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# IPARTS Overview Improved Performance and Readiness Training System

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# **IPARTS Overview**

## **Improved Performance and Readiness Training System**

MOVES Research & Education Systems Seminar,  
31 July 2012

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Monterey, California

[WWW.NPS.EDU](http://WWW.NPS.EDU)



# Introduction to the Role of the LSO





# Introduction to the Role of the LSO



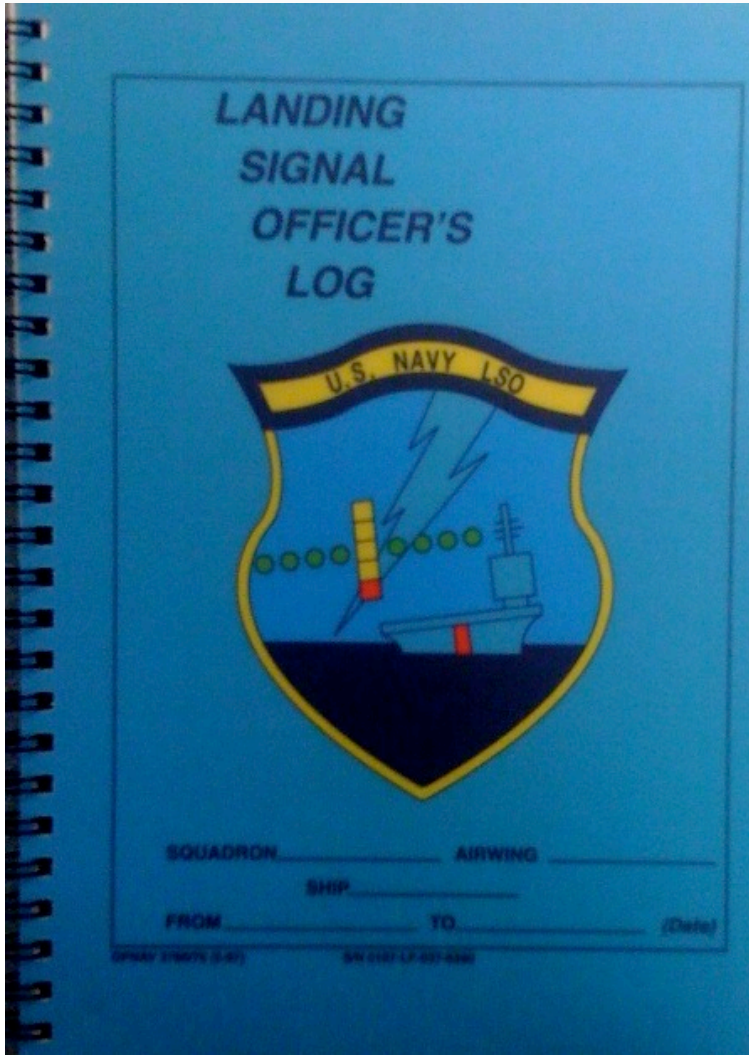


# Introduction to the Role of the LSO





# Introduction to the role of the LSO





# Introduction to the Role of the LSO

LSO SYMBOLS			
GENERAL SYMBOLS		DESCRIPTIVE SYMBOLS	
SYMBOL	MEANING	SYMBOL	MEANING
AA	Assigned	AA	Assigned
AB	Assigned	AB	Assigned
AC	Assigned	AC	Assigned
AD	Assigned	AD	Assigned
AE	Assigned	AE	Assigned
AF	Assigned	AF	Assigned
AG	Assigned	AG	Assigned
AH	Assigned	AH	Assigned
AI	Assigned	AI	Assigned
AJ	Assigned	AJ	Assigned
AK	Assigned	AK	Assigned
AL	Assigned	AL	Assigned
AM	Assigned	AM	Assigned
AN	Assigned	AN	Assigned
AO	Assigned	AO	Assigned
AP	Assigned	AP	Assigned
AQ	Assigned	AQ	Assigned
AR	Assigned	AR	Assigned
AS	Assigned	AS	Assigned
AT	Assigned	AT	Assigned
AU	Assigned	AU	Assigned
AV	Assigned	AV	Assigned
AW	Assigned	AW	Assigned
AX	Assigned	AX	Assigned
AY	Assigned	AY	Assigned
AZ	Assigned	AZ	Assigned

