



# DUMMY MODELS GENERAL UPDATE

Frank Schüssler

10.10.2016

# Agenda

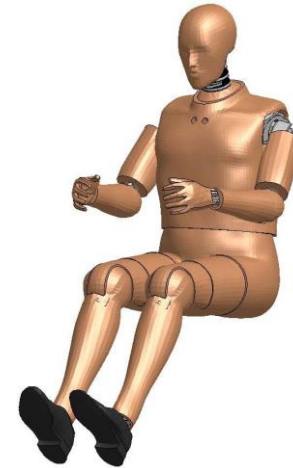
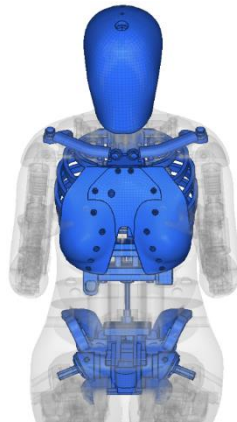


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- **Adult dummies**
- **Child dummies**
- **Side dummies**
- **Pedestrian legform**



# Adult dummies

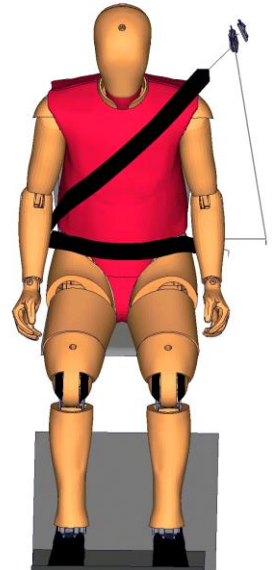
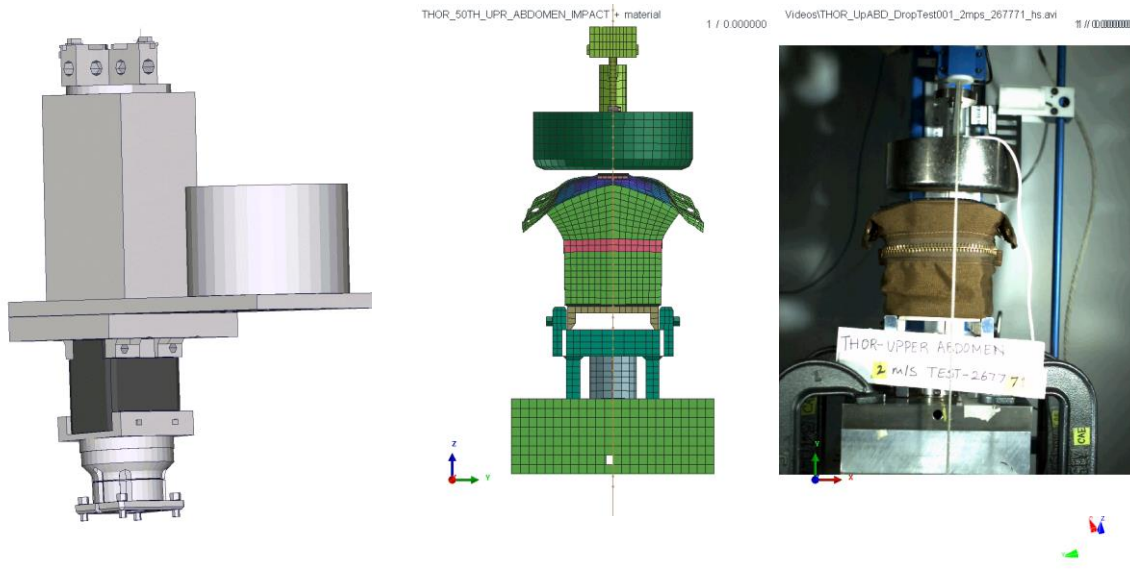


