RESEARCH LINE 1A	
COMPANY	**Telefónica I+D**
PhD THESIS SUPERVISOR (UPM)	Prof. Dr. José Ignacio Moreno Novella *Telecommunications Engineering School* *Telematic Systems Engineering Department*
PhD THESIS CO-SUPERVISOR (UPM)	Prof. Dr. Manuel Alvarez-Campana Fernández-Corredor *Telecommunications Engineering School* *Telematic Systems Engineering Department*
PhD THESIS TUTOR (COMPANY)	Mr. Rafael Cantó Palancar *Transport & IP Network Manager* Mr. Luis Miguel Contreras Murillo *Technology Expert at Global CTIO unit / Telefónica*
DESCRIPTION OF THE PhD THESIS PROJECT	Title: Design of novel network functions, architectures and protocols based on programmable data planes. Currently 5G deployment is providing momentum to emerging technologies like software defined networks (SDNs), Network Function Virtualization (NFV) and Network Slicing (NS). In the next years programable data planes could provide the adoption by telecommunication sector of Protocol Independent Switch Architectures (PISA) as the common hardware platform to develop network specific elements as routers, switches, etc, based on programmable data planes which reduces the time to market of innovative functionalities. This PhD will focus on the evaluation of programable data planes and its capacity to support innovative network functionalities in a dynamic and efficient way. To support this goal, PhD will target three main topics: - Evaluation of the State of the Art on programable data planes. Identification of architectures, protocols and processes involved. - Design of a methodology to develop new functionalities at data layer over a PISA platform based on programable data planes. - Identification, analysis and evaluation of relevant use cases for telecommunication operators in the deployment of advanced network elements. - Integration of developed solutions with existing ones to ensure smooth transition of operational networks Keywords: Programable Data Planes, PISA, P4, DPDK, PROX, SmartNICs *This work intends to contribute to SDG objectives on goal 9: Industry, Innovation and Infrastructures in addition to goal 4 quality education and goal 5 gender equality.*
TRAINING ACTIVITIES	PhD student will be integrated in the RSTI-UPM research group activities, covering aspects related to advanced mobile network technologies (5G/6G), IoT and Cybersecurity. In this process, PhD will participate in meetings, seminars and research projects as well as dissemination activities. We expect that the candidate will actively publish his/her research work on conferences and journals of high impact. In addition, horizontal meetings to evaluate the progress of the work and identify relevant use cases and scenarios will be performed in coordination with Telefonica team. In particular we expect that PhD student will address journals on the level of IEEE (IEEE Communications, IEEE Wireless Communications) and attend conferences related with PISA, P4 or DPDK.

SECONDMENT(S)	Student will have the opportunity to complete his/her training by short stays on selected sites according to the network of contacts maintained by RSTI-UPM and Telefonica.
REQUIREMENTS FOR CANDIDATES	Computer science: Master's degree or equivalent Electrical Engineering: Master's degree or equivalent **Skills:** Networking, Protocols, Mobile Wireless technologies, Virtualization, Programming **English**: Advanced / Proficiency (C1 / C2)