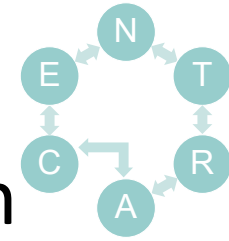


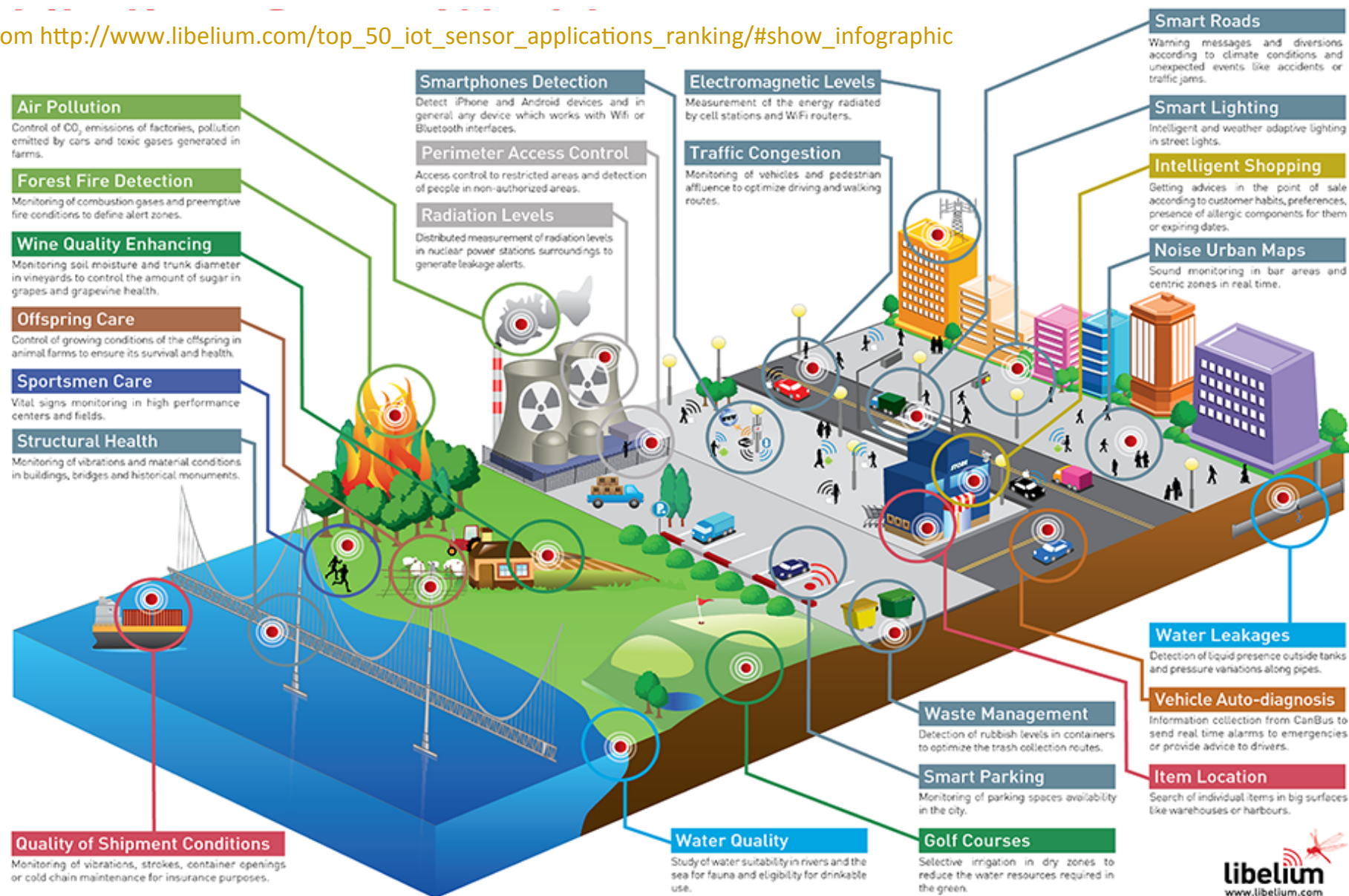
# CENTRA



- US—East Asia Collaborations to Enable Transnational Cyberinfrastructure Applications
- Key goals:
  - Scientific advances in
    - Application domains: environmental monitoring (EM), disaster management (DM), smart cities (SC)
    - Software-defined systems: data-sharing, middleware interoperability, coordination
  - Creation of next generation of collaboration networks (of people)
  - Creation of a framework for persistent collaboration among centers/groups in US-EA
- Key resources
  - Unique testbeds, real-world problems, access to leading scientists and cyberinfrastructure

# CENTRA applications scope: Smart cities + disaster management + environment modeling

From [http://www.libelium.com/top\\_50\\_iot\\_sensor\\_applications\\_ranking/#show\\_infographic](http://www.libelium.com/top_50_iot_sensor_applications_ranking/#show_infographic)

