D9.3 – MOLOKO website

Project Information

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Project Coordinator	Stefano TOFFANIN (CNR)
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PU	Public	✓
PP	Restricted to other programme participants (incl. Commission Services)	
RE	Restricted to a group specified by the consortium (incl. Commission Services)	
CO	Confidential, only for the members of the consortium (incl. Commission Services)	

Document Log

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1 Executive Summary

Deliverable 9.3 is a report on MOLOKO Project website, which can be considered as one of the most relevant dissemination tools to be used by the project consortium in order to reach a wide public and communicate project progress and results.

The website will also include a direct link to the MOLOKO Collaborative Platform, a private area to which only project partners have access.

Therefore, the main content of this document is focused on the description of the project website in terms of design, structure and contents.

2 Introduction

The development of the website of MOLOKO project is one of the activities related to WP9 dealing with the Dissemination, Communication and Exploitation of the results of the Project.

BEWARRANT has been in charge of the development of the website with the assistance and the advice of CNR and QCL.

The website can be found in the following URL: http://www.moloko-project.eu

3 Main Objectives

Project websites are one of the main communication tools of projects funded under the EU H2020 Programme. To ensure maximum visibility to the MOLOKO objectives and results we have set up a project website registered in the "eu" domain and with intuitive URLs to increase hit rates:

http://www.moloko-project.eu/

The design of the website builds upon the following criteria and considers suggestions given in the EU Project Websites – Best Practice Guidelines (EC, 2010):

I. **Visual communication**: use of colours and/or photos, web pages are easy to browse, information is kept short and links are included to websites, publications, and so on.
II. **Verbal communication**: the website uses simple phrasing, no jargon is used to attract the widest possible audience, e-devices are user friendly.
III. **Visibility**: maximum use of free or affordable methods to increase page ranking on search engines, Webmaster Tools provided by search engines to check indexing status, good cross-linking between the different pages of your site and other sites, adding keywords to the web page metadata; use of frequently used keyword search phrases both in the metadata and in the contents pages.
IV. **Regular update of contents**: the website is maintained by BEWARRANT and the update will be regularly done by the Webmaster upon inputs of the Project Dissemination Manager and of Partners, the use of social media (e.g. social networks such as Twitter and Facebook) has been considered.
V. **Monitoring and feedback tools**: the website includes a counter of visitors or other statistical tools that will be used to measure the number of visits.

4 Description of work

4.1 Public Website

The public section of MOLOKO website provides:

- ☐ a brief overview of the project and further details about its objectives, contents and structure;
- ☐ the composition of the project consortium, the links to the partners' websites and the contacts of the people involved in the project;
- ☐ access to the project public deliverables and to the dissemination material prepared (e.g. leaflets, posters, press release and presentations);
- ☐ information about MOLOKO events, such as MOLOKO meetings and workshops, as well as conferences and external events where the project will have an active role (e.g. presentation of paper(s), organisation of sessions, stands with demos, etc.).

The public website has several sections and sub sections devoted to present the project to external visitors, all accessible from the home page and described into details in the following paragraphs.

In each section, at the bottom of the pages, you can find:

- ☐ the acknowledgement of the EU co-funding, also by the inclusion of the relevant logo claiming that "This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n. 780839";
- ☐ the logo of Photonics21 connected to its website: www.photonics21.org. This logo is also displayed on the top of every pages of the website;
- ☐ Some MOLOKO project details.

4.1.1 Home

The home page of the website (see Figure 1) introduces MOLOKO project and it gives relevant information about its objectives and structure.

In the top part of the home page, the logo and the full name of the project can be seen. The page's scroll down shows the main figures of the project:

- ☐ the total EU contribution
- ☐ the number of partners
- ☐ the duration of the project

Below this small section, a bigger one, which is linked to MOLOKO objectives, encourages the visitor to discover the project. In the middle of the home page (see Figure 2) you can find a section related to MOLOKO latest events and forthcoming events.

A further section reports all the partners involved in the project; below them, a contact form has been set up to send private massages in order to ask more information about the project.