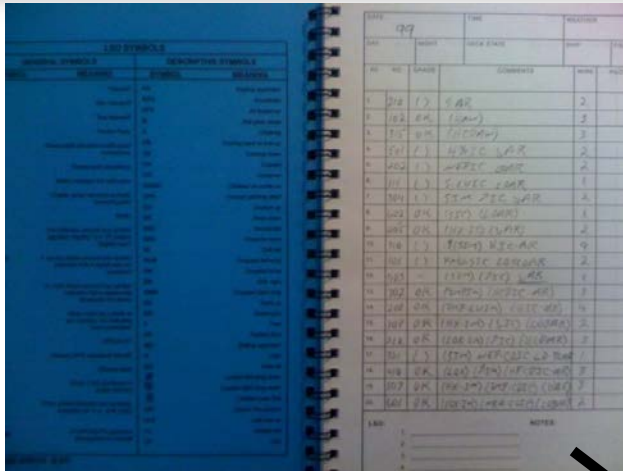
DATE	TIME	WEATHER			
99					
DAY	NIGHT	DECK STATE	SHIP		
AC	NO.	GRADE	COMMENTS	WIRE	PILOT
1	210	( )	SAR	2	
2	102	OK	(HAW)	3	
3	315	OK	(HCDAW)	3	
4	501	( )	4XIC WAR	2	
5	202	( )	NEPIC LOAR	2	
6	111	( )	5 LVIC LOAR	1	
7	304	( )	SIM TIC WAR	2	
8	602	OK	(SIC) (LOAR)	1	
9	205	OK	(HXIC) (WAR)	2	
10	310	( )	(SIM) TIC WAR	9	
11	101	( )	PANATIC LOSEAR	2	
12	403	-	(SIM) (PIC) WAR	1	
13	702	OK	(MPCIN) (HVIC) AR	3	
14	208	OK	(MPCIN) (HVIC) AR	4	
15	10F	OK	(HXIC) (SIC) (LOAR)	2	
16	212	OK	(LOAR) (PIC) (HLOAR)	3	
17	701	( )	(SIM) NEPIC LO-TOAR	1	
18	410	OK	(LOAR) (SIM) (NEPIC) (HAR)	3	
19	507	OK	(HXIC) (NEPIC) (HAR)	3	
20	601	OK	(HXIC) (NEPIC) (LOAR)	2	

LSO:	NOTES:
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____



# Legacy System: APARTS

## Automated Performance Assessment and Readiness Training System



Pass Data - APARTS 7.3

Clipboard | Font | Rich Text | Records | Sort & Filter | Filter | Size to Fit Form | Switch Windows | Find

### Landing Performance Data Input Form

**Recovery**    This is Recovery Number: **2178**    First Recovery    Previous Recovery    Next Recovery    Last Recovery    Add New Recovery Set    Total # Recoveries displayed: **2182**

Event: **2009-CVW14-CVN76-SUSTEN**

Enter Recovery Date (mm/dd/yy): [ ]    Enter Recovery Time (hh:mm (Mil. time)): [ ]    Recovery Period: **03/23/09 13:45**

Lens On: [ ]    Last Trap: [ ]

(D)ay/(N)ight     (F)CLP/(C)(Q)/(C)(V)     MOVLAS  No

Location: **N/A**    General Remarks: [ ]

### Pass Data

Controlling LSO: **TELENT, B9129**    Backup LSO: **GEORGE**    CAC LSO: [ ]

Approach: **7**    Approach/Pilot: **1**    Target wire: **0**

Pilot: **KIRLIN, S2367**    A/C #: **205**    A/C Type: **F-18E**    Squadron: **VFA-115**

Grade: **OK**    LSO Comments: **(LIC) LULX HCDAW**

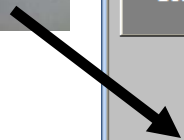
Wire: **2**    Misc. Comments: [ ]

Auto Throttle:     \* = Tick    ^ = Skip    C = Circle    D = Downgrade

This is Record Number: **1**    Total # passes displayed for this recovery: **1**

Main Menu

Form View    Num Lock







- Issues with APARTS
  - Not network friendly (data are squadron specific)
  - Subject to frequent data loss
  - No longer formally supported in MS Access
- The MOVES Institute was awarded the job from among many proposals from the Naval Research Enterprise (NRE)





