

# ***Status of WorldSID*** ***50<sup>th</sup> Male and 5<sup>th</sup> Female*** ***ATDs***

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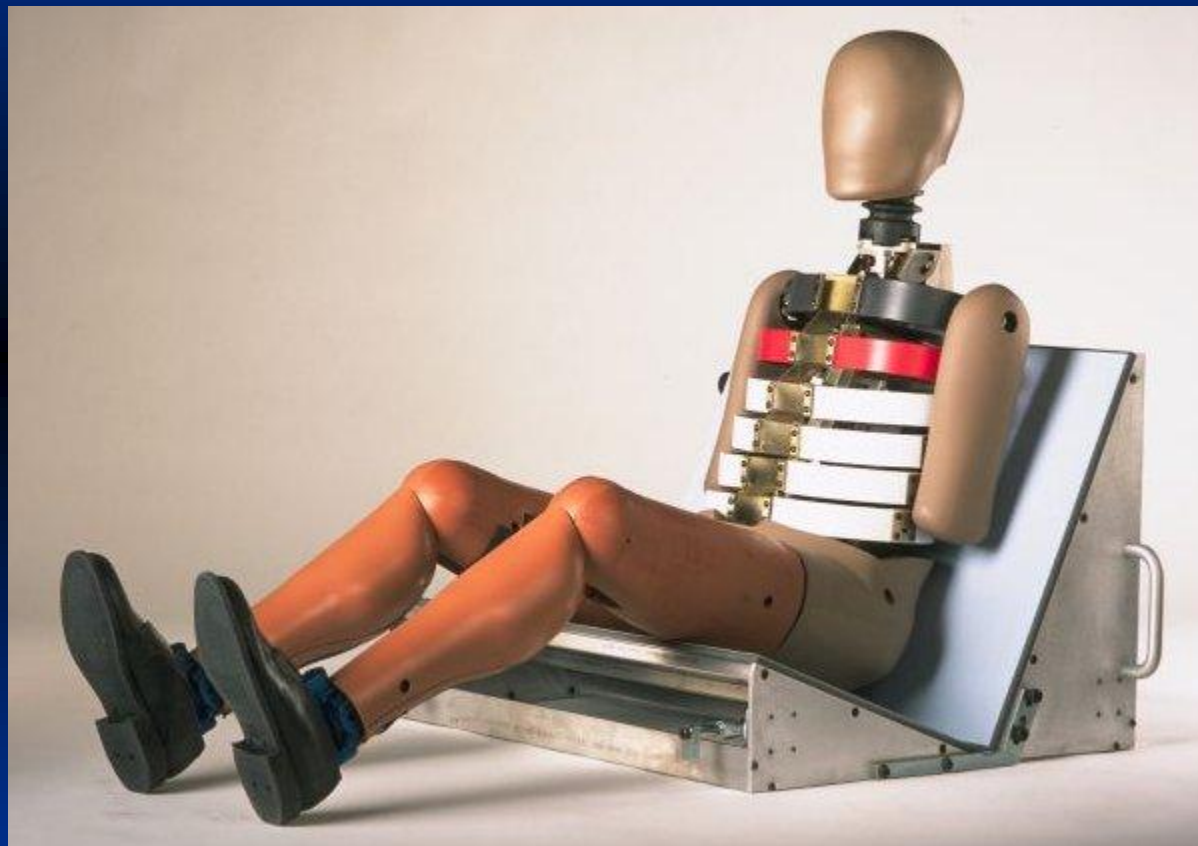
**1st Informal WorldSID Working Group Meeting**  
**Tokyo, Japan**  
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# *WorldSID 50<sup>th</sup> Male*



# Federalization Matrix

## Operation

**Requirement**

	Dummy Inspection	Component Testing	Sled Testing	Crash Testing
Drawing Package				
Certification				
Durability				
R&R				
Biofidelity				
PADI				

**Time** 

# NHTSA Federalization

- **Drawing Package**
- ✓ ■ **Certification** (additional data is desirable)
- ✓ ■ **Durability**
- ✓ ■ **R&R**
- ✓ ■ **Biofidelity**
- ✓ ■ **PADI** (Procedures for Assembly, Disassembly and Inspection)

# Possible Collaboration Work <sup>WS--2-1</sup>

## ■ Drawing Package

- Physical dimensions
- Weight and CG of segments
- Must be freely available to public without restrictions
- Must not endorse any manufacturer