Figure 1. HOME PAGE

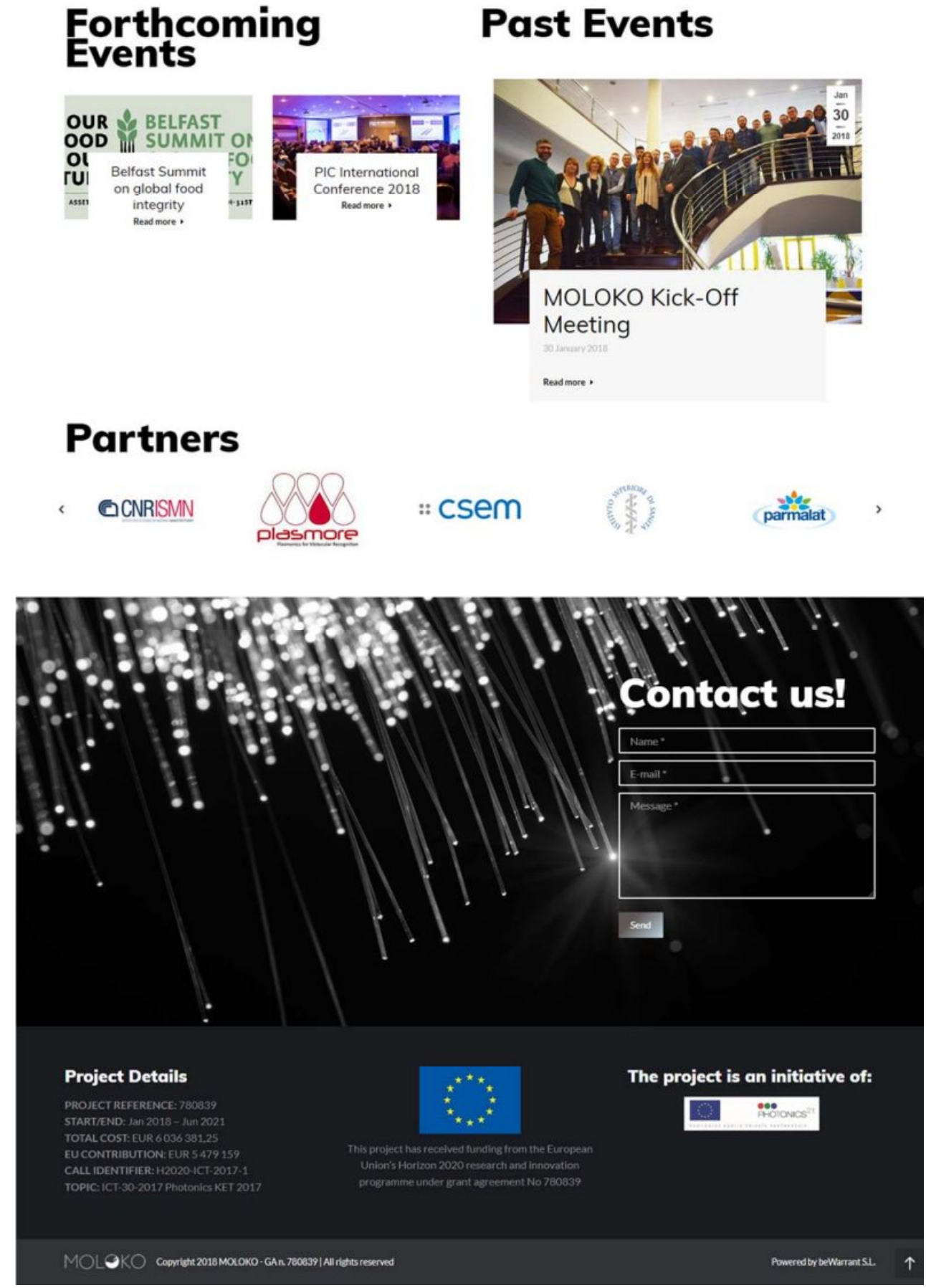


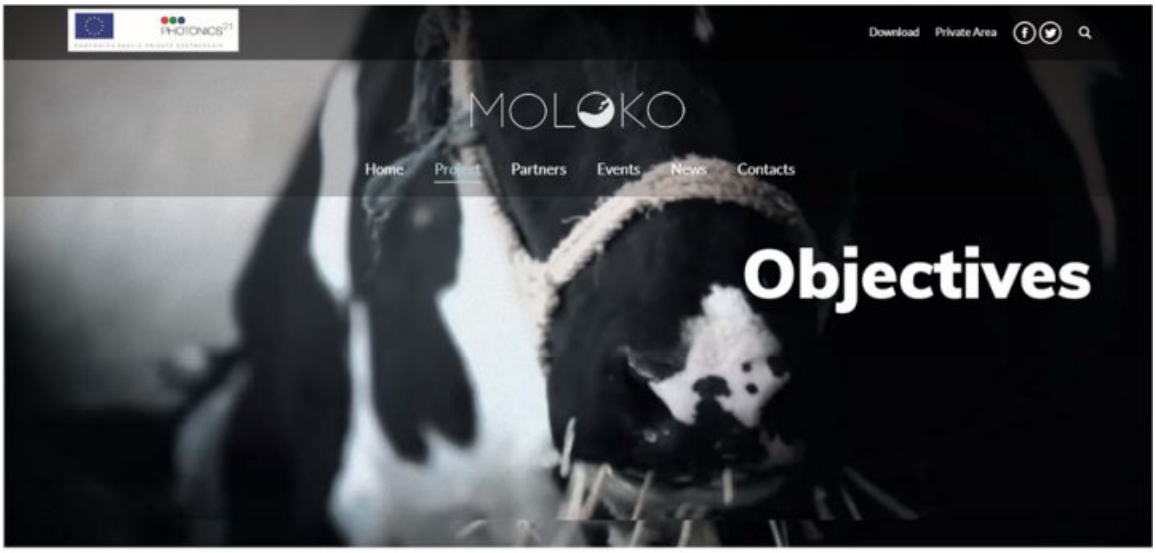
Figure 2. HOME PAGE

4.1.2 Project

The label “Project” on the main menu introduces 3 subsections related to the project structure.

