

Revisiting parcel lockers

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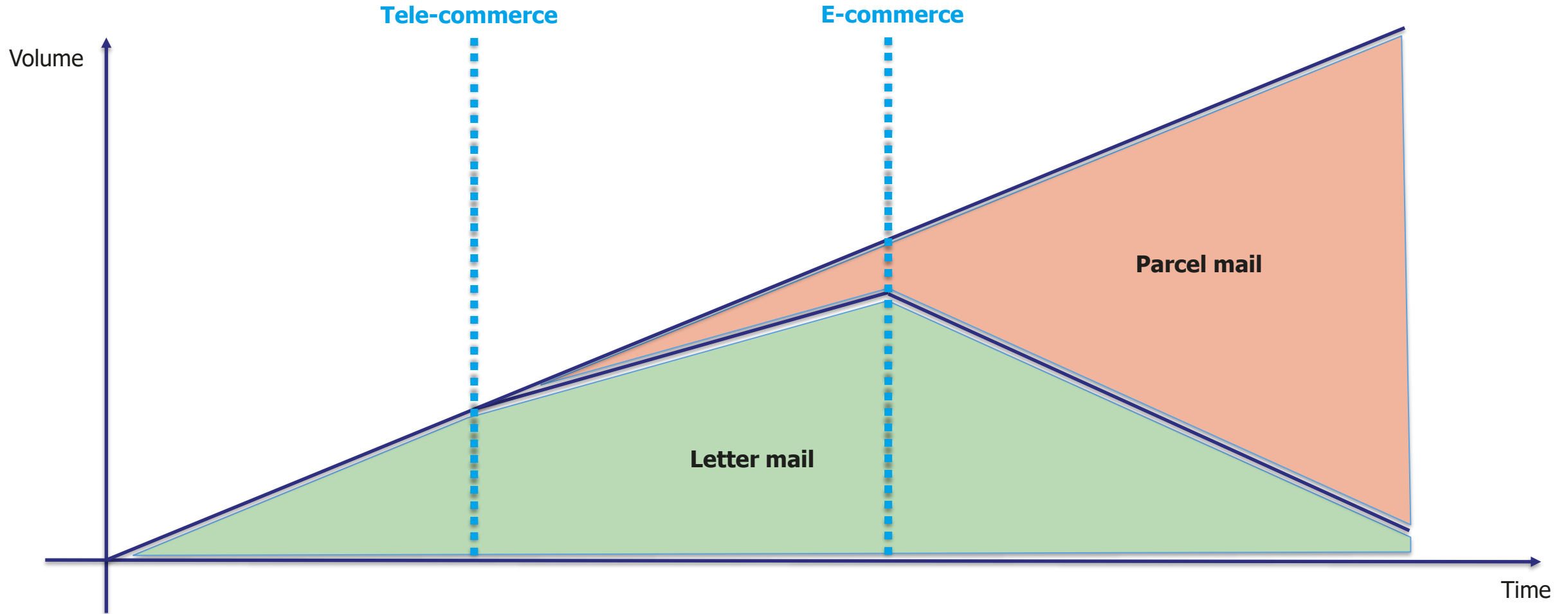
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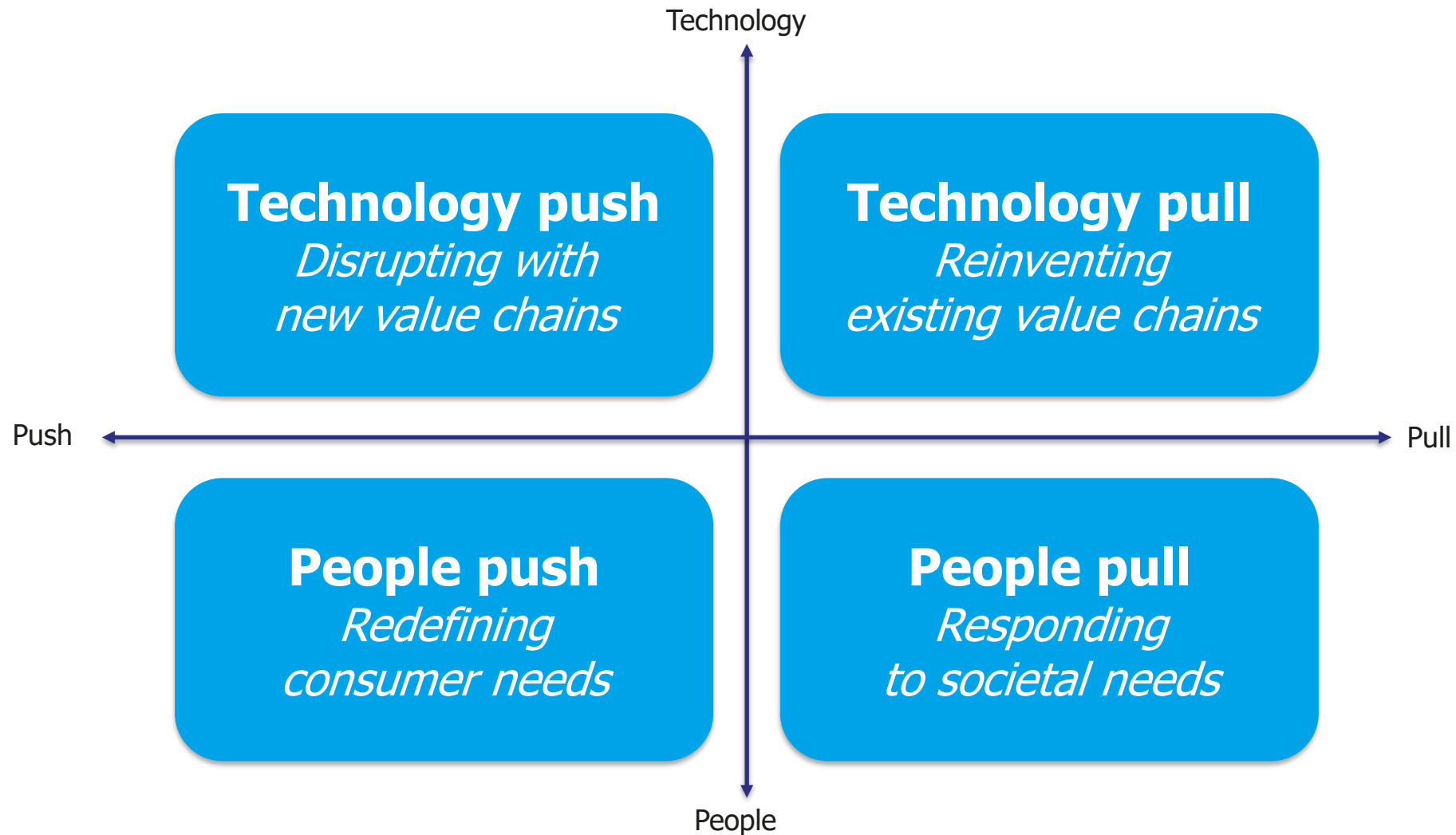
Creative destruction

