Automated GOLE Update

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SURF NET

Automated GOLE Fabric

Automated GOLE

- **AutoGOLE fabric delivers dynamic network services between GOLEs and networks**
- Based on NSI Connection Service v2.0
  - Redundant Aggregator backbone with a leaf uPA per network (hub and spoke architecture)
  - 29 Network Service Agents (6 aggregators, 23 uPA) advertising 30 networks
- Using DDS service for NSA discovery and document propagation between aggregators
- Introduction of monitoring, troubleshooting, and provisioning tools
  - Dashboard, MEICAN, DDS Portal, etc.
- Advancing capabilities
  - Experimenting with new path finding and signaling algorithms
  - Additional network modeling for optimizations

Projects using the Automated GOLE

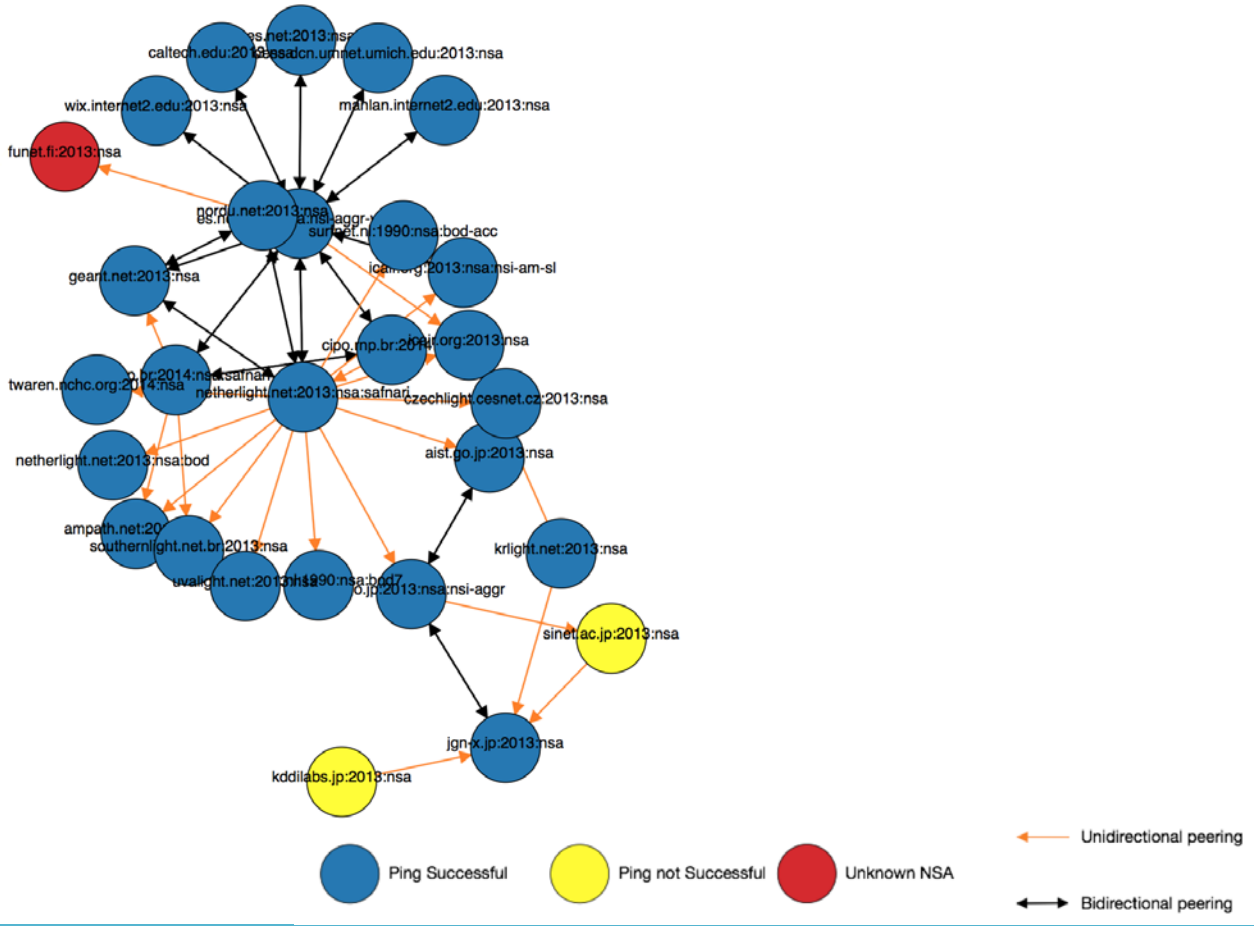
- MEICAN by RNP
- Intent-base API prototype by ESnet
- FELIX consortium, 2015
- Open Cloud eXchange (OCX) by GÉANT
- SC'13 and SC'14 'Portable cloud' by JGN-X
- NRM with OpenFlow underneath by iCAIR
- UltraGrid by CESNET
- NEXPReS by JIVE

