IP Services over an ICN

The Internet as our ICN use case

Dirk Trossen, InterDigital Europe
IRTF ICNRG Meeting

INTERDIGITAL.

A Hypothesis-Driven ICN Story

- **Our starting point:** The Internet is the killer app for ICN
  - Make this work and you have a strong starting point for ICN

- **Our hypothesis:** IP over ICN has the potential to run IP services better than in standard IP networks
  - Show that this is true and you have a strong reason for deploy ICN!

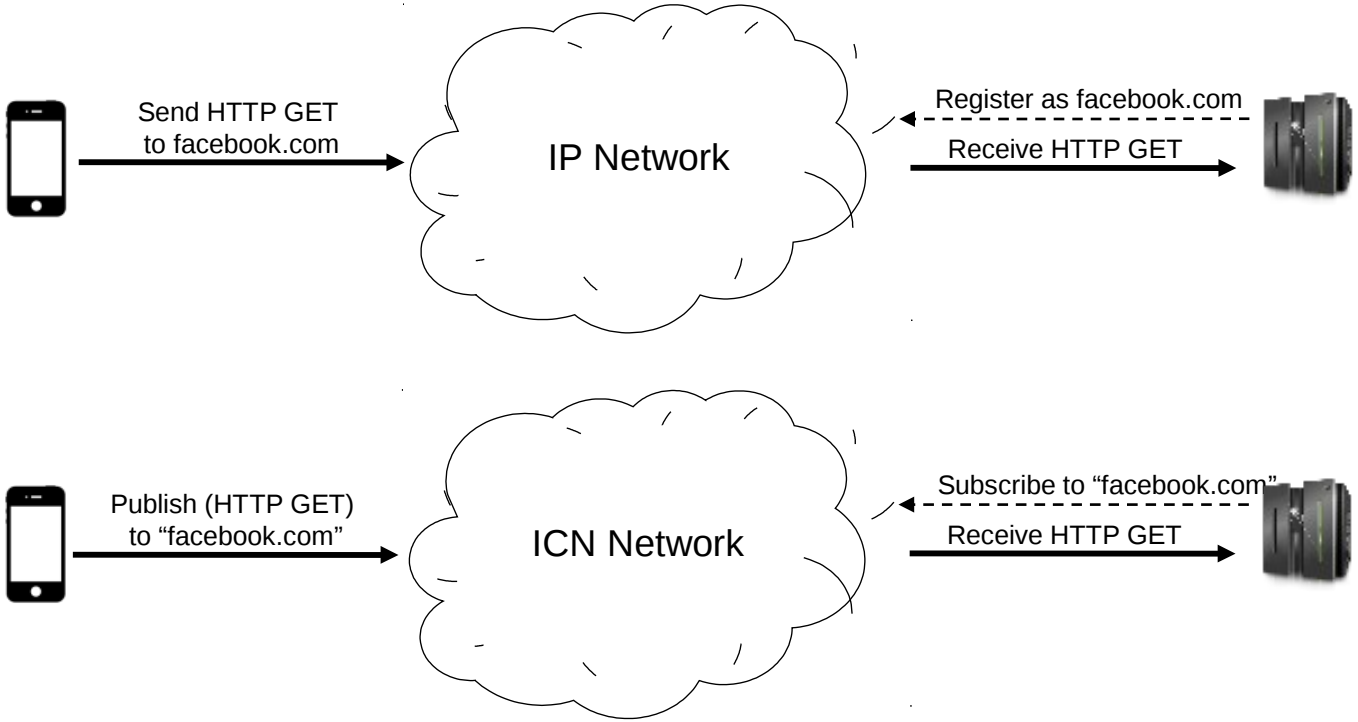
- **Our approach:** Design, build, trial and test
  - Clear set of quantitative and qualitative statements regarding our hypothesis