These subsections are:

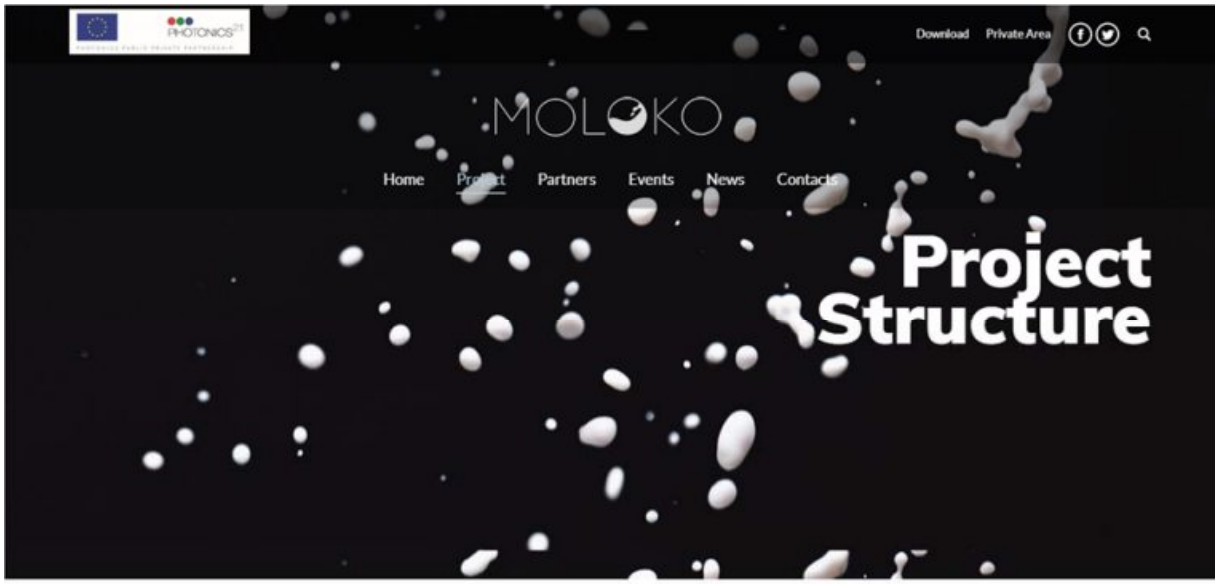
- **Objectives** (see Figure 3): This page is dedicated to project aims and main objectives;
- **Structure** (see Figure 4 and Figure 5): In this page the visitor can find how the project is structured and can learn more about the techniques and the tools developed and implemented in the project;
- **Project Status** (see Figure 6): In this section, the status of the project WPs is shown. Here, it is possible also to download the public deliverables of the project.



The main objective of MOLOKO project is the **manufacturing, implementation and validation** of a **self-managing and automatic miniaturized integrated photonic sensor** to be used as process analytical instrumentation for fastresponse on-site monitoring of interest analytes for security and quality within milk supply chain. In particular, we aim at realizing multiplexing quantitative detection of up to 10 analytes among which food safety parameters, e.g. antibiotics (i.e. penicillin, ampicillin, cephalonium) and toxins (i.e. mycotoxins and bacterial toxins) and food quality parameters e.g. lactoferrin and caseins by implementing a highly-integrated optoplasmonic-microfluidic sensor in the strategic checkpoints along the entire supply and value chain of milk.

The **MOLOKO miniaturized integrated photonic sensor** is specifically designed according to milk primary production, processing and distribution end-users in order to enable and guarantee self-monitoring safety and quality standards by the use of a reliable, highly sensitive and specific, low-cost innovative self-screening photonic technology. The **effectiveness and market-placement** of the engineered functional prototype is quantitatively evaluated by direct comparison with **respect to standard analytical methods and commercially available optical biosensors.**

Figure 3. OBJECTIVES



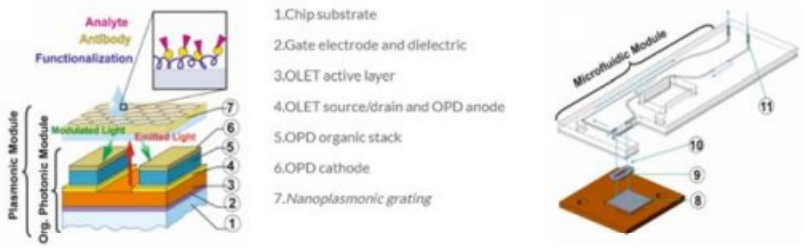
MOLOKO optical biosensor will present maximized characteristics in detection by the exploitation of inherent features of the organic optoelectronic, plasmonic and immunoassay components comprising the overall system.