The "process of industrial mutation that continuously revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one".

From letters to parcels



Schumpeterian economies





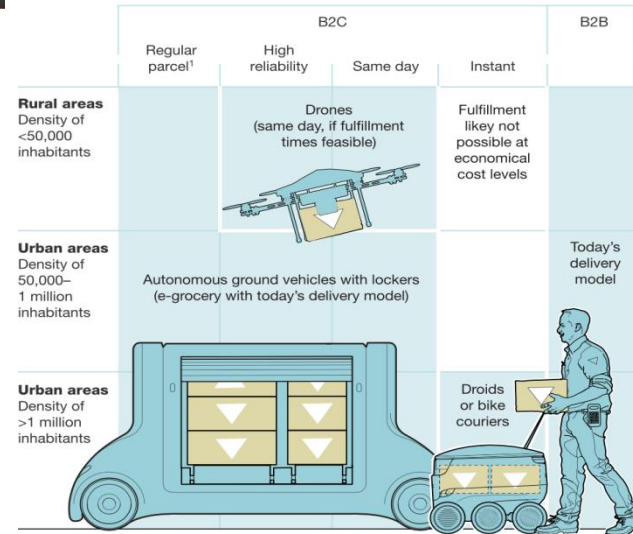
Locker for
sending parcels

Locker for sending &
receiving parcels



Electronical locker

Mechanical locker



Mobile parcel locker

Non-postal operator
parcel locker

