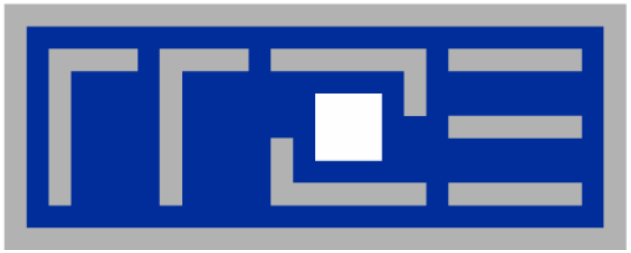


EGEE-III Network Monitoring

Dr. Susanne Naegele-Jackson

Regional Computing Center of Erlangen, Germany

Outline

- Introduction
- EGEE-III Requirements for Network Monitoring
- perfSONAR-based Plugin Architecture
- Authorization and Authentication
- Implementation
- Contact

Introduction

- RRZE: Regional Computing Center of Erlangen, Germany
- IT center of the Friedrich-Alexander University of Erlangen-Nuremberg (FAU)
- Subcontractor of DFN for EGEE-III
- Public university, founded in 1743
- Classical university, technical faculty and hospital
- University with the broadest scientific spectrum in Germany
- 265 faculty chairs, 10600 employees, 25000 students

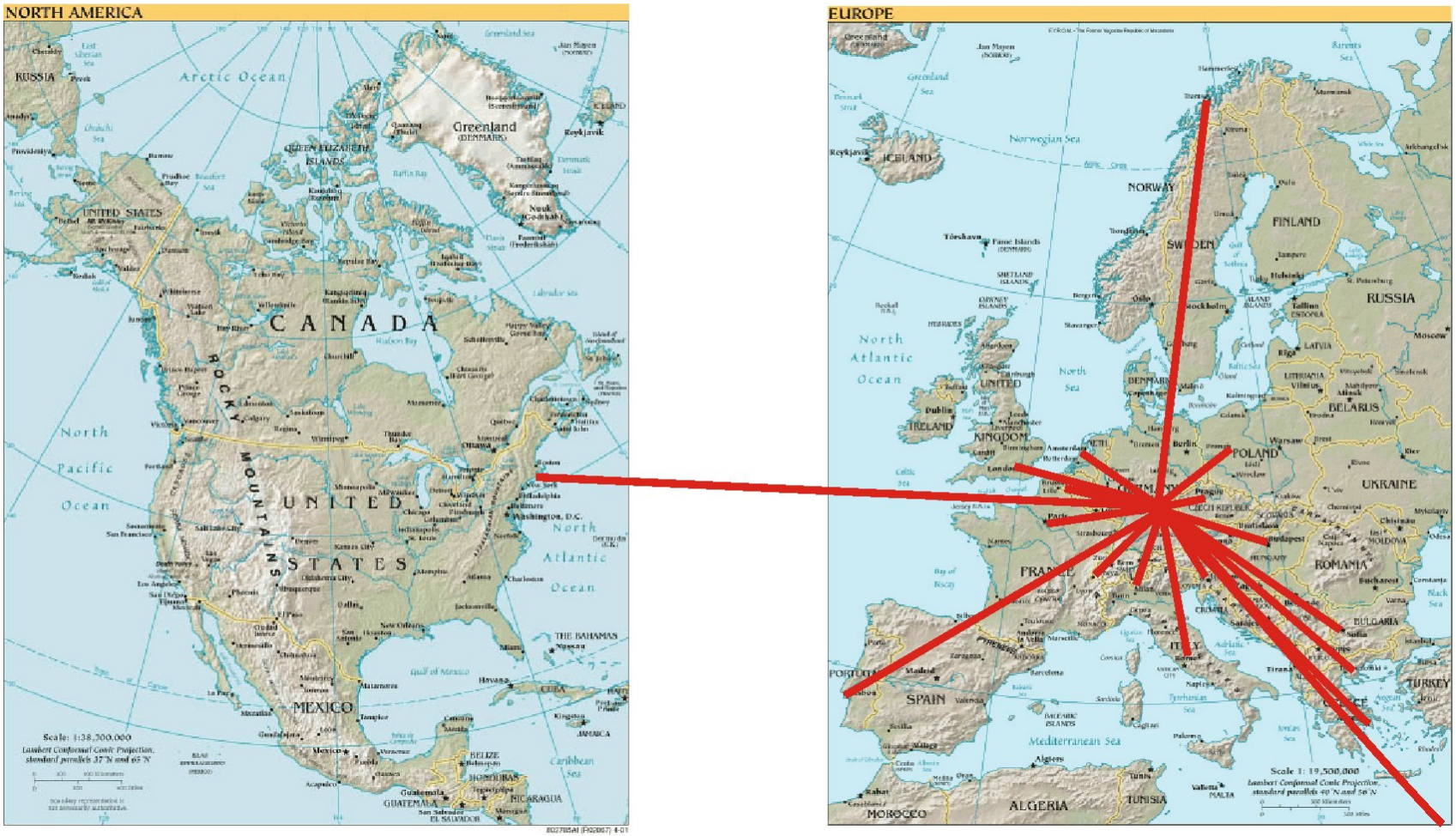
Susanne.Naegele-Jackson@rrze.uni-erlangen.de

