



D 7.7 PROJECT WEBSITE

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Editor	Aurore Niemiec (AYMING)		
Other authors	-		

PROJECT INFORMATION

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DOCUMENT APPROVAL

Name	Position in project	Organisation	Date	Visa
G. Dambrine	Coordinator	IEMN	26/02/2018	GD

DOCUMENT HISTORY

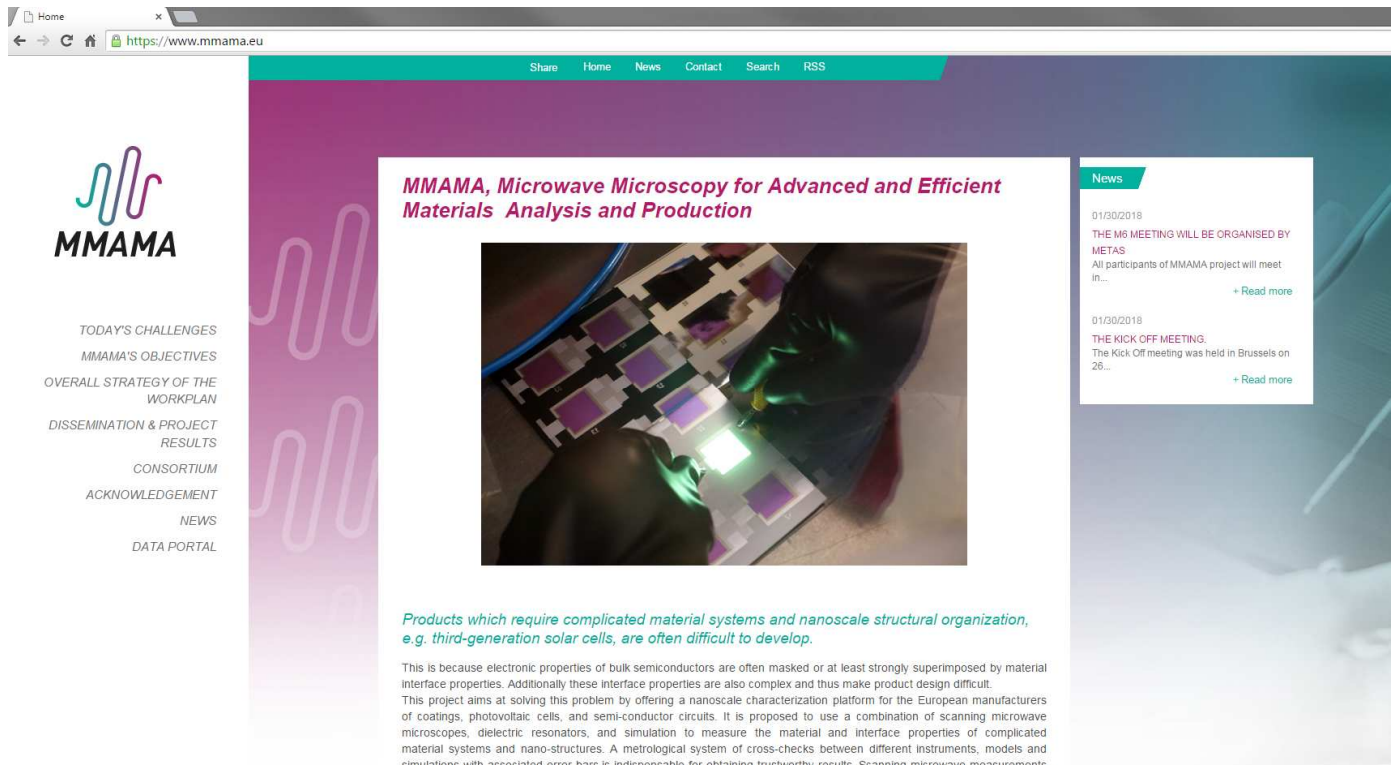
Version	Date	Modifications	Authors
V1	15/01/2018	Implementation of the website	Aurore Niemiec
V2	30/01/2018	Addition of content	Aurore Niemiec
V3	23/02/2018	Addition and corrections after modifications of the website	Aurore Niemiec
VF	26/02/2018	Validation	Gilles Dambrine

