

KEBAPP

**Keyword-Based Mobile Application Sharing
Framework**

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I. Psaras et al. “*Keyword-Based
Mobile Application Sharing*”,
MobiArch 2016

Multi-Service Networks Workshop 2016
Cosener’s House, 7th July 2016

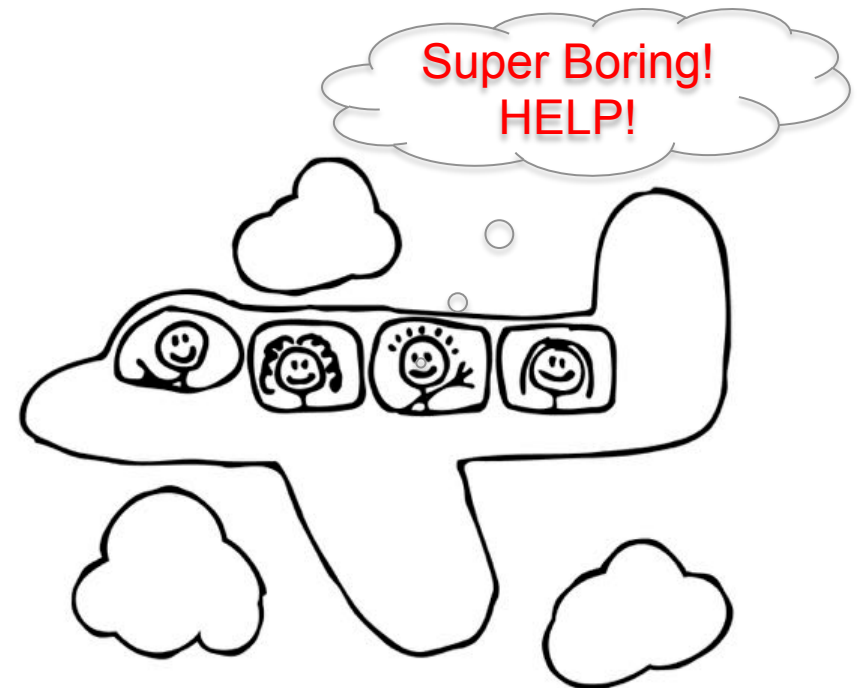
What is KEBAPP – Contribution

An application sharing and information-processing framework for smartphone apps

Route Finder App



Game or Video-Streaming Server



What applications does KEBAPP deal with (Design Space)

- By and large, smartphone apps target:
 - **Static content**, e.g., news updates
 - **Personalised content**, e.g., Facebook/Twitter updates
 - **Processed information**, e.g., route finder, gaming

We envision a pool of *application resources* to provide D2D access to *processed and non-personalised information*

Where/When do we need KEBAPP (Target environments)

- Overcrowded areas
 - Airports, festivals, stadiums, IETF :)
- Fragmented networks
 - Natural disasters (floods, earthquakes)
- Not (or poorly) connected environments
 - Airplanes, trains, ferries, developing regions

In most of those cases, Internet connectivity is not even necessary!

How does KEBAPP work?

Applications act both as clients and as servers

Three main components

1) *Application-centric naming*

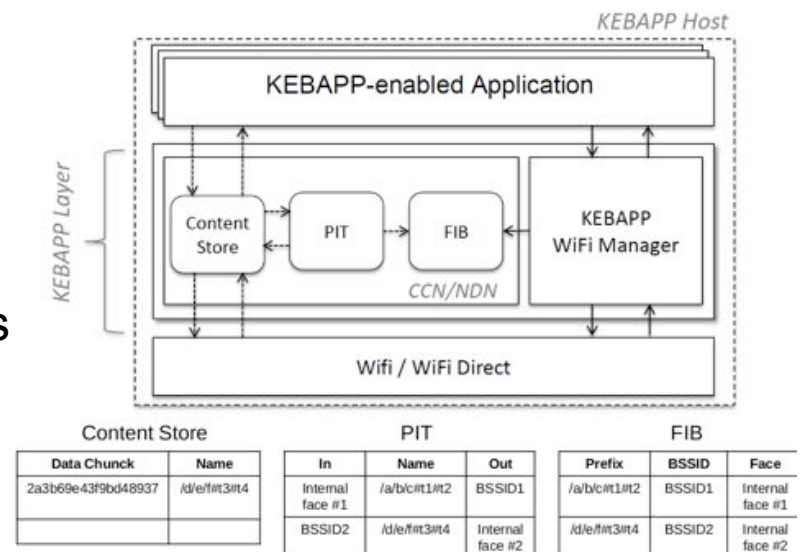
- Applications share common name-spaces and support the use of keywords

