

ROCHESTER INSTITUTE OF TECHNOLOGY

Health Monitoring for the Light Armored Vehicle

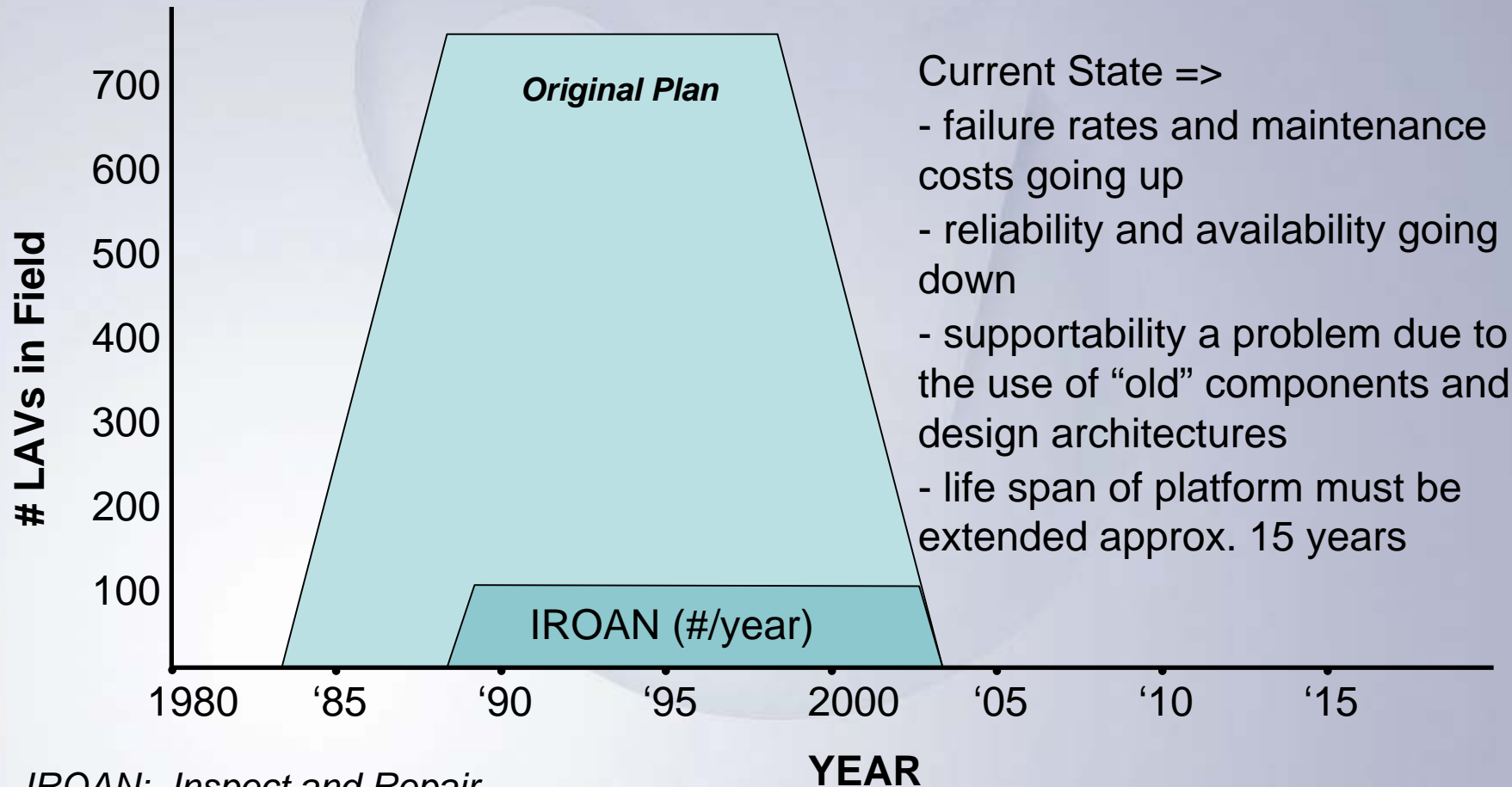
DoD Maintenance Symposium

Maintenance Technology - Initiatives Implemented
Through Academic Development

October 28, 2003

Dr. Michael G. Thurston

USMC Light Armored Vehicle Deployments

