



European Network of Forensic Science Institutes

FINAL DRAFT

Research and Development Strategy

EAFS Standing Committee

May 2010



The EAFS Committee

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INTRODUCTION

Forensic science is highly technological and procedural in character

Forensic science is highly technological and procedural in character. New developments in science and technology offer huge potential for improving its application and delivering added value to criminal investigation. In order to use the full potential of new developments and react to new demands from the end-users of forensic services, the forensic community need to be focused to innovation, research and development.

This document describes ENFSI's vision for research and development. By examining the environment of forensic science, forensic service suppliers and analysing the current level of R&D within the ENFSI community; strategic mechanisms and concrete actions are proposed to deliver this vision.

The R&D strategy provides, a framework for future plans and new initiatives

The R&D strategy provides, therefore, a framework for future plans and new initiatives that are focused on increasing the general level of R&D in the European forensic community, and support continuous improvement of services to the end-users of forensic science.

ENFSI'S VIEW TOWARDS R&D – THE OBJECTIVE

Innovation, research and development will lead to improved services to the end-users of forensic science

The fundamental aim of ENFSI's R&D strategy is to exploit new developments in science and technology and create a framework of continuous improvement in quantity and quality of research and development in Europe. Innovation, research and development will lead to improved services to the end-users of forensic science. We see this as essential to maximize the contribution of forensic science to criminal investigation and the administration of justice. We intend these objectives in their widest possible sense; not only the prosecution of offenders but also the exculpation of the innocent by the most effective and efficient mechanisms which technology can provide.

ENFSI's R&D strategy should be directed towards maximizing the added value of forensic science for customers

In order to achieve this ENFSI's R&D strategy should be directed towards maximizing the added value of forensic science for customers / end-users / clients¹ in the mid and long term. Early work in the set up of the EAFS Committee has recognised the complexity of the environment in which we are engaged. All too often the aspects of science, law and policing that make up forensic science are applied in isolation and to the detriment of general aims.

The strategic aims will be achieved by actively stimulating, facilitating, promoting and guiding research and development within the European forensic community. This will include transfer of knowledge within and between the professional communities of ENFSI, their clients and end users, and will focus on agreed priorities such as improvements in the investigation of crime and added value in processes and outputs.

Research and development must be directed towards creating overarching, multi-disciplinary and cross-cutting knowledge and understanding that can be transformed into tangible products and deliverable services of value.

¹ We consider the terms customer, end user, clients to be equivalent for the purposes of this strategy document

THE ENVIRONMENT OF FORENSIC SCIENCE

The demand for forensic services can be characterised by extreme growth over the past years

The demand for forensic services can be characterised by extreme growth in recent years. This growth -typically by a factor five over the past decade- has been caused by a number of factors including:

- increases in the potential of science and technology, particularly DNA and digital/information technology
- increasing volume of legislation
- the increasing provision of new investigative tools shared across Europe, such as AFIS systems and DNA databases
- increased expectations of customers and end users
- the desire for more objective and reliable evidence
- social phenomena (e.g. ‘the CSI effect’)

Despite this, in many instances new technology is poorly or inefficiently applied. This is due to a number of factors but particularly the complexity of the environment and range of stakeholders involved.

Furthermore, for various reasons the main research focus has been on the improvement of analytical technology. This has led to a situation in which a forensic science laboratory can analyse smaller and smaller traces, yet it can be unclear how this improved analysis adds value to criminal investigation or prosecutions.

Technology guided policing creates new demands and specifications for technology and services to be developed

As well as the increased demand for evidence in court there is a growing need for use of forensic services earlier in the criminal investigation process. This so-called technology guided policing creates new demands and specifications for technology and services to be developed. It is emphasized that it is not a shift in demand, but an additional demand that has important consequences for the amount and type of R&D necessary.

In a number of European countries (England, The Netherlands) a commercial market has developed. This has resulted in new -private- entrants delivering forensic services to customers. If managed appropriately -within an accepted quality assurance framework and regulated

environment- this phenomenon will have a positive effect on innovation in the sector as suppliers will have to find a unique position and competitive advantage.

Political and legal contexts

In recent years the European Union has taken an increasingly active attitude towards security related issues. This is most probably a consequence of high profile (terrorist) incidents around the world such as the 9/11 attacks, and perhaps even more so of the Madrid and London bombings. These incidents demonstrate the potential for European security to be compromised by terrorism.

Crime is not constrained by national borders.

The incidents cited above are clear evidence that crime is not constrained by national borders. One of the major focal points of European policy is harmonization of legal procedures in order that such incidents can be prevented and responded to in the most effective manner possible.

