

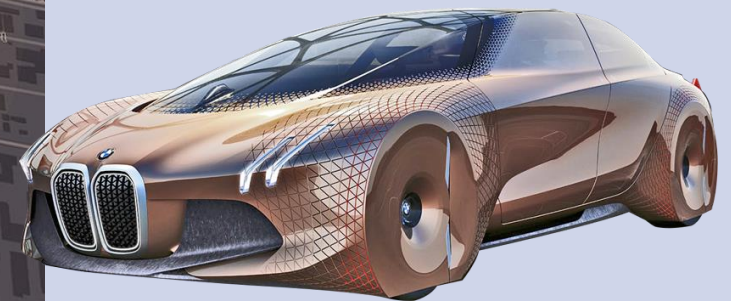


# Welcome to the era of HD

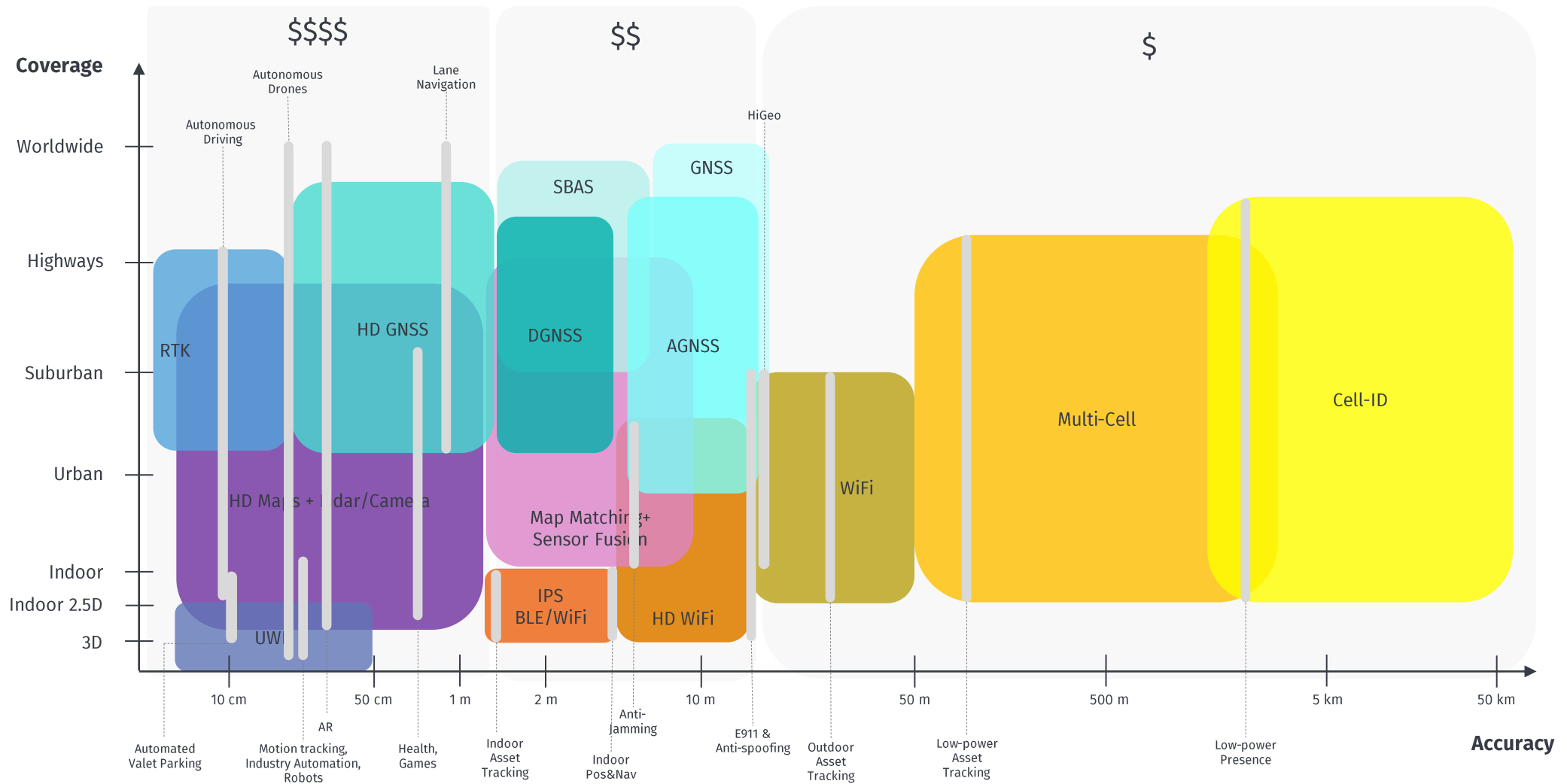
Next generation of positioning - HD Positioning Indoors, Outdoors, Globally