This ambition will be supported by **implementing a synergetic approach** in integrating **4 technology-enabling building blocks** which allows for the realization of high-added value biosensor:

- An organic light source as organic light-emitting transistor (OLET) enables an optics-less lightcoupling in a high-sensitive detection scheme
- A non-conventional nanostructured plasmonic surfaces which allow to detect refractive index modulation at the grating surface opposite to where the probing excitation light is impinging
- An organic photodetector (OPD) that is monolithically integrated in the OLET structure by multistack side-by-side fabrication in order to enhance sensor miniaturization
- Recombinant antibody technology to be used to improve the sensitivity of detection by utilizing oriented and site-specific immobilization of antibodies and to increase the specificity of the assay and reduce the inhibiting matrix effects with respect to the conventional competitive assay format.

Below, we report a sketch of the sensor functioning. The key photonic component at the basis of the architecture of MOLOKO biosensor is the **OLET** that enables the control of the spatial position of the light emission zone within the micrometer-long transistor channel by acting on the gate voltage7. We fully exploit all the photonic features intrinsic to OLETs by monolithically integrating organic multistack OPDs onto the charge-injecting electrodes in OLET. The OPDs are deposited as stripes on top of the electrode surface of OLET by mechanical micrometric alignment: the OPDs work as integrated detectors in the organic photonic module.

Finally, the module is assembled with the functionalized plasmonic grating (optoplasmonic module) that reflects back the impinging OLET electroluminescence, once modulated in peak emission wavelength and spectrum broadness, into the OPD for signal detection. Thus, the optical detection scheme is oversimplified given that light-emitting and sensing components are highly integrated (no bulky detectors allowed) and no optical components are used for coupling modulated light.

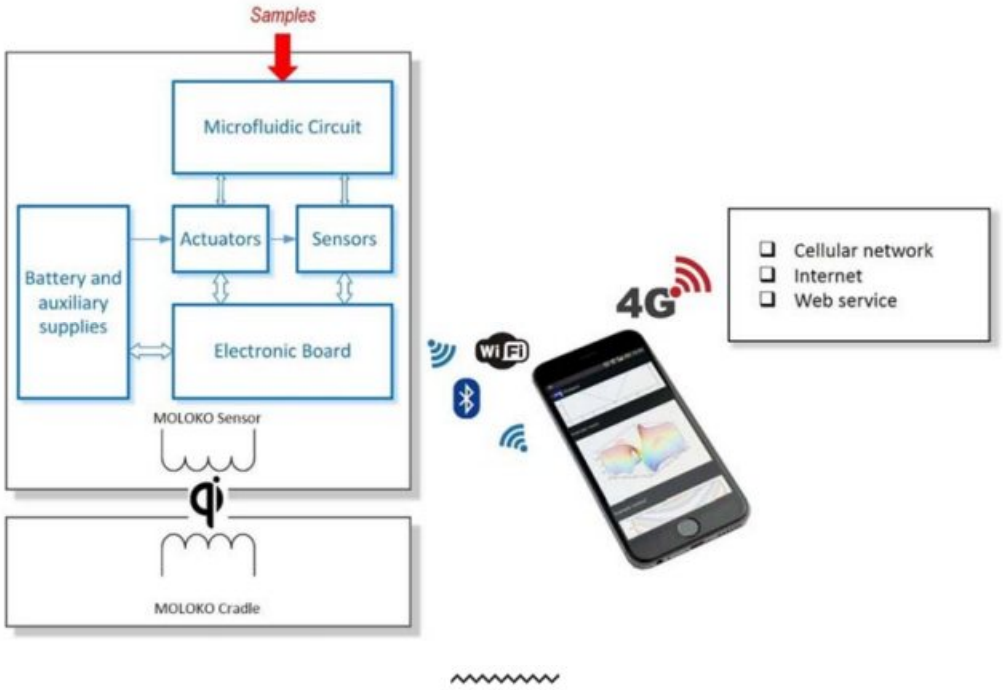


1.Chip substrate
2.Gate electrode and dielectric
3.OLET active layer
4.OLET source/drain and OPD anode
5.OPD organic stack
6.OPD cathode
7.*Nanoplasmonic grating*
8.Optoplasmonic module
9.Sealing
10.Flow direction of the sample
11.Connection to the milk line

MOLOKO project will bring an **optoplasmonic module into the harsh industrial environment of a milking system.** The overall system is comprised of MOLOKO photonic sensor, an electronic board, the MOLOKO cradle used to recharge the embedded battery, the user's mobile device and the back-end web service.
The electronic board is connected by one side to the interface **with the sensors** and the actuators (drivers), and by the other side to the interface with the back-end (user's mobile device)
The embedded software runs into a low power microcontroller that manages the data sensor acquisition, the actuators controls, the power management, the data recording and data streaming, etc.

