

# FRONTE



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## IEEE DAY 2021



# Leveraging Technology for a Better Tomorrow



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## Stenio M. Ranzini on: Pursuing a European Industrial Doctorate in Project FONTE



Optical fiber forms the **backbone of the communication systems**. The exponential increase in data traffic is putting an escalating pressure on fiber-optic networks. Optical fiber is a nonlinear medium because its properties change with the signal intensity. It is well known that the fiber nonlinearity limits the achievable information rates of the conventional transmission methods in optical communication.

The FONTE project focuses on the development of **disruptive nonlinear techniques and approaches to fibre-optic communications beyond the limits of current technology**. The project will make important innovative steps in development of the technique of the nonlinear Fourier transform (NFT) and its implementation in the practical communication systems.



# FONTE – more than just a PhD!

'FONTE is a consortium of 4 European universities and world-leading telecommunications centre **NOKIA Bell Labs** (Germany), together training 4 PhD students, each of whom will spend **18 month at NBL**.

I was hoping to see how an industry researcher would answer some of the problems that are also treated in academia, as each institution has different constraints. Now that I am finishing my Ph.D., I am happy to say my expectations were exceeded.

I have learned so much in only 3 years of the project. It was only possible because of the **expertise I have found at the Technical University of Denmark (DTU) and at NBL**. Since the first day, we have had excellent communication with frequent meetings with everyone involved in the project. The talks were exciting and more than enough to keep me motivated! Not only we had the interaction with the industry partner NBL, but I was also able to know and talk with other research in the consortium. In my case, it was with **Aston University (UK), Delft University of Technology (Netherlands), and Télécom ParisTech (France)**. I think interacting with other research centers, and the industry simultaneously is one of the things I will miss from my Ph.D.

FONTE also prepared different **training** events such as workshops, summer/winter schools, and bespoke events. I learned how to organize my CV, write papers, prepare a LinkedIn profile, open a business, improve self-organization, make a presentation, and much more. I was also able to participate in many conferences, which exponentially increased my **academic network!**

**European  
Industrial  
Doctorate**

## It's not 'just' about the research

'FONTE also incentive **outreach activity** so anyone could learn what we were doing and our goals, which typically is only known to other researchers in the field. I participated in a massive event in Copenhagen called "Culture night" (before Covid-19) and talked to kids, adults, anyone who stopped to have a talk. It was a different perspective from the one I was used to, and I had to adapt so everyone could understand. The FONTE training came as a great help here as well.

In summary, I am genuinely grateful for being select for such a fantastic project! **I am leaving FONTE with many new skills, an amazing professional network, and a Ph.D. project which has also generated a Patent!**

Stenio M. Ranzini (Sept 2021)

## Where is Stenio now?

After completing his secondment at Nokia Bell Labs and finishing his PhD at DTU, Stenio immediately secured a position as **Senior Development Engineer at Infinera Nuremberg**, where he is involved in the development of signal processing algorithms for optical communication systems.



**Meaningful  
research for  
today's societal  
challenges**