



Card-Based Systems and Solutions

Managing security systems successfully



Giesecke & Devrient

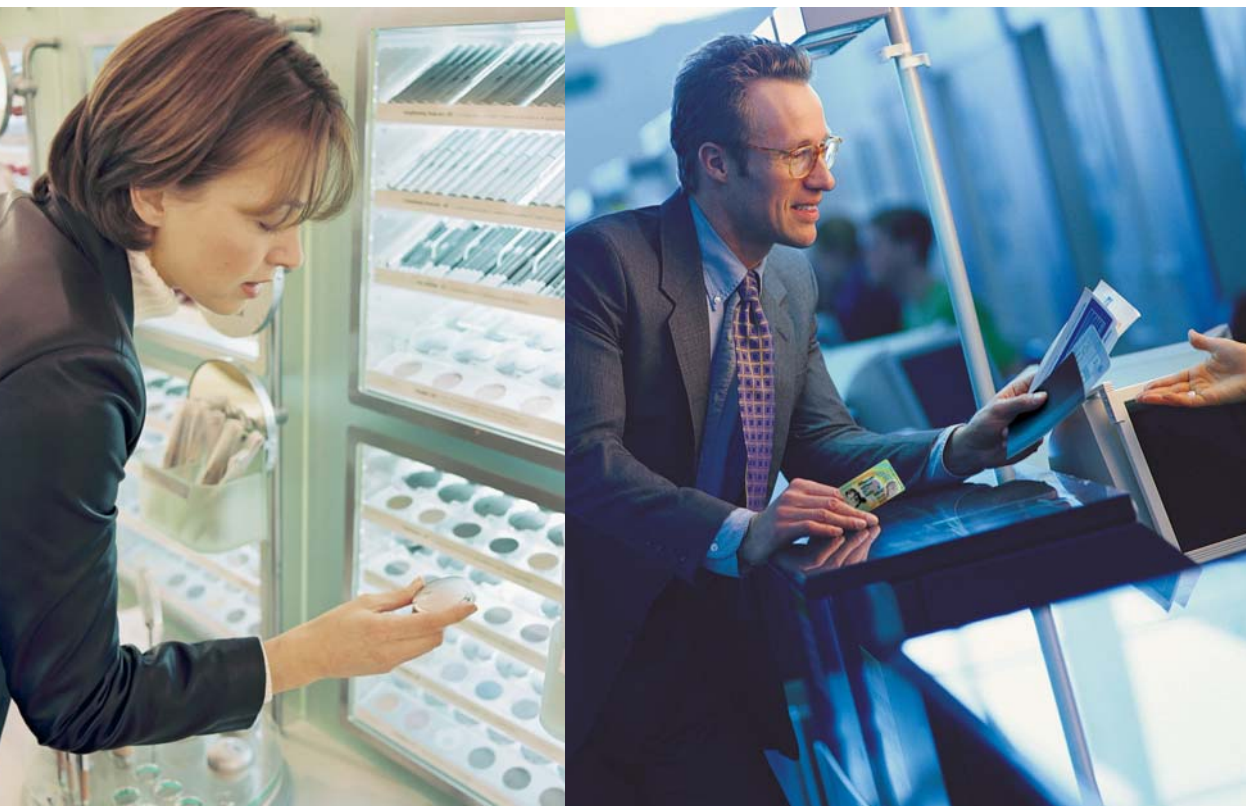
Implement card-based security systems successfully – with a partner that has been setting standards from the start

New technologies allow for future-proof solutions to suit the urgent requirements made of present-day business and public communications systems. These not only give enterprises and authorities great opportunities to considerably increase their security, they also facilitate a significant reduction in administrative costs. In addition, enterprises and authorities can boost their service potential as well as offer new, attractive services.

Card-based security systems increase the level of security with regard to authentication and transactions with considerably accelerated and automated processes. G&D's solutions ensure the integrity of the individual user's data and provides greater user comfort.

The successful implementation of new card systems necessitates careful planning. Administrative systems and organisational processes must be re-structured, responsibilities reassigned and existing processes reorganised. This requires the professionalism of a partner whose competence not only lies in the necessary technologies, but also one who masters all of the processes crucial to implementation.