Within the 7th Framework Program an earmarked fund is set aside: 'the advanced forensic toolbox'

On security matters, the ENFSI board and the EAFS committee have played a significant role in raising awareness of forensic issues within the EU.. Contact was made with the lead individuals of the in DG-Enterprise (7th Framework Program). This resulted in an earmarked fund is set aside within the subprogram called 'the advanced forensic toolbox'. Within DG-FJS² these discussions have led to ENFSI receiving monopoly-status, i.e. ENFSI is now regarded as the sole representative of the European forensic community. Furthermore, ENFSI has been involved in working groups of ESRIF, the European Security Research and Innovation Forum, that published its final report late 2009. In this report, forensic science is one of the areas in which systemic needs and research needs are identified in order to improve capabilities. It is anticipated that these activities by the ENFSI Board and EAFS Committee and their results lead potential funding for forensic science in new funding programs in the coming years.

² DG-FJS = Directorate-General - Freedom, Justice and Security

Economic dimensions

In many cases, dedicated development of forensic products and services requiring large investments will not find a viable business case in the forensic community. Therefore, new or improved forensic applications are more likely to be derived from mainstream developments in other domains.

It can also be foreseen that the recent global economic downturn will have its adverse effect on the availability of funds, both for forensic institutes and potential providers of technology.

Improving efficiencies in the forensic community is seen as a viable way to increase the capacity to do research.

Improving efficiencies (such as standardization of processes or process innovation) in the forensic community should be seen as a viable way to increase the capacity for research and development. Such improvements would also support the viability of business cases for new products and services.

FORENSIC DOMAIN ANALYSIS

Introduction

The following chapter describes the changing environment in which forensic science services are being produced and delivered to end users. The following discussion on the *forensic domain* describes the changing role of forensic science and the assesses of the current situation in Europe. Next, we compare the European situation to that in the USA as described by the National Academy of Sciences (NAS) report.

Changing role of forensic science services

Until recently the results of forensic science investigations were primarily used to provide evidence used in court. This remains a considerable part of the *raison d'être* of forensic science service suppliers. However, due to the scientific and technological possibilities available the application has shifted to earlier in the process of criminal investigations. This shift in demand from the end-users poses very different requirements (such as the need for increased intelligence as opposed to evidence) on the services to be developed and delivered by forensic institutes.

Due to the scientific and technological possibilities available the application area of forensic science services has shifted

It is emphasized that this recent application area of forensic science is not a shift in demand, but merely an addition to the current demand; hence one of the reasons for the considerable increase of work load for forensic institutes during the past decade.

The diagram below identifies current forensic processes and takes into account these new demands.

New application areas of forensic science is not a shift in demand, but merely an addition to the current demand

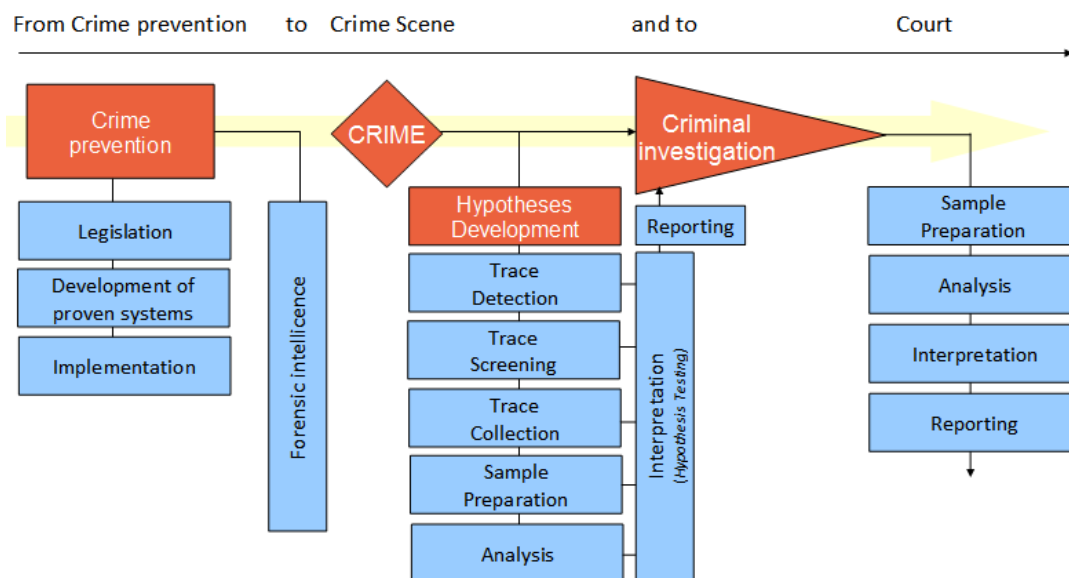


Figure 1: Forensic science is used to aid crime prevention, criminal investigation and evidence in court

Assessment

Given the issues raised above, the EAFS committee has sought to acquire information on the actual situation with respect to R&D in the ENFI community. Three main sources of information were used:

1) R&D Survey

This was a questionnaire sent to all members of ENFSI in order to identify the current status of R&D and to establish incentives and barriers to for R&D.