2) *Application-centric connectivity*

- Applications manage connectivity by defining and/or joining WiFi broadcast domains

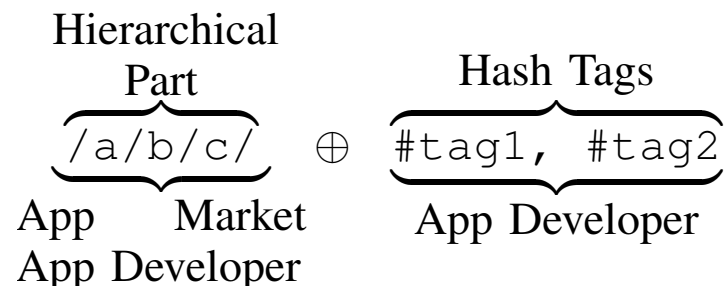
3) *Information-centric forwarding*

- Extending Named Data Networking primitives



Application-Centric Naming (App IDs)

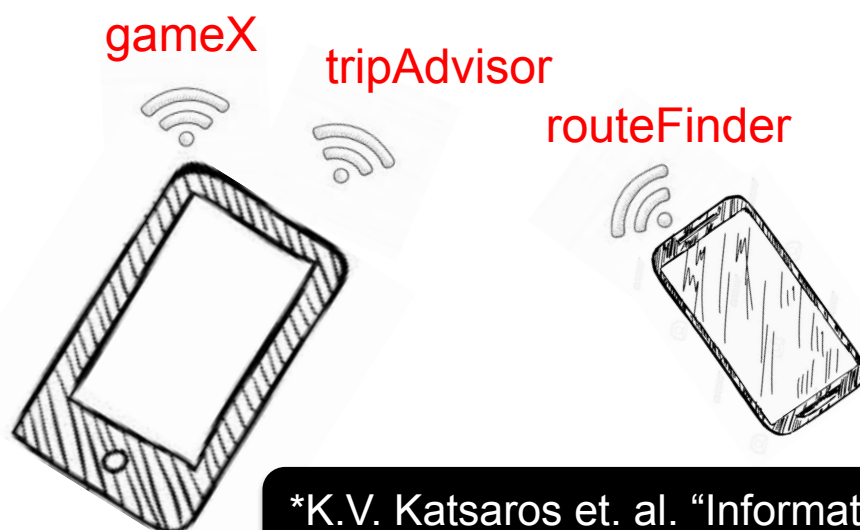
- Needs to support fine-grained description of the desired processed information



- Fixed part:** *NDN hierarchical naming, longest prefix match*
 - Needs to guarantee compatibility between applications
 - Can define static content: `/NewsApp/politics/`
 - Or invoke computation: `/myTravelAdvisor/Top10Restos`
 - App GUI indicates naming, users do not have to be aware of naming
- Hashtags:** *free keywords to assist application processing*
 - `/myTravelAdvisor/Top10Restos #userRating; #London; #indian`
 - `/routeFinder/tube #euston; #waterloo`

Application-Centric Connectivity

- Application-specific 802.11 broadcast domains, through Basic Service Set(s), BSSs
 - Every KEBAPP advertises its own SSID, through WiFi Direct Groups
 - WiFi Neighbour-Awareness Networking (NAN) can find applications behind BSSs



*K.V. Katsaros et. al. "Information-Centric Connectivity",
IEEE Communications Magazine, to appear.

Information-Centric Forwarding

- Single-hop broadcasting domains
- Broadcast domains are considered as interfaces of a node
- FIB is populated with neighbouring BSSIDs