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1. DESCRIPTION OF THE DELIVERABLE CONTENT AND PURPOSE

A public project website was created (<https://www.mmama.eu/>). The homepage is presented below:

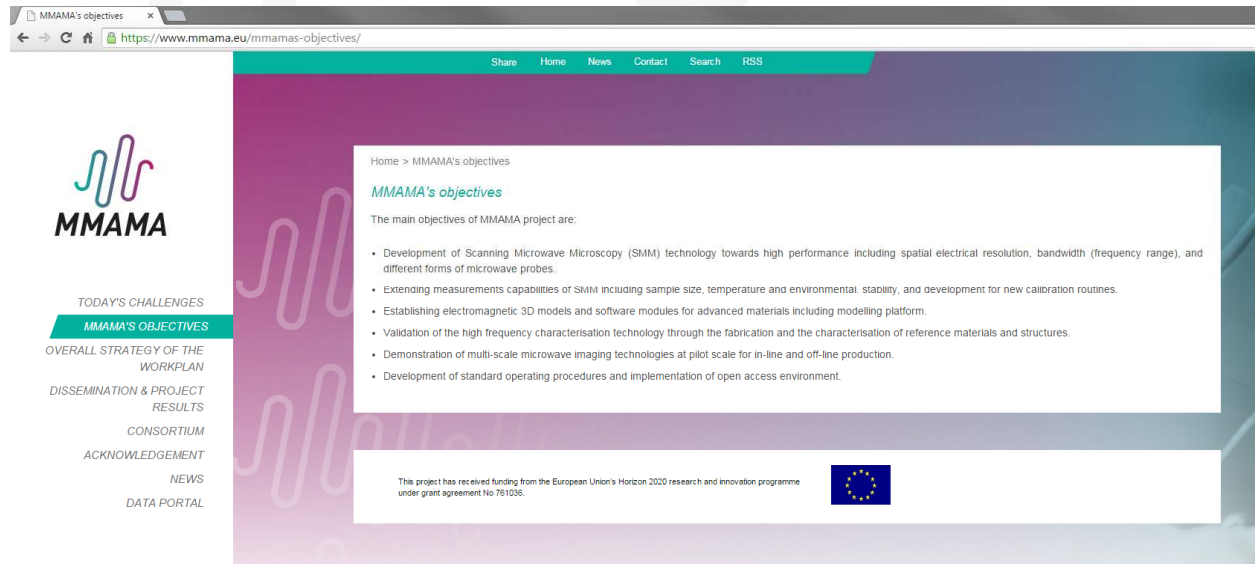


This tool will help the partners to disseminate about the project aim, related events and main results generated during the project. Also it will allow direct access to information related to the consortium, the people and research teams involved and their specific expertise (see dedicated section 'Consortium').