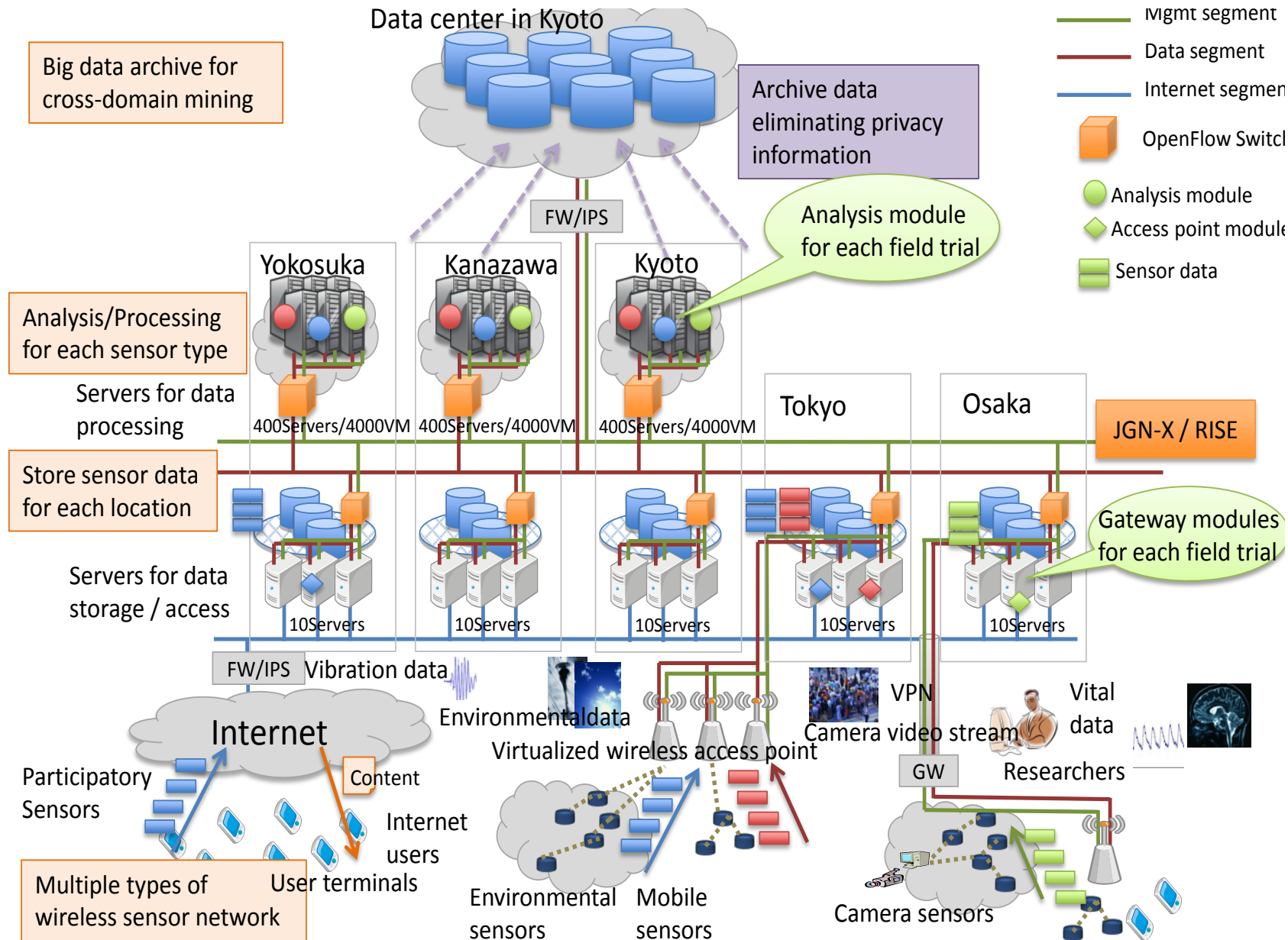


# CENTRA middleware scope

- Software-defined environments, frameworks and IT stacks

Environment	Frameworks	Stacks/platforms	Examples
HPC, HTC	Batch scheduling, parallel processing and management, machine learning.	MPI, HTCondor, HDFS, Pegasus, Torque, Lustre, Hadoop, Infiniband	Ocean/lake modeling, MPI applications
Social nets, ad-hoc systems	Online social networks, overlay networks.	SocialVPN, Jitsi, IPOP	Location-based cooperation
Big-data stores data management	Distributed unstructured stores, structured databases, index/search systems	Spark, Hadoop, Elastic Search, Riak, Ceph, HBase, PostgreSQL	iDigBio
Big data, analytics, visualization	Batch and stream processing, machine learning, distributed data processing	OpenStack, Apache Spark Hadoop/YARN.	Lifemapper
Sensor data processing and communication	Real-time stream processing, data synchronization, compression	Apache Storm, Apache Kafka, Zookeeper, Piix [Yoshida08]	JOSE testbed

# NICT JOSE – example of a testbed and a system accessible to CENTRA



# Research teams

- Multinational members
- Senior researchers as mentors
- Junior researchers: graduate students or postdocs
  - already funded from other sources to do PhD work,
  - work falls in the areas of the targeted applications and middleware technologies and
  - research benefits from access to international contexts and unique problems faced therein.
  - students of senior researchers are natural candidates but we will reach out to others
  - application/selection process will be developed
- 30 research stays at international sites, 3 workshops