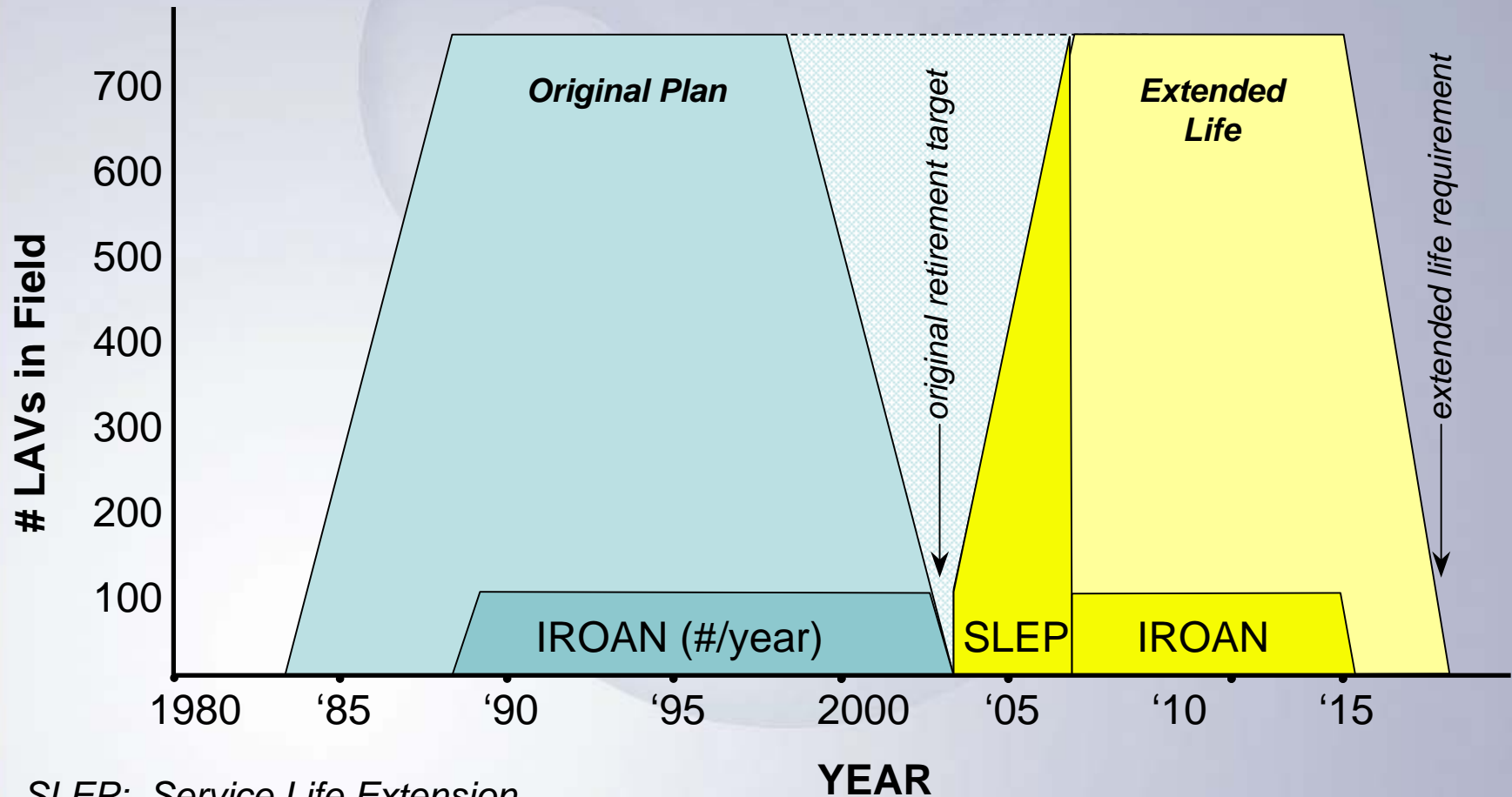


Current State =>

- failure rates and maintenance costs going up
- reliability and availability going down
- supportability a problem due to the use of “old” components and design architectures
- life span of platform must be extended approx. 15 years