## HERE HD GNSS

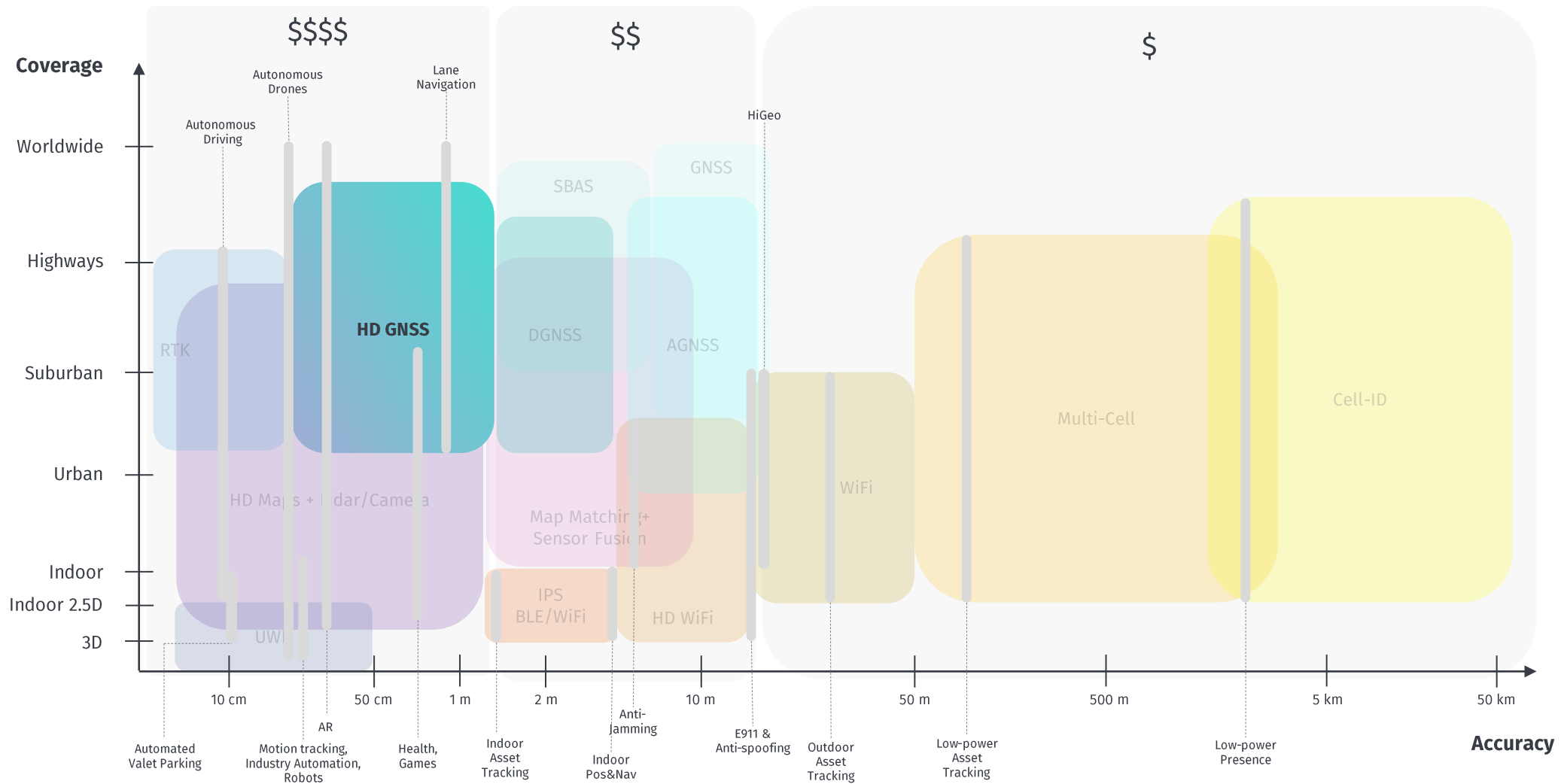
SUBMETER ACCURACY FOR MASS-MARKET. GLOBAL SERVICE



# Map of Positioning Technologies



# Map of Positioning Technologies



# HERE HD GNSS Overview

1

HERE provides a correctional data stream that contains all the corrections for a PPP solution on any device

2

Target accuracy for service is  $< 0.2$  m for good quality receivers and observations,  $< 1$  m for phones

3

