D.2.2– ASCS Constitution

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THE OCEAN OF TOMORROW

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Abstract

The main objective of NeXOS is to develop new cost-effective, innovative and compact integrated multifunctional sensor systems which can be deployed from mobile and fixed ocean observing platforms, not just for the sake of having better marine environmental monitoring means, but with an eye on the potential of the European industry to exploit these new or improved systems. As such, the NeXOS project should contribute to raising the competitive position of the European marine sensor industry. To this end, a committee is formed in which all SME companies that are partner in the NeXOS project participate.

As per the Description of Work, the main responsibility of the ASCS is to ensure, at the outset of the project and during its life cycle, that the design and engineering process followed can be understood and incorporated into the practical implementations by SMEs, industry and the science research and observation community. The ASCS will study how to enhance the potential of NeXOS's products to penetrate the marine sensor market and assess the economic advantages of the innovations developed within NeXOS. Furthermore the ASCS will advise on the management of the NeXOS Intellectual Property Rights to deal with legal provisions for knowledge and technology protection, transfer and exploitation, in accordance with EU regulations.

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1. INTRODUCTION

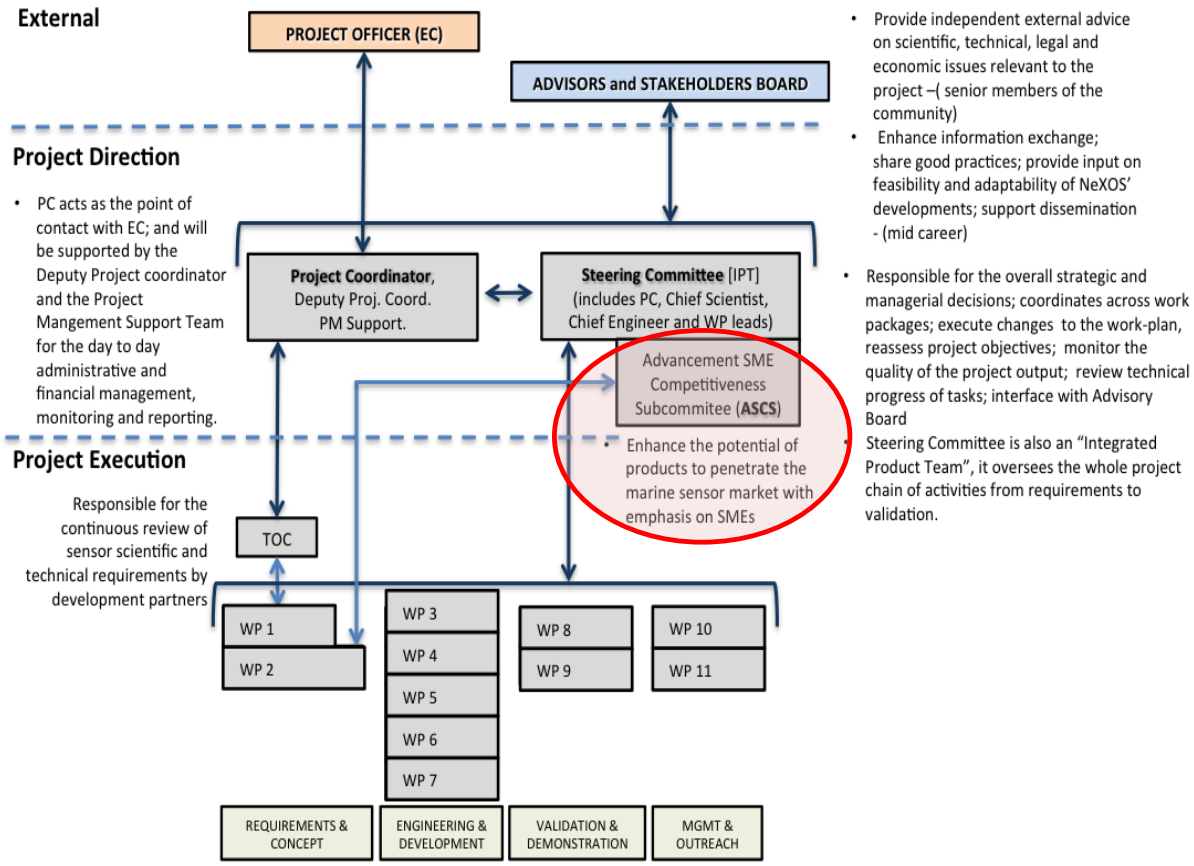
1.1 Introduction and Background

Although marine sensors have a large potential to assist in the growing needs of environmental monitoring, several challenges need to still be overcome such as the lack of standardization, the high investment and maintenance costs of bothy sensors and complete sensors systems, the lack of interoperability etc. NeXOS is trying to tackle some of the identified challenges, by bringing together different economic actors to develop relevant innovations. The main objective of NeXOS is to develop new cost-effective, innovative and compact integrated multifunctional sensor systems which can be deployed from mobile and fixed ocean observing platforms. To achieve this, the following ten specific objectives are formulated:

