



## Protecting Value along your Supply Chain



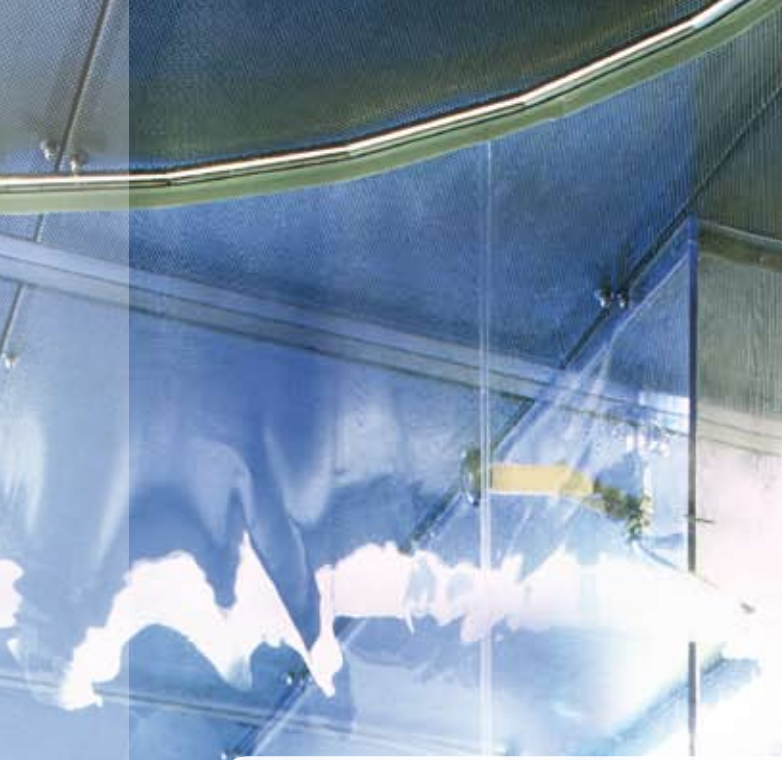
INNOVATION

ENGINEERING

OPTIMIZATION

## Track, Trace & Authentication





## UNRIVALED SECURITY AND PRODUCT IDENTIFICATION

Bayer Technology Services is an experienced and reliable partner for professional Track, Trace & Authentication applications (TTA). Current economic boundary conditions, the increasingly global nature of business activities and the trend towards off-shoring are creating new logistical challenges both within companies and in their dealings with other companies. The complexity of product ranges is leading to divergent supply chain structures that are difficult to follow. Serialization and professional TTA applications enable the protection of products and traceability along the entire value added chain.



Packaging line



Global enterprises are subject to increasing pressure because of their obligation to satisfy international legal requirements. Counterfeit products and the theft of medical products and consumer goods, in particular luxury goods and branded articles, result in annual losses of billions of dollars. The customized TTA solutions offered by Bayer Technology Services help to reduce such losses over the long term. TTA offers a means of demonstrating the origin of products and thus protecting sales. Our technology offers an effective form of protection against counterfeit products and gray-market activities.

The modular TTA solutions from Bayer Technology Services enable customers to protect the image of their brands. Our teams of experts analyze individual problems and develop long-term solutions that are customized to the problem. Serialization using 2D matrix codes or RFID transponders allows original goods to be verified in bulk or individually at the point of sale (POS).

Our authentication technology ProteXXion® – awarded the Hermes prize in 2007 – is free of visible markings and enables the tracking of goods and protection against counterfeiting along the entire supply chain, as well as providing consumers with the reassurance that they are buying a genuine product. The security provided by this surface authentication platform even exceeds the security standard of biometric procedures, such as iris scans or fingerprint scans. The unique surface characteristics of any object scanned with ProteXXion® allow the object to be identified as genuine. Surface structures can be authenticated with absolute certainty without any further identifying markings.

ProteXXion® enables a guarantee to be given to customers about the authenticity of an object, with no risk of it being counterfeit. The ability to trace a product along the supply chain delivers an extremely high level of security for customers, especially for products with a limited shelf life, those that are important for safety and for pharmaceutical products.

Bayer Technology Services, a Bayer AG service company, has decades of experience in the chemical and pharmaceutical sectors. Our customers benefit from the expertise of our interdisciplinary teams of experts that cover different sectors. Bayer Technology Services offers services that are matched to the needs of its customers. These services range from customized complete TTA solutions, software applications and database hosting with professional advisory services and process management, through to installation, maintenance and after-sales support.