For safety reasons, **contactless energy transfer** will be used to recharge the MOLOKO portable device battery. Such technology will allow providing the device with a high ingress protection making it washable which is essential for the in-field validation of photonic sensor. A housing will be designed and developed in rapid prototyping taking into account the user requirements, the insertion of the disposable part and the environmental constraints.

Figure 4. STRUCTURE



The innovative line of MOLOKO technology will greatly extend the in-house tools available for the **rapid and low-cost acceptance screening of milk** from primary producers (farmers). Once integrated in the milking machine, **MOLOKO sensor can detect the non-compliant units** during self-checking with consequent avoidance of mixing milk from different cows in the same tank. Moreover, official control, based on risk analysis "from farm to fork", will be increasingly integrated by bottom-up innovative systems for self-monitoring by food business operators at each segment of the milk chain. Indeed, the MOLOKO photonic sensor can also be used as handheld detection system for improving self-monitoring capability of food business operators based on modernized risk management framework (HACCP plans and daily traceability).
In this scenario, the target analyses are properly chosen in order **to meet the needs of the several food operators** at the different checkpoints of the milk chain a single analytical instrument:

- Mycotoxins from animal feed
- Antibacterial drugs
- Staphylococcus eneterotoxin
- Quality parameters

From process and logistics flow perspective, it is of outmost importance to diagnose the level of contaminants at the earliest in the supply chain. As a preventative approach, the farmers are the ones that can enable the earliest detection of those contaminants in the value chain, and consequently the prevention of contamination in the bulk milk by implementing the appropriate corrective measures.

