

Technology Licensing

Built-In-Fingerprint Biometric Solutions



MB fingerMetrica

The competence of identification solutions

 B - R · E · A · L<sup>®</sup>

Biometric Recognition Embedded Algorithm Library

Reliable flexibility in embedded biometric fingerprint solutions.



Manfred Böswald  
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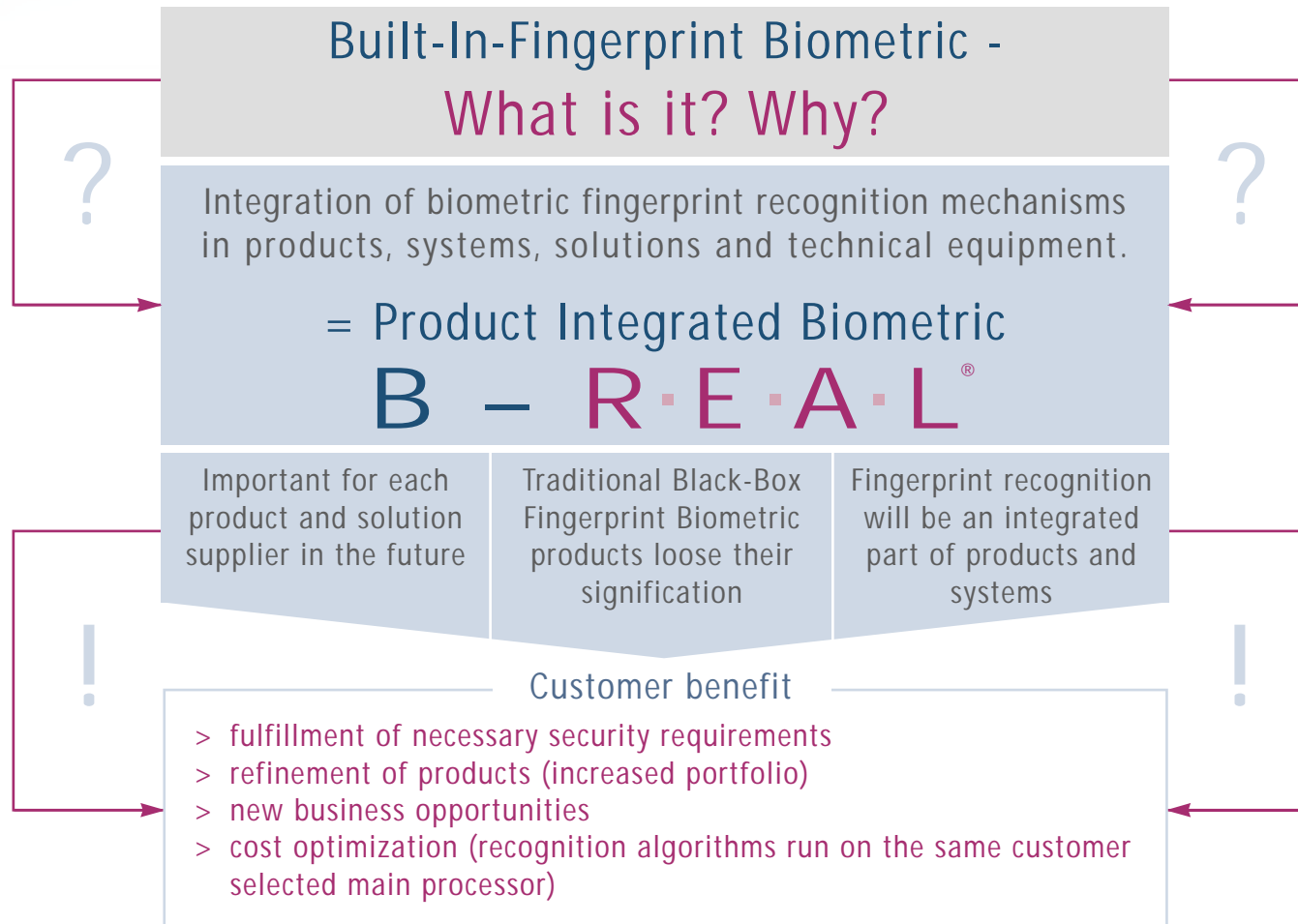
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### General Informations

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## Evaluation of Biometric Systems

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## Application Security

Biometric error rates are only one important part of overall security.

