



Activity Deliverable

CommutING with ShAred mobility covid-FrEe

Completed tests of Sant Cugat pilot

EIT Urban Mobility - Mobility for more liveable urban spaces

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List of abbreviations (if any)

AMB	Àrea Metropolitana de Barcelona
FGC	Ferrocarrils de la Generalitat de Catalunya
GDPR	General Data Protection Regulation
KPI	Key Performance Indicator
KAVA	KIC Added Value Activities
SUMP	Sustainable Urban Mobility Plan

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1. Executive Summary

This document corresponding to deliverable DEL03 “Completed tests of Sant Cugat pilot” is produced in the context of Task A2004, *Pilot demonstration in Sant Cugat*. The document has been developed by FACTUAL with the collaboration of Sant Cugat City Council and it provides detailed information about all the development stages of **an innovative corporate on-demand bus service that connects Barcelona with Can Sant Joan business area** which has around 12,000 workers and it is located in a peri-urban area of Sant Cugat with several barriers (i.e. lack of parking space, traffic congestion and expensive road toll) that hinder the commuting from Barcelona. The objectives of this document are:

- **Presentation of the indicators and first results of the pilot:** KPIs at technical level and user acceptance for the later evaluation of the pilot demonstration
- **Implementation of the service** including legal, technical and communication aspects and the pros/cons of the pandemic situation for a corporate on-demand transport
- **Lessons learnt and knowledge on feasibility of the service** from different angles such as the needs of the companies, operators and users

Thus, the first part of the document shows the list of KPIs that have been collected during the pilot test (from 13 October until 27 November, both included) using NEMI’s data dashboard, fully available for the project in order to analyse the performance of the service. In addition, two surveys have been developed in order to gather user acceptance from the commuters and also to better know the vision of the company, as it would be also a potential customer of the service after the pilot phase.

A second aspect of this deliverable is the descriptions of the challenges and barriers that the project partners faced during the preparation, implementation and development phase of the pilot demonstration in Sant Cugat. This part is a key aspect of the deliverable but also an important input for the later development of a real-world service in a post-lockdown situation.

Finally, the first results of the project have been included in this deliverable in order to highlight that a corporate on-demand bus service would lead to a win-win for commuters and for companies in terms of efficient and sustainable commuting. The conclusions and lessons learnt will be a critical point for the project’s progress since it will be the guide for the assessment of the pilot in Sant Cugat during the activity “*A2005-Pilots’ evaluation*” and it will also include some key hints to overcome the current legal barriers and will nudge users to use flexible transport to reach their workplaces. An agreement between operator and FACTUAL with the support of Sant Cugat City Council is foreseen as a next step to a future commercialization of the service.

2. Development of the evaluation framework

With the main objective of evaluating the Sant Cugat, a detailed and multi-stakeholder approach have been designed. This evaluation framework will allow us to indentify the critical aspects that have impact on its success.

Thus we have carried out an approach based on two levels:

1. **KPIs coming from the pilot itself:** we have identified and monitor the most relevant indicators that can be extracted from the pilot operation. These indicators have been collected from the NEMI on-demand service application. The following indicators have been analyzed through the whole period:
 - Total number of km in service in both directions: Barcelona – Sant Cugat and Sant Cugat – Barcelona.
 - CO₂ emissions saved in comparison with a conventional operational scheme
 - Total number of driving minutes during the service in both directions: Barcelona – Sant Cugat and Sant Cugat – Barcelona.
 - Number of commuters by each journey.
 - Number of commuters getting on the bus by station.
 - Registered persons in the application form (Signed/no signed)
 - Total number of bookings
 - Total number of trips
 - Punctuality of the bus
 - Bus occupation by trip

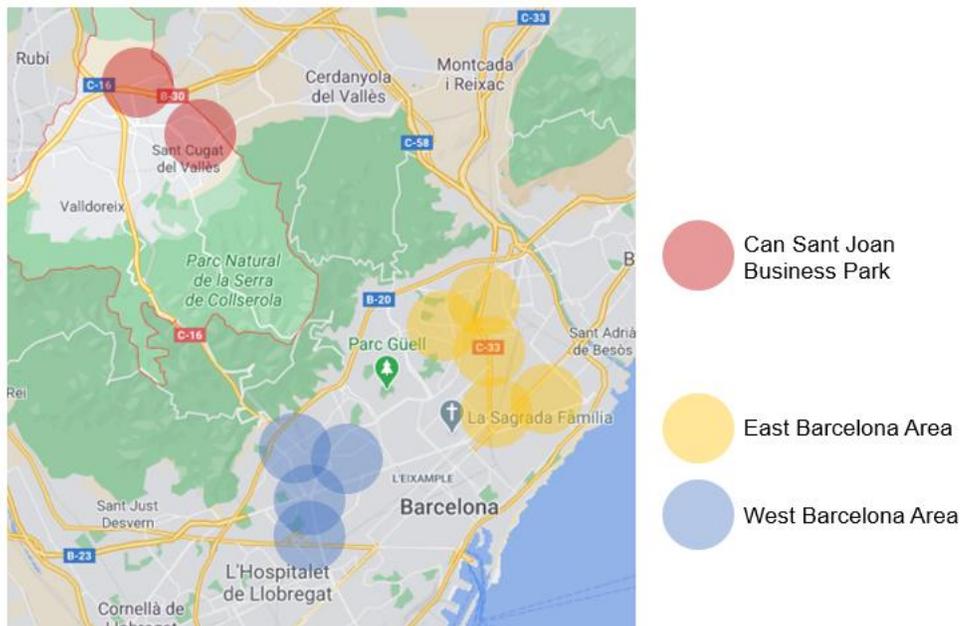
Considering the usual trips that participants were doing before the pilot and the mode that they were using, we will analyze the kilometers and emissions that have been reducing by the pilot itself. These analysis will be published at the Deliverable 04: Pilot's Assessment.