1. To develop a new, compact and cost-efficient multifunctional sensor system for optical measurements of several parameters, including contaminants such as hydrocarbons and other components of the carbon cycle.
2. To develop a new cost-efficient compact and integrated sensor system for passive acoustic measurements.
3. To develop a new low-cost sensor system for an ecosystem approach to fisheries management.
4. To develop and integrate a miniaturised smart sensor interface common to all new NeXOS sensor systems.
5. To develop and apply innovative sensor anti-fouling technologies.
6. To develop a common toolset for web-enabled and reconfigurable downstream services.
7. To assess and optimise the economic feasibility and viability of the new sensor developments including the manufacturing phase.
8. To demonstrate new developments in real operational scenarios.
9. To work with producer and user communities to upgrade requirements and provide a system which allows easier transition to manufacturing and operations.
10. To manage and coordinate the specific aims described above, and contribute through dissemination and outreach, to communication of results and innovations of NeXOS.

The project is divided into eleven different Work Packages (WPs). Five of them, the technical WPs (WPs 3-7), focus on the development of the new sensor systems and tackling some of the more general challenges, e.g. anti-fouling. Other work packages are supportive to the technical work packages. The relationship between the different work packages and their execution in time are depicted in the following figure.

FIGURE 1-1: Set-up of NeXOS and the relationship between WPs



Source: NeXOS Consortium

The Advancement of the SME Competitiveness Subcommittee (ASCS) is assigned, as can be seen in Figure 1-1, to address specific aspects such as product and SME competitiveness and intellectual property rights and advise the consortium members in order to achieve higher added value for the NeXOS innovations.

On 17 October 2014, the ASCS was formally created during its constitution meeting at the Ifremer premises in Brest, France. In this short deliverable, we report on the set-up and working principles of the ASCS throughout the remaining period of the project.

1.2 NeXOS innovations

The innovations developed in NEXOS are distinguished in two categories: new sensor systems (optic sensors developed in WP5, passive acoustic in WP6 and EAF in WP7) and transversal innovations (developed in WP3 and WP4). These are presented in the following table.

TABLE 1-1: NEXOS INNOVATIONS

	New sensor systems
A1	Compact low-power multifunctional passive acoustics sensor system, enabling on-platform measurement and characterisation of underwater noise and several soundscape sources, aimed for platforms with limited autonomy and/or communication capability.
A2	Compact multifunctional passive acoustics sensor system, enabling real-time waveform streaming for the measurement of underwater noise and several soundscape sources, aimed for platforms with unlimited autonomy and/or communication capability.
O1	Compact low-power multifunctional optical sensor system based on multi-wavelength fluorescent technology to provide detailed information on both water constituents and other relevant contaminants being optically active in the respective spectral region.
O2	Compact low-power multifunctional optical sensor system based on hyperspectral cavity absorption technology, enabling measurement of water constituents like dissolved organic matter, suspended matter, and phytoplankton.
O3	Compact low-power multifunctional carbon sensor system. These sensor arrays will quantify the marine carbonate system by combination of a high precision sensor for pH and AT together with a membrane based pCO2 sensor. The system includes high precision spectrophotometric pH and carbonate ion sensor with a membrane based pCO2 sensor.
EAF	Very low-cost, high autonomy, small and sturdy chlorophyll and oxygen sensors for fishing vessels for an Ecosystem Approach to Fisheries (EAF) management. The new sensors will complement the measurement of fish catch, fishing activity tracking, temperature and salinity.
	Transversal Innovations
Antifouling	An innovative scheme using active protection is proposed, controlling biocide generation with a biofilm sensor. This will have high efficiency for optical sensors, low power consumption and negligible environmental impact. The scheme will involve the application of a conductive coating on the transducing interfaces of the sensors. This coating will allow micro-surface-electrolysis, and very little biocide will be produced over the entire sensor
Interface Interoperability	The Smart Electronic Interface for Sensor Interoperability (SEISI) will provide a multifunctional interface for many types of current sensors and instruments, as well as for the new multifunctional detectors to be developed by WP5, 6, and 7.
Data Interoperability	A Sensor Web architecture (WP4) will be developed utilizing relevant standards and best practices for the NeXOS sensors. Suitable Web services and tools conforming to those standards will be implemented and packaged as a toolbox for the deployment in different ocean observing systems

