Report on the technical functioning of the Visa information System (VIS)
August 2022

eu-LISA | VIS

Contents

Executive summary

The overall technical performance of VIS and BMS worked well in line with **the service level agreement (SLA):** availability in 2020 was **99.93 %** and in 2021 **99.98 %.**

A VIS revision was adopted in July 2021. It will reform the VIS and bring with it a number of new functionalities, e.g. integration of long-stay visas and residence permits.

Since October 2019, the Central VIS has been ready to connect to **Europol**. Once access arrangements on the Europol side have been completed, Central VIS services will be available.

In July 2021, **Bulgaria and Romania** achieved read-only access to VIS.

The capacity for VIS increased to **100 million records** and for BMS to **85 million records** as per the 'VIS and BMS Background Databases project' which lasted for 2 years and was finalised in January 2020.

The performance of the **Service Desk** in 2021 was 'very good' or 'excellent' and reached the performance indicator of **95 %** despite the restrictions of the COVID-19 pandemic.

As a result of the interoperability project, eu-LISA will ensure a connection between VIS and the **interoperability** components.

The overall usage of VIS was at **about 15 % of the expected throughput** at the end of 2020 due to effects of the COVID-19 pandemic.

Due to the COVID-19 pandemic, the number of requests and incidents handled by the Service Desk was lower than in previous years; **only a few incidents** for VIS were of critical priority.
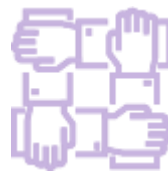
During 2021, eu-LISA delivered **three training activities** on VIS.

The performance in terms of the average processing time reported was very good in 2020. The average time for **alphanumeric** search was 0.76 sec (SLA is 30 sec), and for **biometric authentications** 1.44 sec (SLA is 3 sec).

1. Introduction

The Visa Information System (VIS) is an essential part of the Schengen *acquis*, connecting Member State[1] consulates in non-EU countries and all external border crossing points. The system facilitates the visa checks at external border-crossing points and supports Member States` consular authorities in the management of applications for short-stay visas when visiting or transit through the Schengen Area.

The Biometric Matching System (BMS) links biometric identifiers to individual persons, thereby helping to establish and verify their identity

The system uses a Biometric Matching System (BMS) which allows Member States' border authorities to identify and verify third-country nationals who travel to the EU.

In addition to facilitating the visa application procedure, the system **prevents threats** to the internal security of Member States and **supports the fight against fraud** by preventing 'visa shopping'. The VIS assists in the identification of any person who may not or may no longer fulfil the conditions for entry to, stay in or residence on the Schengen territory.

In 2021, the majority of Visa applications were lodged in the Russian Federation, followed by Turkey and Saudi Arabia

VIS started operating in 2011, following a deployment in phases, and is **operational worldwide** since February 2016. eu-LISA ('the Agency') has been in charge of the operational management and the further development of the central system since December 2012. Operational management of the central VIS system is done in close coordination with the Member States and the Commission. Several fora exist in this respect, primarily eu-LISA's **Management Board (MB)** and the **VIS Advisory Group (AG)**. The AG meets regularly four times a year, to discuss, inter alia, the availability and performance of the central system, approve proposed changes and release plans and also future developments.

In 2020, there was a **fall in the number of stored visa applications and fingerprints in the VIS** for the first time, as a consequence of the COVID-19 pandemic. This was because no or very few new applications and new fingerprints were stored in the system, whereas at the same time, automatic deletion continued as a result of the retention policy. The overall use of VIS in 2020 fell by 75 % compared to pre-COVID levels in 2019. In 2021, activities increased slightly compared to 2020, but they still remained very far below 2019 (–73 %). Other activities such as releases, planned maintenance and implementation of the eu-LISA training portfolio were also affected.

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[1] 'Member States' in the current document refers to the Member States of the EU and Schengen Associated Countries which are connected to the VIS, unless otherwise specified. Member States of the EU connected to the VIS are Belgium, Czechia, Denmark, Germany, Estonia, Greece, Spain, France, Italy, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Slovenia, Slovakia, Finland and Sweden. Schengen Associated Countries connected to the VIS are Iceland, Liechtenstein, Norway and Switzerland. The EU Member States of Romania and Bulgaria have read-only access, whereas Cyprus and Croatia are not yet connected to the VIS.

The further development of VIS is closely linked to the development of the EES[2] **and to interoperability**[3] **between the VIS and other relevant EU IT-systems.** The EES is particularly relevant in relation to sBMS[4], as there will be a migration of the BMS to the sBMS. From the time when the EES is in operation, VIS will switch to the sBMS.

This report is published every 2 years and submitted to the EU institutions[5] in line with Article 50(3) of Regulation (EC) No 767/2008[6] and Article 17(3) of Council Decision 2008/633/JHA[7]. It covers the period from **1 October 2019 until 30 September 2021,** and details the technical functioning of the VIS central system, providing an overview of operational management activities during the reporting period. The report includes data provided by Member States on use of the VIS[8], and the requirement for and use made of Article 4(2) of the VIS Decision.

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[2] The Entry/Exit System (EES), an automated IT system for registering all travellers from third-countries (non-EU/ EEA /Swiss citizens) entering and exiting the Schengen area.
[3] In July 2021, new VIS revision regulations were adopted. The new legal base added a significant number of new functionalities for the system and its users, also ensuring interoperability.
[4] The shared Biometric Matching System (sBMS) is an automated multi-biometric identification system for third-countries (non-EU/ EEA /Swiss citizens) which will serve a several systems (VIS, SIS II, Eurodac, EES, ETIAS and ECRIS-TCN).
[5] Previous issues are available on eu-LISA website: **https: //www.eulisa.europa.eu/our-publications/reports**
[6] OJ L 218, 13.8.2008, hereinafter 'VIS Regulation'.
[7] OJ L 218, 13.8.2008, hereinafter 'VIS law enforcement access decision'
[8] As per Article 50(6) of the VIS Regulation and Article 17(5) of the VIS Decision

2. Operational management of the VIS

The VIS consists of the Central VIS (CS-VIS), the Backup Central Unit (BCU)[9], a national interface (NI-VIS) in each Member State connected to VIS and the communication infrastructure.[10] eu-LISA is responsible for the operational management of CS-VIS and certain aspects of the communication infrastructure 24/7. **The operational management** is done in close coordination with the **Member States** and **the Commission**. In performing the operational management of VIS, the Agency has been steered by the Management Board (MB) and the VIS Advisory Group (VIS AG) [11], which play an important strategic role. The role of the VIS AG is to provide the MB with expertise related to VIS.

Each Member State is responsible for implementing, operating and managing its own national system. The CS-VIS includes the **Biometric Matching System (BMS)**, which is an Automated Fingerprint Identification System (AFIS) subsystem responsible for biometric operations entering into play depending on the specific VIS operation requested.

During the reporting period, the maintenance in working order (MWO) was provided through the framework contract (FWC) signed in May 2016 with the successful consortium[12]. **The FWC was signed for 4 years** with the possibility of renewal for up to 24 months. This FWC is currently into force.

The MWO covers the provision of services related to corrective, adaptive, preventive, perfective and evolutive **maintenance** of the Central VIS, the BMS, the VIS Mail System, devices shared between the VIS and SIS II, as well as associated services and technical support to the Member States. eu-LISA is responsible for the operational management of the Central VIS and the BMS. On the other hand, the MWO contractor is responsible for the performance of the system, any dysfunction or degradation in the performance of services, and for complementary maintenance needed to overcome and solve such dysfunctions or degradations.

The VIS mail is a communication system operated by eu-LISA to allow the transmission of information on visa applications between Member States

eu-LISA is also responsible for **the technological and functional development** of the VIS central system. Developments and changes are analysed and formalised within **the Demand Management Process,** and then discussed and approved by the VIS Advisory Group.

2.1 Performance and availability

During the reporting period, the overall technical performance of VIS and BMS worked well in line with the service level agreement (SLA).

At the end of 2019, the processing times were in line with the SLA both at **consular level** and at **border posts**, and the use was in line with the seasonal expectations. In 2020, the system was still performing in line with the SLA and the use was in line with the seasonal expectations. However, due to the pandemic, the overall use of VIS in 2020 was about 10 % of the expected throughput, and there was very little data from checks at the borders. In 2021, the VIS central system continued to deliver and the overall performance was within the agreed targets outlined in the SLA.

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[9] The backup site is located in Sankt Johann im Pongau (Austria), and ensures all the functionalities of the principal CS-VIS in the event of failure or planned maintenance of the system. Data contained in the CU and BCU are kept synchronised at all times, guaranteeing business continuity.
[10] As per Article 1(2) of Council Decision 2004/512/EC.
[11] Both fora are composed of representatives of Member States and the European Commission.
[12] Bridge³, composed of Accenture NV/SA, Atos Belgium NV/SA and Idemia Identity and Security France SAS.