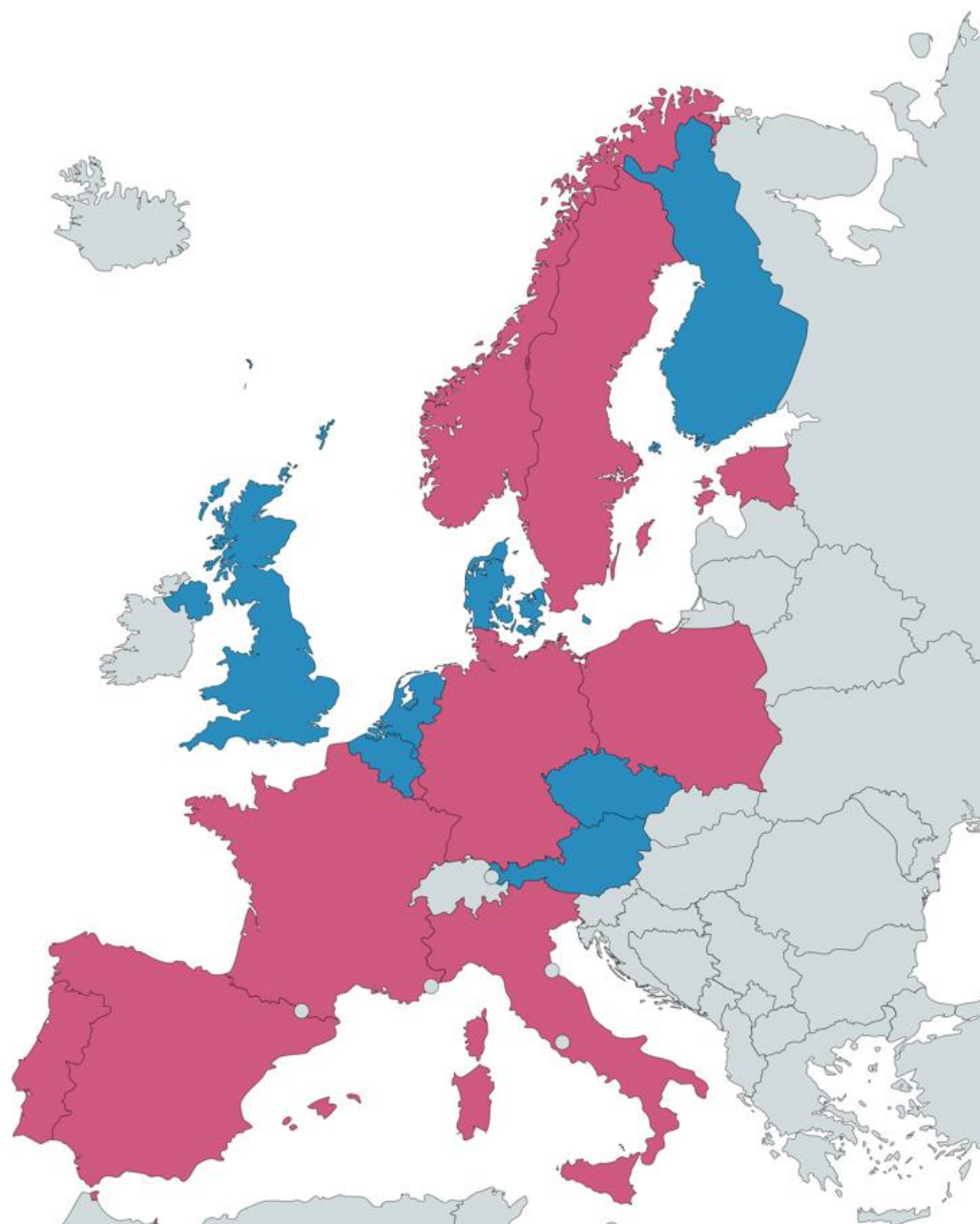




Open vs closed access

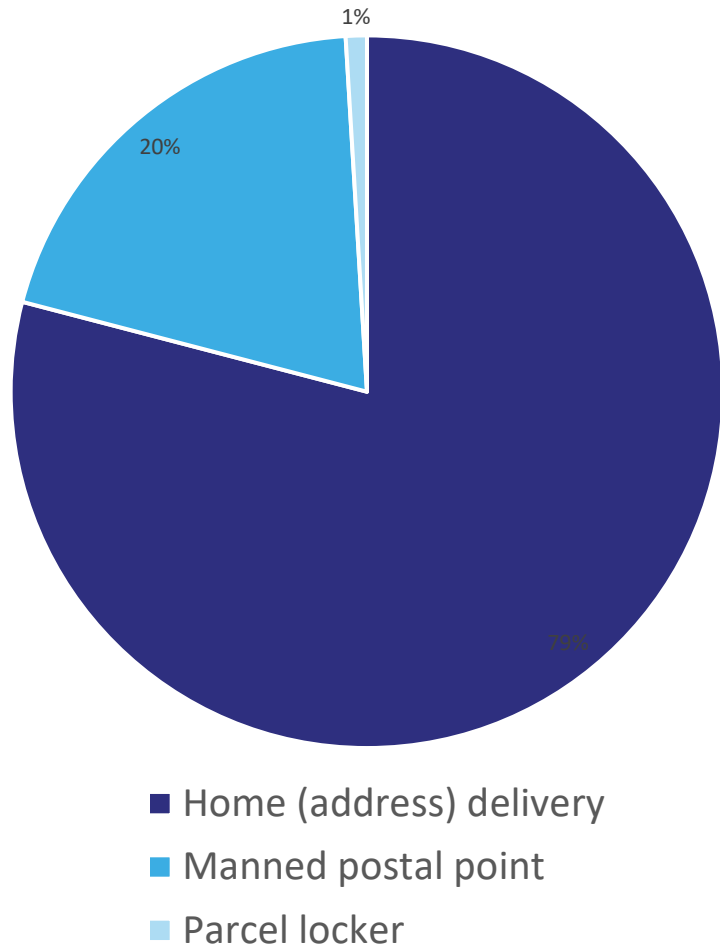
Operators which have open access parcel lockers:

- AT: Austrian Post, A1, Salzburg AG
- BE: Bpost
- CZ: OX Point, Alza, DPD
- DK: Naerboks
- FI: Pakkettipiste
- NL: DHL
- UK: InPost





Ratio of delivery at address, manned postal point and parcel locker (2021)



