KanseiGenie

GEC8 Status and RoadMap

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Spiral 2 Achievements

1. KanseiGenie extension that enables fine-grained resource management using latest ORCA release

2. Extended KanseiGenie Researcher Portal with stitched federated experimentation support

3. Online experiment visualization service (demo tonight) (attach screen shot of visualization tool)

4. Created v1.1 KanseiGenie Installer

5. Ported KanseiGenie to NetEye (Wayne State), and provided support to porting efforts at OKGems (Oklahoma State)

6. Collaboration with GMOC, exported KanseiGenie health meta data

7. Open to outside researchers through the web portal (more than a thousand experiments scheduled)

Only one milestone pending:
KANSEI: S2.h Connections from Kansei and NetEye via L2 (tested up to the campus edge)
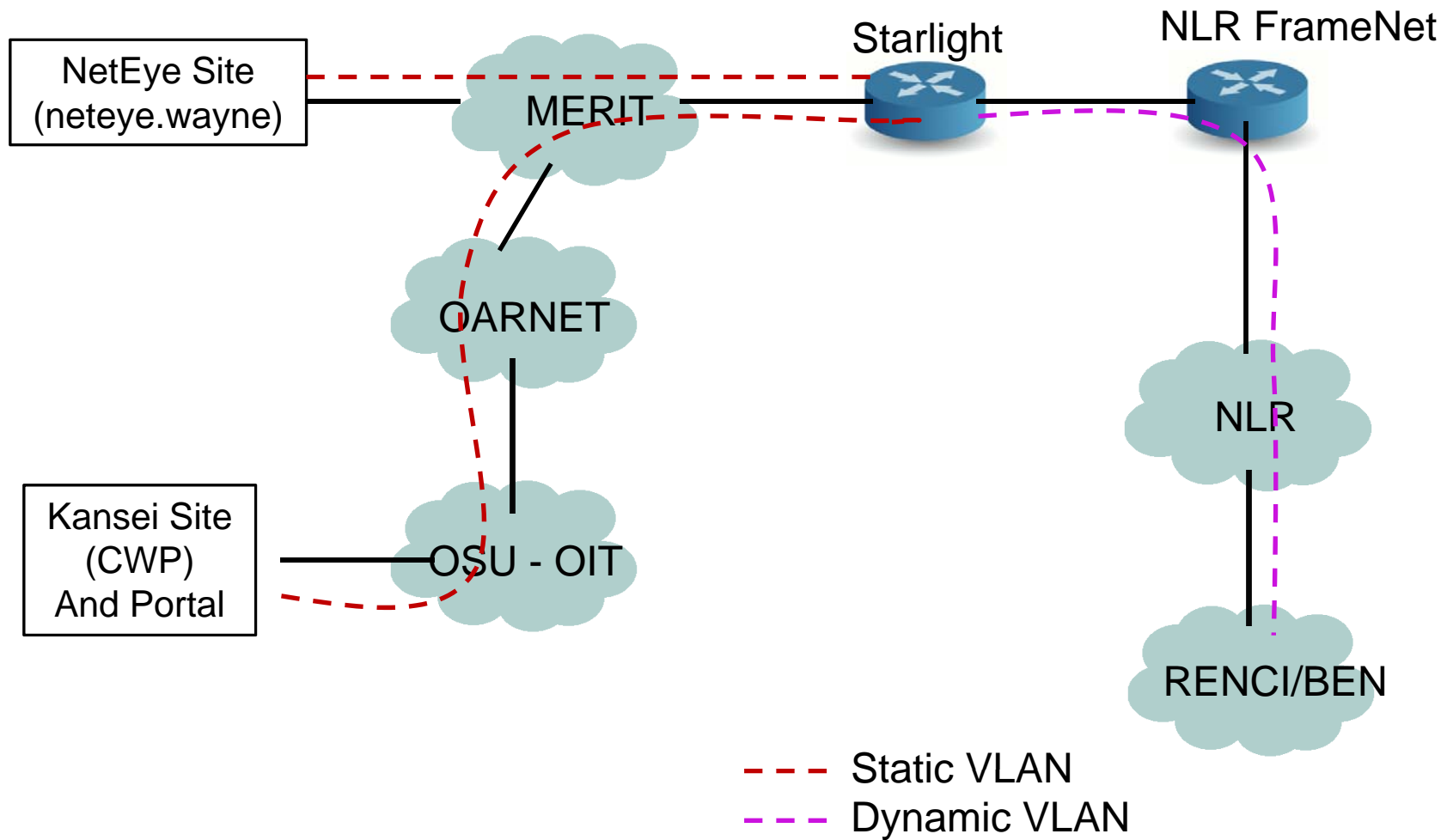
Spiral 3 Roadmap