# THOR-50th

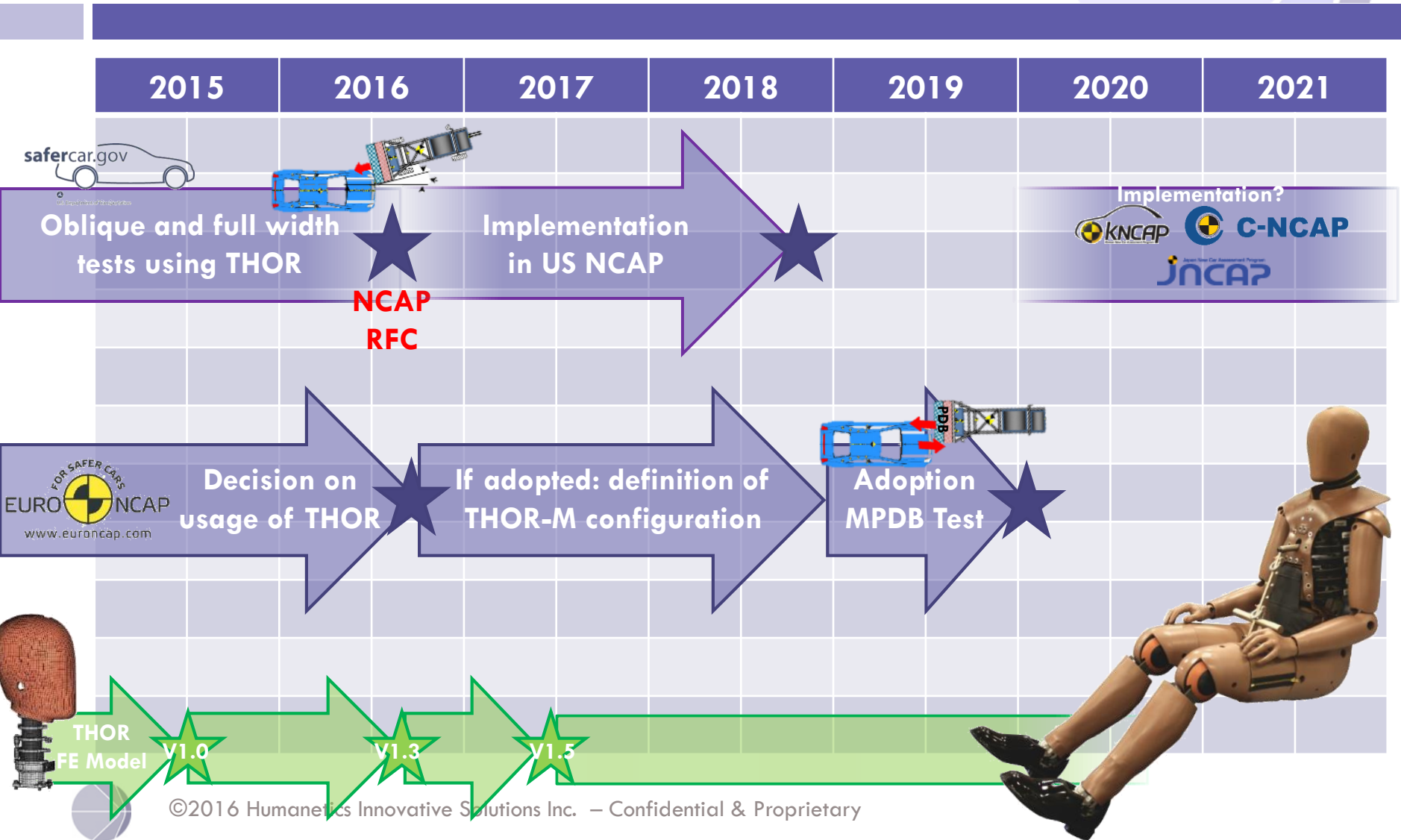
4



- Currently released v1.3
  - Thoracic/lumbar spine tests
  - Upper abdomen drop tests
  - Oblique sled driver side dummy validation