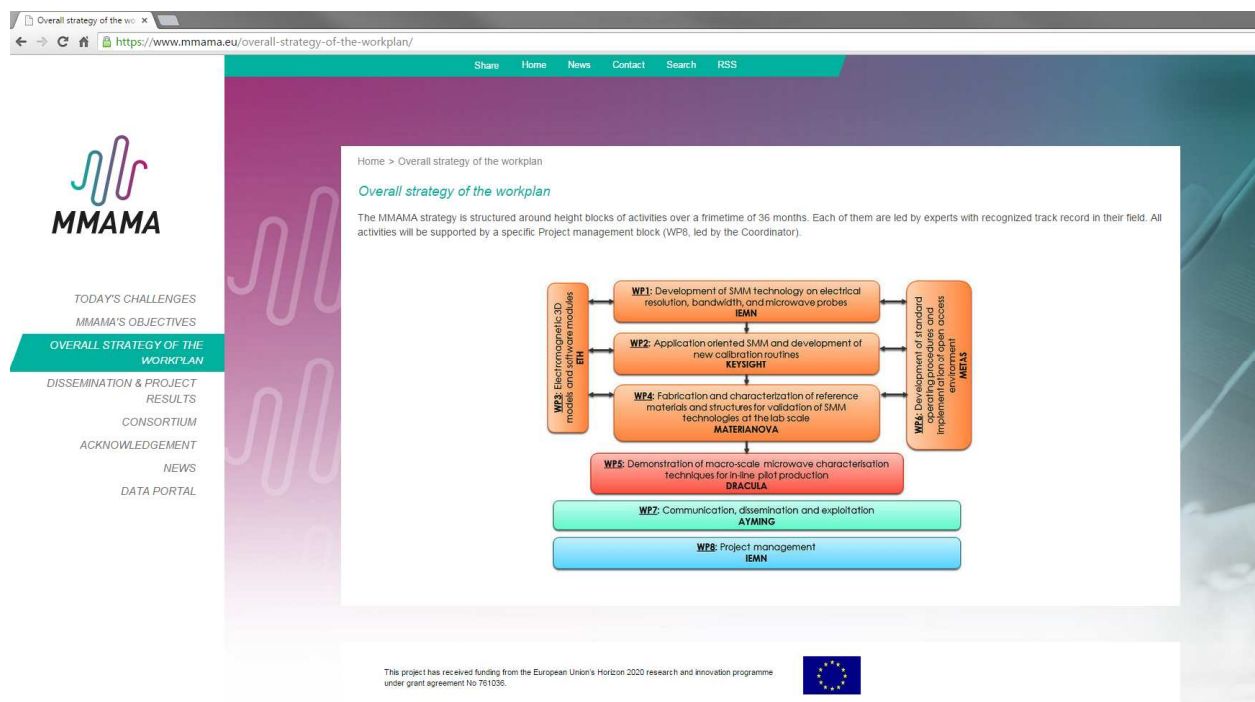
The website will be updated on a regular basis and additional sections will be created as soon as the first results will be generated. Of course the consent of all partners for proper will be necessary for good IPR management, following the rules described in the Consortium Agreement. The structure of the website is currently composed of 8 sections which are listed and described below with some screen copies to illustrate.

- Today's Challenge: Section dedicated to global overview of main technological bottlenecks in the field, new alternatives to be developed notably through MMAMA project and putative applications of MMAMA results. To be updated on a yearly basis or as soon as technological modifications (internal or external to this H2020 project);

