



GEOMETRIC DESIGN LABORATORY FACT SHEET

Research that is Essential, Indispensable, and Connected to our Customers.

PURPOSE

The mission of the Geometric Design Laboratory (GDL) is to provide technical support to the Office of Safety Research and Development to develop the Interactive Highway Safety Design Model (IHSDM), a suite of software tools for the safety evaluation of highway geometric design alternatives. The full two-lane rural road version of IHSDM is scheduled for public release in 2002. A rural multilane version is scheduled for release in 2006.

DESCRIPTION

The Geometric Design Lab helps establish the standards and procedures for IHSDM software development, prepares the software system and functional specifications, performs verification and validation of the models that will become core IHSDM components, performs Alpha testing of IHSDM software, and coordinates the Beta testing of IHSDM software by potential end-users, i.e., State DOTs and their consultants.

GDL also helps coordinate the interaction of key players in IHSDM software development, including research contractors, software developers, potential end-users, and commercial CAD/roadway design software vendors. GDL markets IHSDM to decision makers and potential end-users, and supports staff research related to roadway design and safety.

SPECIAL CAPABILITIES

GDL staff includes professionals with expertise in transportation engineering, software engineering, and communications. This multi-

disciplinary staff allows GDL to support IHSDM development in various ways and to assume a unique coordination role.

The GDL's transportation engineering expertise supports the lab's function of reviewing and assisting development of the engineering models to be included in IHSDM for evaluating the safety of roadway designs.

By combining transportation and software engineering expertise, the GDL has the unique ability to evaluate software from both the software developer and end-user perspective.

Communications and engineering skills help the GDL staff to understand the needs of the audience (e.g., design engineers), thereby supporting effective marketing of IHSDM.

IHSDM development is a long-term effort, involving many research contractors, software developers, and FHWA staff. In addition, FHWA seeks input from potential end-users and user organizations to help ensure that IHSDM is responsive to user needs. FHWA is also negotiating agreements with commercial CAD/roadway design software vendors to facilitate integration and distribution of IHSDM. GDL helps coordinate the interaction of all those involved with IHSDM development.

PRODUCTS AND SERVICES

IHSDM currently includes six analysis components: (1) a Crash Prediction Module, (2) a Design Consistency Module, (3) a Driver/Vehicle Module, (4) an Intersection Diagnostic Re-

view Module, (5) a Policy Review Module, and (6) a Traffic Analysis Module.

Specific IHSDM products and services developed with GDL participation include the following:

- IHSDM Policy Review Module: managing end-user Beta testing, conducted Alpha testing, and finalized software functional specifications.
- IHSDM Design Consistency Module: managing end-user Beta testing, conducted Alpha testing, and developed software functional specifications for public-release version.
- IHSDM Crash Prediction Module: conducting Alpha testing and finalizing software functional specifications.
- Developed software prototypes for the IHSDM Policy Review, Design Consistency and Crash Prediction modules, and demonstrated the software to various target audiences.
- Developed software to extract roadway geometric data from GEOPAK roadway design software.
- Assisted FHWA in developing an IHSDM pre-view CD-ROM.
- Developed architecture for, assisted with the development of, and provided technical content for the IHSDM Web site.

EQUIPMENT & FACILITIES

The GDL is equipped with computer hardware and software typically employed by potential users of IHSDM, including commercial CAD/roadway design software.

The Turner-Fairbank Highway Research Center (TFHRC) has more than 24 laboratories for research in the following areas: safety operations, including intelligent transportation systems; materials technology; pavements; structures; and human centered systems. The expertise of TFHRC

scientists and engineers covers more than 20 transportation-related disciplines, these laboratories are a vital resource for advancing this body of knowledge created and nurtured by our researchers. The Federal Highway Administration's Research, Development, and Technology

Service Business Unit operates and manages TFHRC to conduct innovative research to provide solutions to transportation problems both nationwide and internationally. TFHRC is located in McLean, VA. Information on TFHRC is available on the Web at www.tfhr.gov.