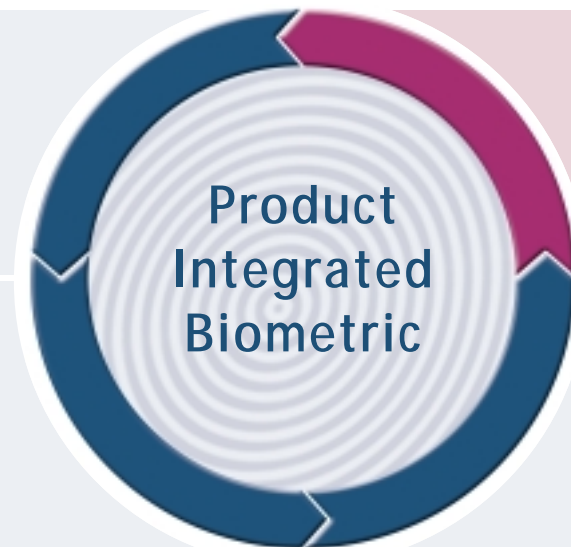
Composed of:

### ■ Processing Power

Customers product and solution environment

### ■ Fingerprint Image Sensors

Various sensor suppliers on the market



### ■ Fingerprint Recognition Technology and Algorithms

Platform and sensor independent, low resources, powerful and cheap recognition fingerprint embedded algorithms.

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### ■ Design in Expertise

> sensor selection  
> mechanical fingerguidance



## Characteristics of the Product Line

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## CHARACTERISTICS

- > No product in the common sense - it's a business model
- > Fingerprint recognition algorithms / technology as the product (license model)
- > Solution business with the focus in integration of biometric functions in customer products and solutions
  - provision and delivery of B – R·E·A·L for customer integration
  - service: advise and integration support
- > Current and future product / technology components
  - standard B – R·E·A·L 1.0 version - refer to specification
  - planned roadmap features - refer to roadmap
  - project and customer specific development of fingerprint biometric FW / SW modules
- > Streamline: development of extraction and matching firmware and software components for fingerprint recognition specific embedded product implementation (biometric devices, smartcards, biometric systems, basic components)
- > Active sales acquisition in 2005 and following years
- > Siemens as the partner for 2nd level and integration support
- > Customer training through provided documents and seminars



## Products / Projects and Market Segments

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### Actual Products / Projects

- > Technology running on known TopSec ID Module
- > Automotive Audi A8 serie product

### Market Segments

- > Automotive control
- > Access control (safes, doors)
- > Time & attendance
- > Motor industry
- > Medical equipment
- > Automation of private homes
- > Industrial use
- > Secure PC devices
- > Smartcard solutions
- > Machines
- > Measuring instruments
- > Multi media equipment
- > Control terminals
- > Mobile device (handy, PDA)
- > Boot protection PC, laptops
- > Printers
- > Digital set top boxes
- > Network components  
(router, switches, server, gateways)
- > Communication equipment  
(telephone, fax, telecommunication equipment)
- > High security applications



## Vision, Mission, Strategy

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### ■ Vision

MB fingerMetrica GmbH is the supplier for product integrated fingerprint recognition solutions.

### ■ Mission

We provide our customers:

- > consulting for product fingerprint biometric integration
- > conception of product integrated fingerprint biometric solutions
- > supply and implementation of fingerprint biometric modules

### ■ Strategy

We have the competence for the integration of fingerprint biometric functions in our customers products based on our excellent biometric know-how and engineering experience. Our product portfolio covers all kinds of modules needed for high quality integrated fingerprint biometric solutions.