1. Fine-grained federated resource discovery and scheduling
   - RSpec (WSNDL) based resource discovery and leasing jointly with ORCA-BEN and Cluster D
   - Authentication across brokers for federated slices (ORCA chaining mechanism/policy extensions?)
2. Extend KanseiGenie Researcher Portal
   - Support experiment workflow management for federated slices
   - Experiment Specification/Scripting language support
3. Realize v2.0 KanseiGenie Installer
   - Accommodate new substrate(s)
   - Support Federation
   - Automation

4. Kansei doctor and its integration with the I&M plane

5. Create KanseiLite software package (for tabletop testbeds) (depends on funding)
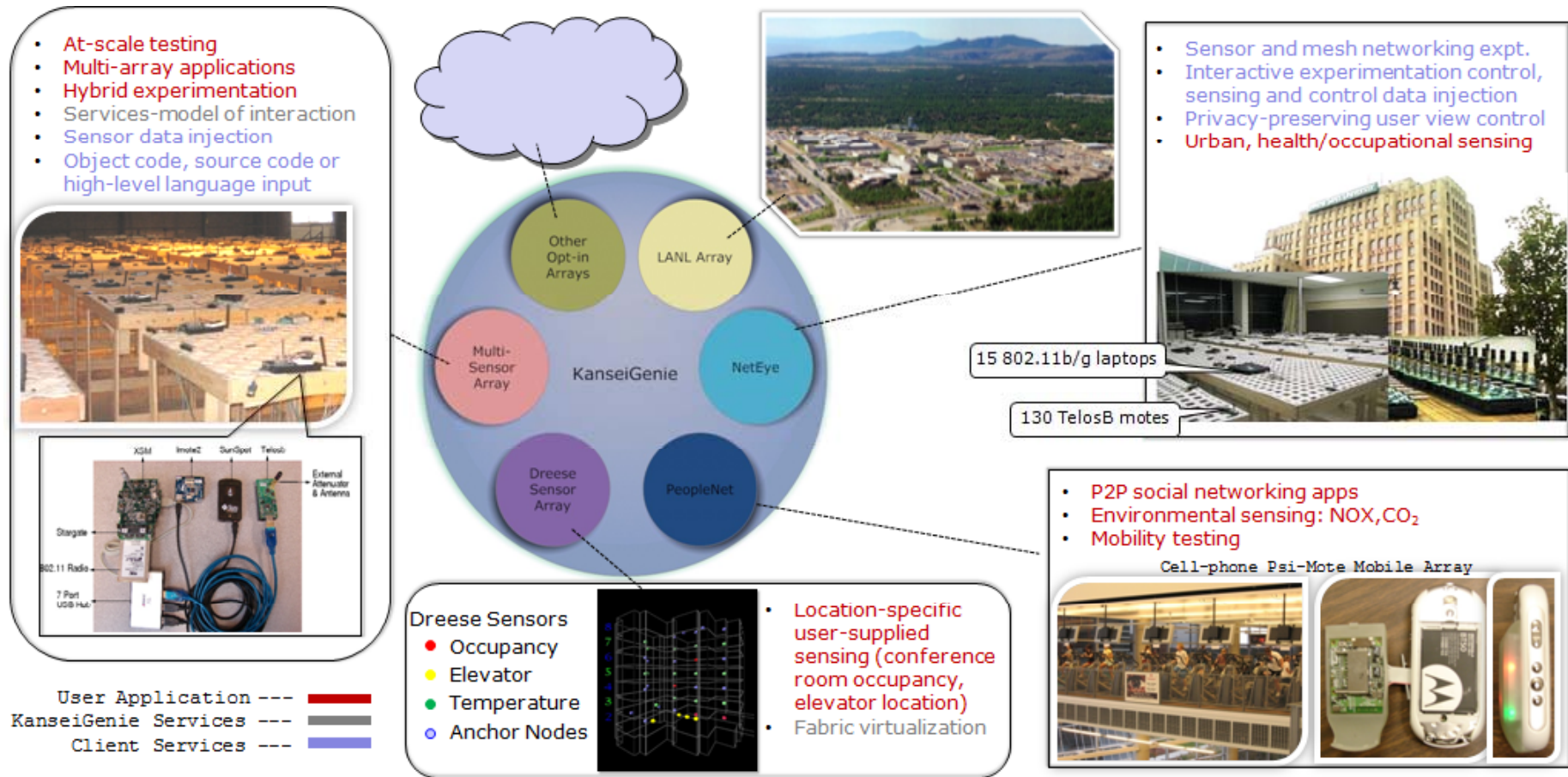
NLR Connection

