

## TClouds Project Results

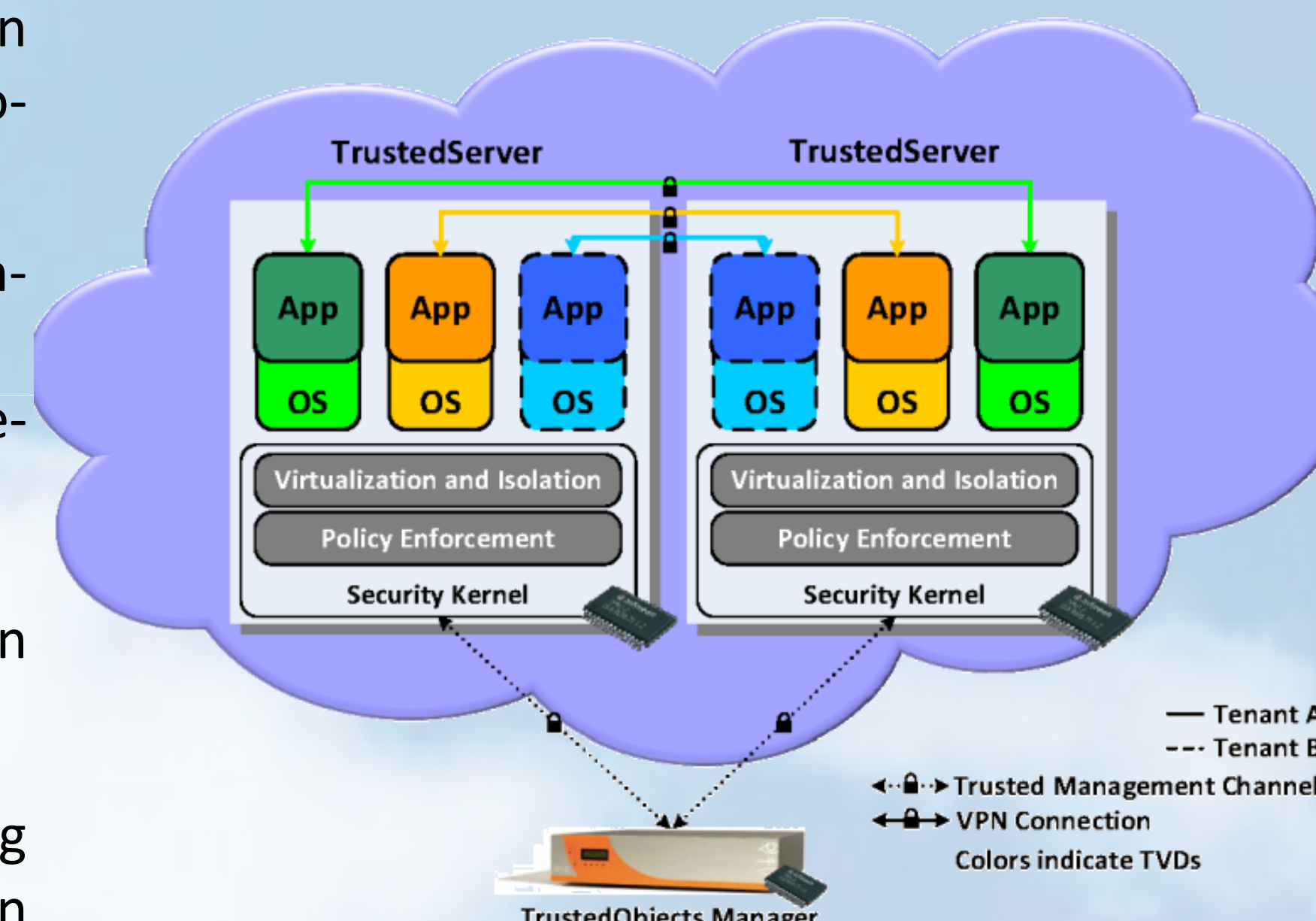
1. TClouds built a Trustworthy Cloud Platform, where federations of standardised resilient and privacy-protecting global infrastructure clouds offer virtualized computing, communication and storage resources. Therefore, novel resilient protocols, cloud security mechanisms, management components and selected open source implementations could be created.
2. In order to evaluate the results the TClouds project prototyped two scenarios, Home Healthcare and Smart Lighting Systems. These scenarios provided a set of critical infrastructures that demonstrated the privacy-enhanced resilience provided by the TClouds infrastructure.

## Trustworthy Cloud Platform

The TClouds project targeted cloud computing security and minimization of the widespread concerns with focus on privacy protection in cross-border infrastructures. It contributed to cloud computing in the Future Internet with progress in four areas:

- Addressing the legal and business implications while building a regulatory framework for enabling privacy enhanced cross-border infrastructure clouds.
- Defining an architecture and prototype for a federation of trustworthy infrastructure clouds to build on complementary and mutually re-enforcing technical approaches.
- Validation and impact through benchmark scenarios, Home Healthcare and Smart Lighting Systems.
- Collaboration with complementary standardisation and FP7 projects maximised impact and fostered a European Trustworthy Cloud ecosystem.