Name Prefix	BSSID	if
/travel/routeFinder #x	routeFinder	#1

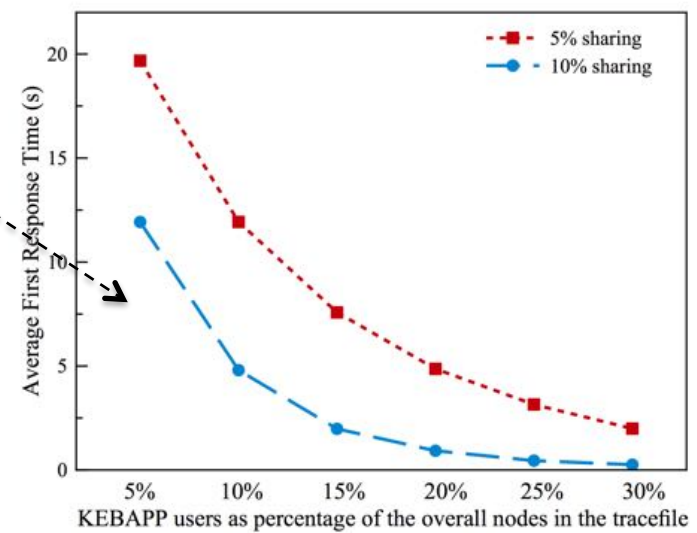
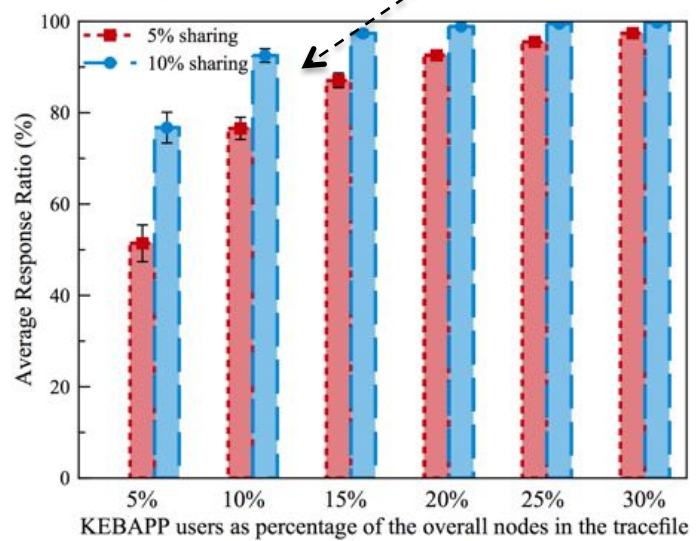
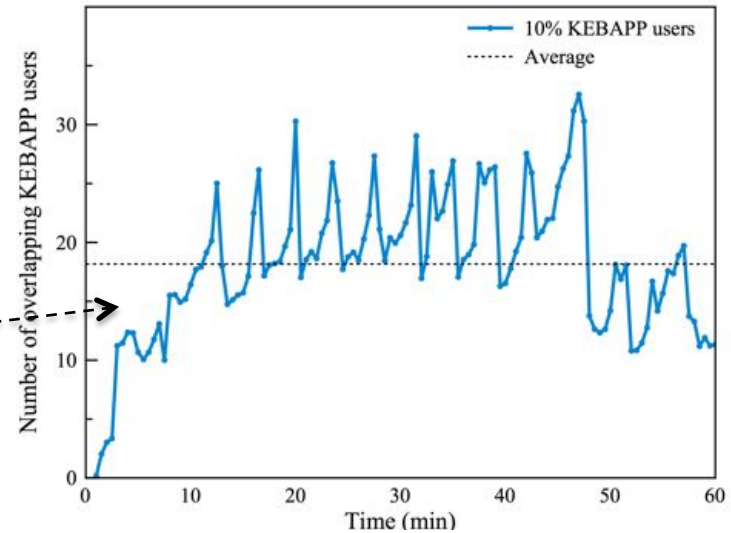
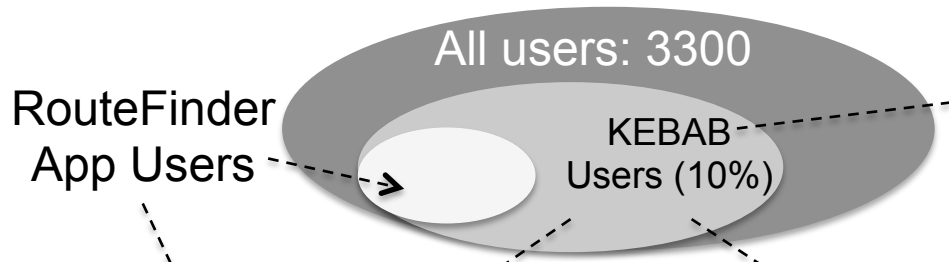
Name Prefix	BSSID	if
/travel/tripAdvisor #x #y	tripAdvisor	#1
/gaming/gameX #z	gameX	#2

routeFinder



Feasibility – RouteFinder App

Setup
 Mobility trace from 3300 users in a Stockholm subway station throughout one hour



Great stuff!

We now have to implement that!! :)

Thanks!



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