SiMoNe Documentation & SureSoft

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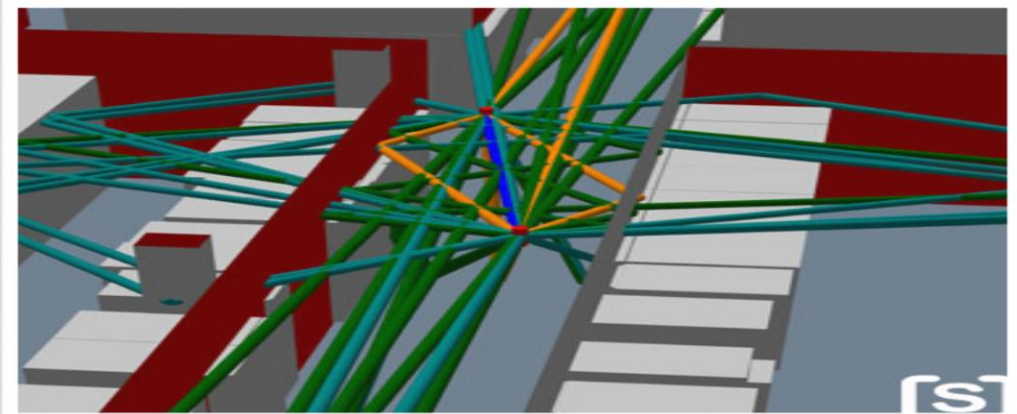
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What is SiMoNe?

- **SiMoNe** stands for Simulator for Mobile Networks.
- Actively developed since 2014 by the Institute for Mobile Communication.
- Developed using Microsoft Visual Studio using C# programming Language.
- Realistic radio networks simulation.
- System and Link-Level simulations.

System Level Simulation

Raytracing

What is SiMoNe?

- **SiMoNe** offers the possibility to simulate 3GPP based networks like GSM, LTE, LTE D2D and 5G as well as IEEE 802 connections like Wi-Fi, 802.11p and 802.15.3d.

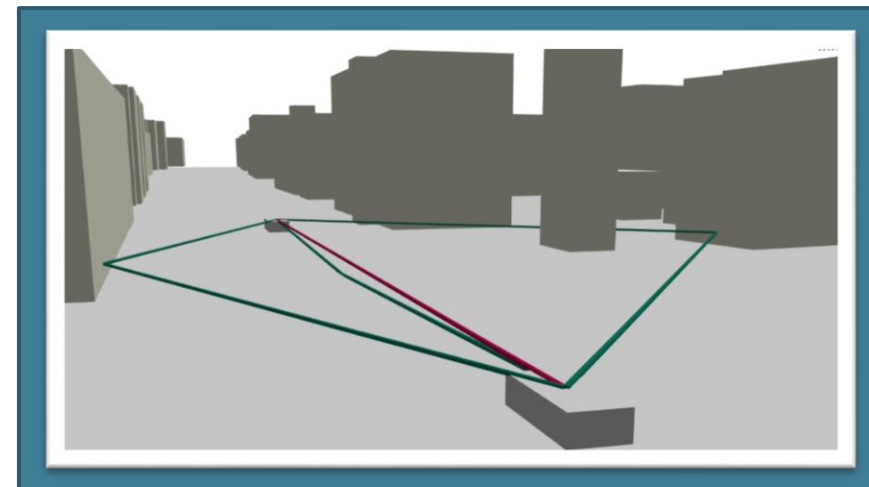- Implementation of THz communications (Gigabit Frequencies).

