NEUROtechnology

Solution for
large-scale AFIS or
multi-biometric systems

MegaMatcher Accelerator

MegaMatcher Accelerator

Solution for large-scale AFIS or multi-biometric systems

*Document updated on **November 17, 2010***

Contents

Features and Capabilities 3
MegaMatcher and MegaMatcher Accelerator in High Productivity AFIS 4
Contents of MegaMatcher Accelerator 3.0 Extended 7
Contents of MegaMatcher Accelerator 3.0 Standard. 7
Technical Specifications 8
Reliability & Performance Tests. 9
System Requirements for MegaMatcher Accelerator 3.0 Standard Software . 12
Technical Support 12
Related Products. 12
Licensing MegaMatcher Accelerator 3.0 13
Prices. 14

MegaMatcher Accelerator 3.0 is a solution for fast template matching on server-side part of a large-scale AFIS or multi-biometric system. The **Extended** version **includes server hardware** and software for fast biometric template matching on server-side part of a large-scale AFIS or multi-modal system. The **Standard** version is intended to be run on a **common PC** and does not include any hardware.

MegaMatcher Accelerator 3.0 Extended units and MegaMatcher Accelerator 3.0 Standard software can be purchased by new and existing MegaMatcher Standard or Extended SDK customers.

Neurotechnology can provide access to MegaMatcher Accelerator Standard or Extended units running at Neurotechnology office for **evaluation** purposes. Please contact us for more information.

- Available as ready-to-use biometric solution with server hardware or as biometric software for running on a common PC.
- Up to 200,000,000 irises or 100,000,000 fingerprints per second matching speed on a single unit.
- Fingerprint, iris and face modalities supported.
- Scalable cluster architecture.
- ISO & ANSI fingerprint template standards support.
- Suitable for duplicates search.

CONTACT INFORMATION ● NEUROTECHNOLOGY • Laisves pr. 125A, Vilnius 06118, Lithuania •Phone: +370 5 277 33 15 •Fax: +370 5 277 33 16 •info@neurotechnology.com

Features and Capabilities

- **MegaMatcher Accelerator 3.0 Extended** is **ready-to-use solution** that includes server hardware, pre-installed operating system and fast multi-biometric identification software. The solution does not require any additional configuration and accepts requests from client software via network or Web.
- **MegaMatcher Accelerator 3.0 Standard** is **intended to be run on a PC** with Core i7 processor and 12 GB of RAM. This version does not include any hardware and is shipped on an installation CD that includes Linux OS and fast multi-biometric identification software.
- **Fast matching.** A PC with MegaMatcher Accelerator 3.0 Standard software can match up to **35 million fingerprints** per second or up to **70 million irises** per second in 1-to-many mode . A single MegaMatcher Accelerator 3.0 Extended unit can match up to **100 million fingerprints** per second or up to **200 million irises** per second in 1-to-many mode using Neurotechnology proprietary biometric template format.
- **Multiple modalities support.** MegaMatcher Accelerator 3.0 can be used within a biometric system that contains templates with any number of fingerprint, iris and/or face records.
- **Full database search.** The biometric engines included in MegaMatcher Accelerator do not perform internal database indexing or pre-classification (by fingerprint type, eye color etc) thus avoiding false rejections when incorrect classificators appear. This way the whole database is scanned comprehensively during every matching request and very low false rejection ensured. On the other hand, integrators may use non-biometric classificators like gender or country's region to optimize system size.
- **Optimal system size.** A system based on MegaMatcher Accelerator 3.0 solution can be configured to perform fast candidates selection using irises and/or several fingerprints, and then use other biometric modalities to validate selection results. This approach allows to reach optimal matching speed and reliability while keeping the overall system cost within the defined limits.
- **ISO & ANSI standards support.** MegaMatcher Accelerator allows to use ANSI and ISO biometric standards for fingerprint templates.
- **Scalable architecture.** Multiple MegaMatcher Accelerator units can be combined together in a cluster for higher matching speed. For example, a cluster of 5 MegaMatcher Accelerator 3.0 Extended units would allow to match about 145 million templates per second (when a template contains 4 fingerprint records), a cluster of 10 units – about 290 million templates per second, and so on. No additional cluster software is required, as MegaMatcher Accelerator includes all necessary software. The customers only need to assign one MegaMatcher Accelerator unit as a primary unit in a cluster.
- **Suitable for duplicates search.** Searching for duplicates in a biometric templates database is a task that requires many computations, as each biometric template needs to be verified with each other template in the database. MegaMatcher Accelerator provides enough productivity to complete duplicate searching in a reasonable time. Scalable architecture allows the combination of several MegaMatcher Accelerator units for tasks involving bigger databases.

CONTACT INFORMATION ● NEUROTECHNOLOGY • Laisves pr. 125A, Vilnius 06118, Lithuania •Phone: +370 5 277 33 15 •Fax: +370 5 277 33 16 •info@neurotechnology.com

MegaMatcher and MegaMatcher Accelerator in High Productivity Systems

See also MegaMatcher SDK brochure.

Different large-scale biometric projects may require specific biometric system performance. These matching engines and architectures may be used depending on the required matching speed, database size and system availability:

- Single MegaMatcher Server (see "*MegaMatcher SDK" brochure*);
- MegaMatcher Cluster (see "*MegaMatcher SDK" brochure*);
- Single MegaMatcher Accelerator 3.0 Standard or Extended unit;
- Cluster of MegaMatcher Accelerator 3.0 Standard or Extended units.