2) Client Survey

This questionnaire was sent to all members of ENFSI, with the request to distribute the questionnaire to as large a number of end users of forensic services as possible (prosecution, police and judiciary)

3) Information from Expert Working Groups (EWG)

Questions about the mid and long term research issues within their area of expertise were directed to the expert working groups of ENFSI by correspondence and in a joint meeting.

These three sources of input were seen as important to draw a true picture of the forensic domain in Europe with respect to current research status and future demand for forensic services.

R&D Survey

The R&D survey provided information from 31 laboratories across 23 European countries. Although 87% of institutes had a formalised requirement to conduct R&D, there was significant variation in the amount of R&D among institutes. The majority had fewer than 10 full time research staff, whilst a small number of institutes had over 30 full time research staff. Most institutes indicated that additional research was either essential (68%) or desirable (26%), but the major barriers to achieving this were the prioritisation of resources for casework and the availability of funding. It was also clear that institutes largely rely on their internal or governmental budget to fund their R&D. Grants from external research funding bodies were also used as funding sources but the burdensome nature of grant applications generated comment. It was evident that the vast majority of R&D efforts within ENFSI institutions were carried out internally or in collaboration with universities/research institutions, with little collaboration with industry partners.

Major barriers to carry out research were the prioritisation of resource on casework and the availability of funding

Although many institutes have a formal requirement for R&D about 20% of the institutes indicated that they had no involvement in research at all. Approximately 40% of the institutes indicated that they had none or only very limited staff (<5%) involved in actual research.

The R&D survey highlights a need to develop further research targeted at pre- and post-analysis stages of the forensic process

One of the most striking observations from the survey was the primary concentration on analytical methods with less emphasis on the crime scene (pre-laboratory), intelligence gathering and on interpretation and evaluation of evidence (pre-and post-laboratory). This observation is in accord with an earlier study of peer reviewed publications in forensic science³ and highlights a need to develop further research targeted at pre- and post-analysis stages of the forensic process.

³ Fraser, J. (2008). Why we need more research. Forensic Science Society AGM. Wyboston.
[ENFSI – R&D Strategy \(v100529-2000 for voting\)](#)

The client survey demonstrated that future developments of forensic science should include speeding up of the forensic processes

Client Survey

The Client Survey provided the views of end users of forensic services in 10 European countries⁴. The current (limited) results of the survey indicate that future developments of forensic science should include improved delivery times of forensic results, speeding up of the forensic processes, improvement of availability of forensic experts, improvement of evidential value of forensic reports and improvement of usefulness to direct police investigations.

These viewpoints of the end user are seen as essential and should be taken into account in making decisions regarding future research.

Despite the limited response received the client survey has proved very useful and yielded useful information. The statistical validity of the data, however, should ideally be improved by obtaining responses from a wider group. For this purpose the *client questionnaire* should be (re)sent to end users in the non-respondent countries.

Expert Working Groups

It appears that the majority of Working Groups are not currently engaged heavily in mid and long term research activities

The input ENFSI EWG input indicated that their activity is mainly directed towards quality and competence related issues, education, training and relatively short term development. Due to the limited amount of responses received and the scarce information available in the annual plans it is not possible to develop a clear view on their mid and long term research initiatives. It appears that the majority of Working Groups are not currently engaged heavily in such activities.

An effective research strategy should balance activities of the EWGs and the EAFS committee and the development of this relationship is essential.

In conclusion, the developing strategy will be based on information obtained from the various ENFSI sources cited above complemented by a review of the external environment, in particular from recent reports summarized below.

⁴

Austria, Czech Republic, Estonia, Finland, France, Hungary, Romania, Slovakia, Slovenia, Spain.
ENFSI – R&D Strategy (v100529-2000 for voting)

*ESRIF report*⁵

The European Security Research and Innovation Forum have been working on a shared vision on research to improve the general level of security in Europe for the next 20 years. The forum consisted of about 70 experts from European ministries, government agencies and the private sector. ESRIF published its vision in r in December 2009. Ten working groups and a few dozen sub-working groups provided input for this report. 'Forensics' was a sub-working group under the working group 'Security of Citizens'.