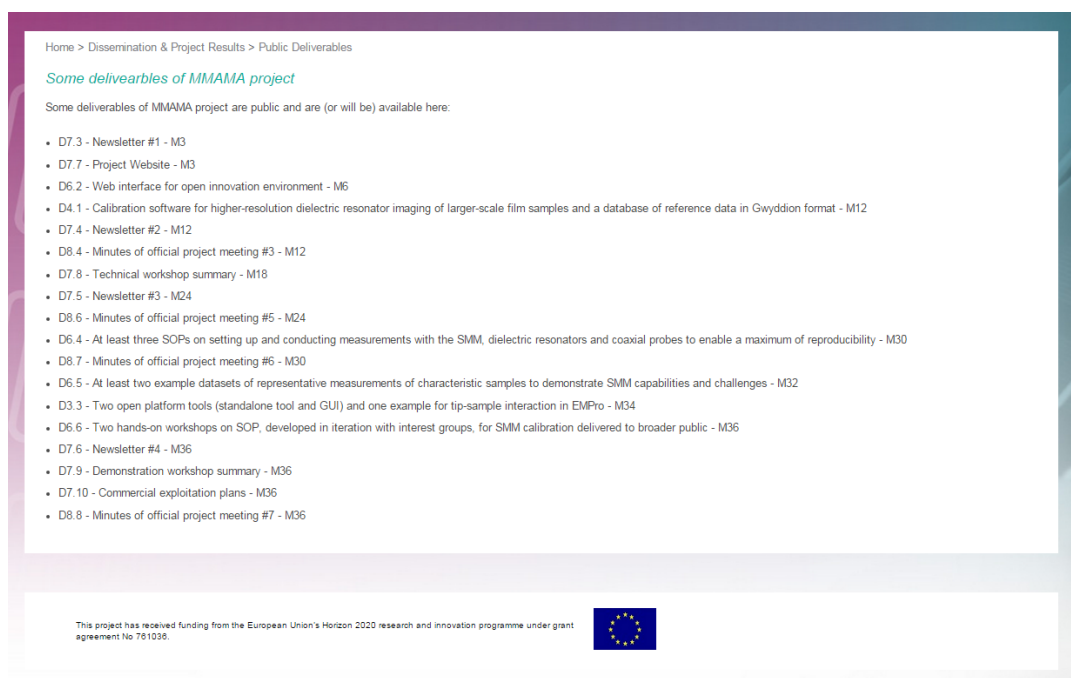
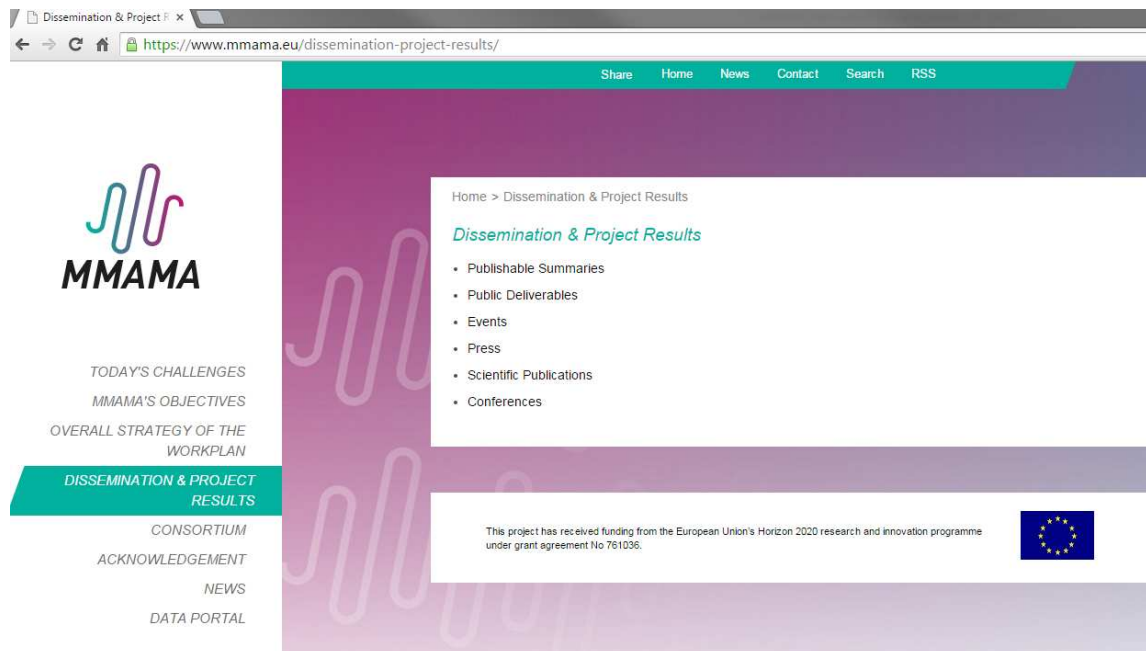
- **MMAMA's objectives:** Section describing the main objectives. To be updated if changes are necessary and made through modification of the Description of action (after Amendment validation by the European Commission);