Work items 2016

- **I. AutoGOLE Dashboard**
  - Overview of both control plane and data plane of the AutoGOLE
- **II. Supporting LHC Sites**
  - Supporting LHC sites that want to connect to the AutoGOLE (Brookhaven and NL-T1 tested last year)
- **III. Connecting Data Transfer Nodes**
  - Kick-off by StarLight, Caltech, RNP, University of Amsterdam this fall, with Pacific Wave, and ,… joining
- **IV. AutoGOLE MEICAN Pilot**
  - Run a pilot of the RNP's Cipó Service front-end interface – the MEICAN – being used by participant research and education networks (RENs) and exchange point (IXP) operators to configure multi-domain point to point circuits. The participants will evaluate the MEICAN as the main interface for AutoGOLE GLIF Project.
  - https://wiki.rnp.br/display/secipo/AutoGOLE+MEICAN+Pilot

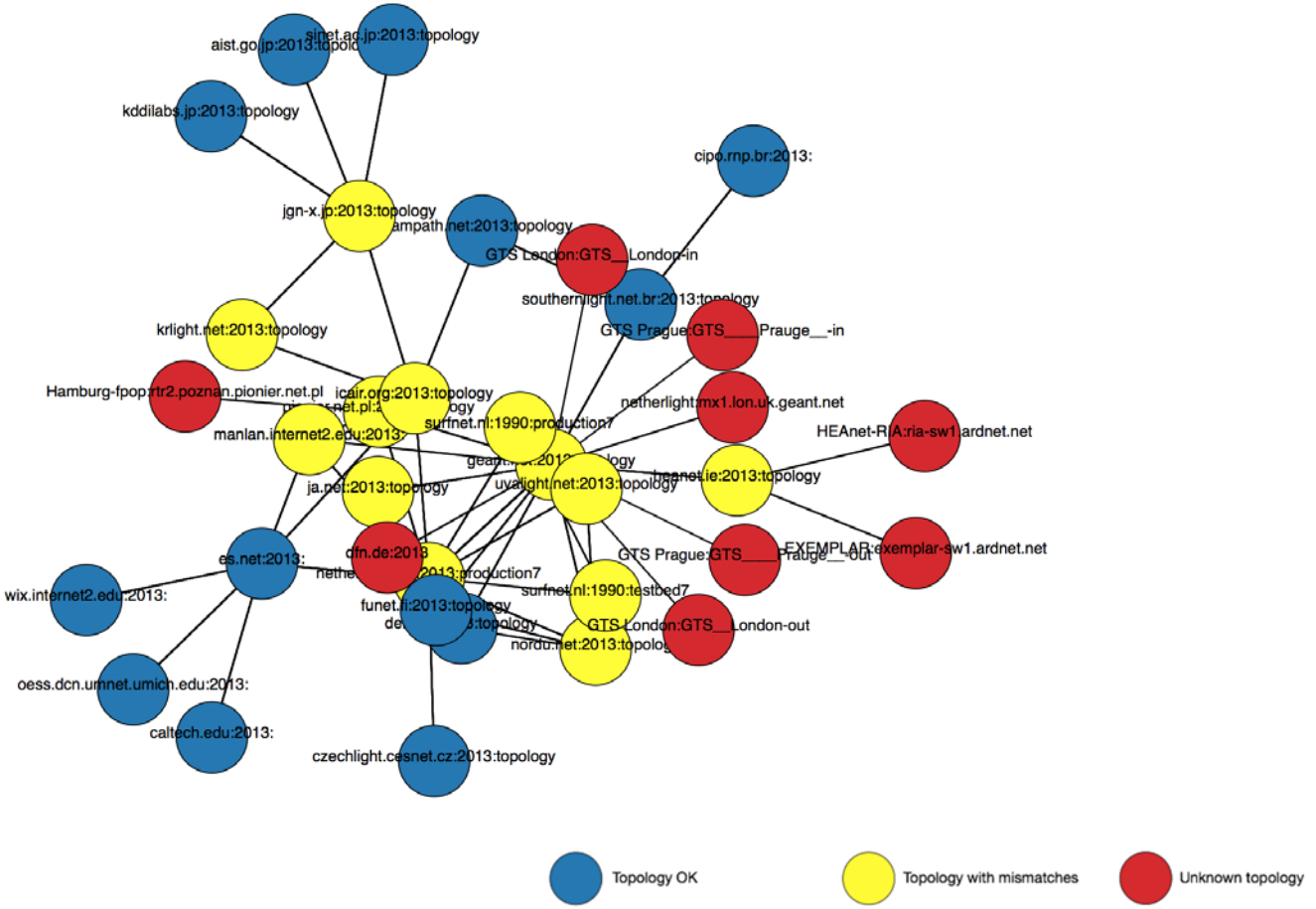
AutoGOLE Dashboard // Control Plane

http://dashboard.lab.uvalight.net/overview



AutoGOLE Dashboard // Data Plane

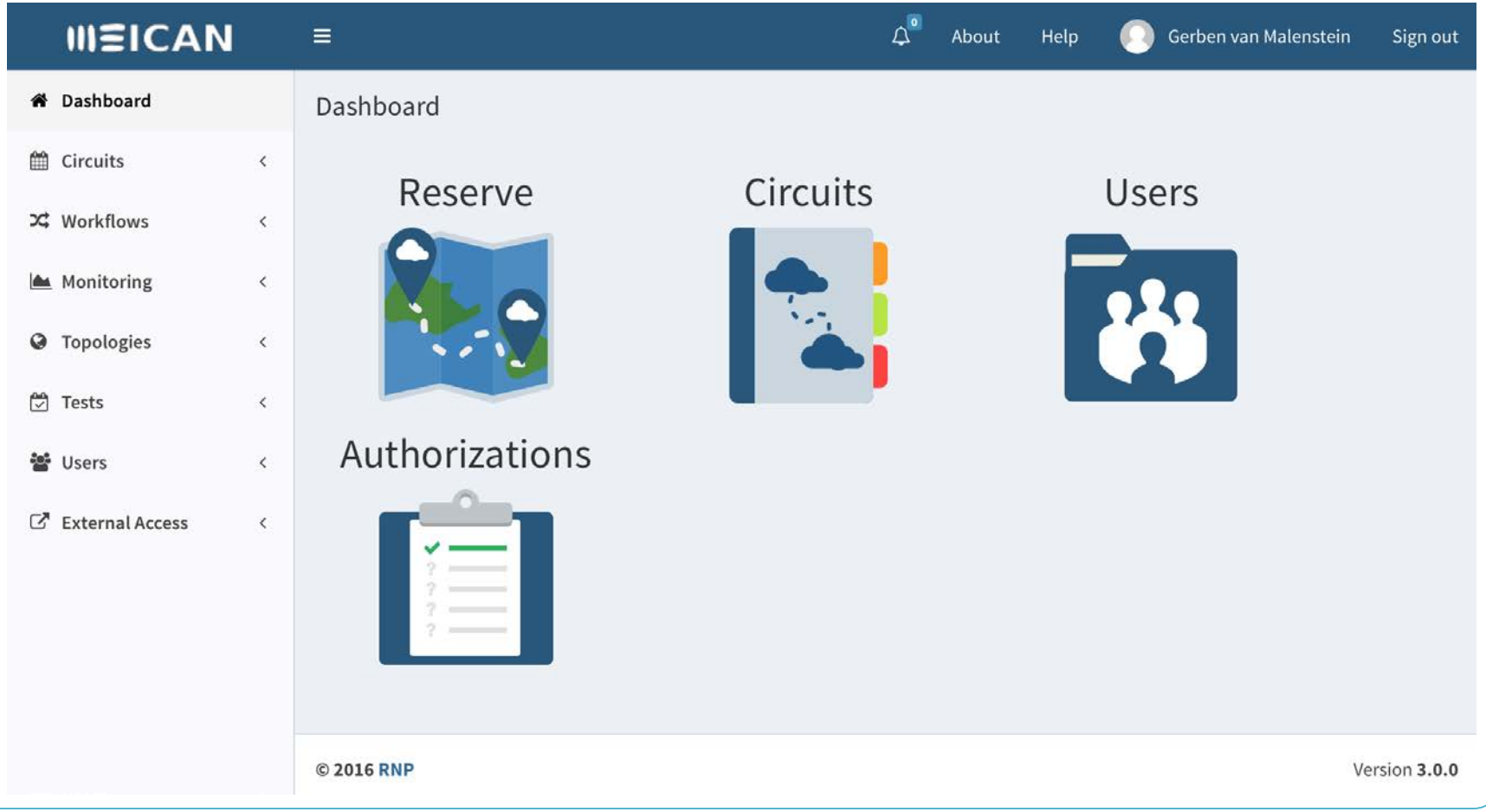
http://dashboard.lab.uvalight.net/overview