Overview of the availability of the VIS central system and the response time performance:

2019	2020	2021
Availability **99.65 %**	Availability **99.93 %**	Availability **99.98 %**
Response time performance **97.79 %**	Response time performance **99.98 %**	Response time performance **99.90 %**

2.2 The new VIS Regulation (VIS revision)

At the end of 2020, a political agreement was reached concerning the negotiations on the VIS revision. The Regulations[13] amending the VIS were adopted in July 2021, adding **new functionalities** for the system and its users and representing substantial evolutions. The new VIS legal base ensures interoperability between the VIS and other relevant EU IT-systems, while fostering the security of the short-stay visa procedure. The VIS and BMS transactional capacity will have to be aligned with the additional business requirements to better respond to the evolving challenges on security and migration.

Some of the most important evolutions and new functionalities are as follows:

- storage of **long-stay visas** and **residence permits** in the VIS system;

- integration of **consular cooperation and information mechanism** (VISMail) into the VIS, notably regarding prior consultation and visa issuance notification;

- **interoperability** with EES and ETIAS[14] and the **interoperability components** such as CIR, ESP, MID, sBMS[15], which will better serve end-users needs, and the development of the CRRS[16];

- connection with **carrier gateway** including mobile technical solutions, which will allow carriers to check the validity of short-stay visas, long-stay visas and residence permits in a read-only copy in the VIS system;

- lowering of the age range for fingerprinting, with **fingerprint enrolment** for applicants between **6 and 75 years old**;

- **live facial-image** enrolment and matching;

- incorporation of a list of **recognised travel documents**.

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[13] Regulation (EU) 2021/1134 of the European Parliament and of the Council of 7 July 2021 amending Regulations (EU) No 603/2013, (EU) 2016/794, (EU) 2018/1862, (EU) 2019/816 and (EU) 2019/818 as regards the establishment of the conditions for accessing other EU information systems for the purposes of the Visa Information System. OJ L 248,, 13.7.2021, p.1.

[14] European Travel Information and Authorisation System (ETIAS).

[15] The Common Identity Repository (CIR), the European Search Portal (ESP), the Multiple Identity Detector (MID),the shared Biometric Matching Service (sBMS).

[16] Central Repository for Reporting and Statistics (CRRS).

The integration of the new functionalities will require an extensive update **of the VIS Interface Control Document (ICD).** Once ready, the Member States will be requested to implement and test the new VIS ICD, national uniform interface (NUI), update the end-user software, as well as train the end-users accordingly. The changes stemming from the EES Regulation[17] to the interface with the VIS users were already part of the VIS ICD approved in September 2019.

Once implemented, the VIS revision will improve crossing the borders of the Schengen area for third-country nationals (TCNs) who are subject to the visa requirement, and make it more efficient for the end-users of the system. Automation of the consultation and notification procedures is foreseen, as well as centralising data, thus making data available across the entire Schengen area and at borders. These activities will bring changes to both the central system and the end-users' systems (those of the Member States and Europol).

Before all the technical preparations can start, a series of implementing and delegated acts will need to be adopted. This work, led by Commission, has already started, and will continue intensively in 2022. eu-LISA supported the Commission in the preparation of the corresponding legal acts in the latter part of 2021. Meanwhile, eu-LISA is proceeding with the project preparations, including identification of requirements.

According to Article 11(1) of Regulation (EU) 2021/1134, no later than 31 December 2023, the Commission shall adopt the decision by means of an implementing act setting the date on which the VIS operations shall start. The decision shall be adopted once the conditions and necessary preparations by eu-LISA and Member states are completed in accordance with the requirements set out under Article 11.

2.3 Testing activities and releases

eu-LISA is responsible for coordinating tests, determining test requirements and planning. During the reporting period, eu-LISA supported the Member States in a variety of testing activities, ensuring the proper functioning of all systems.

Before the deployment of each release, extensive testing campaigns are carried out. The deployment and release activities are planned and carried out in such a way as to minimise the impact on the operational activities of the systems, with special attention being paid to their performance and availability.

One release was deployed in October 2019.

▪ **Release 2019_R12:** Evolutive, adaptive/corrective. The main objective of this release was to implement the changes at central level allowing the integration of Europol as a new user. The release was deployed in October 2019. Since then, the Central VIS has been ready to connect to Europol as soon as the latter completes its integration project.

The release plan for 2020 was affected by access restrictions to the Agency's technical facilities imposed as a result of the COVID-19 pandemic from mid-March 2020. The following three releases were implemented.

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[17] Regulation (EU) 2017/2226 of the European Parliament and of the Council of 30 November 2017 establishing an Entry/Exit System (EES) to register entry and exit data and refusal of entry data of third-country nationals crossing the external borders of the Member States and determining the conditions for access to the EES for law enforcement purposes, and amending the Convention implementing the Schengen Agreement and Regulations (EC) No 767/2008 and (EU) No 1077/2011, OJ L 327, 9.12.2017, p. 20.

- **Release 2020_ADP:** Adaptive release. The objective of this release was to **upgrade firmware on BMS Blades and Enclosures & VIS Firewall replacement.** The release was deployed in January 2020.

- **Release 2020_R1:** Evolutive/adaptive/corrective release. The objective of this release was to **increase the database capacity of BMS from 60 Million records to 85 Million**, to align the BMS capacity with VIS, in addition to deploying corrective and adaptive items at application level on BMS. Due to BMS performance issues related to virtualisation (R3-2018) and the need to stabilise the system, the BMS upscale to 85 million records was postponed to March/April 2020. The release was supposed to enter into operation in June 2020, but it was affected by the COVID-19 pandemic and postponed until August 2020.

- **Release 2020_R2:** Evolutive/adaptive/corrective release. The objective of this release was to prepare the central system for 'passive access' for new users. 'Passive access' in this context implies that the new users will be able to use only a specific subset of all available business transactions of VIS-BMS, namely the ones that pertain to reading/retrieving the data in the systems. The new users will not be allowed to create or update any visa data in the VIS-BMS[18]. This release represents a general enhancement in the access control rules to the VIS system, as from now on **it will be possible to change access individually by Member State if required.** The second objective in this release was to do adaptive upgrades on network and infrastructure level. This release was planned for June 2020, but was finally deployed in September. Following the successful deployment of this release, **Bulgaria and Romania achieved passive access** to VIS in July 2021[19]. Access to VIS for Croatia depends on the necessary legal conditions to be met, however the central system is already ready for this case.

There were four releases in the release plan for 2021 successfully deployed, including one postponed from 2020.

- **Release 2020_R3:** Corrective/adaptive/perfective **release on BMS system**, including aligning upgrade of RHEL OS on MBSS stack. This release was ready in 2020 to be deployed but was postponed due to the COVID-19 situation and resource limitations. The release was deployed in February 2021.

  MBSS= Multi-Biometric Search Service engine

  RHEL= (or RH) Red Hat Operating system

- **Release 2021_ADP:** Adaptive release, including VIS and BMS Service Management Console (SMC) and firmware upgrade. The objective of this release was to **upgrade firmware and apply patches on multiple components of VIS-BMS infrastructure**. The release was deployed during March/April 2021.

  SMC= Service Management Console

- **Release 2021_R1:** Technical/adaptive release. The objective of this release was to **upgrade Red Hat Enterprise Linux (RHEL) operating system** to version 7.9 and perform other necessary changes on BMS to align with the upgrade. The release was deployed during October/November 2021. Implementation was made together with 2021_R2.

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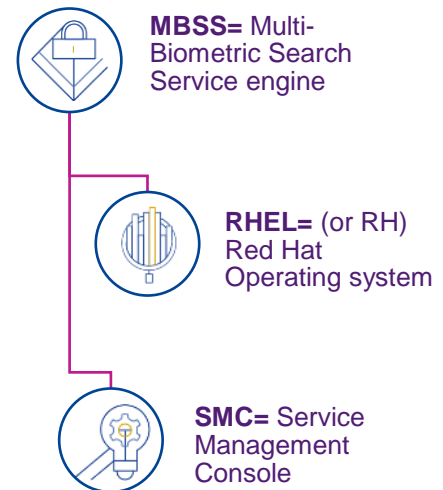
[18] As an exception, the operations to enter, amend or delete their List of Authorities will be allowed.
[19] As per Council Decision (EU) 2017/1908 on passive access to VIS for Bulgaria and Romania and Commission Implementing Decision (EU) 2021/995 determining the date from which this passive access will apply.

- **Release 2021_R2:** Technical/adaptive release, including VIS Oracle Migration in the Common Share Infrastructure Platform and WebLogic Upgrade. The release was deployed during October/November 2021.

2.4 Completed projects

During the reporting period, several projects and activities were conducted on the VIS and BMS in addition to the central system evolutions and releases mentioned above. In the following sections there is information about the most important projects being completed or worked on and about relevant activities.

2.4.1 New VIS users

For the whole of 2020, eu-LISA, together with the future users, Bulgaria, Romania and Europol, continued to work on their integration.

On 18 June 2021, the Commission adopted the decision[20] setting the date for **Bulgaria and Romania to gain read-only access** to VIS. The access was granted as from 26 July. This was an important step for Bulgaria and Romania but also for the Entry/Exit System, as their passive access is an essential prerequisite for the correct functioning of the EES. While technically ready, access to VIS for Croatia depends on the necessary legal conditions to be met and political decisions to be taken.

