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Subject : Report on the further direction of SIS II

In line with paragraph 6 of the Council Conclusions of 26-27 February 2009 on SIS II (6896/09 JAI 109 SIRIS 31 COMIX 173), delegations will find hereafter the report containing an in-depth assessment and comparison of both scenarios, in the light of the criteria set out in the Annex, which is submitted by the Presidency and the Commission.

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Report on the further direction of SIS II

The current Schengen Information System ("SIS 1+")¹ is to be replaced by the second generation Schengen Information System ("SIS II"). The corresponding legal framework ("SIS II legal framework") governing its establishment, operation and use was adopted in 2006 and 2007². The Commission has been legally entrusted with the further development of the central SIS II and its communication infrastructure whilst the Member States are to further develop the SIS II national systems.

The initial legal instruments on the SIS II development were adopted by the Council in December 2001. A feasibility study was subsequently performed and findings were presented in a Communication adopted by the Commission in December 2003. The contract with the main development contractor was signed by the Commission in October 2004. The development of the central SIS II has encountered various difficulties and delays. Therefore, an alternative technical scenario for developing SIS II based on SIS 1+, the so-called SIS 1+ renewal and evolution ("SIS 1+ RE"), is being explored in the framework of the Council as part of a contingency plan. The French authorities launched on 1 April 2009 a call for tender composed of a mandatory part to ensure the continuity of operations of the current SIS 1+ and an optional part (SIS 1+ RE scenario) aiming at developing SIS II functionalities, deadline for submitting offers being 14 May 2009.

This report contains an in-depth assessment and comparison of both the continuation of SIS II development and the SIS 1+ RE scenario. This in-depth assessment encompasses the progress made on SIS II development.

In the case of the alternative scenario it examines, on the basis of the feasibility study, corresponding technical specifications and offers received in response to the call for tender, the ability to achieve the objectives of the NS II legal framework. For the purpose of the comparison, only the scenario providing for the technical, budgetary and legal integration of the SIS 1+ RE into the SIS II legal framework which ensures the compatibility with this framework will be considered.

¹ Technically speaking, it stands for currently operational SIS 1+ R

² Regulation (EC) 1986/2006, Regulation (EC) 1987/2006 and Decision 2007/533/JHA which provide the legal basis for SIS II to function.

Following the Council Conclusions of 26-27 February 2009, the report sets the basis for a political decision to be taken by the Council on 4-5 June 2009 regarding the further direction of SIS II. The report has been jointly prepared by the Presidency and the Commission, in close cooperation with the SIS II Task Force and in consultation with the appropriate instances (Article 36 Committee and Friends of SIS II). Relevant parts of the report have been consulted with SIS-TECH, SISVIS Committee and JHA counsellors/SIS/SIRENE.

The report is divided into two main parts. The first part summarizes the outcome of the report, the second part provides for an in-depth assessment and comparison of both scenarios on the basis of the criteria set out in the Annex to the Council Conclusions of 26-27 February 2009. The report also contains one annexe with the timetable for integrating Ireland, the United Kingdom, Cyprus, Bulgaria, Romania and Liechtenstein into the SIS (annex 1).

The comparison of the two scenarios is a delicate exercise given the importance of SIS II and its political, financial, technical and legal complexity and the significantly different stage of development of both scenarios subject to the comparison.

The report should be read in conjunction with the assessment reports on both scenarios, as set out in 2009/SISVIS/SIS II TECH/13 (SIS II) and 8708/09 SIS-TECH 43 (SIS 1+ RE) and with the legal overview as set out in 8971/09 CATS 36 SIRIS 59.

I - SUMMARY

POLITICAL AND LEGAL CRITERIA

1.1. Time factor

Both scenarios provide a high-level schedule covering all phases of the project.

The entry into operation of the system fulfilling all functionalities required by the SIS II legal instruments on the SIS II establishment, operation and use is scheduled for the fourth quarter of 2011 with the SIS II scenario and the fourth quarter of 2012 with the SIS 1+ RE scenario. These dates are maximum planning estimates with sufficient margins that, if not fully used, could possibly bring forward the start of operations.

1.2. Integration schedule for the Member States which do not participate in SIS 1+ (UK, IE, BG, RO, CY, LI)

Whereas the SIS 1+ RE scenario allows for the integration into SIS 1+ of additional states as of the third quarter 2011 while using their SIS II national systems, the SIS II project allows for the integration of additional states into SIS II as of the fourth quarter of 2011. However, SIS 1+ RE will enable all SIS II functionalities to be used only after it is fully operational, thus as of the fourth quarter of 2012.

Irrespective of both scenarios, additional states can be integrated into SIS 1+ via SISone4ALL and migrate together with the current SIS 1+ users to SIS II.

1.3. Project credibility

Both scenarios are designed to ensure proper functioning of the Schengen information exchange and will add value to the area of Justice, Freedom and Security. Further adaptations to project governance will increase project credibility.

1.4. Compatibility with the SIS II regulatory framework (including governance and responsibilities)

SIS II is compatible with the SIS II regulatory framework.

On condition that it is subject to technical, budgetary and legal integration into the SIS II legal framework, SIS 1+ RE will be compatible with the SIS II regulatory framework.

FINANCIAL CRITERIA

1.5. Expenditures for the EU budget and for the Member States (individually and jointly)

The overall expenditure estimates for the future development of both scenarios are largely similar.

However, in the event of the discontinuation of the current SIS II development, there would be a high risk of additional financial implications for the EU budget.

1.6. Investment protection - "reusability" of investments already dedicated to the development of SIS II and preparation for its operation

Both scenarios fully protect the investments already made in the SIS II national systems (NS.SIS II).

In the event of the discontinuation of the current SIS II project, investments in the central SIS II system would be largely lost.

1.7. Total cost of ownership

In case of the SIS II scenario, the total cost of ownership includes maintenance of SIS II and the taking over of resources related to C.SIS which amount to 46.91 million EUR.

Costs for the SIS 1+ RE scenario are 43.5 million EUR (the costs from the tender offer are slightly higher, but do not exceed 10 % of the estimated price).³

1.8. Contractual implications for the Commission and for the Member States

The potential financial repercussions if the current contracts associated with the SIS II central system development are terminated are estimated at up to 19 million EUR. There may be further implications related to VIS.

The choice of scenario has no contractual implications for the Member States national projects (NS.SIS II).

TECHNICAL CRITERIA

1.9. Technical feasibility and corresponding risks (including migration)

Both scenarios are feasible provided that certain conditions are fulfilled:

SIS II would implement improvements and recommendations stemming from the analysis and repair period and the architecture review, including the proof of concept.

SIS 1+ RE would be developed, taking into account all technical features in full accordance with the project outline.

³ See doc. 10214/09 CATS 56 SIS-TECH 54 COMIX 431.

1.10. Capacity to integrate all functionalities required for SIS II (new types of alerts, logging, security, ...) and biometric search functions

Both scenarios will have to be developed with a view to compliance with the SIS II legal requirements and the full availability of the SIS II functionalities must be guaranteed from the date on which the system is brought into operation.

1.11. Robustness, adequacy and reliability of each solution (network and system stability and system architecture)

The current SIS II development will ensure robustness, adequacy and reliability, provided that improvements and recommendations stemming from the analysis and repair period and the architecture review, including the proof of concept, are implemented.

As regards the alternative scenario SIS 1+ RE, robustness, adequacy and reliability is conceptually also provided for

1.12. Impact on bringing VIS into operation

Both scenarios will not have any impact of a purely technical nature on bringing VIS into operation.

There are, however, contractual and consequently financial implications, should the current SIS II development be discontinued, which could delay the start of operations of VIS.

1.13. Impact on continuity of operations

Both scenarios will be developed without SIS 1+ operations being affected.

1.14. Project management

Independently of which scenario is continued, adaptations of the project management structure will be necessary in order to reflect the growing role of the Member States as the project draws further to its completion and will render the governance more IT project oriented.

1.15. Compatibility with SIS II national systems already developed

Both scenarios provide for the full use of SIS II national systems already developed and are compatible with them.

1.16. Compliance with security requirements

Both scenarios are designed to meet security requirements laid down by the SIS II legal framework.

II - COMPARISON OF BOTH SCENARIOS

POLITICAL AND LEGAL CRITERIA

1.17. Time factor

Summary of comparison:

Both scenarios provide a high-level schedule covering all phases of the project.

