

New technologies applied to urban freight

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SULPiTER
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Overview

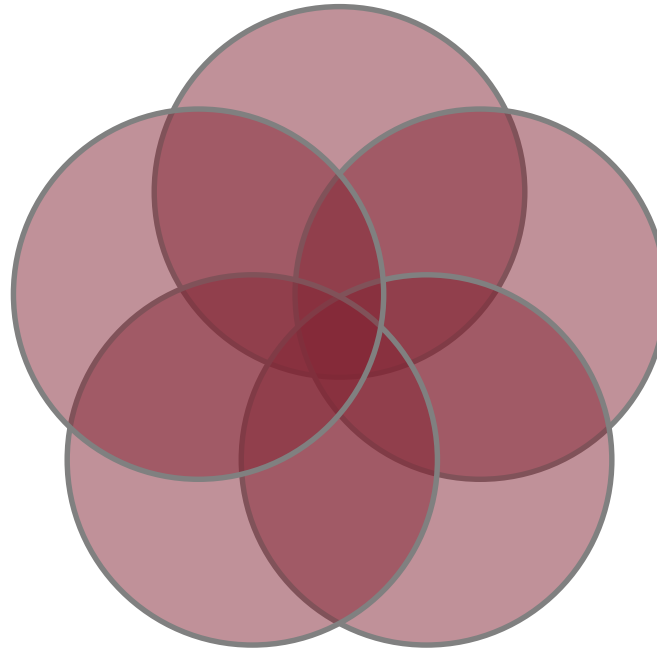
Automation

Augmented
reality

Crowdshipping

Smart
Packaging

Blockchain



Automation

- Vehicles
- Drones
- «tube logistics»
- Anticipatory shipping

UBER FREIGHT

AUTONOMY —

Uber's self-driving trucks have started hauling freight

Uber autonomous trucks are hauling loads across Arizona—with a safety driver.

TIMOTHY B. LEE - 3/7/2018, 5:12 PM



drones



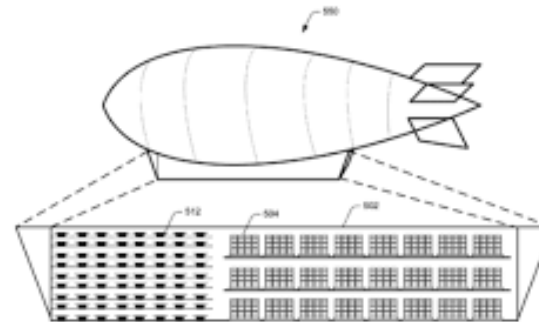
drone-truck



droids

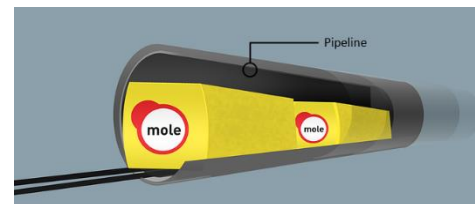
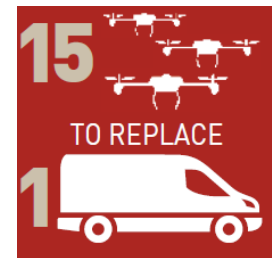


robovan



drones

inventory



Anticipatory shipping

- Already present a new supply chain model called “Anticipatory Logistics”, an improved method of predicting logistics requirements, well known in army logistics
- Amazon patented a “Method and system from anticipatory package shipping” (US patent, 2013).
 - Shipping to a delivery area without completely specifying the delivery address at the time of shipment, and while the package is in transit, completely specifying the address
- Needs big data analysis and artificial intelligence software