It is possible to use more than one architecture within a large-scale biometric system to reach optimal system performance and/or availability. For example, MegaMatcher Accelerator 3.0 unit(s) can be used for candidates selection using irises or several fingerprints, and then the results can be validated on MegaMatcher Server or Cluster with other biometric modalities. Also, two or more MegaMatcher Clusters or MegaMatcher Accelerator 3.0 clusters can be connected together for high availability system.

See Product Advisor at ***www.neurotechnology.com/product-advisor.html*** to find out what Neurotechnology products and system architectures will suit your project requirements.

Single MegaMatcher Accelerator 3.0 Standard or Extended unit

MegaMatcher Accelerator 3.0 is a solution for large-scale AFIS and multi-biometric projects and is available in two versions:

- **MegaMatcher Accelerator 3.0 Standard** is intended for biometric identification projects with up to several million people enrolled in database. This version includes ready-to-use server-side fingerprint and/or iris matching software for installation on a PC with Intel Core i7 processor and 12 GB of RAM. A single MegaMatcher Accelerator 3.0 Standard unit can store 3,000,000 fingerprints or 6,000,000 irises and matches 35,000,000 fingerprints or 70,000,000 irises per second. See technical specifications for more information on performance.
- **MegaMatcher Accelerator 3.0 Extended** is a solution for national-scale biometric identification projects with millions of people enrolled in database. This version includes ready-to-use HP Proliant server hardware with pre-installed OS and fingerprint and/or iris matching software. A single MegaMatcher Accelerator 3.0 Extended unit can store 30,000,000 fingerprints or 50,000,000 irises and matches 100,000,000 fingerprints or 200,000,000 irises per second. See technical specifications for more information on performance.

A MegaMatcher Accelerator 3.0 unit accepts identification requests from a MegaMatcher Client, performs identification and returns back the results.

MegaMatcher Accelerator can be also used as a part of scalable multi-biometric identification system that uses fingerprint, face and/or iris modalities. The fingerprints and/or irises would be matched using MegaMatcher Accelerator(s), whereas other modalities would be matched using MegaMatcher Server or Cluster Server software depending on project size and performance requirements. Also MegaMatcher Accelerator 3.0 software includes fingerprint, face and iris matching engines that may be used for results validation after fast fingerprint or iris matching inside the Accelerator unit instead of using MegaMatcher Server or Cluster.

CONTACT INFORMATION ● NEUROTECHNOLOGY • Laisves pr. 125A, Vilnius 06118, Lithuania •Phone: +370 5 277 33 15 •Fax: +370 5 277 33 16 •info@neurotechnology.com

Cluster of MegaMatcher Accelerator 3.0 Standard or Extended units

MegaMatcher Accelerator 3.0 Standard and Extended versions already include cluster software, thus multiple MegaMatcher Accelerator 3.0 Standard or Extended units can be connected via network to a cluster.

To create a cluster, one MegaMatcher Accelerator unit is assigned as a primary unit in the cluster while other MegaMatcher Accelerator units act as cluster nodes. Note that the primary unit of MegaMatcher Accelerator cluster will still perform fast fingerprint and/or iris matching while using only a small part of its resources for managing the cluster.

Each MegaMatcher Accelerator 3.0 Standard unit in the cluster matches 35 millions fingerprints or 70 millions irises per second, and each MegaMatcher Accelerator 3.0 Extended unit matches 100 millions fingerprints or 200 millions irises per second.

When started, the primary unit splits the whole biometric database, which is stored on its hard disk, and send parts of the database to all MegaMatcher Accelerators in the cluster. Later the primary unit waits for fingerprint identification requests from a MegaMatcher Client, then distributes the identification request to the units of the cluster and returns the identification results to the Client.

The cluster of MegaMatcher Accelerators can be **scaled up anytime** to meet changing project requirements in increasing user amount or request environment. A larger number of MegaMatcher Accelerator units results in faster matching and higher number of requests processed, because each unit operates on a smaller part of the database.

For example, there is a database with 10 million people biometric data (4 fingerprints for each user, 40 million fingerprints in total). The amount of required MegaMatcher Accelerator units is calculated is this way:

1. The whole database **should fit into memory** of the MegaMatcher Accelerator units. A single MegaMatcher Accelerator 3.0 Extended unit stores 30 million fingerprints, thus 2 units required to store the sample 40 million fingerprints database.
2. The **response time** for an identification request should satisfy project requirements. For example, the project requires receive an answer to an identification request in 1 second. Single MegaMatcher Accelerator 3.0 Extended unit matches 29 million templates in 4-to-many mode, thus the two units will satisfy the project requirements for response time.
3. The **peak hour request quantity** should satisfy project requirements. For example, the project expects that there may be up to 30,000 identification requests per hour. Single MegaMatcher Accelerator 3.0 Extended unit matches 29 million templates in 4-to-many mode, thus it will be able to process 10,440 requests per hour with the sample 10 million template database. Therefore, a cluster of 3 MegaMatcher Accelerator 3.0 Extended units will be required to process the required number of identification requests with the sample database.

