“KM3NeT opens a new window on our universe”

Report on the on-line communication of KM3NeT

KM3NeT INFRADEV GA DELIVERABLE: D3.3

Document identifier: KM3NeT-INFRADEV-WP3-D3.3-Report online presence-v2.2
Date: 06/02/2019
Work package: WP3
Lead partner: CNRS
Document status: Final
Dissemination level: Public
Document link:

**Abstract**
In this document we report how KM3NeT communicates with its stakeholders on the internet with a website and using popular social media.
1 COPYRIGHT NOTICE

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I. DELIVERY SLIP

<table>
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<tr>
<th>Name</th>
<th>Partner/WP</th>
<th>Date</th>
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<tbody>
<tr>
<td>Author(s)</td>
<td>E. de Wolf</td>
<td>22/12/2018</td>
</tr>
<tr>
<td>Reviewed by</td>
<td>OCC</td>
<td>29/01/2019</td>
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<tr>
<td>Approved by</td>
<td>PMB and KM3NeT IB</td>
<td>05/02/2019</td>
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II. DOCUMENT LOG

<table>
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<th>Comment</th>
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<td>1st version</td>
<td>E. de Wolf (NWO-I)</td>
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<tr>
<td>2</td>
<td>24/01/2019</td>
<td>2nd version in the official template</td>
<td>E. de Wolf (NWO-I)</td>
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<td>3rd version – reviewed by P. Coyle</td>
<td>E. de Wolf (NWO-I)</td>
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<td>4</td>
<td>05/02/2019</td>
<td>4th version – reviewed by A. Margiotta (IB)</td>
<td>E. de Wolf (NWO-I)</td>
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III. APPLICATON AREA

This document is a formal deliverable for the GA of the project, applicable to all members of the KM3NeT INFRADEV project, beneficiaries and third parties, as well as its collaborating projects.

IV. TERMINOLOGY

A complete project glossary is provided:
- OCC: Outreach and Communication Committee
- ARCA: Astroparticle Research with Cosmics in the Abyss
- ORCA: Oscillation Research with Cosmics in the Abyss
V. LIST OF FIGURES

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VII. PROJECT SUMMARY

KM3NeT is a large Research Infrastructure that will consist of a network of deep-sea neutrino telescopes in the Mediterranean Sea with user ports for earth and sea sciences. Following the appearance of KM3NeT 2.0 on the ESFRI roadmap 2016 and in line with the recommendations of the Assessment Expert Group in 2013, the KM3NeT-INFRADEV project addresses the Coordination and Support Actions (CSA) to prepare a legal entity and appropriate services for KM3NeT, thereby providing a sustainable solution for the operation of the research infrastructure during ten (or more) years. The KM3NeT-INFRADEV is funded by the European Commission’s Horizon 2020 framework and its objectives comprise, amongst others, support for Outreach and Communication (work package 3).

VIII. EXECUTIVE SUMMARY

The main goal of WP3 is to grow financial, political and public support for the international KM3NeT project by communicating its value to stakeholders and the general public. The KM3NeT Outreach and Communication Strategic Plan (D3.1) aims at positioning KM3NeT as one of the top scientific and technological projects of the 21st century. It is a cooperative effort led by the KM3NeT Outreach and Communication Committee in close collaboration with communication and outreach offices in KM3NeT member countries. Five key priorities are formulated in the Strategic Plan: (i) Communicate the value of the KM3NeT project to all its stakeholders; including the public; (ii) Ensure that stakeholders and the public understand KM3NeT to be a single coherent project; (iii) Increase
communication activity in all partner countries; (iv) Ensure that all stakeholders are engaged with the project at the national and international level (v) Support KM3NeT managers to attract new member nations to the project. In this document we report how online communication with KM3NeT stakeholders contribute to support these strategic communication goals. All on-line communication channels have a single motto: **KM3NeT opens a new window on our universe.**

![KM3NeT logo with the KM3NeT motto.](image)
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1. Introduction

The KM3NeT strategy for communication with its stakeholders is set out in the KM3NeT Outreach and Communication Strategic Plan (D3.1). Five key priorities are formulated in the Strategic Plan: (i) Communicate the value of the KM3NeT project to all its stakeholders; including the public; (ii) Ensure that stakeholders and the public understand KM3NeT to be a single coherent project; (iii) Increase communication activity in all partner countries; (iv) Ensure that all stakeholders are engaged with the project at the national and international level (v) Support KM3NeT managers to attract new member nations to the project. The effort to reach these communication goals is led by the KM3NeT Outreach and Communication Committee in close collaboration with communication and outreach offices in KM3NeT member countries. To reach the above goals, on-line communication with stakeholders is an important instrument. The social media form the lively environment in which two-way interaction with stakeholders is natural and easily create a ‘community feeling’ among stakeholder and in the KM3NeT Collaboration itself. The website is the stable ‘rock in the communication branding’ with more detailed scientific, technological and organisational information. The KM3NeT Wikipedia page forms the more distant platform for the interested reader. With this toolset of a website, social media accounts and a Wikipedia page KM3NeT is working on a strong on-line presence with a recognisable scientific and technological brand. This document reports on the current status of this effort and the plans for the direct future.