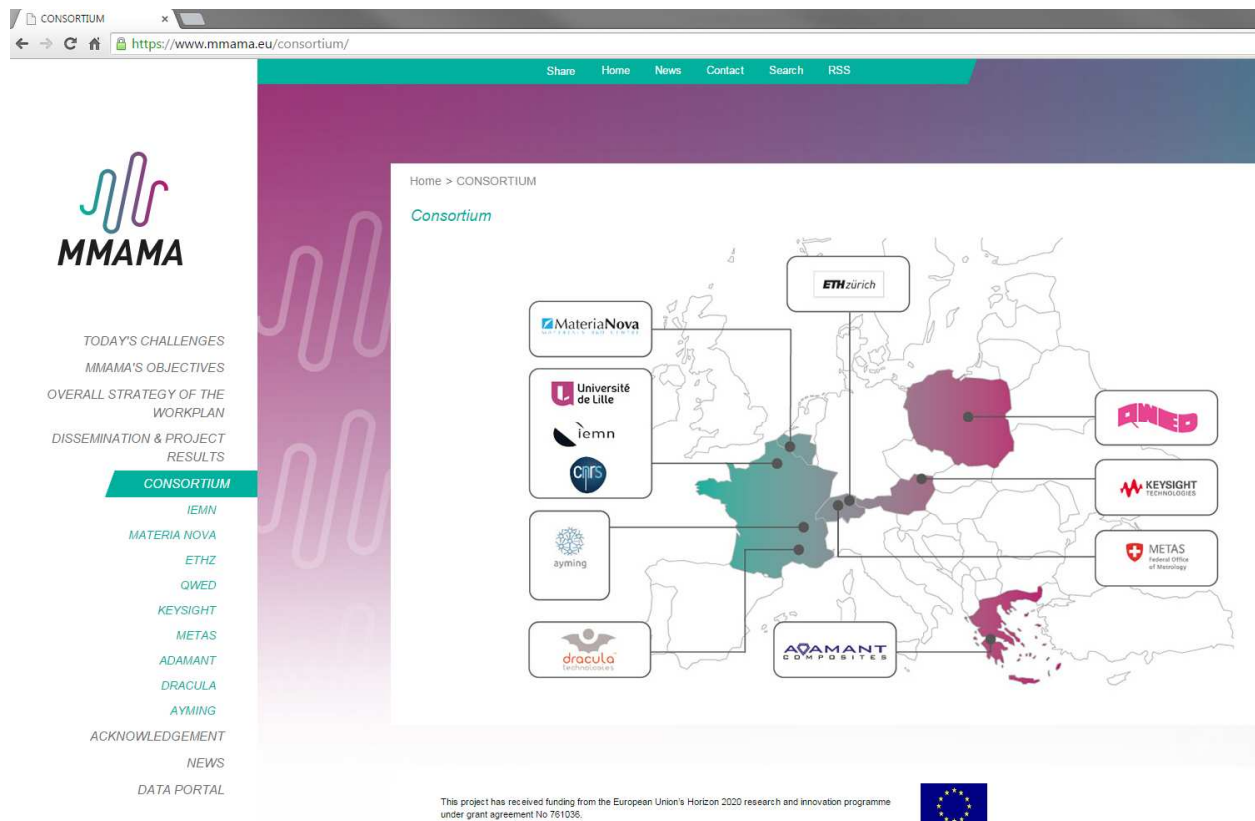
- **MMAMA's overall strategy of the workplan:** Section presenting the structure of the workprogram of the project. To be updated if significant changes are necessary (for example changes in WP leadership or the consortium composition) and made through modification of the Description of action (after Amendment validation by the European Commission);



- **Dissemination & project results:** Section dedicated to all activities and information related to Communication and Dissemination related to the project. The sub-sections list is shown in the screen shot below. Note that all public deliverables will be accessible from the dedicated sub-section as soon as they will be validated by the European Commission.
Any addition of content in one of the subsection will automatically be reported on the Home page ('News' windows on the upper right part).



- **Consortium:** An overview of all participating organizations have been presented on a map. To be updated if significant changes occur (for example change in consortium composition) and made through modification of the Description of action (after Amendment validation by the European Commission). More information are available through the general menu bar on the left, or by clicking on partners' logo. Each partner can request update of its description section. The example of the coordinating organization is provided below to illustrate the type of content provided on the public website of MMAMA project.



Home > CONSORTIUM > IEMN

Description of the organisation

UNI Lille is one of the leading science universities in France, with around 20000 students and 2975 staff members (Academic and Administrative). Research is organised around 5 Institutes and 3 Research Centres. These 8 scientific areas have developed a strong strategy with National and International authorities under its 37 key laboratories. Lille 1 possesses 5 doctoral schools, 1100 candidates of which 30% are international are registered in these doctoral schools and about 220 theses are defended per year.

The Institute of Electronics, Microelectronics and Nanotechnology (IEMN) is a public laboratory within University of Lille, CNRS, University of Valenciennes, École Centrale Lille and ISEN-Lille. The laboratory gathers 480-500 people including as permanent staff: 45 full time CNRS researchers, 114 professors and assistant professors and 66 engineers and technicians. IEMN is a strong actor as training center in the field of nanoscience with 140 PhDs students, 80 undergraduate students and 30 Postdocs.

The laboratory gathers five scientific departments:

- Materials and nanostructures ;
- Micro and nano-systems ;
- Micro nano and optoelectronics ;
- Circuits and communication systems ;
- Acoustics.