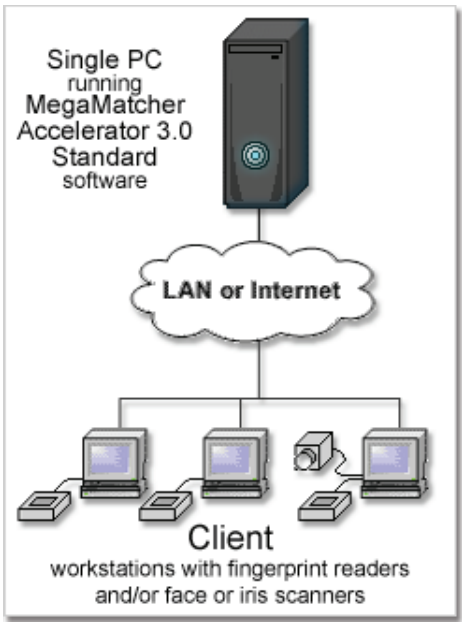
Fault tolerance for a cluster of MegaMatcher Accelerators can be provided using these methods:

1. **Spare MegaMatcher Accelerator units.** A spare MegaMatcher Accelerator 3.0 unit “waits” until an operating unit fails and is used replace the failed one. Switching time from “wait” state to “operating” state depends on time required to copy database part used by failed node into spare node. If the failed node restored, it become the spare node.
2. **Spare cluster.** Two clusters of MegaMatcher Accelerator 3.0 units can be used to provide higher availability and failover. The clusters should have the same database loaded into each of them. One of the clusters can be used as “spare” and wait, until the “active” one fails and replace it. Switching time is very small even in case of manual switch, as the spare cluster already contains the database.
3. **Two parallel clusters.** This method also requires to run two clusters of MegaMatcher Accelerator 3.0 units with the same database loaded into each of them. Both clusters can run in parallel and provide 2 times higher performance. If one cluster fails, the other one will continue operation and provide the nominal performance.

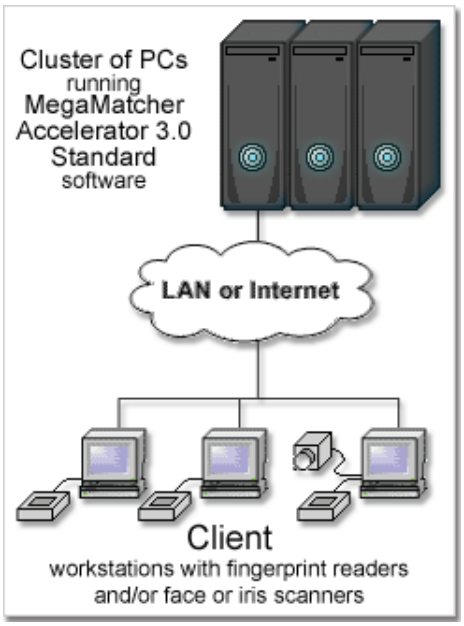
Note, that “spare cluster” and “two parallel clusters” methods may require additional software and hardware for building high-availability clusters.

CONTACT INFORMATION ● NEUROTECHNOLOGY • Laisves pr. 125A, Vilnius 06118, Lithuania •Phone: +370 5 277 33 15 •Fax: +370 5 277 33 16 •info@neurotechnology.com

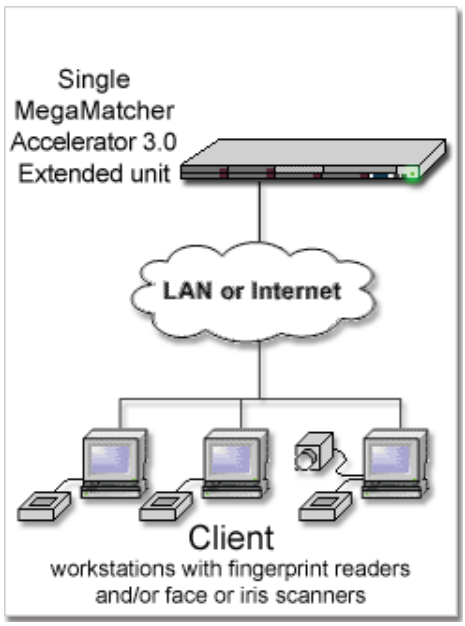
The charts below compare the different MegaMatcher Accelerator architectures for high performance AFIS:



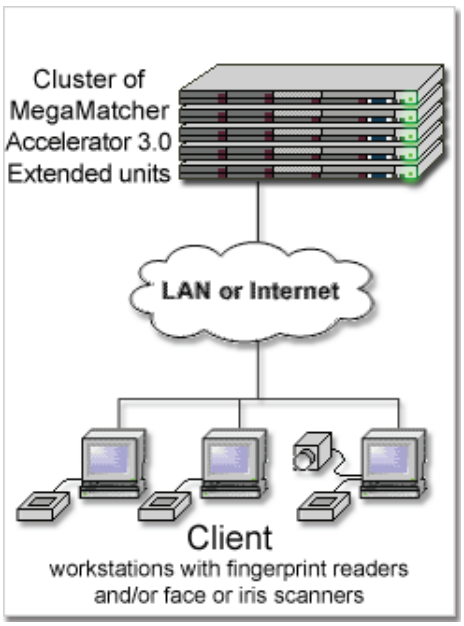
Matches 35,000,000 fingerprints or 70,000,000 irises per second. Requires MegaMatcher Standard SDK for client application development and 1 MegaMatcher Accelerator 3.0 Standard software installation.