The entry into operation of the system fulfilling all functionalities required by the SIS II legal instruments on the SIS II's establishment, operation and use is scheduled for the fourth quarter of 2011 with the SIS II scenario and the fourth quarter of 2012 with the SIS 1+ RE scenario. These dates are maximum planning estimates with sufficient margins that, if not fully used, could possibly bring forward the start of operations.

1.17.1. Schedule for bringing a system into operation, all functionalities at least as legally required

1.17.1.1. Comparative analysis

The entry into operation of a system fulfilling all functionalities required by the SIS II legal instruments on the SIS II establishment, operation and use is scheduled for the fourth quarter of 2011 with the SIS II scenario and the fourth quarter⁴ of 2012 with the SIS 1+ RE scenario. In both scenarios, the same legal requirements for entry into operation as provided for in these legal instruments must be met.

Both schedules are based on a planning, which as regards SIS II was presented to the Member States experts in the framework of the SISVIS Committee and as regards SIS 1+ RE discussed in the preparatory bodies of the Council, notably agreed in SIS-TECH.

The schedule of SIS 1+ RE was further adjusted with regard to the evaluation of the call for tender.

⁴ Migration to s-TESTA network could impact on the schedule for bringing SIS 1+ RE into operation of at least 1 month.

1.17.1.2. SIS 1+ RE

It will be possible for the SIS 1+ RE to fully comply with and achieve the objectives of the SIS II legal framework and to enter into operation in the fourth quarter of 2012.

Member States will be able to bring their NS.SIS II into operation by the third quarter of 2011.

Migration to a new network (in case of s-TESTA) could have an impact on bringing SIS 1+ RE into operation in accordance with the SIS II legal framework of at least 1 month.

1.17.1.3. SIS II

It will be possible for the SIS II to fully comply with and achieve the objectives of the SIS II legal framework and to be brought into operation in the fourth quarter of 2011.

Key elements of the SIS II development, both at central and national levels will be finalised in 2009. 2010 will be dedicated to testing. The entry into operation of SIS II is scheduled for the fourth quarter of 2011.

1.17.2. Short term (2009), medium term (mid 2010) and long term (up to 2012) perspectives

1.17.2.1. Comparative analysis

Both scenarios provide a high-level schedule covering key milestones of the project.

1.17.2.2. SIS 1+ RE

Once the SIS 1+ RE is integrated into the overall SIS II legal framework, the SIS II can be put into operation in accordance with Article 55 of the Regulation (EC) 1987/2006 and Article 71 of Decision 2007/533/JHA respectively once all functionalities are developed.

The SIS 1+ RE project outline included in the call for tender contains 5 phases. It follows a step by step approach of gradual introduction of new functionalities.

Phase 0 relates to the renewal of the existing SIS 1+ system in order to keep it in operational condition and should start as from June 2009. The corresponding tasks belong to the firm part of the call for tender issued by the French authorities, and will be performed regardless of the chosen scenario.

Phase	Provision (according to the call for tender)	Final date
Phase 1	Provision 6.1 step 1	June 2010
Phase 2	Provision 6.1 step 2 Provision 6.5	April 2011
Phase 3 + 4	Provision 6.2	fourth quarter 2012
Phase 5	Provision 6.4	third quarter 2012

By June 2010 (the end of phase 1), the current SIS 1+ data model will be modified in order to be a sub-set of the SIS II data model.

By April 2011 (the end of phase 2), a new data model equivalent to the SIS II data model will be implemented and migrated to the new data model. All national SIS implementations should be ready by June 2010. The actual migration is scheduled to take place from March 2011 with finalization in April 2011.

By October 2011 (the end of phase 3), the new categories of data will be introduced as well as SIS II related functionalities such as linking. The first tests with the Member States are scheduled in October 2010. The actual introduction of new categories is planned to be scheduled in September 2011, and will be finalized in October 2011. This phase includes also all activities and installations needed for establishing a back-up central system that will be available 24/7 and ready to replace the central system when any emergencies occur (phase 5).

By the fourth quarter of 2012 (the end of phase 4), the rest of the SIS II functionalities will be introduced to make the system fully compatible with the SIS II legal framework.

1.17.2.3. SIS II

Most of the outstanding developments of the system, both at central and national levels, scheduled to be finalised at the end of 2009. The year 2010 will therefore be devoted mainly to finalizing the testing activities. The migration from SIS 1+ to SIS II and the subsequent start of operations should take place in the fourth quarter of 2011.

The updated global schedule for the continuation and finalisation of the ongoing project, as discussed with the Member States' experts, consists of the following milestones:

- Central system stress testing (30 - 40 - 50 - 60M records) End September 2009
- Developments of the Central System April 2010
- Developments of the National Systems May 2010
- Technical acceptance testing of the Central System July 2010
- Informal testing for Member States September 2010
- Compliance tests of National Systems October 2010
- Functional acceptance testing with Member States November 2010
- Final tests (Comprehensive /SIS/SIRENE/ Converter) August 2011
- Migration September 2011
- SIS II Entry into Operation End September 2011

1.18. Integration schedule for the Member States which do not participate in SIS 1+ (UK, IE, BG, RO, CY, LI)

Summary of comparison:

Whereas the SIS 1+ RE scenario allows for integration into SIS 1+ of additional states as of the third quarter of 2011 while using their SIS II national systems, the SIS II project allows for integration of additional states into SIS II as of end 2011. However, SIS 1+ RE will enable all SIS II functionalities to be used only after it is fully operational, thus as of the fourth quarter of 2012.

Irrespective of both scenarios, additional states can integrate into SIS 1+ via SISone4ALL and migrate together with the current SIS 1+ users to SIS II.

1.18.1. Comparative analysis

Independently of both scenarios, states wishing to integrate into SIS may do so via SISone4ALL. Three slots are currently available in SIS 1+ for immediate integration using SISone4ALL. As of the end of April 2010, following the maintenance and renewal of SIS 1+ carried out within the phase 0 (i.e. the mandatory part of the call for tender on which the alternative scenario is based), any state will have the possibility to integrate into SIS 1+ and migrate together with the current SIS 1+ users to SIS II.

All states integrated into SIS 1+ will have to pursue parallel activities related to the development of the NS.SIS II (this applies to both scenarios) and will start their migration using their NS.SIS II together with other states using SIS 1+. It should be borne in mind that this option also carries resource implications as two systems would need to be developed in parallel and tested almost simultaneously. This carries a risk of affecting the schedule for bringing SIS II into operation, which applies to both scenarios. The experience from the 2007-2008 integration of states using SISone4ALL has shown the feasibility of developing two national systems in parallel.

States waiting for the full operation of the new SIS II system will have the possibility to integrate in the third quarter of 2011 (SIS 1+ RE – but without SIS II functionalities until the fourth quarter of 2012) or end 2011 (SIS II scenario) while using their NS.SIS II. A certain stabilisation period is provided for between the date the system is brought into operation and the date on which the integration of new states starts.

Beyond technical preparedness to integrate into the SIS, integrating states must fulfil all the necessary conditions to accede to the Schengen area (Schengen evaluation process). The integrating State must meet all the applicable evaluation procedures before the Council can adopt a decision on the application of the provisions of the Schengen acquis.

A detailed timetable can be found in the **Annex 1**.

1.18.2. SIS 1+ RE

The SIS 1+ RE will allow integration of all states waiting for integration in due time in accordance with their planning - based on NS.SIS II as of the third quarter of 2011 following a period of stability. All the SIS II functionalities will nevertheless be available only once SIS 1+ RE is brought into operation in the fourth quarter of 2012.

All states integrated into SIS 1+ via SISone4ALL (Liechtenstein, Bulgaria and Romania have indicated their wish to do so) will have to follow the project planning for the development of SIS II project irrespective on the scenario chosen - in the case of SIS 1+ RE other relevant activities within the SIS 1+ RE project - and will migrate in the third quarter of 2011 together with the countries already using SIS 1+.

As from the third quarter of 2011, the remaining states (Cyprus, Ireland and United Kingdom) may integrate directly into SIS 1+ RE using their NS.SIS II once the migration of the current Member States has been successfully completed.