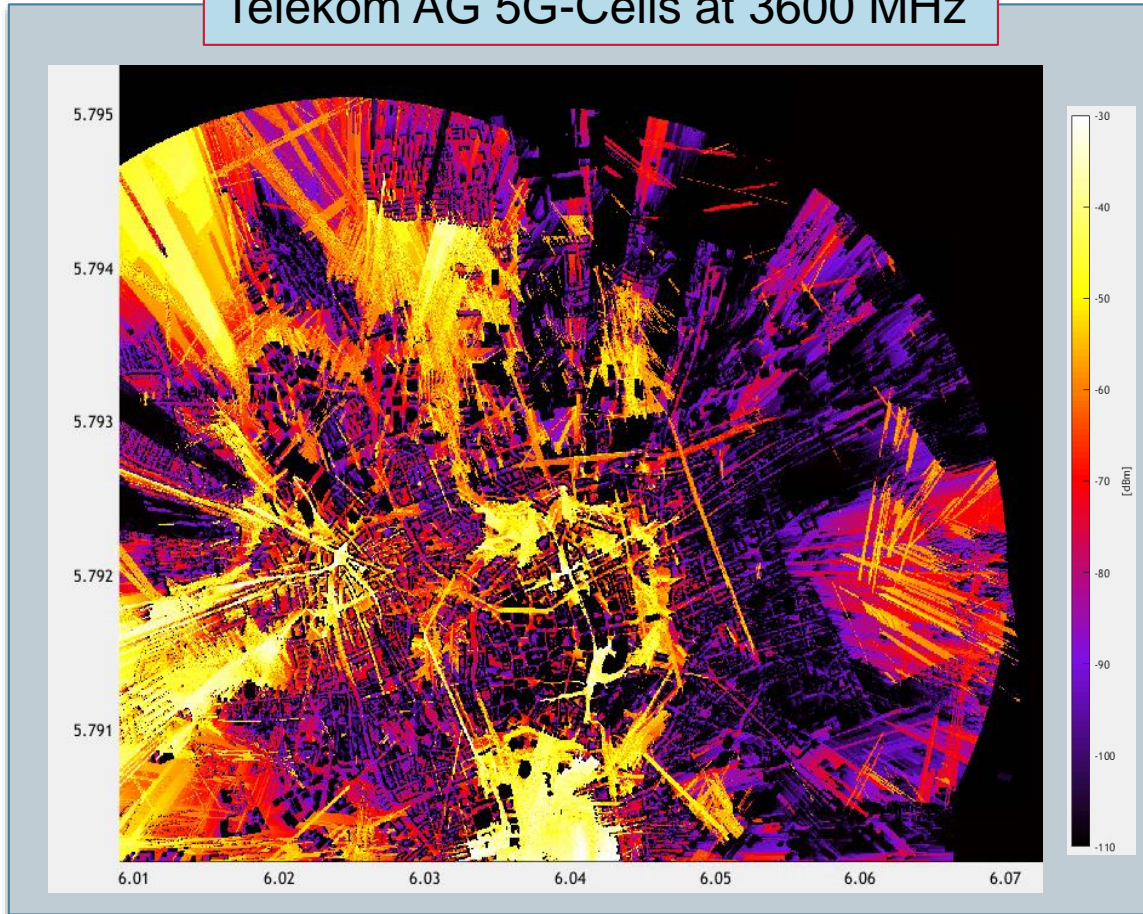Backhaul Links

What is **SiMoNe**?