Matches from 70,000,000 to 350,000,000 fingerprints or from 140,000,000 to 700,000,000 irises per second. Requires MegaMatcher Standard SDK for client application development and multiple MegaMatcher Accelerator 3.0 Standard software installations for reaching the required performance.



Matches 100,000,000 fingerprints or 200,000,000 irises per second. Requires MegaMatcher Standard SDK for client application development and 1 MegaMatcher Accelerator 3.0 Extended unit.



Matches from 200,000,000 to several billions fingerprints or from 400,000,000 to several billions irises per second. Requires MegaMatcher Standard SDK for client application development and multiple MegaMatcher Accelerator 3.0 Extended units for reaching the required performance.

CONTACT INFORMATION ● NEUROTECHNOLOGY • Laisves pr. 125A, Vilnius 06118, Lithuania •Phone: +370 5 277 33 15 •Fax: +370 5 277 33 16 •info@neurotechnology.com

Contents of MegaMatcher Accelerator 3.0 Extended

MegaMatcher Accelerator 3.0 Extended is a family of **biometric solutions** for fast fingerprint and iris matching on server-side part of an AFIS or multi-biometric system. The solutions are intended for national-scale biometric identification projects with millions of people enrolled in database.

- These biometric matching engines are available with MegaMatcher Accelerator 3.0 Extended units:
  - Fast **fingerprint** and **iris** matching engines that can be used **separately** or **together**. See technical specifications for engines comparison and licensing model for engines availability.
  - Fingerprint, face and iris matching engines that can be used separately or together to validate matching results produced by the fast fingerprint and/or iris engines. See *MegaMatcher SDK* brochure for more information.
- Each MegaMatcher Accelerator 3.0 Extended unit includes:
  - **Server hardware** (HP ProLiant DL360G7) with:
    - 2 x Intel Xeon processor X5650 (12M Cache, 2.66 GHz, 1333 MHz FSB);
    - 96 GB RAM (12 x 8 GB DDR3 PC3-10600R-9);
    - 6 x 300 GB HDD (SAS, 10,000 rpm).
  - Debian Linux OS (pre-installed);
  - MegaMatcher Accelerator 3.0 Extended software (pre-installed).
- Multiple MegaMatcher Accelerator 3.0 Extended units can be combined to reach higher productivity using the included cluster software.

Contents of MegaMatcher Accelerator 3.0 Standard

MegaMatcher Accelerator 3.0 Standard is a family of ready-to-use software products for fast fingerprint and iris matching on server-side part of an AFIS or multi-biometric system. These products are intended for large-scale biometric projects with up to several million people enrolled in database.

- These biometric matching engines can be used with MegaMatcher Accelerator 3.0 Standard:
  - Fast **fingerprint** and **iris** matching engines that can be used **separately** or **together**. See technical specifications for engines comparison and licensing model for engines availability.
  - Fingerprint, face and iris matching engines that can be used separately or together to validate matching results produced by the fast fingerprint and/or iris engines. See *MegaMatcher SDK* brochure for more information.
- Includes an **installation CD** for a PC that meets system requirements. The installation CD includes:
  - Debian Linux OS;
  - MegaMatcher Accelerator 3.0 Standard software.
- Hardware is not included.
- Several PCs with the Standard Accelerator software can be combined to reach higher performance using the included cluster software.

CONTACT INFORMATION ● NEUROTECHNOLOGY • Laisves pr. 125A, Vilnius 06118, Lithuania •Phone: +370 5 277 33 15 •Fax: +370 5 277 33 16 •info@neurotechnology.com

Technical Specifications

Database **storage capacities** for single MegaMatcher Accelerator 3.0 unit are:

- **30,000,000 fingerprint records** or **50,000,000 iris records** for each MegaMatcher Accelerator 3.0 **Extended** unit.
- **3,000,000 fingerprint records** or **5,000,000 iris records** for each PC that runs MegaMatcher Accelerator 3.0 **Standard** software.

If a biometric template contains several fingerprint and/or iris records, the database storage capacity changes proprtionally. The table below shows storage capacities for some combinations of fingerprints and/or irises records; there are no limitations on the quantity of fingerprint or iris records in a template.
Product Advisor will help to find out how many MegaMatcher Accelerators would be required for a specific project (***www.neurotechnology.com/product-advisor.html***).

Database storage capacities for single MegaMatcher Accelerator 3.0 unit		
One template contains:	MegaMatcher Accelerator 3.0 Extended	MegaMatcher Accelerator 3.0 Standard
1 fingerprint record	30,000,000 templates	3,000,000 templates
2 fingerprint records	15,000,000 templates	1,500,000 templates
1 iris record	50,000,000 templates	5,000,000 templates
2 iris records	25,000,000 templates	2,500,000 templates
1 fingerprint + 1 iris records	18,750,000 templates	1,875,000 templates
1 fingerprint + 2 iris records	13,635,000 templates	1,363,500 templates
2 fingerprint + 1 iris records	11,535,000 templates	1,153,500 templates
2 fingerprints + 2 iris records	9,375,000 templates	937,500 templates
4 fingerprint + 1 iris records	6,520,000 templates	652,000 templates
4 fingerprints + 2 iris records	5,765,000 templates	576,500 templates

The tables below show the performance of MegaMatcher Accelerator 3.0 fast fingerprint and iris matching engines performance on the specified hardware.