1.18.3. SIS II

The start of operations of the SIS II is scheduled for the fourth quarter of 2011. Under the current technical approach, integrating states may join SIS II when all existing users have migrated from SIS 1+ to SIS II. Nevertheless, whilst nothing would technically prevent an immediate integration into SIS II of new Schengen States as of this date for entry into operation or before the migration of current SIS 1+ to SIS II, most experts consider that it would be more prudent to wait for a 'stabilisation period' (for instance some months of uninterrupted operation till the granting of the final acceptance) before integrating any new member. Consequently, integration into SIS II of additional States could start as from end 2011.

1.19. Project credibility

Summary of comparison:

Both scenarios are designed to ensure proper functioning of the Schengen information exchange and will add value to the area of Justice, Freedom and Security. Further adaptations to project governance will increase project credibility

1.19.1. Proper functioning of the Schengen information exchange

1.19.1.1. Comparative analysis

Both scenarios are designed to ensure proper functioning of the Schengen information exchange.

In the case of the SIS II scenario, measures resolving issues identified and resulting from the repair and analysis period, architecture review, including the proof of concept, will need to be implemented.

The SIS 1+ RE would have to be successfully implemented.

1.19.1.2. SIS 1+ RE

The SIS 1+ RE is a new development. It is based on the technical concept of the existing system SIS 1+, which is proven and has given stable and secure services since November 1994 as regards the sharing of information on alerts for persons and objects.

Until the migration phase, the current SIS 1+ system will not be affected in its operation by SIS 1+ RE. The SIS 1+ RE project is designed to ensure continuation of the proper functioning of the Schengen information exchange at every stage of its development and entry into operation. The migration based on a central interface giving the possibility for versioning and thus ensuring reversibility of the migration process should a serious issue arise.

1.19.1.3. SIS II

Until the migration phase, the current SIS 1+ system will not be affected in its operation by SIS II. The SIS II project is designed to ensure continuation of the proper functioning of the Schengen information exchange at every stage of its development and entry into operation. The migration based on a two-way converter is designed to ensure reversibility of the migration process should a serious issue arise.

Furthermore, appropriate measures will need to be taken in order to remedy shortcomings identified in the course of the repair and analysis period and to ensure proper functioning of the SIS II. In particular, the improvements and recommendations, as defined in the architecture review, the proof of concept and proposed by contractors, have to be properly implemented in order to deliver stable and reliable system.

1.19.2. Added value to the internal security of the area of freedom, security and justice

1.19.2.1. Comparative analysis

All new provisions and functionalities provided for in the SIS II legal framework will give added value to the internal security of the area of justice, freedom and security. Both scenarios must be fully compatible with the SIS II legal framework as from the start of operations.

The SIS II scenario will put into practice new SIS II functionalities few months before SIS 1+ RE and will also allow integration of new states while using these functionalities ahead of the other scenario. SIS 1+ RE solution on the other hand will make it possible to start using NS.SIS II as from the third quarter of 2011 however using SIS 1+ functionalities only.

SIS II on whatever technical base is designed to achieve maximum effectiveness for justice, freedom and security. Its governance structure established by the SIS II legal instruments guarantees effective data protection, redress mechanisms and liability regime.

1.19.2.2. SIS 1+ RE

By the implementation of the SIS 1+ RE and its integration into the SIS II legal framework, the European Union will gain a substantially more effective instrument ensuring a high level of security within the area of freedom, security and justice including the maintenance of public security and public policy and the safeguarding of security in the territories of the Member States and the application of the provisions of Title IV of Part three of the EC Treaty relating to the movement of persons in their territories.

The step- by -step approach will allow the Member States to start using their NS.SIS II as of the third quarter of 2011 (if already integrated in SIS 1+) or the fourth quarter of 2011 (in the case of a new integration into SIS) using SIS 1+ functionalities only pursuant to the Schengen Convention with SIS II data structure. The SIS 1+ RE architecture should guarantee reliability and robustness of the system. All SIS II functionalities will be applicable as of the fourth quarter of 2012.

1.19.2.3. SIS II

By the completion of the SIS II, which is already integrated into the SIS II legal framework, the European Union will gain a substantially more effective instrument ensuring a high level of security within the area of freedom, security and justice including the maintenance of public security and public policy and the safeguarding of security in the territories of the Member States and the application of the provisions of Title IV of Part three of the EC Treaty relating to the movement of persons in their territories, whilst respecting fundamental rights and freedom in particular data protection.

SIS II scenario will put into practice new SIS II functionalities and allow integration of additional states while using immediately these functionalities.

1.20. Compatibility with the SIS II regulatory framework (including governance and responsibilities)

Summary of comparison:

SIS II is compatible with the SIS II regulatory framework. On condition that it is subject to technical, budgetary and legal integration into the SIS II legal framework, SIS 1+ RE will be compatible with the SIS II regulatory framework.

1.20.1. Comparative analysis

Both scenarios will have to comply with the legal instruments on the establishment, operation and use of SIS II.

The technical architecture of current SIS II project has been designed from the beginning of its development to support all the functionalities and requirements laid down in the SIS II legal instruments.

The SIS 1+ RE project would be developed on the basis of the SIS 1+ which would need to be technically reshaped and adjusted in order to comply with the SIS II legal functionalities and requirements.

A technical, budgetary and legal integration of the SIS 1+ RE into the SIS II legal framework seems feasible provided that certain conditions are met. The current SIS II legal framework can be read as referring to SIS 1+ RE substituting SIS II. The technical specifications of the call for tender have been prepared with a view to ultimately delivering SIS II functionalities.

The integration of SIS 1+ RE into the EU budget would have to respect the principle of sound financial management and would take some time.

Both scenarios will involve extension of the migration legislation which expires by June 2010. If the migration instruments are not extended, the Member States could continue jointly to maintain and finance the development of the system and the functionalities on the basis of the SIS 1+ RE within the scope of the Schengen Convention as amended.

With a view to achieving the objectives of the SIS II legal instruments, this option constitutes only an interim solution. In order to ensure compatibility with the SIS II legal instruments, technical, budgetary and legal integration of the SIS 1+ into the SIS II legal framework would be necessary. Any other option would be unsound from the legal point of view.

Therefore, for the purpose of comparison, only the scenario providing for the technical, budgetary and legal integration of the SIS 1+ RE into the SIS II legal framework which ensures the compatibility with the SIS II legal framework will be considered.

1.20.1.1. SIS 1+ RE

The development of the SIS II on the basis of the SIS 1+ RE with a view to complying with SIS II legal instruments, broadly involves the technical, legal and budgetary integration of the SIS 1+ RE into the overall current legal framework on SIS II. As a consequence of such integration, the Commission would be responsible for the development, management and financing of the SIS 1+ RE project.

The integration of the SIS 1+ RE into the EU budget would need to take place in line with the Treaties and the Financial Regulation and in particular the principle of sound financial management. Subject to constraints laid down in the Financial Regulation, in particular the possibility to entrust the SIS II development to France could be envisaged by the Commission (*see also financial implications*).

Until the integration of the SIS 1+ RE into the EU budget, the development of SIS 1+ RE could be continued on the basis of the contract resulting from the call for tender launched by France in March 2009 (a priori steps 0 and 1), financed jointly by the Member States and would be considered as development of the SIS 1+ under the responsibility of France, as covered by the Schengen Convention and the migration instruments. After the integration into the EU budget which could be based on the migration instruments could the references to central SIS II be read as referring to SIS 1+ RE substituting SIS II.

As it will in any case be necessary to amend the migration instruments at least to extend their expiry date, modifications related to the technical architecture including network, migration and other necessary adjustments specific to the switch of the technical solution, as well as other modifications e.g. as regards the repartition of the tasks between the Commission and the Member States for the management of the development of the project, may be proposed by the Commission.

The start of operation of SIS II will involve compliance with the SIS II legal instruments regulating establishment, operations and use and be dependent upon fulfilling the preconditions specified in Article 55 of Regulation (EC) 1987/2006 and in Article 71 of Decision 2007/533/JHA respectively.

The SIS 1+ RE is designed to be compatible with the SIS II legal instruments. For the detailed analysis (*see the Alternative scenario assessment*).

The SIS 1+ RE technical solution provides for a step- by -step approach of gradually introducing new functionalities. However, in order to comply with the SIS II legal instruments, the SIS II based on the SIS 1+ RE can be applied only once all new functionalities and modifications in the technical architecture are developed and tested.

