Dear Photonics21 Secretariat

We herewith submit the nomination of the following Photonics21 Board of Stakeholder candidate Heliograph Holding, Schepers GmbH & Co. KG.

- Letter of Nomination -
Photonics21 Board of Stakeholders
Election 2018

1. Full legal name of the affiliation nominated as BoS Member (candidate's organisation):

Heliograph Holding, Schepers GmbH & Co. KG

2. Full contact details of the affiliation (street, postal code, country) nominated as BoS Member and invoice address (in case the candidate is elected, the affiliation needs to pay an annual service fee according the Photonics21 Terms of Reference §5 (10)):

Karl-Benz Str. 7, 48691 Vreden, Germany

3. Name of the suggested BoS Representative (the personal candidate)

Dr. Stephan Bruening

4. Information about the BoS candidate and the BoS representative

Extract Photonics21 Terms of Reference[1]: "§ 5 BOARD OF STAKEHOLDERS; …(6) Election of BoS Members: "Description of the activities of, and information about the added value and contribution to the BoS by both the nominated BoS member and the BoS Representative"

a) Description of the activities and information about the expected contribution and value added the nominated BoS member (candidates organization) will bring to the BoS[2]

The company Schepers Druckformtechnik GmbH & Co KG was founded in 1991. Based in Vreden, Schepers, a German center for printing form manufacturing, has focused on the design and development of laser engraving systems for gravure, decorative, embossing, rotary pad printing and security applications. The production program also includes equipment for highly specialized requirements. Schepers has created a universal laser platform, the Digilas. The Digilas can process any cylindrical body made of any material that is to be structured by using direct laser-engraving or lithographical methods and subsequent etching or galvanic forming. The Digilas machine is offered in different sizes for the production of rollers from those which can be held in one hand to those cylinders which weigh many tons. It can be combined with various laser sources and optics depending on the type of application and the performance required.

Over the past 7 years, Schepers has installed more than 100 systems on the basis of Q-switched fiber lasers with average powers of up to 500 W for customers in the markets of printing cylinders (color transfer) and embossing cylinders (mold transfer). Especially in the field of embossing applications, great progress has been made: the introduction of pulsed fiber lasers have made possible three-dimensional geometries that could not be realized in these dimensions by micro-milling or lithography previously used. Schepers has meanwhile quartered the engraving times by using four synchronized pulsed nanosecond fiber laser beam sources and today achieves 1 cm^3/min in aluminum and 500 mm^3/min in copper with lateral resolutions of 640 dpi (pixel size 40 µm).

[1] Photonics21 Terms of reference are available at https://www.photonics21.org/download/about-us/structure/ETP_Photonics21_Terms_of_Reference_C3.pdf?m=1513688127&?m=1499877714

[2] The candidate is aware and accepts that according to the Photonics21 Terms of Reference a service agreement and a service fee invoice is to be signed / paid with the Photonics21 association.

Due to the long pulses, however, a corresponding reworking by grinding and cleaning is necessary in these systems. For the market segment of technical form and color transfer, Schepers could bring in the knowledge of the new ultrashort pulse laser processing gained from the BMBF project Pikoflat and could expand its product and application range in this way. Over the past 4 years, 15 Digilas systems (for security print application and micro-embossing application, e.g. for flat panel displays) with ultrashort pulse lasers (1064 nm, 10 ps, 2 MHz, 80 W - 300 W) have been installed at customer sites. In the BMBF project Multisurf, the company Schepers, together with the project partners, have split a 500 W UKP laser system in 16 individual modulated beams and integrated this demonstrator in a cylinder micro structuring process. In the INTERREG project MOVERO (with 5 Dutch and 5 German partners) initiated by Schepers, Schepers is responsible for the mass duplication of functional surfaces (such as soft-touch, anti-bacterial, biomedical, optically diffractive and refractive structures) on films using R2R processes.

Since 2008 Schepers has been a member of the Heliograph group. The Heliograph Holding has 525 employees and is a decentralized, family owned network of dedicated manufacturers and solution providers whose combined expertise in printing form manufacture covers all the relevant printing methods. In this application, Schepers represents the Heliograph group together with the companies HELL, Lüscher and Daetwyler, in the area laser micro structuring of cylinder surfaces.

b) Description of the activities and information about expected contribution and value added the BoS Representative (candidate / person) will bring to the BoS.

For 20 years now, Mr. Stephan Brüning has been working for the company Schepers and is actually Head of Research and Development. He joined Schepers in 1998 and started to work in the pre-press area with focus on the laser processing of printing forms for gravure and flexo applications. During his professional activity, he has been involved in R&D projects concerning laser sources, laser beam delivery, data flow and processing of different kind of materials. He has continuously developed the DIGILAS micro processing equipment and promoted new applications in the field of roll-to-roll applications such as intaglio print metal embossing and nano imprint lithography.

After having studied physical engineering with a focus on laser application technology, he began his professional career at the company Schwind in Aschaffenburg where he worked in the field of medical technology and dealt with excimer laser surgery. Since 1998, he has been working as R & D project manager for Schepers GmbH & Co. KG, nowadays a member of the Heliograph Group. Meanwhile he has joined the management and has been given procuration.

Mr. Brüning has done a degree in electrical engineering and information technology with a focus on photonics at the University of Hagen and has completed a Ph.D. study at the RWTH Aachen University in the mechanical engineering department at the Department of Laser Technology (LLT) in cooperation with the Fraunhofer Institute for Laser Technology (ILT).

In various research projects, Mr. Stephan Brüning has assumed a leading role in strategic and operational matters: He has coordinated the projects between the partner companies involved, controlled the internal development work, and engaged in external communication. For the development of the Digilas, a main project of Schepers, the project results have been very significant and have made possible an innovative leap forward, thanks to the fundamental expertise acquired.

This was honored by several innovation awards like the AKL Innovation Award in 2012 and in 2018 which have enabled the center of science and technology to sustainably secure that the ultra-short pulsed laser technology became more and more important for industrial applications.

Mr. Stephan Brüning participates in a scientific exchange on current research questions and promotes this research work by regular publications as well as discussions and presentations. He is member of various national, European and international organizations and thanks to a regular exchange of ideas with colleagues and business partners, the existing processes will be continuously optimized and new project ideas can be realized.

By his candidature, Mr. Stephan Brüning will actively contribute to strengthening the leading role of the photonics industry in Europe.

Final information from the Photonics21 secretariat:

- *We recommend limiting the BoS nomination letter to 3-4 pages max.*
- *Letters of nominations should be either submitted via the Photonics21 website*

  https://www.photonics21.org/bos-election/index.php

  or via e-mail to secretariat@photonics21.org .

- *It is highly recommended to consult the Photonics21 Terms of Reference before submitting the nomination.*

- *Please note that the deadline for providing BoS nominations to the Photonics21 Secretariat is the **21 st September 2018**.*