IROAN: Inspect and Repair Only As Necessary

USMC Light Armored Vehicle Life Extension



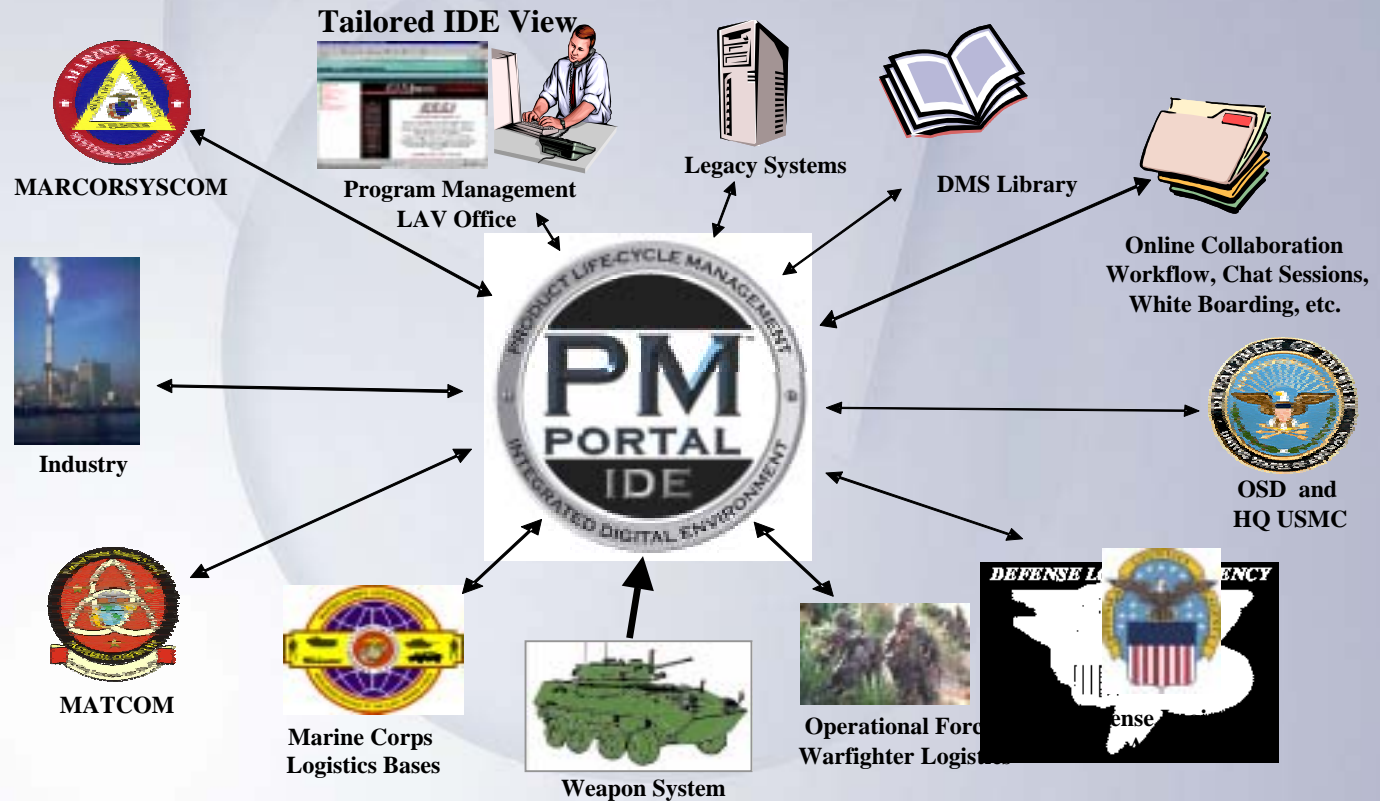
SLEP: Service Life Extension Program

PM-LAV Initiatives

- SLEP: Service Life Extension
- Integrated Data Environment (IDE) to support improved management of operational availability drivers and life-cycle costs.
 - Intranet Portal provides information access to all stakeholders
 - *Smart Maintainer* improves maintainer effectiveness and provides feedback on maintainer training
 - On-board Health Monitoring System: provides core diagnostic and prognostic functionality which feeds information to the *Smart Maintainer* and Portal.