If the migration instruments are not extended, a scenario may be considered where the Member States would on the basis of the SIS 1+ RE continue to jointly finance the maintenance of the system and the development of functionalities covered by the scope of the Schengen Convention as amended. This scenario would be only an interim solution, as there is no legal basis for the Member States to develop SIS II functionalities on the basis of the Schengen Convention which are outside of the scope of that Convention.

In order to provide for such a legal basis, a new legal instrument presented by the Commission in compliance with the Treaties would be necessary to integrate the SIS 1+ scenario into SIS II legal framework. As the expenditure involved for the development of the SIS II is to be charged to the budget of the EU pursuant to the EC Treaty (1st pillar)/ EU Treaty (3rd pillar), SIS 1+ RE would need to be (re-)integrated into the EU budget.

Developing the SIS 1+ RE by the Member States only on the basis of the Schengen Convention with a view to building SIS II and complying with the SIS II legal instruments is therefore questionable from the legal point of view.⁵ Therefore, for the purpose of comparison, only the scenario providing for the technical, budgetary and legal integration of the SIS 1+ RE into the SIS II legal framework which ensures the compatibility with the SIS II legal framework will be considered.

1.20.1.2. SIS II

The design of SIS II project is deeply rooted in the SIS II legal framework, and, as from its commencement, has been closely shaped in line with its requirements. All the functionalities provided for in the legal instruments regulating SIS II establishment, operations and use will thus be available from the start of operations.

The time-line of the SIS II project requires amendment to the migration instruments upon a legislative proposal of the Commission, notably to extend their expiry date beyond 30 June 2010.

⁵ Some delegations (DE, AT) asked that a third option be included which would consist of the development of new SIS II functionalities by the Member States under the Schengen Convention. Once the new functionalities would be ready to be put into operation, the SIS II legal instruments would start to apply to the Member States participating in the SIS 1+ after a Council decision adopted in accordance with Article 55 of the SIS II Regulation and Article 71 of the SIS II Decision.

FINANCIAL CRITERIA

Summary of comparison:

The overall expenditure estimates for the future development of both scenarios are largely similar.

However, in the event of the discontinuation of the current SIS II development, there would be a high risk of additional financial implications for the EU budget.

1.21. Expenditures for the EU budget and for the Member States (individually and jointly)

1.21.1. Comparative analysis

The estimated costs related to the further development (including hardware expenses etc.) of the central system of SIS II respectively SIS 1+ RE amount to 26 million EUR (SIS 1+ RE)⁶ and 27.91 million EUR (SIS II).

1.21.2. SIS 1+ RE

The financial implications with regard to the SIS 1+ RE development are twofold. The first part concerns the costs related to the technical development of the central system of the SIS 1+ RE. The second part relates to the costs which would occur as a consequence of opting for the alternative scenario, should the current central SIS II development be stopped and the contracts be terminated (if SIS II is still considered to be viable).

Equally, a distinction has to be made as to whether the overall costs of the SIS 1+ RE are to be borne by the EU budget (decision to integrate the SIS 1+ RE into SIS II legal framework) or are to be borne, at least for a certain period of time, jointly by the Member States.

Differences in costs depending on whether they are charged to EU budget or paid jointly by the Member States are not expected to vary significantly.

⁶ See doc. 10214/09 CATS 56 SIS-TECH 54 COMIX 431.

Costs related to the development of the central system of the SIS 1+ RE up to an entry into operation date in the fourth quarter of 2012 are estimated at approx. 26 million EUR (the costs from tender offer are slightly higher, but do not exceed 10 % of estimated price)⁶. This calculation includes development costs including test tools (database of 50 million records), hardware extensions, upgrade of the network, project management, test coordination and training of C.SIS staff.

1.21.3. SIS II

It is estimated that the cost of continuing development of SIS II up to an entry into operation date of the fourth quarter of 2011 would be in the order of 27.91 million EUR. This includes the update of the specifications and its implementation, hardware to accommodate up to 50 million records, a full security audit before entry into operation, and the costs of project management, test coordination and quality assurance.

1.22. Investment protection - "reusability" of investments already dedicated to the development of SIS II and preparation for its operation

Summary of comparison:

Both scenarios fully protect the investments already made into the SIS II national systems (NS.SIS II).

In the event of the discontinuation of the current SIS II project, investments in the central SIS II system would be largely lost.

1.22.1. Comparative analysis

Both scenarios provide for the full use of investments in NS.SIS II.

Termination of the SIS II project will mean that investments in CS.SIS II amounting to up to 26.5 million EUR would be lost.

1.22.2. SIS 1+ RE

The investments made by the Member States in the development of NS.SIS II will be protected and re-used when developing SIS 1+ RE.

1.22.3. SIS II

If SIS II is continued, all investments, both on the Commission side and on the Member States side, are further used.

To date, up to 31.5 million EUR has been spent by the Commission on SIS II. While the investment in site preparation (circa 2 million EUR) would continue to be protected, and part of the investment in SIS II hardware (total investment so far: 9 million EUR) might be re-used in VIS in the medium-term (up to an amount of 3 million EUR), it is estimated that up to 26.5 million EUR of investments on the Commission side in software development and training for SIS II would be lost if the current SIS II development is stopped.

1.23. Total cost of ownership

Summary of comparison:

In case of the SIS II scenario, the total cost of ownership includes maintenance of SIS II and the taking over of resources related to C.SIS, which amount to 46.91 million EUR.

Costs for SIS 1+ RE scenario are 43.5 million EUR (the costs from tender offer are slightly higher, but do not exceed 10 % of estimated price).⁷

⁷ See doc. 10214/09 CATS 56 SIS-TECH 54 COMIX 431.

1.23.1. Comparative analysis

In case of the SIS II scenario, the total cost of ownership includes maintenance of SIS II and the taking over of resources related to C.SIS which amount to 46.91 million EUR.

Costs for the SIS 1+ RE scenario are 43.5 million EUR (the costs from tender offer are slightly higher, but do not exceed 10 % of estimated price) ⁷.

Costs related to staff in Strasbourg are the same for both scenarios.

For both scenarios, the network costs are excluded because they will probably be the same – approx. 7.5 million EUR per year.

1.23.2. SIS 1+ RE

The estimated cost of development of SIS 1+ RE amounts to approx. 26 million EUR.

The running costs applying to SIS 1+ RE in the 5 -year period covering 2011 – 2015 have been estimated at 17.46 million EUR, the annual costs (excluding costs for staff in Strasbourg) varying between 2.28 million EUR and 3.80 million EUR.

Therefore, the total cost of ownership for five years operation of SIS 1+ RE is estimated at approx. 43.5 million EUR. ⁸

1.23.3. SIS II

The estimated cost of continuing development of SIS II from 1 June 2009 up to a entry into operation date of the fourth quarter of 2011 is in the order of 27.91 million EUR, excluding network running costs.

⁸ See doc. 10214/09 CATS 56 SIS-TECH 54 COMIX 431.

The estimated cost of operations after entry into operation for SIS II is in the order of 3.8 million EUR per year, excluding network running and personnel costs and in Strasbourg. Given that the site preparation, staff recruitment and training are already underway, it is expected that the annual costs would remain steady for the 5 years after entry into operation.

Therefore the total cost of ownership of SIS II is $27.91 + (3.8 \times 5) = 46.91$ million EUR.

1.24. Contractual implications for the Commission and for the Member States

Summary of comparison:

The potential financial repercussions should the current contracts associated with the SIS II central system development be terminated are estimated at up to 19 million EUR. There may be further implications related to VIS.

The choice of scenario has no contractual implications for the Member States' national projects (NS.SIS II).

1.24.1. Comparative analysis

The Commission concluded a number of contracts to carry out SIS II- related tasks relating to hardware and software development of the central system, preparations for operational management and quality assurance.

The Commission estimates that approximately 19 million EUR would risk to be paid under these contracts should the further development of SIS II be stopped in breach of the contractual terms. Also, termination of the contract concerning the development and the hardware of the central SIS II would have a significant impact on VIS development as a single contract governs development of both SIS II and VIS.

Contractual implications for the Member States are the same for both scenarios.

1.24.2. SIS 1+ RE

The technical implementation of the central system SIS 1+ RE should normally have no contractual impact on the Member States.