**Market for product and brand protection by region  
corresponds to approx. 1 % of the losses of € 660 billion**

REGION	SALES 2009 (US\$ millions)	CAGR* % (2009-2014)
Western Europe	1633,8	7.7
Eastern Europe	462,2	13.0
Middle East	284,7	16.0
Africa	185,7	11.4
North America	1748,4	7.4
South / Central America	271,0	11.2
Asia	2091,8	15.1
Australia	87,8	7.7
<b>TOTAL</b>	<b>6765,4</b>	<b>11.1</b>

80.91 % of the global market

Source: The Future of Anti-Counterfeiting, Brand Protection and Security Packaging V, PIRA International Ltd 2009

\* CAGR Compound annual growth rate

# SIMPLY UNIQUE, AVAILABLE EVERYWHERE 24/7

## Identification through Serialization

Modern serialization procedures enable the recognition of products, components, containers or documents through a unique marking. A check for the presence of an imprinted unique serial number on an object allows the detection of any manipulation activities along the supply chain. This is of particular benefit in the case of luxury goods or pharmaceuticals. The randomized serial numbers can also be applied to articles at high production speeds in a process that is simple and reliable. The serial numbers and product type are stored together in a central database and can be accessed at any time for verification purposes. The product can then be verified as an original when scanned at the point of sale within a matter of seconds.



Serialization through a 2D Matrix Code



### European Union:

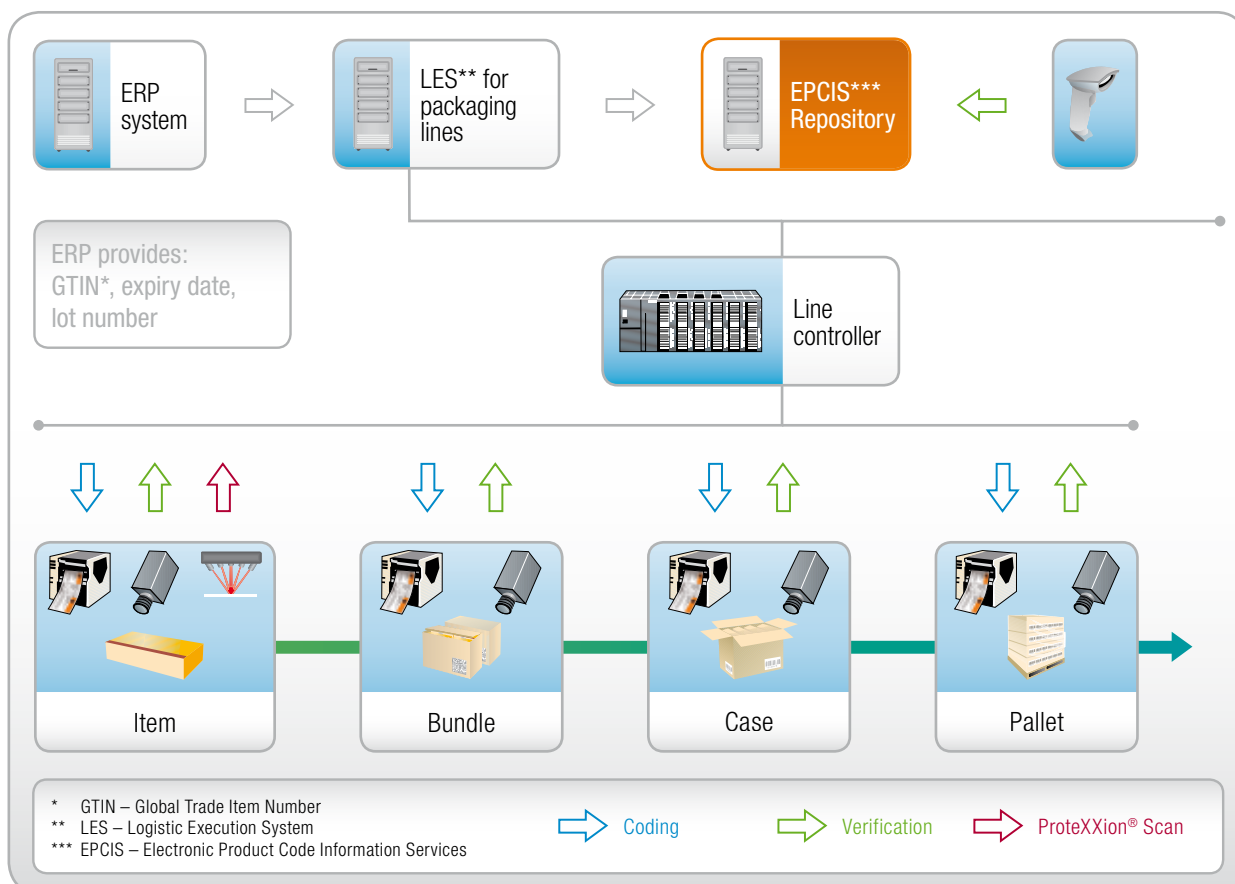
#### EFPIA pilot project demonstrates the way forward

