KEBAPP
Keyword-Based Mobile Application Sharing Framework

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keb.app

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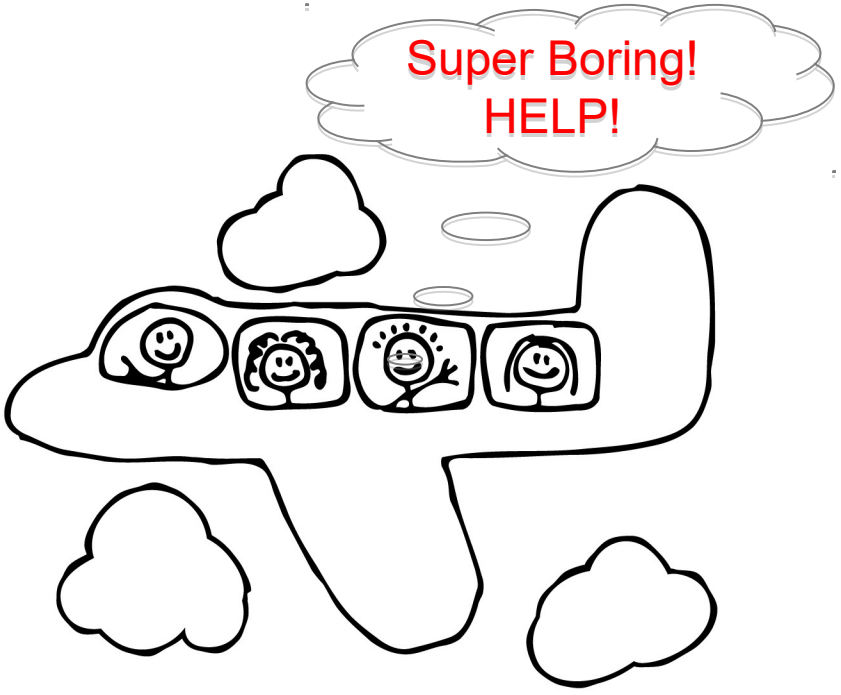
What is KEBAPP – Contribution

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

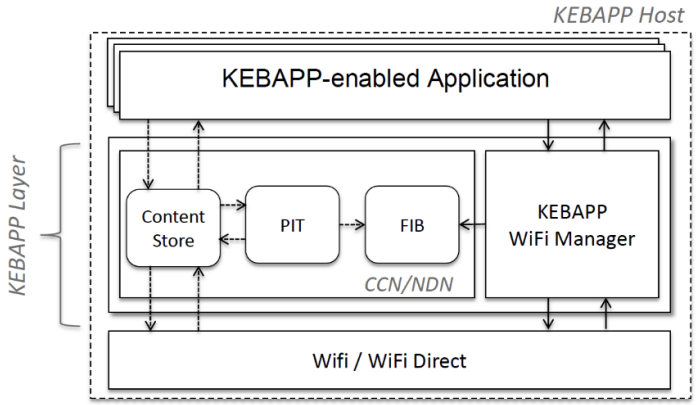
- Applications share common name-spaces and support the use of keywords

2)Application-centric connectivity

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

3)Information-centric forwarding

- Extending Named Data Networking primitives



Content Store

Data Chunck	Name
2a3b69e43f9bd48937	/d/e/f#t3#t4

PIT

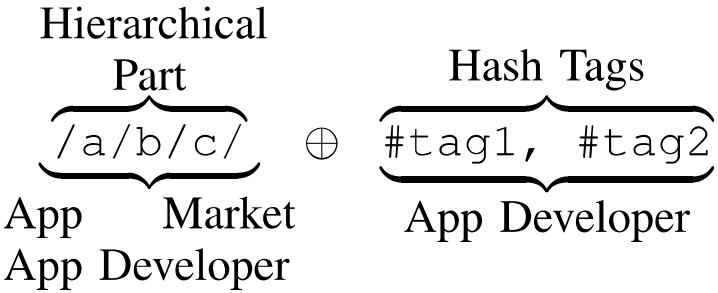
In	Name	Out
Internal face #1	/a/b/c#t1#t2	BSSID1
BSSID2	/d/e/f#t3#t4	Internal face #2

