Market availability analysis

31/8 - 2022

Hans Fridberg, Holo

holo

Autopia Application:

"The primary objective of AUTOPIA is to validate the benefits of a shared, autonomous vehicle fleet in real life (vs theoretical studies) reducing vehicle miles travelled as customers reduce their individual, private car usage. In practical terms this requires some specific advancements in AV capability which are outlined in the Autopia innovation concept"

Ski capability goals (2019)

The AUTOPIA goals can be translated in to specific performance goals for the AVs in Ski, that should be

Speed
Ability to operate in 50 kph zone. This means the vehicle shall be able to operate safely at minimum 40 km/h

SAE Level 4 autonomy within project timeline
Possibility to limit the on-board operator role to near zero within project timeline

On-demand functionality
Functioning system for demand responsive transport. This includes both dynamic routing and functionality for completing missions based on external dispatch input

Operational stability
A proven track record of continuous operation. Minimum 3 months of operation in real traffic

Vehicle documentation / approval
Can be approved for operation in Norway. Technology is good enough and well documented enough to pass Norwegian authorities

Available for purchase
Vendor is willing to sell or lease the vehicles to Holo and Ruter

All weather capability
Ability to operate year round in Norwegian weather conditions. Including snow, wind and rain.

Software vendor + Vehicle platform

Retrofit vs. Purpose built

urpose built autonomous shuttles

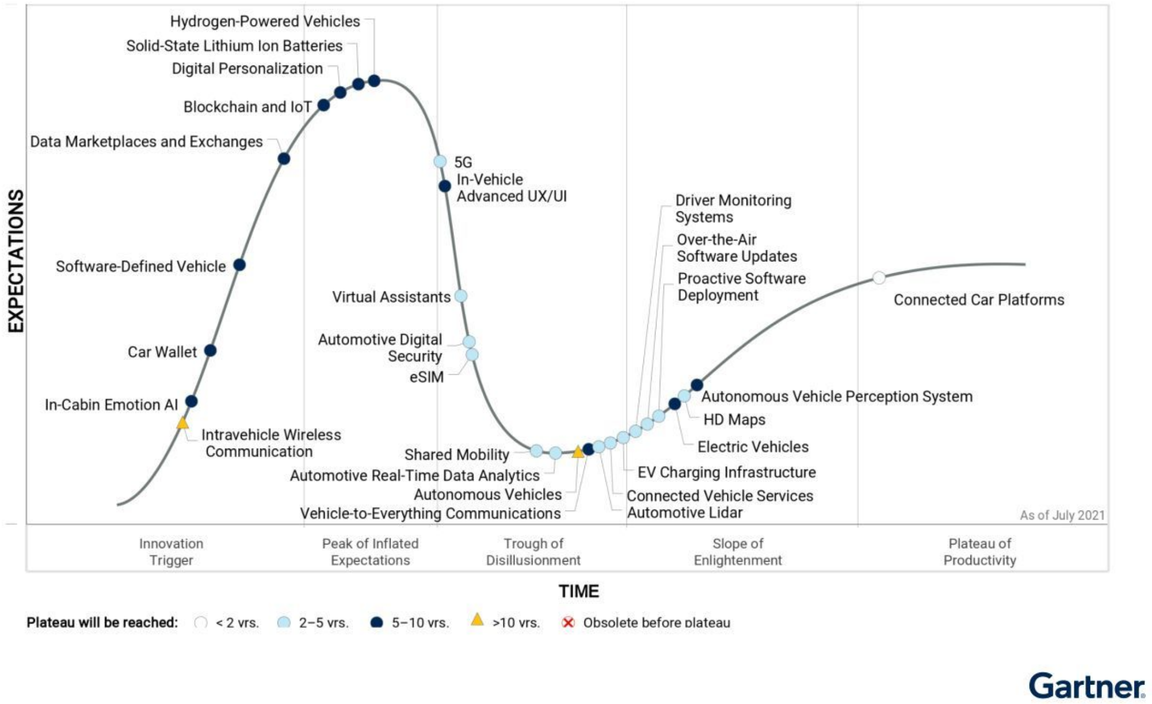
vya Autonom uttle Arma		18	No	No	No	Yes	Yes	No
vya Autonom shuttle O		25	No	No	?	?	No	No
nsible 4 / Gatcha		30	?	Yes	?	?	No	Yes
symile EZ10 gen 3		25	No	Yes	No	Yes	Yes	No
tthere PRT		?	No	?	?	?	Yes	?
tthere GRT		?	No	?	?	?	Yes	?
du Apolong		40	?	?	?	?	No	?
ong 5G		40	?	?	?	?	Yes	?
AT		15	No	?	?	?	No	?
al Motors Oli		15	No	No	No	No	Yes	No

Type approved cars retrofitted with AD technology

Aurora		50	?	?	?	?	No	?
Cruise		50	Yes	Yes	?	?	No	?
May Mobility		30	?	?	?	?	No	?
Motional		50	?	?	?	?	No	?
Oxbotica		30	?	?	?	?	No	?
Pony.ai		50	?	?	?	?	No	?
Sensible 4 / Toyota Proace		30	Yes	Yes	Yes	Yes	Yes	Yes
Streetdrone		?	?	?	?	?	No	?
Tesla		110	No	No	No	No	Yes	No
VW/Argo AI		?	?	?	?	?	No	?
Waymo		50	Yes	Yes	?	?	No	?
Weride		50	Yes	Yes	?	?	No	?


Ruter#
004
Ruter#
DR 88623

Hypecycle 2022



We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run.

(Roy Amara)

Vast difference in size and capabilities

Top tier software developers: Well-funded technology companies from going for SAE level 4 autonomi on open roads. Technology not commercially available yet.

Incumbent OEMs: The existing carmakers are developing both vehicles and software. Many are also investing heavily in top tier AD software vendors. Vehicles are not yet commercially available or available for testing.

SMEs: Medium-size and small companies focused on reduced-speed and reduced complexity environments.

Vehicles from some of these vendors are commercially available.