History

- network measurements since 1998
- involved in various networking projects:
  - Uni-TV, VIOLA, MUPBED, FEDERICA, GÉANT2
- perfSONAR developments for GÉANT2
- location of the WiN Laboratory
  - measurements, accounting, QoS for German Research Network WiN

Susanne.Naegele-Jackson@rrze.uni-erlangen.de

WiN Measurements across Europe/USA



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Susanne.Naegele-Jackson@rrze.uni-erlangen.de

EGEE-III Requirements

EGEE-III requirements for network monitoring:

- a light-weight solution
- easy to deploy and upgrade
- portable to all sites / platform independent
- modules should have sustainability
- use of perfSONAR common core interface
- should offer requested EGEE troubleshooting tools (e.g. ping, traceroute, …)
- measurements
  - not continuous
  - but on-demand (to support troubleshooting)

Susanne.Naegele-Jackson@rrze.uni-erlangen.de

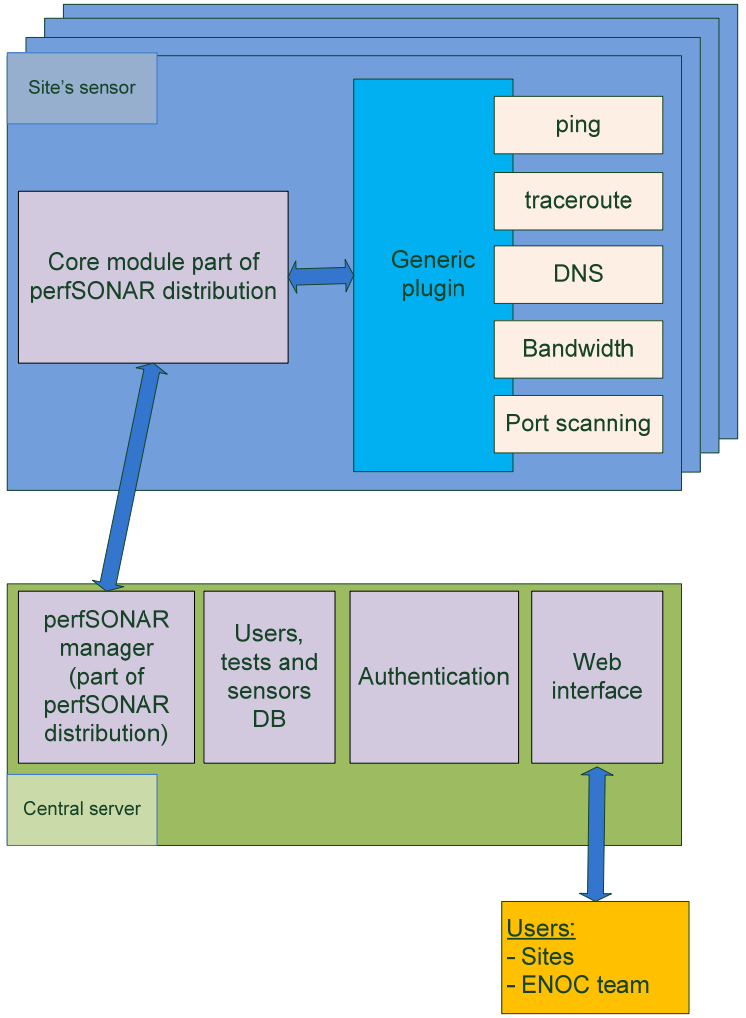
EGEE-III Extensions

- perfSONAR extensions for EGEE-III are necessary
  - to enable light-weight ***on-demand*** measurements