2. THE ADVANCEMENT OF THE SME COMPETITIVENESS SUBCOMMITTEE (ASCS)

2.1 Tasks of the ASCS

The role of the ASCS is to provide input and advice to the NeXOS Steering Committee (SC) regarding the technical WPs of NeXOS with the objective of maximising the competitiveness of the developed innovations and SMEs. The role of the ASCS can be explained as the "watch dog" of the project that continuously checks whether the innovations that are being developed make sense from a commercial/business perspective, and whether/how they can be best marketed. Therefore, the SME companies will play a central role in the functioning of the ASCS.

According to the NeXOS DoW document
"the main responsibility of the ASCS is to ensure, at the outset of the project and during its life cycle, that the design and engineering process followed can be understood and incorporated into the practical implementations by SMEs, industry and the science research and observation community",
Additionally
"The ASCS will study how to enhance the potential of NeXOS's products to penetrate the marine sensor market and assess the economic advantages of the innovations developed within NeXOS"
while
"This task will also address the management of the NeXOS Intellectual Property Rights to deal with legal provisions for knowledge and technology protection, transfer and exploitation, in accordance with EU regulations."

Further, the ASCS function was further specified during the WP2 Kick-off meeting (31 October 2013), where the following was stated:

- The scope of the ASCS should go beyond IPR issues alone. The ASCS should put concerns on the agenda, for the SC to make decisions for implementation in other WPs.
- The ASCS should aim to give regular feedback to innovation WPs to ensure research is fitting current SME business models and practices as well as possible IPR issues

Taking all these into consideration, the tasks of the ASCS have been agreed on during its constitution meeting that took place in Brest on October 17th 2014, as follows.

TABLE 2-1: TASKS OF THE ASCS

Tasks of the ASCS:
to provide innovation WPs (3-7) with a simplified format to feed the ASCS with information regarding their progress, in coordination with the project management activities (WP11),
to develop innovation evaluation indicators to assess the competitiveness contribution of each of the NeXOS innovations,
to monitor the progress of the innovation WPs and give regular feedback on the relevance of the work for SME companies,
to advise on further steps needed to accelerate market uptake of these innovations,
to advise on how the developed innovations could fit the SMEs business models in place and if needed, how these would need to be modified,
to draft an inventory of possible IPR mechanisms, accounting also, but not exclusively, for the IPR practices currently applied by the SMEs,
to advise the SC on what would be the most appropriate IP vehicles to protect and exploit the innovations developed within NeXOS bearing in mind the different interests of the individual SMEs on board the NeXOS consortium, and finally

to monitor and control the timing and depth of dissemination activities and publications regarding the NeXOS innovations balancing the protection of the commercial interests streaming from NeXOS innovations and the potential of researchers to communicate/publish part of their work without affecting protection of the novelty components.

2.2 Composition

The composition of the ASCS is built around the SME companies present within the consortium (see annex I of the DoW for a description of these companies). These are all sensor and platform developers and manufacturers, and some of them also provide sensor services. Hence they should be leading in defining the messages to be submitted to the Steering Committee (SC) or to individual WP leaders (directly or through the SC as appropriate). The other members are there to support the process and progress (Chair), feed the IPR proposals (project coordinator - PC), guard the coherence (e.g. the Chief Scientist - CS), the feasibility of requests (Chief Engineer - CE) and the possibilities to market among the wider community (Dissemination leader).

The ASCS will be composed of the following permanent members representing their organisations or an appointed replacement.

TABLE 2-2: ASCS COMPOSITION

NeXOS role	Organisation	Representatives
WP2 leader	Ecorys	Johan Gille (ASCS Chairman)
Project Coordinator	PLOCAN	Eric Delory Ayoze Castro
Project Chief Scientist	UniHB	Christoph Waldmann
Project Chief Engineer	Ifremer	Jean-Francois Rolin
Dissemination leader	IEEE	Jay Pearlman
All industry (SME) partners	NKE ACSA TRIOS SMID Franatech	Patrice Brault Patrice Pla Rüdiger Heuermann Luigi Corradino Michel Masson

There is the possibility to introduce new members to the ASCS along the progress of the NeXOS project following the identified need for that and the unanimous acceptance of the current ASCS members. Additionally, the ASCS may invite other consortium members or external experts to participate in specific ASCS meetings taking appropriate measures to safeguard that the information shared with them will not jeopardise the interests of the consortium partners in the case of non-consortium members (who have not signed a Non-Disclosure Agreement (NDA) as the consortium members have).

