International Dummy Working Group
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WS-4-2

WorldSID 5th Evaluation

Dan Rhule

Bruce Donnelly

NHTSA

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people saving people

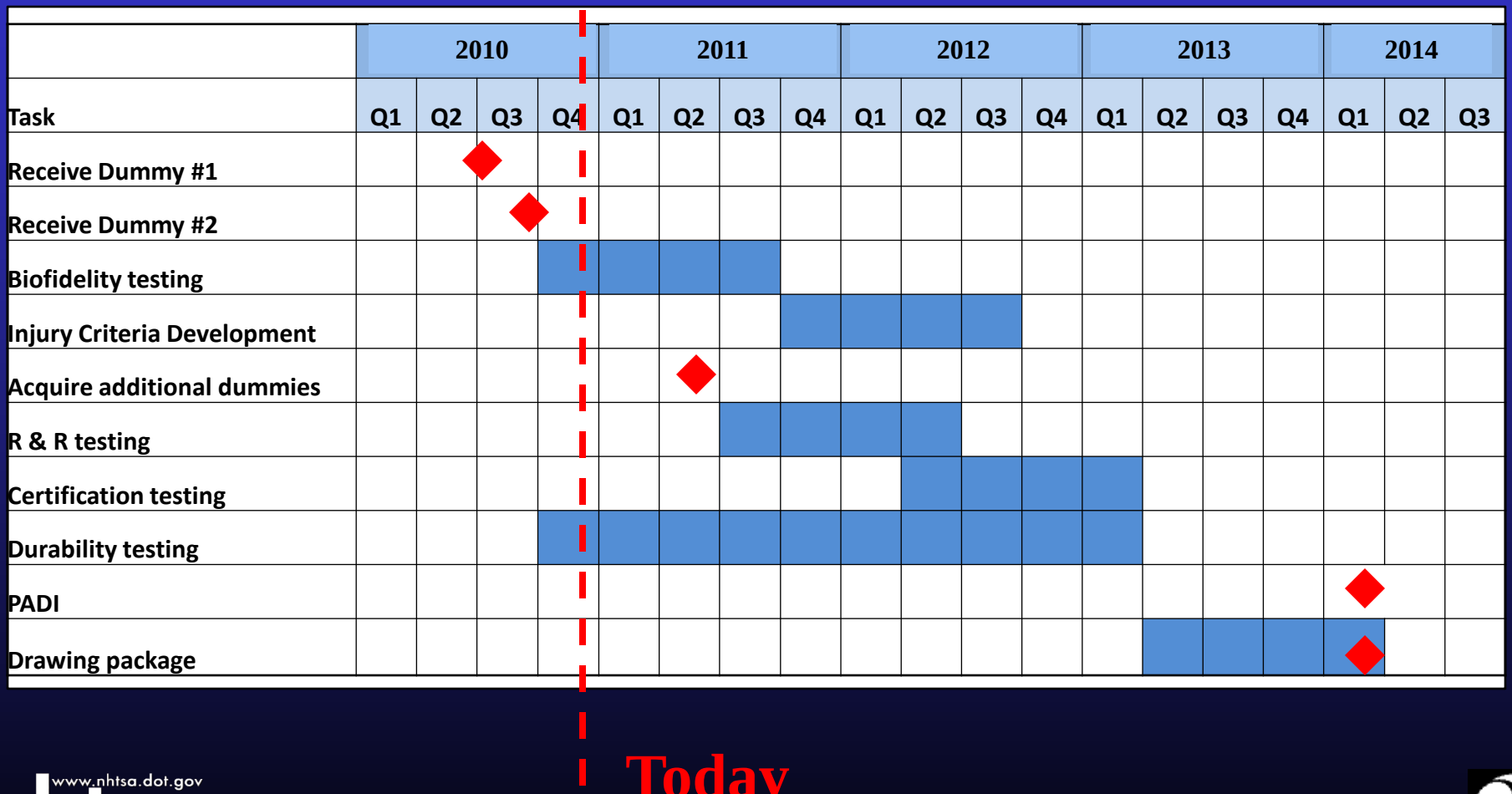
WorldSID 5th Status

- **NHTSA/VRTC procured two dummies**
- **Conducted preliminary inspections**
  - Overall Dummy & Segment masses
    - Overall mass within tolerance; segment mass targets not yet established
  - External dimensions – targets not established yet
- **Issues with IR-Traccs**
  - Inconsistent sensitivity results
  - Axial rotation issue
  - IR-Tracc returned to FTSS for resolution
  - Data processing issues
    - Double-gimbal processing problems
- **Conducted certification tests on one dummy**
  - Head drops, frontal and lateral
  - Lateral neck pendulum
    - R&R has been good so far

WorldSID 5th Status

- **Current Activities**
  - Thoracic testing has been delayed until IR-Tracc issues can be resolved
  - Continue with head & neck certification tests
- **Planned Activities**
  - Complete certification tests on both dummies
  - Component biofidelity tests
  - Sled Testing – durability & biofidelity
  - Evaluate R&R in component & sled tests
  - Drawing review when drawings become available