The regulations that govern marking and labeling are specific to individual countries and make serialization of medicinal products particularly difficult at present. The European Federation of Pharmaceutical Industries and Associations (EFPIA) recently concluded a pilot project in Sweden to implement a new coding system. Bayer Technology Services made a substantial contribution to the development of this project, which was a considerable success. Data sets with unique serial numbers, imprinted on each pack as 2D matrix codes, provide a high degree of protection against counterfeiting all along the supply chain. The EFPIA has recommended the implementation of a standardized identification solution for pharmaceutical products across Europe: A GS1-2D matrix barcode is to be applied to each pack and will store all major product data, such as product ID, batch number, expiry date and a unique serial number.

## Turkey: Serial numbers for the improved detection of counterfeits and accounting control

The Turkish government believes that 10% of all accounting for pharmaceutical products in Turkey does not comply with financial regulations. The state healthcare system incurs considerable financial losses as a result of such activities. Turkey has therefore become the first country within Europe to introduce a verification network for the individual coding of sales packaging for medicines supplied on prescription throughout the country. At the time of supplying a patient with a medicine, each serial number has to be checked for authenticity against a database. This system helps to prevent counterfeiting and fraudulent accounting activities. Bayer Technology Services advises Bayer HealthCare on the introduction of coding technology in packaging plants.

Bayer Technology Services possesses the necessary expertise to develop TTA solutions that are geared to the requirements of individual companies. Bayer Technology Services provides neutral advice on all aspects of the process – from the initial project outline to implementation. Our professional teams focus on achieving the best possible solution for their customers, taking into account their existing situation and requirements. The customer may choose a complete package that is ready to use, or one or more parts of such a package.



## INNOVATIVE SURFACE AUTHENTICATION TECHNOLOGIES

### Intralogistics Systems

The advancing cross-linking of intralogistics and goods flows is presenting many companies with increasing logistical challenges. ProteXXion® tracking enables objects and components that are free of markings to be tracked during the production process and during maintenance operations. The ST20 sensor scans the surfaces of products or components at a point defined in advance. This generates a binary code for the object through which all necessary product data or component data can be automatically stored in a central database at an early point in the supply chain. The data can then be accessed at any time using Track & Trace software. One possible application is the creation of production status documentation in the automotive industry. This reduces costs substantially if there are any recall actions.



ProteXXion® sensor ST20

The uniqueness of the data generated using ProteXXion® ensures that an object can be recognized time and again during the production process and along the supply chain at any desired control point. ProteXXion® tracking enables original parts to be tracked and guaranteed at all times. Our experts provide advice, assistance with planning and the implementation of customized TTA technologies such as sensor technology, software programming and database hosting for customers. Our customers profit from our complete project management package comprising the modification of their packaging line, the installation of all of the necessary technical components, and maintenance and support. The first pilot projects in the automotive industry have now been successfully concluded.