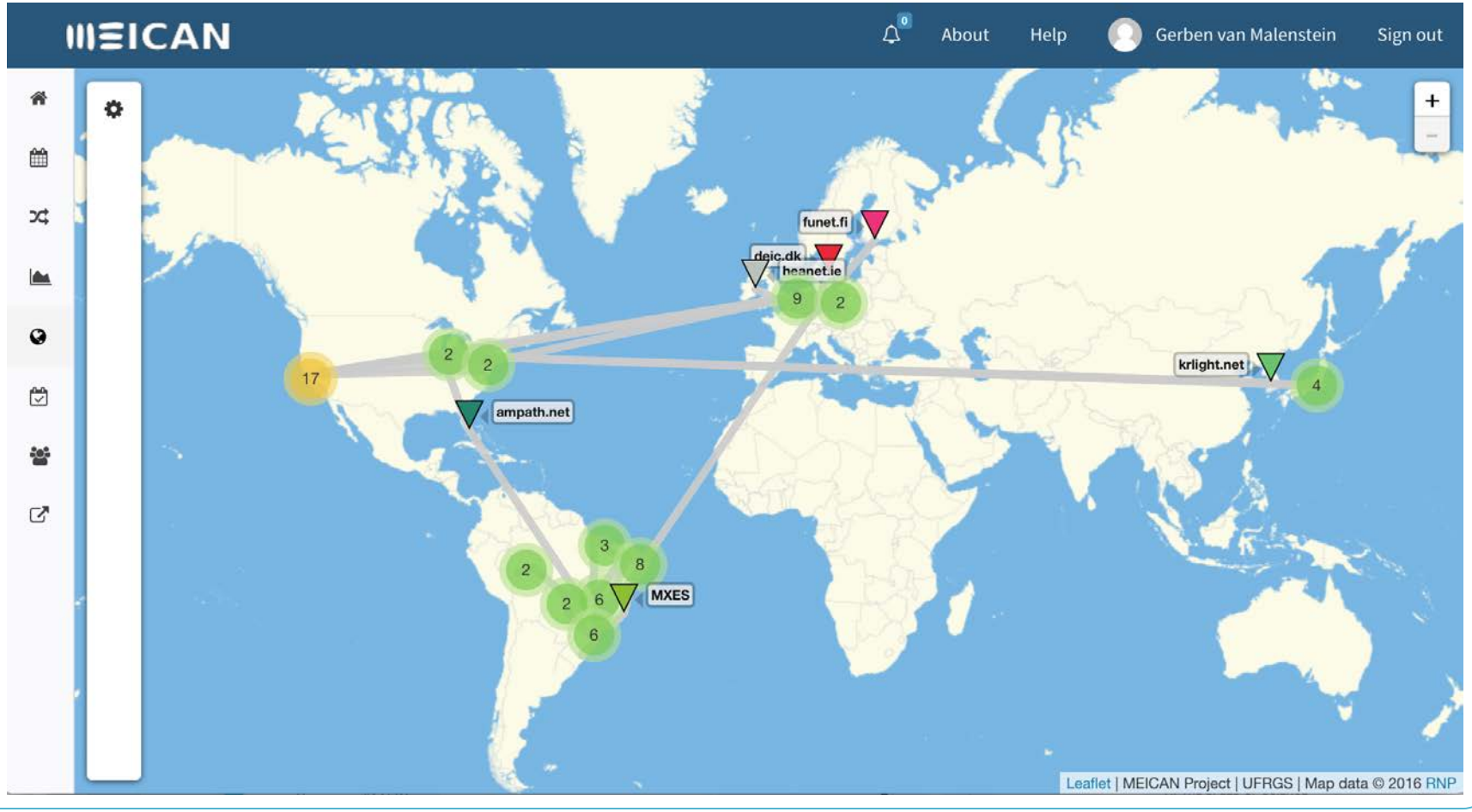
MEICAN introduction

- During the May 2016 Chicago AutoGOLE meeting it had been agreed that we are looking for one provisioning portal for world-wide circuit requests
  - The AutoGOLE TF members suggested several software suites
    - These have been evaluated
    - MEICAN (by RNP) is most promising to support the AutoGOLE:
      - Offers circuit request/reservations, status, user roles and authorizations
- MEICAN pilot kick-off September 21, 2016
  - Gaining experience with tool
  - Ironing out bugs / topology interpretations