WorldSID 5th NHTSA Evaluation Schedule



Potential Collaboration

- **Biofidelity, Durability & Certification testing**
  - NHTSA, EC?, others?
- **Data review and archive**  **Important!**
  - ISO WorldSID Group?, Humanetics?
- **On-board data acquisition open source specification**
  - ISO WorldSID Group, PDB, NHTSA, Humanetics

Potential collaboration

Test type	Component	Sled	Comment
Certification			**Collaboration?**
Durability			**Collaboration?**
Biofidelity			**Collaboration?**
R & R*			**NHTSA/VRTC**

* Best performed at one lab to avoid lab-to-lab variation

WorldSID 5th Certification tests

- Head drop test
- Neck-lateral head/neck pendulum test
- Shoulder test – string pendulum
- Thorax with half-arm test– string pendulum
- Thorax without arm test– string pendulum
- Abdomen test– string pendulum
- Pelvis test – string pendulum

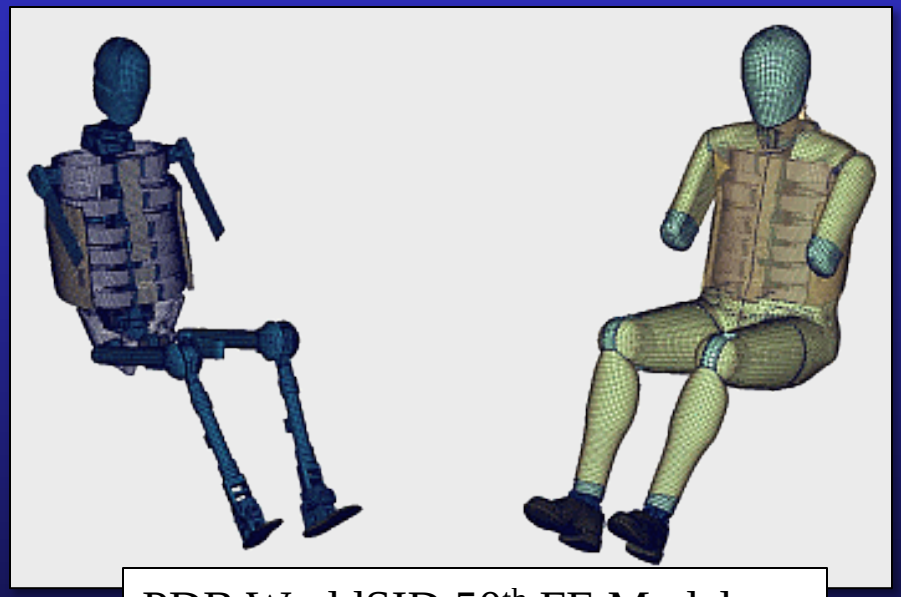
Reference: 2010, User Manual WorldSID Small Female, W5-9900 User Manual WorldSID 5th, Rev. C., First Technology Safety System, Inc.

WorldSID 5th Biofidelity tests

Test Condition	Test Name	Reference
200 mm Rigid Lateral Head Drop	Head Test 1	ISO 9790 - Head Test 1
7.2 g Restrained Occupant Sled	Neck Test 1	ISO 9790 - Neck Test 1 & Shoulder Test 2
12.2 g Restrained Occupant Sled	Neck Test 3	ISO 9790 - Neck Test 3 & Shoulder Test 3
4.3 m/s Rigid Pendulum Lateral Thorax Impact	Thorax Test 1	ISO 9790 - Thorax Test 1
6.8 m/s Rigid Wall Sled	Heidelberg Sled Test	ISO 9790 - Thorax Test 5 & Pelvis Test 7
6.8 m/s Rigid Wall Sled	Wayne State Sled Test	ISO 9790 - Abdomen Test 3 & Pelvis Test 10
6 m/s Rigid Pendulum Pelvis Impact	Pelvis Test 1	ISO 9790 - Pelvis Test 1
10 m/s Rigid Pendulum Pelvis Impact	Pelvis Test 2	ISO 9790 - Pelvis Test 2
4.4 m/s Padded Pendulum Lateral and Oblique Shoulder Impact	NHTSA Shoulder Test	Bolte et al. Stapp 2003
2.5 m/s Rigid Pendulum Lateral and Oblique Thorax Impact	NHTSA Thorax Test	Shaw et al. Stapp 2006
6.7 m/s Flat Rigid Wall Sled	NHTSA Low Speed Flat Rigid	Maltese et al. Stapp 2002
6.7 m/s Flat Padded Wall Sled	NHTSA Low Speed Flat Padded	Maltese et al. Stapp 2002
6.7 m/s Rigid Abdomen Offset Sled	NHTSA Low Speed Rigid Abdomen Offset	Maltese et al. Stapp 2002
6.7 m/s Rigid Pelvis Offset Sled	NHTSA Low Speed Rigid Pelvis Offset	Maltese et al. Stapp 2002
8.9 m/s Flat Padded Wall Sled	NHTSA High Speed Flat Padded	Maltese et al. Stapp 2002

On-board data acq. specification

- **Collaboration - WorldSID 50th**
  - **ISO WorldSID Group**
  - **PDB**
  - **NHTSA**
  - **Humanetics**
- **Specification**
  - **"Gray Space"**
  - **Mass, CG, Imom tolerances**
  - **Repeatability standard**



PDB WorldSID 50th FE Model

Thank you.