- OSU
  - Layer 3 (I2) connection to KG Site (done)
    - $214/month
  - Layer 2 – (tested up to the campus edge, campus VLAN setup in process)
    - KG Site-RENCI
      - ○ Via OIT-Oarnet-MERIT-Starlight-NLR- RENCI
    - $50/month
    - Paul Schopis (CTO Oarnet)
- WSU (via MERIT)
  - L3 (I2) connection available
  - Up to 10Gbps VLAN from WSU to StarLight
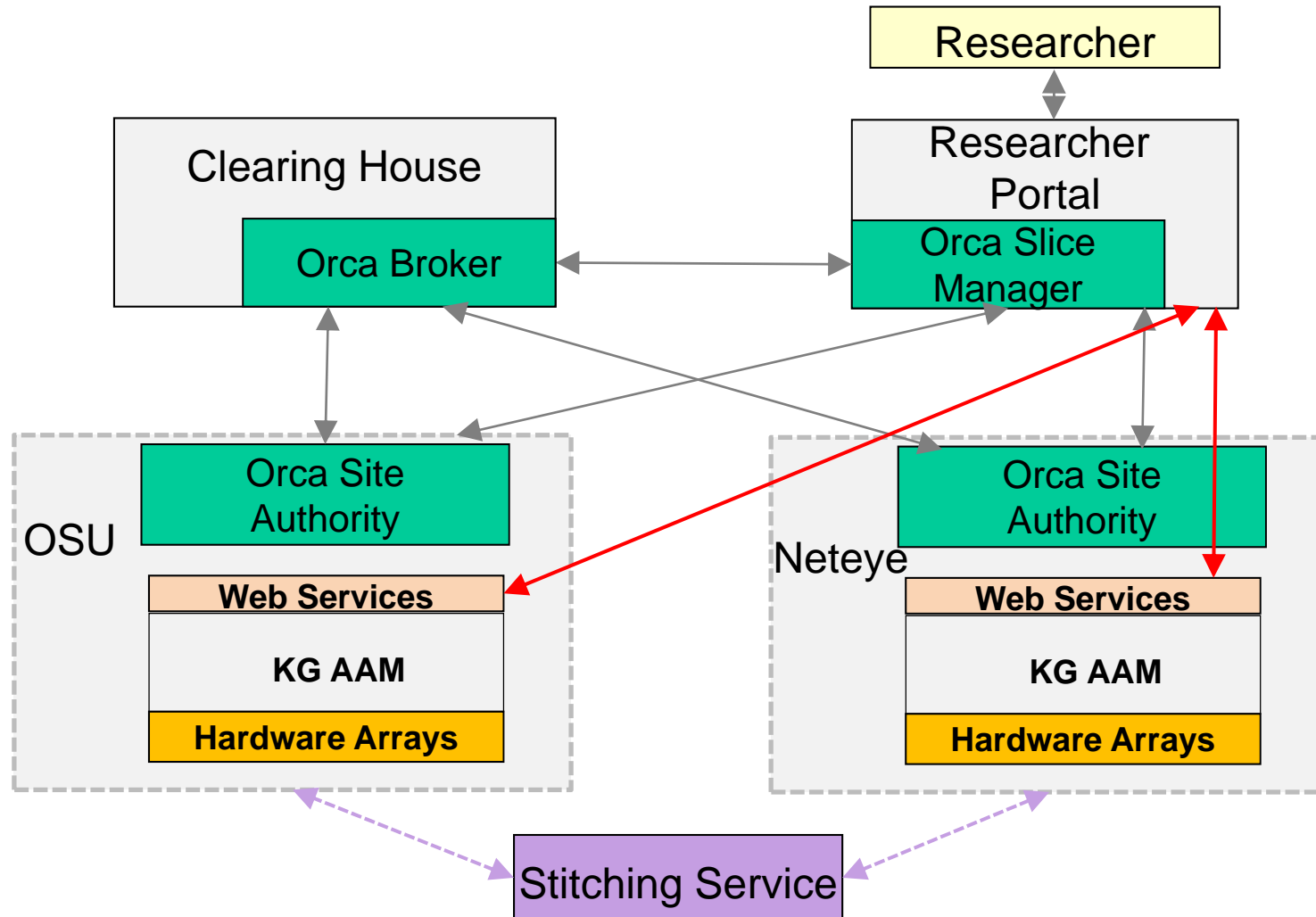- WSU and KG connected via L2/L3