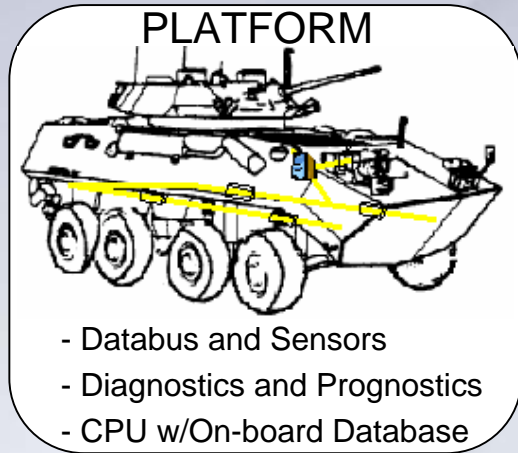
PM-LAV: Program Managers Office for the Light Armored Vehicle

Integrated Data Environment (IDE) Vision

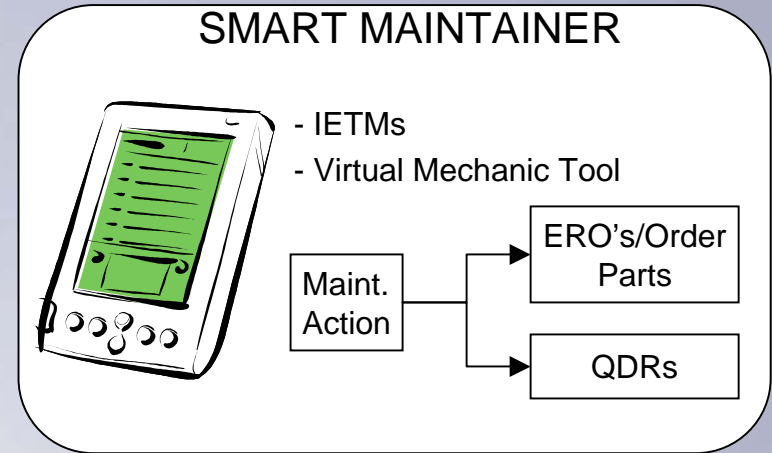


Use Portal Technologies to Integrate the Acquisition & Logistics Processes of the Enterprise

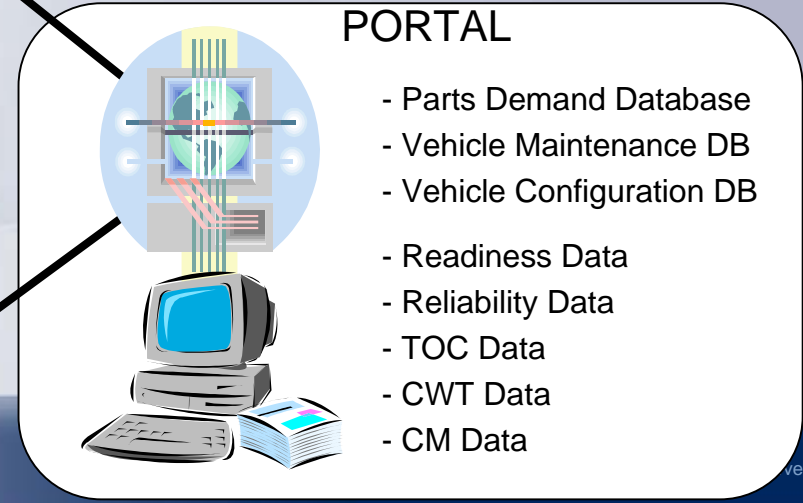
IDE Integration



- System Faults (including diagnostic and prognostic info.)
- Platform Data



- Configuration Data (upward arrow)
- Platform Data
- Maint. Forms/Records (downward arrow)



Phase I Program Goals:

- Develop and FIELD a core set of functionality in each area.
- Systems must be affordable, and scalable to allow for expansion of functionality in the future