  - to offer additional service tools (ping, traceroute, DNS lookup and reverse lookup, BWCTL, port scan (nmap))
  - web service extensions for EGEE-III platform
  - authorization / authentication for EGEE-III specifications
  - EGEE-III specific visualization and archiving

Susanne.Naegele-Jackson@rrze.uni-erlangen.de

perfSONAR-based Plugin Architecture

- central web server
- all access to measurements via central web server
- a light-weight client at each site
- basic service tools are activated via generic plugin
- generic plugin supplies input to perfSONAR core modules
- users: all sites, ENOC team



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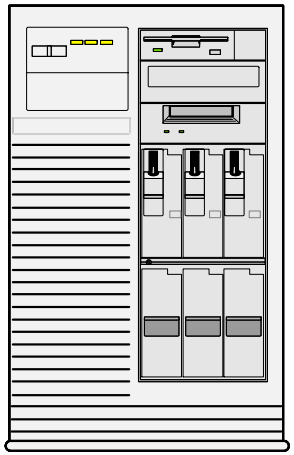
Central Web Server

- **Key functions of the central web server will be:**
  - **web-based user interface**
  - **authentication of users for tests**
  - **launching of test measurements requested by client site**
  - **collection of measured data and display of results**
  - **data archiving**
  - **history of recent tests**



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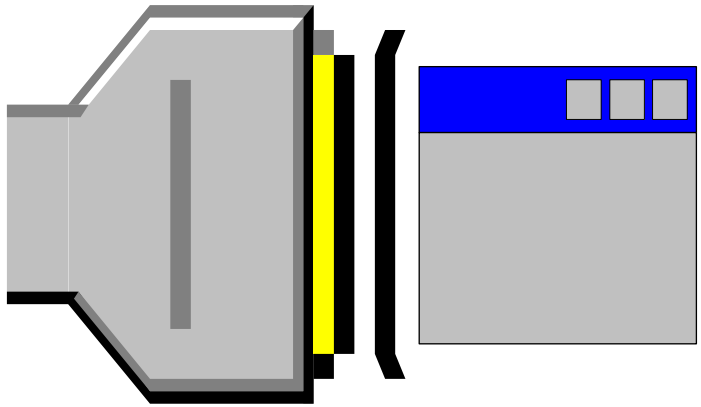
Generic plugin