1.24.3. SIS II

The Commission concluded a number of contracts to carry out the following SIS II -related tasks:

1. Contract for the development and the hardware of the central SIS II
 2. Contracts with France regarding preparations for operational management
 3. Contract on quality assurance
-
1. Contract for the development and the hardware of the central SIS II

Under the law governing the contract, early termination cannot be effected unilaterally, unless the Commission is able to prove that the contractor is unable to achieve the object of the contract. As regards the past underperformance of the contractor, this did not constitute a valid reason to terminate the contract unilaterally but has triggered other contractual mechanisms.

Should the Commission nonetheless be expected to terminate the contract despite its performance, this would constitute a breach of contract and render the Commission liable pursuant to Article 288 TEC. This would be contrary to the principle of sound financial management under Article 274 of the EC Treaty and under Article 27(1) of the Financial Regulation.

In the event of termination of the SIS II project, it is estimated that the Commission would risk to pay just over **14 million EUR** for SIS II under the contract for hardware and software development for the central system. This is an estimate. The final settlement would have to be negotiated with the contractor or set by a court verdict.

2. Contracts with France regarding preparations for operational management

The contracts with France run until January and March 2010. They do not provide for an early termination clause (entitling the Commission to unilaterally terminate the contract at its own discretion). The contract involves an entity (CIVI.POL) to which France has partly delegated the performance of the contract. CIVI.POL has entered into contractual commitments, such as employment contracts, in order to fulfil obligations under the contract.

Should a mutual termination agreement fail, termination by the Commission would entitle France to full payment of all services still to be performed. In that event, it is estimated that the Commission would risk to pay just under **2.5 million EUR** for SIS II under grants and contracts with France.

3. Consultancy contracts

For IT consultancy, mainly quality assurance, the Commission has a framework contract running until April 2010 (which can be renewed for another maximum two years). The framework contract does not provide for an early termination clause for running specific contracts (entitling the Commission to unilaterally terminate the contract at its own discretion) but for the framework contract as a whole (entitling the contractor to *pro rata* compensation for efforts made under running specific contracts). In the event of termination of the SIS II project and failing a mutual early termination agreement on the specific contracts on SIS II, the Commission would risk to pay of the order of **2.5 million EUR** for remaining services.

The abandonment of the current SIS II solution in favour of a SIS 1+ RE scenario entails a major impact on VIS, as there is a single contract for the development of SIS II and VIS. Consequently stopping SIS II would have substantial disruptive impacts on the VIS project. In that case, the VIS date for entry into operation would be delayed by at least 9-12 months. The additional cost incurred for completing VIS and the VIS-B the Member States integration is estimated to amount to 2.7 million for the central part alone. Independently of the contractual termination, the synergies related to common procurement of hardware and network services for SIS II and VIS would be lost. The same is also likely to apply to synergies related to the common operation of SIS II and VIS..

TECHNICAL CRITERIA

Summary of comparison:

Both scenarios are feasible provided that certain conditions are fulfilled:

SIS II would implement improvements and recommendations stemming from the analysis and repair period and the architecture review, including the proof of concept.

SIS 1+ RE would be developed, taking into account all technical features in full accordance with the project outline.

1.25. Technical feasibility and corresponding risks (including migration)

1.25.1. Comparative analysis

Both scenarios are feasible provided that certain conditions are fulfilled.

The feasibility study of SIS 1+ RE has been assessed and approved by the appropriate Council bodies. The technical feasibility has been assessed again and confirmed when the corresponding technical specifications were included in the call for tender. To the extent that technical components of the existing SIS 1+ are re-used, risks are limited since the components are tried and tested in operational practice. There are certain risks linked to the complexity of the system, parallel planning and N.COM proxy.

As regards SIS II, various intensive testing and in-depth analysis processes performed during the repair and analysis period proved that if additional measures are taken, SIS II is technically feasible. A considerable number of known issues and bugs have been fixed. As regards some outstanding issues, a root cause has been identified and an appropriate solution has been proposed, some of which have been designed or implemented already. Given that the central system has undergone substantial development, the remaining risks are linked to the implementation of the outstanding improvements related to data consistency, performance and scalability, reliability, changeability and maintenance.

1.25.2. SIS 1+ RE

The feasibility of the SIS 1+ RE scenario was examined in a study approved by SIS-TECH in February 2009.

In general, all technical components of the existing SIS 1+ system to be re-used in the SIS 1+ RE system have proven to be feasible and limit risks. In addition, SIS 1+ RE will need to comply with all the SIS II functionalities. Therefore, a number of new components will need to be introduced and put into practice according to the project schedule. SIS 1+ RE will include an enhanced N.COM, new functions and technical solutions/changed architecture for handling data consistency, etc.

One part of the concept that makes implementation and testing easier but also more stable is the N.COM component. This is installed locally in every Member State and “shields” the Member States' national systems from the complexity of the communication protocols and message structures. Additional modules and a few changes will be provided by central site to the N.COM component in the SIS 1+ RE in order to transform from SIS 1+ format to the SIS II format and also to handle the different installations of message- oriented middlewares (MoM - e.g. Weblogic, Jboss, Oracle) on a national level. The adaptation of this N.COM therefore becomes a key component of the SIS 1+ RE project and the attendant risks will have to be carefully addressed.

A main change in the existing concept is the introduction of more extensive query services. There are query services for Eurojust and Europol today but the complexity of the queries and the volumes are quite limited compared to what is required for the SIS 1+ RE use.

The other main changes are related to the introduction of the SIS II functionality and the SIS II data structure, for messages and for the central database. This includes the functions for making links, new categories, new mandatory fields and the introduction of binary data (e.g. fingerprints) attached to the alerts.

Potential risks have been identified as follows:

- The additional complexity compared to the current operational system needs to be carefully addressed.
- The parallel planning will impose heavy constraints on the contractor, test environments, the Member States' projects, central organisation's teams and resources involved. Therefore, the project will need to be managed accordingly.
- Integration of national MoM with the N.COM proxy must be dealt with as a vital component.

1.25.3. SIS II

The SIS II project started with a feasibility study by an external contractor. Technical options, the general architecture, as well as the call for tender specifications, were discussed in great detail with Member States' experts within the framework of Comitology. The offers were evaluated with the active help of experts.

Since 2007, suggested technical changes have been dealt with at the level of a "Change Management Board" with the participation of the Member States' experts, following agreed procedures.

All testing campaigns involving the Member States are monitored by a "Tests Advisory Group" established within the framework of the SISVIS Committee, which comprises both Commission and the Member States' experts. All tests follow an agreed methodology, including expected results.

The developed central system has undergone a series of intensive testing campaigns:

- The *Solution System Tests*: approximately 3000 tests have been performed, leading to the corresponding acceptance in January 2008.
- The *Operational System Tests* executed between mid-2008 and end-2008 showed that the functional behaviour of the system was in the main satisfactory, although aspects of non-functional behaviour were identified

- The subsequent 4-month *Analysis and Repair Period* focused on the root- cause analysis and correction of the known bugs (identified during OST and otherwise), as well as on the performance of predefined tests to investigate areas of uncertainty.

This **Analysis and Repair** period examined more specifically the mechanisms and processes managing the communication and consistency between the central and national components of SIS II, as well as the performance and robustness of the SIS II solution. It addressed in particular bridging and sequencing, data consistency, message and broadcast handling, and functional tests with large volumes.

In parallel, an **architecture review** was performed by a specialised IT consultant between March and April 2009. On this occasion, a wide consensus emerged regarding the absence of major flaws in the SIS II architecture. The other major findings and recommendation stemming from this exercise can be summarized as follows:

- The system was designed according to industry standards.
- The architecture serves the requirements of SIS II.
- The hardware is properly sized and scalable to ensure the system can grow beyond what is currently provided for).
- The message architecture could be simplified. This however does not invalidate any architectural choice that had been made.
- Scalability and performance can be improved with an eye to future needs, all possible actions have been identified.

Notwithstanding intensive testing in recent months, the number of open bugs or issues has decreased considerably . This indicates that the system has reached a level of robustness and maturity consistent with what can typically be expected from a complex IT project at this stage of its development

Finally, a number of cross-cutting issues emerged clearly in recent months:

- **Requirements:** The business requirements expressed by Member States do not always match the requirements placed on the contractor. This is a general risk which needs careful attention given that amendments to the contractual requirements takes time to formalise and to implement ('moving target'). The Change Control process, through the Change Management Board established within the framework of the SISVIS Committee, is instrumental in managing this risk.
- **Interface Control Document (ICD):** The current ICD contains certain elements which have occasionally resulted in diverging interpretations by the stakeholders. A new version of the ICD clarifying these elements will be made available in August 2009.

