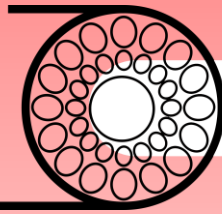


Newsletter #3
October 2016



NewDeli



Collaborative project
No. 609355 APPOLO
FP7-2013-NMP-ICT-FOF



**Dear Subscriber,
Welcome!**

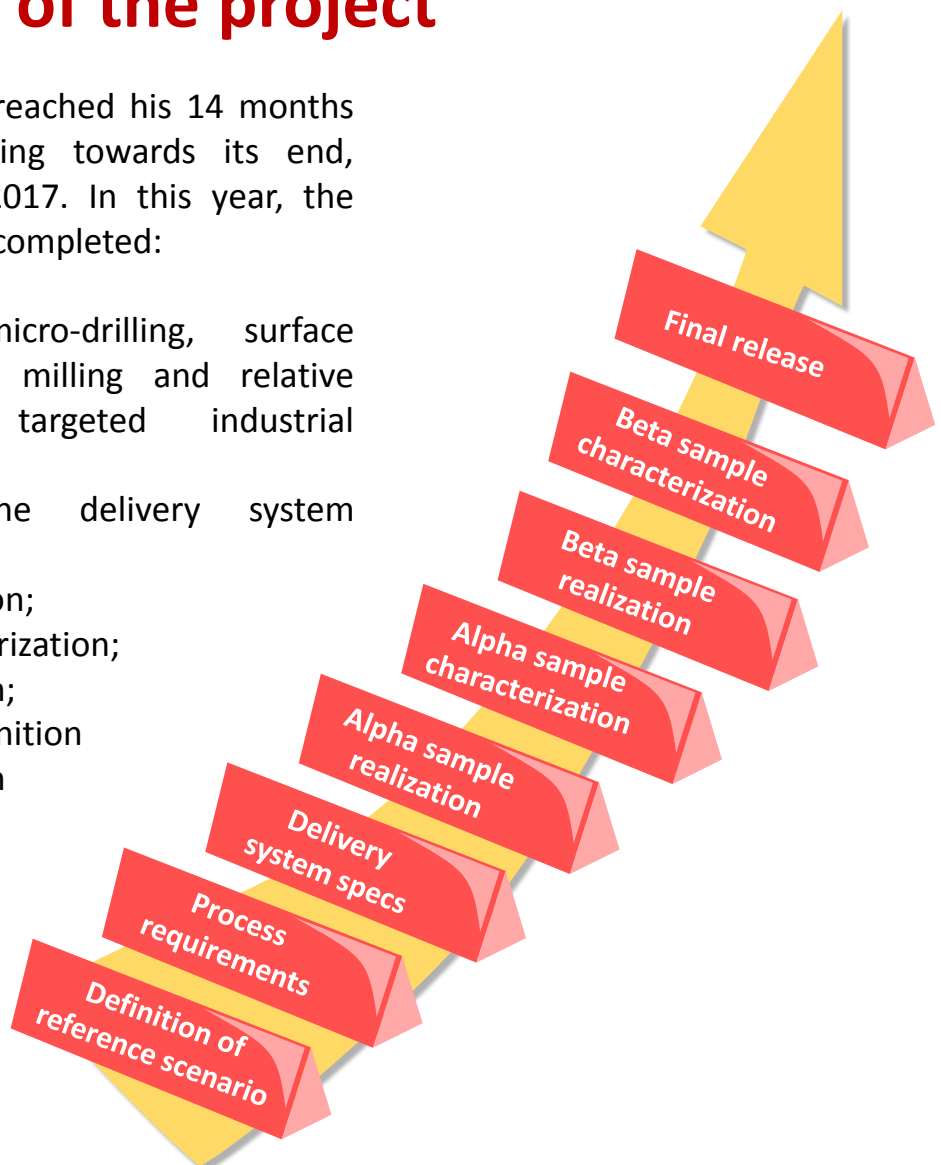
*This is the third issue of **NewDELI** project newsletter, a project funded by the European Commission within **Factory of the Future** program, FP7.*

To receive our newsletter by email please subscribe at project website www.newdeliproject.eu or address an email to info@newdeliproject.eu

Current status of the project

The NewDeli project has reached his 14 months of activity and is heading towards its end, scheduled for February 2017. In this year, the following tasks have been completed:

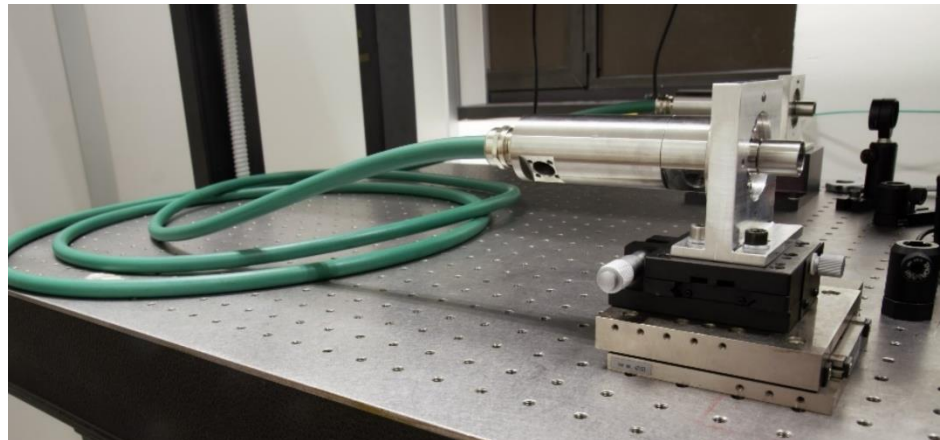
- ✓ Identification of micro-drilling, surface polishing and micro milling and relative requirements as targeted industrial applications;
- ✓ Identification of the delivery system specifications;
- ✓ Alpha sample realization;
- ✓ Alpha sample characterization;
- ✓ Beta sample realization;
- ✓ Experimental plan definition for the characterization of the beta sample.