2.3 Assessment methodology for NeXOS contribution to SME competitiveness

One of the fundamental tasks of the ASCS is to systematically check whether the innovations that are being developed by NeXOS make sense from a commercial/business perspective. The ASCS will address this by taking the following actions to enable its further functioning:

1) Definition of a number of indicators for assessing the impact of the innovations produced by NeXOS on the competitiveness of the NeXOS SMEs. These indicators can be common for all innovations developed if considered appropriate or can be specific for each specific NeXOS innovation.

2) Preparation of a simple, easy-to-fill-in and comprehensive template for reporting on the progress of the innovation WPs and presenting the issues for which ASCS advice is requested. This template will be developed in coordination with the project management activities (WP11) and will include the indicators defined.

These two actions will be finalised prior to the next ASCS meeting (March 2015). If considered necessary, the competitiveness indicators and reporting template can be revised along the progress of the project to address the received feedback and any concerns. Additionally, for every other ASCS meeting:

3) Leaders of the innovation WPs will be invited to present their progress and further plans in advance of every ASCS meeting as to allow initial feedback by the Subcommittee members. The frequency of the reporting will follow the frequency of the ASCS meeting as defined in the next section.
4) During the Subcommittee meetings, the progress of the innovation WPs on the defined indicators will be assessed.
5) The minutes of the ASCS meetings, containing specific feedback on the work of every NeXOS innovation WP will be provided to the relevant WP leaders.

A SIMPLE OVERVIEW OF INDICATORS AND SCORING COULD BE PROVIDED ADOPTING A COLOR-CODING SCHEME AND WOULD LOOK AS FOLLOWS:

TABLE 2-3: COMMERCIALIZATION INDICATORS AND ASSESSMENT OF THE INNOVATIONS

Assessment indicator:	Innovation 1 (optical)	Innovation 2 (acoustic)	…	
1. Production start-up costs				
2. Unit costs				
3. Batch possibilities				
4. Reliability				
5. …				

Green = evaluated as meeting the SME expectations; yellow = doubtful, needs to be improved; red = impossible to achieve commercial business case

The ASCS will upon application decide on the most useful presentation scheme considering alternative options such as scoring using (+) and (–) or ratings (1-5) etc.

Whether or not innovations will be useful and can be implemented on a commercial basis will only gradually become clear as the innovation work of WP3-7 evolves. Therefore early discussion of the interim results or reported progress can be premature. On the other hand if discussion is postponed until close to completion, there is little room for steering/adjustment left. Hence, a combined process is needed. The reporting template and feedback loop between the innovation WPs and the ASCS should provide for this. For critical issues or if conflicting views arise, discussions or requests for decision will be submitted to the Steering Committee.

2.4 Meeting schedule

The proposed set-up for this is as follows:

- Kick-off in M13 (meeting 17 Oct in Brest) with the establishment of the ASCS, its scope and principles.
- A meeting schedule with gradually increasing intensity of regular meetings, based on the logic that while moving closer to realisation of innovations a more intensive process will be required, as follows:
    a. 2 meetings/year for year 2,
    b. 3 meetings/year for year 3,
    c. 4 meetings/year for year 4

  The meeting intensity will depend on the progress of the innovation WPs and will be related with the work performed in Tasks 2.4 and 2.5
- The frequency of the regular meetings can be later modified depending on the need derived from the progress of each innovation WP.
- In that end, also irregular meetings can be planned for one or more individual innovations depending on the WP progress, their time paths and maturity.
- Face-to-face meetings will be organised 2 times/year (as part of the GA meetings and/or WP2 meetings, and other meetings will be held through web interface or telephone.

Annex A: List of abbreviations

ASCS	Subcommittee for the Advancement of Small and Medium Enterprise Competitiveness
CE	Chief Engineer
CS	Chief Scientist
DoW	Description of Work
IPR	Intellectual property rights
NDA	Non Disclosure Agreement
PC	Project Coordinator
SC	Steering Committee
SME	Small and Medium Enterprises
WP	Work Package