In October 2019, eu-LISA completed the integration to allow the connection of **Europol** to the Central VIS. Once Europol's access is completed on its side, Europol will have access to Central VIS to **query the database.**

2.4.2 Capacity increase and evolution

The project on **new VIS and BMS Background Databases**[21] lasted for 2 years and was finalised in January 2020. The project allows eu-LISA to validate the system with databases upgraded to a capacity of **100 million records** in the VIS BGDB[22] and **85 million records** in the BMS BGDB. The capacity increase will support the growing needs of the Member States. The BMS capacity increase started in 2019, following a similar evolution for the VIS. BMS database increase was delayed by 18 months in total due to technical and COVID-related delays, among other things. The project was completed with a release deployment (Release 2020_R1) and entry into operation in August 2020, and it **resolved the issues caused by the BMS virtualisation (production and pre-production environments).**

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[20] Commission Implementing Decision (EU) 2021/995 of 18 June 2021 determining the date on which Council Decision (EU) 2017/1908 on the putting into effect of certain provisions of the Schengen acquis relating to the Visa Information System in the Republic of Bulgaria and Romania shall start to apply, C/2021/4302, OJ L 219, 21.6.2021, p. 37

[21] The data in the databases is made up of synthetic fingerprints based on real fingerprints. For compliance with data protection requirements, a statistical sample was checked to make sure that the synthetic fingerprints do not match any real fingerprints.

[22] Background database.

2.5 Ongoing projects

2.5.1 Interoperability

As per Regulation (EU) 2019/817[23] and Regulation (EU) 2019/818[24], **eu-LISA is responsible for the interoperability** among both existing and new information systems in the Justice and Home Affairs JHA domain, including the VIS.

Interoperability is the ability of information systems to exchange data and information

Interoperability will allow border guards, police officers, authorities competent for short-stay visas, long-stay visas and residence permits, and immigration officials to have **more complete information on security threats as well as seamless access to information**. The implementation will require significant efforts in terms of **design, build, testing and implementation.** Each existing system's legal basis has been / will be amended to reflect the interoperability initiatives.

The evolution and **interoperability between the systems are essential to better serve end-users' needs,** meet changing policy demands, and ensure enhanced internal security. The implementation of the interoperability architecture is ongoing, thanks also to the development of the necessary interoperability components.

The interoperability components are:

- **the European Search Portal (ESP)** – this will be a front-end system enabling Member States authorities and Union agencies to perform queries on individuals' identity data in EU information systems, Europol data and Interpol databases, in accordance with their access rights and the objectives and purposes of the systems accessed;

- **the Common Identity Repository (CIR)** – this will create an individual file for each person registered in the EES, VIS, ETIAS, Eurodac or ECRIS-TCN. It will facilitate and assist the correct identification of persons registered in these systems;

- **the shared Biometric Matching Service (sBMS)** – this will store biometric templates and enable authorities to search identity data with biometric identifiers across all JHA connected systems;

- **the Multiple Identity Detector (MID)** – this will contain links between data in the EU information systems included in the CIR and SIS and enable the detection of multiple identities when an identity is created or updated.

As part of the same interoperability regulations, eu-LISA is developing a **Central Repository for Reporting and Statistics (CRRS)** to provide statistical data and analytical reporting for operational and data quality purposes. All data used are either non-personal data or anonymised data.

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[23] Regulation (EU) 2019/817 of the European Parliament and of the Council of 20 May 2019 on establishing a framework for interoperability between EU information systems in the field of borders and visa and amending Regulations (EC) No 767/2008, (EU) 2016/399, (EU) 2017/2226, (EU) 2018/1240, (EU) 2018/1726 and (EU) 2018/1861 of the European Parliament and of the Council and Council Decisions 2004/512/EC and 2008/633/JHA. OJ L 135, 22.5.2019, p. 27.
[24] Regulation (EU) 2019/818 of the European Parliament and of the Council of 20 May 2019 on establishing a framework for interoperability between EU information systems in the field of police and judicial cooperation, asylum and migration and amending Regulations (EU) 2018/1726, (EU) 2018/1862 and (EU) 2019/816. OJ L 135, 22.5.2019, p. 85

As a result of the interoperability project, eu-LISA will **ensure a connection between VIS and the new interoperability components.** The interconnection between the VIS and EES is already ongoing in parallel to the migration of the BMS to the sBMS. It is planned to use the sBMS for the VIS as from the entry into operation of the EES.

2.5.2 Development of the sBMS

On 16 April 2020, eu-LISA signed a framework contract for the development of the Shared Biometric Matching Service (sBMS) and the migration of SIS, VIS and Eurodac to sBMS. The sBMS is one of the central interoperability components and will be used by **all systems** operating within the **interoperability** architecture. The sBMS will manage biometric templates from the different systems, store them in a logically separate form depending on their origin, and enable biometric data queries by the systems. The development of the sBMS progressed significantly in 2021. Successful testing campaigns with Member States were carried out and different work packages within the sBMS project were finalised.

sBMS and EES are developed in parallel. This enables substantial savings in time and efforts compared to a situation where a biometric matching system would be developed to only meet EES objectives.

In order to **ensure the quality** of biometric data for the large scale IT-systems using the **sBMS**, **the user software kit (USK)** is needed. An enhanced version of the USK was delivered to the Member States on 30 November 2020 to start the initial (beta) testing campaign.

In December 2020, several Member States started collecting and processing biometric data for testing purposes. During the reporting period, Member States had access to the sBMS USK space on eu-LISA's SharePoint in order to sign End User Licence Agreements (EULAs) and to provide the 'Facial Quality Assessment'[25] and 'Fingerprint Quality Assessment'[26].

2.5.3 VIS-EES interoperability

The evolutions of VIS/BMS have strongly been influenced by the future interconnection between VIS and the EES. A direct consultation between the VIS and the EES will, for example, allow border authorities to retrieve visa-related information from the VIS and import them to the EES, or allow visa authorities to consult the EES from VIS for the examination of visa applications.

A prerequisite to enable the interoperability between the EES and the VIS is a **secure communication channel** which must be established between the **two central systems.** eu-LISA is responsible for the development of a secure and encrypted communication infrastructure of Member States to the EES central system (VIS TAP upgrade) as well as hosting the central system and the national uniform interface (NUI). In collaboration with the VIS contractor, eu-LISA has assessed the impacts of the EES Regulation[27] on the VIS and set out the further actions needed.

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[25] Assessment of the usefulness of the facial image for recognition.
[26] Assessment of the usefulness of the fingerprint for recognition.
[27] Regulation (EU) 2017/2226.

In 2019, the Agency continued the implementation of the EES in close cooperation with the Member States and the European Commission through different programmes and projects[28]. A **Test Working Group** was set up under the umbrella of the EES-ETIAS Advisory Group to coordinate all test activities and training aspects related to EES and VIS.

During 2020, despite restrictions on access to technical sites due to the COVID-19 pandemic, major efforts were undertaken by eu-LISA, together with the Member States and the contractors, to continue the preparations and implementation of the EES. The upgrade of the VIS communication infrastructure continued during 2021 different testing campaigns and remote training to the Member States.

Despite the good progress, some delays in the development of the central system and the web services infrastructure were encountered, in particular due to the COVID-related restrictions.

2.6 Additional project

▪ **Prototype project on Online visa applications**

In 2019, the European Commission, supported by eu-LISA and a few Member States, launched the e-VISA prototype project. The project was to test the feasibility (design and development) of an EU online visa application platform and provide a prototype for a future online EU visa application. The project was concluded in September 2021 with a final report. Building on the lessons learned from the prototype project, on 27 April 2022, the European Commission adopted a proposal to digitalise the Schengen visa procedures with the objective of modernising, simplifying and harmonising the visa application process for Member States and third-country nationals (TCNs)[29]. The proposal introduces also the obligation for Member States to issue digital visas instead of visa stickers. Digital visas will be issued, e.g. for short stay visas and long stay visas. **The digital visa will be recorded in VIS**, including a unique visa number. When a visa has been confirmed, data will be transferred immediately from the VIS to the EES.

2.7 Training activities

eu-LISA provides training for relevant national authorities in the Member States and EU agencies on the technical use of all the large-scale IT-systems it manages, and the new upcoming systems, including interoperability components. Training sessions are organised as face to face, when conditions allow, or otherwise via the Agency`s e-Learning platform.

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[28] The implementation of the EES is a complex programme that consists of five major building blocks: the EES Central system and NUI applications; the sBMS; the VIS; the web services for carriers and travellers; the systems of the Member States / other Agencies that need to be connected to EES.
[29] Proposal for a Regulation of the European Parliament and of the Council amending Regulations (EC) No 767/2008, (EC) No 810/2009 and (EU) 2017/2226 of the European Parliament and of the Council, Council Regulations (EC) No 1683/95, (EC) No 333/2002, (EC) No 693/2003 and (EC) No 694/2003 and Convention implementing the Schengen Agreement, as regards the digitalisation of the visa procedure, COM(2022) 658 final.

