



RDECOM



Malcolm Baldrige
**National
Quality
Award**
2007 Award
Recipient



TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

17417 – Exploring Next Generation Fire Control User Interfaces

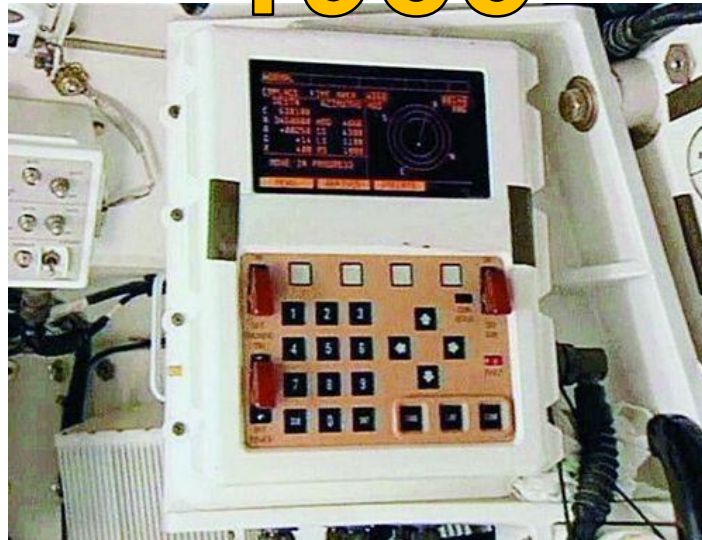
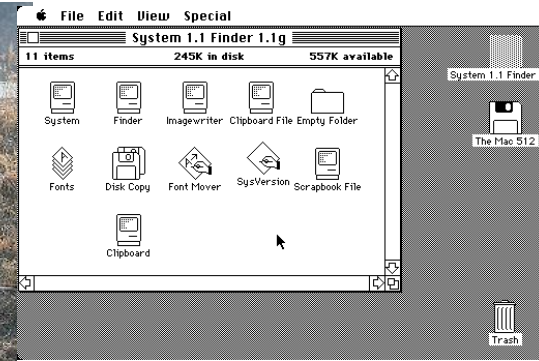
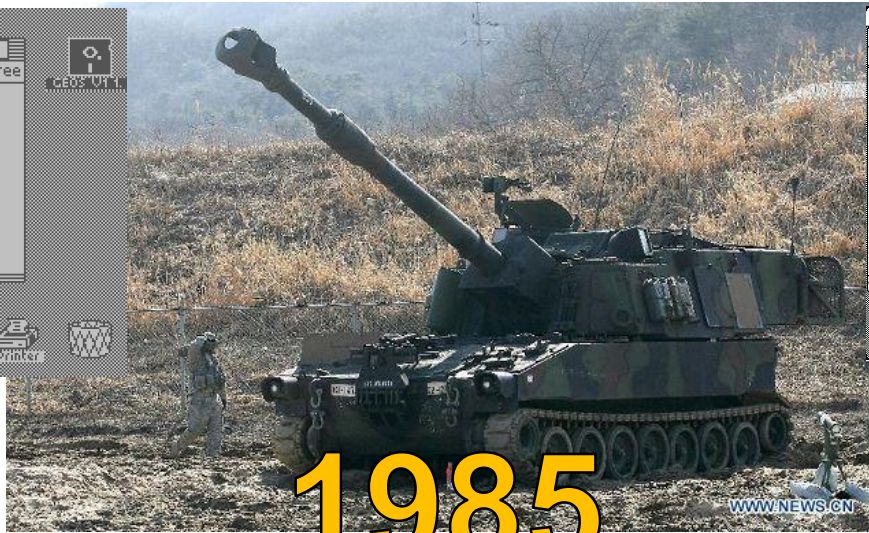
2015 Armament Systems Forum

April 22nd, 2015

David Musgrave, US Army ARDEC

- **Classification: UNCLASSIFIED**
- **Distribution A: Approved for Public Release.
Distribution is unlimited.**
- **Type of Briefing: INFORMATIONAL**





- Not a renovation or translation
- Complete clean slate
- Foundation of core requirements
- Not just ‘what we did before’



- Move, shoot and communicate
- “Common” fire control system across all artillery platforms
- Easy to develop, easy to maintain
- Challenge user assumptions and habits