Fingerprint matching speed (templates per second)		
One template contains:	MegaMatcher Accelerator 3.0 Extended	MegaMatcher Accelerator 3.0 Standard
1 fingerprint record	100,000,000	35,000,000
2 fingerprint records	72,000,000	21,000,000
4 fingerprint records	29,000,000	8,500,000
10 fingerprint records	11,500,000	4,000,000

Iris matching speed (templates per second)		
One template contains:	MegaMatcher Accelerator 3.0 Extended	MegaMatcher Accelerator 3.0 Standard
1 iris record	200,000,000	70,000,000
2 iris records	100,000,000	35,000,000

CONTACT INFORMATION ● NEUROTECHNOLOGY • Laisves pr. 125A, Vilnius 06118, Lithuania •Phone: +370 5 277 33 15 •Fax: +370 5 277 33 16 •info@neurotechnology.com

Reliability & Performance Tests

MegaMatcher Accelerator 3.0 Extended was tested on the specified server hardware.

MegaMatcher Accelerator 3.0 Standard was tested on hardware with these specifications:

- Intel **Core i7-920** processor, running at **2.66 GHz**;
- **12 GB of RAM**;
- **ASUS P6T SE** motherboard;
- **2 x 1TB SATA** hard disk drives;
- **RTL8111/8168B** PCI Express Gigabit Ethernet network card;
- bootable CD-ROM compatible device.

These template databases were used for testing MegaMatcher Accelerator 3.0 template matching algorithm reliability:

- **Database 1** is the SONATEQ Fingerprint Database SQ FDB1-75TS1 that contains 75,000 fingerprints collected with Cross Match Verifier 300 LC scanner. The database represents 1,500 unique persons with 10 fingerprints per person captured in 5 sessions. Neurotechnology proprietary format was used for fingerprint templates storage. The tests were performed with these biometric template types:
  - **1 fingerprint record** – using right hand index fingerprints;
  - **2 fingerprint records** – using right and left hands index fingerprints belonging to the same person;
  - **4 fingerprint records** – using right hands slap (index, middle, ring and little fingerprints) belonging to the same person;
  - **10 fingerprint records** – using all 10 fingerprints belonging to the same person.
- **Database 2** was created by merging iris images from BATH, Casia3 and ND-IRIS-0405 Iris Image Dataset. The irises from those 3 datasets were combined to form 1,500 unique persons with left and right irises captured in 5 sessions. The tests were performed with these biometric template types:
  - **1 iris record** – using right eye iris image;
  - **2 iris records** – using both eyes iris images belonging to the same person.
- **Database 3** is a combination of Database 1 and Database 2. The database represents 1,500 unique persons with 10 fingerprints and 2 iris images per persons, captured in 5 sessions. The tests were performed with these biometric template types:
  - **1 fingerprint + 1 iris records** belonging to the same person;
  - **1 fingerprint + 2 iris records** belonging to the same person;
  - **2 fingerprint + 1 iris records** belonging to the same person;
  - **2 fingerprint + 2 iris records** belonging to the same person;
  - **4 fingerprint + 1 iris records** belonging to the same person;
  - **4 fingerprint + 2 iris records** belonging to the same person;

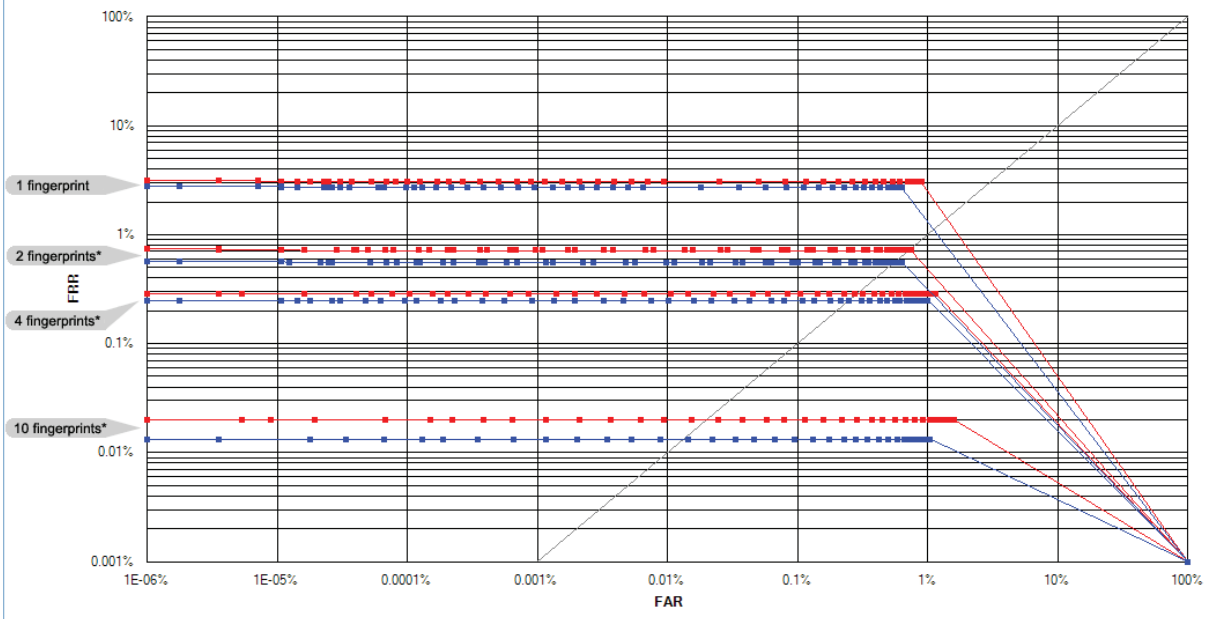
Reliability testing results for the MegaMatcher Accelerator 3.0 fingerprint template matching algorithm are shown as a receiver operation characteristics (**ROC**) charts on the next pages. Note, that all tests with Database 3, except 1 finger + 1 iris, produced **0% FRR** for all FAR values.