To this end, Giesecke & Devrient (G&D) offers complete solutions from a single source. This guarantees the highest levels of functionality and security. We have successfully implemented our solutions

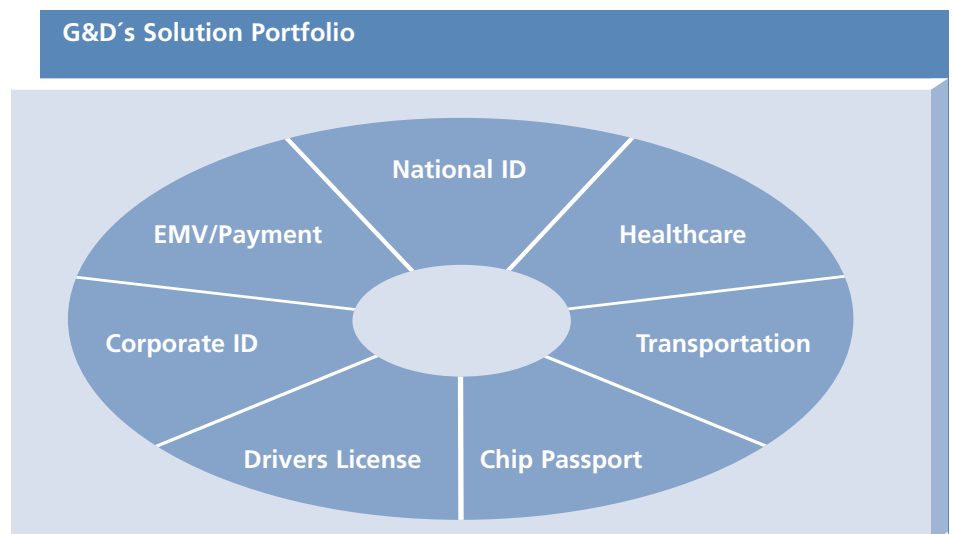




in the areas of industry and public authorities, payment modalities and telecommunications around the globe.

G&D is an international technology company that has been setting standards in the security technology sector for decades and is the technology leader for smart cards and complete smart card solutions.

Customers make use of our experience world-wide for setting up card-based systems, from the use of the card as a means of identification and communication, through personalisation systems, data collection and administration, card and application management, key management and security functionality, all the way to application development.



Creating individual solutions out of complex requirements

The requirements of our customers are as individual as the opportunities posed by innovative smart card technologies are versatile and flexible. One cannot have a secure and fully functional complete system without first finding the right customer-specific and requirements-specific combination of appropriate technologies. We ensure that an individual solution package is created from the extensive portfolio of innovative technologies which can be used with versatility and flexibility. We support our customers at every phase of the project.

Consultation

Based on the actual analysis of the existing system, G&D presents various approaches to improving existing processes or getting new solutions to function. Even at this early stage, we rely on competent partners as required.

Products

Once the decision for a solution model has been taken, G&D is able to offer the complete product, from the card, through the applications, all the way to hardware. In this area as well, suitable partners with high quality components are available to complement our range of products.

Implementation

This includes the entire system integration along with the infrastructure setup, linking to existing systems and processes as well as training the staff on site – in short, everything directly required to commission a solution. This phase in particular

demands a high level of individual adaptability to the requirements of the customer and regional factors. Every task is embedded in its own specific environment.

Operation and Service

Even after things are up and running, we continue to support our customers. No matter whether it is staff training, complete outsourcing, for example of personalisation, or software maintenance, G&D offers the entire spectrum of services and products required for the running operation of a solution.

Our service range covers all solution components

Only those who master all of the components can successfully implement complex solutions. For deployment of the individual project phases, G&D offers all process steps all the way to system commissioning.

Project management

We create a project plan defining the activities and milestones leading to the finished solution before the project even gets started. We select suitable partners, coordinate partial projects and are responsible for the specification and implementation all the way to acceptance by the customer as well as subsequent system maintenance. In addition, G&D can offer the customer financing models such as BOT (Business Operation Transfer) or alternative solution approaches such as outsourcing.

Workflow Guides the Whole Project

- Consultation
- Products
- Implementation
- Operation/Service



Products and Services

- Project Management
- System Design
- Secure Communication
- Card-Based Engineering

System design

With our experience in the area of smart card technology, we are the customer's competent partner for the entire planning and realisation of card-based solutions. We design the system concept and define the specifications and security mechanisms for the various system components. This includes card personalisation, data collection and administration, card and application management, the security infrastructure as well as industry-specific applications. What makes our particular strengths unique is the integration of the individual components and their harmonisation to create a fully functional complete system.