RIT On-Board Monitoring System for the LAV

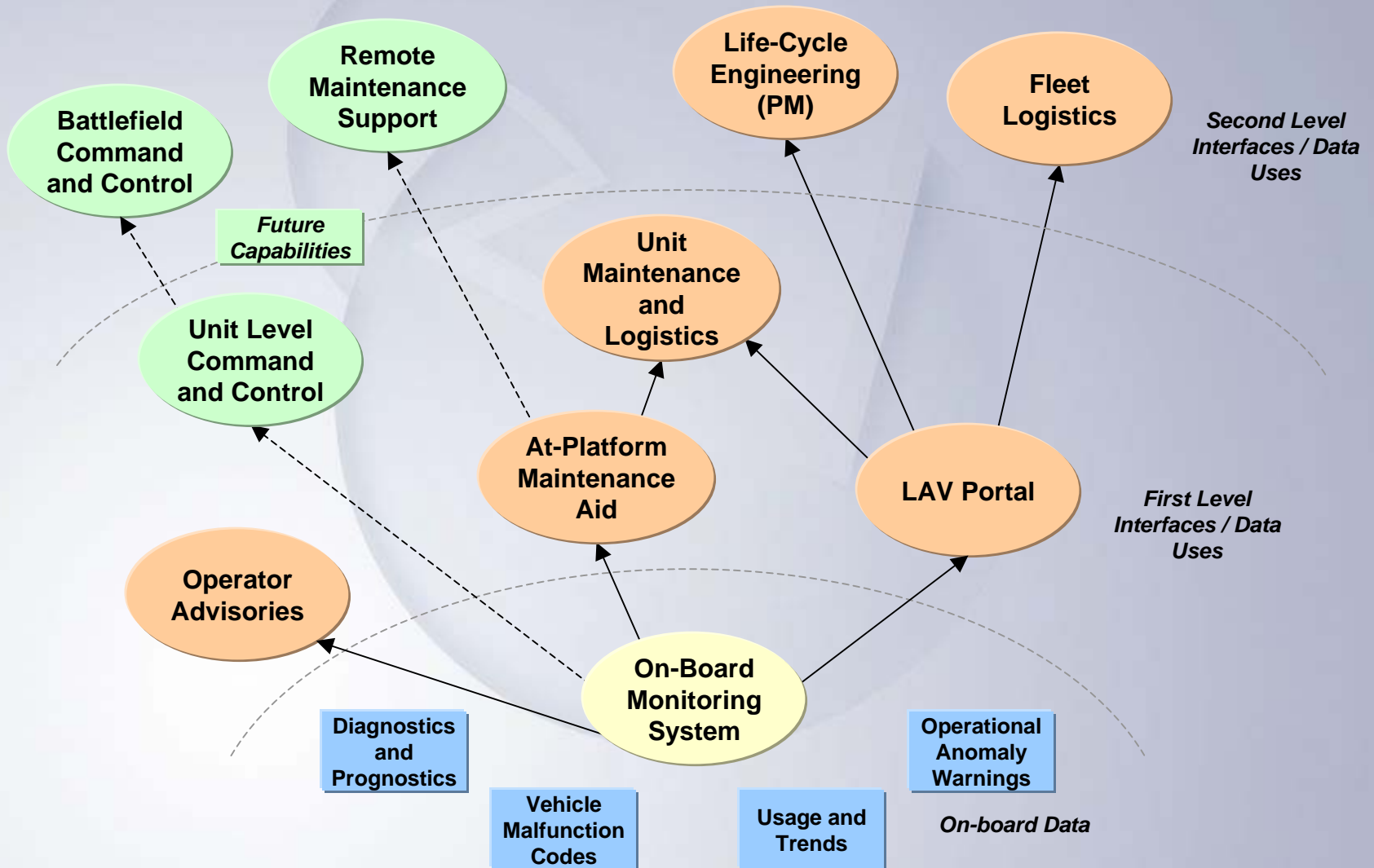
LAV On-board Health Monitoring System



General Description of Phase I System

- Databus based on industry standard J1939
- A mix of COTS and custom hardware is being used
- User interface for driver only
- System archives operational excursions and faults, and maintains long term data trends
- System supports queries and data extraction by *Smart Maintainer* over wired ethernet connection

LAV On-Board Monitoring System Data Uses



Phase I Development Timeline

- Jan 04: Complete Development / Preliminary System Validation
- Mar 04: Single vehicle USMC field test
- Mar-June 04: Integration of additional commercial technology, Incorporation of field feedback
- Aug 04: Five vehicle USMC field test, Integrated with IDE and *Smart Maintainer*
- FY 05: Technology Transition Planning

Summary

- The Program Manager's office for the Light Armored Vehicle is moving aggressively to develop and field new technologies to: extend the useful life of the LAV fleet by more than 15 years, and improve their ability to manage operational effectiveness and total ownership cost for the aging LAV fleet.
 - The primary goals of the PM-LAV technology insertion effort are:
 - 1) Improving overall asset visibility in order to move towards more proactive fleet engineering and logistics support
 - 2) Enabling maintainers to improve their effectiveness
- A key component of the PM-LAV strategy is the on-board monitoring system being developed by RIT.
 - Rapid development and deployment of a core set of functionality that can be readily expanded as additional funding become available.
 - Technology supports future USMC battlefield information needs (e.g. ONR GLC2 - Ground Logistics Command and Control)



Questions?