The report identifies a number of systemic needs and research needs in the forensic domain that should be met during the mid and long term.

The ESRIF report states:

"The effective application of forensic science depends on the logically correct reasoning (based on empirical data and statistics), integrating the different phases in the forensic process [...] This must occur within a comprehensive accreditation framework."

The ESRIF report indicates two main areas of research needs with respect to the lack of pre- and post analysis activities

With respect to the research needs identified the report indicates two main areas that are in line with the observations above on the lack of pre- and post-analysis basis.

On the pre-analysis phase the report states:

"Improve trace recovery, improve recording and reconstruction of the crime scene:

- *Development of screening methods for detection and (first) analysis (e.g. lab-on-a-chip) which need to be portable, robust, high speed, sensitive and simple to use. This requires miniaturisation of technology in order to be able to bring 'the lab to the traces' instead of bringing 'the traces to the lab'.*
- *Development of systems for the recording, and software for the visualization of the crime*
- *Development of software for the reconstruction of the crime-scene and to visualize scenarios*
- *Development of decision making and risk handling models to manage real time application of outputs from analysis*
- *International standards for trace recovery*
- *Development of appropriate training and education methods*

⁵

- *Facilities for innovation in so-called field labs, in which clustering of actors and pooling of expertise takes place”*

And with respect to the post-analysis phase:

“Objective, probabilistic interpretation: logical and correct reasoning (criminalistics) for all forensic disciplines:

- *Development of statistical methods and implementation in tools for objective interpretation*
- *Development of formal structures for databases (empirical science) and the development of databases*
- *Development of international standards*
- *Development of models for effective application and evaluation of forensic science use in a complex multi-jurisdictional environment”*

ESRIF also underlines the observation that crime is not limited by national borders and that international cooperation and standardization has to be improved. The report concludes:

“Design of a comprehensive accreditation network for an effective international response to cross-border incidents and crime. This concerns incidents with respect to terrorism, drugs trafficking, cybercrime, human trafficking, paedophilia, environmental crime:

- *Develop standardized methods and best practices*
- *Development of standardised and formal structures for databases to be used for more objective interpretation. Statistical research is also required in order to discover the limitations of various methods and their error rates*
- *Organisational models for collaboration of forensic scientists with appropriate industrial partners in an entrepreneurial manner in order to improve the competitive and independent position of the EU”*

The National Academies of Sciences report: parallels and differences between the USA and Europe

In 2009, a committee of the National Academy of Sciences (NAS) in the United States (US) published its report, *Strengthening Forensic Science in the United States: A Path Forward*⁶. Issues that are raised in this report have parallels with forensic science in Europe. However, many of the deficiencies have already been identified by ENFSI at a European level and ENFSI members at a national level.

One of the factors highlighted in the NAS report was the inadequate research base in forensic science with few scientists available to undertake research, limited funding and a disparity in resources between laboratories. This is mirrored to an extent among ENFSI laboratories, and highlighted in the recent EAFS R&D survey.

A further conclusion in the NAS report was the need to strengthen the cooperation and scientific communication between forensic laboratories and academia, especially by establishing or optimizing university courses with a strong focus on forensic R&D and the application of scientific methods in forensics to establish the right qualification of staff in the forensic laboratories and to enhance knowledge-transfer. Within ENFSI, these are key elements in the work and motivation of the EAFS committee.

Another observation in the NAS report was: “The forensic science disciplines need to develop rigorous protocols for performing subjective interpretations, and they must pursue equally rigorous research and evaluation programs.” As a consequence, one of the recommendations of the report was that research in the areas of errors, validity of forensic methods and the implications of expert bias for the interpretation of forensic data and results was essential and required funding. . The EAFS committee endorses this proposal. .

One of the recommendations of the NAS was to explicitly stimulate and fund research in the field of expert bias for the interpretation of forensic data and results

⁶ *Strengthening Forensic Science in the United States: A Path Forward - Committee on Identifying the Needs of the Forensic Sciences Community; Committee on Applied and Theoretical Statistics, National Research Council (2009).*

Good examples of ENFSI activities include the FORSTAT initiative, the statistical evaluation of fingerprints and efforts towards standardized reporting terminology

The EAFS survey has highlighted disparity in R&D effort between different forensic disciplines, the inevitable outcome of which is a in the level of scientific development between disciplines. This issue was highlighted by the NAS report. The NAS observation that “In terms of scientific basis, the analytically based disciplines generally hold a notable edge over disciplines based on expert interpretation”, accords with the EAFS survey observation that one of the least researched areas is interpretation and evaluation of evidence. However, the level of R&D in this area is building. Good examples of ENFSI activities include the FORSTAT initiative, the statistical evaluation of fingerprints and efforts towards standardized reporting terminology. This begins to address the NAS criticism of the “notable dearth of peer-reviewed, published studies establishing the scientific bases and validity of many forensic methods”.

