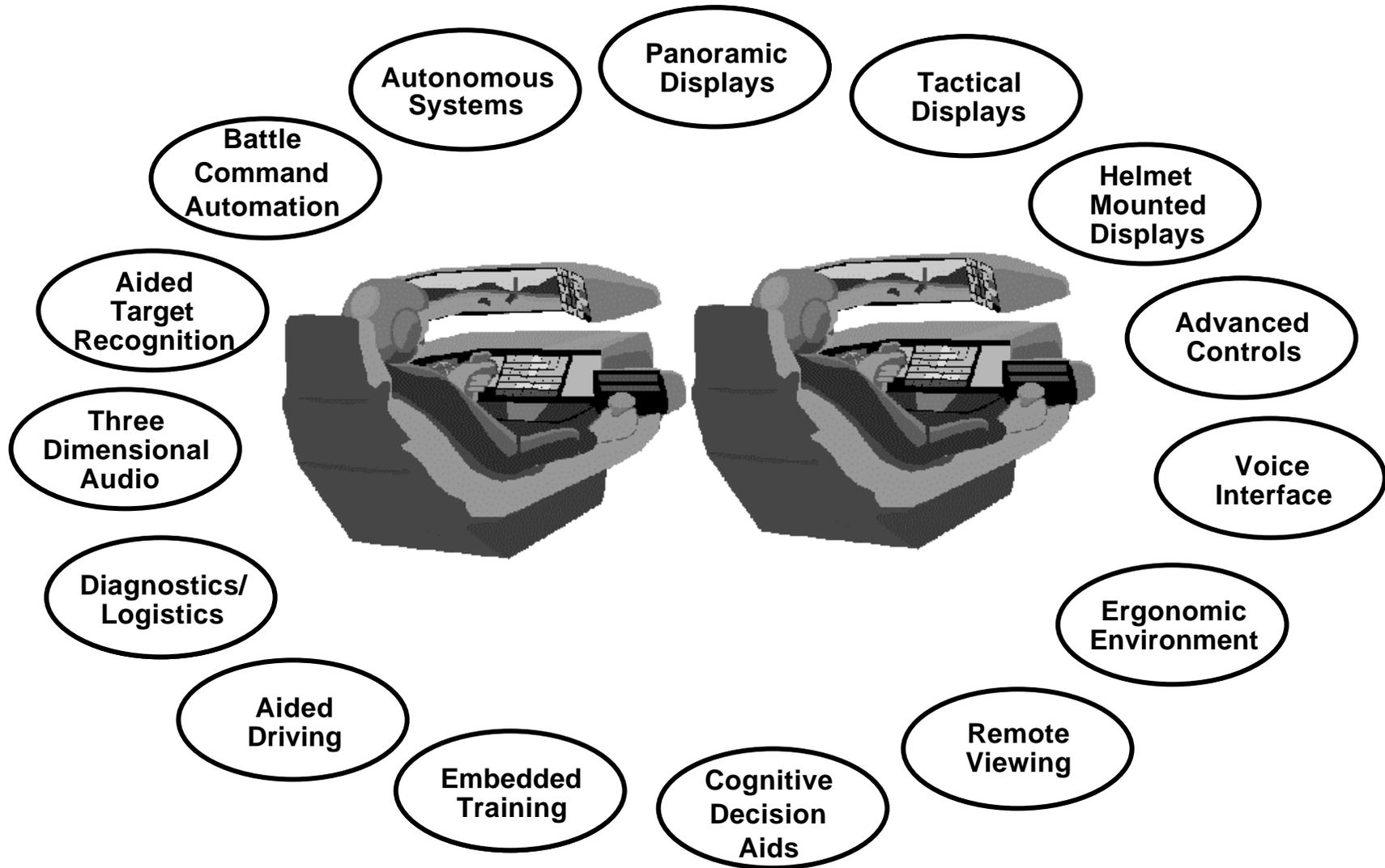
Crewman's Associate ATD

- The development of a crew station soldier-machine interface
- The integration of advanced technologies, such as aided target acquisition, integrated defense, combat ID, digital messaging, driver's aids, etc.
- Two platforms (time frames) addressed:
 - Potential M1A2 (SEP) + (1998 *technology*)
 - Future MBT (2005 *technology*)