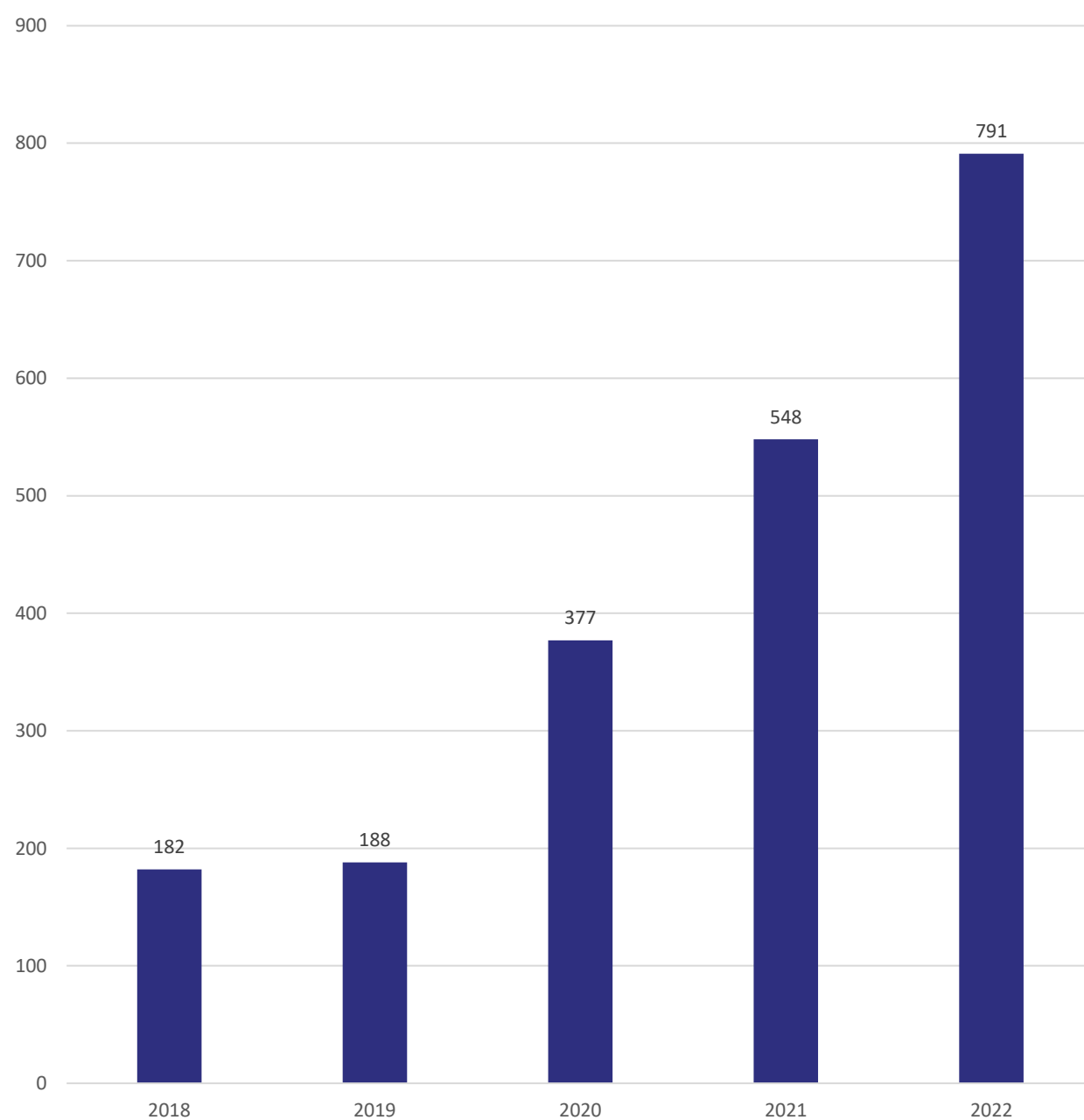
Usage in Belgium

- Still only about 1% of the total parcel and express volume is being delivered in a locker in Belgium. This is the same percentage as three years earlier.
- But parcel and express volume has grown over those years (2018-2021) with 75%. Which means that although the preference towards lockers hasn't really altered, the number of parcels being delivered in a locker has increased strongly.



Parcel locker locations in Belgium

- More than quadrupled in four years;
- Pushed by bpost (Ecozones) and the arrival of Budbee on the Belgian market;
- In the near future, we can expect that not only bpost and Budbee will increase their number of locations, but there is also Mondial Relay that is starting to install lockers (since they have been taken over by 'locker specialist' InPost).



Consumer preferences

Molin, Kosicki & Van Duin (2022)