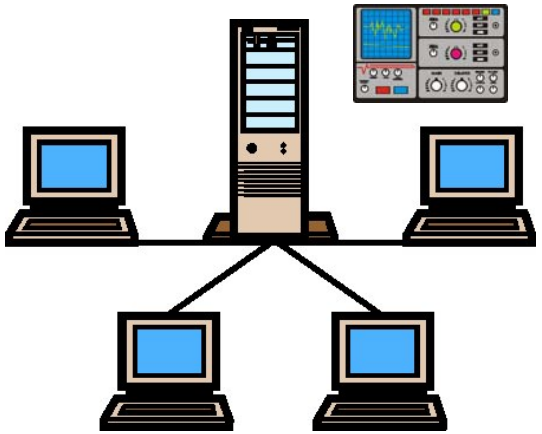
- translates requests from sites to perfSONAR common core module
- wrapper around basic service tools
- basic function:
  - get request
  - execute request
  - deliver results
- offered benefits:
  - platform independent
  - deployable to all 270 sites



Susanne.Naegele-Jackson@rrze.uni-erlangen.de

Basic Service Tools

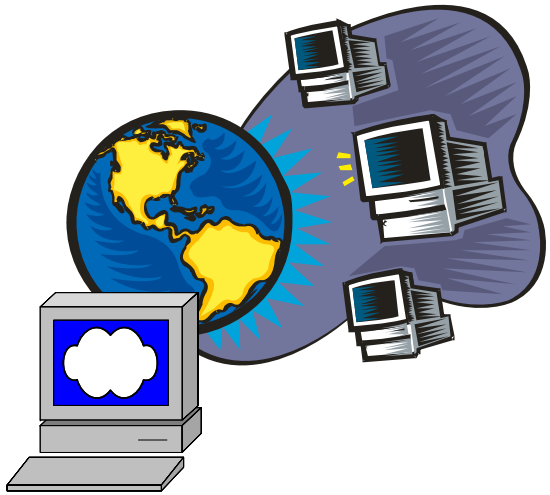
- **EGEE-III requested basic troubleshooting tools:**
  - **Ping**
  - **Traceroute**
  - **DNS lookup and reverse lookup**
  - **Bandwidth tests (BWCTL; UDP and TCP throughput)**
  - **Port scan (nmap)**



Susanne.Naegele-Jackson@rrze.uni-erlangen.de

Implementation

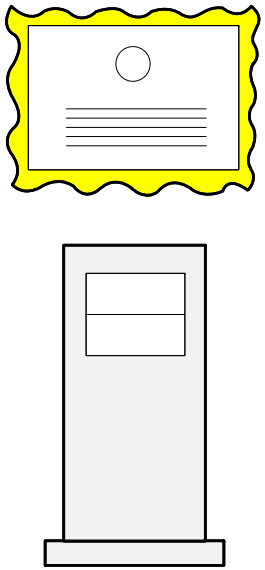
- client software in perl
- distributed as a CPAN module that includes configuration files
- Libraries can be published on CPAN
- perfSONAR elements:
  - basic parts of web services and XML handling
- perfSONAR daemon that allows remote execution
- no ssh access to sites required