Initial service is targeted for dual frequency receivers. A single frequency version is planned for later

4

For mobile phones achievable accuracy depends mostly on observation quality

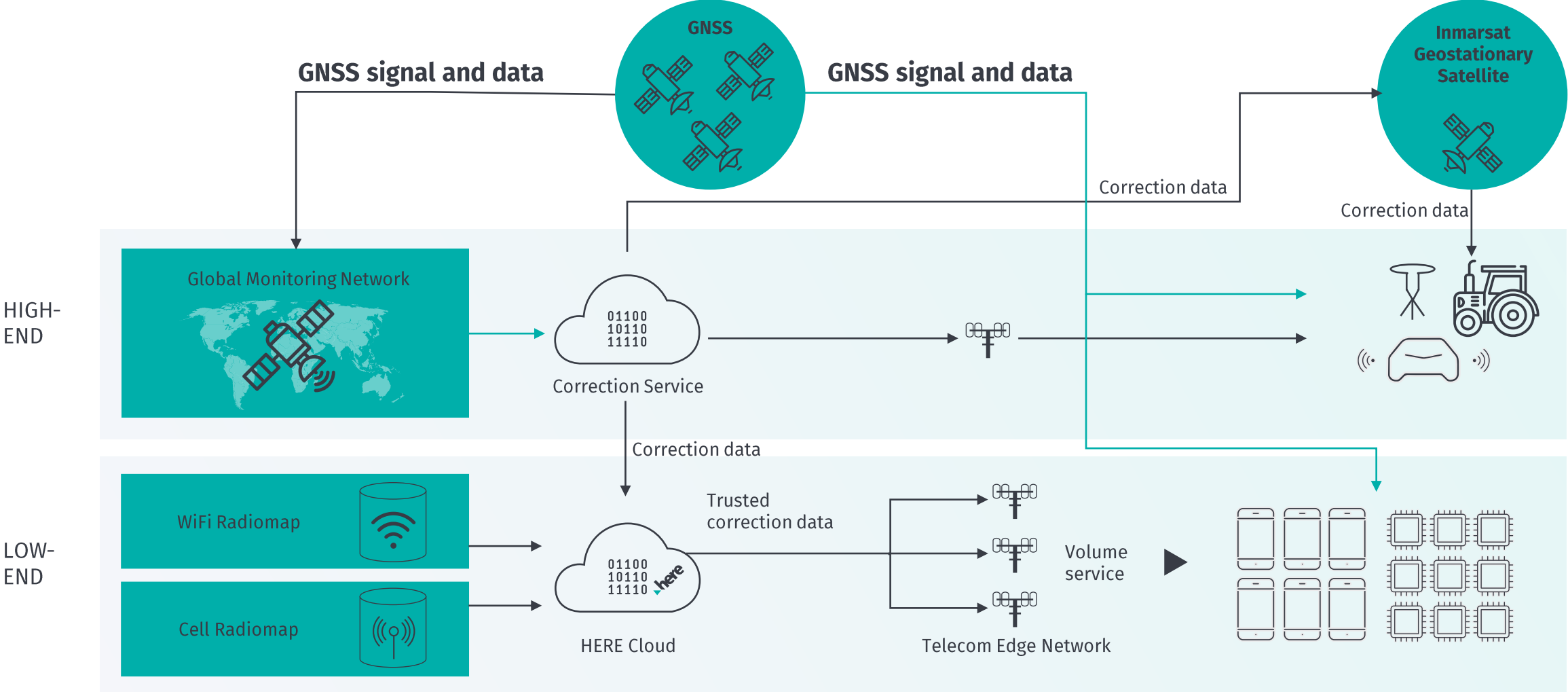
5

Corrections are delivered in State Space Format requiring a very low bandwidth

6

HERE also plans to release a separate reference implementation of a HD Positioning Engine (if chipset cannot support corrections)

