



To Photonics21Secretariat
via eMail: secretariat@photonics21.org

or via Mail:
c/o VDI Technologiezentrum GmbH
ST / QS
Attn: Barbara Kehrler, Ursula Tober, Markus Wilkens
VDI Platz 1
40468 Düsseldorf
Germany

Dear Photonics21 Secretariat

We herewith submit the nomination of the following Photonics21 Board of Stakeholder candidate
Tyndall National Institute / Professor Paul Townsend.

**- Letter of Nomination -
Photonics21 Board of Stakeholders
Election 2019**

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§ 5 BOARD OF STAKEHOLDERS (6) b....A candidate nomination will always contain the name of the candidate organisation together with its proposed BoS Representative, and voting on a candidate implies voting on this combination.

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

Tyndall National Institute

2. Full contact details of the affiliation (street, postal code, country) nominated as BoS Member and invoice address *(In accordance with the Terms of Reference §5, which the Affiliation acknowledges having received, an Annual Service fee will be invoiced every year during the first quarter to the BoS Member. By signing the present letter the BoS candidate agrees to pay this Service Fee. The Service Fee will be considered an asset of the Photonics 21 AISBL in accordance with its statutes (article 12,c).*

Tyndall National Institute, University College Cork, Lee Maltings, Dyke Parade, Cork, T12 R5CP, Ireland

(Candidates' signature below)

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

Paul Townsend

4. Information about the BoS candidate and the BoS representative

Extract Photonics21 Terms of Reference¹: “§ 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 BoS²

Established with a mission to support industry and academia in driving research to market, Tyndall National Institute is one of Europe's leading research centres in Information and Communications Technology (ICT) research and development and the largest research facility of its type in Ireland. Established in 2004 as a successor to the National Microelectronics Research Centre (NMRC founded in 1982) at University College Cork, the Institute hosts over 600 researchers, engineers and support staff, including a full-time postgraduate cohort of 130 students, as well as approximately 70 industry

¹ Photonics21 Terms of reference are available at

http://www.photonics21.org/download/general_inf/TermsOfReference/ETPPhotonics21TermsofReference.pdf

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.

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researchers in residence. The institute is heavily involved in knowledge generation and dissemination, generating over 200 peer-reviewed publications each year.

The term 'atoms to systems' captures the principle of the organisation which is to undertake leading edge research in key underpinning scientific disciplines, such as the fundamental physics of semiconductor materials and devices, and to then combine this knowledge in partnership with companies to develop novel devices and systems to high technology readiness levels. This is enabled by the presence of full CMOS, Micro-Electronic-Mechanical Systems (MEMS) and III-V Wafer Semiconductor fabrication facilities on-site. Central to the continuous sustainable growth of Tyndall are the long-term partnerships with industry which include global ICT leaders such as Analog Devices, BT and Intel, world-leading Medical Device companies such as Stryker and J&J, and Irish SMEs and start-up companies that have spun out of Tyndall. In addition, the Institute hosts spin-in companies to facilitate their set-up in Ireland, with recent examples including United Technologies, X-Celeprint, Rockley Photonics and ficonTEC. The main focus areas of Tyndall's applied research programmes are communications, energy, health and the environment.

Tyndall is also host to a number of public-private led and funded research centres. These include the Science Foundation Ireland Irish Photonic Integration Centre (IPIC), which has a total programme value of €66M from 2019-2025, with 30 industry partners, and the Microelectronic Circuit Centre Ireland (MCCI), which has €2.4M funding per year with 38 industry partners.

Tyndall is an active participant in European research programmes securing a total of €47M (85 projects, 13 coordinated) under the Horizon 2020 programme (including €17.5M for industry partners based in Ireland) and a key member of programmes such as ACTPHAST, which is giving European SMEs access to leading edge photonics based technologies and PIXAPP, for example. Tyndall coordinates the PIXAPP photonic packaging Pilot Line (15 M€, 18 partners from across European industry and academia), and is also a leading partner in PIX4LIFE and InPulse. Tyndall is also a partner in the NextPho21 programme, which provides support to the European Photonics21 community to develop a European industrial strategy to 2030.

