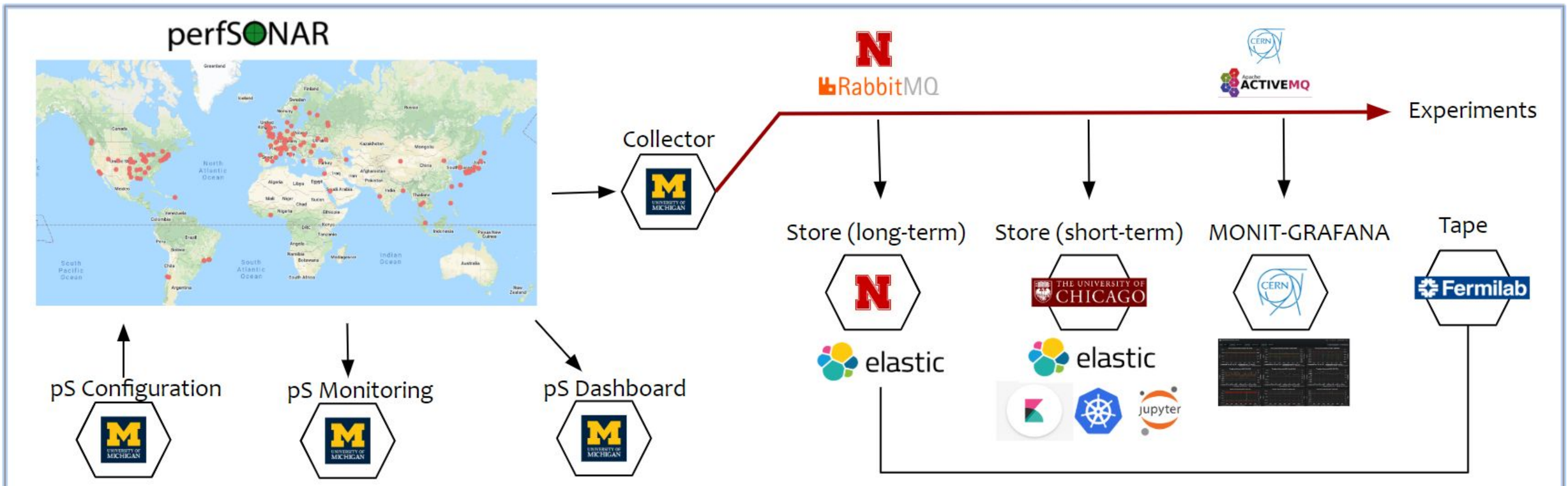
OSG Network Monitoring

Team: Shawn McKee[1], Edgar M Fajardo[4], John Thiltges[3], Ilija Vukotic[2 †], Derek Weitzel[3], Marian Zvada[3]
Institutions: [1]University of Michigan, [2]University of Chicago, [3]University of Nebraska, [4]UC San Diego

Network Monitoring Overview

The **OSG-LHC** component of **IRIS-HEP** has a network monitoring component, setup to assist its users and affiliates in identifying and fixing **network bottlenecks and soft-failures** that are typically extremely hard to find and resolve. We do this by developing and operating a comprehensive network monitoring platform including a data pipeline, user interfaces and an analytics platform.
Data is gathered from a global deployment of **perfSONAR** instances and other data sources including **ESnet** snmp interface counters, **WLCG** data transfers and **LHCOPN/LHCONE** data from CERN. This data provides powerful insights into our research and education network infrastructure by leveraging **spatial** and **temporal** information and making the raw and processed data easily accessible for further analysis.

OSG Network Monitoring Pipeline: Shown below is the logical diagram of the OSG network metrics pipeline. Data from **>250** perfSONAR's all over the world are gathered and made usable.



Status and Challenges

Maintaining and operating a network monitoring infrastructure with more than 250 globally distributed data sources, along with a significant number of additional components (shown above) is challenging!
Currently we are collecting **~50 GB / week** of **perfSONAR** metrics alone, with a continuously polling collector that has **~15 minute** latency. Our next milestone is to transform this "pull" model of data gathering into a "push" model where each perfSONAR instance is centrally configured to send its metrics directly to our OSG RabbitMQ bus, which should significantly **reduce data latency** and **improve reliability.**

Recent Work

- **Updating** and **augmenting** the pipeline data schema for improved traceroute usability
- Working with the **perfSONAR developers** for the required components for "push" operations
- We are **replaying data from tape** to use our new schema and fill-in small prior collection outages.

We created a web page to route users to various OSG docs, services and dashboards.

Have a look → https://toolkitinfo.opensciencegrid.org/

This project is supported by National Science Foundation under Cooperative Agreement OAC-1836650. Any opinions, findings, conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

† NSF SAND project collaborator