Stated preference discrete choice experiment

Different determinants regarding the preference for parcel lockers

Table 6. Predicted shares of delivery options under six scenarios

Scenario	1.Reference scenario 1 – low prices	2.PL close by	3.PL close by & HD low price	4. Reference scenario 2 - high prices	5. PL for free	6. PL for free & close by
HD Price	€ 0	€ 0	€ 2	€ 6	€ 6	€ 6
SP Price	€ 0	€ 0	€ 0	€ 2	€ 2	€ 2
PL Price	€ 0	€ 0	€ 0	€ 2	€ 0	€ 0
HD Delivery moment	Weekdays: 9h-18h	Weekdays: 9h-18h	Weekdays: 9h-18h	Weekdays: 9h-18h	Weekdays: 9h-18h	Weekdays: 9h-18h
SP Opening hours	Mon - Sat: 8h-22h; Sun: 10h-17h	Mon - Sat: 8h-22h; Sun: 10h-17h	Mon - Sat: 8h-22h; Sun: 10h-17h	Mon - Sat: 8h-22h; Sun: 10h-17h	Mon - Sat: 8h-22h; Sun: 10h-17h	Mon - Sat: 8h-22h; Sun: 10h-17h
PL opening hours	24/7	24/7	24/7	24/7	24/7	24/7
SP Distance	1 km	1 km	1 km	1 km	1 km	1 km
PL Distance	2.5 km	0.5 km	0.5 km	2.5 km	2.5 km	0.5 km
HD	71%	43%	23%	29%	21%	7%
SP	18%	4%	6%	43%	20%	2%
PL	11%	53%	71%	28%	59%	91%

Source: Molin, Eric & Kosicki, Matthijs & Van Duin, J.h.r. (Ron). (2022). Consumer preferences for parcel delivery methods: the potential of parcel locker use in the Netherlands. European Journal of Transport and Infrastructure Research. 22. 183-200. 10.18757/ejtir.2022.22.2.6427.



