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# CESSAMag

CERN-EC Support for SESAME Magnets

Seventh Framework Programme, Capacities Programme, General Activities, Activities of International Cooperation

## DELIVERABLE REPORT

# CERN-EC-SESAME COMMUNICATION ON SCIENCE FOR PEACE IN THE MIDDLE-EAST

## DELIVERABLE: D1.4

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### Abstract:

This document is the conclusive overview of the science diplomacy aspect of CESSAMag. It serves as a communication material on the evolution and success of the CERN-EC-SESAME partnership.



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For more information on CESSAMag, please see [www.cern.ch/CESSAMag](http://www.cern.ch/CESSAMag)

CESSAMag stands for “CERN-EC Support for SESAME Magnets”. It is a 4-year long FP7 project which aims at supporting the construction of the [SESAME](#) light source, the Middle East's first major international research center in the making.

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**Delivery Slip**

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## 1. EXECUTIVE SUMMARY

*The scope of this deliverable has been adapted to the positive evolution of the situation since the approval of the Description of Work in end of 2011. Since 2015, the European Commission has consolidated the science-diplomacy role of CESSAMag and extended its support to SESAME, by organizing two diplomatic events, by becoming Observer in the SESAME Council and by granting approval for a new H2020 project for 2017. A major diplomatic event will be organized by SESAME with the technical support from CERN in May 2017 for the Opening of the light source.*

*The purpose of this communication, after the successful completion of CESSAMag, is then to summarize its science diplomacy aspect. It will be further distributed via various channels to the scientific community, civil society and to the media. This communication has been approved by all involved partners and to be used as is.*

## 2. MAIN COMMUNICATION

### **CESSAMag project aids pioneering Middle East laboratory SESAME**

The EC-funded CESSAMag (CERN-EC Support for SESAME Magnets) project, coordinated by CERN, has delivered key components to the Middle East's pioneering SESAME laboratory, which is currently starting-up in the Jordanian town of Allan. SESAME was established under the auspices of UNESCO before becoming an independent intergovernmental organisation in its own right with Members Bahrain, Cyprus, Egypt, Iran, Israel, Jordan, Pakistan, the Palestinian Authority and Turkey. Its mission is to provide a world-class research facility for the region, while fostering international scientific cooperation among its Members. The collaboration of CERN, the European Commission and SESAME in the CESSAMag project has played a vital role in supporting this visionary mission.

SESAME is a light source; a particle accelerator-based facility that uses electromagnetic radiation emitted by circulating electron beams to study a range of properties of matter. Experiments at SESAME will enable research in fields ranging from medicine and biology, through materials science, physics and chemistry to healthcare, the environment, agriculture and archaeology.

SESAME is an organisation driven by the scientific communities of its Members. The need for an international light-source in the Middle East was first recognised in the early 1980s by the Pakistani Nobel Laureate Abdus Salam, and was also felt by the Middle East Scientific Collaboration group, which grew from a meeting of Egyptian and Israeli scientists and politicians in 1995. The project was initiated with a proposal to relocate the soon-to-be-closed Berlin Synchrotron in the Middle East, although it was soon decided to equip SESAME with a completely new, and much more powerful main ring, for which CESSAMag has provided the key components.



The CERN community's involvement with SESAME goes back to that 1995 meeting, which stemmed in part from discussions among scientists about whether the CERN model of science for peace in Europe might be replicated in the Middle East. SESAME is modelled conceptually and organisationally on CERN, although the scientific aims are very different. Furthermore, accelerators, albeit of very different sizes, are at the heart of both, so it is no accident that the CERN Organization has responded positively to request of support by SESAME and that the two Presidents of the SESAME Council to date, as well as the President-elect, are former CERN Directors General.

SESAME formally came into existence as an intergovernmental organisation in 2004 with strong political support from its Members. SESAME's Members are not the oil-rich countries of the Middle East, and they are countries that have modest science budgets. It soon became apparent that additional resources and expertise would be needed to ensure that the laboratory would be able to offer world-class facilities. It was in response to this need that the European Commission, along with CERN, launched the CESSAMag project as part of the seventh Framework Programme, FP7. The ALBA light source in Barcelona also played a role in testing some of the magnets produced in the CESSAMag framework.

CESSAMag's overall objective was to deliver the magnetic system for SESAME's new main accelerator ring. The magnetic system is a key component of any light source in terms of complexity, performance of the light source and cost. The overall CESSAMag budget was 8.85M€, of which 5M€ was provided by the Commission. The total capital investment in SESAME to date is US\$79M. The philosophy of CESSAMag was to bring the expertise of CERN in particle accelerator technology to the service of SESAME, with the support of ALBA. This would allow SESAME to concentrate on other key main ring systems, while providing important training, knowledge and technology transfer. Throughout the process, SESAME personnel have been stationed at the European laboratories. Three key contracts were placed with companies in SESAME Members (Israel, Cyprus and Pakistan), with the rest placed in Europe, and CERN received in-kind support from three SESAME Members, Iran, Pakistan and Turkey, which itself allowed valuable knowledge transfer.

CESSAMag has strengthened Euro-Mediterranean collaboration in science, and its impact will be long lasting. CESSAMag support has allowed SESAME to complete the construction phase in a timely fashion, allowing SESAME scientists and engineers to bring the facility into operation ready to begin its research programme in 2017. The project has built on existing Euro-Mediterranean scientific links, and established new ones. It has helped to bring a world-class laboratory into existence, a laboratory that will reverse the brain drain from the region and foster broader scientific cooperation globally. Thanks in part to CESSAMag, SESAME is already strongly integrated into the global light source community at all levels from technical to administrative. With the official inauguration scheduled for May 2017, the Middle East's first light source has a bright future.