# Tentative THOR Schedule NCAP's

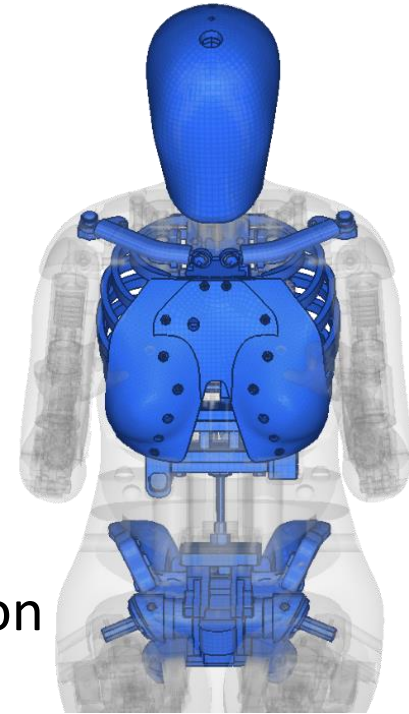


# THOR-5th



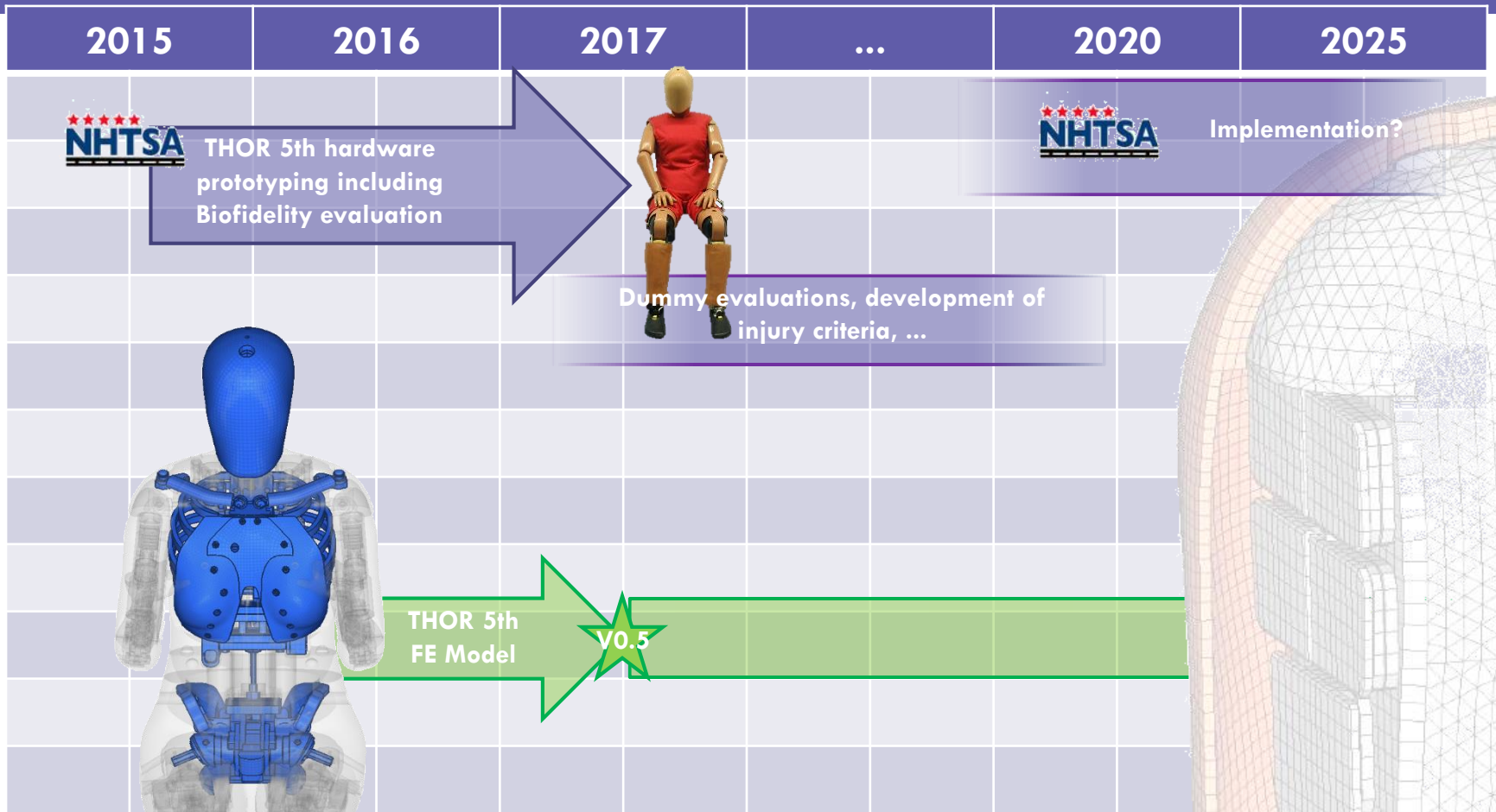
6

- Current project v0.5 (July 2017)
  - 3-D geometric representation
  - Mass/inertia property
  - Integration/connection
  - Generic material database
  - Robustness verification
  - Limited biofidelity tests and components validation



# Tentative THOR 5th Schedule

7



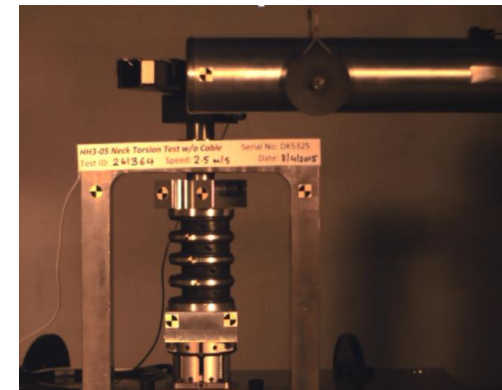
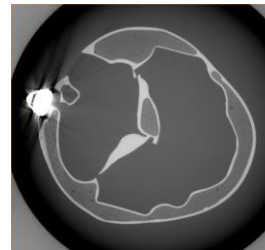
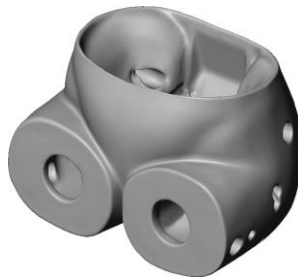
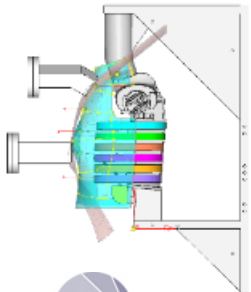
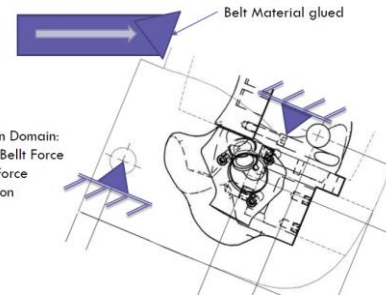
# Harmonized HIII-5th



8

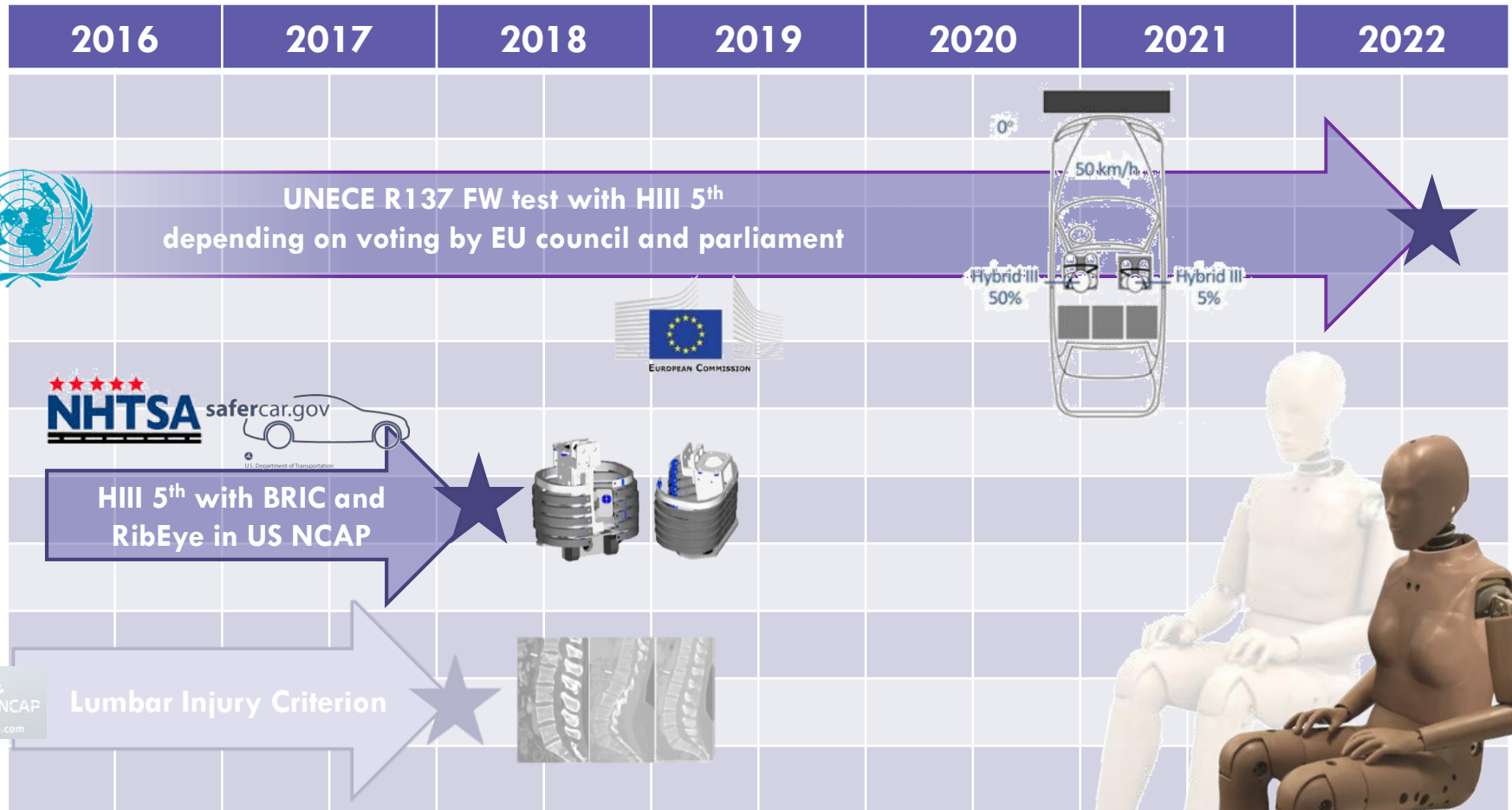
- Current project v1.5 (February 2017)

