IFTEST

Iftest hardware and software development

Time-to-market, quality and cost efficiency

From highly demanding electronics design, smart IoT solutions using the newest generation of wireless data communication technologies all the way to the development of modules and devices. Faster market entry through seamless transition from R+D to serial manufacturing.

What are the advantages of a development with Iftest?

The development of an end-to-end product concept is supported by a comprehensive consulting process. Important criteria to be taken into consideration are electromagnetic compatibility (EMC) as well as the conformity of the product to applicable regulations and the corresponding registrations for international markets. The electrical and functional safety of the product plays a decisive role. Many years of experience, demonstrated through successfully executed projects, are the basis for the consulting services.

Further elements of the consulting services are feasibility studies and estimations of total cost of ownership (TCO). Since Iftest is covering the know-how from development all the way to serial produciton, the estimate of TCO can be calculated with a high level of accuracy.

80 percent of manufacturing cost are determined during the development and design phase. Carrying out an estimate through an initial analysis and assessment allows to influence and optimise important cost drivers early on. For cost optimization all quality relevant criteria need to be carefully looked at in an early phase.

Customers are involved in the projects continuously. In joint workshops, the requirement specification for the product to be developed is created together. The project benefits significantly from Iftest's know-how in the fields of hardware, software and in particular also the new product introduction process and serial production. The close proximity of development and serial production under one roof allows a fast and cost effective transition from functional model to prototype and from prototype to serial production. This enables Iftest customers an accelerated market entry at reduced development cost.

Hardware development

Iftest has experience and offers the following hardware development services:

+ Microcontroller systems
+ Motor controllers
+ Digital and analog circuits
+ Communication interfaces
+ Wireless data communication
+ Display und touch
+ Power electronics
+ Field bus and base boards

Hardware development starts with creation of a concept for the product to be developed. In close cooperation with customers, the product concept and product specification is developed based on requirement and performance specifications. Important elements of a good product design include component selection keeping in

mind performance, long term availability, price, lifetime, possibility of 2nd sourcing as well as meeting environmental requirements and, if applicable, conformity to regulatory standards. For PCB design ‚PADS PCB Designer' and ‚Altium Designer' are used as design tools. Another important aspect that determines quality and cost is design for testability. This is done during this step. Furthermore, test strategy and test set-up are being defined. Mechanical design is developed in parallel to electronics hardware development together with selected partners.

Software development

Iftest has experience and is offering the following software development services:

+ Device and machine controls
+ Digital controls
+ Data communication
+ Field bus and internet protocols
+ User interfaces (input, display, process visualization)
+ Software maintenance and support

With almost any product a software goes alongside, in particular for device and machine controls. We develop and realize concepts for software projects as well as embedded systems as well as the corresponding PC application. Wireless data communication and encryption systems are important elements of software development. An important part for Iftest is the development of display and control modules (human machine interfaces = HMI). In this area user interfaces are developed for input, display and process visualization. In the area of embedded software Iftest works with C/C++, C# and Phyton. Apart from the V model, increasingly agile methods are being used in software development at Iftest.

Use cases and reference projects

Cardio pump

The Iftest customer Cardiobridge developed an innovative cardio pump for use in hospitals. Iftest developed electronic hardware and firmware in order to create a true product solution. In particular it was required to carry out and document the project in such a way that CE registration for the Europe wide use could be secured. Achieving the CE registration had a substantial impact on the product and solution concpet. It was decisive to implement and secure first fault safety as part of the product concept. This important goal was achieved through an appropriate system architecture.

Project highlights:

+ CE registration for Europe wide use and distribution
+ First fault safety through a respective system architecture
+ Product documentation in line with medical device regulation guidelines

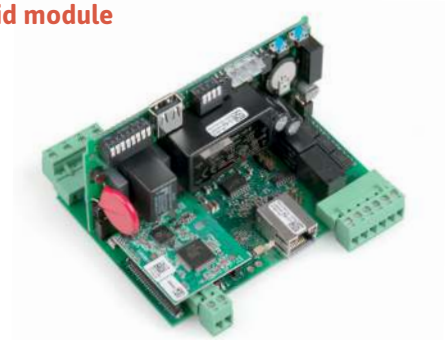
Fiscal memory solution

Together with its daughter company Actilog, Iftest developed a fiscal memory solution for the integration of an encryption system. The Physikalische-Technische Bundesanstalt (PTB), the National Metrology Institute of Germany, has developed INSIKA. Derived from the German acronym for 'integrated security solution for measured data processing till systems' (INtegrierte SIcherheitslösung für messwertverarbeitende KAssensysteme), INSIKA is the digital response to the temptation and often commonplace practice of cheating a little at the till. A smart card according to ISO7816 as well as two redundant flash memories (SD cards with MLC-NAND-Flash technology) for data memory is the core of the solution. A high performance Ethernet connection guarantees a fast data transfer between the fiscal memory and the till electronics. This guarantees that the till receipts are printed as fast as prior to implementing the memory. Since all booking events have to be openly revealed to tax authorities, a high memory capacity is required in order to collect data over a period of time of more than a year. Through data encryption according to AES256 and TLS (SSL), the protection of sensitive data can be warranted at all times. In order to protect the memory cards against removal or destruction, a solid housing was developed. This housing, acting as a sealing, protects the device against manipulation and breakup attempts. Those would be made visible.

Project highlights:

+ Data storage via smartcard according to ISO7816 and two redundant flash memories (SD cards with MLC-NAND-Flash technology)
+ Data encryption according to AES256 and TSL (SSL)
+ Manipulation protection through special design of device housing

Smart grid module



Production of electricity based on renewable energy sources changes the requirements for the grids. It is very difficult to plan electricity which is produced from sun or wind. Therefore electric power from renewable sources inherently undergoes significant variability. Smart grids is a solution approach for these challenges: the grid forms a symbiosis with information and communication technologies and is therefore more intelligent and controllable. Iftest developed a smart grid module for a leading energy service provider; this module helps to optimize energy consumption in private homes. Core of the solution is a learning algorithm which continuously learns and forecasts the energy needed per device. Wireless data communication inside the private home, between homes all the way to the cloud supports the energy optimization process. Examples are the control of building technologies such as heat pumps, boilers, charging stations for electric vehicles, PV inverted rectifiers and battery storage. The control is happening decentralized and autonomous.

Project highlights:

+ Learning algorithm to forecast energy needed per device
+ Encryption / certification (https / HMAC / MDS)
+ Software development based on CTI project and industrialization of hardware

Iftest AG

+ EMS partner for medical and industrial electronics

+ Services
  – Consulting
  – Hardware development
  – Software development
  – PCB design
  – Fast prototyping
  – PCB assembly (SMT and THT)
  – Device assembly

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Autor
Bernd Maisenhölder

Kontakt
Iftest AG | Tel. +41 56 437 37 37
info@iftest.ch