

# From IoT to Cloud Via Fog and SDN

Antonio Brogi



Stefano Forti



Federica Paganelli

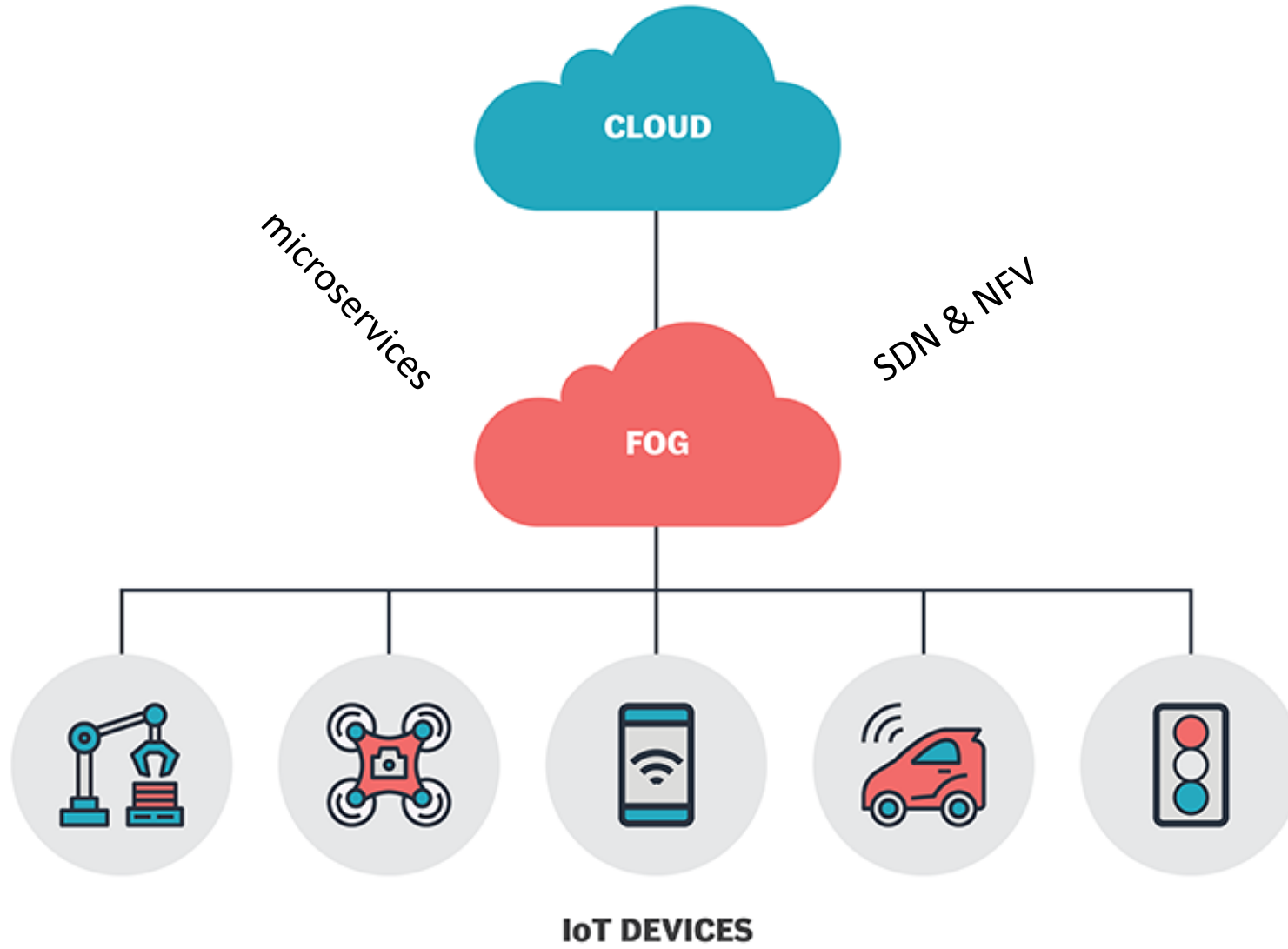


Jacopo Soldani

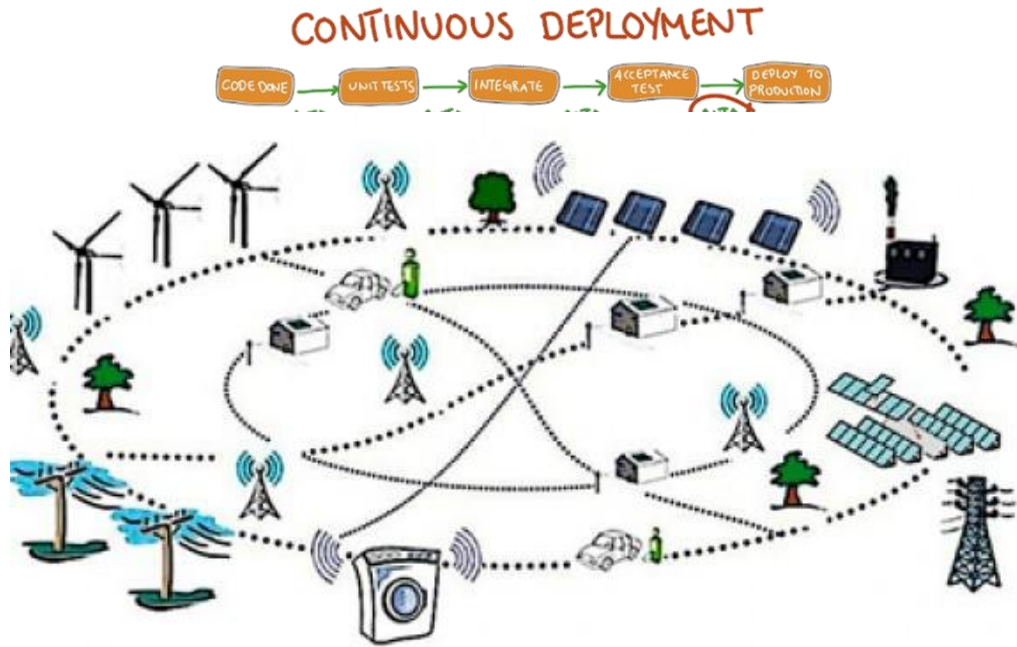


Department of Computer Science  
