

## CAREER PROFILE

I am an seasoned and results-oriented R&D professional, with over 15 years experience. I have participated in and managed a large number of large-scale R&D projects, both commercial and academic, at the national and European levels. My main field of expertise is Quality of Experience (QoE), which deals with how users experience the services they use. QoE is a very multidisciplinary field, spanning several technical domains such as networks, media, cloud, and web, as well as human aspects, including business. I am also knowledgeable on a number of other topics, such as Data Analysis, Predictive Models, Network Performance (QoS), Network Function Virtualization (NFV), Software-defined Networks (SDN), and Network Management.

## RECENT WORK EXPERIENCE

### Senior Systems Engineer

2017

EXFO, Finland

At EXFO, I worked on guiding the transition of its Service Assurance (SA) product line to virtualized environments. This work revolved around the virtualization of network probes and their associated support infrastructure, and their integration into NFV architectures, notably ETSI NFV MANO. There were also performance issues to be addressed, due to moving the probes from specialized hardware to a COTS-based cloud context. My role involved translating the business requirements into engineering specs, dealing with stakeholders, planning development activities in an agile fashion, and architecting the solution.

### Principal Scientist

2007 – 2017

VTT, Finland

I spent over ten years at VTT (first as a post-doc, then as a Senior Scientist, and later as a Principal Scientist). I was the lead for research in the QoE domain, and was active in other domains such as QoS measurement / monitoring. Besides the traditional work on quality assessment for media services, I have also worked on other aspects of QoE, most notably QoE management, and the business and economic aspects of QoE. Beyond my focus on QoE, I worked on Unified Communications (developing new mechanisms to manage presence), and Network Performance Monitoring (developing tools for e.g., passive QoS measurement, and vertical handover management). My duties, beyond the actual research, included project management, sales, and promotion of VTT's competence in the area.

### Founder and CTO

2009

MOS4 Oy, Finland

In 2008, we started building a spin-off from VTT, aiming at developing a novel, avatar-based, teleconferencing system with high-quality VoIP and secure document sharing and storage as its key defining features. The company was founded in early 2009. I was responsible for the architecture of the system, as well as the voice and document sharing functionality, including implementation work.

## SELECTED PROJECTS

Below is a short list of some of the projects I have worked on. For a full list, please refer to my Full CV, or my website: <http://martin.varela.fi>.

### Celtic Plus QuEEN (Celtic-Plus Excellence Award for Services and Applications, 2016)

The QuEEN project developed a conceptual and operational framework for QoE modeling and monitoring. It was a large-scale project, with 21 partners across Europe and over 12M€ in funding. I was one of the proposers of the project, and I acted as Technical and Scientific coordinator. This project was highly successful, resulting in a number of commercial applications, and one ETSI Technical Specification for QoE monitoring.

### ESA QuoTE - QoE for Telemedicine Applications



**Martín  
Varela**

R&D Specialist / Scientist  
QoE Guy

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-  <http://github.com/mvarela>
-  ResearchGate
-  Full CV
-  This résumé online

## EDUCATION

PhD. in Computer Science  
Université de Rennes 1, France,  
2002–2005

MSc. in Computer Science  
Université de Rennes 1, France,  
2001–2002

Computing Engineering  
Universidad de la República,  
Uruguay, 1996–2001

## LANGUAGES

- Spanish (native)
- English (professional)
- French (professional)
- Finnish (basic)
- Portuguese (basic)
- Swedish (basic)

## INTERESTS

- Cooking
- Photography
- Calligraphy

The QuoTe project was commissioned by the European Space Agency, to develop benchmarking and monitoring tools for video-based telemedicine systems. I was in charge of this project, and of the development of the QoE models required for its use cases (cardiac surgery, and outpatient follow-up).

### **Celtic Plus NOTTS**

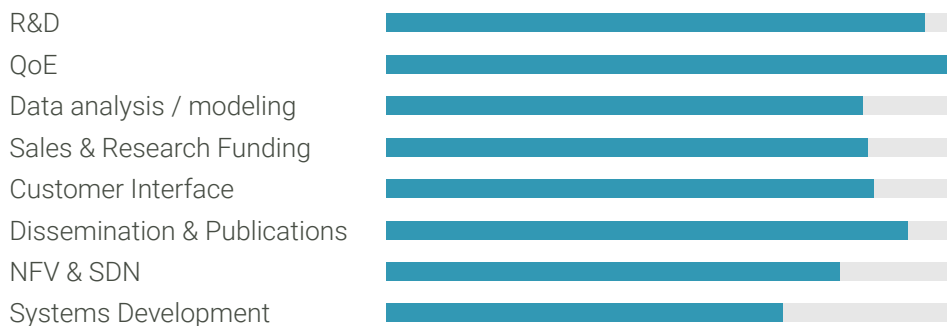
The NOTTS project dealt with the modeling and management of QoE for OTT services, with a focus on OTT video. I was responsible for the work package on QoE models and management, as well as being the project's scientific coordinator.

### **Nokia-Siemens Networks - Mobile Video**

Between 2010 and 2012 I was responsible for a series of projects commissioned by NSN to study the network behaviour of a large number of OTT and managed mobile streaming services.

## **🔧 SKILLS & PROFICIENCY**

I am fluent in a number of technologies, tools and programming languages. In my daily work, I use mostly Ruby, git, R, C, Bash/Zsh, sed/awk, ex, Haskell, LaTeX, SQL, gnuplot, Clojure and other lisps. I've recently started using Julia for data analysis, too. I also have some experience in C++, Java, x86 and Sparc assembler, Python and Perl.



## **📖 SELECTED PUBLICATIONS**

Below is a small sample of my scientific publications. For a full list, please refer to my Full CV, or my website: <http://martin.varela.fi>.

### **Definition of QoE Fairness in Shared Systems**

Tobias Hoßfeld, Poul Einar Heegaard, Lea Skorin-Kapov and Martín Varela  
IEEE Communications Letters, vol. 21, no. 1, pp. 184-187. Jan. 2017

### **QoE Beyond the MOS: An In-Depth Look at QoE via Better Metrics and their Relation to MOS**

Tobias Hoßfeld, Poul Einar Heegaard, Martín Varela and Sebastian Möller  
Quality and User Experience 1(1):1-23, Springer. Jan. 2016

### **From Service Level Agreements (SLA) to Experience Level Agreements (ELA): The Challenges of Selling QoE to the User**

Martín Varela, Patrick Zwickl, Peter Reichl, Min Xie and Henning Schulzrinne  
In proceedings of IEEE ICC QoE-Fi, London, UK. Jun. 2015

### **Meta-Modeling QoE - Towards a Generic Methodology for Building QoE Models**

Martín Varela, Lea Skorin-Kapov, Frédéric Guyard and Markus Fiedler  
PIK - Praxis der Informationverarbeitung und -kommunikation, 37(4):265-274. Oct. 2014

### **Challenges of QoE Management for Cloud Applications**

Tobias Hoßfeld, Raimund Schatz, Martín Varela, Christian Timmerer  
IEEE Communications Magazine, 50(4):28-36. Apr. 2012