Motivation



Vision

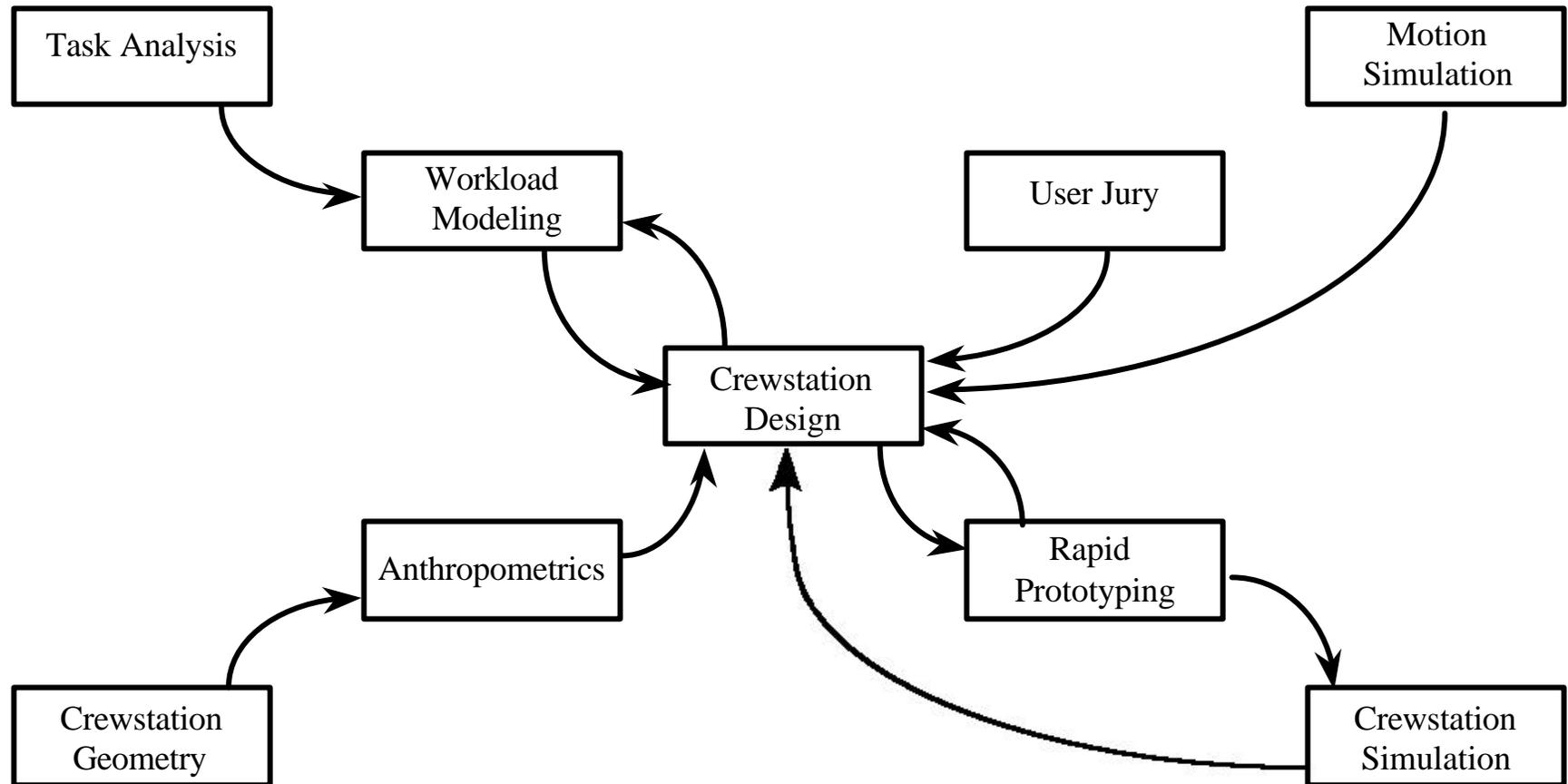


Objectives

Increase Main Battle Tank operational effectiveness by:

- Decreasing engagement timelines
- Decreasing time required to create and send digital C2 reports
- Improving operations on the move
- Improving situational awareness
- Improving night operations
- Providing a User-friendly interface to the digital battlefield of Force XXI
- Improving CONOPs
- Reducing maneuver damage

CTT Design Methodology

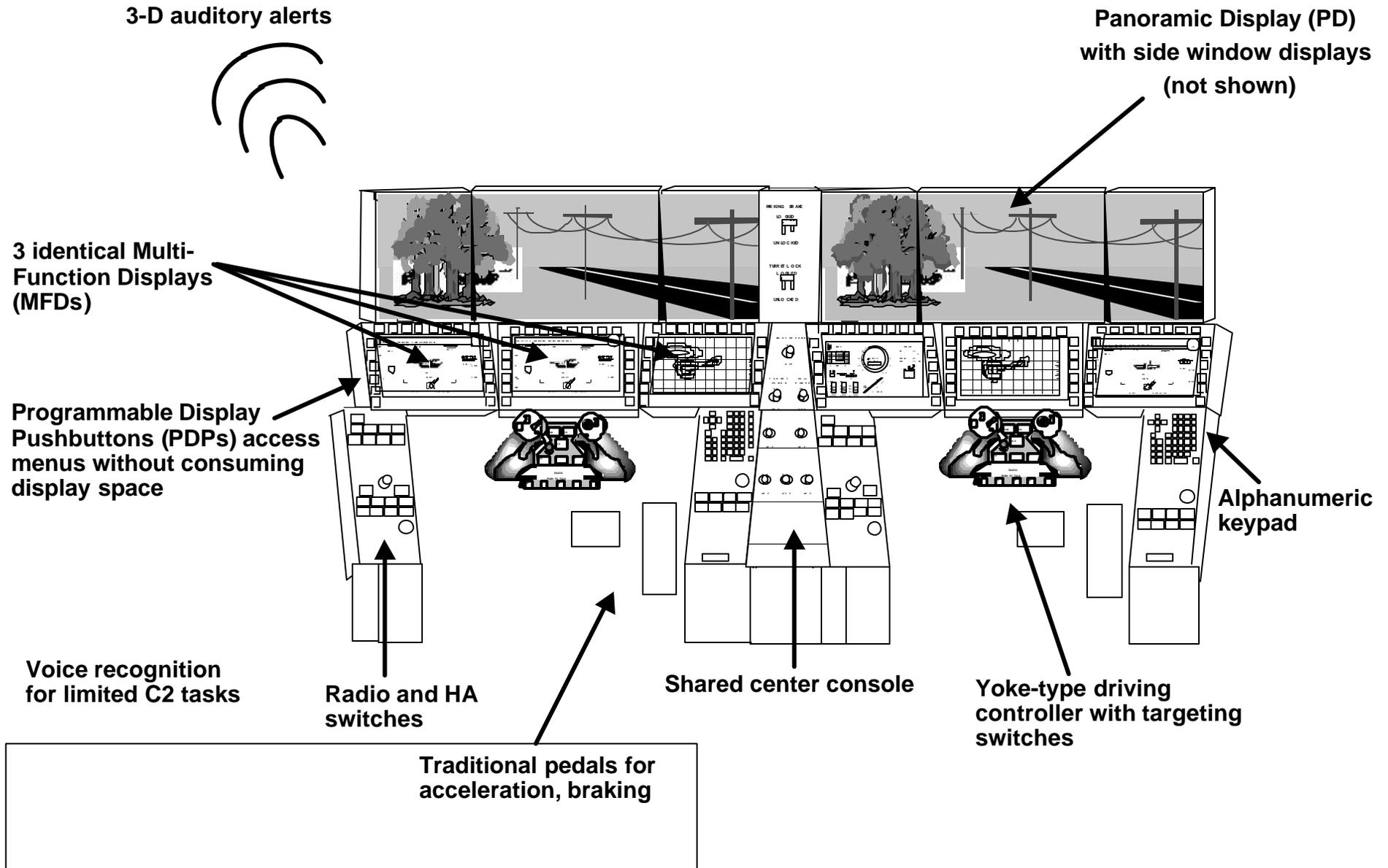


Individual Steps or Complete Design Process Performed to Meet Project Goals

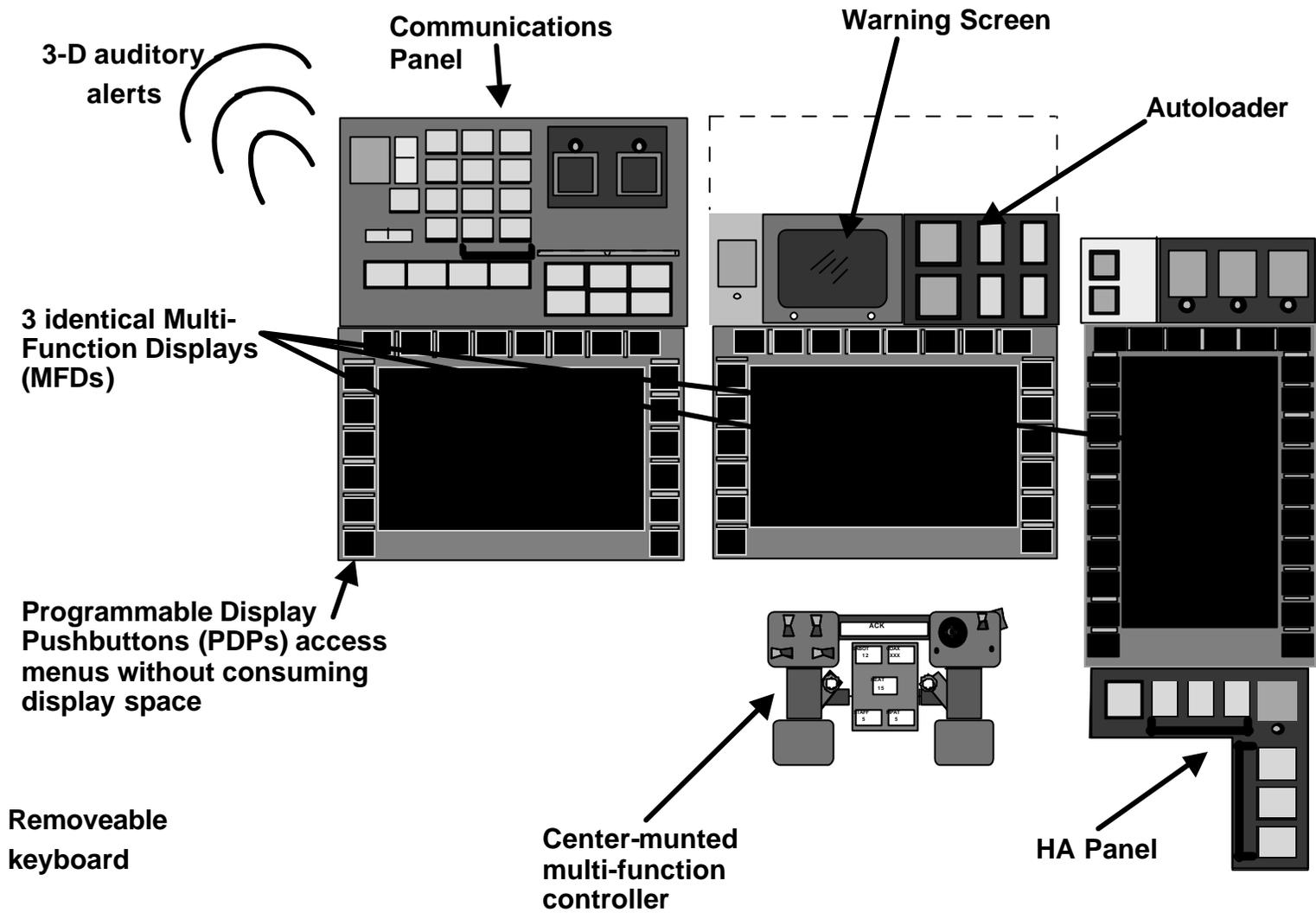
Crewstation Design Principles (Primary)