More information about obtaining the biometric databases is available there:

- SONATEQ Fingerprint Database - at ***www.sonateq.com/fdb1-75t1.htm***
- BATH iris database - at ***www.irisbase.com***
- Casia3 iris database - at ***www.cbsr.ia.ac.cn/english/IrisDatabase.asp***
- ND-IRIS-0405 Iris Image Dataset - at ***www.nd.edu/~cvrl/CVRL/Data_Sets.html***

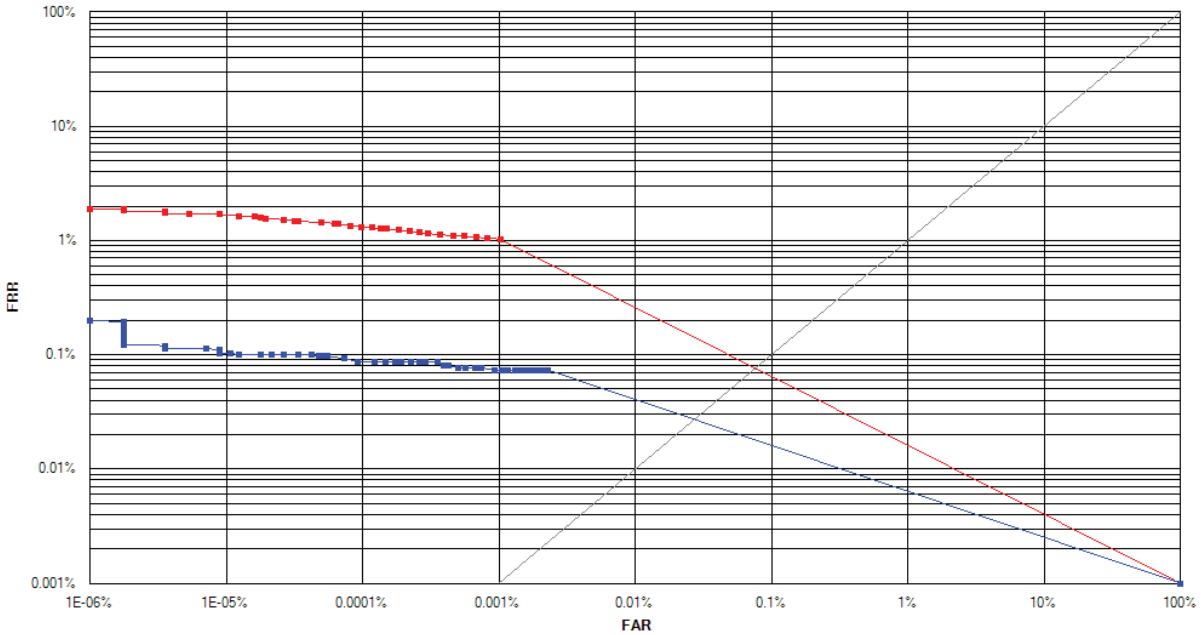
CONTACT INFORMATION ● **NEUROTECHNOLOGY** • Laisves pr. 125A, Vilnius 06118, Lithuania •Phone: +370 5 277 33 15 •Fax: +370 5 277 33 16 •info@neurotechnology.com