- Belt like thorax impact (Frontone)
- Lower torso update
- Submarining investigation
- Neck torsion (BriC)
- Sled validation: 2<sup>nd</sup> row loading
- Borderline features: thorax

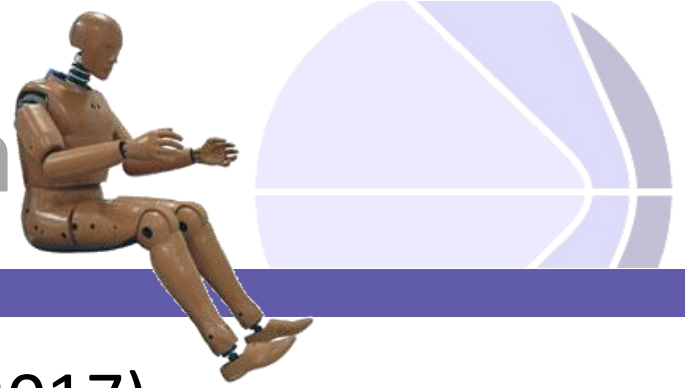




# Tentative Harmonized HIIII Schedule

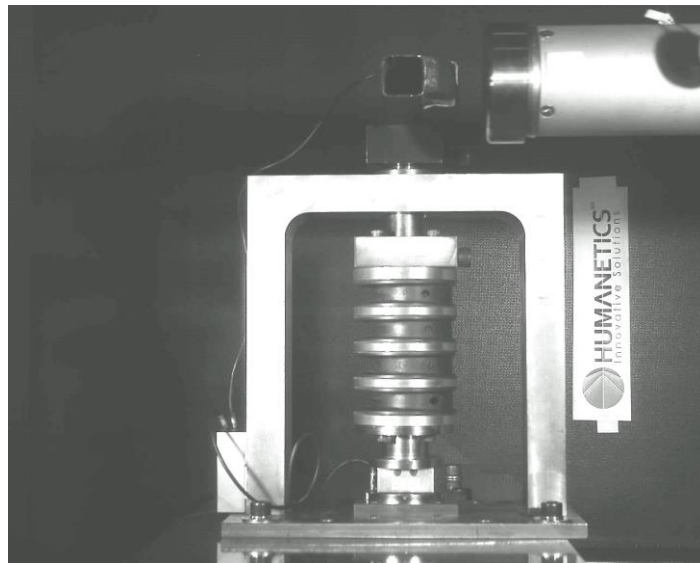
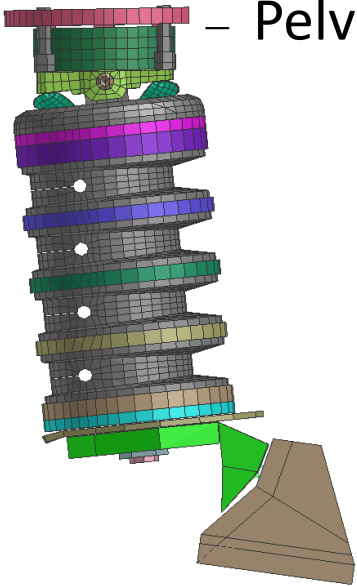


# Harmonized HIII-95th

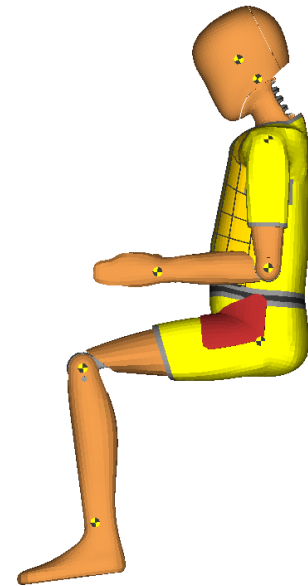
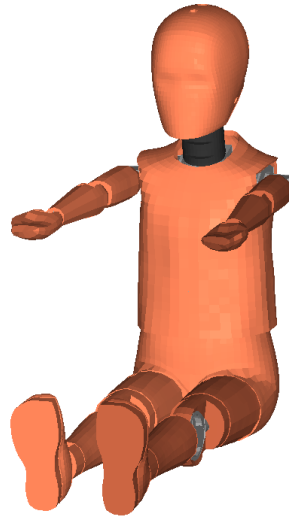
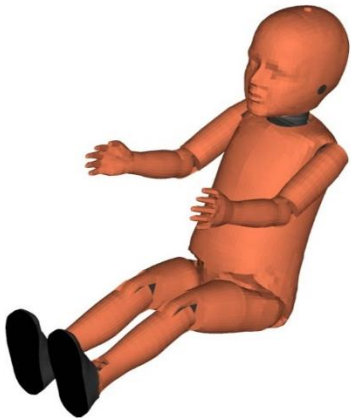