Expected Benefits

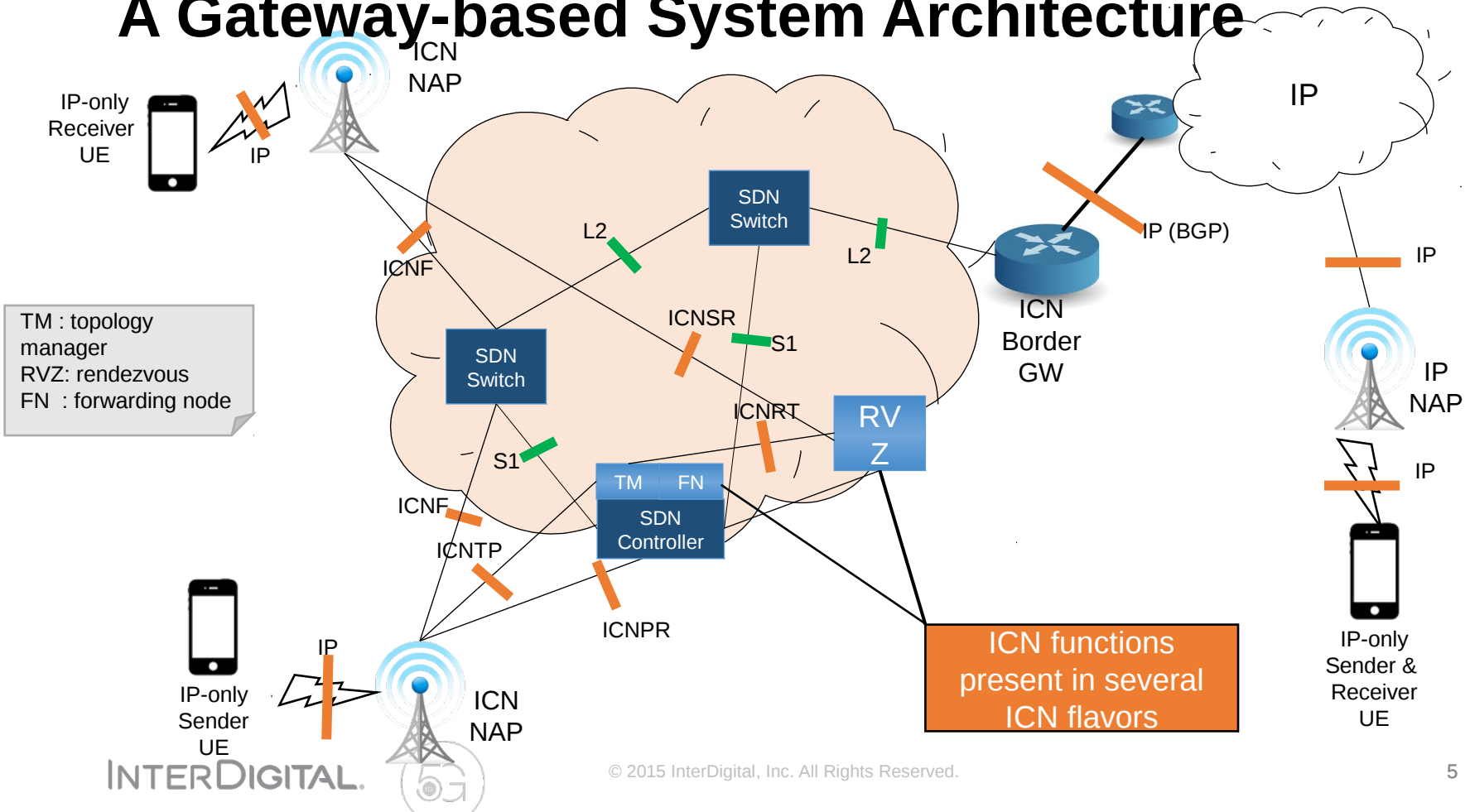
- Coincidental multicast
  - Re-introduce multicast in the light of proliferating HTTP unicast
- Direct path mobility
  - No more anchor points
- Fast surrogate support
  - Evolution of CDNs but NO universal caching!
  - Fast node/link resilience
- Delay-constrained insertion of surrogates
  - Important for current 5G discussions
- Democratization of CDNs
  - Content provisioning by smaller content providers (no need for large-scale CDNs)