Database 1



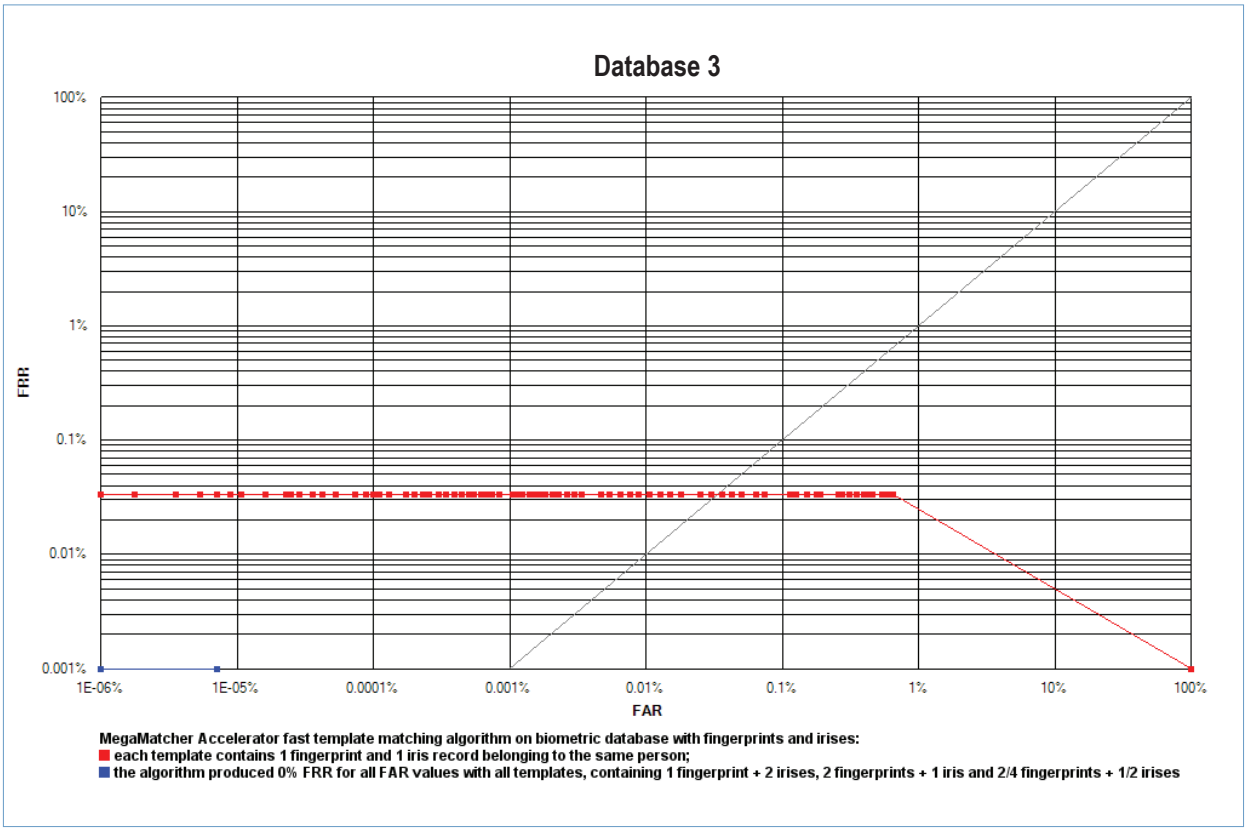
SONATEQ Fingerprint Database SQ FDB1-75TS1 fingerprints are stored using **Neurotechnology proprietary** fingerprint template format:
■ MegaMatcher Accelerator 2.0 template matching algorithm reliability;
■ MegaMatcher Accelerator 3.0 template matching algorithm reliability.
* fingerprint templates with 2, 4 and 10 fingerprint records are extracted from images of different fingers belonging to one person

Database 2



MegaMatcher Accelerator 3.0 fast template matching algorithm on iris image database created by merging BATH, Notre Dame and Casia 3.0 databases:
■ **each template contains 1 iris**
■ **each template contains 2 irises belonging to the same person**

CONTACT INFORMATION ● **NEUROTECHNOLOGY** • Laisves pr. 125A, Vilnius 06118, Lithuania •Phone: +370 5 277 33 15 •Fax: +370 5 277 33 16 •info@neurotechnology.com



The MegaMatcher Accelerator 3.0 template matching algorithm performance was tested with full database capacities for both Standard and Extended units as specified above. The table below shows the performance testing results:

MegaMatcher Accelerator 3.0 matching speed testing (million templates per second)		
One template contains:	MegaMatcher Accelerator 3.0 Extended	MegaMatcher Accelerator 3.0 Standard
1 fingerprint record	124.76	37.28
2 fingerprint records	89.46	22.18
4 fingerprint records	35.57	8.76
10 fingerprint records	13.97	3.91
1 iris record	219.79	73.66
2 iris records	108.70	36.10
1 fingerprint + 1 iris records	79.55	26.23
1 fingerprint + 2 iris records	55.64	18.46
2 fingerprint + 1 iris records	62.20	18.55
2 fingerprint + 2 iris records	47.84	13.23
4 fingerprint + 1 iris records	30.52	8.63
4 fingerprint + 2 iris records	26.19	7.16
10 fingerprint + 1 iris records	12.99	4.32
10 fingerprint + 2 iris records	12.19	3.97

CONTACT INFORMATION ● NEUROTECHNOLOGY • Laisves pr. 125A, Vilnius 06118, Lithuania •Phone: +370 5 277 33 15 •Fax: +370 5 277 33 16 •info@neurotechnology.com

System Requirements for MegaMatcher Accelerator 3.0 Standard software

MegaMatcher Accelerator 3.0 Standard software should be installed on a PC with these specifications:

- Intel **Core i7** processor with **4 cores**, running at **2.66 GHz**.
- **12 GB of RAM.**

Pre-installed operating system is not required, as MegaMatcher Accelerator 3.0 Standard is available as installation CD that already includes Linux OS.

Technical Support

Hewlett Packard Company provides 3 years worldwide warranty and part replacement in 5 business days for the server hardware. Optionally, part replacement can be provided in 4 hours. See warranty information for HP ProLiant DL360 Server series on HP web site for more information.

Neurotechnology provides free and unlimited technical support for MegaMatcher Accelerator over phone or email. Technical support covers issue resolution, bug fixing and providing the required technical information.