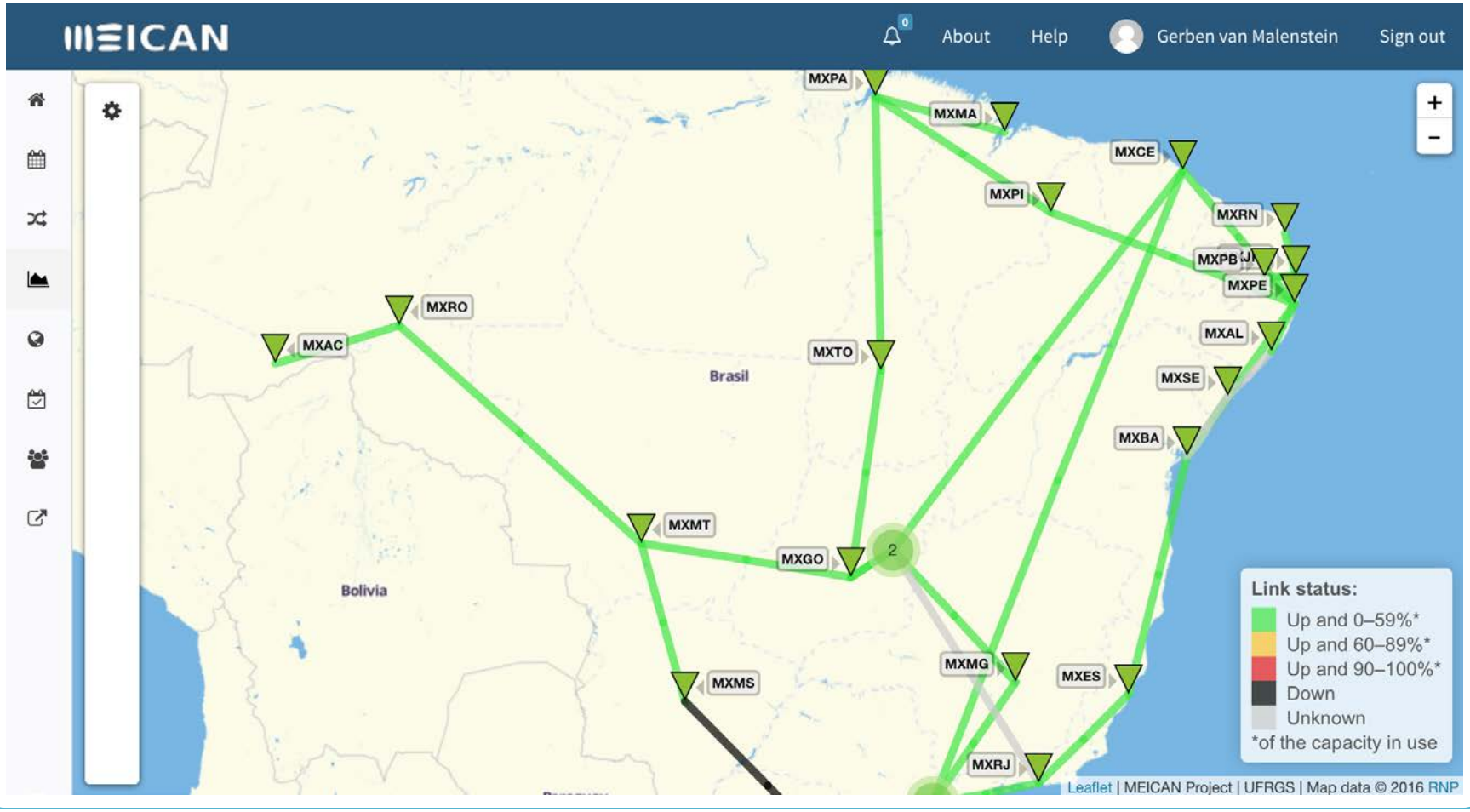
MEICAN // Dashboard



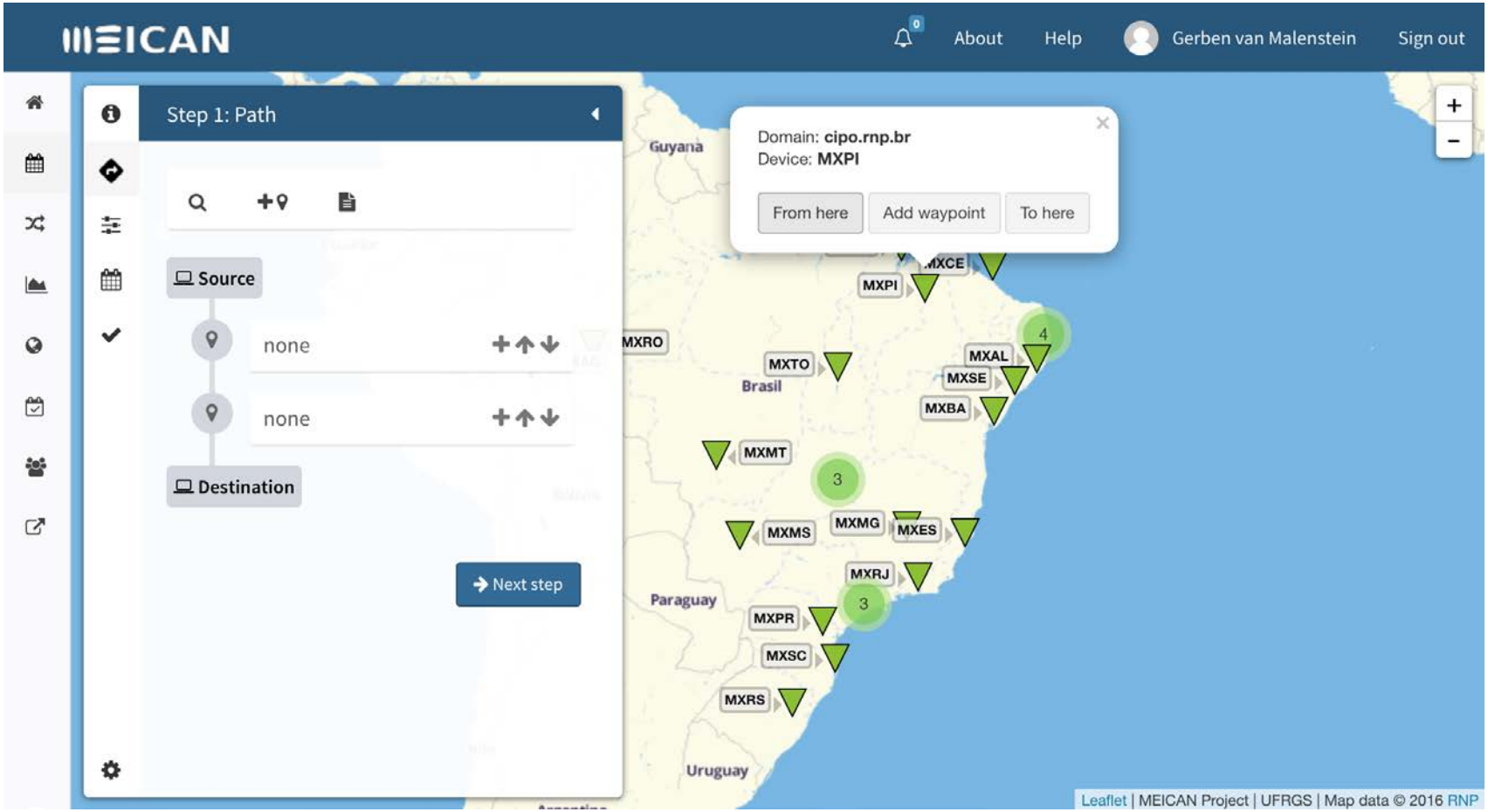
MEICAN // Topology view



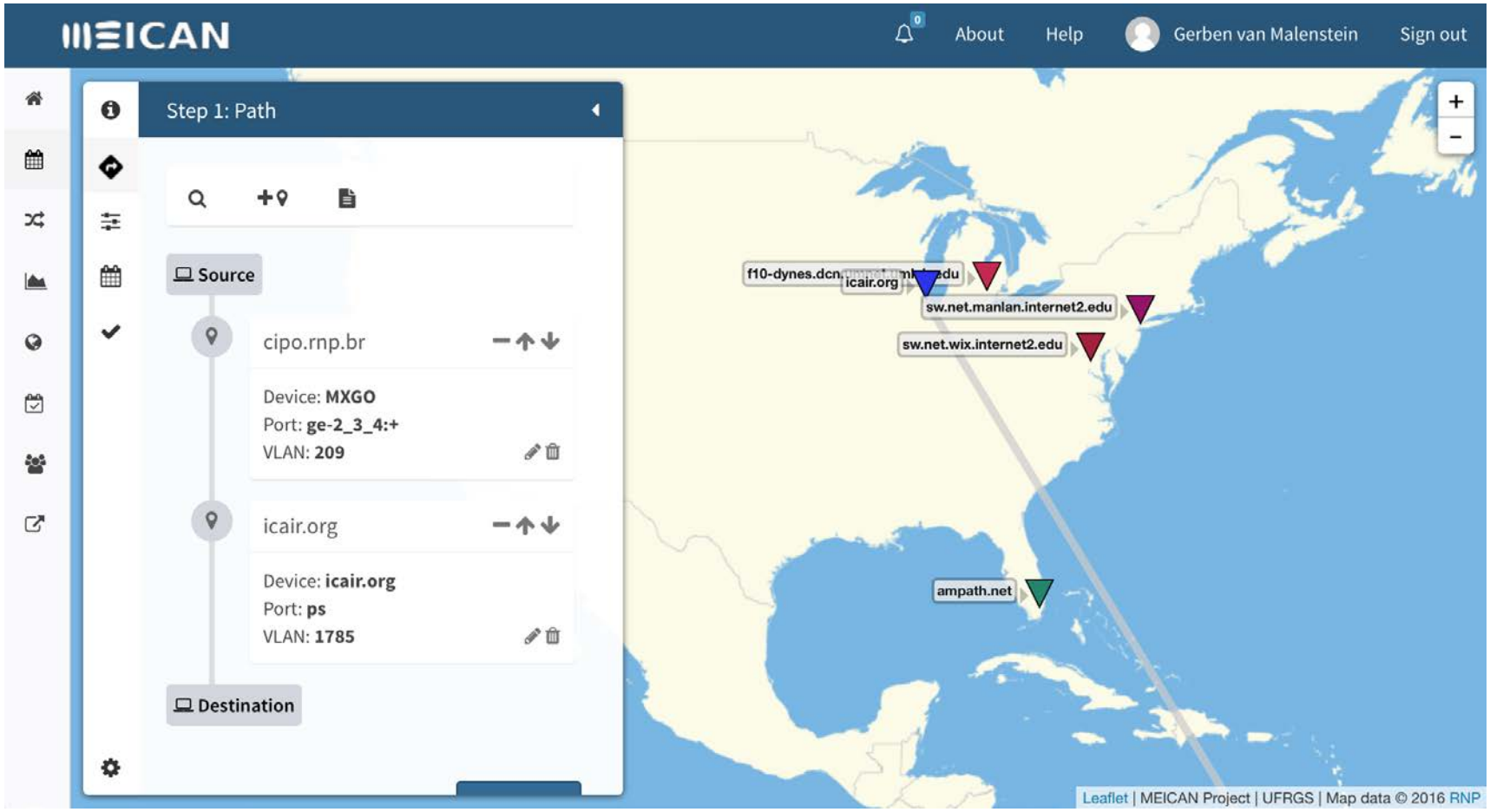
MEICAN // Traffic view



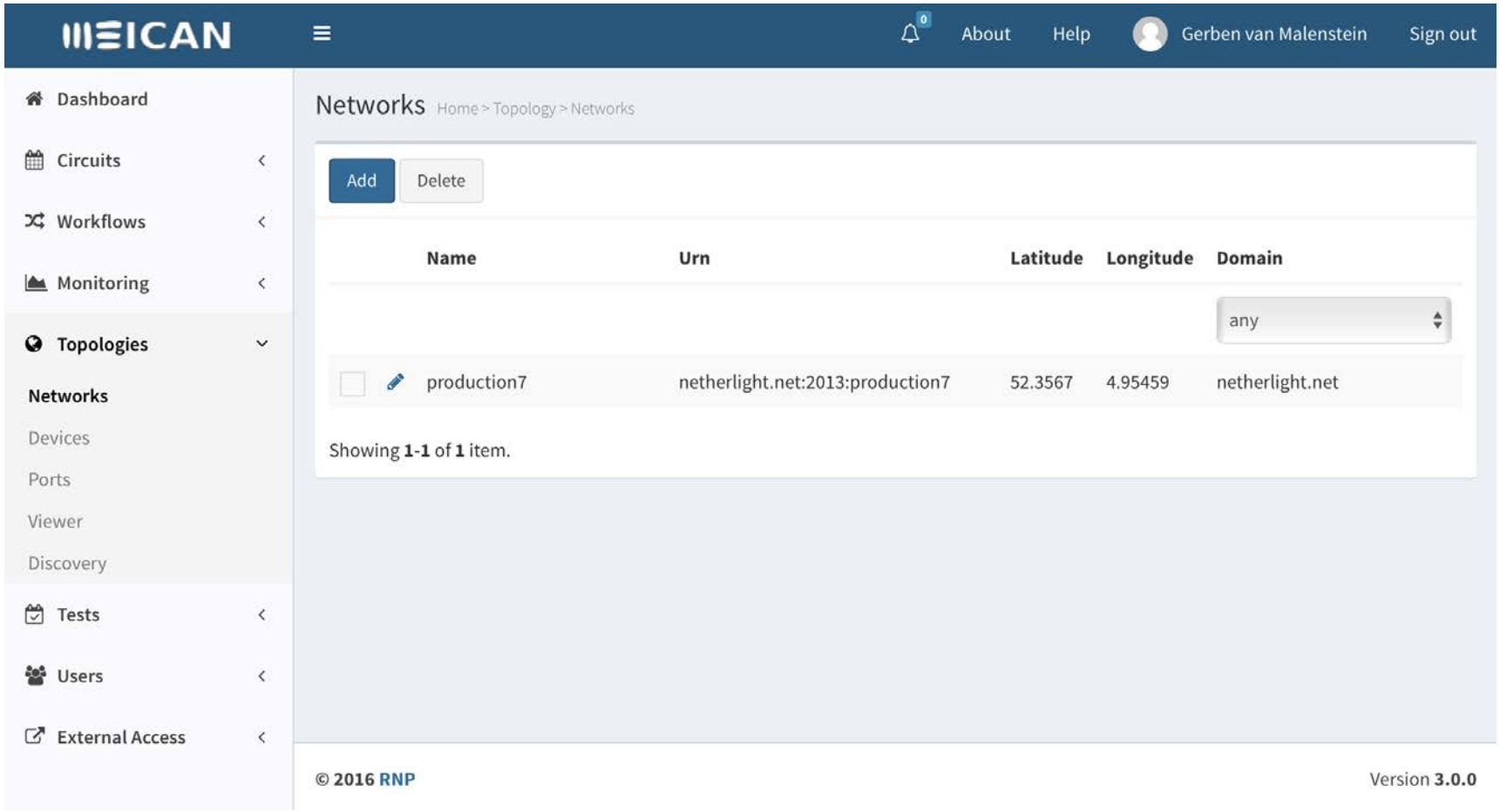
MEICAN // Provisioning



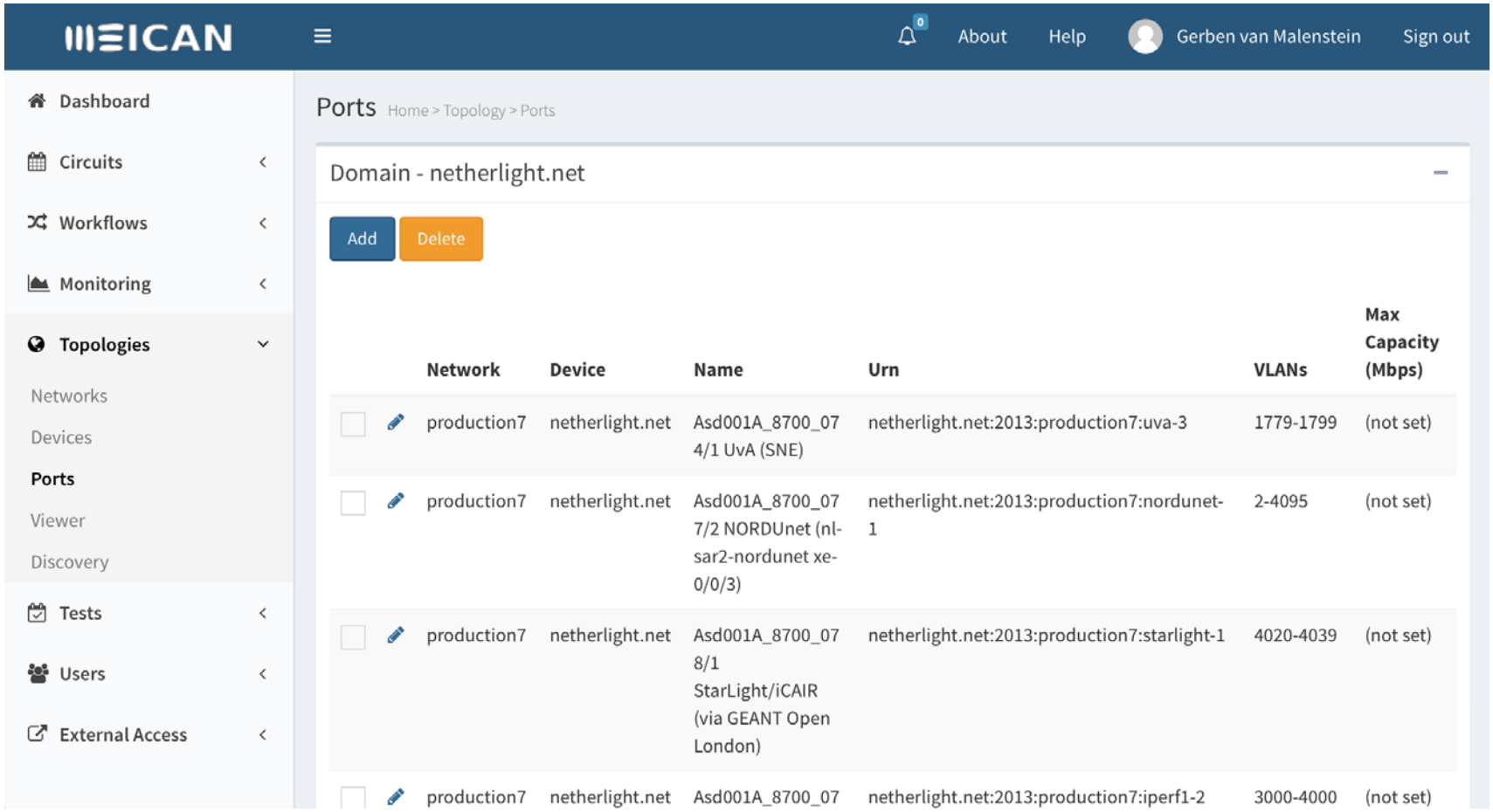
