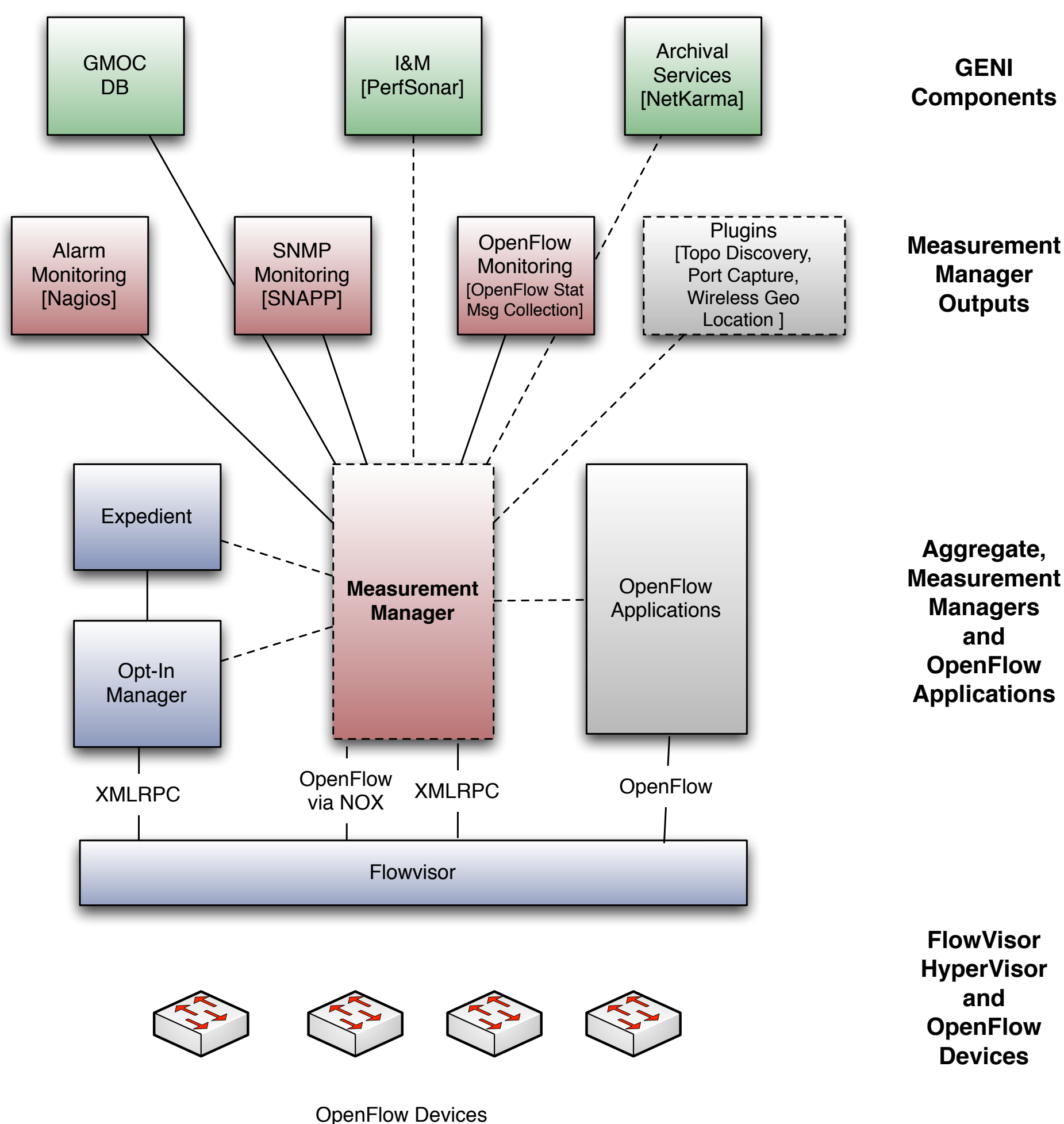# Measurement Manager

Overview

The Indiana University Measurement Manager allows OpenFlow enabled infrastructure to be monitored and managed easily.

It collects data from the Flowvisor instances about the configuration of slices, the location of switches and their interconnections. It builds a view of the network at the aggregate and slice level. It uses this model to enable the retrieval of information about each component and the state and topology of each slice.