The Trusted Infrastructure Cloud provided trust in remote resources as they were built on top of Trusted Computing technologies. Furthermore, protection against insider attacks was achieved due to the control of the administration by the infrastructure itself.

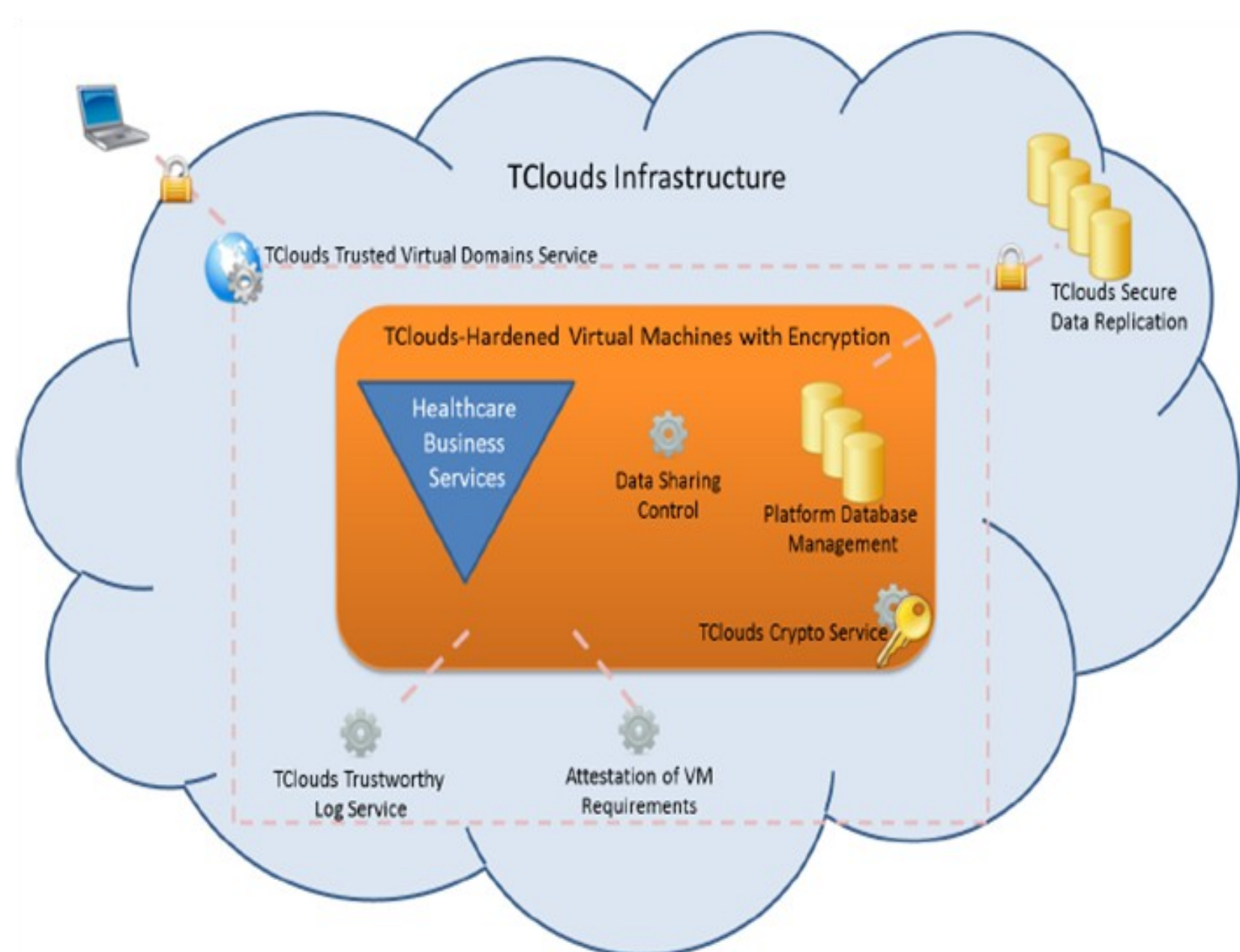


## Cloud Scenarios

Scientists built up two scenarios involving critical IT systems in order to demonstrate TClouds. The overall architecture used TClouds datacenters, pervasive home health devices (e.g. phones or patient monitors) for the Home Healthcare scenario, and collector appliances to collect SCADA data for the Smart Lighting System scenario.