Alongside analytical science, comparison of marks was also identified in the the EAFS client survey as an are requiring R&D. The NAS report also considered this to be a priority to: [establish] “the limits and measures of performance and to address the impact of sources of variability and potential bias. Such research is sorely needed, but it seems to be lacking in most of the forensic disciplines that rely on subjective assessments of matching characteristics”.

The NAS report gave significant attention to legal admissibility issues; due to major differences between legal jurisdictions, these do not merit lengthy consideration here, but the following observation is pertinent: “Two very important questions should underlie the law’s admission of and reliance upon forensic evidence in criminal trials:

- 1) the extent to which a particular forensic discipline is founded on a reliable scientific methodology that gives it the capacity to accurately analyze evidence and report findings and
- 2) the extent to which practitioners in a particular forensic discipline rely on human interpretation that could be tainted by error, the threat of bias, or the absence of sound operational procedures and robust performance standards.”

Both considerations should be addressed by R&D, and summarise well some of the research priorities for the ENFSI community and their stakeholders.

Until now we have provided our analysis of the internal and external environment, and summarized our interim conclusions. This has identified important gaps and this will lead us to concrete activities to close these gaps to implement the research and development strategy.

STRATEGIC MECHANISMS

Introduction

With ENFSI's ambition to increase the average level of innovation, research and development in Europe in mind and after the analysis of the current status of the European forensic community and its environment, strategic mechanisms can be defined to close the gaps between the current situation and the situation desired.

Eight strategic mechanisms are described below. They are expressed as objectives that need to be reached in order to overcome the gaps identified. In Annex A a number of concrete actions are suggested that will help to fulfill the objectives.

From the R&D survey it became apparent that there are significant number of laboratories that are not involved or committed to mid and long term R&D

1. UNDERSTANDING OF THE SIGNIFICANCE OF RESEARCH

Mid and long term research, as opposed to short term development, is necessary in order to continuously deliver increased added value to end users. From the R&D survey it is apparent that there is a significant number of laboratories that are not involved or committed to mid and long term R&D. The understanding of the significance of R&D for this purpose is crucial for continuous improvement.

In order to convert strategic needs into R&D results that can actually be transformed into concrete products and services solid R&D management is necessary

2. UNDERSTANDING AND IMPLEMENTATION OF R&D-MANAGEMENT

R&D Management is a complex issue involving multiple stakeholders and deals with issues as selecting R&D subjects, prioritisation, intellectual property, contract management and project management. In order to meet strategic needs effective R&D management is essential.

3. MAXIMIZING STRATEGIC COORDINATION OF RESEARCH AND RESEARCH OUTPUTS

From the information obtained it is evident that there are multiple projects with common aims as well as areas that appear to merit research but lack activity. Coordination of effort is essential to maximise efficiency and benefits.

Increasing the headroom for research and development will increase the innovative capabilities of the forensic community.

4. **MAXIMIZING RESOURCES (CAPACITY AND FUNDING) FOR R&D**

European (ENFSI) institutes have indicated that the most important reasons barrier to research is the lack of funding and/or limited capacity. It is clear that limited capacity is also due to prioritisation to casework.

5. **CLARITY OF END USER DEMAND AND NEEDS**

ENFSI members are the channels to the market for forensic services. Therefore, information from the ENFSI members with respect to market intelligence, customer demands and research and development activities ongoing in their respective countries is vital to make educated decisions. . For the quality of the services delivered by forensic science organisations it is important that customers of forensic institutes are . involved in specifying future needs and aware of the technological possibilities of emerging forensic possibilities.

6. **ATTACHMENT TO EMERGING SCIENCE AND TECHNOLOGY**

Assessment of main stream technological developments, and emerging new technology need to be developed in order to make viable choices in the short, mid and long term. For example, nanotechnology, microfluidics, lab-on-a-chip, remote sensing and optical technologies that are developing at a fast pace and could have much in store for forensic applications. These areas need to be monitored carefully.