During 2020, the COVID-19 pandemic meant that training activities, in particular the delivery method thereof, had to be adjusted. Despite the new situation, **eu-LISA continued to deliver high-level technical training events,** and by the end of the year, the Agency's training programme included a high number of newly created e-learning products, such as **online courses, e-learning modules and webinars.**

eu-LISA provides training for relevant national authorities in the Member States and EU agencies on the technical use of all the large-scale IT-systems it manages

As a comparison, in 2019, the year before the COVID-19 pandemic, **12 % of the 25 training sessions** delivered by eu-LISA **focused on VIS.** The majority of these were **organised face to face**, followed by webinars and new modules added to the Learning Management System (LMS)**.**

During 2020, due to the COVID-19 pandemic, all but one of the **30 training activities** delivered for all the systems were online (being webinars or e-Courses on the Learning Management System). **Three new** e-learning products and training sessions were developed **focused on VIS**:

- **VIS SPoC Profile Course**
- **VIS IT Operators Profile Course**
- **VIS Central Domain Simulator**

Satisfaction rate for MS training activities 2020

The 2020 satisfaction rate was 4.5/5. eu-LISA KPI Scale for MS training activities: 1-5 (positive KPI:>3)

During 2021, a total of **34 training activities** were delivered for all the systems, and **three training** activities were **focused on VIS:**

- **Introduction to the VIS-BMS**
- **Interoperability Components between VIS and EES**
- **International Law Enforcement Cooperation and Information Exchange**

Satisfaction rate for MS training activities 2021

The 2021 satisfaction rate was 5.4/6. eu-LISA KPI Scale for MS Training activates: 1-6. (positive KPI:>4.5)

2.8 Monitoring and quality of service

The Central VIS monitoring is carried out at the operational centre in Strasbourg by the eu-LISA Service Desk, operational 24 hours a day, 7 days a week. **The eu-LISA Service Desk** is the entry point for users' reports of incidents[30] as well as for requests for information or technical advice and support. eu-LISA provides a single point contact through the Service Desk function where users can report incidents, or request a service. Any request or incident is registered in a central incident management tool (SM9) for follow-up. The relevant assistance is provided based on the initial analysis and thereafter impact, urgency and priority are defined.

The performance of the systems Service Desk during the reporting period was very good or excellent and the performance indicator reached between 90 %-99.90 %, exceeding the targets of between 75 %-80 % (KPI 20-KPI 22) [31].

As the VIS usage was heavily impacted by the COVID-19 pandemics, the number of requests and incidents handled by the Service Desk was lower compared to previous years.

- In 2019 (October-December): **1 719 incidents** and **270 service requests** were handled; **8 incidents** were of critical priority, there were no critical incidents for VIS.

- In 2020: **1 095 incidents** and **217 service requests** were handled; **4 incidents,** one at national level and hence detailed below in a footnote[32], were of critical priority.

  - On 5 March, an incident occurred in the Central VIS production site concerning multiple critical mail alerts on the VIS BCU which affected all Member States. The incident lasted for approximately 22 hours.

  - On 31 August, the Central VIS production site was unavailable for all Member States for 1 hour in connection with a release deployed by human error.

  - On 22 October, an incident occurred in the Central VIS production site in connection with a release deployment where VIS MAIL did not work on the CU. The issue was caused by maintenance and lasted for approximately 7 hours.

- In 2021: **1 079 incidents** and **166 service requests** were handled; **one incident** was of critical priority.

  - On 5 August, an incident occurred in the Central VIS production site due to a cooling outage in the main data centre, leading to an emergency shutdown of most VIS and BMS servers. The incident affected all Member States and lasted for almost 6 hours. The incident caused a full outage and unfortunately prevented a switchover to the BCU. The issues were solved with no data being lost.

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[30] An incident is opened by the service desk following an exchange/interaction with Member States or following eu-LISA monitoring activities (abnormal observations). Impact, urgency and priority of the incident are defined at this first stage. All long the process, eu-LISA technical staff reviews the status and priority assessing the severity of the incident.

[31] This indicator measures the ability of the Agency to provide end users with support for help requests and incident resolution. The indicator measures the availability of support (time to respond) and the performance of support (time to resolve). As a result, the indicator shows the percentage of requests completed within the criteria set in the service level agreement (SLA) between eu-LISA and the Member States.

[32] The fourth incident was on national level and occurred on 7 March in the production site of the VIS National System of Slovakia, where the Turnkey Access Point (TAP) was unavailable for approximately 3 hours due to a power failure.

The VIS customer satisfaction survey

Each year, for the systems that eu-LISA manages, **Member States are asked to evaluate** the eu-LISA Service Desk, incident and problem management, operational communication, technical assistance, support for national activities and release management. The exercise is carried out via a customer satisfaction survey and is presented to the VIS Advisory Group. Participation in the survey has steadily increased over the years. For VIS, after years of increased overall satisfaction rates, the satisfaction rate for 2019 dropped compared to the previous year for the first time in three years.

- In 2019: **14 out of 26 Member States** took part in the survey and the satisfaction rate was **91 %**

- In 2020**: 25 out of 26 Member States** took part in the survey and the satisfaction rate was **97 %**

- In 2021: **26 out of 26 Member States** took part in the survey and the satisfaction rate was **94 %**

Figure 1 – VIS satisfaction rate 2014-2021
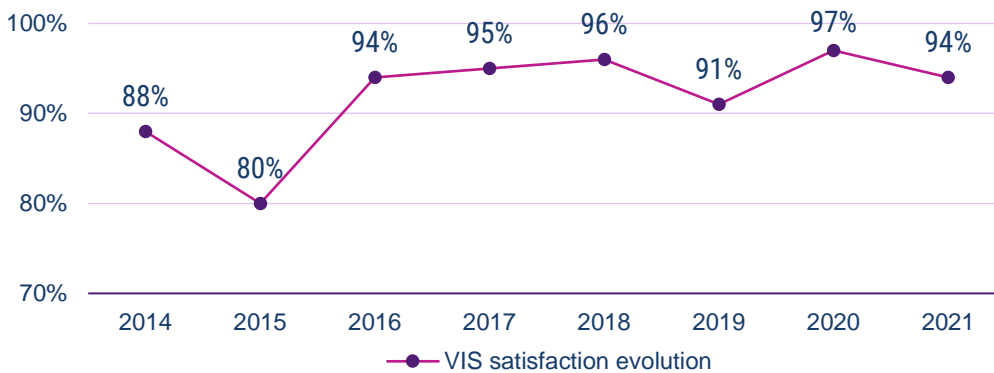
Member States' feedback in the customer satisfaction surveys help the Agency in its commitment towards stakeholders.

3. The communication infrastructure and its functioning

In accordance with Article 1(2) of Council Decision 2004/512/EC and the parallel provision in Article 2 of the Annex to Commission Decision 2008/602/EC, **one of the three elements comprising the VIS is a communication infrastructure** between the VIS central system and the national interfaces (NI-VIS). The infrastructure provides an encrypted, virtual and private network dedicated to VIS data for communication among Member States and between Member States and the authority responsible for the operational management for the VIS central system. The abovementioned communication infrastructure is provided via a European private secure network named **Trans European Services for Telematics between Administrations – new generation (TESTA-ng**).

TESTA-ng: Trans European Services for Telematics between Administrations – new generation

The VIS network provides a secure wide area network for the exchange of data between central and national systems. The architecture of the network can be described as a dual star topology with resilience. **The central unit (CU) and backup central unit (BCU) contain the systems to which each national network connects.** The CU and BCU are interconnected by a dedicated point-to-point connection. The VIS network is permanently monitored in order to ensure continuous service availability and strict performance service level requirements have been established.

During the reporting period, there were no incidents with critical impact on the functioning of the overall VIS community and no incidents affecting the connectivity of more than one site. **The availability of the TESTA-ng network was 99.98 % in 2020 and 99.99 % in 2021.**

eu-LISA has been responsible for the VIS administrative tasks related to the communication infrastructure between the Central VIS and national interfaces since 30 June 2018 pursuant to the VIS Regulation as amended by Article 61 of the EES Regulation[33]. Furthermore, Article 7 of the EES Regulation requires certain hardware and software components of the EES communication infrastructure to be shared with the VIS communication infrastructure. Logical separation of VIS data and EES data is to be ensured. Finally, Article 6 of the ETIAS Regulation[34] also requires certain hardware and software components of the ETIAS communication infrastructure to be shared with the EES (therefore VIS) communication infrastructure.

To accommodate the legal changes and in particular the new EES and ETIAS requirements, a feasibility study was conducted in 2019 with the TESTA-ng provider. The Agency signed contracts with the TESTA-ng provider on 30 June 2020 to increase the capacity of the VIS communication infrastructure and interconnect it with the NUI as defined in Article 7(b) of the EES Regulation. The upgrade was achieved through a combination of line upgrades and replacement of the turnkey access points (TAPs) by new models at the sites where line upgrades alone would not be sufficient.

