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ENSAR2  
EUROPEAN NUCLEAR SCIENCE AND APPLICATION RESEARCH 2

*GRANT AGREEMENT NUMBER: 654002*

D6.1 GDS WEB SITE

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*REFERENCES AND APPLICABLE DOCUMENTS*

[1] <http://igfae.usc.es/gds/>

[2] <http://www.ensarfp7.eu/activities>

*LIST OF ACRONYMS AND ABBREVIATIONS*

CEA	Commissariat à l’Energie Atomique et aux Energies Alternatives (France)
CNRS	Centre National de Recherche Scientifique (France)
GANIL	Grand Accélérateur National d’Ions Lourds (France)
GDS	Gas-filled Detectors and Systems
IGFAE/USC	Instituto Gallego de Fisica de Altas Energias / Universidad De Santiago De Compostela (Spain)
INFN	Istituto Nazionale Di Fisica Nucleare (Italy)
KULeuven	Katholieke Universiteit Leuven (Belgium)
RUG	Rijksuniversiteit Groningen (Netherlands)

## *EXECUTIVE SUMMARY*

This document describes the creation, current status, future plans and other aspects of the website [1] related to the GDS (Gas-filled Detectors and Systems) Networking Activity of the ENSAR2 project [2]. Deliverable D6.1 was the “Creation of a dedicated GDS website to help facilitate communication between the GDS community and disseminate information amongst all interested parties (Month 6)”. In this report we describe the on-time and successful completion of this deliverable.

## *INTRODUCTION*

The aim of the GDS Networking Activity is to assemble and coordinate a large group of research collaborations that are in the process of developing new capabilities with gas-filled detection and active-target systems in the field of nuclear physics.

The GDS network will exchange information through various media and scientific events between physicists and engineers already working on these projects across Europe. It will assist and promote collaborations and personnel working on similar projects and will encourage the support and training of highly qualified personnel in this rapidly evolving field.

Nowadays it is generally acknowledged that the active web presence plays the key role in the dissemination process, being the central point of all dissemination activities. Therefore, the GDS web site is a crucial tool in the successful accomplishments of GDS Networking Activity.

The GDS website is available at this address: <http://igfae.usc.es/gds/> and it has been online since April 2016. It is technically maintained and updated by the USC team (Beneficiary n°26, Spain). A brief description of each of the pages and goals is provided below. In addition, communication and outreach actions are presented in the following section.

## *STRUCTURE AND CONTENTS*

### **Home page <http://igfae.usc.es/gds/>**

Introduction to the networking activity and description of the different work packages. A screenshot of the page is provided in the Annex in Figure 1.

### **Meetings <http://igfae.usc.es/gds/meetings.html>**

The remaining deliverables of the project are collaboration topical meetings and this page will provide all of the information about upcoming meeting (dates, location, program) and a link to the registration page. Once the topical meeting is complete, this page is where we intend to put the program and the presentation files from each of the participants.

### **Collaboration <http://igfae.usc.es/gds/collaboration.html>**

A list of the members and institutions that represent the GDS coordination committee (CC). These persons are responsible for the organization of the network and the successful completion of its milestones and deliverables. Creation of the GDS CC constituted milestone 1 of the project and was completed in Month 3.

### **Projects <http://igfae.usc.es/gds/projects.html>**

This page is dedicated to providing a brief presentation of all of the ongoing projects within the GDS community. Many of these projects will have their own detailed website. The goal of this page is to provide a paragraph describing each project with a figure and a link to the project website (if one exists).

**News and Documents** <http://igfae.usc.es/gds/documents.html>

This page will be used as a “news feed” to post all information that is of interest to the GDS community such as upcoming conferences, workshops, news, figures, reports or highlights from each of the projects. This page will also be used to advertise the four GDS topical meetings that will be organized as part of the GDS network. On this page, we will also provide links to all recent scientific publications that are relevant to the GDS community. This page also has an internal area that is password protected where we keep the minutes of the GDS CC meetings that are held regularly.

**Contact us** <http://igfae.usc.es/gds/contact.html>

By filling in this online form anyone will be able to join the GDS network or contact directly the GDS CC for questions and information. We have sent an email to some of the most widely used mailing lists in nuclear physics in order to advertise the network and direct them to this web site. Anyone that is interested in receiving more information, and if they wish to be regularly updated with all of the GDS news and activities, can sign up on this page. We will collect the email addresses of everyone who registers and use this information to create a GDS mailing list to send news and information more efficiently to the community. This same page can be used for anyone wishing to unsubscribe from the network.

