

IRTF ICNRG Update

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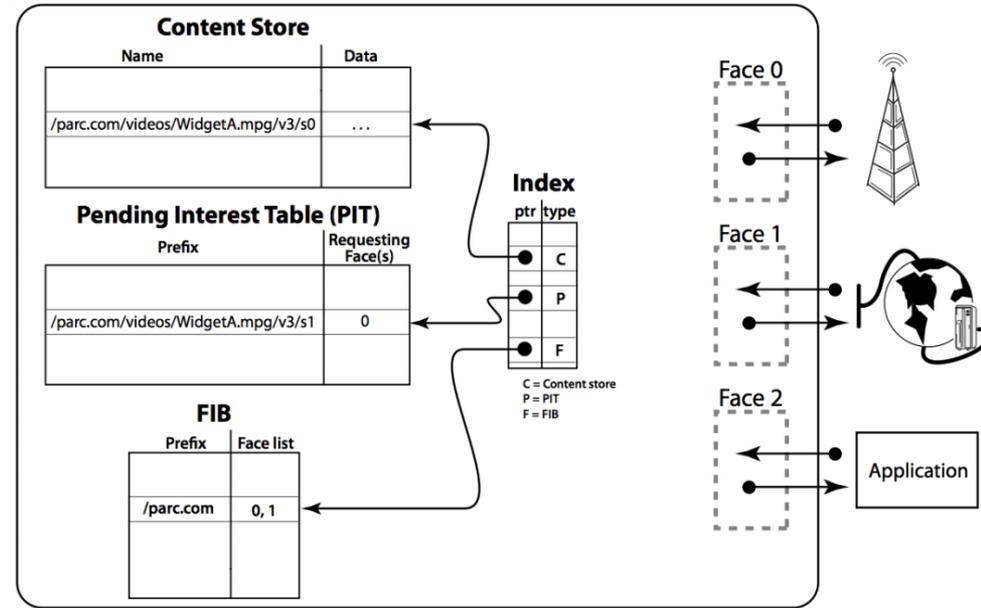
Dave Oran