The upgrade was completed on 27 July 2021, allowing for the VIS communication infrastructure to have a capacity almost seven times higher than before in order to support **the entry into operation of the EES and ETIAS.** With this project the turnkey access points (TAPs) at the operational sites of the Agency were also upgraded to ensure that the VIS, EES and ETIAS Central Systems have sufficient bandwidth.

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[33] Regulation (EU) 2017/2226.
[34] Regulation (EU) 2018/1240.

4. Security

eu-LISA ensures the operational effectiveness of the security controls at VIS central level, and the continuous improvement of the security strategy, in line with the requirements of the VIS Regulation and relevant Commission Decisions in terms of data protection and information security. **Security is a core element of all activities undertaken at eu-LISA**. Furthermore, the Agency is becoming a centre of excellence in the provision of IT services, emphasising the assurance of system and data security in all its activities.

In the context of the Agency's security monitoring and incident management processes, **no critical security incidents occurred during the reporting period**. The Agency's security unit continued to maintain and develop security measures concerning both physical and system security. As a core element of its Information Security Management Framework, the Agency operates and continuously develops its **Information Security Management System (ISMS)** in compliance with the relevant ISMS standards and ISO27001. Continuous monitoring and management of the residual risks took place to provide assurance that the appropriate security controls for the large-scale IT systems have been properly implemented and managed.

In accordance with the relevant security principles, standards and good practices mentioned, the VIS security and continuity risk management strategy covers all layers of the security spectrum: physical security, personnel security, network security, operating systems security, application security, business continuity and data security. Security requirements are embedded in all development projects, changes and maintenance activities. The eu-LISA's security unit is part of the VIS Operational Change Advisory Board, and takes part in any VIS development project from the initial phase to develop requirements.

eu-LISA has adopted a new Security and Business Continuity Plan based on the European Commission IT Security Risk Management methodology, ITSRM

During the reporting period, **the VIS central system went through numerous major upgrades**, including for its interoperability with the EES, migration to Common Shared Infrastructure and integration to sBMS. These implementation activities also triggered the reassessment of security risks through the full cycle of Security Risk Assessment, adoption of a new Security Plan and Business Continuity Plan based on the European Commission IT Security Risk Management (ITSRM) methodology.

As part of the update of the VIS ICD due to the interconnection with the EES mentioned above, there was a **thorough review of the baseline security requirements** supporting the interoperability of VIS system. These were updated in line with the risk assessment findings.

In 2020, eu-LISA and eight Member States[35] together with ENISA and the Commission ran a multi-system business continuity exercise. The end-to-end business continuity exercise aimed to test the security, business continuity and disaster recovery capabilities of SIS II, VIS and Eurodac. The exercise covered rehearsing the existing processes and technical procedures and further improving the overall coordination and readiness in the event of a disaster. As a conclusion of the exercise, a list of improvement measures was drawn up and further implemented to support the resilience of the systems.

The initial proposed approach for the exercise was to run a simulation exercise combining both technical and operational levels. The COVID-19 pandemic meant that only an operational (extended table-top) exercise was conducted. The **exercise was successful.**

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[35] Germany, Estonia, Greece, Spain, Italy, Cyprus, Romania and Iceland.

In November 2019, eu-LISA received the report on the **European Data Protection Supervisor's** inspection on the SIS and VIS central systems in November 2018, focusing on operational management, internal communication infrastructure and security. The recommendations were analysed and an internal action plan was drafted. The recommendations in relation to security were followed up in 2021 and had been fully addressed by the end of the year. Overall, the inspection report noted no critical findings regarding the security of the Central VIS, and no security incidents regarding any unauthorised access to VIS data.

5. Data protection

Data protection is a key factor in the success of the VIS operations and for the Member States using the system. The quality of the data, data security and regulatory compliance with the legal framework provide the conditions for the VIS to support Member States effectively in the visa procedure and in border checks, while upholding the rights and freedoms of third-country nationals applying for a Schengen visa.

The protection of personal data related to individuals processed by the VIS at central system level is monitored by the **European Data Protection Supervisor (EDPS)** in close cooperation with **eu-LISA's Data Protection Officer (DPO)**. Quality of data stored in the VIS central system and the rights of data subjects, as per the legal provisions, are ensured by the Member States.

The latest on-site inspection of the VIS central system was carried out by the EDPS in November 2018 at eu-LISA's premises in Strasbourg, and the draft report was received in November 2019. The Management Board of eu-LISA adopted formal comments on this report for consideration by the EDPS pursuant to Article 19(1)(hh) of the eu-LISA establishing Regulation[36]. **The final EDPS report on the VIS inspection was received in April 2020** containing **43 recommendations** to be implemented by eu-LISA. To ensure appropriate implementation of EDPS recommendations, regular internal follow-up meetings were organised, and progress was reported to the EDPS.

Throughout the reporting period, the VIS Product Manager and the VIS Operational Change Advisory Board regularly consulted eu-LISA DPO on a number of VIS-related projects involving processing of personal data.

Accountability, risk-based approach, transparency and managing data breaches are key aspects stemming from the EU-DPR, which came into force on 11 December 2018. eu-LISA's DPO is committed to informing, raising awareness and advising on these obligations, in particular, in regard to the operational management of the VIS central system and the developments required for interoperability with other large-scale IT systems.

The eu-LISA DPO represents the Agency at the **VIS Supervision Coordination Group** which met twice per year, and reports on the current state of the VIS central system, future developments, data quality issues and security incidents, both at central system level or as reported by Member States. This group is composed of the National Data Protection Authorities and the EDPS and monitors data protection legal compliance at both Member State and VIS central system levels.

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[36] Regulation (EU) 2018/1726 of the European Parliament and of the Council of 14 November 2018 on the European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice (eu-LISA), and amending Regulation (EC) No 1987/2006 and Council Decision 2007/533/JHA and repealing Regulation (EU) No 1077/2011, OJ L 295, 21.11.2018, p. 99.

6. Use of the VIS: trends and figures

VIS started operations in 2011. Since February 2016 – following the finalisation of the phased rollout – the system has been accessible worldwide in all consulates of the Schengen countries. A positive trend in the use of the system was visible between 2017[37] and 2019 with the total operations rising from over 268 million operations in 2017 to over 294 million in 2019. The peak use of VIS is usually during the holiday season, reflecting how the system is used. Therefore, it is clear that use was greatly affected by the travel restrictions imposed during the COVID-19 pandemic.

VIS operations in 2021 totalled 80.8 million, which is a fall of 73 % in comparison with the pre-COVID year 2019. In 2020, the situation gap compared with 2019 was even larger as there were merely 73.9 million operations in total. The overall use of VIS in both 2020 and 2021 was about 15 % of the expected use in a normal year.

Regarding application processes, for both 2020 and 2021 there were slightly more than **3 million visa application processes per year, far from the record number of over 17 million applications processed in 2019.**

By the end of 2019, over 77 million visa applications and 68 million sets of fingerprints were stored in the VIS database. The figures have steadily increased over the years, but due to COVID-19 travel restrictions in 2020, the **number of stored visa applications and fingerprints in VIS fell for the first time.** The stored visa applications fell to 73 million and the stored sets of fingerprints fell to 66 million. By the end of the reporting period at the end of 2021, the figures had fallen even more than the previous year, with over 62 million visa applications and over 56 million sets of fingerprints now stored in the system.

This negative trend is due to the fact that very few new applications and new fingerprints were stored in the system in 2020 and 2021 due to COVID-related travel restrictions and, at the same time, automatic deletion continued as a result of the retention policy.

System use

| Visa Applications stored	Sets of fingerprints stored
77 million: 2019 **73 million**: 2020 62 million: 2021	**68 million**: 2019 **66 million**: 2020 56 million: 2021

Both the use at the borders and at the consulates was greatly affected by the travel restrictions imposed as a result of the pandemic. In 2019, 42,000 visas were issued per day on average, whereas this fell to around 7,500 on average per day in 2020 and around 7,000 on average per day in 2021. In 2019, there were more than 43 million operations at the external borders, whereas this fell to around 11 million in 2020 and around 7.5 million in 2021.

The peaks for **border operations** and **issued visas** were still reached during the summer months in 2019. In July 2019, 1.8 million visas were issued and, in August, 4.5 million border operations were carried out. The 2020 peak of these activities was, in contrast to 2019, in January, before the introduction of the first COVID-19 restrictions. During 2021, the ongoing pandemic continued to have a major impact on use of the system. The highest number of issued visas was in November (over 382,000) and for border operations this was in December (over 879,000).

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[37] VIS was accessible worldwide for the full year for the first time in 2017.

Figure 2 below shows the sharp drop in the totals in 2020 and 2021, caused by the travel restrictions, compared to levels reached in 2019. This was the case both for issued visas and for border operations.