MEICAN // Provisioning



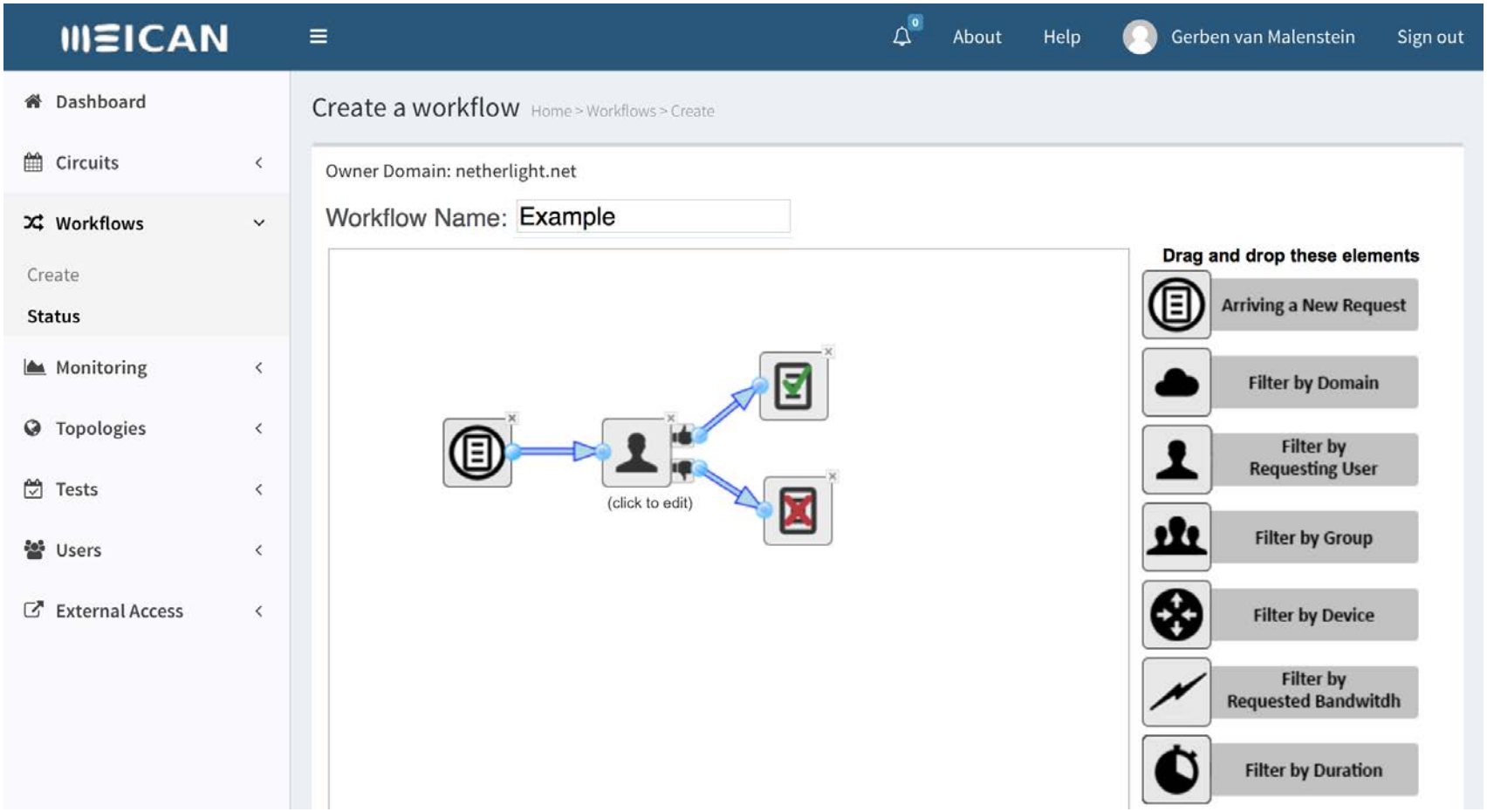
MEICAN // Networks



MEICAN // Ports



MEICAN // Workflow



MEICAN demonstration

- *Fingers crossed, it's demo time!*
- http://meican-test.cipo.rnp.br/meican

- MEICAN wiki: https://wiki.rnp.br/display/secipo/AutoGOLE+MEICAN+Pilot
- MEICAN user guide: https://wiki.rnp.br/display/secipo/MEICAN+User+Guide

2017 / Discussion

- Using the AutoGOLE for automated interconnects
  - International: for R&E based on MEICAN
  - For Service Providers:
    - GÉANT-Microsoft Azure ExpressRoute connections are now being setup using GÉANT and NetherLight's automated provisioning systems to prevent manual configuration for each service request
  - 2017: Letting AutoGOLE grow by using MEICAN as world-wide provisioning system
- Suggestions for other/new user communities?

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