Susanne.Naegele-Jackson@rrze.uni-erlangen.de

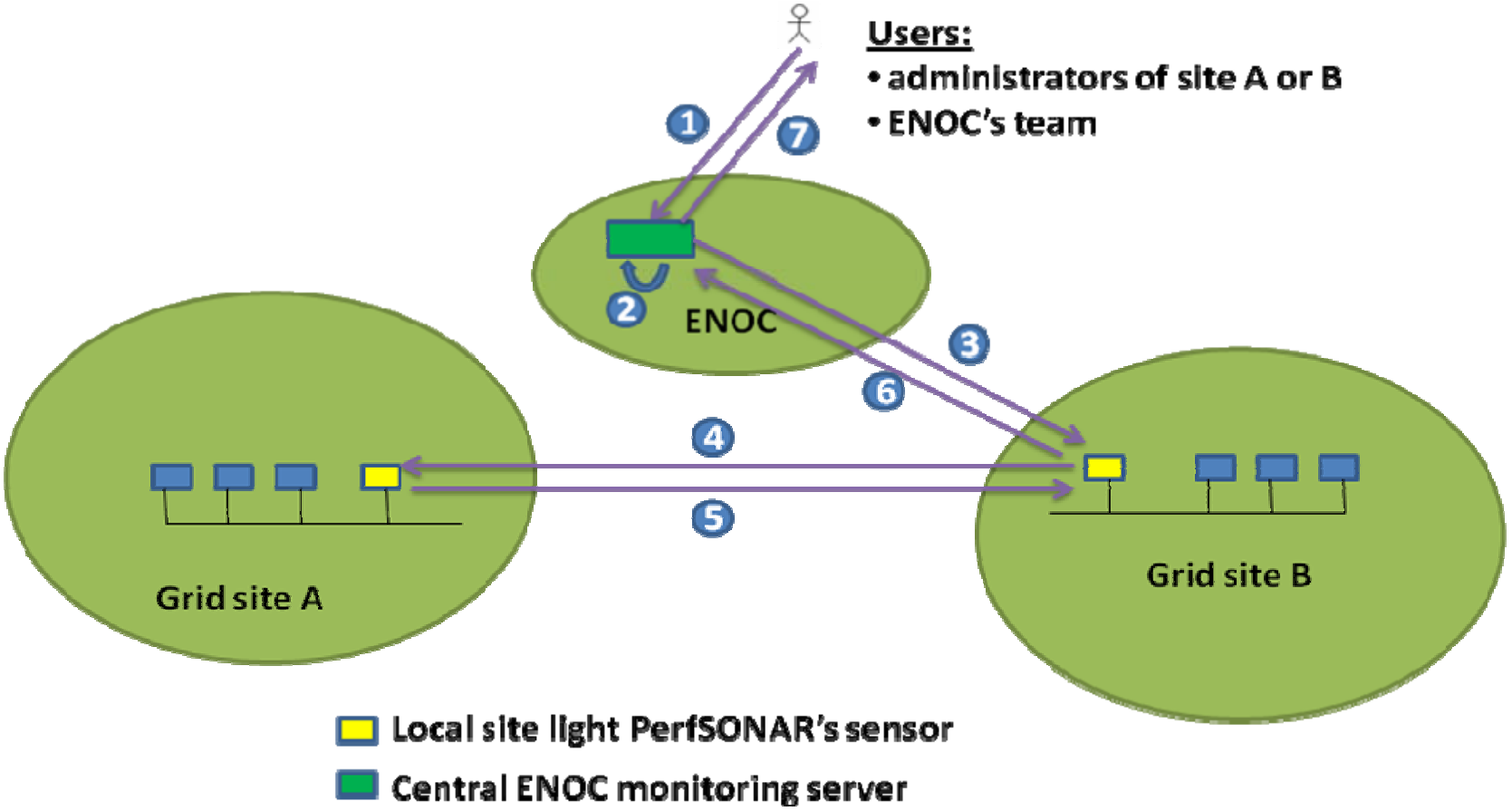
Authorization and Authentication

- Authorization via local administration and client registration
- Authentication on the central web server with X.509 certificates or password-based via HTTPS
- every site can only initiate measurements having their own site as source or destination
- ENOC team is considered super-user and can perform every test



Susanne.Naegele-Jackson@rrze.uni-erlangen.de

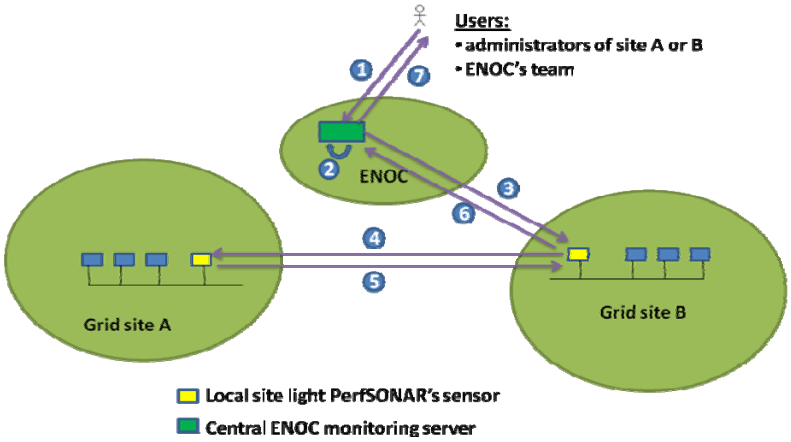
Typical case scenario (I)