Basic Idea

Interpret IP-based communication as Named Object Exchange

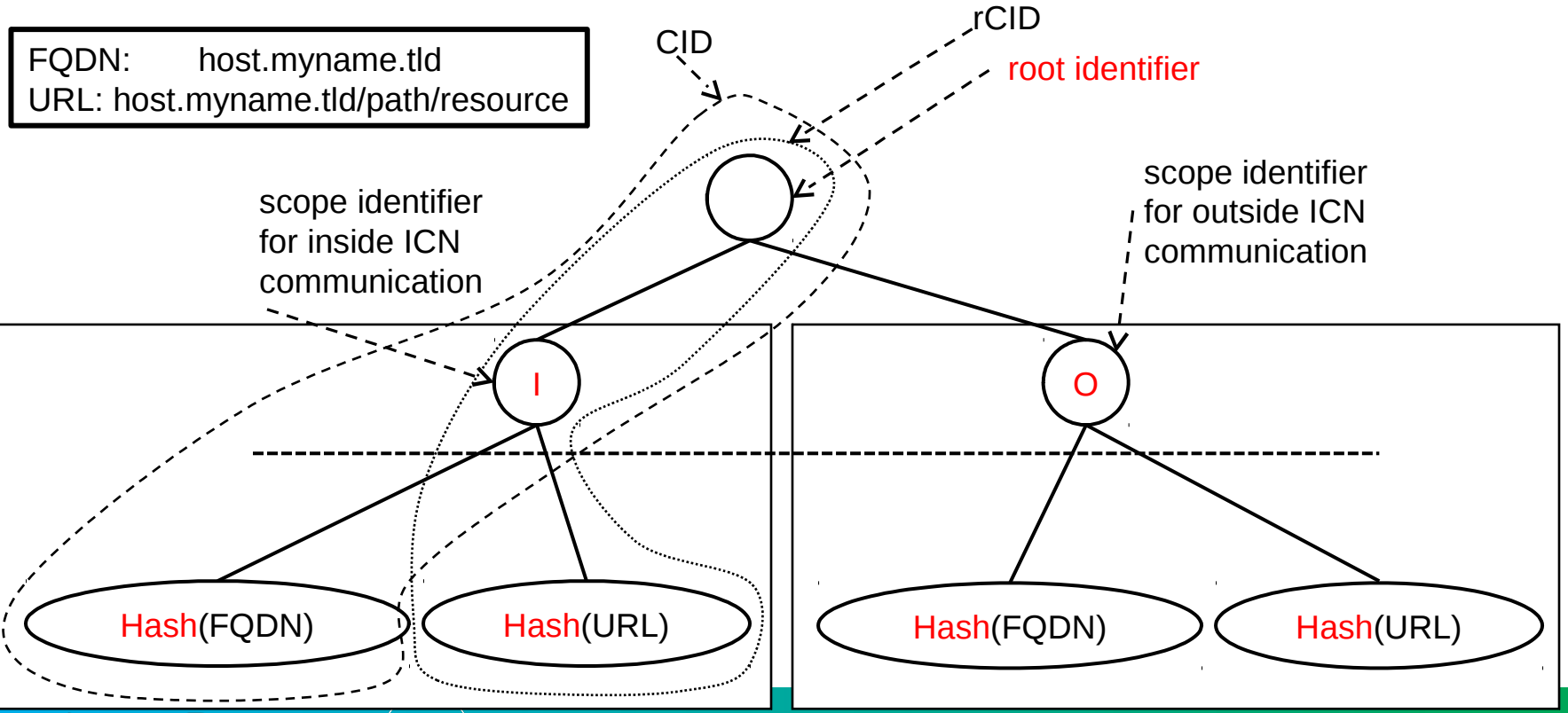


A Gateway-based System Architecture



One Issue for (Standard) Agreement

Namespace for HTTP over ICN mapping



From a Use Case to a Working, Deployable System

- Various building blocks

Standardization Needs

  - System architecture (possibly more the space for ETSI or others?)
  - Namespaces for protocol abstractions
  - Governing of root scopes (assignment? Scopes of scopes?)
  - Interfaces/protocols
    - Protocol encapsulations
    - Lightweight transport (for HTTP abstraction)
    - ICN-internal interfaces (particularly for highly delay-optimized versions)
    - SB interfaces, particularly to SDN

- Main issue: IPoverICN proposition itself
  - Use case that is valid to include in wider ICNRG discussions **OR**
  - Warranting an own work area?

Summary

- ICN is an ongoing evolution
  - We have moved from true endpoint communication to content oriented communication a long time ago

- We believe that the current Internet is the ultimate use case for ICN
  - Make it work – great! Make it work better – potential for ICN deployment!

- We are dedicated to making IP/HTTP over ICN work
  - KPI-driven approach (with trials) to quantify the **improvement** part

A Set of Partners (and Looking for More…)

POINT (3.5MEuro H2020 effort)

Partner	Role
Aalto University	Academia (coordinator)
InterDigital Europe	Technology provider (technical mgr)
PrimeTel	Operator (trial lead)
Intracom Telecom	Vendor
CTVC	Content provider
Ell.i	IoT provider
University of Essex	Academia (development lead)
RWTH Aachen University	Academia (evaluation lead)
Athens Univ. of Economics & Business	Academia (architecture lead)

RIFE (3.0MEuro H2020 effort)

Partner	Role
Martel Consulting	SME (coordinator)
Aalto University	Academia (technical mgr)
InterDigital Europe	Technology provider (architecture lead)
guifi.net	Community operator (trial lead)
Thales	Sat vendor
avanti	Sat operator
University of Cambridge	Academia (evaluation lead)

Additional trial in Bristol (UK), …