Transaction security

In addition to biometrics, cryptological processes such as PKI form the core of secure smart card solutions and thus are the focus of our solutions in the area of

transaction security. The experts from G&D are active on different leading industry and standards committees and are making a substantial contribution towards the further development of smart card technology, ensuring innovative applications and products.

Card-based engineering solutions

This area mainly involves the planning and setup of card production and personalisation systems for our customers. We provide the complete hardware, including machines and production systems as well as the related software components, define the process for production and make the infrastructure for the system available. In addition, we ensure compliance with security requirements relevant for ID and credit cards. Our goal is to put the customer in a position to use our solution to optimise processes.

A network of partners to bundle the strengths of the best

As a result of the unique customer-specific and requirements-specific combination of various technologies that marks each project, extremely varied demands are made of the solution. It takes a network of competent partners to complete these tasks in all of their complexity. In addition to its own competence in security issues and technology resources, G&D offers its customers an international network comprising various solution partners.

External suppliers

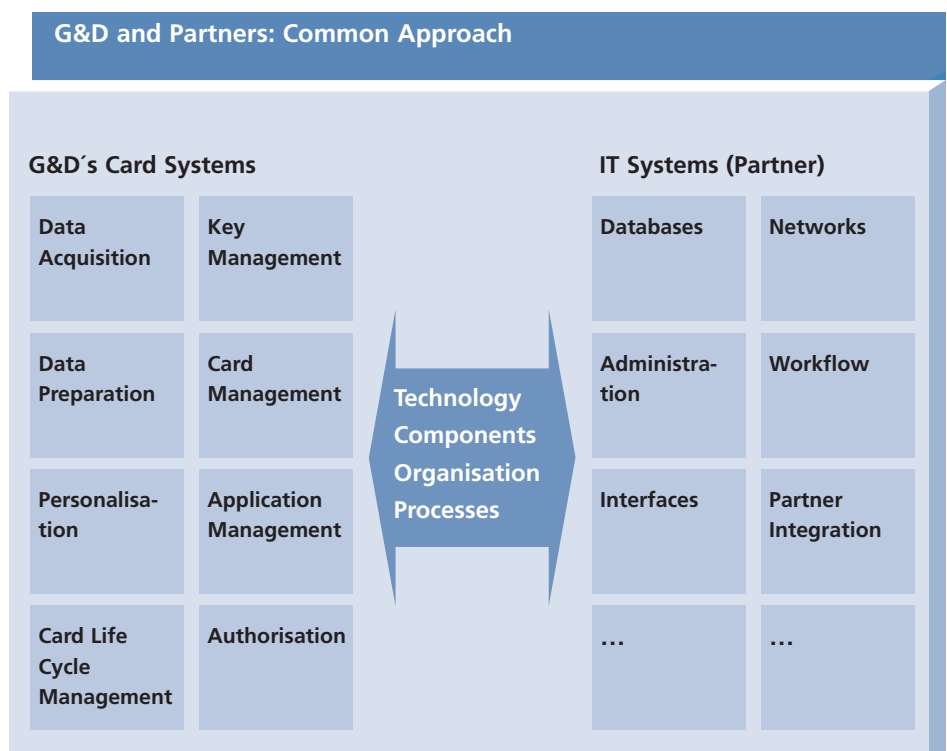
Our product suppliers provide us with proven technical solution components which we integrate in the complete system. These partners include enterprises in the areas of card and application management, PKI and manufacturers of personalisation systems, to name a few examples.

System integrators

In order to integrate complex card solutions in the online background system, we collaborate as required with experienced system integrators (e.g. Accenture, EDS, SBS, IBM). In such cases, G&D concentrates on the card system, while our partner focuses on the IT system (e.g. database, network and interface). Together with our partner, we ensure that the technology and components of the card system harmonise with the background system and at the same time that the organisation and processes of the customer are taken into consideration.

Regional partnerships

Cooperative efforts with local enterprises round off our network. These companies are able to take on the integration or





even the operation of the solution in regional infrastructures or networks. In addition, we work with our subsidiaries, e.g. Secartis, which has specialised in the integration of security in company and business processes.