KanseiGenie VLAN Connectivity

NetEye Site (neteye.wayne)

Kansei Site (CWP) And Portal

MERIT

OARNET

OSU - OIT

Starlight

NLR FrameNet

NLR

RENCI/BEN

- - - Static VLAN
- - - Dynamic VLAN

Thank you

- At-scale testing
- Multi-array applications
- Hybrid experimentation
- Services-model of interaction
- Sensor data injection
- Object code, source code or high-level language input

- Sensor and mesh networking expt.
- Interactive experimentation control, sensing and control data injection
- Privacy-preserving user view control
- Urban, health/occupational sensing

15 802.11b/g laptops

130 TelosB motes

User Application ---
KanseiGenie Services ---
Client Services ---

Dreese Sensors
- Occupancy
- Elevator
- Temperature
- Anchor Nodes

- Location-specific user-supplied sensing (conference room occupancy, elevator location)
- Fabric virtualization

- P2P social networking apps
- Environmental sensing: NOX, CO_2
- Mobility testing

Cell-phone Psi-Mote Mobile Array

Other Opt-in Arrays

LANL Array

Multi-Sensor Array

KanseiGenie

NetEye

Dreese Sensor Array

PeopleNet

KanseiGenie Overview

Current KanseiGenie Sites

- **Kansei (Ohio State University)**
  - Wenjie Zeng

- **NetEye (Wayne State University)**
  - Xi Ju

- **OKGems (Oklahoma State University)**
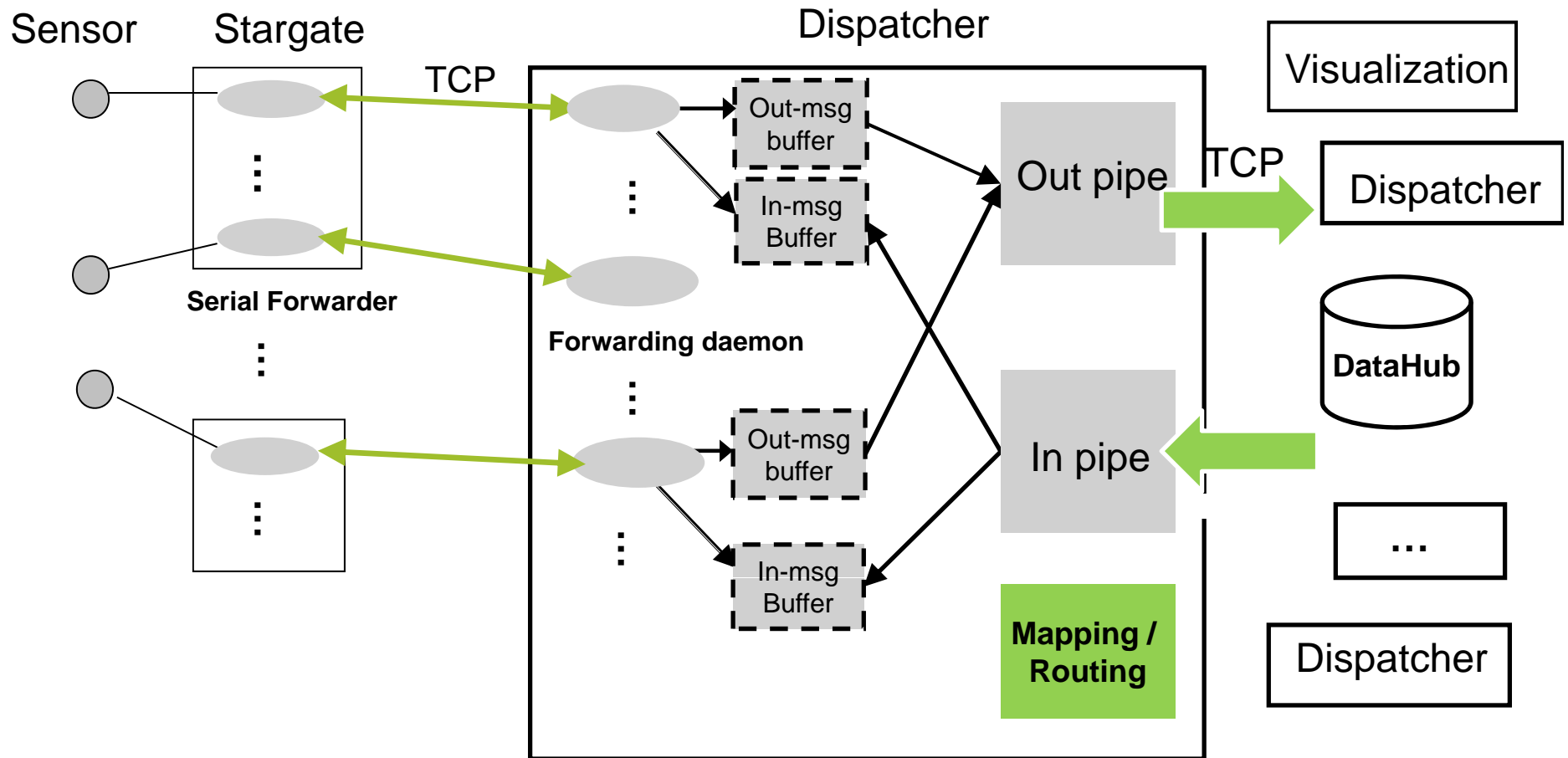 - Praveen Kumar

Stage-1 Federation Architecture

Federated and Stitched Experimentation

Design of Stitching Service

KanseiGenie Architecture

Researcher

Clearing House — User Authentication — Researcher Portal

Orca Broker — Ticket request/ grant — Orca Slice Manager

Publish Resources

KanseiGenie Site

Redeem Ticket/ Slice setup

Orca Site Authority

File upload, Rspec creation, Execution, Log, Data infiltraion, Viz

Web Services

Aggregate of Aggregate Manager

| **Slice Manager** | **Experiment Manager** |
| **Measurement Manager** | **O&M Manager** |

Hardware Arrays