10

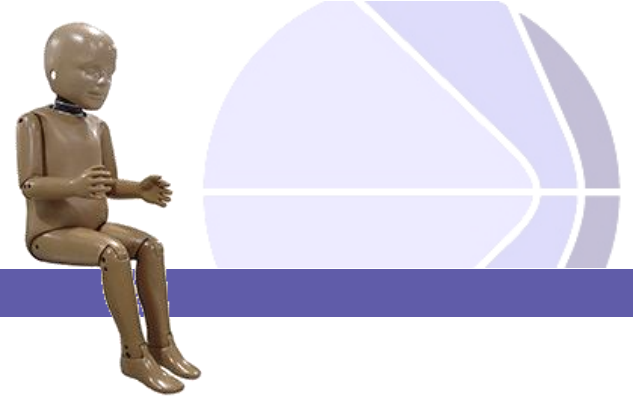
- Current project v3.3 (January 2017)
  - Detailed neck representation (NIJ)
  - Mass, inertia and material
  - Neck torsion (BriC)
  - Pelvis CT scan



# Child dummies

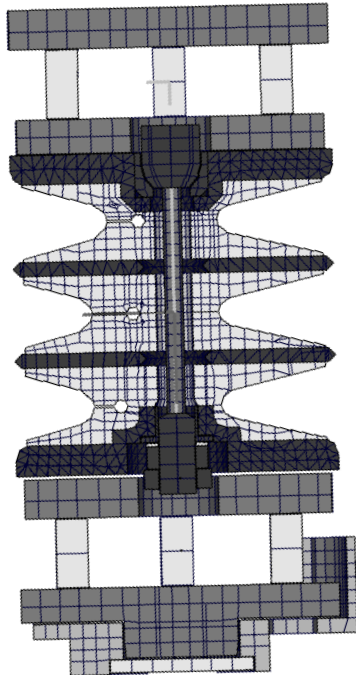


# Harmonized HIII-3YO



12

- Current release v4.2.1
  - Detailed neck representation (NIJ)
  - Mass, inertia and material
  - High speed video correlation

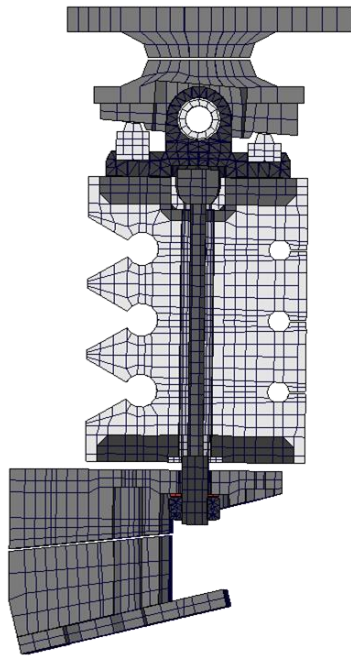


# Harmonized HIII-6YO



13

- Current project v3.3 (February 2017)
  - Detailed neck representation (NIJ)
  - Mass, inertia and material
  - High speed video correlation

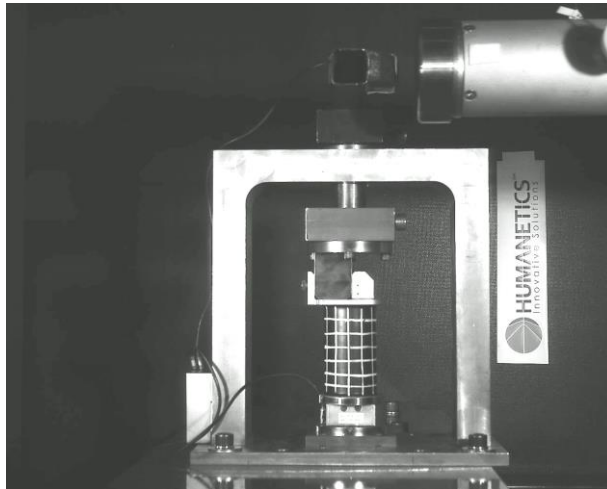


# Q10

14

- Current release v1.5

- Oblique sled Validation
- 2<sup>nd</sup> row EURO NCAP configuration with Load Limiter
- APTS sensor implementation (December 2016)
- Lumbar spine update (February 2017 )

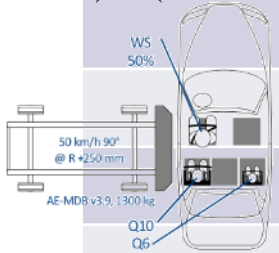


# Tentative Q-Dummies Schedule



2016                      2017                      2018                      2019