Dirk Kutscher

IETF-98 / 2017-03-30

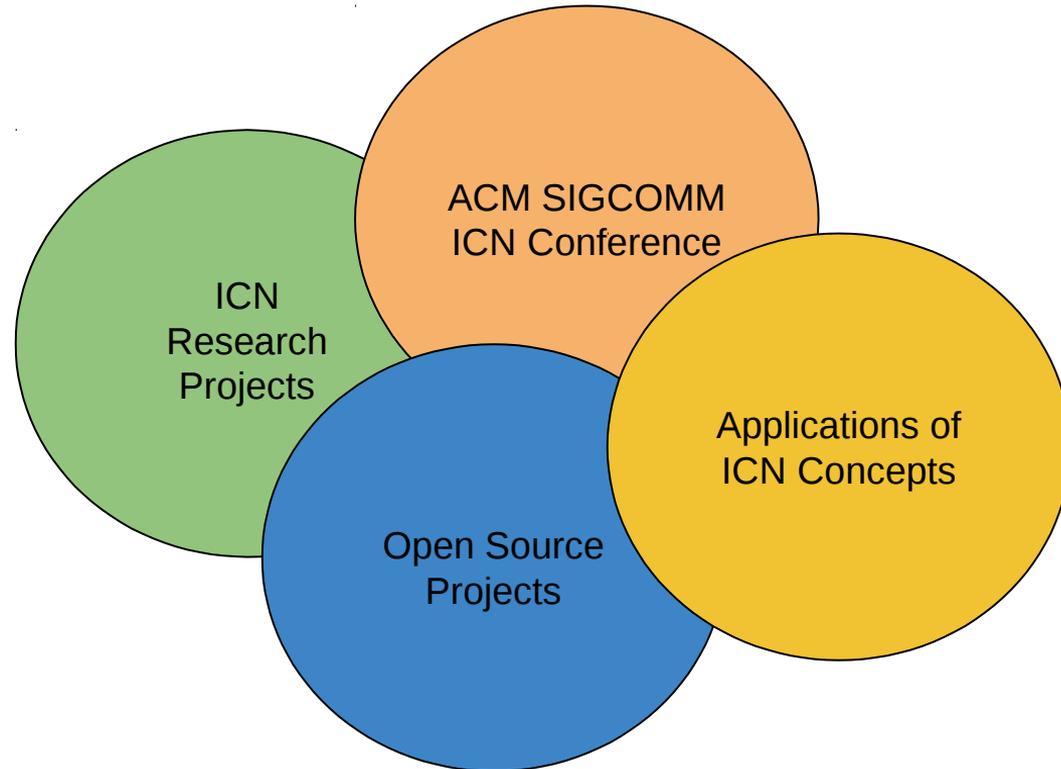
Information-Centric Networking

- Accessing named data in the network
- Implemented at the network-layer
- Naming and securing individual Named Data Objects
- Potential for empowering forwarding plane
 - Stateful request forwarding
 - Applying forwarding strategies
 - Caching

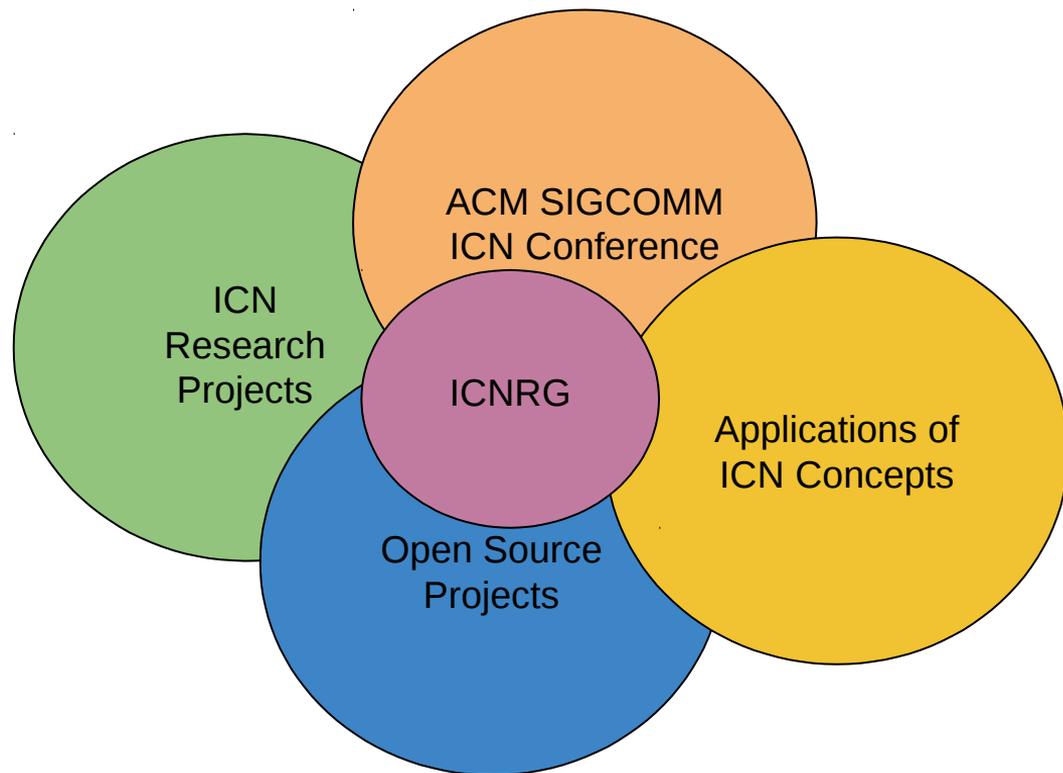


<https://named-data.net/project/archoverview/>

ICNRRG in the ICN Community



ICNRG in the ICN Community



Output and Activity So Far

- RFC 7476 Information-Centric Networking: Baseline Scenarios
 - RFC 7927 Information-Centric Networking (ICN) Research Challenges
 - RFC 7933 Adaptive Video Streaming over ICN
 - RFC 7945 Information-Centric Networking: Evaluation and Security Considerations
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- ICNRG has met at all IETFs since it was formed at IETF84 (14 regular meetings)
 - ICNRG has held 16 interim meetings
 - Currently active drafts: 19