IEMN gathered five large experimental platforms:

- The 'Micro and Nano Fabrication Center' with 1000m² of clean room (ISO6) including nanotechnology equipment and 250m² dedicated for back-end process; 24 engineer permanent positions;
 - The 'Microwave Characterization Center' and - The 'Scanning Probe Microscopy (SPM)' platform' are gathered in new controlled (temperature, hygrometry, ultra low vibration) environmental spaces (ISO6) over 1100m²; 7 engineer permanent positions.
 - The 'Telecom' and - The 'ElectroMagnetic Compatibility' platform dedicated to microwave and mm-wave systems characterization; 3 engineer permanent positions.
- In 2016, 66 national projects (National Research Agency), 17 European projects (FET, Flagship Graphene, Interreg V, Marie Curie - ITN...) are on-going.
The annual scientific production is close to 250 peer-reviewed articles in Physics, Engineer research, Chemical, Biological journals (Nature, Science, APS, ACS, IEEE...).

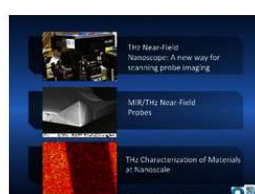
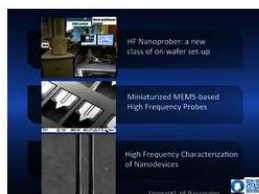
Significant infrastructure / major items of technical equipment

The instruments, the environmental controlled space and permanent staff of the 'Microwave Characterization Center' and the 'Scanning Probe Microscopy (SPM)' platform' guarantee the best conditions to achieve the project objectives.

These characterisation platforms of IEMN offers:

- numerous Microwave to THz measuring equipments (up to 750GHz VNAs*, manual and semi-automatic probe stations, HF noise and power microwave and mm-wave test-sets, near field and far field microwave measurement set-ups*, microwave and mm-wave interferometer set-ups* ...) as well as
- scanning probe microscopy/spectroscopy facilities (2 SMMs*, 1 SEM dedicated to microwave/mm-wave measurements*, 1 s-SNOM operating at 10µm and in the THz, 4-probe SPM and time resolved probe-pump optical set-up, open air and UHV multi-physics AFMs, 1Kelvin/2Tesla Joule Thomson AFM ...).

* main instruments used in the frame of MMAMA project.



Main contact

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About the team

MMAMA project will be carried out in the 'Micro and Nano-systems' department and will benefit of the facilities and permanent staff of the 'Microwave Characterization Center' and the 'Scanning Probe Microscopy (SPM)' platform'.

As leader of WP1, IEMN will develop a homemade SMM integrated in a SEM set-up including microwave to mm-wave SMM probes and characterization techniques. In WP2, in collaboration with METAS, IEMN will contribute to SMM based measurements with coaxial tip under SEM. In WP4, IEMN will be involved, in close collaboration with Materia Nova and Adamant, to SMM analysis of reference samples dedicated to PV, batteries, ultracapacitors, advanced components and ion-implanted surfaces. In WP5, IEMN will develop a microwave free-space measurement set-up suited for in-line non-destructive testing and evaluation.

- An interferometric scanning microwave microscope and calibration method for sub-THz microwave measurements, T. Dargent, K. Haddadi, T. Lasri, N. Clément, D. Ducatteau, B. Legrand, H. Tanbakuchi, D. Théron, Rev. Sci. Instrum. 84, 12 (2013).
- Interferometric technique for scanning near-field microwave microscopy applications, BAKLI H., HADDADI K., LASRI T., Trans. Instrum. Meas. 63, 5 (2014)
- Measurement techniques for RF nanoelectronic devices : new equipment to overcome the problems of impedance and scale mismatch, HAPPY H., HADDADI K., THERON D., LASRI T., DAMBRINE G., IEEE Microw. Mag. 15, 1 (2014).
- Modeling and calibration in near-field microwave microscopy for dielectric constant and loss tangent measurement, BAKLI H., HADDADI K., LASRI T., IEEE Sens. J. 16, 12 (2016)
- Quantitative impedance characterization of sub-10 nm scale capacitors and tunnel junctions with an interferometric scanning microwave microscope, F. Wang, N. Clément, D. Ducatteau, D. Troade, H. Tanbakuchi, B. Legrand, G. Dambrine, D. Théron, Nanotechnology Volume 25, Number 40 (2014).
- A 17 GHz molecular rectifier, J. Trascobares, D. Vuillaume, D. Theron, Nat. Commun., Volume: 7 Article Number: 12850 (2016).