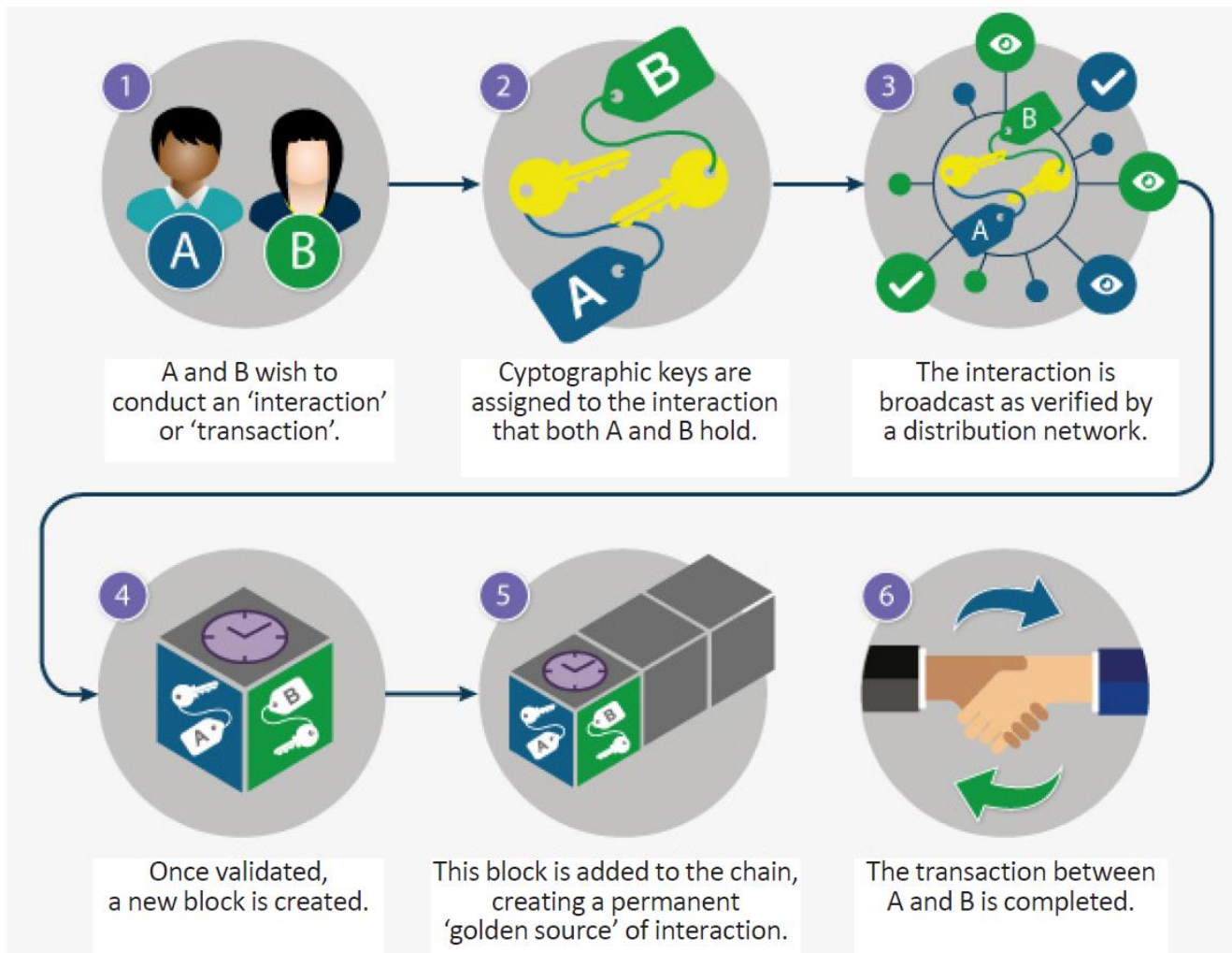
Crowdshipping



'enlisting people who are already travelling from points A to B to take a package along with them, making a stop along the way to drop it off (US Postal Service 2014)