# HERE HD GNSS Correctional Service



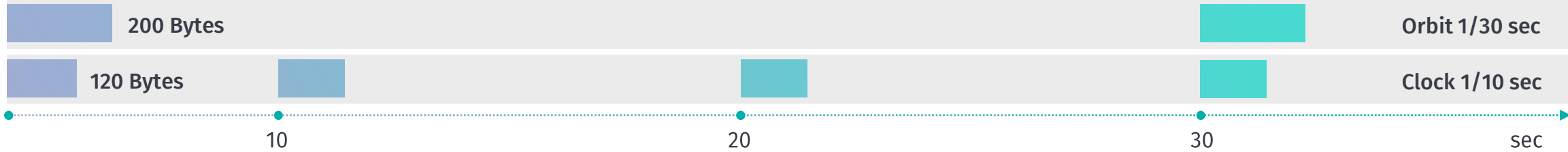
# Bandwidth requirements – Initial release

Package sizes estimated for 12 satellites

Update rates not critical  
Can miss some packages

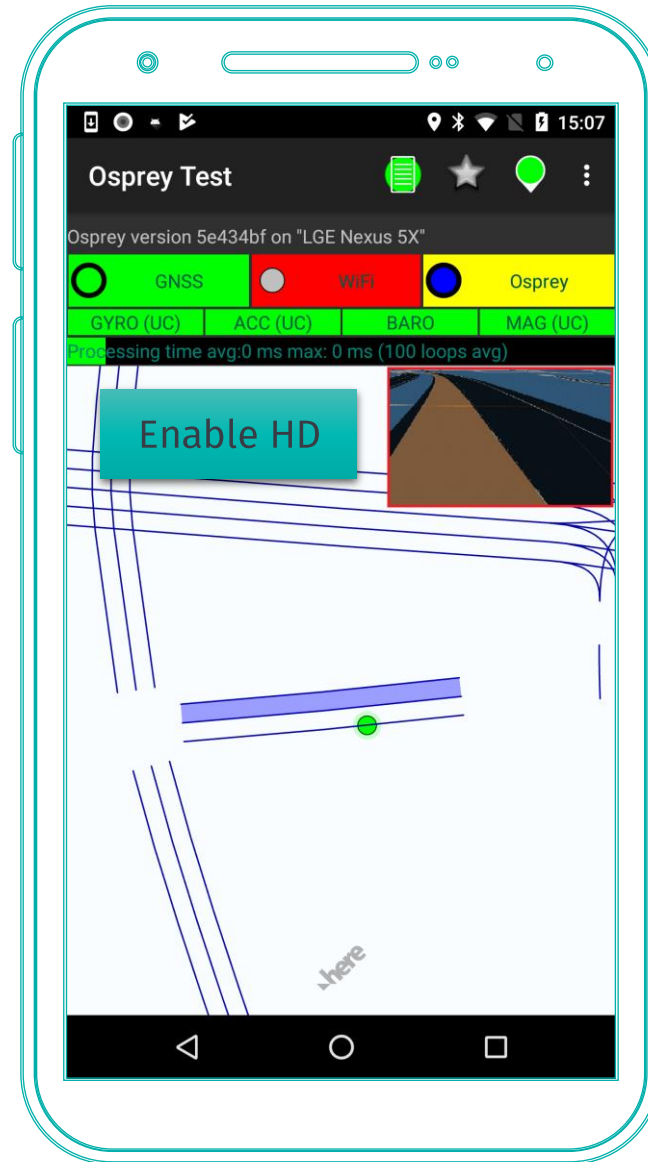
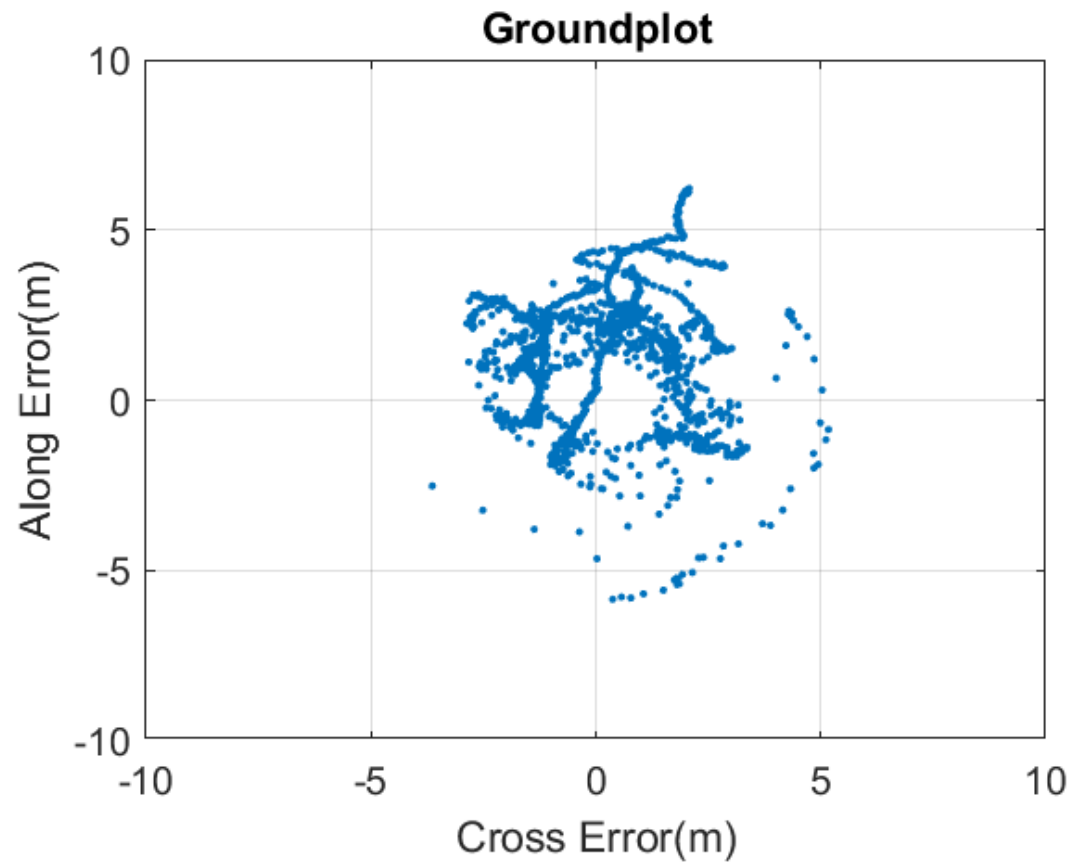
Data can be merged to single packages