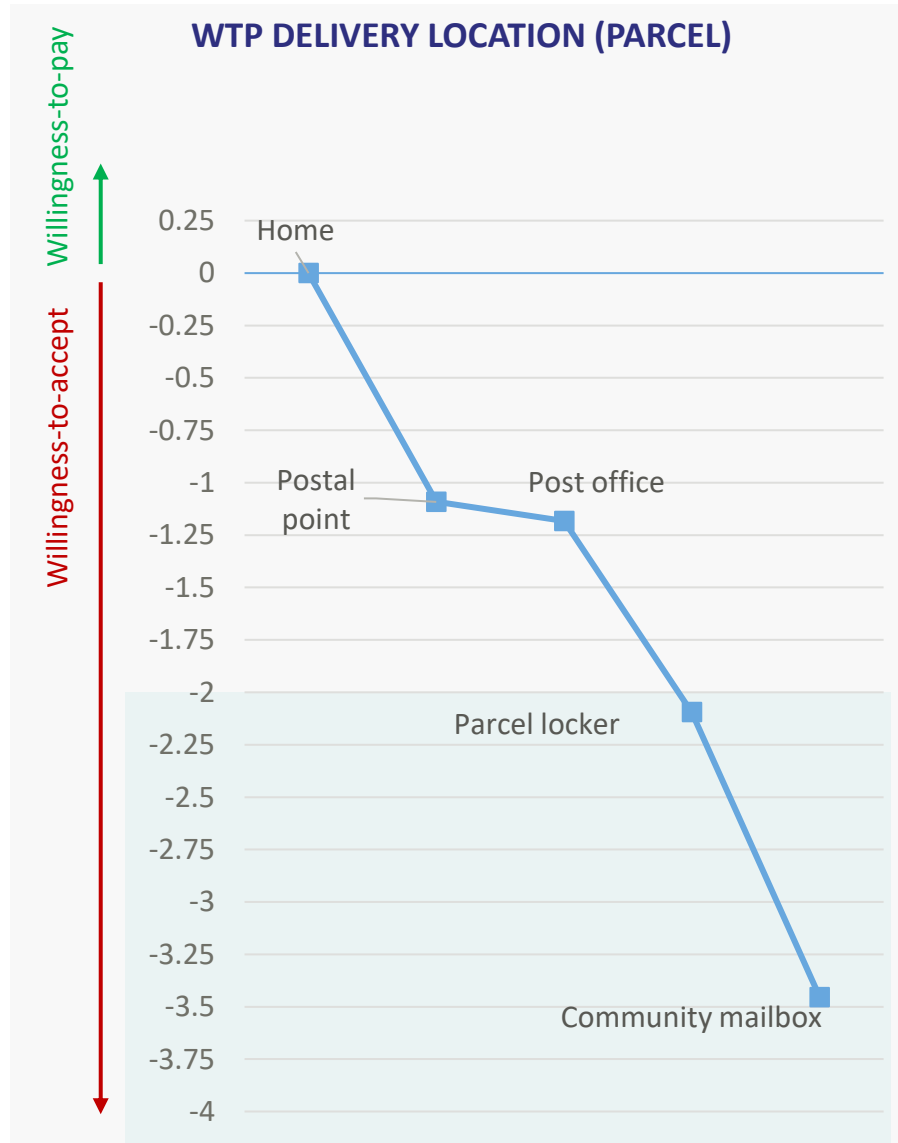
Consumer preferences

Home delivery remains unchallenged for letter mails.

Standard parcel service point delivery might be accepted in case of discount (1–1,5 euro).

Standard parcel lockers delivery might be accepted in case of an even higher discount (2 euro).

Exception for home delivery should remain for vulnerable users.





Benefits of using lockers

- Almost eliminating the chance of a missed delivery;
- Increase in the number of parcels transported per driver per day from 80-120 parcels (with outliers of up to 200) for home deliveries to 800 parcels for parcel lockers.
- Simultaneously with the delivery, parcel collection can also take place at the same location and time.
- And finally, the optimization of transport with, for example, even the possibility of overnight delivery.

(Mommens, Peeters, et al. 2022)



Sustainability of parcel lockers