Figure 5. STRUCTURE

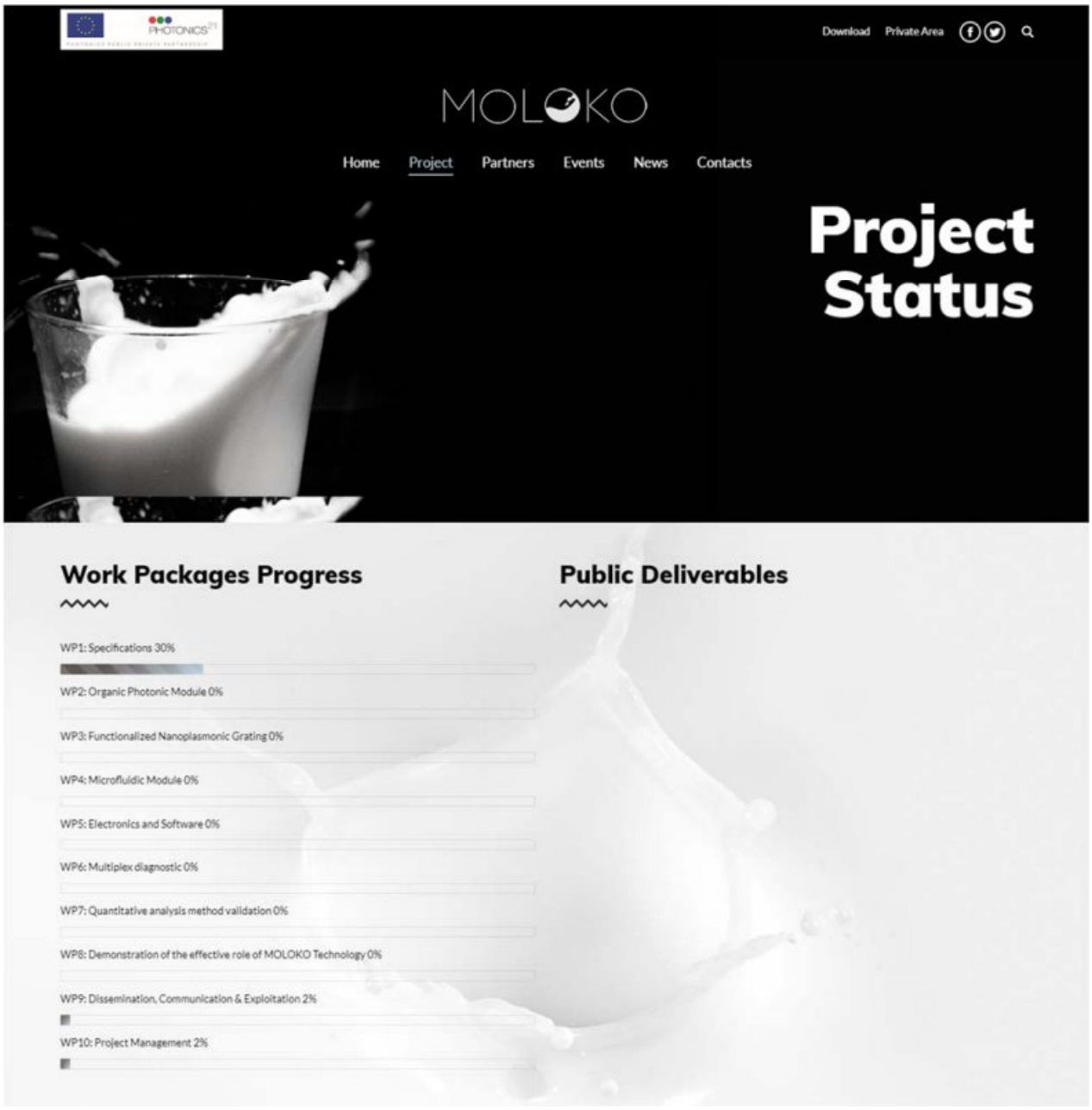


Figure 6 PROJECT STATUS

4.1.3 Partners

In this section the list of MOLOKO Partners is displayed.

For each Partner the logo is shown, with a hyperlink to the reference site home page. Below the logos, a table with the list of partners and their role in the project is also provided (see Figure 7).

