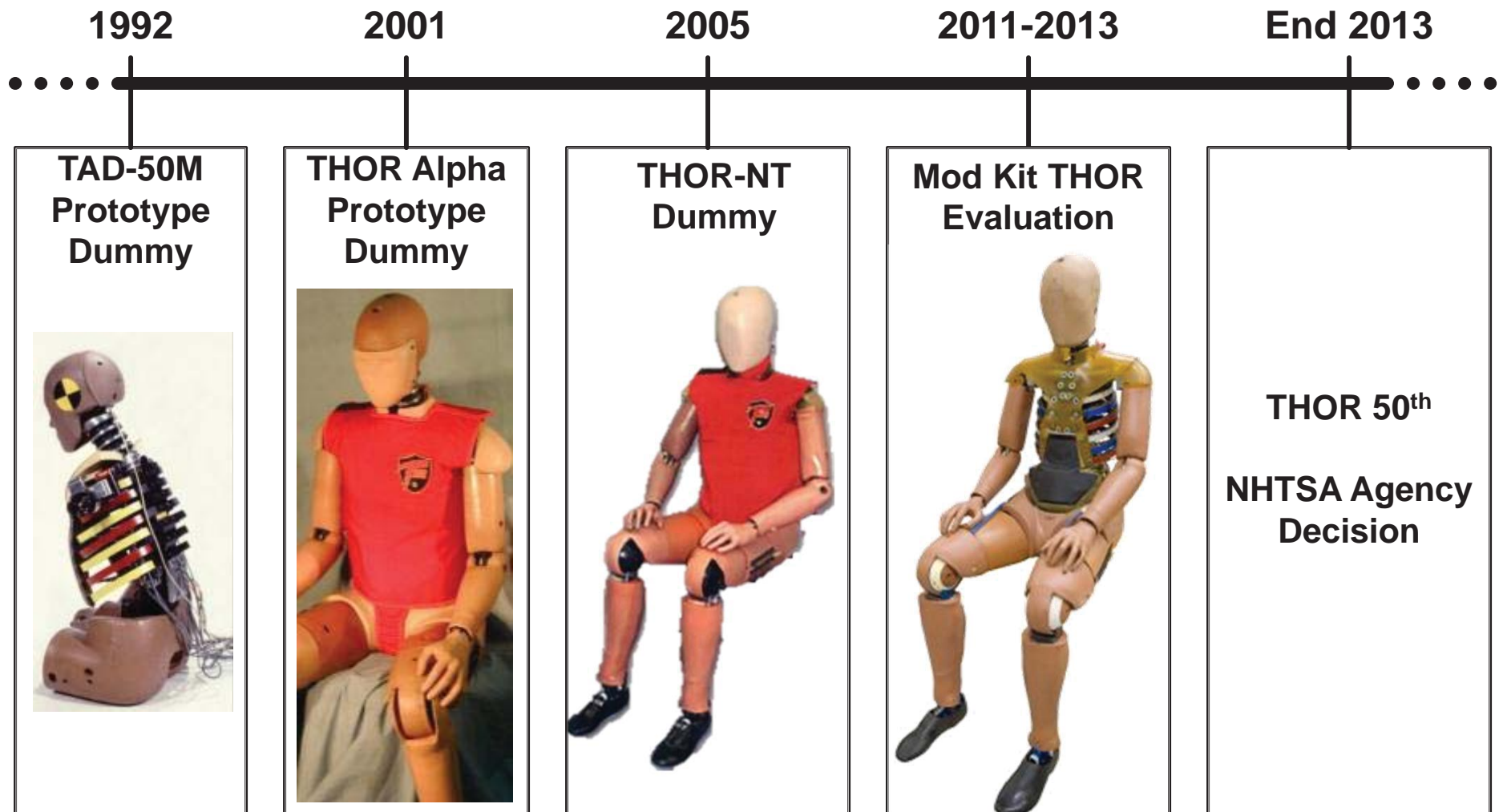


NHTSA THOR Update

September 30, 2013

Dan Parent
Human Injury Research Division

Test Device for Human Occupant Restraint



Mod Kit Hardware History

2010

2011

2012

**THOR Mod Kit
(n=1)**

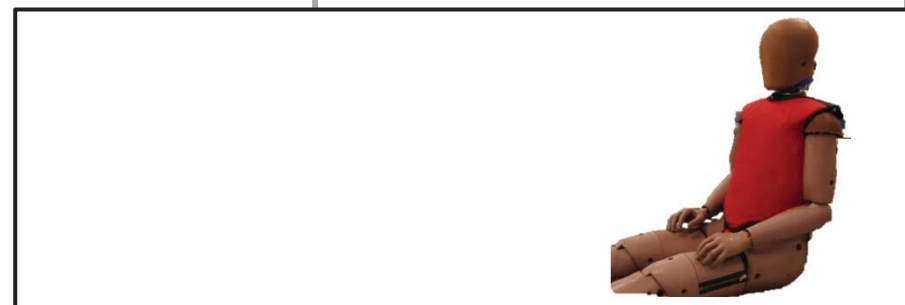
Evaluation



**THOR Mod Kit
(n=3)**
**Consolidation and
Fabrication**



**THOR Metric
(n=1)**
**Conversion and
Fabrication**



THOR Research Plan

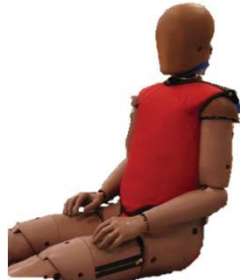


2012

2013

THOR Metric Evaluation

Inspection
Cert Testing



Multi-Point
Thoracic
Injury Criteria
Development



Fabricate
Additional THOR
Metric ATDs,
Initiate
Repeatability &
Reproducibility



THOR
Tasks



Hardware

Finalize Hardware,
Release Technical
Data Package

Biofidelity
Evaluation

Hybrid III
Comparison

Procedures

Injury Criteria

Certification

Seating

Parallel NHTSA
Agency Needs

Oblique MDB
Vehicle Testing

Advanced Adaptive Restraint
Program

Rear Seat Advanced
Restraints Program

THOR 50th
NHTSA Agency Decision

Technical Data Packages

Mod Kit

*Allow users to
upgrade THOR-NT*



Metric THOR

*Allow users purchase or
build complete THOR*



- Status: Drafts provided by Humanetics, currently under revision
- Drawing package to include:
 - Bill of Materials (BOM)
 - Drawing Index
 - Drawing Specifications
 - 2D Drawings (in DWG and PDF formats)
 - 3D Parametric Database (in Autodesk Inventor and generic formats)
- Associated updates to documentation provided by Humanetics, more updates necessary
- Does not include SD3 shoulder
 - Out of scope of contract with Humanetics

NHTSA Agency Decision

- THOR 50th
Agency Decision in 2013
 - Complete, review technical data package
 - Demonstrate biofidelity
 - Fabricate additional Metric THORs (w/SD-3)
 - Initiate thorough R&R

- THOR 5th
Agency Decision in 2014
 - Assess anthropometry (UMTRI)
 - Update biomechanical response requirements
 - Update design with Mod Kit components
 - Fabricate and evaluate

THOR 50th Finite Element Model

- THOR-NT FE model available for download from “Collab” website
 - Feedback has been provided by industry
- Currently incorporating Mod Kit components into model
 - Collaborative effort
- Still need:
 - Certification simulations
 - SD-3 shoulder