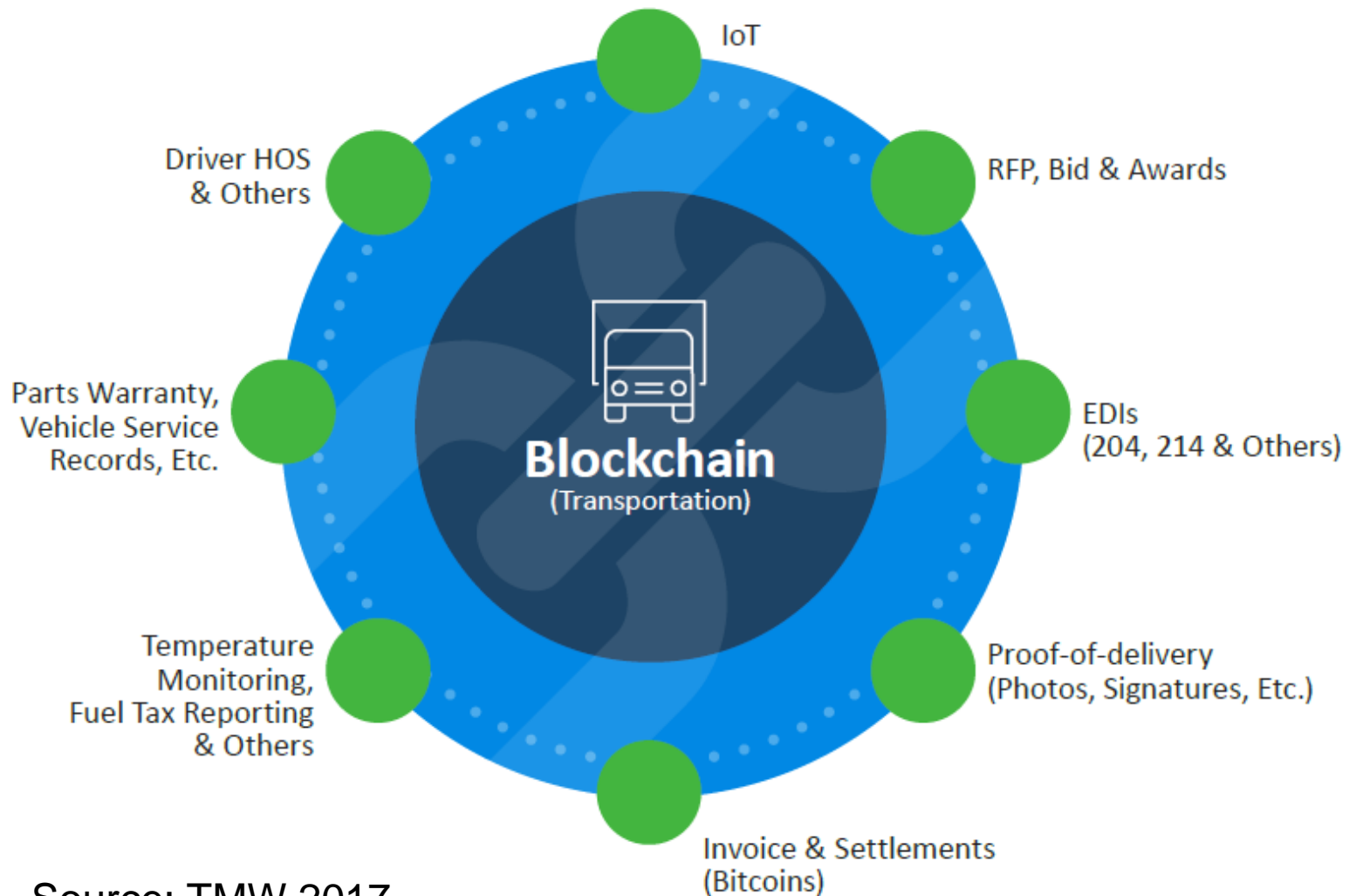
Benefits	Problems
<ul style="list-style-type: none">• accelerates last mile distribution• more flexible, life-style-adjusted delivery• fewer failed deliveries• low marginal cost / improved asset utilisation• lower traffic levels, emissions and congestion	<ul style="list-style-type: none">• increased risk of theft, loss and damage• inadvertent delivery of illicit products• vulnerable to criminal / terrorist activity