University of Pisa






# Fog Computing



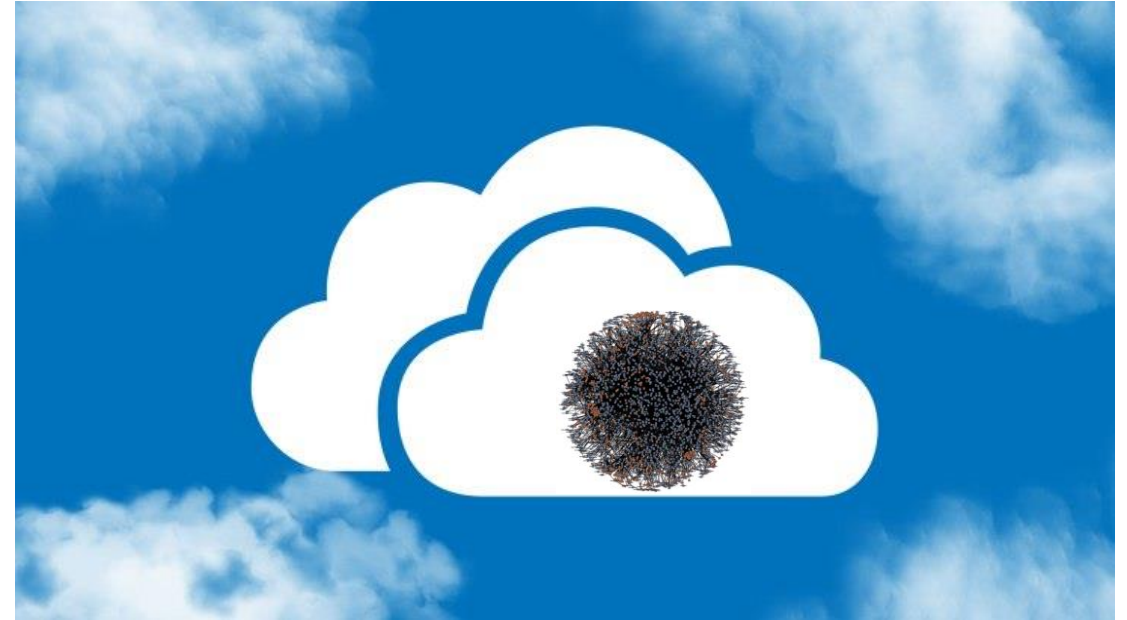
Deploying and managing distributed applications in an effective way are two open problems in the emerging area of **Fog computing**