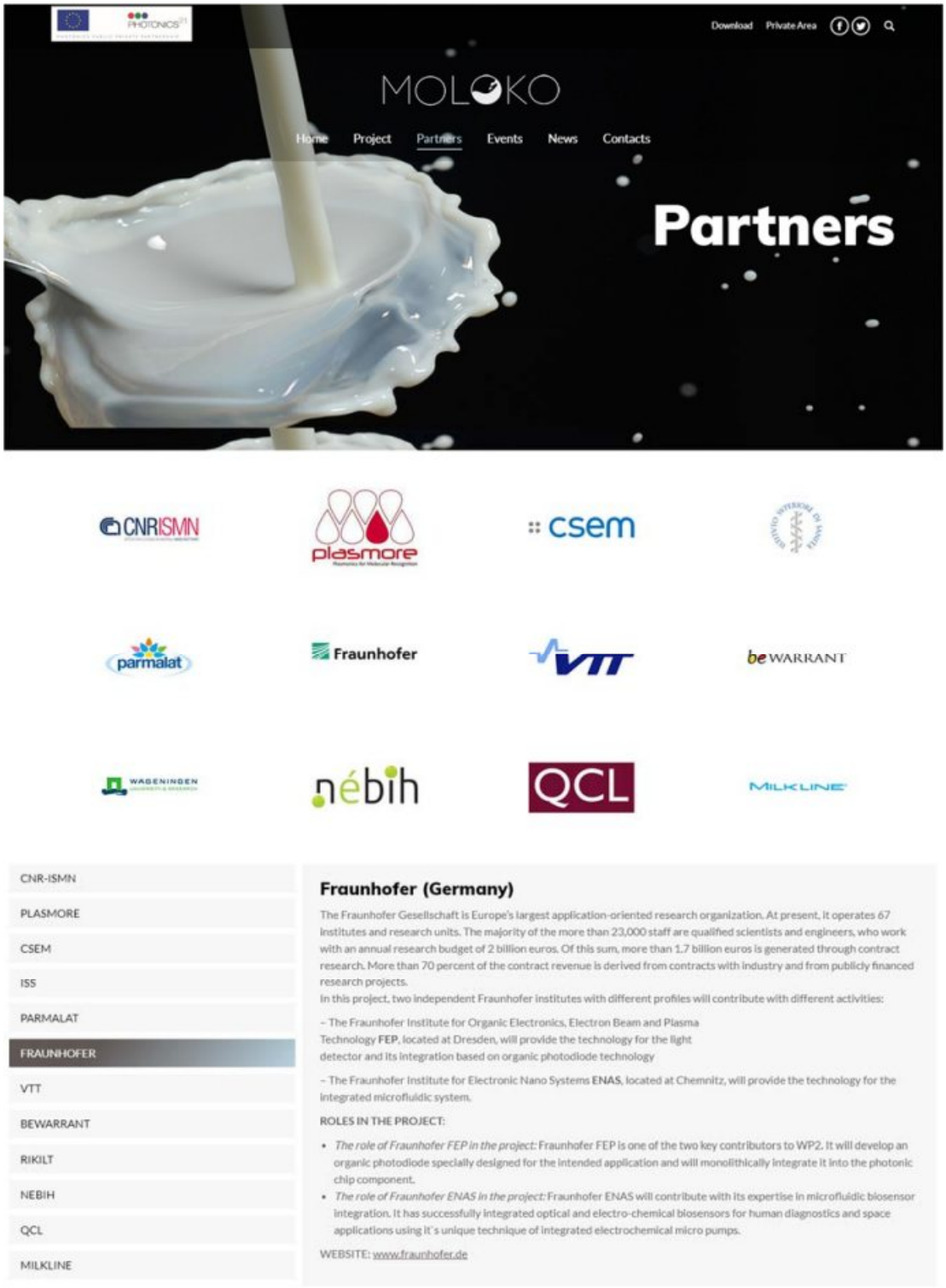


Figure 7 PARTNERS

4.1.4 Events

This section (see Figure 8) shows the complete list of the events of the MOLOKO Project (past and forthcoming) and offers the opportunity to filter them according to the following category:

- ☐ technical meeting;
- ☐ public events;
- ☐ workshops;
- ☐ forthcoming events.

Clicking on each event, it is possible to find further information about the main themes addressed by it, its main results and to see some pictures.

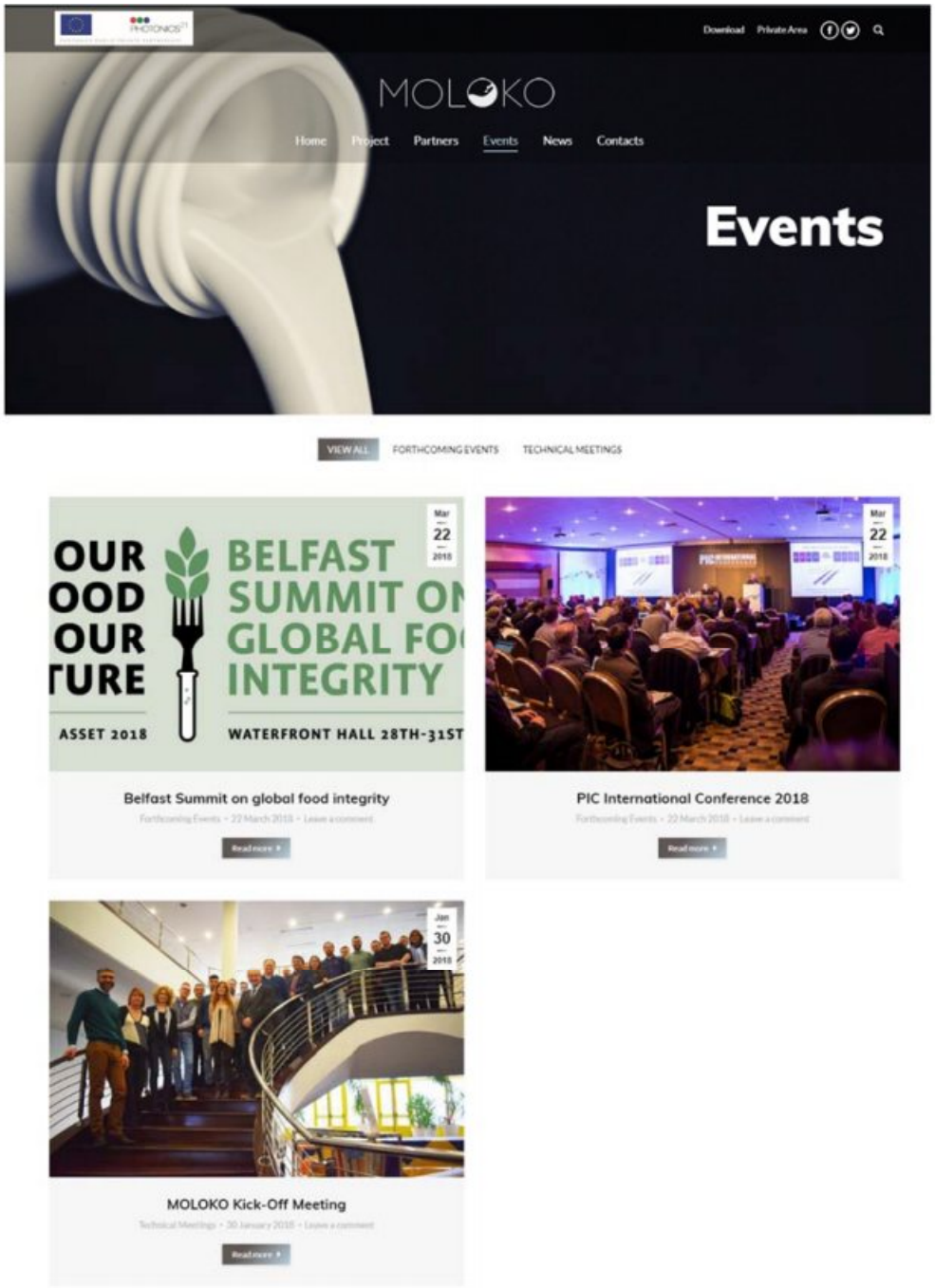


Figure 8 EVENTS

4.1.5 News

This section will contain all the news about the project, latest articles release, publication, prototype demonstrations.