Blockchain



Source: Standard Chartered

Blockchain for transportation



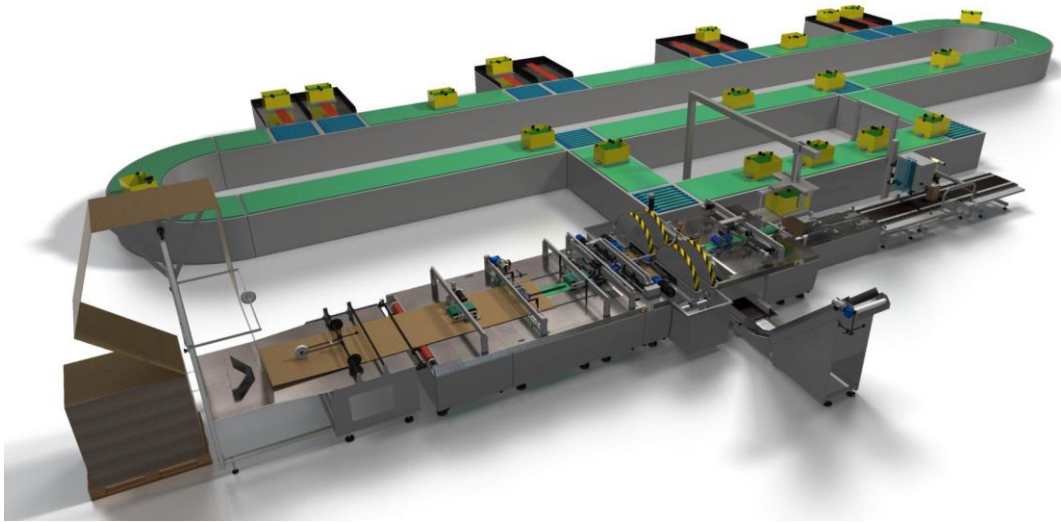
Source: TMW 2017

Blockchain for urban freight

- Transport capacity sharing (delivery matching)
- Carrier onboarding
- Trusting load board
- Tracking of deliveries (also with drones, see Walmart)
 - Single trusted source, simplified integration, shared data
- Proof of delivery
- Delivery process validation and costing

Smart packaging

- *box-on-demand*
- *box-dimensioning*
- *cartoning*
- *fulfillment centre*



«...waste volume capacity between primary and secondary packaging is about 34-50%, while 46 and 64% is between secondary and tertiary packaging»

- *Environmental benefits*
- *Reduction of transport costs (courier services)*
- *Reduction of logistics costs*
- *Optimisation of deliveries*

Augmented reality

- Warehousing Operations
- Transportation Optimization
- Last-mile Delivery
- Enhanced Value-added Services