Based on the Belgian postal network:

- Home delivery appears more sustainable in rural and suburban areas;
- In urban areas on the other hand collection point deliveries proved to be more sustainable.
- Collection point result drivers:
 - the collection point density;
 - the share of dedicated collection trips.

(Mommens, Buldeo Rai, et al. 2021)



Sustainability of parcel lockers

The benefit of parcel lockers can further still be improved (Mommens, Peeters, et al. 2022):

- Through flanking policies, including creating awareness around sustainable delivery options and by no longer classifying home delivery as a default option.
- By consolidating parcel volumes at a hub on the outskirts of the city. While the last-mile delivery is then bundled and executed by ideally just one or two players, to minimize the vehicle movements in a city.



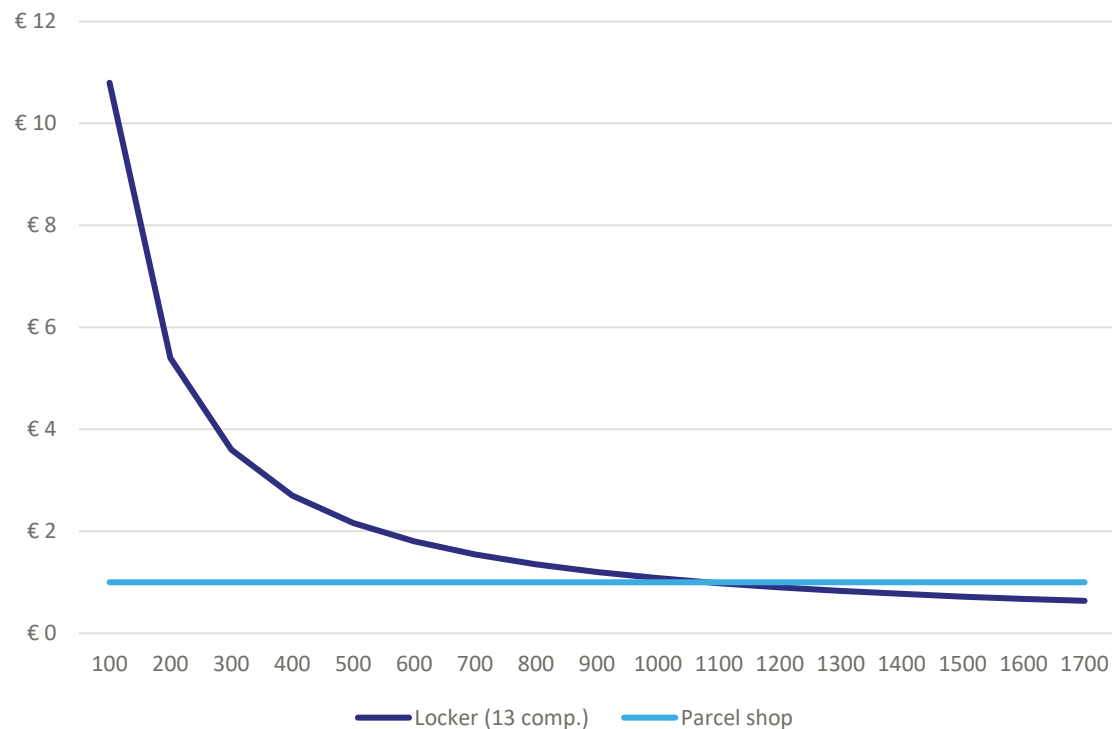
Afterthoughts on sustainability of parcel lockers

