The human machine interface in the cockpit of a modern vehicle is much more than a bunch of colorful pictures. A wide range of input and output media results in complex interactions. A variety of demands must be taken into account: whereas drivers must not be distracted from their primary task, substantial and up-to-date information is to be provided while the other passengers want to be entertained.

Intelligent concepts must be developed by leading professionals in psychology, ergonomics, design and engineering who collectively work together and take a responsible approach to ensure that the results are suitable for our customer.

Implementing prototypes for analyzing and evaluating a concept’s usability is just as indispensable as formulating a complete and consistent specification for the HMI. Model-based software development using modern tool chains and existing sub-models provides clarity in ensuring a high level of quality from the very start.

A growing number of vehicle models as well as new and ever-increasing sale markets are demanding a process-focused approach in managing models, versions and variants. They also necessitate proven and flexible methods in worldwide testing and validation.

In developing HMFs, IAV’s engineers provide expertise along the entire value chain: from developing prototype hardware and studies based on user utilization, complete operating concepts through to production-level software, and integration into the vehicle and back-end.

Worldwide testing along with controlled model and version management complement the IAV portfolio.
Our experts develop HMI in multidisciplinary teams and structured processes.

Market and consumer analysis
- Ascertaining and analyzing client requirements
- Verifying requirements by interviewing test persons and organizing consumer clinics
- Analyzing the present market situation and collecting information on technology trends
- Conducting design studies and feasibility analyses

Concept
- Designing innovative, intuitive display and operating concepts with visual, acoustic and haptic elements
- Ensuring type-approval conformity and suitability for mass production
- Verifying vehicle integration
- Preparing comprehensive HMI concepts

Simulation / prototyping
- Simulating HMI and functions by incorporating actual vehicle data
- Constructing prototypes and demonstrators
- Integrating prototype solutions into the vehicle

Consumer clinics
- Developing function-specific questionnaires
- Defining test-person profiles
- Holding the consumer clinic
- Analyzing results and defining fields of action

Specification
- Defining all operating processes and graphic design
- Model-based, platform-independent HMI specification

Development
- HW
- Operating system, driver
- Model-based SW development
- Code generation
- Automotive SPICE compliance

Introduction into mass production
- Managing projects to SOP level
- Managing suppliers
- Generating test scenarios and test instructions
- Testing vehicle integration and systems
- Automated testing in the laboratory and validation in the vehicle