# PROTEXXION® BY BAYER TECHNOLOGY SERVICES

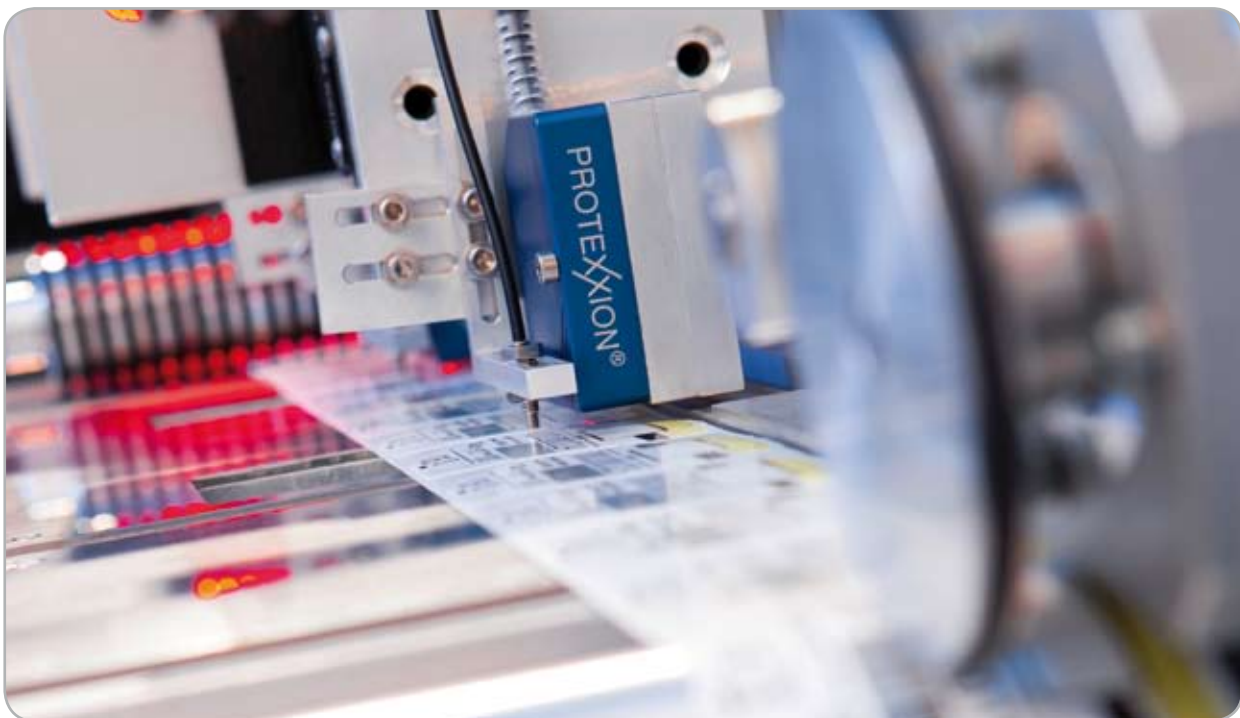
## Customized Authentication Solutions

Bayer Technology Services offers customized TTA applications for every need, e.g. based on the marking-free authentication technology ProteXXion®. Many companies, however, do not wish to do without a visible marking for the identification of their products. Furthermore, ProteXXion® does not deliver reliable results with reflecting surface structures. In these cases ProteXXion® Secure Label is the optimum solution for the authentication of products. This application optimally combines the advantages of forensic and visible security properties. Each security label – which can be individually configured – is given a unique identifier by Bayer Technology Services and can be applied to any desired part of an object. Packaging can also be sealed without difficulty since a label that has been attached cannot be removed without damage. Any attempt to manipulate original packaging is effectively and reliably detected through ProteXXion® Secure Label. Secondary scanning of the label allows unequivocal identification of an object anywhere in the world at any time. The process can be carried out quickly and easily over the internet. Merkur Media GmbH has put its faith in the protection afforded by ProteXXion® Secure Label and has used specially designed labels to protect its GameDisk® console since February 2010.

From April 2010 Bayer Technology Services is offering a new online service for the authentication and verification of products, components, containers and documents. Our customers can now benefit from the advantages of a web-based service portal for flexible access to their reference scan data. Because of their small size, the data files can be checked without delay and virtually in real time. Innovative scanning devices have WLAN-interfaces so that scan data can be transmitted wirelessly to suitable smart phones and then be transmitted to authentication servers via a GSM service. Smart phones that will be connected to ProteXXion® Web Services directly through WLAN or UMTS connections are currently being developed.

Protect your brands, know-how and investments with the help of the ProteXXion® system. Our teams of experts provide support for all aspects of authentication projects.

We're happy to deliver advice at any time.



Secure labels for the GameDisk® console by Merkur Media GmbH



## Bayer Technology Services

Bayer Technology Services GmbH  
51368 Leverkusen, Germany  
Phone: +49 (0)214/30-800 50  
E-mail: [info@bayertechnology.com](mailto:info@bayertechnology.com)

[www.protexxion.de](http://www.protexxion.de)  
[www.bayertechnology.com](http://www.bayertechnology.com)