- Vehicle-to-X Communications
- Implementing multiple propagation scenarios with arbitrary variations.
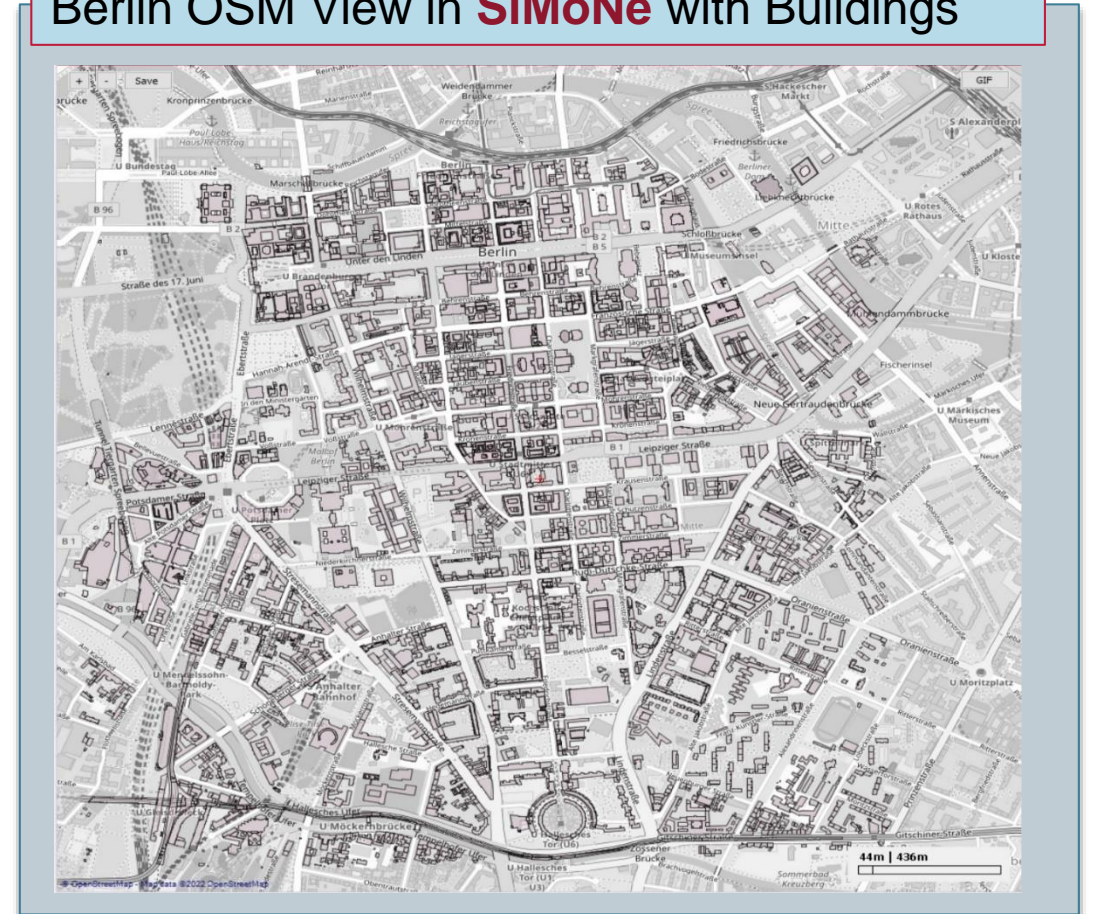- Raytracing-based location accuracy estimation for GPS.

V2X Communication

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Suresoft — SUSTAINABLE RESEARCH SOFTWARE