Target is to reduce BW by >50 % in future releases



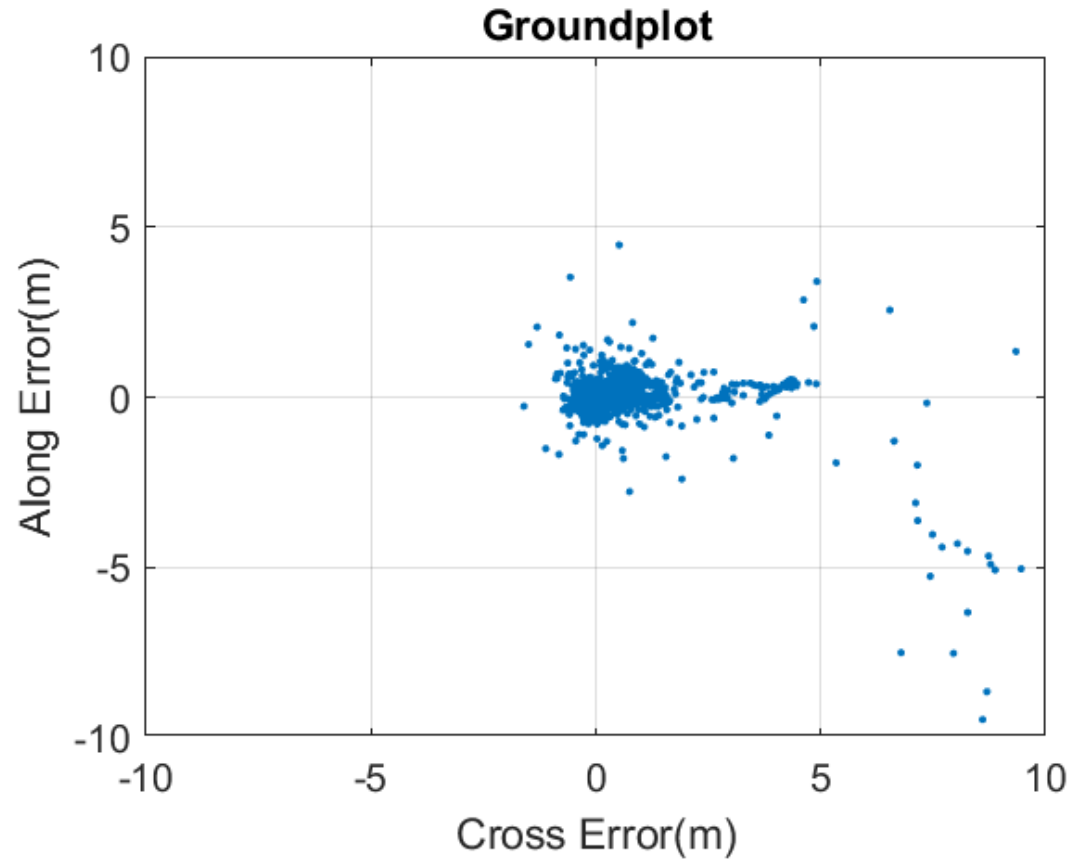
# Xiaomi Mi8 : Android Error

Ground plot



# Xiaomi Mi8 : DF-PPP Error (HD GNSS)

Ground plot





# HERE HD GNSS

Mobile applications



Lane tracking for mobile phone



Sport and fitness



Navigation for 2-wheelers



Navigation for helmets/AR

## HD GNSS



VR/AR games



Emergency



Accessibility



# HERE HD GNSS

Automotive applications



Aiding positioning for self-driving cars

Fleet management



## HD GNSS



Dashboard navigation for motorcycles

Lane-level navigation on dashboard screen



Black-box Insurance



# Product evolution

Automotive applications

1

## HERE HD GNSS E2E (service + PE)

HERE provides correction service in pair with multiplatform positioning engine.

GARMIN

SUUNTO

SAMSUNG

SONY

oppo

mi

2

## HERE HD GNSS Correction data service

HERE provides correction service as a stream of data via websockets.

KOMATSU

BROADCOM

ublox

Qualcomm

3

## HERE HD GNSS Post-Processing

HERE provides web interface to upload GNSS logs and receive results as charts and statistics.

TELTONIKA

GPSINSIGHT

Bell  
part of the Admiral Group

EVCARD  
电动汽车租赁

Yandex.Drive

Delimobil

REMOTO  
BY BRIGHT BOX

# Combination with other products

## 1. HD GNSS + OLP

Use OLP to get access to post-processing features of HD GNSS. Extended reports, anti-fraud check, integration with HD Maps.

## 2. HD GNSS + HD Live Maps

Having precise map is not enough for navigation in multi-lane road. Precise positioning is sometimes even more important. By using HD GNSS in pair with HD Live Maps you will always know where you are and which lane to take.

## 3. HD GNSS + HERE Tracking

Track fleet with sub-meter precision. Use all the benefits of low-bandwidth and anti-spoofing.

## 4. HD GNSS + HERE WeGo

Precise location in your mobile phone became real with a unique feature of HERE WeGo navigation app. Measure your garden, mark you favorite fishing spots, go orienteering , go rafting, go skiing, go cycling.



# Thank you

Stefan Söderholm

# Disclaimer

This presentation is for informational purposes only and is copyright controlled by HERE. All rights are reserved. Use of any elements or all of this presentation requires the prior written consent of HERE. This material may contain confidential information, which may not be disclosed to others without the prior written consent of HERE.