Topics and Research Activities

- CCNx set of specifications

- [draft-irtf-icnrg-ccnxsemantics-04](#)
- [draft-irtf-icnrg-ccnxmessages-04](#)
- [draft-wood-icnrg-ccnxkeyexchange-01](#)
- [draft-mosko-icnrg-ccnxurischeme-01](#)
- [draft-mosko-icnrg-beginendfragment-02](#)
- [draft-tschudin-icnrg-flic-03](#)

- Use cases

- IoT, 5G, Video streaming

- PARC's IPR statements
 - <https://datatracker.ietf.org/ipr/2560/>
 - <https://datatracker.ietf.org/ipr/2886/>
- NDN team's view on IPR situation
 - <https://named-data.net/wp-content/uploads/2016/08/NDN-IPR.pdf>

Standards, “Harmonization”

- Experienced requests for “ICN standards” in 2016
 - Motivation: getting ICN into 5G
 - Industry irritation caused by different protocol variants and project/company camps
- Proposed ICN BOF for IETF-96, Berlin
 - Some push-back from parts of the community
 - IPR situation perceived as blocking
 - Conclusions
 - Try to complete set of experimental RFCs in ICNRG first: foster more experiments
 - start a sprint on “harmonization”

...Then, This Happened

Cisco CCN acquisition: what changes?

- For IRTF and IETF if a WG is created
 - IPR clauses on CCN drafts has changed,
 - Under reasonable and non-discriminatory terms, with reciprocity, to implement and fully comply with the standard,
- Which means:
 - **RAND**: If standard is adopted Cisco will not assert any patents [...] against any party for making, using, selling, importing or offering for sale a product that implements the standard,
 - **Reciprocity**: Cisco retains the right to assert its patents against any party that asserts a patent it owns or controls [...] against Cisco in any IETF standard.

...Then, This Happened

Community Information-Centric Networking (CICN)

- Several software components
 - VPP ICN forwarder
 - Socket based forwarder
 - ICN socket API
 - HTTP server
 - DASH video player
 - vICN for container based network deployment and orchestration
- Software is distributed under Apache 2.0 license



Recent ICN Research Developments

NSF/Intel Partnership on Information-Centric Networking in Wireless Edge Networks (ICN-WEN)

PROGRAM SOLICITATION

NSF 16-586



National Science Foundation

Directorate for Computer & Information Science & Engineering
Division of Computer and Network Systems



Intel Labs University Collaboration Office

Letter of Intent Due Date(s) (required) (due by 5 p.m. submitter's local time):

September 20, 2016

Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):

November 21, 2016

ICN Edge Computing



DEFENSE ADVANCED
RESEARCH PROJECTS AGENCY

≡ MAIN MENU

[Defense Advanced Research Projects Agency > News And Events](#)

Sharing Battlefield Information at Multiple Classification Levels via Mobile Handheld Devices

DARPA to leverage new software and networking technology to vastly simplify secure data sharing among U.S. and coalition troops across mobile tactical networks

OUTREACH@DARPA.MIL
1/10/2017



ICNRG Goals for 2017 (Chairs' Perspective)

- Foster more experiments, proof-of-concepts for ICN
 - Not necessarily limited to CCN/NDN-based ICN approaches
- Enable creation of interoperable specs
 - As Experimental RFCs
- Be the international, supra-project forum where people come to share their ideas, results
- Interact with other IRTF groups (such as T2TRG) and provide useful input to IETF

Summary

- ICN has been around for some time
 - Research projects in Europe, USA, Japan, China
 - Active research community -- reasonable quality research output
- Industry adoption has been challenging
 - Disruptive “Future Internet” approach
 - IPR situation & camp competition was not helpful
- Brighter outlook
 - IPR situation improved
 - Open source software availability