FOR SAFER CARE  
EURO NCAP



ASEAN NCAP  
KNCAP

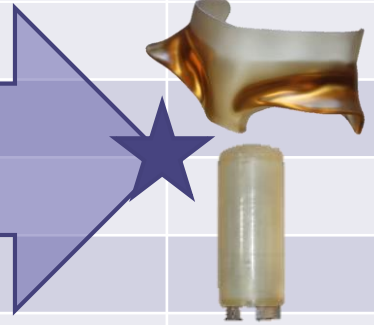


Q1,5 and Q3  
Q6 and Q10

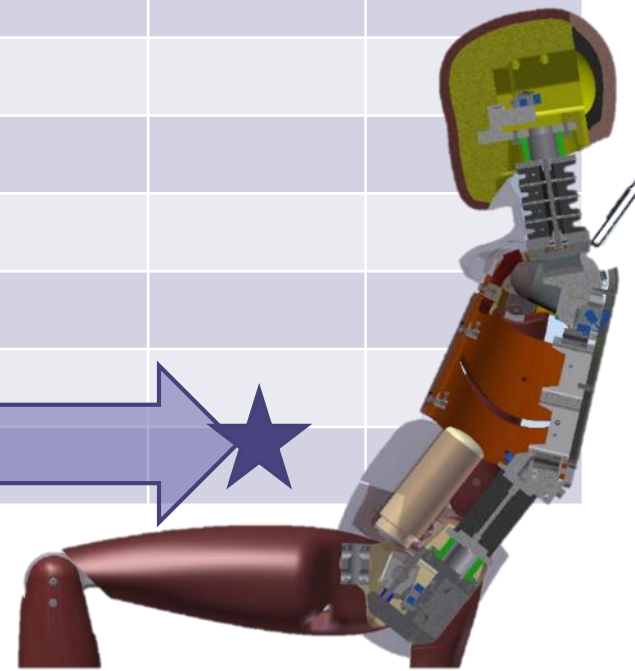
Indian NCAP Q1,5 and Q3



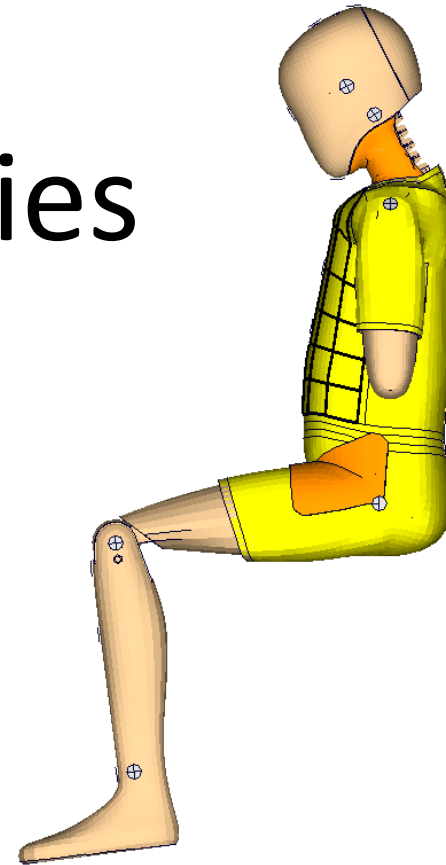
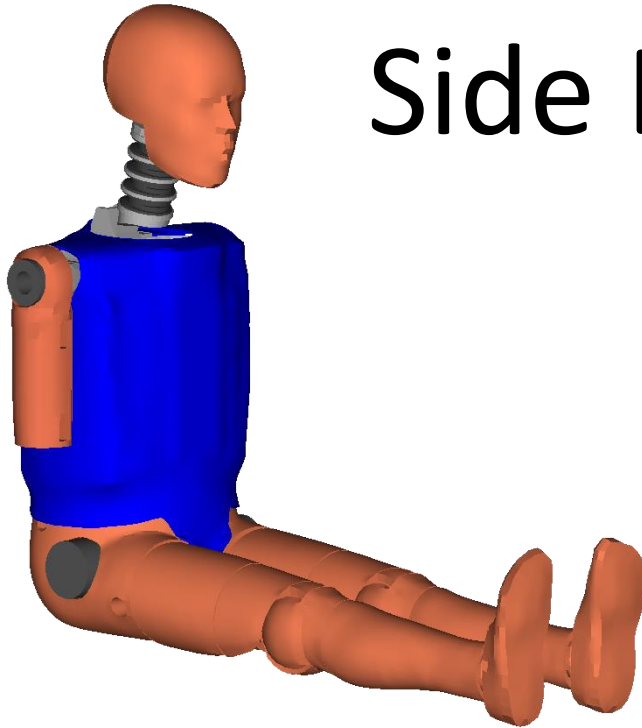
R129 Phase II using Q3, Q6 and Q10



Q Dummy update effort with focus on Q10



# Side Dummies



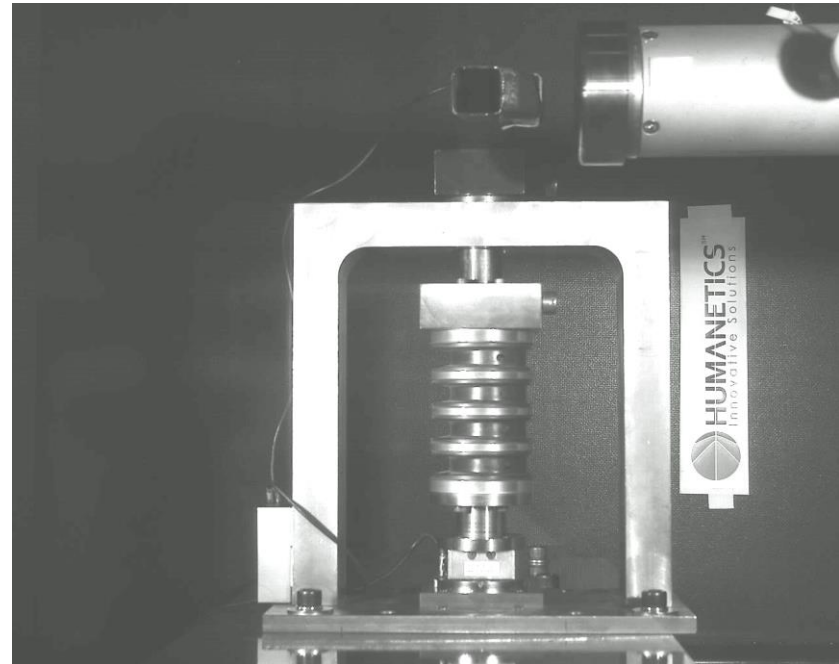
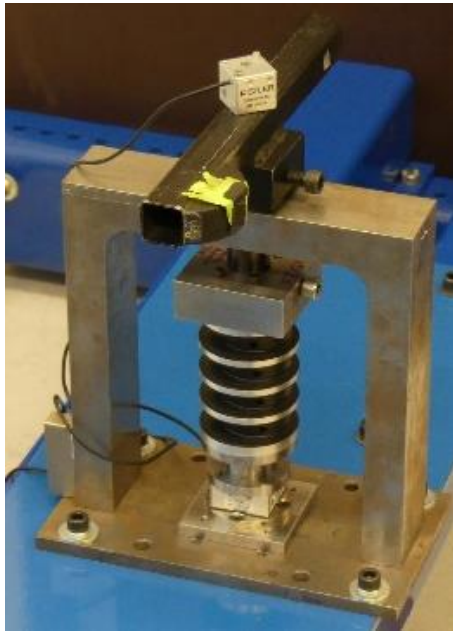