Figure 2 – Border operations and issued visas 2019-2021
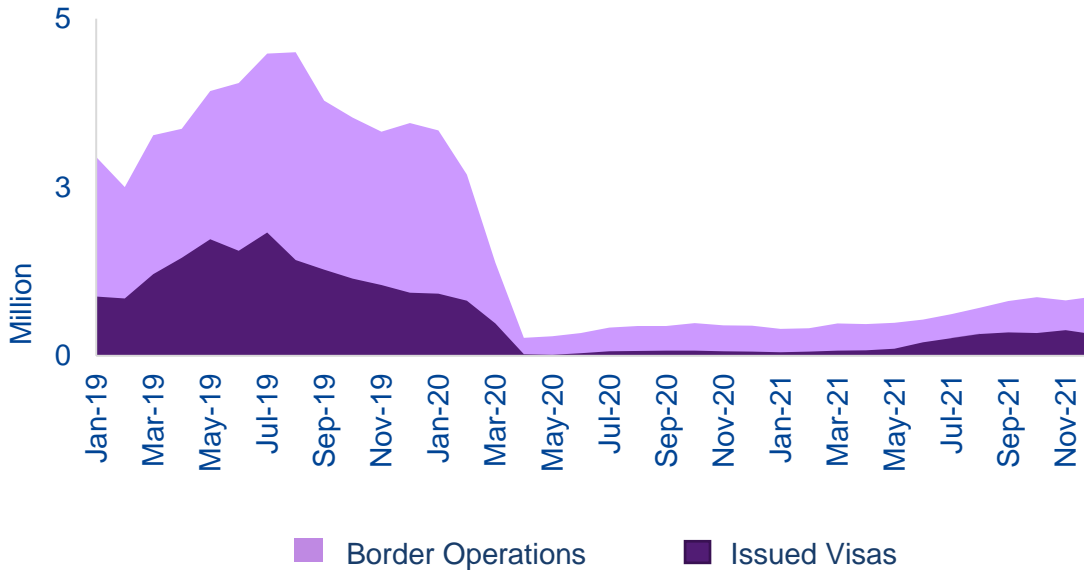
A closer look at the different search operations, **alphanumeric searches**, **biometric authentications** and **biometric searches**, confirms the trend just highlighted, in other words, a sharp drop in 2020 due to the travel restrictions, which continued in 2021 (see Figure 3 below).

Figure 3 – Alphanumeric and biometric searches
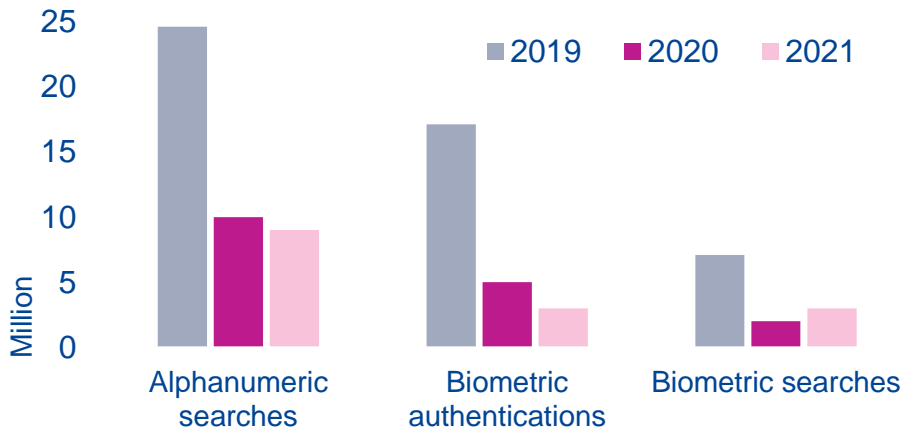
The highest demand for Schengen visas in 2021 was in the Russian Federation, where most visa applications were lodged, followed by Turkey and Saudi Arabia. The Russian Federation was already the most active region worldwide in 2019, with over 4 million visa applications registered.

Looking more into the details of average processing time for some specific operations, the system was performing well during the reporting period, in both the **Alphanumeric searches** and the **Biometric authentications**.

Alphanumeric searches[38]
(average performance in seconds, SLA is 30 seconds)

2019: **0.78 sec**
2020: **0.76 sec**
2021**: 0.38 sec**

Biometric authentications (fingerprint verification) [39]
(average performance in seconds, SLA is 3 seconds)

2019: **1.87 sec**
2020: **1.44 sec**
2021: **0.87 sec**

As per Article 50(6) of the VIS Regulation and Article 17(5) of the VIS Decision, Member States have a legal obligation to provide data to eu-LISA to compile this report. The data collection was a long and complex exercise[40]. An overview of the data is available in the annexes, and a short analysis is presented below.

The 26 Member States using VIS during the reporting period provided either a full or a partial set of statistical data for the report based on an agreed template. Data for *Refused visas per applicant* was reported by 11 Member States[41], whereas data for *Successful identifications asylum* was provided by eight Member States[42]. Reporting from other Member States for these categories was also incomplete or only partial.

France did not provide any data for 'Registered Applications with Fingerprints', 'Registered Applications without Fingerprints', 'Registered Applications without Fingerprints – legal', 'Registered Applications without Fingerprints – factual', 'Refused Visas per applicant', 'Refused Visas – fingerprints could not be provided factually', 'Successful Identifications Asylum'.

Bulgaria and Romania – who achieved read-only access to VIS in July 2021 – accordingly provided data on their use at the borders for the last 3 months of the reporting period.

Of those Member States who provided input on the narrative part of this report for the reporting period, most reported that the technical functioning of the system worked well and the workload and performance of CS-VIS, BMS, NS-VIS and VIS-Mail systems were good, without any major interruptions of service or incidents. No major security issues for the system were reported.

In accordance with Article 6 of the VIS Regulation, each Member State is to designate the competent authorities, the duly authorised staff of which are to have access to enter, amend, delete or consult data in VIS. The **end-users**[43] (individual persons) who are allowed access to VIS must therefore belong to one of these competent authorities. As per information provided by Member States, the approximate total number of end-users for 21 Member States using VIS pursuant to the VIS Regulation was over 30,800, the majority of them coming from **consular offices or border posts.** Nevertheless this data is incomplete, as seven Member States did not provide any data in this respect[44].

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[38] Performed for identification purposes in the different areas (Consulates, borders, law enforcement, asylum and immigration authorities within territory).
[39] Verification of fingerprint (1FP against the FP linked to the same visa which is in the database) mainly due at the borders (1st line checks).
[40] The data collection period started at 17 November 2021, and it was finalised with the last contribution received from Lithuania at the end of April 2022.
[41] Belgium, Denmark, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovenia, Spain, Sweden.
[42] Belgium, Denmark, Iceland, Luxembourg, Malta, Netherlands, Norway, Sweden.
[43] Any individual person authorised to access the CS-VIS is called an end-user.
[44] Bulgaria, France, Greece, Hungary, Italy, Malta, Portugal.

6.1 Use per activity reported by Member States

The use of the VIS system differs substantially from Member State to another. While the extent of the consular network and historical ties determine, amongst other things, the workload of the consular posts, both the number of third-country nationals crossing the external borders and the number of crossing points have a significant impact on use of the system for border control purposes.

All analysis provided has to be considered incomplete as it is based on data provided, which, as mentioned above, is incomplete in some aspects (see Annexes).

From October 2019 until the end of September 2021, **over 8 million** visa applications were registered and handled via the VIS, resulting in over **7 million visas issued** and over **965,000 refused visas.** All Member States reporting during the period, provided data for these categories.

Taking into account the data sets provided by the Member States, analysis shows that during the reporting period as represented by Figure 4 below, the majority of operations were conducted at the borders:

- **52 %** of the operations were carried out at the borders - *visa verifications border* and *identifications border*.

- **33 %** of the operations were carried out at consular posts – *registered applications*, *issued visas* and *refused visas*.

- **5 %** of the operations were carried out for asylum purposes[45] – *searches asylum* and *identifications asylum*.

- **10 %** of the operations were carried out by the competent authorities within the Schengen territory[46] – *visa verifications within territory* and *identifications within territory*.

**Figure 4** – VIS use per '*user group*' during the reporting period

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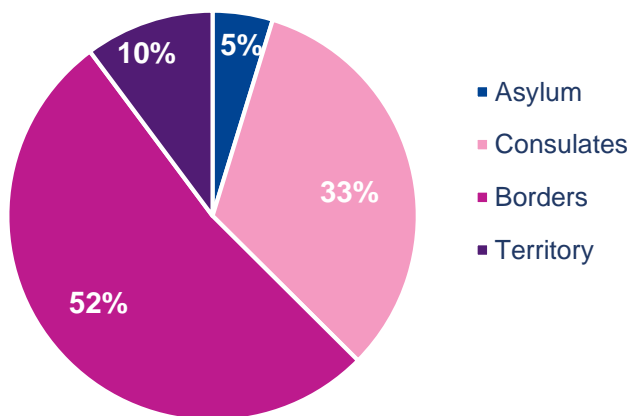
[45] As per Articles 21 and 22 of the VIS Regulation.
[46] As per Articles 19 and 20 of the VIS Regulation.

As shown in Figure 5, four Member States – France, Germany, Italy and Spain – handled **59 %** of all visa applications, similar to levels reported in the previous reporting period. All Member States reported data for this category.