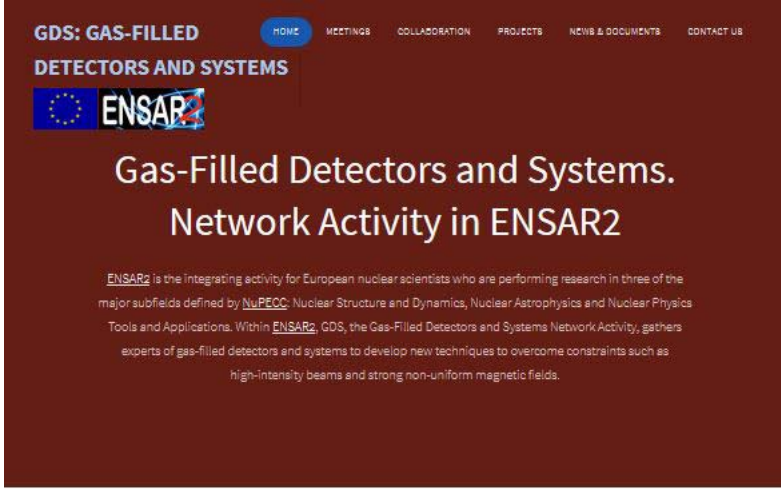
*COMMUNICATION AND OUTREACH*

In addition to the website we have created a single email address [gds\\_ensar2@ganil.fr](mailto:gds_ensar2@ganil.fr) that will be used throughout the duration of the project. When someone fills in the online form on the website, this information is automatically sent to the GDS email address and is automatically forwarded to the GDS CC. When there is important news to send to the community, we will post this information on the “news” section of the website and generate an email from this GDS account that will be sent to all registered users. This is to ensure that any and all communications are quickly and efficiently sent to all registered users.

*CONCLUSION*

The creation of the GDS website provides a complete and promising tool for GDS Networking Activity. It raises awareness of the GDS achievements within the European Nuclear Physics community and beyond. The GDS website is now functional for some months and based on current and future feedback it will be further cultivated.

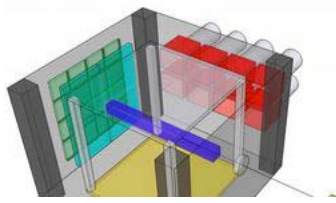
ANNEX



ENSAR2 [Work Package 6]

NETWORK ACTIVITY 6 - GDS: GAS-FILLED DETECTORS AND SYSTEMS

The aim of the present network activity is to assemble and coordinate a large group of research collaborators that are in the process of developing new capabilities with gas-filled detector and active target systems in the field of nuclear physics. Gas-filled time projection chambers and active target detection systems have found profitable applications in nuclear physics due to their high efficiency and ability to detect low-energy particles. Examples include the GEM/DC TRC, designed for studying positron self-absorption and the active target YRF at GSI, MIRA at DANL and TACTIC at York/TBUNIF that are used for scattering and reaction studies over a wide range of energies. While these detectors have each been extremely successful, recent advances in high-density front-end electronics now permit very large numbers of channels to be read and processed. Smaller pixel sizes, higher data rates throughout, the ability to change gains and thresholds on a channel-by-channel basis, and software-level fully numerical triggering are some of the main advantages that next-generation detectors will have over previous ones. Between GEM and GEM, new detector projects including MINOS, ACTAR TRC, and Bowdler have all been funded through competitive grants awarded by the European Research Council (ERC), and together represent a total EU investment of nearly 4.4M€. These projects highlight the potential for these types of detection systems in nuclear physics and imply that the demand for a networking activity between these collaborations, and several others interested in using these technologies, is both essential and timely.



TASK 1: MANAGEMENT/GDS COORDINATION (GANIL)

The main objectives of this task are to harmonize the various activities described in the tasks of the GDS network, assist with the dissemination of information and knowledge gained to the broader community, and suggest ways to combine the existing resources of the various collaborations in order to maximise the efficiency and potential of these projects. This task will provide the platform for these activities through the organisation of workshops between all of the EU communities working on GDS projects.

TASK 2: GDS IN STRONG AND NON-UNIFORM MAGNETIC FIELDS (CEA, KU LEUVEN)

To reach particle identification and energy resolution over an extended dynamic range several detector projects require magnetic fields. However, access to magnets with strong fields of 3-6 Tesla and with "volumes" that can house an active target or time projection chamber of around 0.5 m<sup>3</sup> with their auxiliary detector arrays is non-existent in Europe. The role of this task is to combine the available knowledge and expertise to support and assist existing projects and to develop new ideas and capabilities for future ones.

TASK 3: NOVEL DETECTION SYSTEMS FOR HIGH-INTENSITY AND HEAVY-ION BEAMS (USC, GANIL)

The large number of ionisation electrons produced from unweeded high-intensity (>10<sup>12</sup> ions/s) or heavy-ion beams (i.e., Ni, Sn, Pb, U) creates a significant space charge that degrades the homogeneity of the drift electric field in gas-filled detector systems. Experiments suffer from poorer resolution, or in some cases, cannot be performed at all. New solutions to operate an active-target detection system at the highest possible beam

Figure 1: screenshot of GDS Website home page