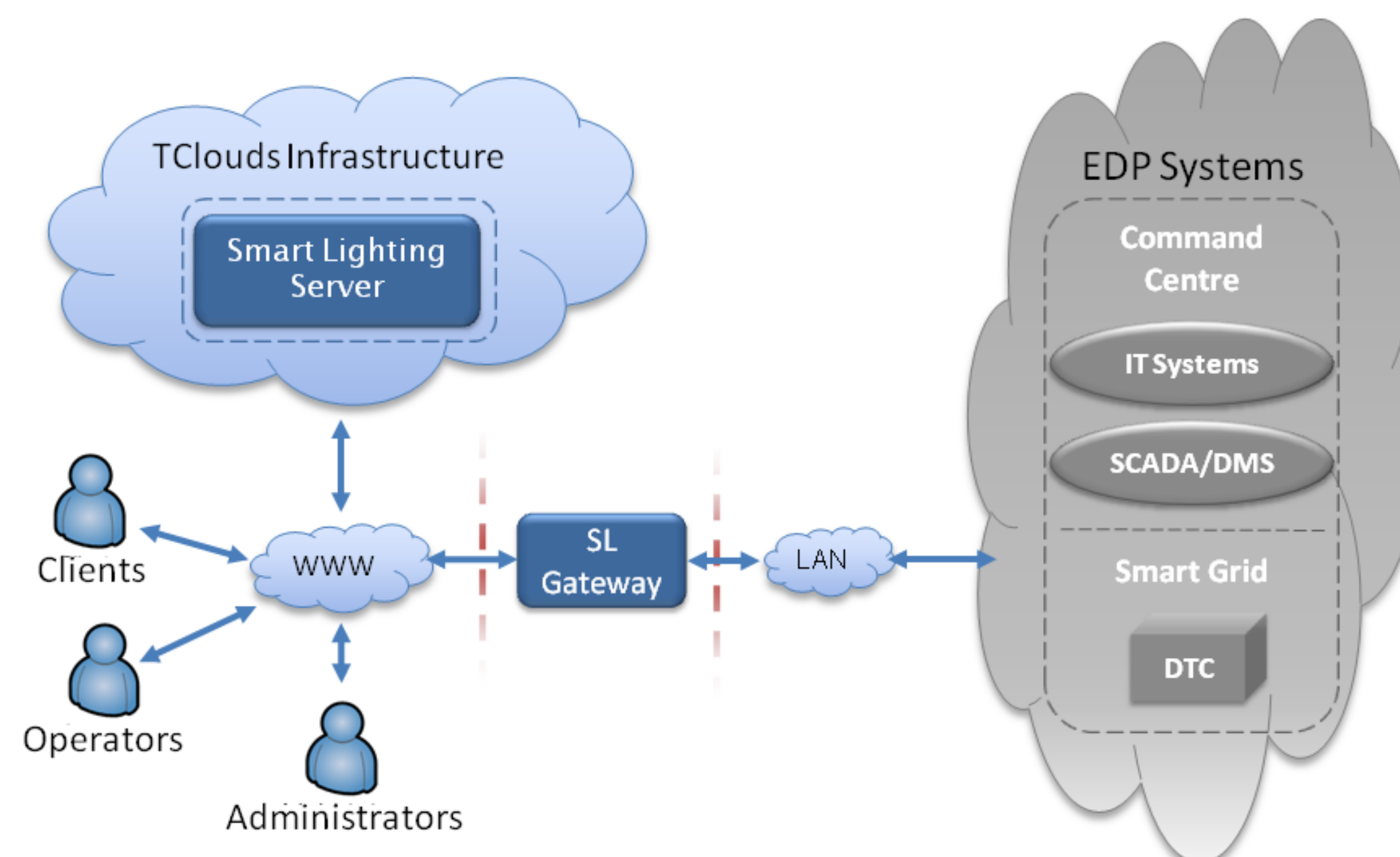
### Scenario 1: Home Healthcare

- Implementation of a citizen-centred home care scenario at the Hospital San Raffaele in Milano.
- Supporting multiple different actors and remotely monitors, diagnoses and patients outside a hospital facility.
- Sharing health data while respecting the security and privacy requirements as well as regulations governing patient data.
- Demonstrating a complete life-cycle of a prescription through a web-based application hosted in the cloud.
- Cross-border medical data mobility and privacy implications.
- Possibility to receive or reorder directly from home.
- Use of pervasive devices (e.g. phone) to provide a cloud deployment.



### Scenario 2: Smart Lighting System

- Public-infrastructure solution as part of the smart grid based on a cloud environment.
- Using collector appliances to collect SCADA Data.
- Interaction of authorized users with the underlying Smart Grid Infrastructure of EDP (Energias de Portugal).
- Providing functionalities such as on/off commands, real-time status, energy consumption and schedules update to client municipalities & operator utility.
- Generating reports about many operational aspects, both to the client and to the operator.
- Increase the resilience against hardware failures, hacker attacks and other security problems.



## Project Partners



## Consortium

The consortium consists of 14 partners from 7 different countries (greyed background identifies former members): reputable universities and recognised companies from six European Union member states (Austria, Netherlands, Germany, Portugal, Italy and the United Kingdom) plus Switzerland. This partnership of professionals contributed to the success of the project.

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