In **conclusion**, the various intensive testing and in-depth analysis processes performed in the latest months did not throw up any element casting doubts on the technical feasibility and viability of the current solution for SIS II. A considerable number of known issues and bugs have been fixed. As regards all outstanding issues, a root cause has been identified and an appropriate realistic solution has been either designed or implemented to remedy them.

1.26. Capacity to integrate all functionalities required for SIS II (new types of alerts, logging, security, ...) and biometric search functions

Summary of comparison:

Both scenarios will have to be developed with a view to compliance with the SIS II legal requirements and full availability of the SIS II functionalities must be guaranteed from the date on which the system is brought into operation.

1.26.1. Comparative analysis

Both scenarios will have to be developed with a view to compliance with the SIS II legal requirements and full availability of the SIS II functionalities must be guaranteed from the date on which the system is brought into operation.

As concerns biometric search functions, due to the fact that these can only be implemented after the presentation by the Commission of a report on the availability and readiness of the required technology, on which the European Parliament must be consulted, both scenarios do not currently provide for implementation of these functions, but there is a declared capability to do so.

1.26.2. SIS 1+ RE

SIS 1+ RE will have the capacity to fully integrate all functionalities stemming from the SIS II legal framework. Integration of these functionalities is provided for in the project. This concerns new types of alerts and their interlinking, logging, security and establishment of a back-up contingency unit. Once the SIS 1+ RE is integrated into the overall SIS II legal framework, SIS II can be put applied in accordance with Article 55 of the Regulation (EC) 1987/2006 and Article 71 of Decision 2007/533/JHA respectively once all functionalities have been developed.

New types of alerts and their interlinking:

SIS 1+ RE provides for a phased approach to introduce all new types of alerts and their interlinking.

During phase 2, the current SIS 1+ data model covering the existing categories will be transformed in such a way that it will be compatible with the SIS II data model. After finalization of this phase, the central database will cover the existing types of alerts in SIS 1+ but according to the SIS II specifications in terms of data structure and message formats to the Member States' systems. The added SIS II functionality in this phase includes the ability to make central queries. In the following phases 3 and 4, all other new categories and their interlinking will be made available, including the ability to store fingerprints and photographs.

As there will be no technical limitation on adding additional types of alerts (e.g. other biometrics), the solution is open for further extensions, if allowed on the basis of the relevant legal provisions.

Additional data:

The system will be able to store copies of translations of the European Arrest Warrant as a result of phase 2. New implementation of misused identities is part of phases 3 and 4 of the project. All necessary modifications will be carried out to enable the SIS 1+ RE system to handle additional binary information.

Logging:

The logging of insert, update and delete of SIS data will be continued and extended to cover the new categories and central query in the SIS 1+ RE.

Data will be written to WORM storage devices allowing for proper tracking of the actions carried out.

There will be two different loggings:

Logging for the creation, update and deletion of alerts: There will be no change to the current logging in SIS 1+ where it complies with the SIS II requirements.

Logging for Central Queries: Central Queries functionality will be implemented on a different server than the creation, update and delete processing activities. Therefore and because of the expected amount of data to be logged, the following strategy has been chosen:

For Standard Queries the same logging functionality will be applied as for SIS II as currently developed by the Commission.

For the Extended Queries, the logging will contain the arguments and the results of the query. In order to avoid logging of binary information only the ID of the returned binary objects will be logged.

Security:

As SIS 1+ RE represent an evolution of existing SIS 1+, it will not impact on the existing security measures of SIS. The current security corresponds to the security requirements stemming from the SIS II legal framework.

Establishment of a Back-up Central Unit (BCU):

SIS 1+ RE will establish a BCU in a separate phase (phase 5) of the project, which is aligned with the end of phase 2. In technical terms, the update of the BCU will be done by duplicating the sending of the update requests of the Member States towards both the Central Unit (CU) and the BCU in parallel. This will ensure that CU and BCU will always be at the same level of information, allowing for a fast switchover for both, retrieval and query functions of the CU.

Use of fingerprints to identify a person on the basis of his/her biometric identifier:

The biometric search function can only be implemented in SIS II after the presentation by the Commission of a report on the availability and readiness of the required technology, on which the European Parliament must be consulted. Therefore, the biometric search function does not form a part of the SIS 1+ RE project. However, the SIS 1+ RE will be able to implement this functionality.

1.26.3. SIS II

The functionalities of SIS II are legally defined in Regulation (EC) 1986/2006, Regulation 1988/2006 and Council Decision 2007/533/JHA regulating the establishment, operation and use of SIS II. These instruments provide for the architecture and location of SIS II, categories of data to be stored, the conditions for issuing alerts and the scope of access to those alerts.

All the SIS II functionalities will be fully available from the start of operation of SIS II.

1.27. Robustness, adequacy and reliability of each solution (network and system stability and system architecture)

Summary of comparison:

The current SIS II development will ensure robustness, adequacy and reliability, provided that improvements and recommendations stemming from the analysis and repair period and the architecture review, including the proof of concept, are implemented.

As regards the alternative scenario SIS 1+ RE, robustness, adequacy and reliability is conceptually also provide for

1.27.1. Comparative analysis

The SIS II architecture review has shown that the architecture serves the requirements of SIS II. Nevertheless, due to the complexity of the requirements, some parts of the architecture have been “over engineered”. This does not invalidate the architecture as such, but might lead to problems with the extensibility and maintainability of the system. Therefore, a number of improvements and recommendations have been made in order to address certain components of the system and simplify some parts.

SIS 1+ RE is conceptually designed to fulfil requirements concerning robustness, adequacy and reliability.

1.27.2. SIS 1+ RE

SIS 1+ RE is designed to fulfil requirements concerning robustness, adequacy and reliability.

Network:

A final decision about the network has not yet been taken . Any network chosen will have to comply with the SIS II requirements concerning robustness.

System stability:

SIS 1+ RE is designed and will be developed as a mission critical system. For system stability, implementation of the BCU in Salzburg is provided for. The BCU will work in “Slave” mode and from the data collection viewpoint (actualization of the database) will be treated as the National System. This mechanism will provide data consistency between CU and the BCU. Switchover between CU and BCU will be provided by the system and not by the network. The supervision function of the BCU (just as all the other functions of the BCU) will be at all points identical to the function of CU. There will be crossed monitoring between the two central sites and a fast switching function in the case of failure of the C.SIS. The network and security configuration of the back-up platform in Salzburg will be upgraded in order to ensure a level of service identical to the operational CS.SIS II platform awaiting the implementation of back-up servers for the essential functions of CS.SIS II.

System architecture:

Vis-à-vis the current SIS 1+, the SIS 1+ RE system architecture is scheduled to be extended.

Prior to the SIS 1+ RE project, the existing implementation will be rewritten in order to overcome several shortcomings and the legacy from the past. During phase 0, several improvements in the application will take place. In order to improve the throughput, multithreading will be introduced allowing for parallel processing of data.

SIS 1+ RE will use the proven reliable transfer of the creation, upgrade, deletion of alerts (C/U/D) traffic based on N.COM stack at all sites (nationally and centrally). This component is important as it will ensure the alignment of the national with the central databases. Furthermore, it will ensure that the underlying network does not influence the reliability of the data exchange.

N.COM component will use only one common MoM that will be provided to all the Member States. The common MoM used for message transfer will have the advantage that native trace facilities can be used that allow direct capture of information on the ancillaries’ levels rather than on application level. This will make the debugging and monitoring in the event of problems much easier. Those traces will show exactly the behaviour of the systems independently from the application code. Furthermore, the chosen MoM will use a Server -to -Server connection mode between the central and the national systems.

This will provide a clear demarcation between central and national responsibility. Transaction management will be carried out by the internal mechanisms of the MoM and not by a specific piece of software, which will increase the reliability. Data will be transmitted as soon as they will be available and will not stay in the local queues until the central system asks for them. Network resources will thus be used more efficiently.