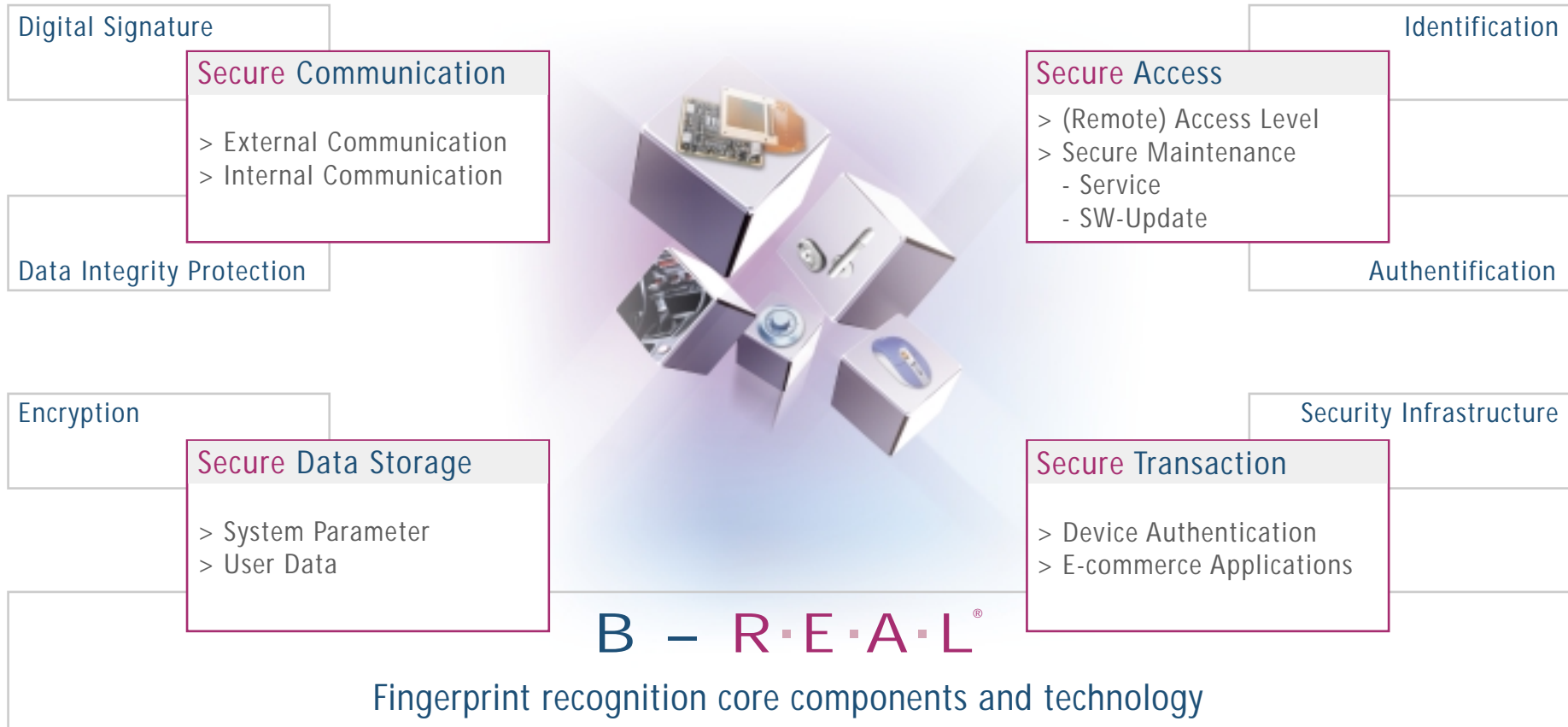


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## Core Components and Technology