Card-based solutions from a single source

We are able to offer our customers everything required for the realisation of complex card solutions. This ensures a high degree of functionality and operational security. From the first deter-

mination of requirements all the way to post-project support, the entire project realisation remains the responsibility of one single source. Our modular offering, which makes use of existing resources, provides the utmost economy.

No matter what the requirements are, our world-wide network ensures that appropriate resources and competencies are available on site, thus fulfilling an important prerequisite for the successful implementation of our solutions.



Multiplicative smart card system with biometric data for Macao

Smart card-based ID systems from G&D which include biometric data offer one-of-a-kind protection against counterfeit. In addition, ID systems with PKI functionality ensure that the prerequisite for modern eGovernment services is given. The government can offer its services to its citizens online and fulfil its administrative tasks with more efficacy.

and did not ensure secure identification. Following the return of Macau to the Chinese government, the number of frontier commuters has increased dramatically. In addition, the government of Macau has made modernising the administration a top priority and the smart card is to play a key role towards establishing eGovernment.



eGovernment in Macao

The government of Macao is presently completing a multi-application smart card project. It involves a Java™ card featuring the biometric fingerprint as well as PKI, with the fingerprint used for border control and additional PKI for eGovernment services. In addition, the integration of a Trust Center is a part of the solution. Subsequent applications are planned for the future.

In collaboration with our partner Siemens Business Services, G&D provided the project management and made the registration and issuing systems available. For this purpose, G&D delivered the main components of the issuing system, key management, card and application management, public key infrastructure and multi-functional smart cards.

The introduction of the modern ID system comes on the heels of Macau's paper-based ID card, which was in use for 10 years without any major modification

18 short months after the contract was awarded, distribution of the ID cards was started. Macau intends to issue a total of 560,000 ID cards to its citizens by 2007.



Italy – well ahead of the game in EMV migration

According to the EMV directive of the credit card organisations MasterCard and Visa, the liability stipulations for credit and debit cards will change from January 2005 on. After that point, a lot of banks around the world will have to take steps towards implementing smart cards. As a result, the security of payment transactions will increase and risk management as a whole will be improved. In addition, EMV cards open up new sources of potential revenue. For example, other applications, such as bonus programmes, can be integrated on the smart card.

EMV migration requires complex system changes from frontend to backend and affects the card issuer as well as the bank. G&D offers a largely standardised phase model, which is proven in practice. A world-wide network of partners well used to working together seamlessly helps to reduce the project risk and costs.

In Italy, the pilot phase for the migration from credit cards with magnetic stripes to secure cards with chips came to a close in June 2003. G&D actively accompanied the pilot phases at several corporate banks. Approx. 30 percent of EMV cards were supplied by G&D. In July, ABI (Associazione Bancaria Italiana) started the rollout phase for the migration to smart cards.

The whole project was completed within the scope of a cooperative effort with the Italian company Metalplex, which took on the personalisation of the cards. G&D provides the technical equipment for the personalisation centre and accompanies the entire setup process. In addition, G&D supports Metalplex in ensuring that the security requirements of the card organisations as well as those of ABI are met.



Taiwan's early launch of a future-orientated healthcare system

In July 2002, the starting gun went off on the issue of a total of 24 million intelligent healthcare cards in Taiwan. With this move, Taiwan was the first country to implement smart card technology in its healthcare system. This contributes significantly to increased efficiency and reduced costs as well as providing more transparency in the healthcare system.

With its use of Java™ cards and the establishment of a public key infrastructure, the country can place its trust in a flexible and secure system. This Java™ card-based solution from G&D was nominated for the SESAMES award.

G&D, together with its local joint venture partner TECO, was responsible for the shipment and personalisation of the smart cards for the healthcare card project in Taiwan. With a capacity of 2.5 million cards a month, the personalisation centre is the largest in Asia.

In addition, G&D developed the Java™ card operating system. The Java™ applet with the corresponding healthcare card application is a result of Secartis research. The 100% G&D subsidiary also designed the entire security architecture and defined the access rights for patients and doctors.

This project marks Taiwan as the first country in the world to launch a healthcare card system on the basis of Java™ technology which is state-of-the-art and effective. The healthcare authorities forecast savings of more than 550 million euros over the next five years as a result of reduced expenses for treatment and medicine as well as fewer cases of fraud.





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