In order to minimise impact on NS.SIS II, a proxy function (N.COM proxy) will convert the SIS II communication protocol to N.COM. The N.COM proxy will work on the base of the latest version of the ICD which will have to be adapted in particular as regards the creation, updating and deletion of alerts in SIS 1+ RE. NS.SIS II will be able to connect to this proxy function without modification. The conversion of the communication protocols will not be an easy task and will require considerable processing power on the hardware on which the N.COM proxy will be running.

The SIS 1+ architecture will be extended to add central query functionality and a remote BCU. Central query will be implemented based on the functionality of the SIS II specifications using web service on SOAP protocol. The consequence is that the existing trace tools have to be enabled to handle SOAP protocol.

1.27.3. SIS II

System

The SIS II requirements ensure data integrity, system availability and robustness. The system has been based on proven standards and built with intrinsic resilience, also as regards migration. The SIS II Central System unit is designed to guarantee 99.99 % availability and in addition complemented by a Business Continuity Unit (BCU). Monitoring, support and helpdesk functions are in place. Quality of Service will be permanently measured in order to guarantee that requirements are met. The intelligence of the system is incorporated in the central solution, not requiring encoding – decoding at national level.

The SIS II ICT Architecture review has shown that the architecture serves the requirements of the SIS II. The hardware is properly sized and scalable to ensure the system can grow beyond what is currently provided for . In terms of design and implementation, a number of recommendations have been made that would improve certain aspects of the system, such as performance, software scalability and maintainability. Especially performance and functional extensibility are important areas for improvement. It should be noted that some improvements are already being undertaken in the various proof of concepts that the Main Development Contractor is currently developing.

Based on the complex requirements for SIS II, the business message architecture seems to be over-engineered and could be simplified to improve maintainability of the system. However, this has no impact on the architecture as such.

Network

The SIS II s-TESTA network has been designed to ensure a very high level of availability and resiliency. This was achieved through a complete duplication (in a 1+1 resiliency configuration mode) of equipment and lines for the production environment connectivity. This was done on all the Member States primary and back-up sites, for the CU and BCU site and for the CU-BCU point-to-point connection.

The lines themselves have been dimensioned (in particular at CU and BCU sites) to absorb large volumes of traffic, thus ensuring the expected quality of service.

Care was taken to ensure line diversity: the two lines connecting each site follow different paths and enter the Member State site via two distinct building entries whenever possible. This makes it possible to minimise the risks of simultaneous line cuts e.g. due to roadwork close to the site.

The connection points have also been designed so that the production bandwidth and pre-production/training/test bandwidth are fully independent and fully dedicated. Hence the production traffic cannot be threatened by the activity of the preproduction/training/test environments (e.g. during load tests).

In addition, the architecture has been designed to allow the network CU-BCU failover to occur in less than 4 minutes. This is achieved in a fully automated way when the failover is triggered by a network failure.

Regarding the robustness of the management and monitoring services of the SIS II s-TESTA network, the equipment in Bratislava at the Service Operation Centre (SOC) is duplicated to a large extent at a secured site in Brussels. In the event of disaster in Bratislava, the network services will continue to function and the management and monitoring will be performed from Brussels.

These technical provisions are further backed by stringent contractual Service Level Agreements, in particular the availability of each site being 99.99 %.

1.28. Impact on bringing VIS into operation

Summary of comparison:

Both scenarios will not have any impact of a purely technical nature on bringing VIS into operation.

There are, however, contractual and consequently financial implications, if the current SIS II development is discontinued, which could delay the start of operations of VIS (*see chapter 5. 4*).

1.28.1. Comparative analysis

Neither scenario will have any impact of a purely technical nature on bringing VIS into operation, but discontinuation of the current SIS II project could have some organisational impact.

There are, however, contractual and financial implications arising from the fact that there is a single contract concluded between the Commission and the contractor with regard to both SIS II and VIS (*see chapter 5. 4*).

1.28.2. SIS 1+ RE

SIS 1+ RE development will have no technical impact on bringing VIS into operation.

1.28.3. SIS II

The common elements of VIS and SIS II are run at the program level in order to generate benefits in the procurement of services and hardware and in operating both systems by the same management entity in the same location.

The following links exist between the SIS II and VIS *systems*, and impact operations.

- The main VIS and SIS II central systems and the back-up central systems are on the same locations but are distinct.
- SIS II and VIS are set to be operated by the same Management Authority and the same technical team on a 24/7/365 basis.
- There is, however, no interface between SIS II and VIS: the two systems do not share parts of software or system resources outside the local area network.

The continuation and rescheduling of the SIS II development would have no adverse effects on the entry into operation of VIS.

- All the functions / features of VIS can be delivered independently of SIS II.
- VIS can be used from the date of entry into operation by any Member State that has fulfilled the obligations set out in the VIS legal basis. A delay of SIS II will not impact on available functionality or performance as the Member States access SIS II and VIS via different access points and both projects have the network services defined per project. When SIS II is not available, verification of whether alerts are recorded on a visa applicant will have to be performed in the existing SIS.

1.29. Impact on continuity of operations

Summary of comparison:

Both scenarios will be developed without the SIS 1+ operations being affected.

1.29.1. Comparative analysis

Migration involves certain risks that might impact on the continuity of operation under both scenarios.

Both scenarios provide for one data migration using different technical approaches to convert the data for securing the migration phase.

SIS II will use a specific converter to minimise possible risks related to migration.

SIS 1+ RE will use versioning to limit possible risks.

Both scenarios will be developed without the SIS 1+ operations being affected.

1.29.2. SIS 1+ RE

SIS 1+ RE will impact on the continuity of operations in a minor way and will be manageable.

Thanks to the phased approach and the ability of the central interface to handle versioning, the migration will be smooth and secured and not disturbing the continuity of operations.

Due to a multi syntax functionality, the central system will be able to handle both the SIS 1+ and the SIS II transfer syntaxes, since it is working as a kind of fully integrated converter.

1.29.3. SIS II

When all the SIS 1+ connected Member States are ready to migrate from SIS 1+ to SIS II the Member States will disconnect from the SIS 1+ system and connect to the SIS II system at a given time, and migrate within a timeframe of 8 hours. Gradual migration from SIS 1+ to SIS II was designed to mitigate the risk that one or more the Member States would not succeed in the changeover to SIS II as well as the risk of failure by the Central SIS II System. The scenario allows for the simultaneous operation of the SIS 1+ and the SIS II side by side.

Thanks to the SIS II converter, guaranteeing the real-time conversion of SIS alerts, the Member States will be able to revert back to SIS 1+. Any alerts entered by the Member States connected to the SIS 1+ system will be automatically converted to the SIS II system. Conversely, any of the alerts entered onto the SIS II system by the Member States connected to the SIS II system will then be automatically converted back to the Member States still connected to the SIS 1+ system. In this way the continuity of services is guaranteed across the two platforms until all the Member States have successfully affected the changeover. The converter and hence the running of the two systems in parallel can stay in place for as long as practically needed.

1.30. Project management

Summary of comparison:

Independently of which scenario is continued, adaptations of the project management structure will be necessary in order to reflect the growing role of the Member States as the project draws further to its completion and render the governance more IT project-oriented.

1.30.1. Comparative analysis

Given that both scenarios would be developed under the same SIS II legal framework, the institutional management structure could become identical, while not excluding adaptation of the project management in order to reflect the growing role of the Member States as the project draws further to its completion and render the governance more IT project-oriented.

To improve the overall programme management and integration of the central and national developments, new elements have been introduced in the management of the current SIS II project. This global programme management approach is to be maintained for the next phases of the project and will be further adjusted to render it more IT project -oriented.

The SIS 1+ RE scenario provides for the retention of the current SIS 1+ project structure prior to integration into the SIS II legal framework.

1.30.2. SIS 1+ RE

In its phase 0, the firm part of the call for tender carried out with a view to ensuring the continuity of the current SIS 1+ will be under responsibility of the French public authorities.

Once the SIS 1+ RE is integrated into the EU budget, implementation tasks can be performed either directly by the Commission or indirectly, by delegation to public sector bodies. Subject to constraints laid down in the Financial Regulation, in particular the possibility of entrusting the SIS II development to France should be further examined by the Commission.