Susanne.Naegele-Jackson@rrze.uni-erlangen.de

Typical case scenario (II)

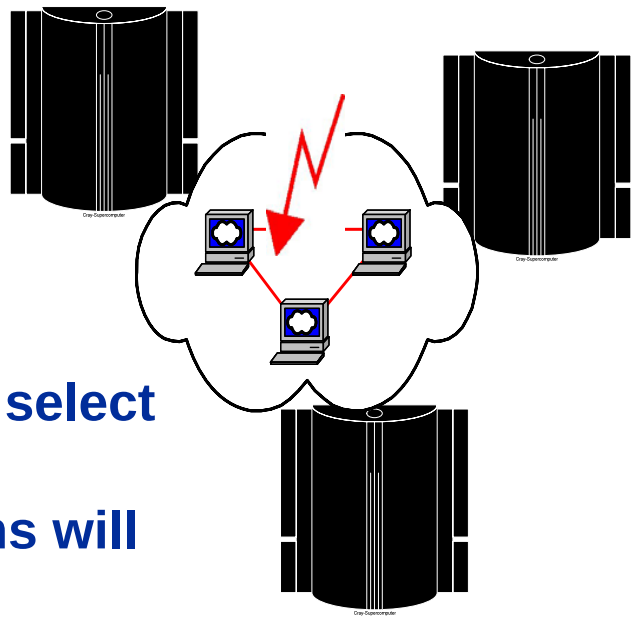
- User A requests measurements from site B to site A
- Web server verifies requests (AA) and checks for availability of test results from earlier tests
- (new) test is initiated via generic plugin
- Results are collected and made available to user



Susanne.Naegele-Jackson@rrze.uni-erlangen.de

Suggested Time-scale (I)

- **Two phase implementation process (12 PM over 2 years)**
- **Phase I:**
  - **Basic package**
  - **4 PM for development**
  - **2 PM for deploying software to first select sites**
  - **sites experiencing network problems will be selected first (based on ENOC's current monitoring tool DownCollector: https://ccenoc.in2p3.fr/DownCollector/)**
  - **text-based summary output**



Suggested Time-scale (II)

- **Phase (I):**
  - basic package
- **Phase (II) (6 PM):**
  - improvement of basic package
  - refined authentication
  - data representation in graphics
  - history of tests recently performed
  - data collection and archiving
  - support of local EGEE site administrators

Susanne.Naegele-Jackson@rrze.uni-erlangen.de

perfSONAR in EGEE-III

	perfSONAR (components already available)	EGEE-III (required new components)
Web-services	▪ perfSONAR core (daemon and processing of XML-perfSONAR requests) = protocol implementation perfSONAR	▪ EGEE-III specific AA (via central web server) ▪ archives & test history (via central web server) ▪ generic plugin for perfSONAR core modules
service tools	▪ BWCTL	▪ BWCTL ▪ DNS lookup ▪ ping ▪ traceroute ▪ port scan
visualization	▪ not available for EGEE service tools	▪ EGEE-III specific for new service tools (via central web server)

Susanne.Naegele-Jackson@rrze.uni-erlangen.de

Contact information

- Susanne.Naegele-Jackson@rrze.uni-erlangen.de
- Win-labor@dfn.de

- www.rrze.uni-erlangen.de

- **RRZE / FAU**
  Martensstrasse 1
  91058 Erlangen
  Germany