# SID-IIs



17

- Current project Version: v4.1 (December 2016)
  - Neck update with torsional validation (BriC)
  - Mass, inertia and material

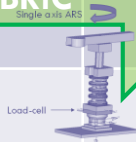


# Tentative SID-IIs Schedule

18

2014	2015	2016	2017	2018	2019	2020
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SID IIs FE Model  
Improvements including  
validation for BRiC



V4.1



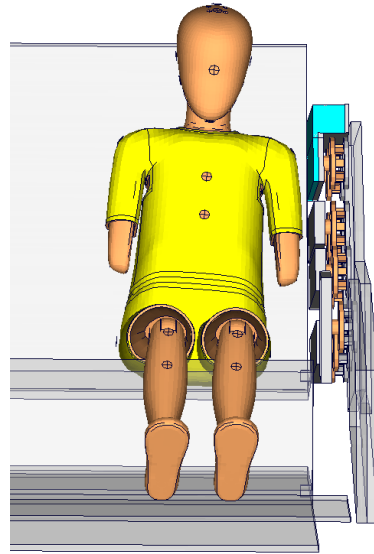
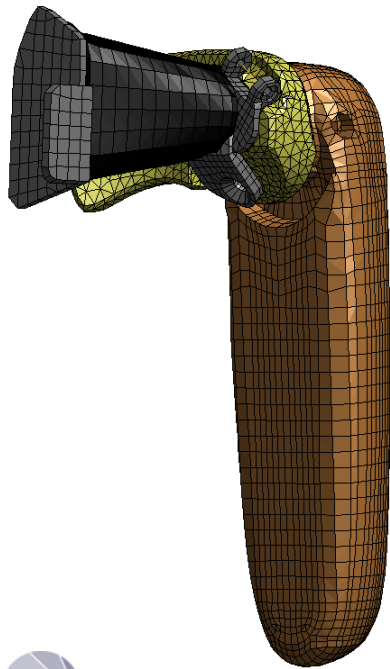
U.S. Department of Transportation

SID IIs with BRIC

# Q10-SK

19

- Current release v1.3.1
  - Sled Validation
  - Biofidelity test



# Pedestrian legform



# Flex-Pli

21

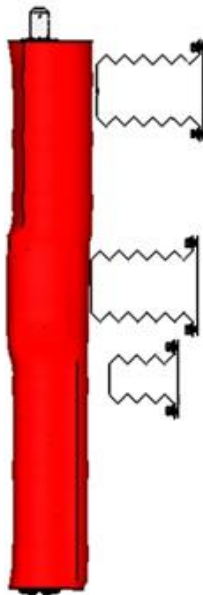
- Current released v1.0.1
  - Vehicle profiles rig tests: multiple legs and labs

## Straight

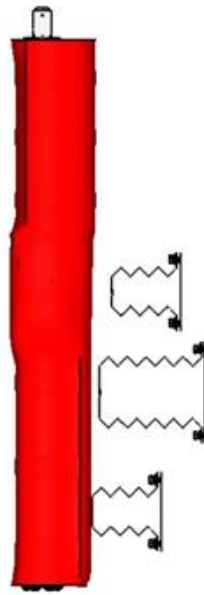
Sedan  
0 deg



SUV  
0 deg

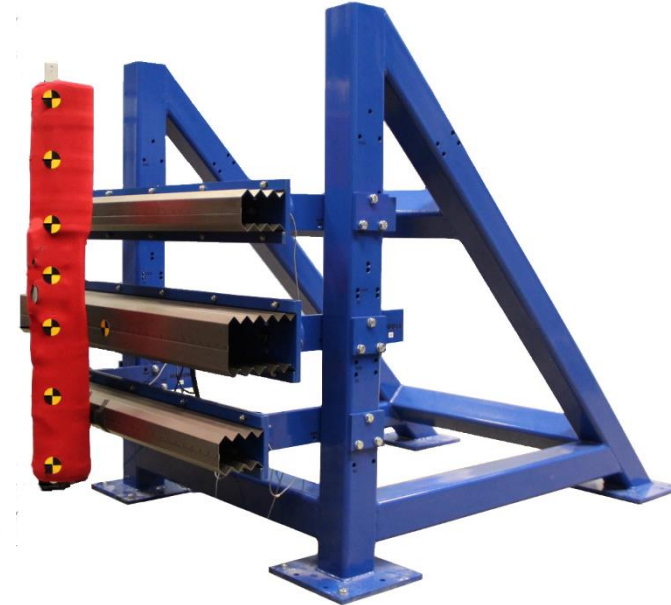
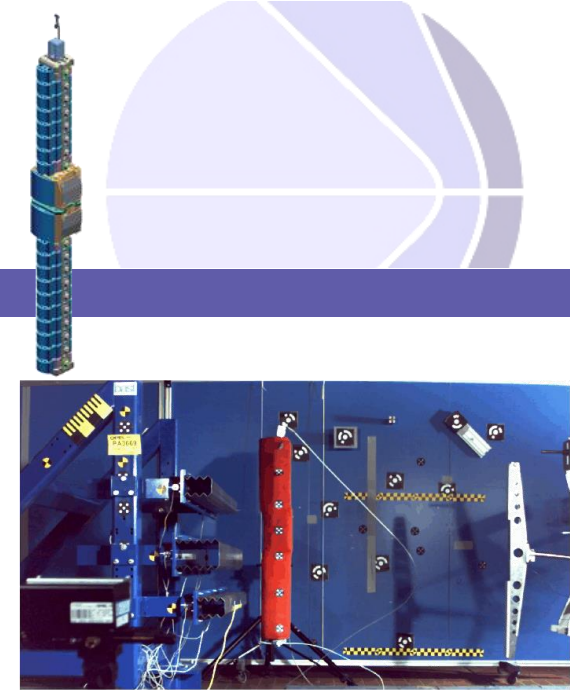
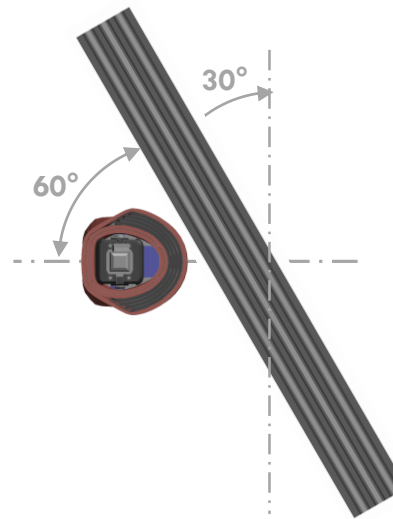