With this nomination, Tyndall is seeking to expand and deepen its relationship with Photonics 21 by joining the BoS. Tyndall will bring important knowledge and insights to the BoS regarding models and processes for effective academic-industrial partnerships based on insights gained from working with companies ranging from global multi-nationals to SMEs and start-ups. In particular, Tyndall will bring deep knowledge of the photonics needs of the industry sector in Ireland which includes, for example, ICT and MedTech clusters that are significant on a European scale.

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

Paul Townsend is Head of the Photonics Centre at the Tyndall National Institute, Director of the IPIC SFI Research Centre in Photonics and Professor of Photonic Systems Research in the Department of Physics at University College Cork. Tyndall and IPIC support approximately 200 photonics researchers who work on many of the key aspects of photonics spanning from the theory and growth of III-V and III-N semiconductors, through integration and packaging to advanced communication and biomedical

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systems. Townsend was awarded a PhD in Physics from the University of Cambridge in 1987 and subsequently spent 16 years working in the international communications industry with Bell Communications Research, British Telecom and Corning, before moving to Tyndall in 2003. He is an internationally-recognised expert in advanced photonic communication systems. In particular, he is known for his pioneering work on quantum key distribution in optical networks, and for world-leading demonstrations of high-capacity broadband access networks. His work has led to more than 200 published technical contributions comprising peer reviewed journal and conference publications (with >45 at world's leading optical communications conferences, OFC, ECOC and CLEO), including 40 invited papers, and 30 registered patents in 16 different families (<https://scholar.google.com/citations?user=YX2tnGIAAAAJ&hl=en>). Townsend is involved in many external activities, for example he is a frequent journal and grant reviewer and has served on numerous conference technical programme committees including, for example, OFC (2005 – 2011) and he is currently General Co-Chair for ECOC in Dublin in 2019. He is also a member of the External Advisory Board for the UK Quantum Technology Hub for Quantum Communications and co-founder of the Photonics Ireland National Technology Platform, which aims to drive academic, industry and government coordination to promote the development of the photonics industry in Ireland. Townsend is also a member of the IEEE and a Fellow of the Institute of Physics (UK and Ireland).

Paul Townsend will actively participate in the Photonics 21 Board of Stakeholders and will coordinate the contributions of the wider IPIC/Tyndall team to Work Group 1 (Information and Communications), Work Group 3 (Life Sciences and Health), Work Group 6 (Design and Manufacturing of Components and Systems) and Work Group 7 (Photonics Research, Training and Education). IPIC/Tyndall has significant activities in each of these areas, including the development of energy efficient optical communication devices and systems for core, metro, access and datacenter applications, the development of low cost biophotonic diagnostic instruments and smart surgical instruments, the development of PIC and PIC packaging technologies and the training of photonics-skilled PhDs and post-docs as well as a vibrant and growing science outreach programme.

Townsend and his team will work to support the growth of the photonics industry and the significant and growing photonics user industry community. The opportunity is significant, for example Ireland is home to 20 of world's top 30 medical technology companies and one of the leading manufacturing hubs in Europe (the second largest next to Germany) employing some 25,000 people in 140 medical device companies, generating exports of €6.2 Billion annually. Initial projects with a selection of these companies have been highly successful and are resulting in the integration of photonic devices onto some of their product families, thus widening the deployment of photonics and delivering positive economic and societal impact. Similar opportunities exist in other industries such as ICT which represents a large sector of the Irish economy, employing approximately 83,000 people and accounting for €50 billion in Irish exports.

Finally Townsend and his team will act as national champions and a gateway to evangelise and support the participation of the Irish academic and industry communities with Photonics 21, Horizon 2020 and Horizon Europe and the European photonics network.



Paul Townsend

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Final information from the Photonics21 secretariat:

- We recommend limiting the BoS nomination letter to 3-4 pages max.
- Letters of nominations can either be submitted
 - A) electronically (secretariat@photonics21.org) - **PREFERRED**
 - B) by post mail to:

VDI Technologiezentrum GmbH
ST/QS
B. Kehrler/ U. Tober/ M. Wilkens
VDI-Platz 1
40468 Düsseldorf
Germany

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 **21st. September 2019**. This is also valid for postal submission.