- Hands on primary controller
- All critical information in the primary vision zone
- One step functions
- Consistent Mental Model

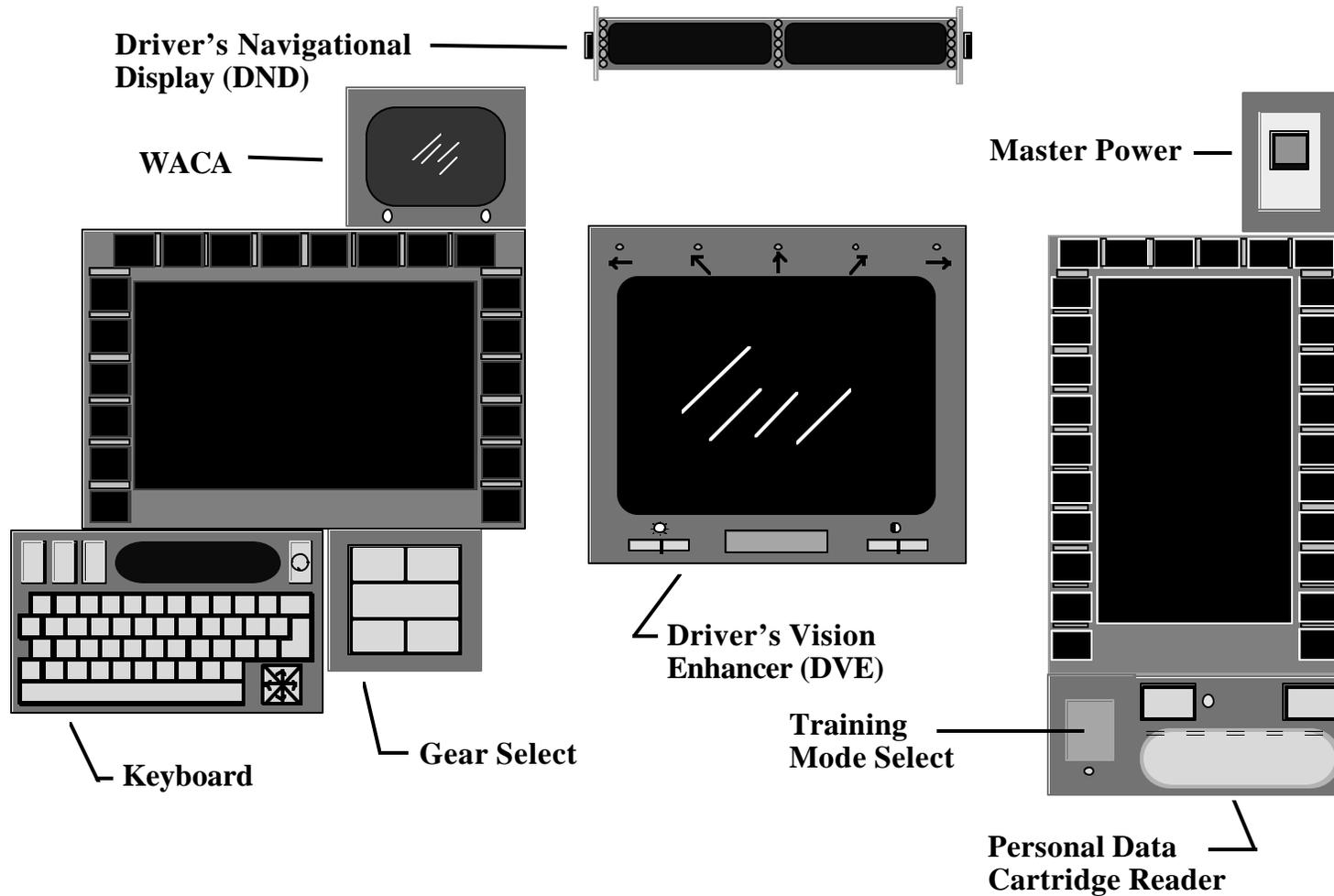
2005 Crewstation



1998 Crewstation



1998 Driving Station



Crewstation Displays