2. KM3NeT website

Figure 2 Header of the KM3NeT website.

The website km3net.org was launched in 2007 during the KM3NeT Design Study. Since then it gradually evolved to its current format and look-and-feel following the progress of the KM3NeT from a Design Study, via a Preparatory Phase to the construction of the neutrino telescopes. The KM3NeT Outreach
and Communication Committee (OCC) is responsible for the content of the website. The Physics and Software Manager is the chair of the OCC and forms the link with the executive management of the KM3NeT project. The architecture of the website comprises four cascading menus dedicated to an audience of different stakeholders. The menu “About KM3NeT” aims at informing policy makers, funding authorities and potentially interested new members about the organisational structure of the KM3NeT Collaboration. Here one can find the list of institutes participating in the Collaboration and the Organisational Breakdown Structure of the project. Statements about diversity and Open Access reveal the policies of KM3NeT for an inclusive working environment and the policy of KM3NeT to provide regulated free-of-charge access to the infrastructure and its data for scientific purposes. For the interested astrophysicists, a list of publications is provided. In the near future, the newly developed “Code of conduct and ethical behaviour” (D5.1) and the “Policy for Equality, Diversity and Inclusion in KM3NeT” (D5.2) will be made public here.

![Figure 3 “About KM3NeT” cascading menu.](image)

The cascading menu “Research” comprises information about the science objectives of KM3NeT, the details of the detector elements and the seafloor cable networks. A high-level overview describes the computing model of KM3NeT and the opportunities for Earth and Sea Sciences to use dedicated ports at the KM3NeT installation sites. This cascading menu aims at informing the astroparticle physics community as well as a broader audience. It provides background information for science journalists.
Figure 4 "Research" cascading menu.

The third cascading menu “News & Media” aims to reach out to science journalists with news items and material such as photos of detector elements, activities during sea campaigns and people at work.

Figure 5 “News & Media” cascading menu.

Finally, at the cascading menu “KM3NeT-INFRADEV” the deliverables and description of work of the KM3NeT-INFRADEV H2020 project are published.

The KM3NeT website is kept up-to-date by the OCC as needed and important news items are issued regularly. The more static pages are updated annually. Since the transition to a WordPress based webpage, for security reasons the use of Google analytics for performance measuring is no longer allowed by the hosting server. A new performance measuring tool has not yet been decided.
3. KM3NeT social media accounts

In 2012 the social media accounts for KM3NeT were launched. As with the website, the OCC is responsible for the contents of the posts. At first, the emphasis was at Facebook, but over time the focus moved to Twitter where science journalists and the astroparticle community are more active. More recently, the KM3NeT Instagram account is more frequently used to better reach out to the younger general public that has moved out from Facebook. Generally, the same information is posted at the three social media accounts with slightly different text to address the different target audiences. Unfortunately, due to a pause in the operation of the first detection units of the neutrino telescopes while upgrading the seafloor cable network, in 2018 the KM3NeT online activities had a low profile. Since early 2019, operation of the ARCA telescope at the Italian site has been resumed and the start of operation of the ORCA telescope at the French is expected to be launched soon. With two operational sites, KM3NeT will be able to enhance its on-line communication profile considerably, in particular on Instagram.

![KM3NeT Twitter profile](image)

Figure 6 KM3NeT Twitter profile

4. KM3NeT Wikipedia page

The KM3NeT Wikipedia page was launched in 2007 during the Design Study. At first, it took some effort to get the page accepted, because the name KM3NeT contains a number and that is generally not accepted by the moderators of Wikipedia for a lemma. The page is updated by the OCC at an annual basis to provide scientific and technology information to the interested reader.
5. On-line communication campaigns

In the KM3NeT Outreach and Communication Strategic Plan, five themes are defined for KM3NeT to tell its stories. Each of these themes are being addressed by the information on the website and in posts in the social media.

5.1 Stories being told

1. **KM3NeT is the next generation neutrino observatory.**
   - KM3NeT is an initiative to build and operate the next generation deep-sea neutrino telescope.
   - KM3NeT will collect an unprecedented quantity of cosmic and atmospheric neutrinos
   - KM3NeT will serve as an open observatory to a wide astrophysics and particle physics community.
   - KM3NeT will provide open access to the earth and sea science community for real-time, continuous, high frequency monitoring and observation of the deep-sea environment.

This theme is addressed by the information on the KM3NeT website and the Wikipedia page and currently less in social media posts. Once both the ARCA and ORCA sites are operational with a few detection units, the OCC will launch a new campaign “The next generation” with a press release and posts at the website and in the social media to emphasise this story again.

2. **KM3NeT’s foundation is its exceptional scientific potential.**
   - KM3NeT is pushing both the low-energy and high-energy frontiers, where insight into some of the Universe’s greatest mysteries may exist.
   - KM3NeT’s unique capabilities will help us to address some of the most perplexing questions in astrophysics and particle physics.
     - Understanding the origin and role of relativistic cosmic particles
     - Probing extreme environments

Figure 7 KM3NeT Wikipedia page
On-line communication campaigns

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3. **Technological innovation**
   - KM3NeT has innovated new technologies for photo-detection, deep-sea technology, time-synchronisation over large distances and computing.
   - KM3NeT-based innovations have applications in other domains?