Figure 5 – Main VIS users for '*visa applications*' during the reporting period
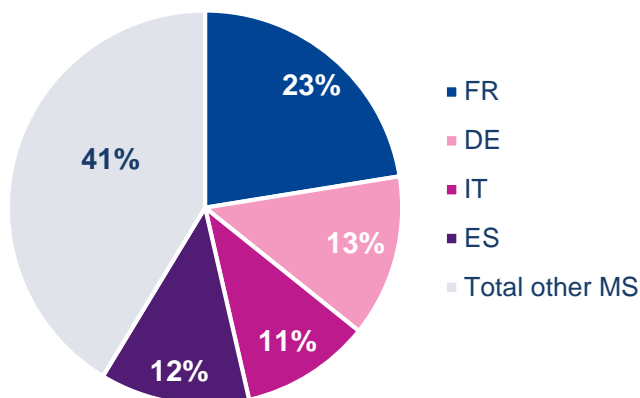
Over 26 million checks[47] at the external borders were carried out during the reporting period, the vast majority being first-line checks (the *visa verifications border* operation). Four Member States – Finland, Latvia, Lithuania, and Poland - accounted for **57 %** of all checks reported, as shown in Figure 6 below. All Member States reporting during the period provided data for these categories.

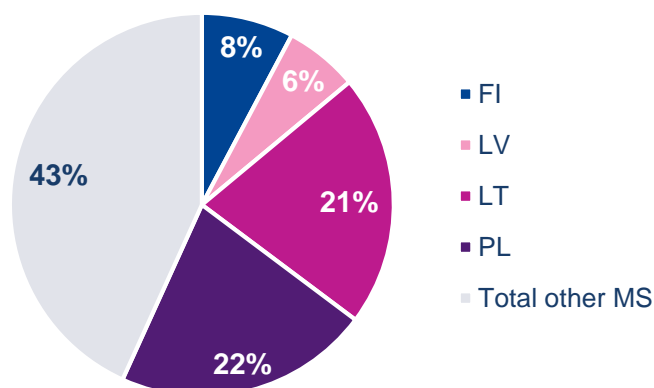**Figure 6** – Four '*main users at borders*' as per the data provided

Figure 7 shows that **94 %** of the searches for asylum were carried out by four Member States – Belgium, Germany, Netherlands and Sweden. Germany reported the majority of asylum searches for all Member States with **64 %** of the total searches, in line with what was reported in the previous reporting period.

The use of the VIS for asylum purposes differed to a great extent between Member States. Eight Member States – Bulgaria, Estonia, Greece, Liechtenstein, Lithuania, Poland, Romania and Slovakia - reported the figure zero or provided no data on the three asylum indicators 'Searches Asylum', 'Identification Asylum', 'Successful Identification Asylum'.

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[47] As per the data collected, these were 'visa verifications border' (first-line checks) and 'identifications border' (second line checks).

Figure 7 – Four main users for '*asylum searches*' during the reporting period
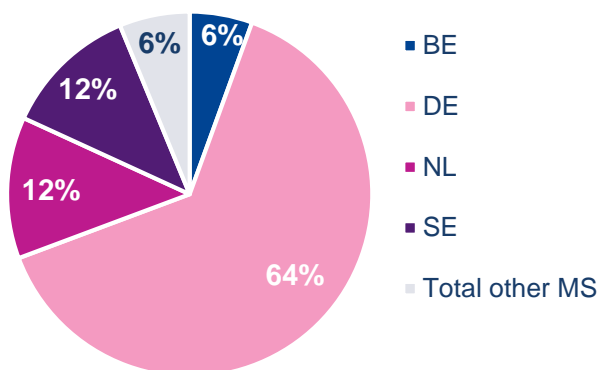
6.2 Reported use of Article 4(2) of the VIS Law Enforcement Access Decision[48]

Pursuant to the VIS Decision, Member States' designated authorities and Europol have been able to access the VIS for the purpose of prevention, detection and investigation of terrorist offences and other serious criminal offences since 1 September 2013.

The collection of Member State data on use of the VIS pursuant to the VIS Decision was very time-consuming and the data received was extremely fragmented[49]. Fourteen Member States - Austria, Czechia, Estonia, Germany, Luxemburg, Malta, Netherlands, Poland, Portugal, Slovenia, Slovakia, Spain, Sweden, Switzerland - reported that they had used the VIS for law enforcement purposes during the reporting period. The level of use varied considerably between those Member States.

Belgium, Denmark, Finland, Greece, Hungary, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Norway did not report any activity in this respect, France did not provide any report on use of Article 4(2). As mentioned above, during the reporting period Europol was not connected to VIS. Therefore, no data was collected. A breakdown of data provided for this exercise is available in Annex 2.

As per the data provided, over 35 000 searches were carried out in accordance with the VIS Decision by law enforcement authorities in fourteen Member States in the reporting period.

As shown in Figure 8 below, the majority of searches were carried out by 4 countries: 29 % of all searches were carried out by Slovakia, followed by Spain with 22 %, Czechia with 16 % and Germany with 11 %.

Figure 8 – Four users reporting most '*searchers*' as per the VIS Decision
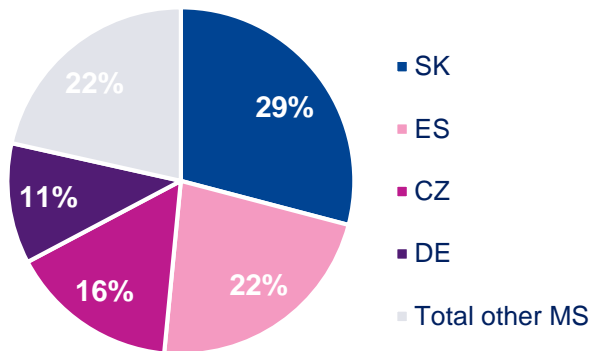
In accordance with Article 4(2) of the VIS Decision, **in an exceptional case of urgency**, the central access point(s) may receive written, electronic or oral requests. In such circumstances, the central access point(s) are to **process the request immediately** and **only verify ex post** whether or not all the conditions of Article 5 are fulfilled, including whether or not an exceptional case of urgency existed. The ex post verification is to take place without undue delay after the processing of the request.

The data reported shows that 418 urgent cases pursuant to Article 4(2) were registered during the reporting period reported by six Member States (Austria, Germany, Netherlands, Poland, Portugal and Spain).

Of the urgent cases, 47 % (197 cases) were reported by Portugal, followed by 24 % (98 cases) by Spain, 21 % (89 cases) by Austria and 4 % (18 cases) by Germany. Following ex post verification, 65 cases were deemed not urgent.

Figure 9 — Four main users reporting '*number of urgent cases*'
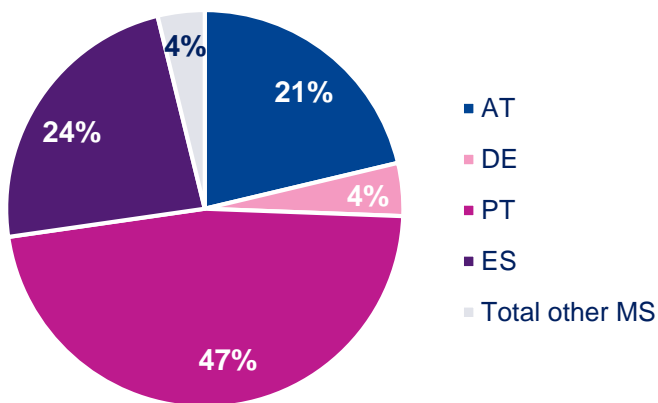
End-user(s) and access point(s)

The number of end-users and access point(s), where reported, varies considerably between the Member States.

Seventeen Member States reported the data for end-users: Austria, Czechia, Denmark, Estonia, Finland Germany, Island, Latvia, Liechtenstein, Lithuania, Luxemburg, Netherlands, Poland, Slovenia, Slovakia, Spain and Switzerland. The total number of end-users reported by those 17 Member States was over 18,700. Other Member States did not provide any end-user data and France did not provide any report.

As per Article 3(3) of the VIS Decision, each Member State is to designate the central access point(s) through which access pursuant to the Decision is done. Sixteen Member States reported data for access points: Austria, Czechia, Denmark, Estonia, Finland, Germany, Island, Latvia, Liechtenstein, Lithuania, Luxemburg, Norway, Poland, Slovenia, Sweden and Switzerland. The total number of access point(s) was almost 1,700. As for the end-user data, other Member States did not provide any access point data, and France did not provide any report.

7 Conclusions

During the reporting period, the Central VIS consistently performed well and in line with the service level agreement (SLA). The processing times were in line with the SLA both at consular level and at border posts. For 2019 and 2020, the response time was approximately 0.8 seconds on average for alphanumeric searches (SLA is 30 seconds) and less than 2 seconds on average for fingerprint verification (SLA is 3 seconds). In 2020, total use of VIS fell by around 75 % due to the travel restrictions resulting from the COVID-19 pandemic. During 2021, the ongoing pandemic continued to have a major impact on use of the system since very few checks were required at the borders.