- Bundling is not an easy step to take, given that few operators today are interested in using a parcel locker network if they cannot access it directly themselves.
- If delivery at a central location, such as a locker, becomes the standard, then presumably - due to the lower volume delivered at home- the unit cost of home delivery will increase. Care will then have to be taken, as is the objective of the universal service, to ensure that vulnerable users still have access to affordable postal services.

Cost efficiency of manned points vs parcel lockers owned by postal operators



Estimate of unit cost of a manned point versus parcel locker in function of the yearly volume (euro)



Parcel shop compensation: €1/parcel
Parcel locker (13 comp.): €1,080/y (€300/y capex + €780 opex)

- Given that we assume here a variable cost per parcel for a manned point and a fixed cost for a parcel locker, volume will play a crucial role;
- If we assume that it takes two working days for a parcel to be collected, this would therefore mean that an occupancy rate of 2/3th would be required before a parcel locker becomes more cost-efficient.

Cost efficiency of manned points vs parcel lockers owned by postal operators

- 1% of all parcels and express shipments are delivered to a parcel locker in Belgium;
- Operators offering such lockers account for about 50% of the entire market volume.

=> So for an operator that today mainly does home deliveries, we can expect that around 2% of its parcels would be delivered in a locker if he would offer this service. Given the minimum cost efficiency needed compared to a parcel shop, for just 100 locations with lockers (with 13 compartments) such an operator should own a 2% market share.

Estimate of market share needed for a certain amount of parcel locker locations (13 comp.) given the percentage of parcels delivered in a parcel locker

# Parcel locker locations	Market share needed		
	2% delivered in lockers	5% delivered in lockers	20% delivered in lockers
100	2%	1%	0%
200	4%	2%	0%
400	8%	3%	1%
800	17%	7%	2%
1600	33%	13%	3%
3200	67%	27%	7%

Estimate market share needed in five years time for a certain amount of parcel locker locations (13 comp.) given the percentage of parcels delivered in a parcel locker and a yearly market volume growth of 5%

# Parcel locker locations	Market share needed		
	2% delivered in lockers	5% delivered in lockers	20% delivered in lockers
100	2%	1%	0%
200	3%	1%	0%
400	7%	3%	1%
800	13%	5%	1%
1600	26%	10%	3%
3200	52%	21%	5%

Cost efficiency of manned points vs parcel lockers owned by postal operators

- These calculations are of course based on strong assumptions, but they do illustrate the large impact of volume and consumer preferences.
- Also other motives that influence the decision for either a new manned point or a parcel locker location:
 - Rising interest rates will discourage investments, certainly the risky ones;
 - User friendliness;
 - The maximum capacity at a manned point may also be less of a hard limit (i.e. peak periods);
 - ...



Potential regulatory challenges

Dominant player that acquires a dense network of parcel lockers, which might be very difficult or impossible to replicate by a small or medium-sized operator.

Exclusivity agreements with the main providers of scarce strategic locations (particularly all the favored passage places: supermarkets, train stations, municipalities etc).



KEY TAKEAWAYS

- 1) Parcel lockers are gaining ground in Western Europe
- 2) Use of lockers can be further incentivized
- 3) Last-mile delivery cooperation can play an important role in terms of sustainability

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