

Intelligent Network Analyzer

INA – a digital twin of physical networks

The Intelligent Network Analyzer (INA) is an innovative tool that builds a digital twin of the mobile network. It does so by reading out data from existing, as-is network management systems and reconstructing the network topology through MAC bridges and IP connections.

The **INA Explorer** is a tool for network engineers and planners that provides network details to the users, allows root cause and impact analysis through historical data, and supports data-driven decisions in network planning through AI-based simulations.

With the **INA Studio** we are currently “extending the tool” for a variety of users, enabling them to understand the processes which impact network maintenance, sustainability, security and further use cases.

INA offers a major differentiation for telecommunications companies as they cannot pull over and shut down the network for a short time, like changing a tyre in a pit stop. All of the **several hundred daily changes** and adjustments must be made **during ongoing operations**.



Near-real-time display of as-is network topology with top-performing graph database



Root cause analysis through before-and-after view of the network enabled by historical data



Network performance and traffic data analysis



Simplified network planning through simulations and network optimisation powered by classical and quantum algorithms

40%

Up to 40% reduction of maximum utilisation through traffic optimisation

100M

Almost 100 million network elements stored in graph DB

2 years

A productive INA system in use at a German telecommunications provider

~300

Current daily tool users

INA's innovative technology partners

- neo4j Graph Database
- NetworkX
- Yworks

Further use cases for INA technology

- Fraud detection
- Network and databases
- Infrastructure monitoring
- Prevention of terrorism
- Risk management
- Supply chain management

Context-agnostic thanks to modular design

INA base system

- Network discovery including functional network model
- Storage and display in graph database
- Visualisation interface
- Result: End-to-end network discovered

Time travel module

- Before-and-after change comparisons of topology
- Root cause analysis of network changes

Simulations module

- Simulation of any changes in the topology
- Evaluation of different simulated variants

Analysis module

- Root cause and impact analysis
- Prepared NW analysis: L2 L3 routing
- Network performance and data traffic analysis
- Result: Digital twin

AI module

- Topology evaluation and suggestions
- Iterative recommendations based on the as-is situation
- Saving of versions and entering into the inventory process

ina¹

Discover the network in near real time

Analyse the network in an intuitive user interface

Simulate network changes

Optimise network performance



About Sopra Steria

Sopra Steria, a European tech leader recognised for its consulting, digital services and software development, helps its clients drive their digital transformation to obtain tangible and sustainable benefits. It provides end-to-end solutions to make large companies and organisations more competitive by combining in-depth knowledge of a wide range of business sectors and innovative technologies with a fully collaborative approach. Sopra Steria places people at the heart of everything it does and is committed to putting digital to work for its clients in order to build a positive future for all. With 50,000 employees in nearly 30 countries, the Group generated revenue of €5.1 billion in 2022.

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The world is how we shape it