Also this theme is addressed by the information on the KM3NeT website, the Wikipedia page, by frequent posts and threads in the social media and by the videos published in the YouTube channel of KM3NeT. The latter are mainly videos made during deployment operations and would in future need more polished versions telling the story of KM3NeT technology. This has not yet been planned.

4. **Diversity of people**
   - People of many nationalities from across the globe are working for KM3NeT.
   - Their academic and professional backgrounds are diverse: science, engineering, computing and others.

At the KM3NeT website the list of institutes participating in KM3NeT, together with a map of the cities of KM3NeT. It shows that KM3NeT is a global collaboration of scientists and engineers. In the social media campaign “Meet our Collaboration” individual KM3NeT members are introduced to the followers of the KM3NeT accounts. Also the campaign “Heroes of KM3NeT” contribute to telling the story of diversity in KM3NeT. Typical in this campaign the light is on the teams responsible for the production of KM3NeT hardware, the crews of the ships during sea operations, individuals or group receiving grants or other funding, individuals winning scientific awards, individuals achieving important scientific results or PhD students that have successfully defended their thesis. In addition, KM3NeT participates in the promotion of women in STEM, in particular by on-line posts at the International Day of Women and Girls in STEM.

5. **Inspiration and education**
   - KM3NeT trains future scientists, engineers and technicians.
   - KM3NeT inspires school teachers for modern and up-to-date science education.
- KM3NeT motivates school students to pursue the study of science.
- KM3NeT inspires scientific awareness among citizens.

For 2019, a new campaign “Bye, bye, KM3NeT” with short interviews of PhD students leaving the KM3NeT Collaboration after graduating, will be initiated by the OCC. Currently, on-line KM3NeT does not yet address school teachers and students. Once the telescopes are operational the Collaboration hopes to provide them on-line educational material.

5.2 On-line communication campaigns in 2019

<table>
<thead>
<tr>
<th>Campaign name</th>
<th>Theme( s)</th>
<th>Start</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>The next generation</td>
<td>1</td>
<td>Expected in 2019</td>
<td>To be revived once both ARCA and ORCA are operational.</td>
</tr>
<tr>
<td>Heroes of KM3NeT</td>
<td>2, 4, 5</td>
<td>Intensify in 2019</td>
<td>Started a few years ago.</td>
</tr>
<tr>
<td>KM3NeT papers explained</td>
<td>2, 3</td>
<td>Revive in 2019</td>
<td>In cooperation with the KM3NeT Publication Committee.</td>
</tr>
<tr>
<td>KM3NeT presents</td>
<td>1, 2, 3</td>
<td>Revive in 2019</td>
<td>Needs cooperation of KM3NeT Conference Committee and individuals attending conferences and workshops.</td>
</tr>
<tr>
<td>KM3NeT workshops</td>
<td>2, 3, 5</td>
<td>Continue in 2019</td>
<td>Started a few years ago. Needs cooperation of the KM3NeT group responsible for the workshop.</td>
</tr>
<tr>
<td>Meet our Collaboration</td>
<td>4, 5</td>
<td>2018.</td>
<td>To be continued in 2019.</td>
</tr>
<tr>
<td>Bye, bye, KM3NeT</td>
<td>5</td>
<td>2019</td>
<td>Interviews with graduates leaving KM3NeT.</td>
</tr>
<tr>
<td>Learning KM3NeT</td>
<td>5</td>
<td>Not yet scheduled.</td>
<td></td>
</tr>
<tr>
<td>Update of the website pages</td>
<td>1 – 5</td>
<td>Spring 2019</td>
<td></td>
</tr>
</tbody>
</table>
In addition, the OCC will be active in the social media responding to posts of other (astro)particle physics experiments and observatories and to posts of relevant universities and funding authorities.

### 4.2 Examples of Twitter feeds

Examples of recent twitter feeds addressing the themes described above:

Table 2 Examples of Twitter feeds
On-line communication campaigns

Meet our Collaboration: Anna Sinopoulou!
After working on alternative geometries of the ARCA detector during her MSc studies at @ntua and @NCSR_Demokritos, she decided to continue as a PhDstudent, searching for possible neutrino candidates from the first data-taking of KM3NeT.

The Dutch Science Park Unveiling the Secrets of the Universe
For his book Universe, photographer Aia Jansen documented a neutrino-detecting orb, data visualizations, and other ambitious projects in the field... 

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document            KM3NeT-INFRADEV-WP3_D3.3-Report online presence-v2.2 WP 3
version: 2.2        Release date: 06/02/2019 Public
On-line communication campaigns

This week KM3NeT celebrates the 9th anniversary of its innovative deployment of detection units in the Mediterranean Sea. On 16 December 2009, on board RV Pelagia, teams of SINTEF, Hellenic and
@JUNO tested the method for the first time. A thread in memory of that event.

Part of the KM3NeT team of @WDCRFP at the European Researchers’ night in Catania. #KM3NeTRFP