Initialization Wizard

Wizard Text

Enter Text

< Back Next > Cancel

Initialization Wizard

CONFIRM BORESIGHT AND SELECT OPERATIONAL MODE

CONFIRM BORESIGHT

OPERATIONAL MODE

TRAINING NORMAL OPS MAINTENANCE

< Back Next > Cancel

Initialization Wizard

SET PROP TEMP, TOT RESPONSE TIME, LOAD ELEVATION AND SECTOR OF FIRE

PROPELLANT TEMPERATURE

TEMPERATURE (F) UPDATE ALERT TIME 0.5 1.0 1.5 2.0

TOT RESPONSE TIME IN MINUTES

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0

LOAD ELEVATION ENTER IN MILS BETWEEN -200 AND 1333

LEFT SECTOR OF FIRE ENTER LEFT SECTOR IN MILS BETWEEN 0 AND 6399

AZIMUTH OF FIRE ENTER AOF IN MILS BETWEEN 0 AND 6399

RIGHT SECTOR OF FIRE ENTER RIGHT SECTOR IN MILS BETWEEN 0 AND 6399

< Back Next > Cancel

Initialization Wizard

SET DATE / TIME GROUP

ZULU TIME IS 14:10:23-1955-44

LOCAL TIME IS 14:10:23-1955-44 USE LOCAL TIME

GPS TIME IS 14:10:23-1955 USE GPS TIME

TIME ZONE Enter Text

DAYLIGHT SAVINGS STANDARD 1/2 HR AHEAD 1 HR AHEAD 2 HRS AHEAD

SET LOCAL TIME YYMMDD:HHMM

< Back Next > Cancel

Form1

PROPELLANT TEMPERATURE UPDATE REQUIRED

Direct Fire

Fire Commands

Stored Targets

Send Checkfire

Fire Mission

TOT Response

Load Elevation

Muzzle Velocity

AMMO Inventory

Send Checkfire



Form1

NORMAL PROPELLANT TEMPERATURE UPDATE REQUIRED

DO NOT LOAD

MENU

- PDCU
- NAV
- WPN
- MVS
- IFS
- PCU
- KYPD

NO MORE MESSAGE

Form1

AMMO Selection

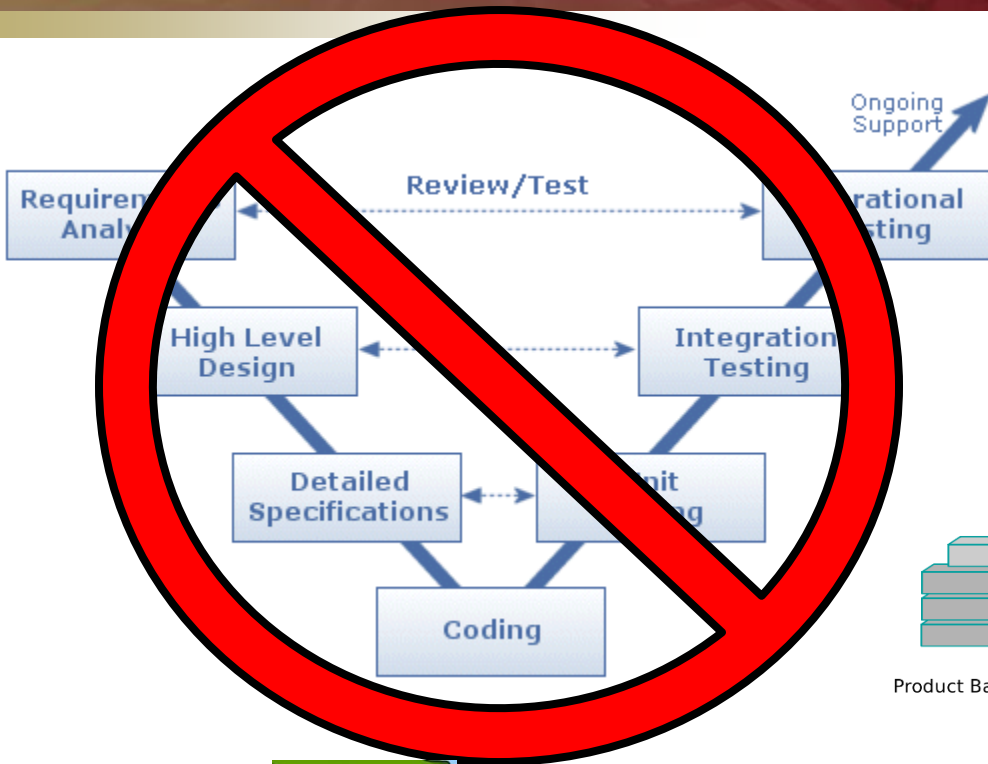
Shell Prop Fuze USE ALL

COUNTRY	MODEL	COUNTRY	LOT	WEIGHT	ON HAND
US	M212	US	LOT	8	X
M123	M2A1	US	LOT	77	X
M234	M2A1	DK	LOT	77	X
M456	M2A1	PO	LOT	77	X
	M2A1	US	LOT	77	X
	M2A1	US	LOT	77	X
	M2A1	US	LOT	77	X
	M2A1	US	LOT	77	X
	M2A1	US	LOT	77	X
	M2A1	US	LOT	77	X