Panoramic Display

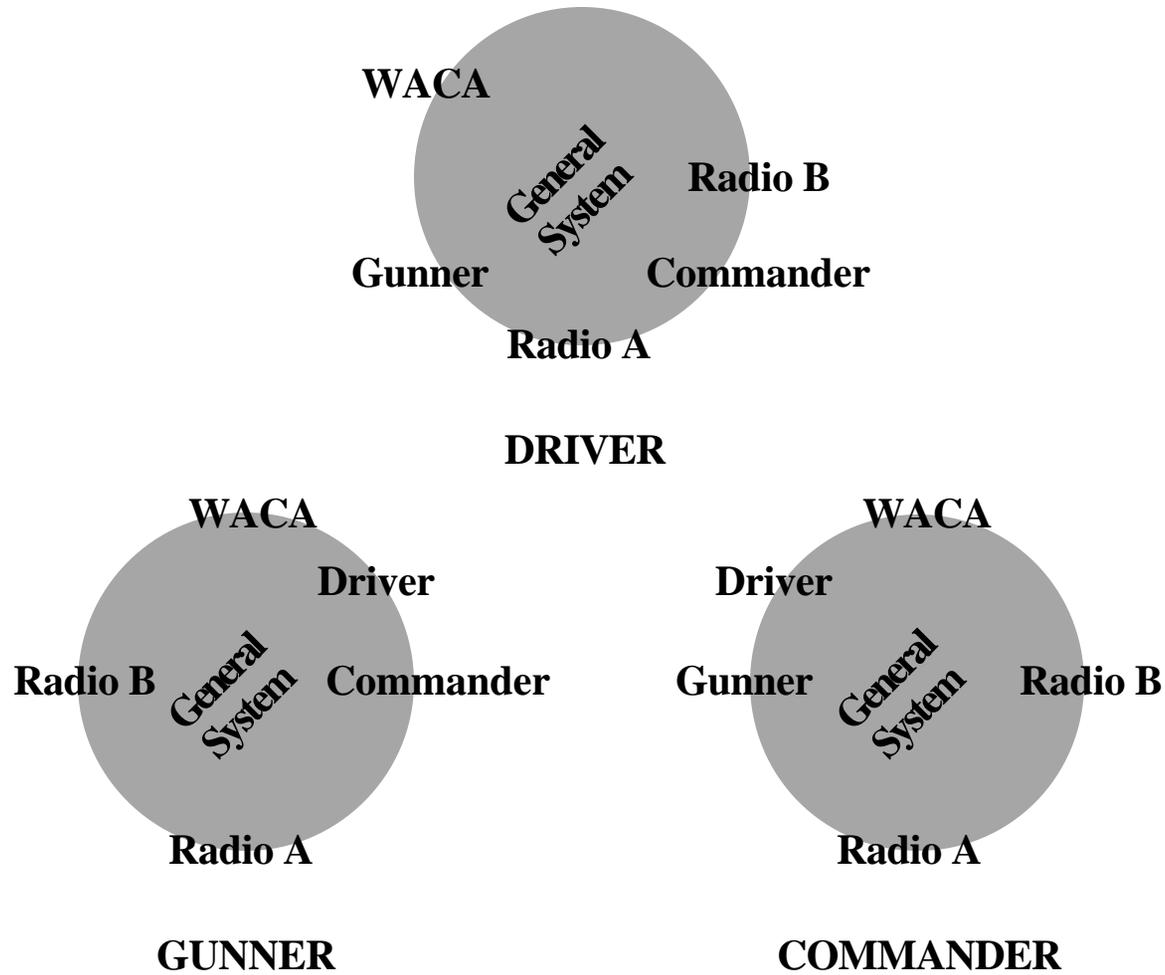
- 180 degree indirect vision to the crew
- Inherent protection from directed energy weapons
- Seamless, closed hatch vision
- Common visual environment
- Located within the Primary Vision Zone.