Sports Car  
0 deg

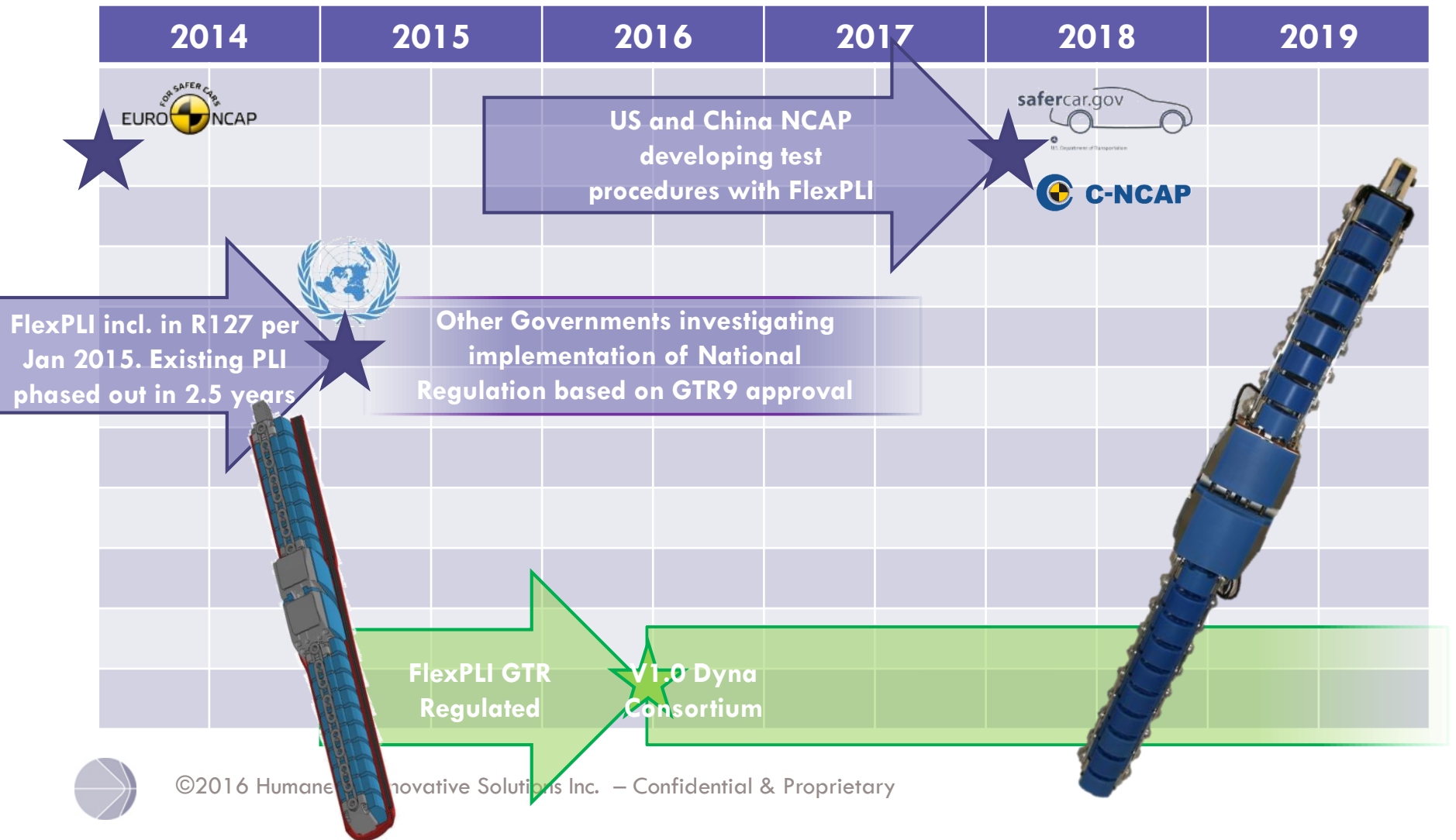


## Oblique

Oblique Sedan (+30  
deg, -30 deg)



# Tentative Schedule Flex-PLI



A blurred background image of a humanoid robot in a laboratory setting. The robot has a white head and torso, with a dark, segmented body. It is standing in a room with various pieces of equipment and a large window in the background.

# Thank you very much for your attention

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