## *Research topics*

- **Continuous Reasoning for Continuous Deployment of Fog applications**
- **Distributed management of Fog applications**
- ** Giò: A Fog computing testbed for research & education**

# Clouds & Microservices

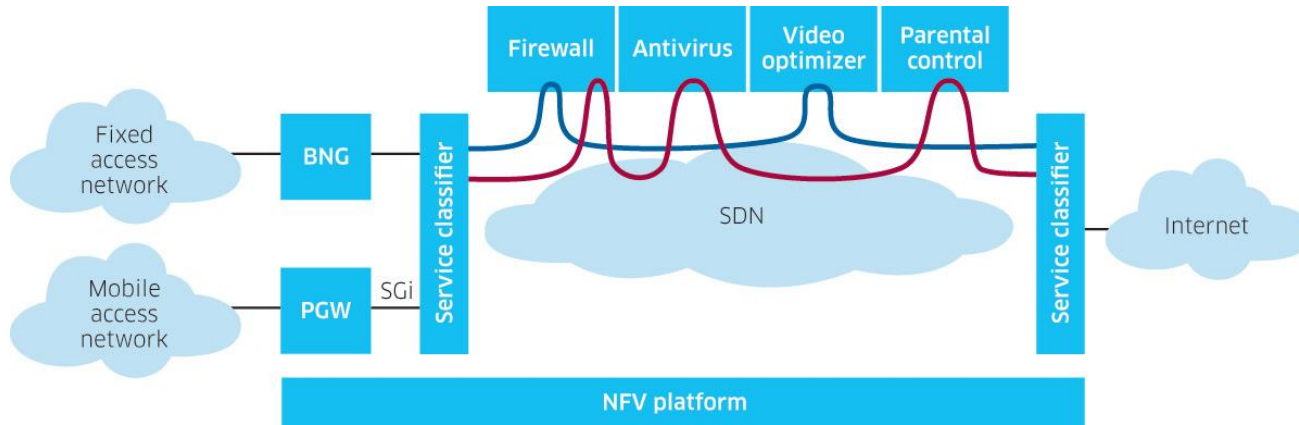
Independent, scalable, fault-resilient **microservices** have revolutionised modern, **cloud**-based software development & management



## *Research topics*

- **Analysis of microservice-based applications**
- **Orchestration of services in a serverless world**
- **Systematic integration of cloud-based applications**

# SDN & NFV



**SDN** (Software-Defined Networking) and **NFV** (Network Functions Virtualization) enable the dynamic definition of network services as chains of network functions

## *Research topics*

- **Placing network functions** in distributed infrastructures to match with conflicting goals
- **Orchestrating network functions** on different virtualization platforms
- **Reconfiguring network services** to cope with changes in networks and resources



## Fog Computing

A. Brogi, S. Forti, C. Guerrero, I. Lera. How to Place Your Apps in the Fog - State of the Art and Open Challenges. *Software Practice & Experience*, 2019.

## Clouds & Microservices

A. Brogi, D. Neri, J. Soldani. Freshening the air in microservices: Resolving architectural smells via refactoring". 15th International Workshop on Engineering Service-Oriented Applications and Cloud Services (WESOACS 2019). 2019.

## SDN & NFV

P. Cappanera, F. Paganelli, F. Paradiso. VNF placement for service chaining in a distributed cloud environment with multiple stakeholders. *Computer Communications*, vol 133, pp. 24-40. 2019.