Prior to its integration into the SIS II legal framework, should SIS 1+ RE be developed on the basis of the Schengen Convention as amended, including its joint financing and within the limits specified in chapter on the compatibility with SIS II legal framework, current structures dealing with the SIS 1+ project should in principle be maintained and used to the maximum in order to provide for effective and efficient cooperation, exchange of information and best practice, while reflecting the experience gathered so far and the use of the Information and Communication Technologies standards and methodologies. SIS-TECH especially has proved its capability to be an efficient tool in managing development of large-scale IT projects.

Global programme management approach ensuring the involvement of the Member States is of proven added value and should be continued and form a standard part of the project management contributing to its credibility.

The rules applied to test management of SIS 1+ RE will be similar to those used during SISone4ALL and compatible with the legal option chosen.

1.30.3. SIS II

The SIS II project is managed according to established standards and through well-documented processes, covering all aspects of project management. The project actively uses project management artefacts, resulting in predictable and traceable project results.

- **Project organisation:** The Commission Project Manager is responsible for the proper execution of the central SIS II development. The Global Programme Management Board (GPMB) brings together the Commission project manager, the Presidency, Member State experts from the SIS II Task Force, managers from the Main Development Contractor and high-level experts from the Support and Quality Assurance Contractor.
- **Transparency, accountability and governance:** Project governance of the SIS II is ensured by the legal framework especially the migration instruments, including the role of the SISVIS Committee.
- **Quality Management:** A dedicated Support and Quality Assurance Contractor provides independent and flexible support for all aspects of the project. Key Performance Indicators were agreed with the Main Development Contractor and a system of financial incentives was worked out.
- **Risk Management:** Risk management processes are in place, coordinated by a risk manager and supported by tools for risk and issue follow-up.
- **Change Control:** Change Control in the SIS II project is coordinated through the Change Management Board (CMB), which is an advisory working group of the SISVIS Committee.
- **Planning and scheduling:** The SIS II project is based on common planning at three levels: the Master Project Schedule (MPS), the Work Package schedules and, if applicable, detailed team or task schedules.
- **Project Control:** the SIS II project maintains a comprehensive relational database, based on a Work Package structure, allowing detailed follow-up and reporting of progress.

The analysis and repair period has introduced new and productive elements into the management of the SIS II project, such as better integration of central and national developments within the framework of the GPMB. This global management approach is to be maintained for the next stages of the project.

1.31. Compatibility with SIS II national systems already developed

Summary of comparison:

Both scenarios provide for the full use of SIS II national systems already developed and are compatible with them.

1.31.1. Comparative analysis

Both scenarios provide for the full use of NS.SIS II already developed and are compatible with them.

1.31.2. SIS 1+ RE

No substantial changes in NS.SIS II will be needed to switch from SIS II development to the SIS 1+ RE development, since the main priority is to make it possible to connect all NS.SIS II to the new Central System of SIS 1+ RE without many modifications to the NS.SIS II.

Impact on the national systems will depend in several respects on the approach which the Member States choose to take for their national implementation.

Member States choose to use the native interface, very similar to that used currently in SIS 1+, which is already positively verified. The current SIS 1+ native interface of the N.COM will be modified, maintained and offered to the Member States which choose this approach. This would, however, require significant development activity in the current NS.SIS II.

Member States choose to stay with interface provided for in SIS II (ICD-like). This interface is based on the introduction of the N.COM proxy, a software module which will facilitate the communication between the NS.SIS II and CS.SIS II similar to the way described in the SIS II ICD. This module would have to be installed at the national level, and can be quite demanding in terms of hardware capacity, everything depending on the respective Member States' traffic needs or performance of the calculation part of the N.COM proxy at the CS.SIS II site.

1.31.3. SIS II

The technical impact on the SIS II National Systems of any continued development in the SIS II project will be minimal. It might be an option to implement improvements before entry into operation. However, the advantages of these changes will be carefully balanced against the impact. Changes will only be implemented if the impact in time and money has been agreed in the Change Management Board and the SISVIS Committee. For substantial changes impacting on the date for the entry into operation, political agreement is also required.

In this way, compatibility with the SIS II national systems already developed remains guaranteed

1.32. Compliance with security requirements

Summary of comparison:

Both scenarios are designed to meet security requirements laid down by the SIS II legal framework.

1.32.1. Comparative analysis

Both scenarios are designed to meet security requirements laid down by the SIS II legal framework.

1.32.2. SIS 1+ RE

SIS 1+ RE is designed to fully respect the security requirements stemming from the SIS II legal framework.

1.32.3. SIS II

The SIS II development includes the security requirements in relation to the Central SIS II and the Communication Infrastructure laid down in Regulation (EC) 1987/2006 and Council Decision 2007/533/JHA. In line with this Regulation and Decision, the Commission plans to adopt a Security Plan. This Commission Decision is intended to establish security measures for the protection of the Central SIS II and the Communication Infrastructure and the information processed therein against threats to their availability, integrity and confidentiality. Within this framework, a security policy for both the Central SIS II and the Communication Infrastructure during operations is being prepared, based on a risk assessment and security plan that were finalised in 2005.

III - ANNEXES

**ANNEX 1 - CALENDAR FOR INTEGRATING IRELAND, THE UNITED KINGDOM, CYPRUS, BULGARIA,
ROMANIA AND LIECHTENSTEIN INTO THE SIS**

Ireland, the United Kingdom, Cyprus, Bulgaria, Romania and Liechtenstein have been preparing for integration into SIS II.

Since the completion of the SIS II project by September 2009 is no longer realistic and the global schedule cannot be laid down at this stage, the need to provide these states with information on integration planning becomes more urgent.

During the repair period, ways to join SIS were studied in detail. As these states follow different national strategies as far as timing and technological means are concerned, the timetable has to be drawn up individually.

Independently of both scenarios, states wishing to integrate immediately (before the third quarter of 2011) will need to integrate via SISone4ALL. Three slots are currently available in SIS 1+ for immediate integration using SISone4ALL. As of the end of April 2010, following the maintenance and renewal of SIS 1+ carried out within the phase 0, any state will have the possibility to integrate into SIS 1+ and migrate together with the current SIS 1+ users to SIS II.

All states integrated into SIS 1+ will have to follow in parallel activities related to the development of the SIS II national systems (applies to both scenarios) and will start their migration using their NS.SIS II together with other states using SIS 1+. The experience from the 2007-2008 integration of states using SISone4ALL has shown the feasibility of developing two national systems in parallel.

Depending on the choice of scenario, states waiting for the new SIS II system to be fully operational will have the possibility to integrate in the third quarter of 2011 (SIS 1+ RE but without SIS II functionalities until the fourth quarter of 2012) or in the fourth quarter of 2011 (the SIS II scenario) while using their SIS II national systems (NS.SIS II).

A certain stabilisation period is provided for between the date on which the system is brought into operation and the date when the integration of new states starts. In the case of the SIS 1+ RE scenario, all the SIS II functionalities will be applied only once developed and tested - as of the fourth quarter of 2012.

The possible schedule for the technical integration of waiting states is as follows (based on indications provided by states concerned):

- Bulgaria: 2010 (SISone4ALL, parallel development of NS.SIS II)
- Cyprus: the third quarter of 2011 (SIS 1+ RE), the fourth quarter of 2011 (SIS II)
- Ireland: the third quarter of 2011 (SIS 1+ RE), the fourth quarter of 2011 (SIS II)
- Liechtenstein: 2009 (SISone4ALL, parallel development of NS.SIS II)
- Romania: 2010 (SISone4ALL, parallel development of NS.SIS II)
- The United Kingdom: the third quarter of 2011 (SIS 1+ RE), the fourth quarter (SIS II) of 2011

Table:

Country	Provisional solution	Preparation for a definitive connection	Definitive connection depends on the scenario chosen:		
	SISone4ALL	NS.SIS II	SIS 1+ RE (NS.SIS II)		SIS II
			SIS 1+ functionalities	SIS II functionalities	
Bulgaria	2010	Yes	Third quarter 2011	Fourth quarter 2012	Fourth quarter 2011
Cyprus	-	Yes			
Ireland	-	Yes			
Liechtenstein	2009	Yes			
Romania	2010	Yes			
The United Kingdom	-	Yes			

Beyond technical preparedness to integrate into SIS, integrating states must fulfil all the necessary conditions to accede to the Schengen area (Schengen evaluation process). The integrating states must pass all the applicable evaluation procedures before the Council can adopt a decision on the application of the provisions of the Schengen acquis.
