

ICN2020 Project

Advancing ICN towards real-world deployment through research, innovative applications, and global scale experimentation

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- Key-objective :
 - Facilitate the real-world deployment of ICN through research, innovation and large scale experiments.
- ICN is halfway to the real-word deployment
 - ICN2020 Project approaches both from research and from proof
 - Challenge unsolved problem and enhance the ICN infrastructure
 - Design specific applications and evaluate them on the testbed

ICN2020 Consortium

ICN2020



KDDI R&D Laboratories, Inc.



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**Georg-August-Universität
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Osaka City University



**University College London
UK**



Osaka University



**Cisco Systems France Sarl
France**



**Ericsson AB
Sweden**



**Institut de Recherche
Technologique SystemX
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Overview

Applications and Services

Main Application (Video/Social)
Enhance the network's support of global scale applications

IoT Application
Design and develop IoT application which utilize ICN features



Services
Design and assess performance of high-layer ICN services

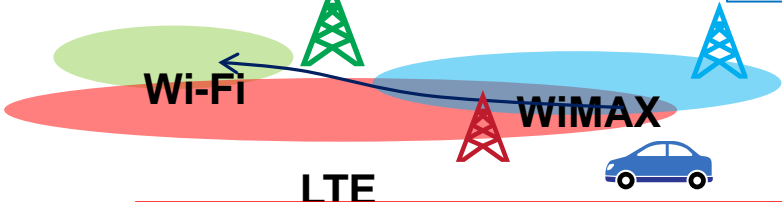
ICN Enhanced Infrastructure



Security, Access Control and Privacy
Design content-based access control and privacy mechanisms

Cache-Enhanced Routing and Traffic Mgmt.
Integrate caching with forwarding and congestion control in the context of ICN

Mobility
Research and proof how ICN can complement 5G



Testbeds and Experiments

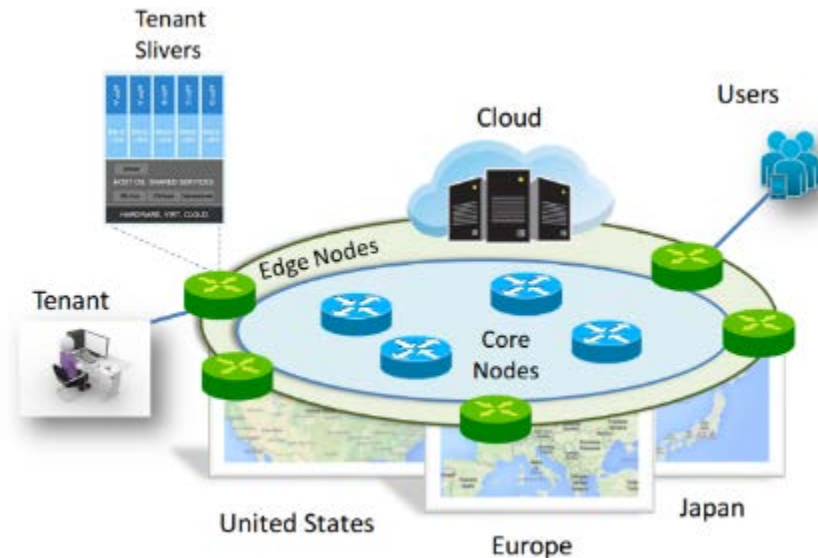
Federated Testbed
Global testbed based on existing ICN testbed infrastructures (CUTEi, NDN)

Local Testbed
Local testbed to evaluate IoT applications, mobility.

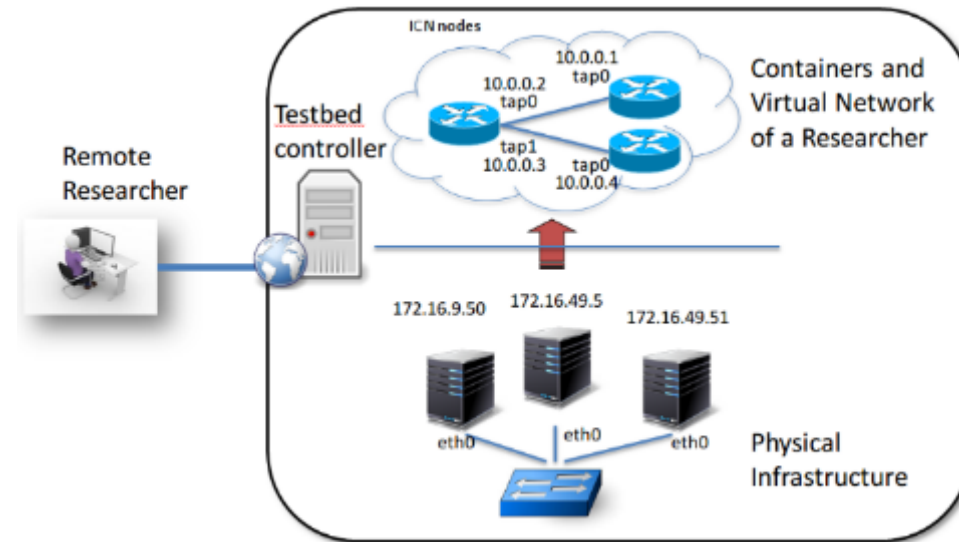
- Objective I** Design and develop a set of exemplary main applications with a special focus on **video delivery** and **social networks**.
- Objective II** Design and develop key features of **IoT Applications**.
- Objective III** Design and develop **ICN Services**.
- Objective IV** Adapt ICN to complement **5G**.
- Objective V** Improve/resolve solutions to vital functions of ICN based **Infrastructure**.
- Objective VI** **Realistic** experiments on large scale local and global federated testbeds.
- Objective VII** Stimulate general deployment of ICN in the real world, e.g., by integrating specific ICN concepts and solutions in POCs **by industrial partners** during the project life time.

Realistic Experiments

- Theoretically, ICN has the potential to solve many issues prevalent in current IP
- But the realistic experiments need to be performed in order to
 - obtain an understanding of ICN's performance in large scale and real-world scenarios
 - discover a new problem on the real-world environments
- We use two approach : Federated Testbed and Local Testbed



Federated Testbed



Local Testbed

- Three applications that could be useful for such a large scale event, e.g., Tokyo Olympic
 - a. Video** : VoD/Live streaming, Interactive (video conference)
Challenges : Large number of users, large filesize content (4K), low latency
 - b. Social Network**
Challenges: Large number of users that connect based on context (e.g. they are in a stadium together)
 - c. Internet of Things**
Challenges: How do you send/receive info to context based IoT devices (e.g. evacuation signal in a planned manner to IoT devices in a stadium, context based feedback to people in the vicinity)

Video



Social



Things



Kick off

- ICN2020 project is just started
- We had Kick off meeting Sept. 5 – 6 in Göttingen, Germany



- ICN has potential to solve many issues prevalent in IP
 - But it is still halfway to the real-world deployment
- GreenICN Project improved the research activities related with the future network technologies in EU and JP
 - But still research phase
- ICN2020 project will bridge to the real-world deployment
 - From the past projects including GreenICN project
 - By the experimental proof on the global and local testbed