# IPARTS Benefits and Features



- Replaces the ageing APARTS
- Can import legacy data
- Better reliability
- Captures all relevant data
- Immediate electronic data entry → only once
- Immediate boarding rate calculation, trend analysis
- Fleet-wide database



- Lead engineer, and NPS student, LT Michael Ross, IS an LSO and an F-18 pilot (currently at Test Pilot School, Pax River)
- Frequent intensive input from the user community (LSOs)
  - LSO School
  - NAS Lemoore
  - NAS Oceana
  - NAS Norfolk
  - Squadrons on several aircraft carriers for Carrier Qualification



NAVAL



Data entry on the LSO platform,  
electronically on IPARTS "Handheld"



Debrief from IPARTS "Handheld"



Capture Ship TV  
add ILARTS video



CAG IPARTS "Laptop,"  
Squadron Laptops



LSO School database  
("server")



# HANDHELD INTERFACE

**iPARTS Beta - Handheld Interface**

Pre-Recovery | **Recovery** | Debrief | Settings

#	Side	Int	Groove	Grade	Comments	Wire	Pilot
1	100			(OK)	(HX) TMPIM HCDIC (SAR)	3	BROPHY, R...

Side Number | Wire | Grade | **Comments Page 1** | Page 2 | Page 3 | Note Pad | Interval

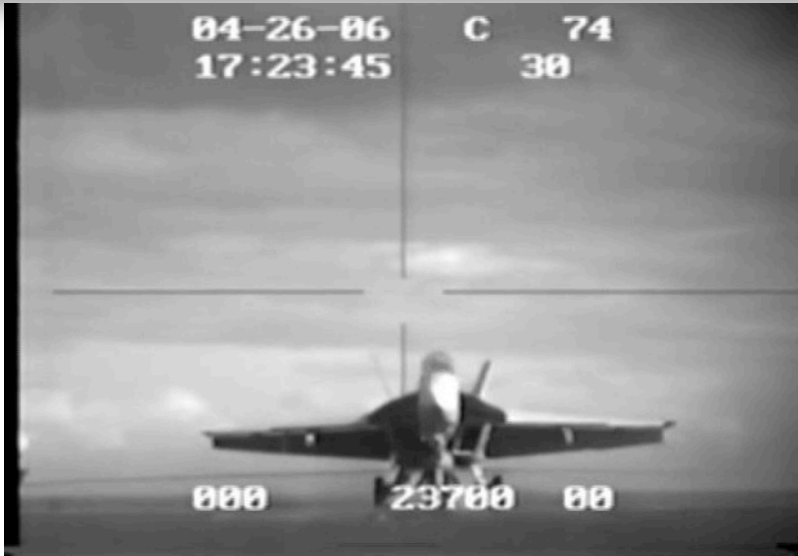
( )	H	LO	OC	F	LU	<input type="button" value=" &lt;&lt;Backspace"/>  Note: Pages 2 and 3 above list all comments alphabetically.  <input type="button" value="Next Pass"/>
—	/	\	S	ND	DL	
ON .	TMP	NEP	CD	SLO	DR	
TO -	TMA	NEA	CO	PNU	CB	
X	IM	IC	AR	IW	AW	



- Expectation Management:
  - IPARTS is a research prototype
  - “80% solution”
- That said, IPARTS works already, gets good reviews
- User interface developed by/with LSOs
  - Highly optimized, specific touch keyboard
  - Naturally follows flow of operations and writing order
- Pilot entries are consistent, unique, and carry over from squadron to squadron
- Ability to ingest video, misc comments
- Most APARTS reports are available, + new reports
- ... many more features!
- Trials on Ike (CVN-69) and Stennis (CVN-74) in 2011 and 2012



# PLAT Video Recording



IPARTS Beta - Laptop Interface

File Edit Admin Import Help

Data Entry Reports Media Editor Media Recorder Synchronization

Media Input: Record and process media from live capture or files

**CAPTURE SOURCE**

<input type="radio"/> File input	needs configuration	Input File...
<input type="radio"/> Sensoray (USB) capture	uninitialized	Initialize
<input type="radio"/> Imperx VCE-Pro (PCMCIA card)	uninitialized	Initialize
<input checked="" type="radio"/> Tv Tuner (USB) capture	ready	Configure...