Pick-by-Vision: Optimized Picking



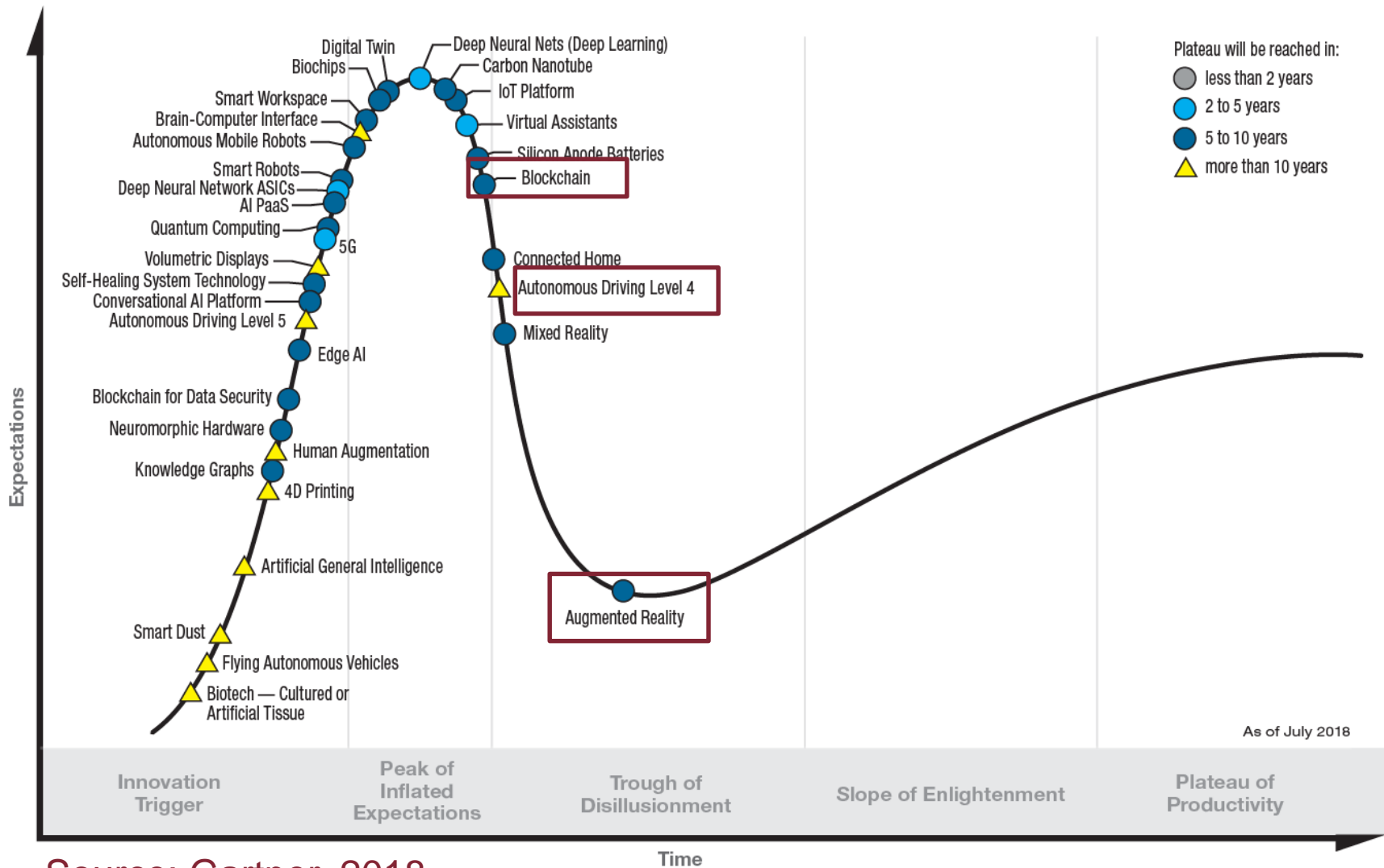
- Picking staff are equipped with wearable AR devices for the picking process
- The solution offers digital navigation to find the right route and item more efficiently, while reducing training time
- **Main objectives:** reduce picking errors and search time