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7. **CROSS-DOMAIN ACTIVITIES (ACADEMIA, LEGAL, POLICING, PRIVATE SECTOR)**

Forensic services are delivered in a multi-domain environment. The demand for these forensic services comes from the demanding operational world of the police and the legal profession. In order to achieve optimal added value from the scientific forensic community these worlds need to be connected in such a way that they can benefit from the results of scientific investigations. Individual forensic institutes and ENFSI play a crucial role as broker between the

demand side and the supply side of new to be developed technology, knowledge in academia, knowledge providers and private sector.

8. **VISIBILITY OF FORENSIC RESEARCH TO THE OUTSIDE WORLD**

The forensic community is still a rather introspective and closed. It could greatly benefit from more exposure to academia, knowledge providers and industry in order to create awareness of development possibilities, needs and business opportunities within the forensic market. Public relations, marketing and communication is in this respect an underexposed area of the forensic community and ENFSI should aim to become actively engaged in creating exposure in the important areas.

Public relations, marketing and communication is an underexposed area of the forensic community and ENFSI should become actively engaged in creating exposure in the outside world

CONCLUSION

This document presents the objective of ENFSI's R&D strategy. The overall objective of the R&D strategy is to raise the general level of forensic innovation, research and development available to the ENFSI members and, consequently, to the end users of forensic services supplied by the ENFSI members. The R&D strategy provides, therefore, a framework for future plans and new initiatives.

An R&D survey among the member institutes have showed a large variety of the amount of research in the institutes. At one extreme institutes are actively engaged in innovation, and at the other extreme of the scale institutes are only involved in casework. The *center of gravity*, i.e. the average level of research on this scale, need to be raised in order to satisfy the strategic objective. In the onset to this document this R&D survey, an end user survey, information from the ENFSI working groups and other sources, e.g. ESRIF and NAS report, have been used to generate a concrete *picture* of the 'innovative' state of forensic science in Europe.

The document has provided the analysis of the internal and external environment. This has identified important gaps and this has lead to concrete activities to close these gaps to implement the research and development strategy.

In a number of meetings the members of the EAFS committee have used this overview to perform a gap-analysis and to define a number of most important shortcomings. Consequently, the strategic mechanisms to close these gaps have been developed.

ANNEX A: ACTIVITIES SUGGESTED

The strategic mechanisms described in this strategy document are the basis for the definition of activities and concrete actions that will support meeting the strategic objectives that will raise the average level of research and development in the European forensic community.

An initial set of activities and actions suggested are presented below. These actions should be seen as part of a dynamic list, the results of which need to be evaluated regularly as part of a Plan-Do-Check-Act cycle by ENFSI board and EAFS committee. As a result of this evaluation actions can be added, adjusted or abandoned.

The responsibility for these activities is with the ENFSI Board. The EAFS committee and other ENFSI committees and their members can take on delegated tasks.

ACTIVITY 1 – Roving Researchers

ENFSI aims to increase the net level of research activity or readiness level throughout its member institutions. It is proposed that this aim can be supported by mutual exchanges of research staff in an analogous manner to the 'flying mentors' scheme in use for accreditation. Such a role would be based on a short term exchange of staff between mutually interested institutions. Normal costs such as salary will be covered by the home institutions of the staff involved whilst additional costs such as accommodation and travel will be covered by funds from ENFSI. The scope of this activity is, therefore, to help to implement R&D infrastructure in the widest sense of the word.

The proposed mechanism for such exchanges is as follows:

Institutions who are research active will be encouraged to:

- Indicate their willingness to take part in the exchange scheme
- identify ongoing research projects which may act as a vehicle for developing research knowledge
- Indicate how long a period of exchange is suggested. Although it largely depends on the support required, it seems that the minimum period is 1 month but ideally should be longer in order to support suitable skill development
- Identify in general terms the general background and skills required for individuals who may become involved.

Institutions that wish to develop research skills are invited to:

- Indicate their willingness to take part in the exchange scheme
- to identify areas of research which are of interest to them
- Identify a suitable individual who is willing to take part

Benefits	<ul style="list-style-type: none"> • Short, impactful and relevant learning experiences • Knowledge and skill transfer of between institutions • Increased level of research knowledge • Development of ongoing partnerships • Low cost and low risk
Needed	<p><i>Pilot Project</i></p> <p>The aim of this project is to test the feasibility of the Roving researcher's project by supporting the process of at least 2 exchanges in the coming business period. For evaluation reasons the pilot projects should bring forward a report on the activities carried out.</p>
Strategic Mechanisms	1,2,3,4
When	2010-2011

ACTIVITY 2 – R&D Lead Person

In order to create a flexible and efficient R&D network all ENFSI members should have one contact person or R&D lead with whom communications could take place. Ideally this would be the person responsible for R&D within the organisation, or at least the person who has insight in all of the institutes' R&D-activities.