Related Products

- MegaMatcher SDK – intended for development of AFIS or multi-biometric face-fingerprint and optionally iris identification products. See *"MegaMatcher SDK"* brochure for more information.
- VeriFinger SDK – intended for development of PC-based or Web-based fingerprint identification systems. See *"VeriFinger SDK"* brochure for more information.

CONTACT INFORMATION ● **NEUROTECHNOLOGY** • Laisves pr. 125A, Vilnius 06118, Lithuania •Phone: +370 5 277 33 15 •Fax: +370 5 277 33 16 •info@neurotechnology.com

Licensing MegaMatcher Accelerator 3.0

Although MegaMatcher Accelerator is a ready-to-use solution, it requires MegaMatcher 2.1/3.0/3.1 Standard SDK or MegaMatcher 2.1/3.0/3.1 Extended SDK licenses to be purchased.

MegaMatcher Accelerator 3.0 is available in these versions:

- MegaMatcher Accelerator 3.0 Extended units:
  - Fingerprint engine license – the engine is pre-installed on a MegaMatcher Accelerator 3.0 Extended unit.
  - Iris engine license – the engine is pre-installed on a MegaMatcher Accelerator 3.0 Extended unit.
  - Fingerprint and iris engines license – both engines are pre-installed on a MegaMatcher Accelerator 3.0 Extended unit and can be used as a fused matching engine.
- MegaMatcher Accelerator 3.0 Standard licenses:
  - Fingerprint engine license – allows to use the engine on a single PC.
  - Iris engine license – allows to use the engine on a single PC.
  - Fingerprint and iris engines license – allows to use both engines as a fused matching engine on a single PC.

MegaMatcher Accelerator 3.0 Standard and Extended also include fingerprint, face and iris matching engines. These engines are intended for validating the results selected by the fast fingerprint and/or iris matching engines, as systems based on MegaMatcher Accelerator 3.0 solution can be configured to perform fast candidates selection using irises and/or several fingerprints, and then use other biometric modalities to validate selection results.

MegaMatcher Accelerator units are not included with MegaMatcher 2.1/3.0/3.1 Standard or MegaMatcher 2.1/3.0/3.1 Extended SDK. The units can be purchased together with MegaMatcher 3.1 Standard SDK or MegaMatcher 3.1 Extended SDK, or by existing MegaMatcher SDK customers after providing a valid MegaMatcher SDK Reference ID.

See *"MegaMatcher SDK"* brochure for more information on MegaMatcher SDK licensing.

CONTACT INFORMATION ● NEUROTECHNOLOGY • Laisves pr. 125A, Vilnius 06118, Lithuania •Phone: +370 5 277 33 15 •Fax: +370 5 277 33 16 •info@neurotechnology.com

Prices for MegaMatcher Accelerator

- The prices are **effective from November 2, 2010**. The prices may change in the future, so please **download and review the latest version** of the brochure before making an order.
- Quantity discounts do not accumulate over time.
- The prices do not include any local import duties or taxes.
- Product shipping cost depends on delivery country
- Our customers can gain a discount for our products by getting the Solution Partner status.

MegaMatcher Accelerator 3.0 Extended (Prices per unit)			
Quantity	with pre-installed fingerprint engine	with pre-installed iris engine	with pre-installed fingerprint and iris engines
1	€ 59,000.00	€ 59,000.00	€ 79,000.00
2	€ 55,600.00	€ 55,600.00	€ 74,500.00
3	€ 52,700.00	€ 52,700.00	€ 70,500.00
4	€ 50,700.00	€ 50,700.00	€ 67,900.00
5	€ 49,300.00	€ 49,300.00	€ 66,000.00
6	€ 48,100.00	€ 48,100.00	€ 64,400.00
7	€ 47,100.00	€ 47,100.00	€ 63,100.00
8	€ 46,400.00	€ 46,400.00	€ 62,100.00
9	€ 45,700.00	€ 45,700.00	€ 61,100.00
10	€ 45,000.00	€ 45,000.00	€ 60,300.00
11 and more	Please contact us for more information		

MegaMatcher Accelerator 3.0 Standard (Prices per license)			
Quantity	Fingerprint engine license	Iris engine license	Fingerprint and iris engines license
1	€ 20,000.00	€ 20,000.00	€ 26,800.00
2	€ 18,600.00	€ 18,600.00	€ 25,000.00
3	€ 17,500.00	€ 17,500.00	€ 23,500.00
4	€ 16,800.00	€ 16,800.00	€ 22,400.00
5	€ 16,200.00	€ 16,200.00	€ 21,700.00
6	€ 15,700.00	€ 15,700.00	€ 21,100.00
7	€ 15,300.00	€ 15,300.00	€ 20,600.00
8	€ 15,000.00	€ 15,000.00	€ 20,100.00
9	€ 14,800.00	€ 14,800.00	€ 19,800.00
10	€ 14,500.00	€ 14,500.00	€ 19,400.00
11 and more	Please contact us for more information		

Ordering

MegaMatcher Accelerator 3.0 units can be ordered:

- online, at ***www.neurotechnology.com/cgi-bin/order.cgi***
- via a local Neurotechnology distributor; the list of distributors is available at ***www.neurotechnology.com/distributors.html***

CONTACT INFORMATION ● NEUROTECHNOLOGY • Laisves pr. 125A, Vilnius 06118, Lithuania •Phone: +370 5 277 33 15 •Fax: +370 5 277 33 16 •info@neurotechnology.com