FIB

Prefix	BSSID	Face
/a/b/c#t1#t2	BSSID1	Internal face #1
/d/e/f#t3#t4	BSSID2	Internal face #2

Application-Centric Naming (App IDs)

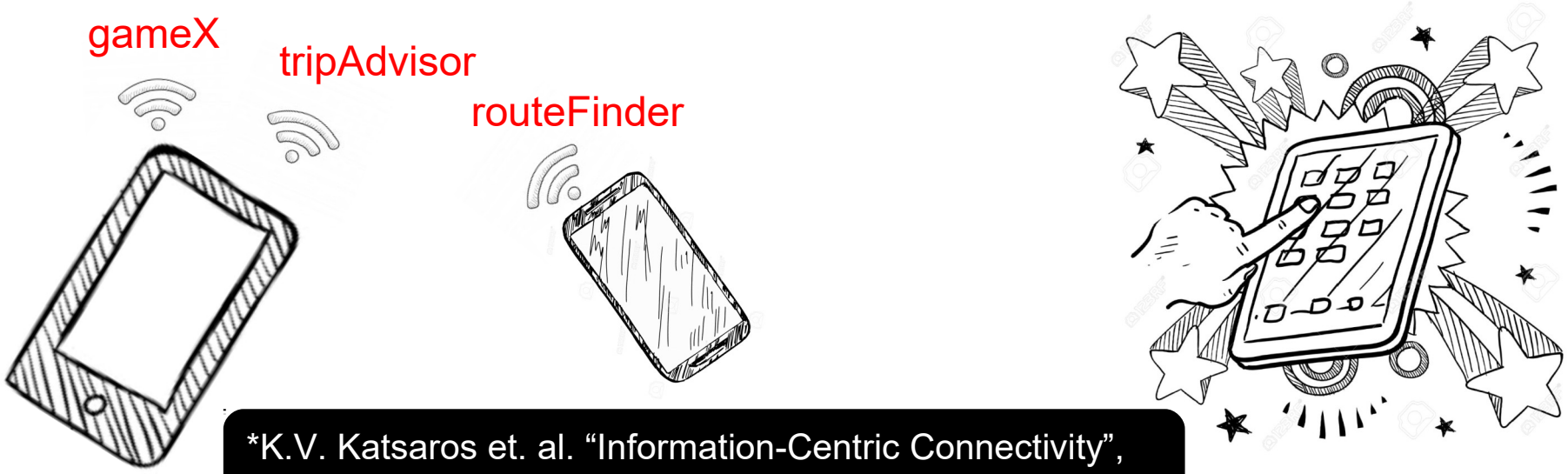
- Needs to support fine-grained description of the desired processed information



- **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



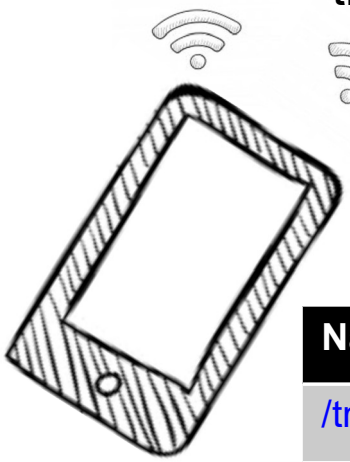
*K.V. Katsaros et. al. “Information-Centric Connectivity”, IEEE Communications Magazine, to appear.

Information-Centric Forwarding

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

gameX

tripAdvisor



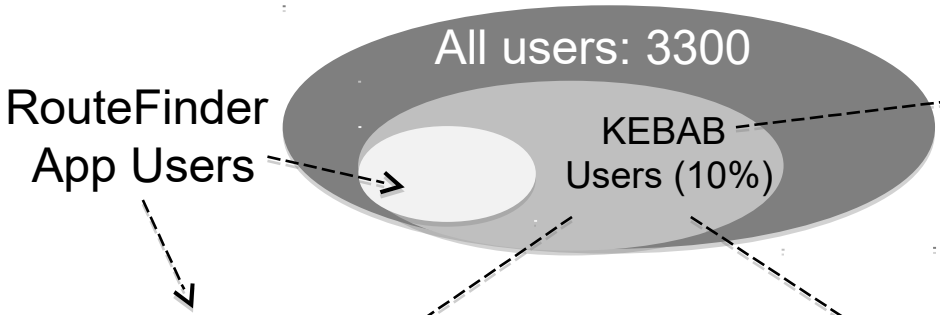
Name Prefix	BSSID	*if*
/travel/routeFinder #x	routeFinder	#1