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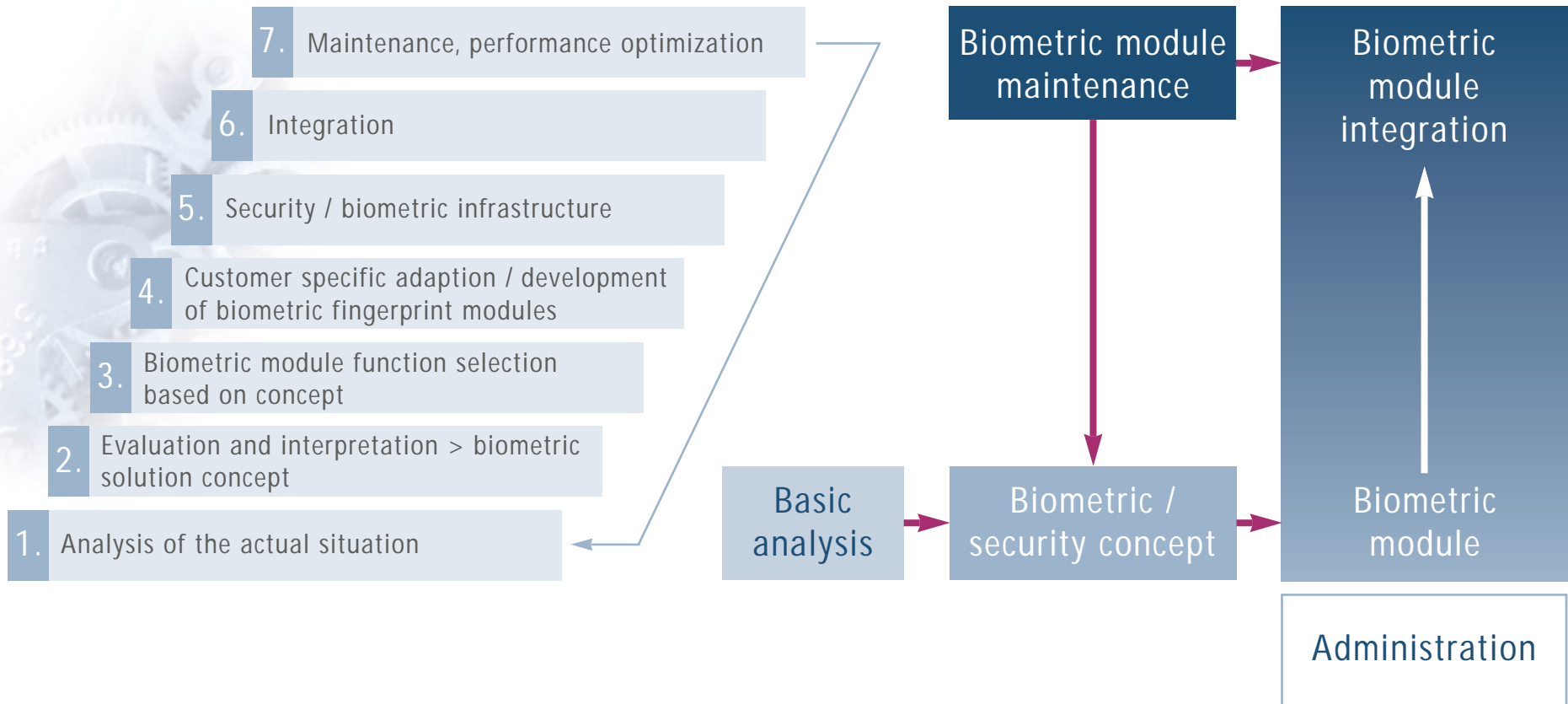


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Work Flow (Overview)

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Work Flow (Description)

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Basic Analysis	Biometric / Security Concept	Biometric Module Integration	Maintenance
<ul style="list-style-type: none"> <li>&gt; Information-Workshop, meeting</li> <li>&gt; Customer individual assessment                             <ul style="list-style-type: none"> <li>- Threat analysis / security / biometric requirements</li> <li>- Possible biometric functions / concepts</li> <li>- Customer benefits, business opportunities</li> <li>- Possible integration solution</li> </ul> </li> <li>&gt; Determination of next steps</li> </ul>	 <ul style="list-style-type: none"> <li>&gt; Detailed individual system analysis                             <ul style="list-style-type: none"> <li>- Required biometric functions (verification or identification)</li> </ul> </li> <li>&gt; Determination of the biometric features</li> <li>&gt; Selection / specification of biometric modules and fingerprint sensors</li> <li>&gt; Required infrastructure</li> <li>&gt; Integration concept</li> <li>&gt; Organisational measures</li> <li>&gt; License agreement</li> <li>&gt; Legal conditions (e. g. export)</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Embedded Biometric Library B – R·E·A·L</li> <li>&gt; Customer specific adaption</li> <li>&gt; Module integration and test</li> <li>&gt; Infrastructure</li> <li>&gt; Training (sales, service, developers)</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Maintenance of modules / infrastructure</li> <li>&gt; Maintenance and improvement of biometric modules</li> <li>&gt; Definition of new concepts depending on threat requirements</li> </ul>