Key people involved

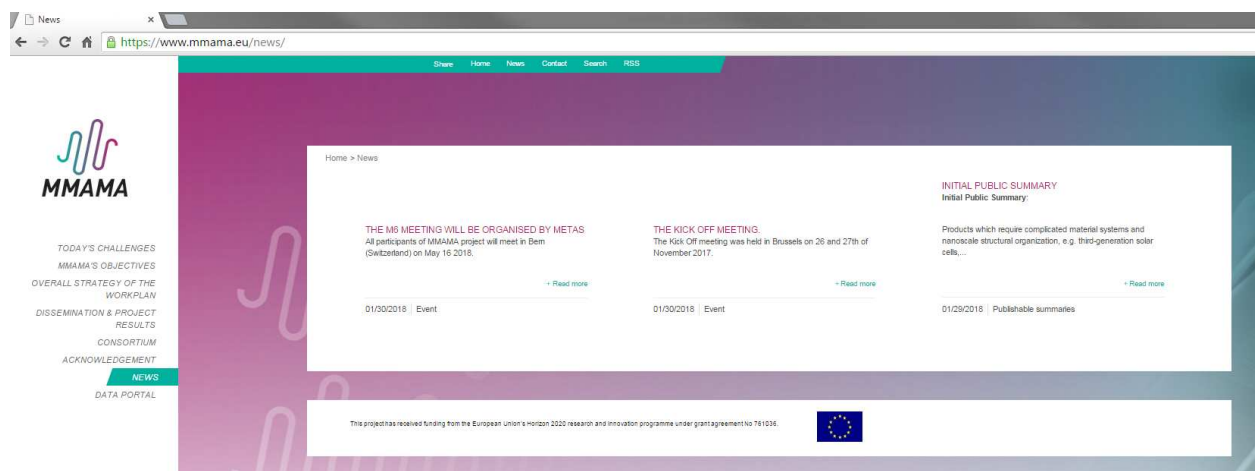
Prof. Gilles Dambrine, (PhD 1989, Habilitated 1996, IEEE Fellow 2016), is Deputy Director of IEMN. He is author and co-author of 75 peer review articles and 112 peer-reviewed communications in IEEE conferences (5 invited in plenary session) and 14 book chapters (2900 citations ISI/Scopus, 4300 Google Scholar). He participates to H2020: 'Flagship Graphene', EMPIR 'IND02 PlanarCal' and he participated to FP5-6 & 7 Framework programs (FET), MEDEA (after CATRENE) European clusters and ESA programs whose 6 of them as WP leader. His main expertise is the characterization of semiconductors based devices in dynamic regime.



Dr. Kamel Haddadi (MSc Lille 2003, Ph.D Lille 2007) is an Associate Professor of Electronics and Electrical Engineering in the University of Lille 1. His main research interests, in the IEMN, are the development of microwave measurement techniques for microwave Non Destructive Evaluation (NDE) and for electrical nanometrology. He is in charge of microwave aspects in the frame of the French PIA Equipex Excelsior and European project EMPIR EMPIR 'IND02 PlanarCal'. He is author of ~ 80 articles in peer review international papers and conferences. He is a TPC member in various IEEE conferences.

Dr. Didier Théron received in 1998 the CNRS Bronze medal for his work on the physics and technology of power HEMTs for millimetre wave applications. In 2009, in collaboration with Keysight Technologies, he developed expertise in Scanning Microwave Microscopy coupled to RF Interferometry for the investigation of aF scale capacitance on Au nanodot devices and Ferrocenealkane Thiol grafted to those Au nanodots. He participated to 80 peer-reviewed papers and 76 peer-reviewed communications in conferences (12 invited) and 2 patents.

- **Acknowledgment:** Section reminding that this project was made possible thanks the European grant. Note that, in order to comply with European Commission recommendations, this information appears at the bottom of each page of the website.
- **News:** Section grouping all news that will be generated on the public website (only the two most recent ones are shown on the Home Page).



- **Data Portal:** This section will allow a direct link to the secured website where all data will be centralised and shared within the consortium and with specific stakeholders through nominative access. For security reasons, separation of the 2 websites has been decided during Kick-Off meeting. This restricted access website, also hosted by METAS, is still under construction and will be available from M6 (April 2018).