Benefits	A single contact person for R&D within every institute would guarantee an effective communication network for all of ENFSI/EAFS matters in this area.
Needed	The ENFSI board should ask all ENFSI members to nominate a R&D lead within their organisations
Strategic Mechanisms	1,2,3
When	2010

ACTIVITY 3 – EU Involvement and commitment

The ENFSI board and EAFS committee representatives will have regular discussions with EU representatives from DG FJS and DG Enterprise/Research and other relevant EU bodies in order to be able to convey important messages from and towards the ENFSI community.

Benefits	Communication with the EU guarantees that the right topics are on the EU agenda. Furthermore, regular discussions will sustain the awareness of the importance of forensic science, as well as important developments in the EU framework. In this way, for example, it can be expected that funding will become available for the right areas of research
Needed	Discussions with representatives from the EU.
Strategic Mechanisms	4
When?	Ongoing concern

ACTIVITY 4 – EU Project Evaluators

European projects (funded by DG-FJS and DG-Enterprise (FP7)) are an interesting option for starting-up research and development projects within the forensic community and outside organisations (ref. Activity 4). After submission, these projects need to be evaluated. ENFSI should encourage member organisations to appoint evaluators that can help the European Union to evaluate projects submitted .

Benefits	In this way projects it can be guaranteed will be evaluated by forensic experts and, thus, take care of correct evaluation from the viewpoint of the forensic community.
Needed	ENFSI members should encourage appropriate staff within their organisations to enlist themselves at the European Union (website) to become evaluator for forensic projects
Strategic Mechanisms	4
When?	2010

ACTIVITY 5 – Monopoly Funding Scheme

When the decision is made that “monopoly money” will be used for the implementation of the R&D strategy, as laid down in this document, the EAFS committee will be involved in discussions on the appropriate usage.

The EAFS committee will act as a facilitator and will work in close discussion with the ENFSI Board and the Working Groups and ENFSI R&D lead persons.

Benefits	“Monopoly money” will be used and monitored according to the strategy.
Needed	A call structure needs to be defined for: <ul style="list-style-type: none"> • Definition of topics • Submission of proposals • Evaluation and granting of proposals • Evaluation of results
Strategic Mechanisms	4
When?	2010 (ongoing concern)

ACTIVITY 6 – National Funding Programs

In many countries funding possibilities exist from the Ministries responsible for law enforcement and justice. Moreover, there might be funding programmes or initiatives found from National Scientific Organisations. Already in a number of countries National Science Funding programmes exist that allow or are searching for international collaboration.

Benefits	Combining the information from the members of ENFSI, ENFSI/EAFS could create an overview of funding possibilities and specific areas eligible for funding from the different member states. More importantly, these funding programmes could be combined to fund multi-national research program and facilitate cross-border cooperation
Needed	Members of ENFSI should investigate these possibilities within their countries and report back to ENFSI/EAFS.
Strategic Mechanisms	4
When?	First analysis in 2010

ACTIVITY 7 – Process Innovation

In the light of rapidly growing amount of casework in forensic institutes all over Europe (and beyond) it is worthwhile to investigate the possibilities for improving existing processes. Implementing new techniques and technology in existing processes can greatly improve turn-around times, process efficacy and efficiency. A number of institutes within the forensic community already have considerable experience with implementing new and innovative technique to improve the production processes within their institutes achieving very good results

Benefits	Faster turn-around times and improved efficiency in forensic investigation processes will increase the available time to carry out research and development.
Needed	OOS on process innovation to exchange
Strategic Mechanisms	4
When?	2011

ACTIVITY 8 – Website

In order to increase the visibility of the EAFS/ENFSI activities and to disseminate relevant information on ongoing activities, funding programmes and other R&D-related issues the ENFSI/EAFS website need to brought to a higher standard.

A sub-site in the restricted area of the ENFSI website (www.enfsimembers.eu), dedicated to the EAFS activities has already been formed. It contains, among others:

- Information on European Union (EU) funding, including EU Work Programmes, ESRI Reports, etc.
- Documents of the EAFS committee, including annual plans and reports, terms of reference and minutes of the meetings
- Information and links to the project groups (FORSTAT, FORJUST, Multilingua) acting under the auspices of the EAFS committee.

The website will be extended with other information and data, e.g. on the projects supervised by the EAFS committee (e.g. 'Roving Researchers') and the brokerage platform for R&D projects.