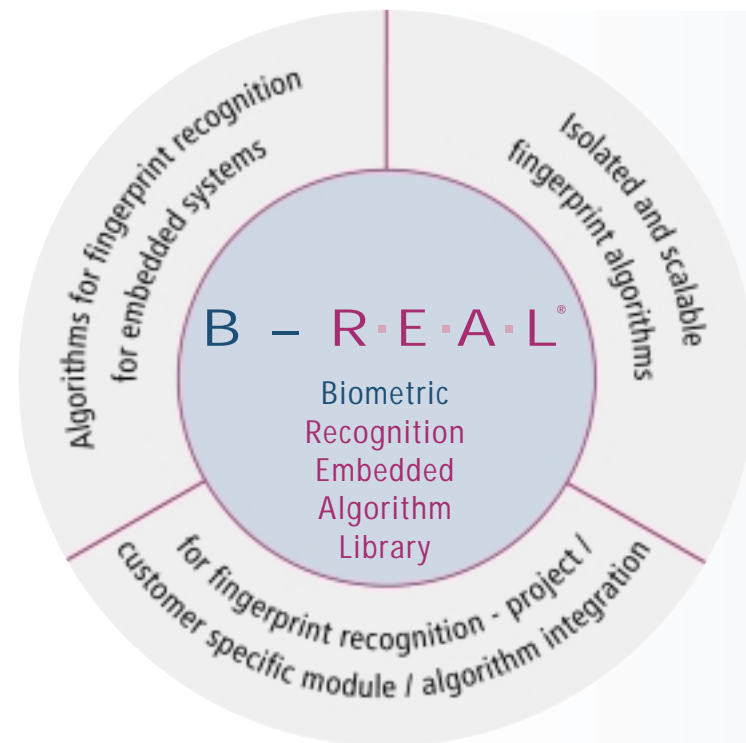


## FW/SW Bio-Fingerprint Recognition Modules

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Professional integration service and support through MB FingerMetrica GmbH and SIEMENS



- > Best in class performance worldwide
- > „Siemens-approved“ (Siemens development) fingerprint recognition algorithms
- > Isolation and specific adaption of algorithms
- > Optimised for embedded systems
  - memory resources optimised
  - scalable performance / MIP's resource requirements
- > Implementation of project specific biometric modules
- > Continuous enhancement and improvement of biometric modules