## ■ Onboard DAS part 572 specification

- specify these parameters by body region:
  - Use CAD to determine
    - Mass, CG location, MMI
    - Space (volume) where DAS can be mounted
- Electronic performance requirements
- Define acceptable tolerances based on simulations
  - Madymo parameter study

# Thank You

# Questions?



# *WorldSID 5<sup>th</sup> Female*





# 5<sup>th</sup> Female Evaluation

WS--2-1

- **NHTSA is purchasing a second WorldSID 5<sup>th</sup> small adult dummy**
- **Initiate Standard Evaluation**
  - Inspection/Drawing Package
  - Certification
  - Durability
  - Repeatability & Reproducibility
  - Biofidelity
  - User's Manual (PADI)

# 5<sup>th</sup> Female Evaluation

## Operation

**Requirement**

	Dummy Inspection	Component Testing	Sled Testing	Crash Testing
Drawing Package				
Certification				
Durability				
R&R				
Biofidelity				
PADI				

**Time** →

**NHTSA Work**

**Collaboration Work**

# 5<sup>th</sup> Female Evaluation

WS--2-1

- **APROSYS Work**
  - Anthropometry
  - Biofidelity
  - Certification
  - Injury Risk Functions
  
- **ISO Biofidelity Ranking = 7.6/10**
  
- **NHTSA Biofidelity Rank = ?**

# 5<sup>th</sup> Female Evaluation

## ■ **Biofidelity**

- APROSYS conducted extensive testing of ISO 9790 conditions
  - Share reports and data
  - NHTSA conduct BioRank analysis
- APROSYS conducted Yoganandan tests
  - Share reports and data
- BioRank
  - Not clear which dataset was used in the APROSYS analysis
  - Revision 1 generally scored worse than the prototype

# 5<sup>th</sup> Female Evaluation

WS--2-1

## ■ Repeatability

- APROSYS summary is brief, slightly vague, and qualitative
- Provide summary reports and data
  - AP-SP52-0043 *Prototype Evaluation: Biofidelity, Sensitivity, and Durability Test Results*
  - AP-SP52-0058 *Updated Prototype Dummy Fully Operational for Testing According Recommendations of D5.2.3*
- No reproducibility evaluation

# 5<sup>th</sup> Female Evaluation

## ■ Durability

- Durability is selective and somewhat qualitative
- BAST
  - Tracked rib deformation over 15 sled tests; in general there was less than 2 – 3 mm of permanent deformation
  - Reported issues with IR-Tracc ball joint
- TRL
  - Debonding of thorax rib 2
  - Shoulder rib permanent deformation (amount?)
- FTSS
  - Observed rib debonding after UPM-INSIA testing
- Recurring problem: retention of shoulder ball joint in shoulder bracket

# 5<sup>th</sup> Female Evaluation

WS--2-1

## ■ Other Items

- Certification
  - APROSYS published draft procedures and corridors
    - **NHTSA can use these as a starting point for evaluation**
- User's Manual
- Status of recommended changes to optimize neck response

# 5<sup>th</sup> Female Evaluation

## List of References Needed

Report # AP-SP52-xxxx	Title
-0036	<i>Biofidelity Testing of the 5th Female WorldSID Head-Neck Response</i>
-0043	<i>Prototype Evaluation: Biofidelity, Sensitivity, and Durability Test Results</i>
-0058	<i>Updated Prototype Dummy Fully Operational for Testing According Recommendations of D5.2.3</i>
-0059	<i>Revision 1 Prototype WorldSID 5th Percentile Female</i>
-0065	<i>D5.2.9 Appendix TRL</i>
-0066	<i>D5.2.9 Appendix UPM</i>
-0068	<i>D5.2.9 Appendix BAsT (Maltese corridors scaled by Yoganandan)</i>



# WorldSID Project Timing

WS--2-1

		'08	2009				2010				2011				2012						
Item		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1		
50th Male	Certification	◆																			
	Biofidelity		◆																		
	R & R			◆																	
	Durability			◆																	
	PADI			█																	
	DAS Specs			█				█													
	Drawing Package			█				█													
	Part 572 NPRM													◆							
5th Female	Receive Dummy							◆		◆											
	Inspection							█		█											
	Certification							█													
	Biofidelity							█				█									
	R & R							█				█									
	Durability							█				█									
	PADI																		█		
	Drawing Package																			█	
	Part 572 NPRM																				

# Thank You

# Questions?