Benefits	The website will serve as a main source of information for all ENFSI members where relevant information can be found easily and efficiently
Needed	A clear information flow structure and a web-master who can constantly organize and update the information
Strategic Mechanisms	3,4,7
When?	2010 Start (Ongoing concern)

ACTIVITY 9 – Demand driven R&D

ENFSI stimulates customer involvement in the decision making of research and development activities. ENFSI members will implement customer demand and fit-for-purpose services

Benefits	Taking customer views into account will stimulate an improved focus on developing R&D programs that will maximize added value of products and service delivered to end users
Needed	Involvement of all ENFSI member states in customer needs assessment (client questionnaire)
Strategic Mechanisms	5,7
When?	2011-2012

ACTIVITY 10 – Working Groups involvement

ENFSI will stimulate the involvement of the working groups in creating more strategic mid and long term views with respect to R&D. Working Groups will make a mid and long term plan to indicate the demands and needs within their area of expertise.

Benefits	The information will give a clear and focused overview of necessary research in the mid and long term
Needed	(Members of) the EAFS committee will assist the working groups. A possible way is to discuss with the WG-chairs or by organizing a dedicated session during working groups meetings.
Strategic Mechanisms	1,3,5,6
When?	<ul style="list-style-type: none"> • Start with meetings in 2010 • Pilot documents of a number of working groups in the first quarter of 2011 • Full set of documents in 2011

ACTIVITY 11 – External Network

The forensic community has a large need for research and development in order to maximize the added value to the end users. The quantity of research necessary can impossibly be carried out by the forensic institutes themselves and, therefore, collaboration with external organisations is crucial. A wide variety of organisations are eligible for this purpose: academia, knowledge providers and the private sector.

Benefits	A larger capacity and new insights in new science, technology and engineering knowledge will become available for the forensic world
Needed	Identification of suitable organisations and discussions with these institutes in order to make them aware of the needs and possibilities of the forensic community
Strategic Mechanisms	1,2,8
When?	2010 (ongoing concern)

ACTIVITY 12 – Science and Technology Watch

In order to stay abreast with emerging technology and developments in science (e.g. microfluidics, nanotechnology) ENFSI will take on the role as a broker. A number of consortia or organisations exist in which organisations from the demand and supply side are gathered in order to facilitate the introduction of new technology. ENFSI should be involved as the representative of the forensic demand side

Benefits	In this way information of new technology and science can be brought within the forensic community. Furthermore, ENFSI(-members) can actively disseminate the specifications that are typical for forensic applications and create forensic "R&D-awareness" outside the forensic world.
Needed	Membership of or representation within these consortia on behalf of the European forensic community. Ideally this should be a representation from the working groups or from ENFSI members institutes across the forensic domain. Reports from the representatives within these consortia/organisations will take care of the dissemination of the knowledge acquired. This can be done through the ENFSI/EAFS website
Strategic Mechanisms	6
When?	2010 (ongoing concern)

ACTIVITY 13 – Brokerage

Transparency and openness on ongoing and/or planned R&D initiatives will help to increase collaboration and avoid same developments taking place at more than one location. A so-called brokerage-platform of these activities will deal as a matchmaking tool and partner-search for intended (collaborative) projects.

Benefits	Members of ENFSI can consult the R&D-project platform and look for similar or adjoining activities in order to avoid duplication of initiatives.
Needed	A low-effort and low-treshold structure within ENFSI/EAFS that will take care of this platform and the disclosure of the information (on website and/or by e-mail-ditribution to the e.g. R&D lead persons)
Strategic Mechanisms	3
When?	The set-up of the platform will be done in 2010-2011

ACTIVITY 14 – R&D Models (internal)

The ENFSI community could learn from eachother by comparing critical success and failure factors for R&D within the different institutes. Therefore, it is suggested to provide insight in the different research models within the ENFSI members.

Benefits	From this evaluation lessons can be learned on positive and negative aspects of certain research and development structures within institutes at different development levels.
Needed	As a first step, the R&D lead persons will convene during a One Day One Issue Seminar. In which ideas and experiences can be shared
Strategic Mechanisms	1,2
When?	2011

ACTIVITY 15 – R&D Models (external)

High-tech organisations outside the forensic arena no-doubt are facing similar issues as forensic institutes. Therefore, it is interesting to exchange ideas with these institutes to learn from them.

Benefits	Interesting lessons can be learned on all elements involving research and development
Needed	<ul style="list-style-type: none"> • The identification of suitable organisations from which lessons can be learned. • A number of R&d lead persons meeting with representatives of these kind of organisations. • Reporting back to the ENFSI members
Strategic Mechanisms	1,2,5
When?	2011