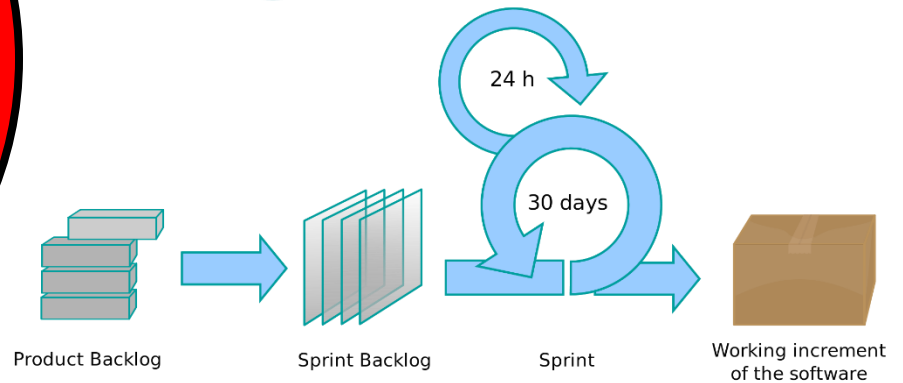
AMMO Inventory User Story







Agile/SCRUM



Wrong



Still Wrong



Wrong
But Better



Needs Work



Good



Excellent

- Initial planning meeting to gain commitment and strategy with the user
- Iterative user testing every three months
- Various environments and user experience levels

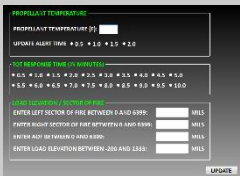




Mostly Functional Finalists

Objective Evaluation on Mission Threads

Data



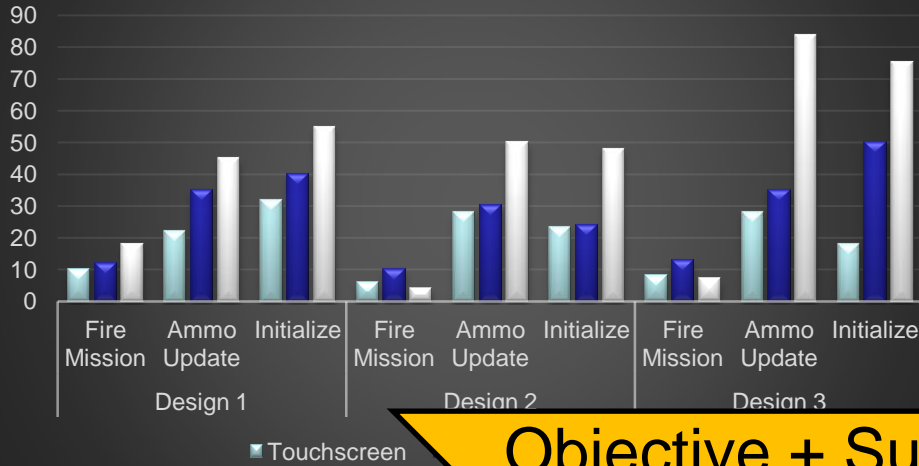
Input Method	Environment	Screen Size
Fire Mission	Fire Mission	Fire Mission
Ammo Update	Ammo Update	Ammo Update
Initialize	Initialize	Initialize



- Execution Time
- Error Rate
- Variability

Baseline against the current system

Thread Completion Speed

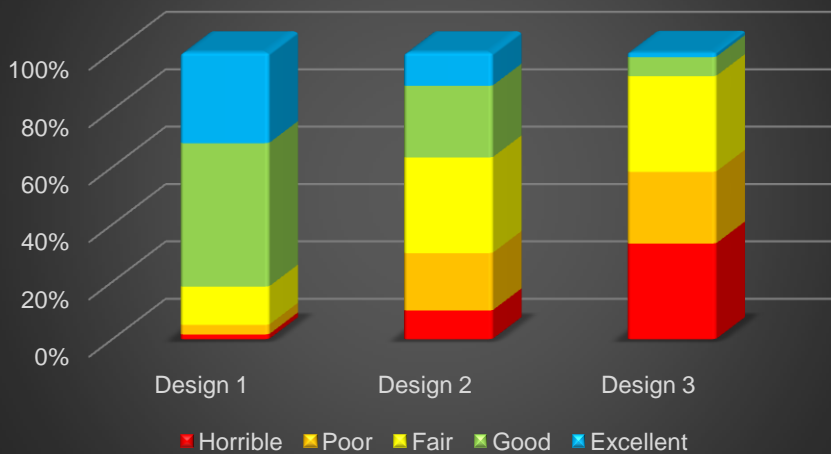


Winning Design



Objective + Subjective Feedback

Overall Sol



- Iterate on an increasingly more complete prototype
- Polish and refine specific components on user feedback
- Re-test when necessary for non-obvious decisions



- Data driven designs not ‘gut feel’ guess
- Transparent, documented, and justified decisions
- Help dissuade late term major rework
- User buy in



- First user testing in ~3 months
- Continue to iterate for about the next 2 years
- Return with data to share