Crewstation Displays

Multifunction Displays

- Display information from different subsystems: targeting, driving, command and control, tactical map, etc.
- Buttons on the top of the MFD select the displays functionality.
- Located within the Primary Vision Zone.
- Provide consistent mental model.

3D Audio Display





- **A User-friendly interface to the digital battlefield of Force XXI**
- **A 65% decrease in the workload required to send C2 messages**
- **Improved situational awareness**
- **Improved operations on the move**
- **Improved night operations**
- **Reduced maneuver damage**
- **Improved CONOPs**

Test Results

(Non-experimental analysis)

- Operations on the move have been improved due to:
 - 1) decreased steps required to execute tasks
 - 2) elimination of dragging the cursor
 - 3) all critical task on yoke

- The crewmen now have a simplified, User-friendly interface to the digitized battlefield of Force XXI.

- The ability to effectively perform continuous operations has been improved due to the decreased fatigue associated with operating this crew station.

Test Results

(Subjective Comments)

- The electronic map provided the most significant performance enhancement
- The ability for each crewman to tailor his individual displays to suit his preferences was helpful
- Digital C2 interface had a positive impact on performance, being easier and faster than M1A2
- Aided target acquisition had a positive impact on performance.
- *Combined interfaces and technologies provided the ability to rapidly convey the information required to control forces at the platoon and company level*

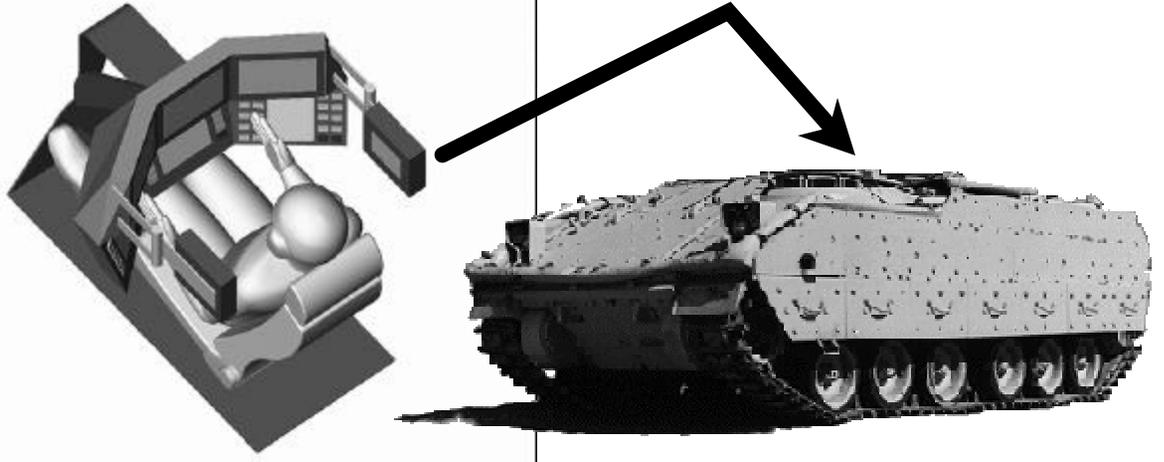
Vetronics Technology Testbed (VTT)

- **Update Crewman's Associate Crew Station Design**

- Lessons Learned
- Technology Advances
- Test Bed Costs
- Test Bed Space

- **Integrate into Bradley A0 Hull**

- Two Crew Stations
- Supporting Technology
- Supporting Subsystems



- **Conduct Test Bed Workload Experiments and Technology Demonstrations in the Field**

- Side-By-Side
- In-Line