**Tv Capture Configuration**

<input type="checkbox"/> Preview	<input type="radio"/> Composite Video (RCA)
<input checked="" type="checkbox"/> Record	<input type="radio"/> S - Video
	<input type="radio"/> Tv Tuner (BNC)

Video Properties

Save Media to  Default File


Auto-Segment into Passes

Record Audio

GMT 13:45:03  
Length: 00:00:00

Deck state: Unknown  
Camera: Unknown

# Passes Found:



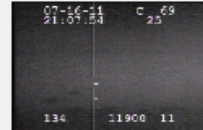








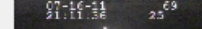



iPARTS Beta - Laptop Interface

File Edit Admin Import Help

Data Entry Reports Media Editor Media Recorder Synchronization

### Exercise & Recovery: CVW-14 Exercise: 01/17/12 17:43


<p><b>1 BAKER,</b> Aircraft: 201 01/17/12 17:43:41</p>	<p>PLAT Camera 07-16-11 21:07:54 C 25 69 134 11900 11 1981 frames</p>  	<p>Tower Camera 07-16-11 21:08:52 C 25 69 71 frames</p>  
<p><b>2 BELLINA,</b> Aircraft: 304 01/17/12 17:43:47</p>	<p>PLAT Camera 07-16-11 21:08:33 C 25 69 133 08300 10 1382 frames</p>  	<p>Tower Camera 07-16-11 21:08:33 C 25 69 93 frames</p>  
<p><b>3 KEMP,</b> Aircraft: 112</p>	<p>PLAT Camera 07-16-11 21:11:38 C 25 69 1215 frames</p>  	<p>Tower Camera 07-16-11 21:11:38 C 25 69 83 frames</p>  

Pass Tue Jan 17 17:43:41 PST 2012 17:43:41  
Pilot BAKER,  
Side Number 201

Media files associated with this recovery:  
CVN69\_3\_360\_240\_20fps.avi  
add media remove media

Media servers for this file:  
file:///C:/Users/tomb/MediaFiles

07-16-11 21:11:38 C 25 69  
previous  
Date Time Code  
0000-00-00  
00:00:00:00  
next  
Current Frame  
6820  
Total Frames  
9330  
Continue







- IPARTS “Night Mode”



## Limited Objective Evaluation

... is an experimental deployment  
... for testing under operational  
conditions

- VFA-122 (FRS, F/A-18E/F) during FCLP and CQ
- VFA-106 (FRS, F/A-18E/F) during FCLP and CQ
- VAW-120 (E-2, C-2)
- CVW-3 and CVW-8 during deck certification
- >6000 passes recorded and stored to date
- Lots of (verbal and questionnaire) LSO feedback, many bugs fixed, many features added, ...





# Why Transition IPARTS?

- Strong support from the user community
- Functionality is a NATOPS requirement
- Built using DIACAP-certified technologies: Java, Oracle database; modular extensions
- Low deployment cost:
  - No licensing fees
  - Utilization of existing squadron laptops
  - Additional squadron hardware is optional, COTS, inexpensive
  - Central software administration and automatic updating
  - Open software architecture, designed with maintainability in mind
- Cost savings for fleet: FCLP quals, CQ, realtime readiness reports, time savings for LSOs, flexible fleet-wide reports

PMA-205 (Training) and PMA-251 (Launch & Recovery) will promote IPARTS' **transition** to the fleet





- LSO School: Weeds, Frodo, Barf, Pleber, ...
- ONR TechSolutions: Dr. Stephanie Everett, Master Chief Ziervogel
- MOVES Institute, Naval Postgraduate School:
  - Tom Batcha, Greg Belli, Arijit Das, LT Matt Dominick, Erik Lowney, Mathias Kölsch, Michael McCauley, Terry Norbraten, **LT Mike Ross**, Neil Rowe, Jon Schmid

- Touch and feel IPARTS

- Demo night,  
16:30 Wednesday



- Contact:

- Mike McCauley: [memccaul@nps.edu](mailto:memccaul@nps.edu)
- Mathias Kölsch: [kolsch@nps.edu](mailto:kolsch@nps.edu)

Thank you!



- Student involvement was/is critical
- Requirements analysis and iterative HCI/UI development is of utmost importance



- Commercial Off the Shelf whenever possible
  - Built using Java Version 6
    - Swing API for Interface
    - JDBC for Database interface
- Oracle Database Products
  - LSO School Database runs Oracle 11g
  - Distributed databases use Oracle Database Lite Mobile Server (provides software update and database synchronization services)





### Smoothed Learning Curves by Participant