Despite the difficulties of the COVID-related restrictions, a number of critical projects of significant scale were successfully delivered to further support the Member States. However, Member States registered only around 8.2 million visa applications and issued around 7.1 million visas in the period under review. As noted above, there was a tremendous impact on VIS use from travel restrictions imposed during the COVID-19 pandemic. VIS operations in 2021 only recovered slightly to 80.8 million which is still a fall of 73 % in comparison with the pre-COVID year 2019, when the total was 294 million.

Looking to the future, the VIS revision adopted in July 2021 will add a significant number of new functionalities for the system and its users and ensure interoperability between the VIS and other relevant EU systems. Once implemented, the VIS revision will improve border crossing for third-country nationals, and make it more efficient for the users, the individuals authorised to access the CS-VIS. The evolutions of VIS/BMS have been greatly influenced by the future interconnection between VIS and the EES. During the reporting period, eu-LISA continued its work on the implementation of the EES in close cooperation with the Member States and the European Commission through different programmes and projects.

Based on Member States' satisfaction rates, the overall reliability, performance, security and functioning of VIS met the expectations of Member States during the reporting period. eu-LISA is confident that the implementation of the VIS evolution projects will bring further improvements that will be positively perceived by the end users.

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8 Annexes

8.1 1. Data reported by Member States on use of the VIS pursuant to the VIS Regulation[50]

	Registered Applications	Registered Applications with Fingerprints	Registered Applications without Fingerprints	Registered Applications without Fingerprints – legal	Registered Applications without Fingerprints – factual	Issued Visas	Refused Visas	Refused Visas per Applicant	Refused Visas – fingerprints could not be provided factually	Visa Verifications Border	Visa Verifications within Territory	Identifications Border	Identifications within Territory	Searches Asylum	Identifications Asylum	Successful Identifications Asylum
Oct-19	1,272,980	890,031	60,152	53,285	4,133	1,107,181	150,592	997	9,449	3,439,929	54,638	77,007	240,164	91,358	35,382	4,143
Nov-19	1,170,658	814,159	67,574	61,467	4,259	1,027,009	137,865	640	9,570	3,263,748	51,975	69,424	232,995	81,964	30,910	4,896
Dec-19	1,048,212	711,388	71,006	65,439	2,871	914,244	137,494	521	10,589	3,424,020	48,792	73,692	170,222	70,210	28,982	4,613
Total 2019	3,491,850	2,415,578	198,732	180,191	11,263	3,048,434	425,951	2,158	29,608	10,127,697	155,405	220,123	643,381	243,532	95,274	13,652
Jan-20	1,037,804	738,587	53,193	47,980	3,391	895,910	131,785	619	8,524	3,249,556	60,682	74,006	224,420	94,888	33,584	4,443
Feb-20	968,448	684,641	52,553	47,622	3,104	815,064	118,507	591	7,435	2,592,915	55,818	72,628	225,979	78,694	28,698	3,207
Mar-20	475,916	339,691	34,908	30,253	3,078	399,285	84,837	458	6,915	1,320,616	42,553	54,979	147,194	58,601	19,407	2,786
Apr-20	10,922	8,315	1,914	832	1,018	8,977	3,777	114	903	262,252	23,322	13,188	105,772	28,464	5,786	769
May-20	14,425	11,019	2,175	921	1,155	11,867	2,928	150	608	282,300	36,875	15,799	158,613	36,174	13,305	508
Jun-20	32,290	25,128	4,008	1,764	2,095	27,668	3,233	80	636	319,649	47,664	20,860	130,253	51,625	21,728	874
Jul-20	74,173	59,985	5,125	3,458	1,357	65,117	4,171	72	705	391,844	52,748	26,191	138,274	72,824	32,038	1,268
Aug-20	77,835	58,955	4,500	2,771	1,550	68,362	5,853	72	512	419,398	53,098	26,016	134,048	67,303	32,090	1,287
Sep-20	91,714	67,550	4,437	2,839	1,343	78,216	8,663	138	555	425,352	45,345	31,361	146,312	74,670	33,513	1,082
Oct-20	85,413	66,299	4,376	2,763	1,346	74,222	9,677	121	655	449,071	42,698	34,133	158,657	73,527	34,022	1,311
Nov-20	73,430	59,498	3,517	1,894	1,419	64,933	7,768	197	639	414,417	43,802	35,876	148,082	69,810	31,071	1,030
Dec-20	70,850	57,163	3,459	1,867	1,421	61,996	7,279	139	547	409,361	42,092	33,530	147,571	62,768	28,800	1,012
Total 2020	3,013,220	2,176,831	174,165	144,964	22,277	2,571,617	388,478	2,751	28,634	10,536,731	546,697	438,567	1,865,175	769,348	314,042	19,577
Jan-21	57,239	47,619	2,506	1,310	1,013	50,542	5,769	79	357	360,598	49,343	30,267	174,346	69,125	34,089	827
Feb-21	69,386	60,945	2,972	1,685	1,108	61,746	5,878	78	380	371,624	44,573	29,567	191,708	63,150	30,510	930
Mar-21	87,131	75,962	3,747	2,241	1,334	77,152	7,013	123	501	431,582	50,084	40,132	208,369	66,642	31,110	828
Apr-21	91,552	78,277	4,734	3,377	1,157	81,974	6,729	96	453	433,228	49,689	31,873	177,388	53,378	26,942	682
May-21	118,228	98,406	8,237	6,773	1,168	106,427	6,252	47	416	447,537	49,451	34,084	183,965	51,579	26,135	614
Jun-21	236,562	174,000	16,646	14,278	1,900	207,127	12,437	89	983	493,784	51,724	37,242	165,125	68,557	35,462	654
Jul-21	300,229	221,307	22,329	19,863	1,868	268,291	21,219	104	2,396	573,410	8,862	35,782	162,768	75,485	40,757	1,107
Aug-21	370,611	272,025	25,787	21,601	2,760	326,181	34,601	151	4,900	675,511	8,806	42,481	149,230	82,888	49,469	2,262
Sep-21	419,925	299,731	21,765	17,760	2,721	350,088	50,537	217	6,499	755,016	10,249	58,813	157,790	93,913	53,415	2,316
Total 2021	1,750,863	1,328,272	108,723	88,888	15,029	1,529,528	150,435	984	16,885	4,542,290	322,781	340,241	1,570,689	624,717	327,889	10,220
Grand total	8,255,933	5,920,681	481,620	414,043	48,569	7,149,579	964,864	5,893	75,127	25,206,718	1,024,883	998,931	4,079,245	1,637,597	737,205	43,449

[50] The 26 Member States using VIS during the reporting period provided either a full or partial set of statistical data for the report. Data for 'Refused Visas per Applicant' was reported by 11 Member States, data for 'Successful Identifications Asylum' was provided by 8 Member states. France did not provide any data for 'Registered Applications with Fingerprints', 'Registered Applications without Fingerprints', 'Registered Applications without Fingerprints – legal', 'Registered Applications without Fingerprints – factual', 'Refused Visas per applicant', 'Refused Visas – fingerprints could not be provided factually', 'Successful Identifications Asylum'. Bulgaria and Romania provided data on their use at the borders for the last 3 months of the reporting period.

8.2　2. Reported use of Article 4(2) of the VIS Law Enforcement Access Decision[51]

	Use of Article 4(2)		Number of all searches
	Number of urgent cases	Number of 4(2) where ex-post no urgency	
Oct-19	38	5	3,992
Nov-19	46	1	1,759
Dec-19	69	3	1,260
Total 2019	153	9	7,011
Jan-20	16	21	1,998
Feb-20	15	4	1,753
Mar-20	9	8	1,906
Apr-20	13	3	1,102
May-20	12	3	974
Jun-20	12	0	1,003
Jul-20	21	0	966
Aug-20	16	1	1,225
Sep-20	10	0	965
Oct-20	5	0	1,382
Nov-20	5	0	1,707
Dec-20	36	0	1,128
Total 2020	170	40	16,109
Jan-21	7	0	2,015
Feb-21	8	0	1,161
Mar-21	3	1	1,619
Apr-21	8	4	1,785
May-21	6	1	1,231
Jun-21	10	2	1,058
Jul-21	23	3	1,028
Aug-21	5	1	934
Sep-21	25	4	1,241
Total 2021	95	16	12,072
Grand total	418	65	35,192

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[51] Estonia did not report 'Number of all searches' on a monthly basis but only one total for the period October 2019-December 2020 and for January 2021-December 2021. France did not provide any report on use of Article 4(2). Denmark indicated that the number of cases and queries from the Danish Security and Intelligence Service cannot be provided. Norway reported that they had not implemented the VIS Regulation Article 3 searches. Czechia reported that they had not implemented any tool to analyse the data from Article4(2) and were not able to divide searches as described in Article (1)3 of the VIS Decision. The reports of many Member States were fragmented or incomplete since they did not separate out the categories 'Number of urgent cases', 'Number of 4(2) where ex-post no urgency' and 'Number of all searches'.

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