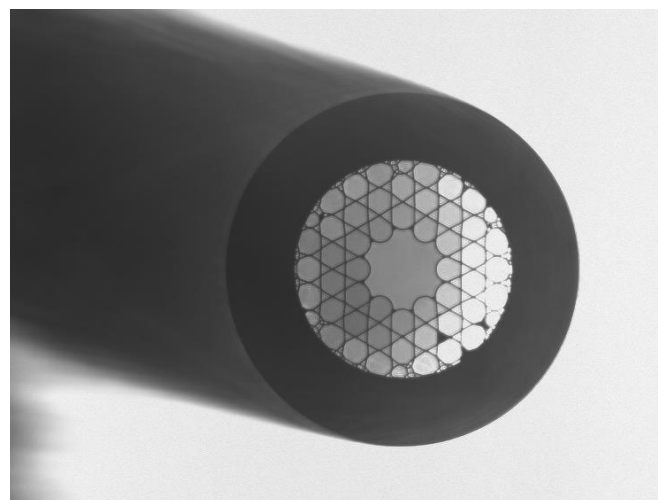
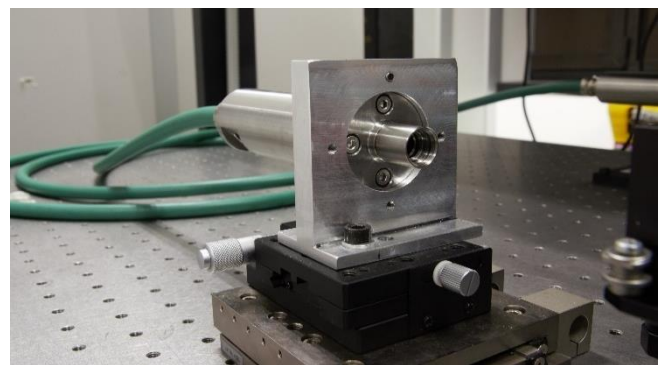
Next step and objectives

In the following months, a quality assessment of the cable realized by OPI will be tested at BUAS' facilities following an experimental plan properly designed by IRIS. After the test sessions, a validation report of the delivery system and the assessment of its capability to fit the industrial process requirements of the selected use cases scenario will be released. Moreover, an application note for end-users and specific guidelines for Subtractive Manufacturing applications on how to effectively use the NewDeli's cable will be made available to the public.

>>> Beta sample delivered



Beta sample of the delivery system has been designed and realized by the team from OPI. The NewDeli's solution is an Hollow-core photonic crystal fiber that exploits the potential of having a micro-structured cladding region with air holes: the periodic circular "holey" structure encompasses a larger central air hole, which serves as the fiber core to guide the ultrashort laser pulses. This cutting edge technology gives the possibility to deliver high peak power laser pulses without nonlinear effects or material damage.



Interview with... **ANDREA BRAGLIA** CEO @ OPI Photonics

OPI Photonics develops cutting-edge industrial solutions in **high power photonics**, focusing on laser beams managing for material processing & biomedical applications (biomedical laser sources, novel architectures for high power laser diodes, kW range beam switching and combining, high power pulsed laser delivery systems). More at opiphotonics.com

Which are the current limitations for the industrial beam delivery system for ultra-short pulsed laser?

Due to the high power density brought by ultrafast lasers, this kind of pulses can not be delivered by solid core traditional fibers, because of optical damages and non-linear effects. Today's systems thus involve free space mirrors arms, with beam path encapsulated in tubes, resulting in rigid and difficult to handle systems.

Which are the benefits that the NewDeli's solution can bring to the market?

NewDeli's solution will deliver ultra-short pulsed lasers using a hollow core photonic crystal fiber. This will result in a delivery system with the key advantages of fiber optics, i.e. a flexible, easy to handle and alignment-free system.

Which were the major challenges that had to be faced in the realization of the prototype?

In the prototype realization first we had to face the technological issues related to the hollow core fiber, e.g. handling a fragile fiber, realization of the proper fiber coupling system and the development of a repeatable cleaving process.

Moreover, the mechanical design of the cable and the connectors must minimize any kind of stress on the fiber.

>>> **STAY TUNED...**

In order to promote the knowledge about the NewDeli's solution, a specific event held at the end of the project at OPI's facilities in Torino open to all APPOLO network members will be organized. Concurrently, a seminar in Torino open to young researchers from APPOLO network will be arranged: both events are planned at the end of the project.

>>> **Dissemination events**

IRIS participated at **Additive Manufacturing Europe 2016** in June 2016. IRIS presented information and latest achievements of the NewDeli and APPOLO project to a variety of industrial and academic interested people. The three day conference was split by vertical sector: healthcare, aerospace and automotive. The sessions covered trends and technologies, case studies and panel discussions.



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