4.1.6 Contacts

This section (see Figure 9) enables people to get in touch easily with relevant contact people of the project consortium, of which membership organizations, roles, email addresses are provided.

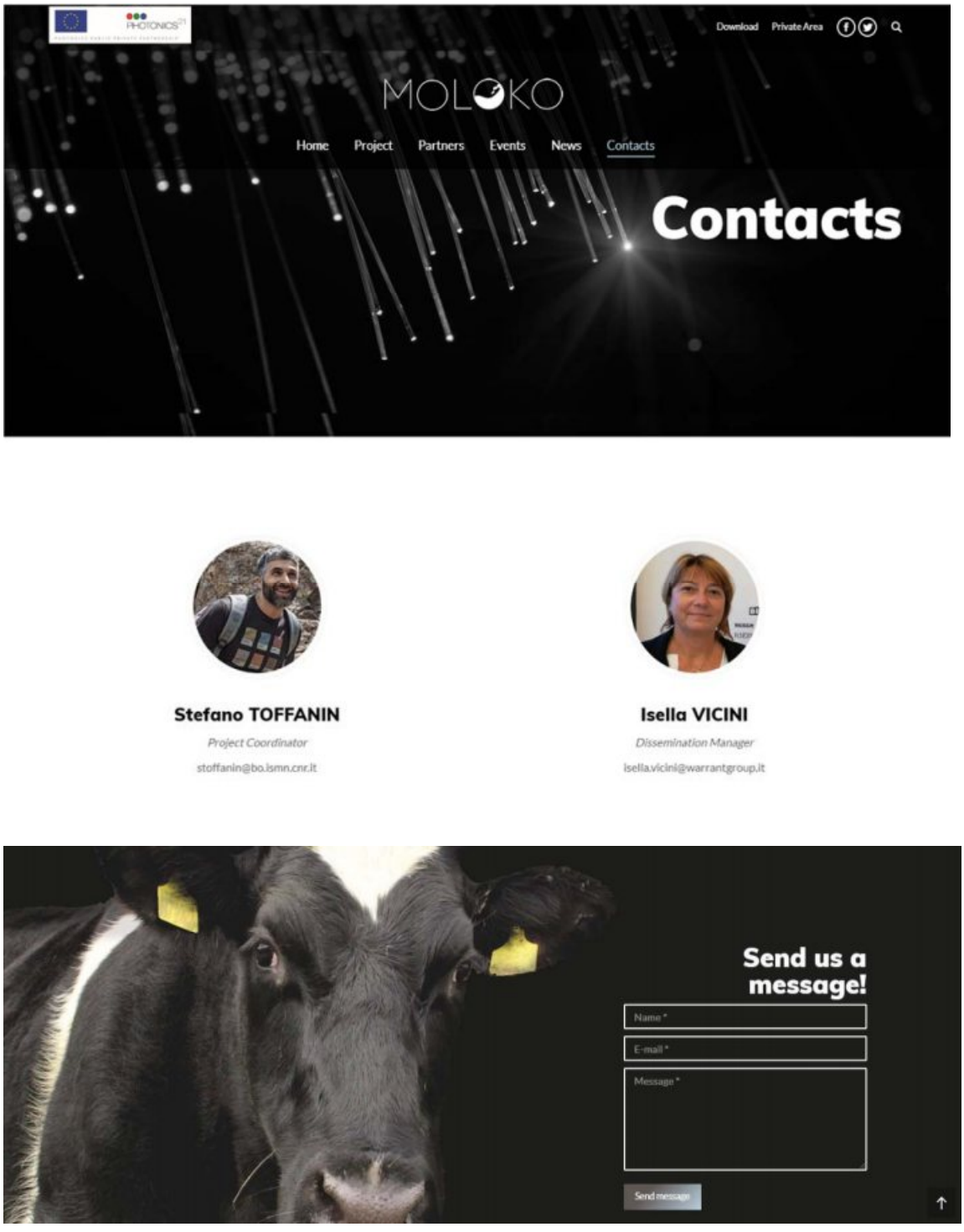


Figure 9 CONTACTS

4.1.7 Download

On the top of the website, in the secondary menu, there's a link called "Download". Clicking here, it will be possible to download press material, leaflet and posters.

4.1.8 Private Area

On MOLOKO website home page, in the secondary menu, there is a link called "Private Area" that allow to access the MOLOKO Collaborative Platform described in deliverable D10.4.