roVer AID Layer

Description of AID layer (Stefan) and its usage

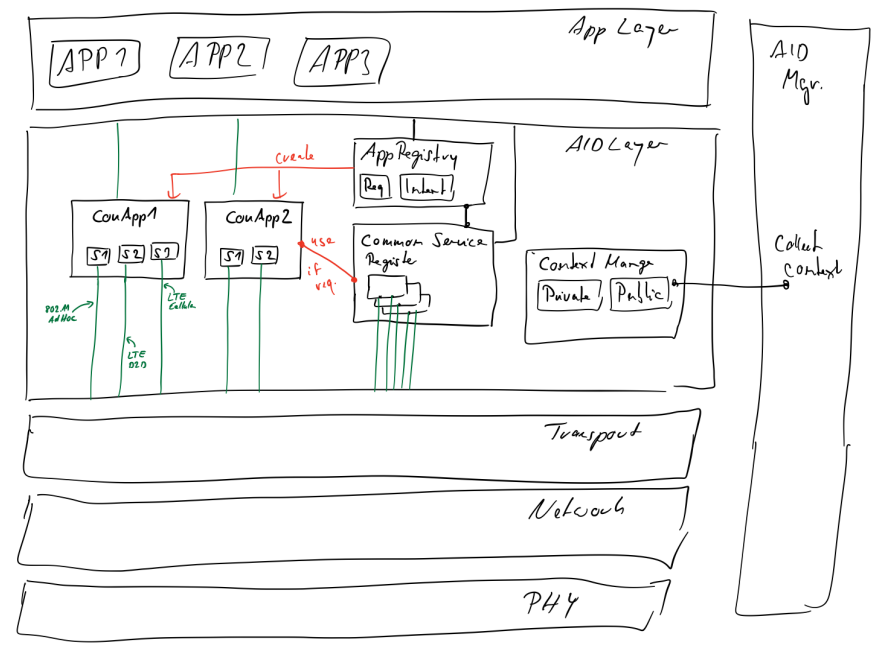

Figure 1: Aid Layer

Common Service Register

Contains applications or services useful for many applications. If multiple application need the same service each application would introduce messages to accomplish the same outcome. If these kinds of services are provided in a common, shared way. Unnecessary duplicate messages can be avoided.

Examples for such services are neighbourhood maps and node density maps. A *neighbourhood map* contains information about each node which is reachable to the current node directly (direct neighbour). From each node the current location, speed, heading as well as some network identifier is known. This information is highly useful to determine how likely direct communication is possible.

The *node density map* contains data from a bigger geographical region in the vicinity of the node. It contains however only node counts for some arbitrary sized cells and no further identifiers of the underlying nodes. This map is then propagated (hop count > 1) to disseminate the density measures. The density map can benefit from local information contained in the neighbourhood map.

Context Manager

The context manager contains static and dynamic information of the node, state existing communication channels as well as the overall state of the accessible medium. This includes for instance number of network interfaces, battery status, available applications, current location, speed, current data rate used, channel busy ratio for each accessible medium, public advertisements of services provided by other nodes.

This context is separated in a private and public spheres where the former is never shared and does not leave the node. The public context can be shared to aid the decentral information dissemination.

Application Register

Each application must register itself to the AID layer and share its requirements and intent with the AID layer.

Requirements are for instance minimal message rates needed for the application logic to function properly.

Intent Security, Information, Entertainment, ...

TBD: Are common services part of the requirements an application must share during registration?

Connection

The aid layer creates *one* connection for each application. The connection is the entry point for an application to communicate with the AID layer as well as to send and receive data. Each connection contains one or more sockets which connect to one specific communication channel. A mode in this sense is a technology (i.e. wireless LAN 802.11 or cellular LTE) as well as mode such as cellular, d2d, infrastructure mode. The number of sockets depends on the requirements of the application as well as the capabilities of the node (number and type of network interfaces)

Each connection has a handler to access common services as well as the context manager to use these information to decide who to handle request and indication primitives.