

# News Letter

## ACINO at a glance

The Internet traffic is today a three layer structure: the traffic generated by *applications* is groomed at the *IP* and/or Optical Transport Network (OTN) layers and transported at the *optical layer*. The grooming layer maps large numbers of small flows into small numbers of very large and static light-paths, ignoring specific application needs.

ACINO proposes a novel application-centric concept that differentiates the service offered to each application all the way down to the optical layer (see figure below).

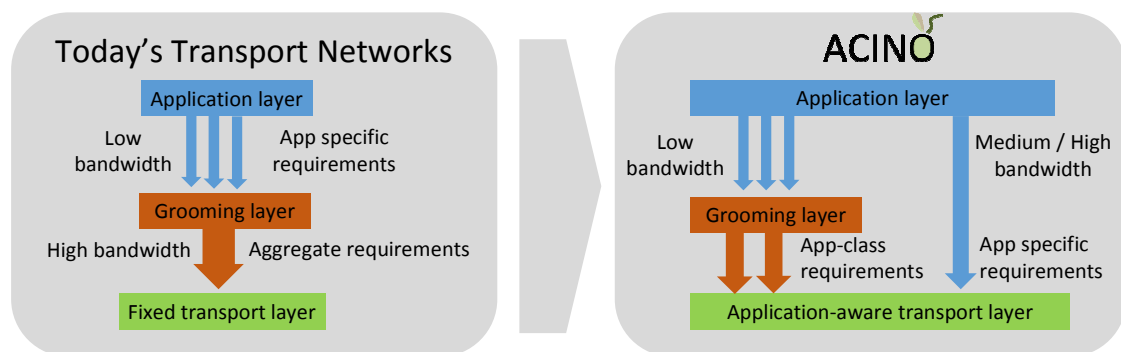
ACINO develops and will demonstrate an open-source IP/optical orchestrator that includes online planning and resource allocation software modules exploiting

application-centric algorithms. Intent-based primitives are exposed towards the applications so they can easily map their needs to the service they want to receive.

ACINO's main expected impacts include:

- Enable transport network services directly satisfying the application's needs;
- Prove the value of dynamic and elastic optical technologies;
- Tackle the lack of dynamic control of transport networks by means of automated Software-Defined Network (SDN) based multi-layer resource orchestration;
- Reduce energy consumption by bypassing the grooming layer;
- Foster the emergence of open industry with an open source and vendor-agnostic approach;

## The ACINO concept



## Initial achievements

The project has investigated the most relevant groups of applications: 5G (enhanced mobile broadband, massive machine-type communications, front-haul services to enable Cloud RAN deployments), video (IPTV, Video on Demand, OTT video) and cloud (virtual machine migration and

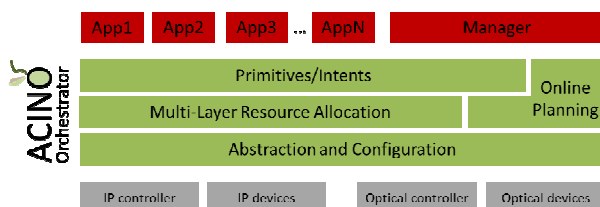
replication, database synchronization). Requirements were identified and classified, resulting in six case studies that will show how the adoption of the ACINO concept can help catering the needs of the applications in multiple scenarios.

The consortium defined the overall architecture and requirements of the

orchestrator (see figure below), as well as its interfaces and supporting network controllers. The main network multi-layer operations that can be applied were identified, along with a set of requirements for the controllers of the IP and optical layers.

The orchestrator's North-Bound Interface (NBI) was designed using the Intent paradigm: applications request a network service by specifying *What* they want (network features) rather than *How* the underlying network should be configured.

In addition, the reference network that will be used in the planning and techno-economic studies of the project was chosen.



### Our presence at past public events

The ACINO consortium has been very active at meeting our peers and presenting our work at conferences.

ACINO published four conference papers (see website) at the *International Conference on Transparent Optical Networking* (ICTON 2015), the *European Conference on Optical Communication* (ECOC 2015) and *Photonics in Switching 2015*, describing the ACINO concepts and presenting the project's first results.

ACINO also participated in the organization of the *Workshop on Network Function Virtualization (NFV) and*

*Programmable Networks* at the *European Conference on Networks and Communications* (EUCNC 2015). ACINO also presented the main concepts of the ACINO project and network programmability applied in the context of transport networks.

ACINO had a very active presence at the *Optical Fiber Conference* (OFC 2015), where its members organized a tutorial and a course. ACINO partners also demonstrated an early feasibility implementation of multi-layer control over commercial optical and IP equipment.

ACINO partners also ran demonstrations in booths at the *Open Networking Symposium* (ONS 2015) and the *SDN and OpenFlow World Congress 2015*.

### Coming events – Where to meet us!

The ACINO consortium has an ambitious activity plan for 2016. In addition to the continued development work of our network orchestrator, we will be present at several conferences and standardization events where we hope to meet you, share ideas and experiences and discuss possible collaborations!

Current planning includes two talks at the *International Conference on Optical design and Modeling* (ONDM), which will take place in Cartagena, Spain, May 9-12, 2016.

And that ACINO will be present at EUCNC 2016 in Athens, Greece, June 27-30, 2016.

You can also meet us at ICTON 2016, where we are organizing a workshop on *Multi-Layer Orchestration for Future Transport Networks*. The conference will take place in Trento, Italy, July 10-14, 2016.

### The ACINO consortium



**ACINO – Application Centric IP/Optical Network Orchestration**

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**Website : [www.acino.eu](http://www.acino.eu)**

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