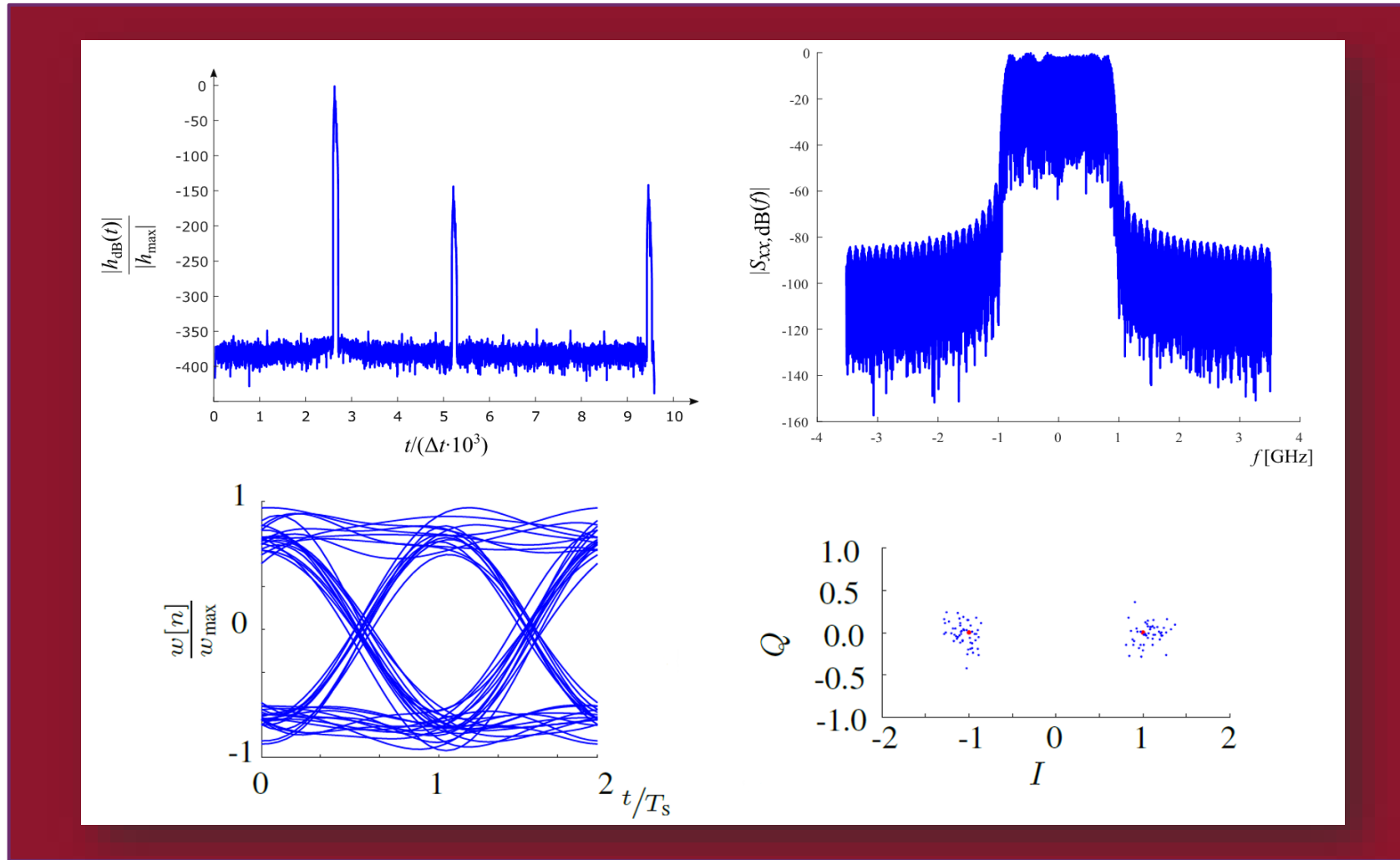Institut für Nachrichtentechnik

SiMoNe Visualization

RSRP map of Braunschweig with Telekom AG 5G-Cells at 3600 MHz

Berlin OSM View in **SiMoNe** with Buildings

Link Level Simulator

System Level Simulator

- Different realistic simulations of different user attributes.
- Simulation of Pedestrians, Vehicles, Drones, etc.…
- Arbitrary number of Antennas, users and buildings.
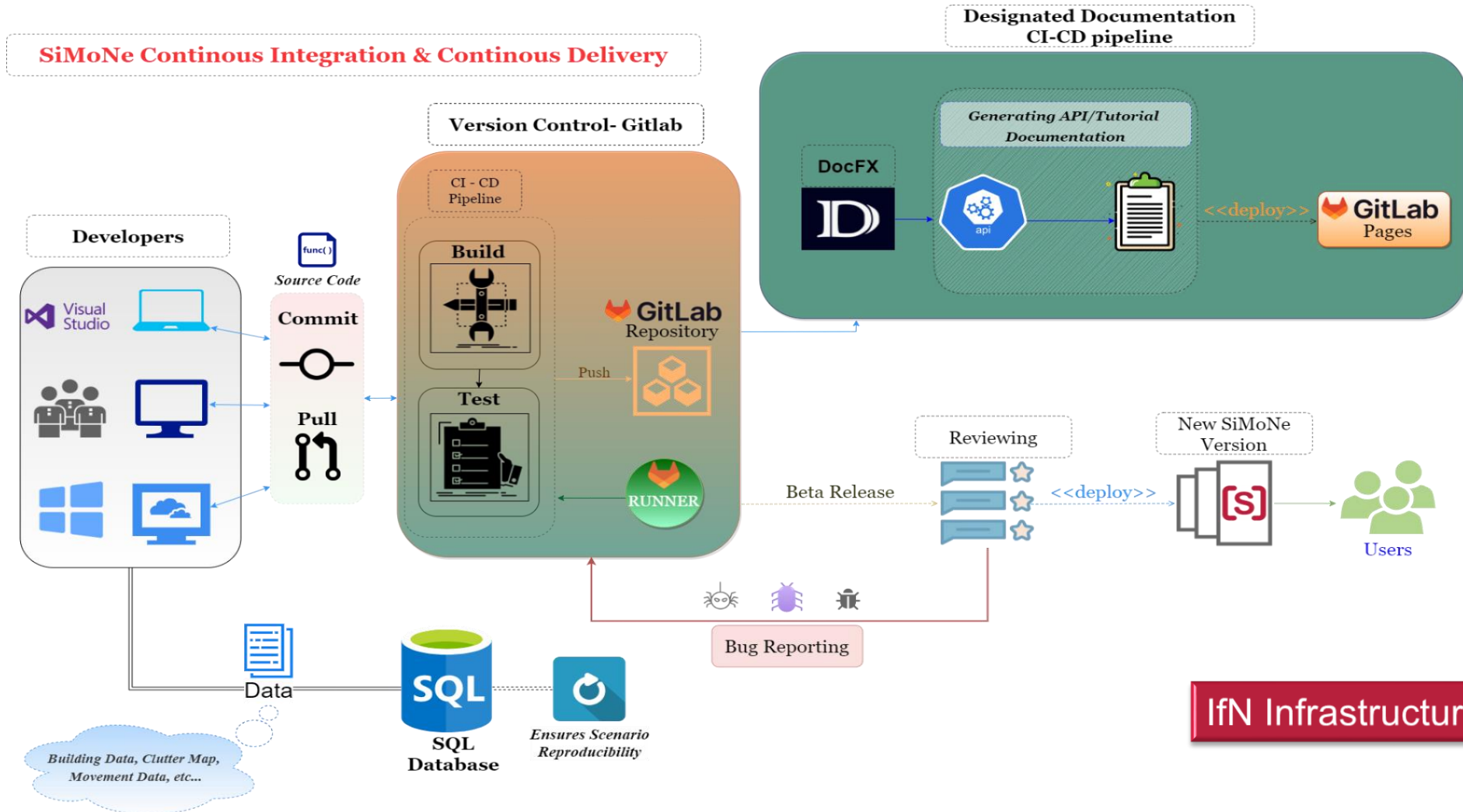- Simulating different frequencies and scenario deployment.

Challenges that SiMoNe Face

- Prior to **SureSoft** a full CI-CD pipeline was not present which affects the production stage as well bug reporting along with version control.

- With the lack of documentation lack of accessibility to the code occurs, which in turn produces a steep learning curve for the new developers.

- Absence of technical documentation further decreases the learning speed of which the new developer can contribute to the existing source code.

SiMoNe & SureSoft

- Implementing a fully automated **GitLab** CI-CD pipeline that ensures continuous integration and continuous delivery.

- Using **GitLab** as version control and utilizing the reporting issues feature to help fix the bugs that comes with new versions of the software.

- The implementation of a detailed How-to documentation for new developers as well as students who uses the software.

- Implement a thorough in-depth technical documentation that highlights the key functions/variables that consists the code, it will help further ease access to the source code with detailed description of the source code.

- The Implementation of **GitLab-Pages** to publish the generated static documentation.

SiMoNe & SureSoft

Open Challenges & SureSoft

- **SiMoNe** utilizes the power of windows forms which provides one of the most productive ways to create desktop application.

- One of the main **SureSoft** goals was the archiving aspect.

- Most participants in the **SureSoft** project were able to implement the Docker containerization method, which help fully containerize an application with all of its dependencies into a single portable image.

- Since **SiMoNe** uses windows forms, for the time being the power of Docker cannot be used to containerize this type of application.

- This challenge will be addressed in future projects to help solve the archiving issue with **SiMoNe**.

Thank You
For Your Attention!

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