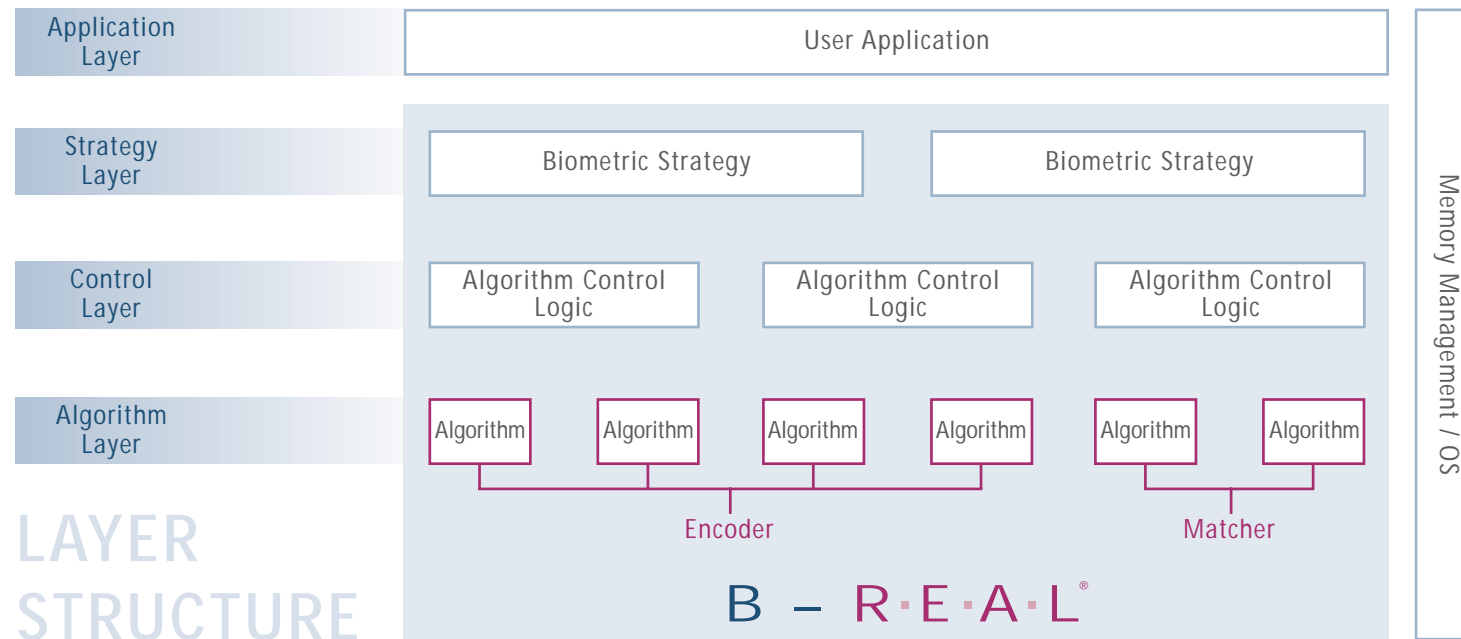
Architecture (general description)

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B – R·E·A·L (Biometric Recognition Embedded Algorithm Library) is a library written in ANSI C and is constituted of algorithms and logic used in fingerprint encoding (extracting relevant match information) and matching. The library is intended to be used by developers wanting to incorporate fingerprint recognition technology into their product.

B – R·E·A·L in its current form has a standard algorithmic layer and a simple biometric strategy layer. New/advanced strategy layers will be implemented on customers' need. (i.e. a specific enrollment strategy)



LAYER  
 STRUCTURE



## Architecture (Highlights)

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## HIGHLIGHTS

- > „Siemens-approved“ / developed together with Siemens
- > Comfortable / easy programming interface
- > Continuous enhancements and improvement of recognition performance
- > Optimized for embedded architectures, footprint, memory resources, timing requirements
- > Standard ANSI C code
- > Easy platform, independent portation / integration
- > Best in class fingerprint algorithms for license to PC, embedded and mobile application suppliers
- > Sensor independent through required image prenormalisation
- > Adjustable security level (FAR / FRR)
- > Sensor diagnostic and smoothing / sensor defects repair capability
- > High performant minutia extraction engine to achieve a maximum accuracy of true minutias for enrolment and template match quality
- > Matcher average time approx. 2 - 3 ms (ADSP BF536) per reference, project/HW specific assembler optimization (1 - 2 ms)
- > Encoder time approx. 800 ms (ADSP BF536)
- > Flexible strategy layer to support enrolment strategies, latency checking functions, etc.
- > Feed back engine to advise user (wet fingers, dry fingers, press harder, move towards center, clean sensor, press more uniform, no finger)
- > High accurate matcher engine for verification and identification
- > Scalable matcher time through parametisation of rotation and translation limits



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Business-Model: Costs, Fees, Licenses

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Basic Analysis

First information  
 Workshop / meeting  
 Biometric security  
 for free

Individual first analysis  
 if required

Fix price or  
 based on required  
 engineering hours

- > On-site consulting and custom engineering
- > Off-site consulting and custom engineering
- > Architecture design and consultancy

Biometric Concept

Biometric  
 concept

Fix price or  
 based on required  
 engineering hours

Know-How

Biometric Integration

- > Integrated biometric modules
- > One time license
- > License per piece
- > General license (see license agreement)

Integration

- > individual: fix price or based on required engineering hours
- > Professional service
- > Porting costs

After Sales Maintenance

Custom application  
 support contract

■ Service and support  
 ■ Product / module license