The Data can include:

- Aggregate and Slice Topology
- Port Utilization through OpenFlow or Out of Band (SNMP)
- OpenFlow specific utilization information (# of flows, flow table sizes, etc..)
- Geolocation of devices (GeoIP, WiFi location and Manual settings)
- Monitoring and Status information

OpenFlow Devices
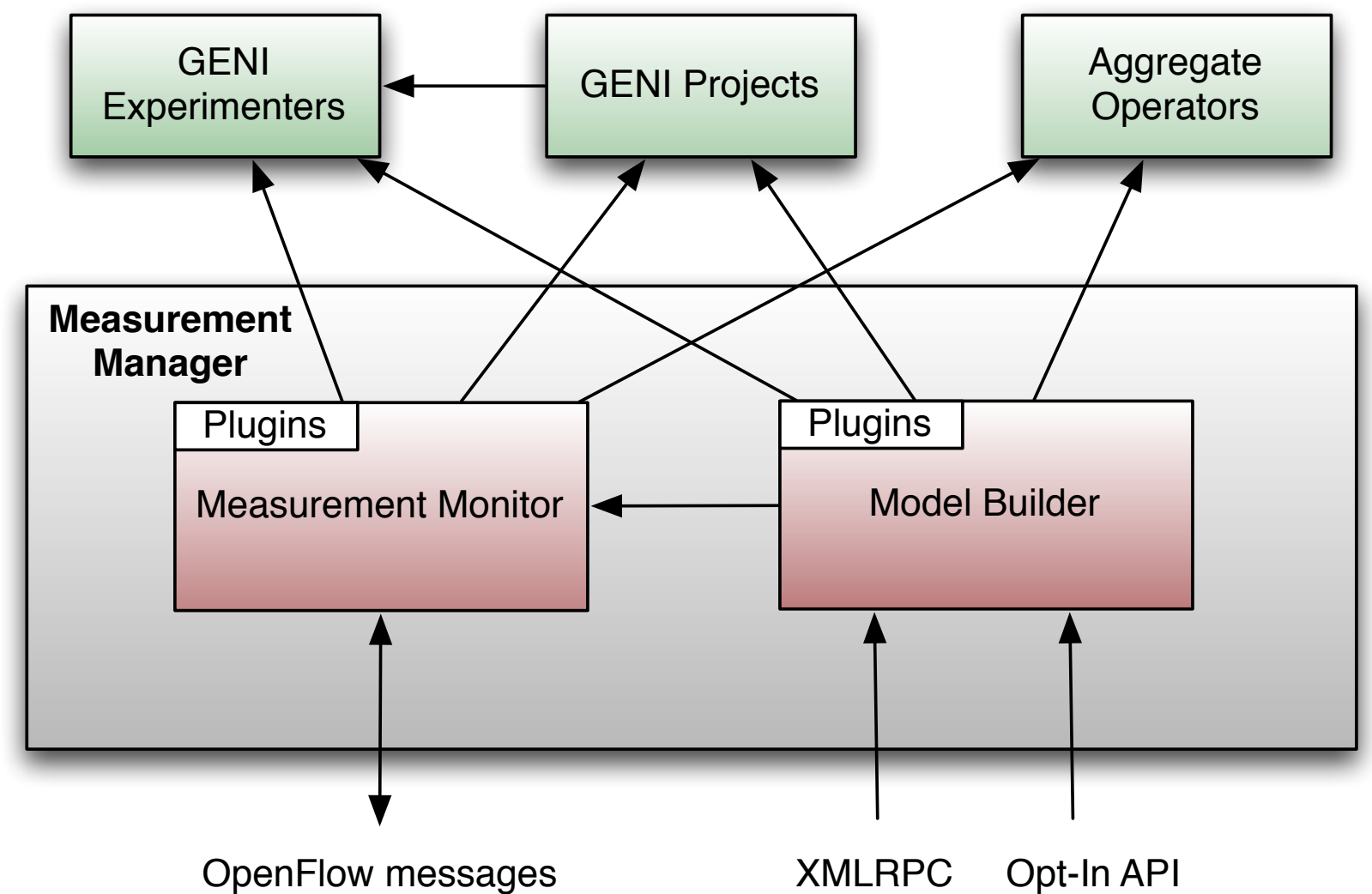
Components

The Measurement Manager consists of two main components, a Model builder to construct a model of the OpenFlow aggregates; and the Measurement Monitor which collects information by becoming an OpenFlow controller and monitoring all controller traffic from the OpenFlow enabled devices.

It also utilizes a plugin architecture to allow the development of additional tools to capture additional information from the network and include it in the network model or data collected.

Outputs

The Measurement Manager generates a variety of outputs directly and through existing GENI Frameworks and Infrastructure. It currently generates the following outputs:

- GMOC Exchange format
- Nagios (Open Source Monitoring) configuration files
- SNAPP SNMP configuration API

Current and Future Plans

Our demonstration shows a simple hosted deployment of the Measurement Manager. Once integration between Opt-In and Expedient is complete the Measurement Manager should be able to collect data about all slices and devices that are part of the GENI OpenFlow deployments on campus and in the backbone networks.