



## FROM THE FORD “SCI LAB”

### **April 11, 2011: RESEARCH INTO DIGITAL DUMMY HARDLY CHILD’S PLAY**

**FROM THE LABS OF FORD MOTOR COMPANY** researchers are starting to build one of the world’s first digital human child body models. The model could some day serve as a digital dummy for computer-simulated vehicle crash safety testing.

**HOW IT WORKS:** A digital model is constructed component by component – brain, skull, neck, ribcage, upper and lower extremities – using data gathered from medical scans as well as anatomical texts. To start, the surface geometry for each component (the human body) and any subcomponent (internal organs) is generated, then each layer thereafter. Completed components are then joined to create a virtual human body.

Using mathematical and analytical tools combined with available body data, the virtual dummy can then be subjected to computer-simulated crash testing scenarios where researchers can collect information about the effects of a crash as well as the pressure of a restraint system on the body. Generally children are more vulnerable in crashes.

**POTENTIAL CONSUMER BENEFIT:** A child’s body is very different from an adult body, and can react differently in a vehicle crash. If researchers can get a more complete understanding of how injuries to younger occupants can differ from those in other age groups, vehicle restraint systems could become even better.

- Injury trends from the National Center for Health Statistics show that traffic crashes are the leading cause of death for people ages 1 to 34
- Ford has extensive expertise in the field of digital human models, conducting a decade-long research project to build a sophisticated and detailed adult human model, which was completed in 2004

**WHAT’S NEXT:** Ford researchers are working with China’s Tianjin University of Science and Technology, which is collaborating with Tianjin Children’s Hospital, to obtain accurate child geometry and basic body information from sources such as MRIs and CAT scans to complete the construction of the child digital dummy components.

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