Source: DHL

AR in last mile deliveries

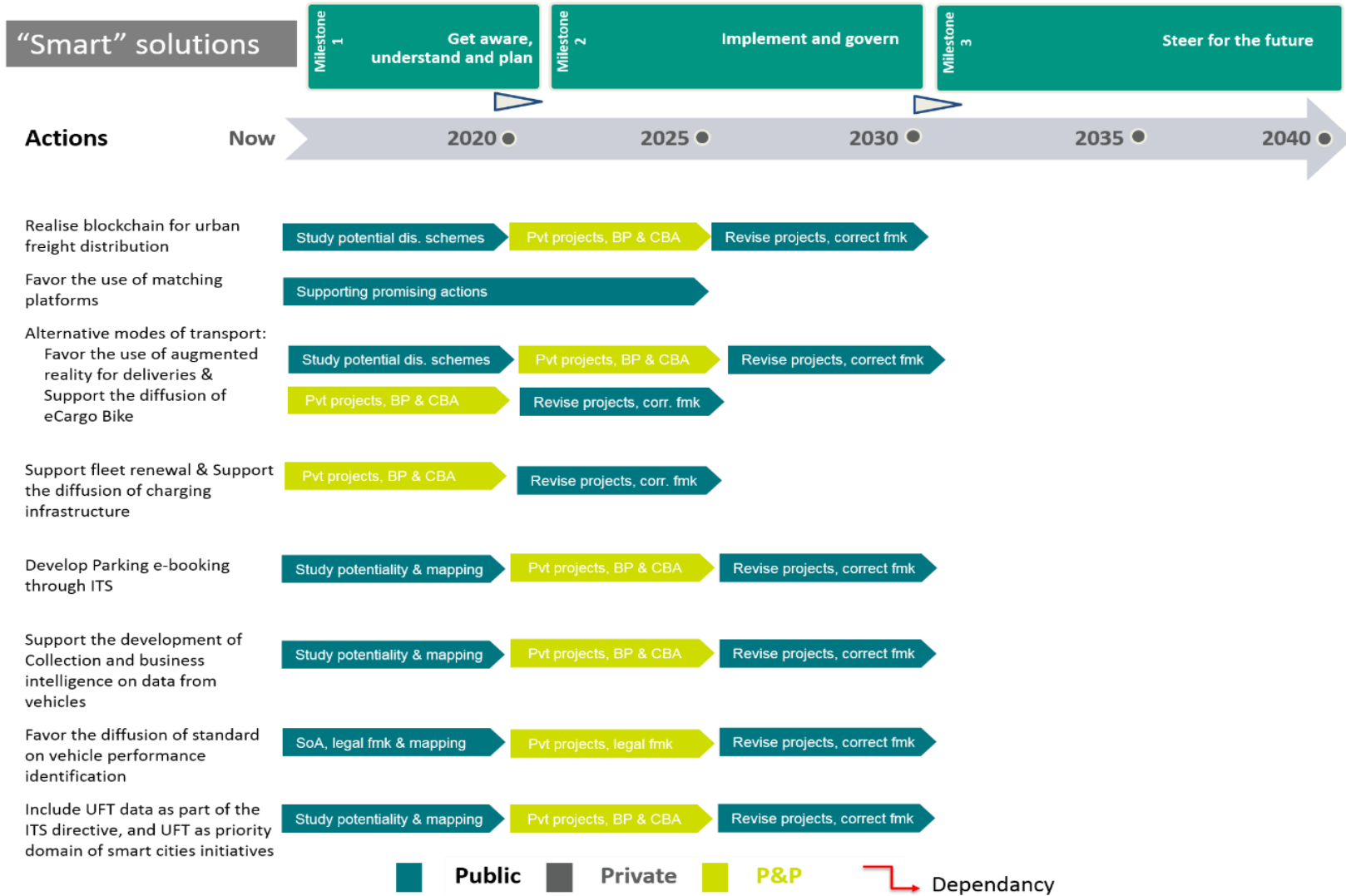
Application field	Benefits
Parcel Loading and Drop-off	<ul style="list-style-type: none">• Wearable AR devices for parcel handling, loading, and delivery processes• All parcels are overload with critical information (contents, weight and destination) and handling instructions• Parcels are intelligently loaded into the vehicles• Improved handling, avoiding improper handling, ensuring load optimisation
Last-meter navigation	<ul style="list-style-type: none">• AR-supported identification of buildings and entrances, as well as indoor navigation for faster delivery• A learning system that is able to add user-generated content, particularly when public databases are unavailable• Efficient indoor navigation, reduce search and delivery time, especially for first-time deliveries
AR-secured delivery	<ul style="list-style-type: none">• AR-based unambiguous identification of the parcel receiver using face-recognition technology• Visual approval/refusal instead of ID card or signature• Improve security of registered letters, speed up the delivery process

Hype Cycle for Emerging Technologies, 2018



Source: Gartner, 2018

Cues for SULPs





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**THANKS FOR YOUR
ATTENTION**