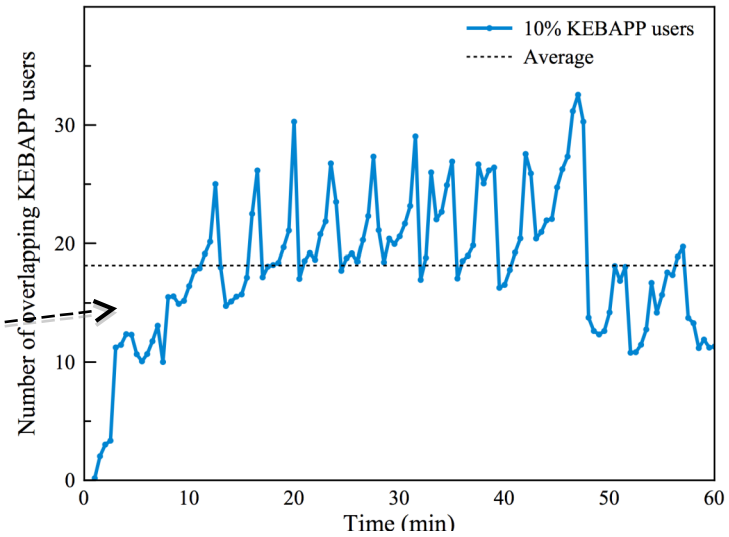
Name Prefix	BSSID	*if*
/travel/tripAdvisor #x #y	tripAdvisor	#1
/gaming/gameX #z	gameX	#2

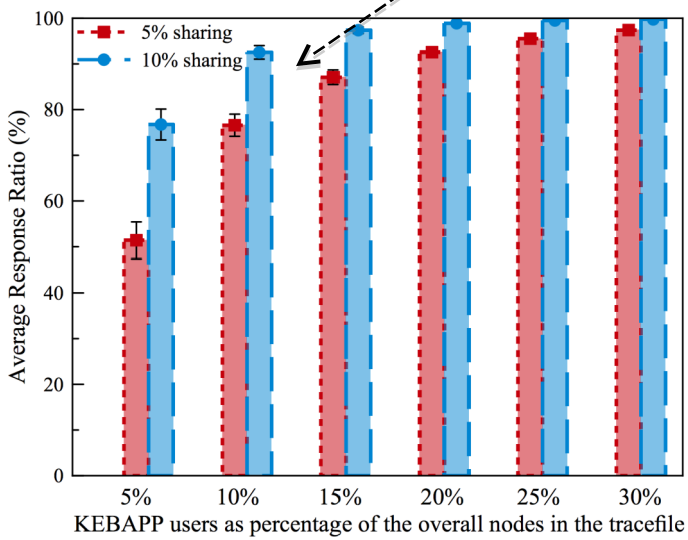
routeFinder

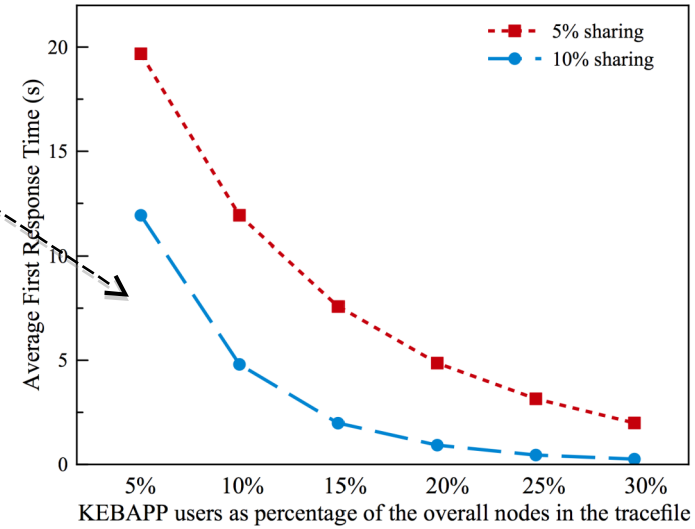
Feasibility – RouteFinder App

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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