2. **KPIs coming from surveys:** we have design different surveys for the users and companies involved in the pilot (attached in the Annex section). The objective of these surveys is to understand their assessment and satisfaction over the pilot and their interest in continuing the service after the pilot and potential involment. In addition to these surveys, we have also asked to the drivers and operator (Moventia) over their assessment with the pilot and the on-demand mobility application. All the surveys are running and we are still receiving feedback from users and companies. The final results will be published in "*A2005-Pilots' evaluation*".

3. Pilot service testing

The pilot demonstration of Sant Cugat consisted in three stages: preparation, implementation and development of the on-demand transport service. This document explains the methodology used and the roles of each of participant:

Preparation: it started during the proposal stage with the selection of a business area with an important number of workers and located in the metropolitan area of Barcelona with a difficult connection by public transport. Even though Can Sant Joan business park has a train station (FGC) there is a problem with the last mile and it leads to a higher use of private vehicle for the whole journey (about 25km from Barcelona). Once the target area was selected and with Sant Cugat City Council on-board, the itineraries in the city of Barcelona has been pre-defined according with demographic aspects (residential areas of Barcelona) and direct road corridors to the Can Sant Joan area:



In addition, a total of 6 pick-up points or virtual bus stops have been detected in each direction. It is important to stress that the pick-up points are transport hubs (i.e. Estació de Sants, which includes three metro lines and train) and close to the itinerary.

The final part of the preparation phase was the creation of a survey for potential users which includes questions about the company, favourite pick-up points and information about timetable. In addition, for subsequent analysis of sustainability of the measure, a question on the current mode of transport was added.

Implementation: This part began one month before the pilot demonstration starting and it has a double objective: fine tuning of the on-demand service and communication to target companies and end-users.

Regarding the **adjustment of the on-demand bus**, an assessment report of the itineraries selected have been developed at the same hours that it is expected to run the service, i.e. morning peak hour and afternoon. All the pick-up points have been analysed and the itinerary has been adjusted according to real-world conditions considering roadworks, curvatures, etc. All this information was included at the NE-MI application in order to create an itinerary and be able to provide real-time information on bus location to the users (through user application) and real-time information to the driver (through driver application). In addition, a transport operator was selected (JULIÀ) with a 20-seats vehicle and the disinfection system, consisting in several modules have been prepared for the installation. An in-situ analysis has been developed to cover a maximum of surface and air inside the bus.

In parallel, FACTUAL and Sant Cugat City Council have developed a **communication strategy** which started with a press release that was published in local newspapers and website portals in order to reach potential users. At the same time, the city council posted information of the pilot in the bus stops of Can Sant Joan business park. In addition, several companies have been reached through the SUMP monthly meeting and a corporate information for their employees, tailored for each company, has developed. Interested employees of Can Sant Joan business area contacted to the city council and they received the survey. A total of 96 potential users from 9 companies (SIGMA, FERRER, NESPRESSO-DABA, GRIFOLS, ASEPEYO, BANCO SABADELL, HEWLETT PACKARD, ROCHE and ESADE-CREAPOLIS) completed the survey which means more than expected considering the pandemic situation in September/October. In addition, due to regulatory aspects of discretionary transport in Catalonia, a contract between companies that have at least one user, and the transport operator must be signed. However, because GDPR, the name of the user cannot be provided to the company which is an additional barrier for the development of the service.

Development: This phase started on 13 October and ended on 27 November with one journey at 7.10am and two at 2.10pm and 5.10pm with a 24-seats bus. Due to legal aspects, the selected operator JULIÀ could only develop the first week of the pilot as they did not completed the administrative permission for developing discretionary services to more than one company (it means that operator could face a penalty -not FACTUAL or Sant Cugat City Council- but as it could affect the development of the pilot, FACTUAL decided to rule out JULIÀ and incorporated MOVENTIA as pilot operator without any affectation for the users).



The dashboard of NE-MI provided information in real-time about the use of the on-demand service including all the KPIs listed in chapter 2 of this document. One of the key aspects that pilot showed is that the employees don't use the same pick-up point in the morning and in the afternoon as a huge % of them started the journey in one pick-up point in the morning and step-off of the bus in another pick-up point. The client support was developed by FACTUAL during the whole development stage.

During the pilot demonstration, COMMINSAFE team faced a number of challenges and barriers that have been overcome successfully. Below, the most important ones are highlighted:

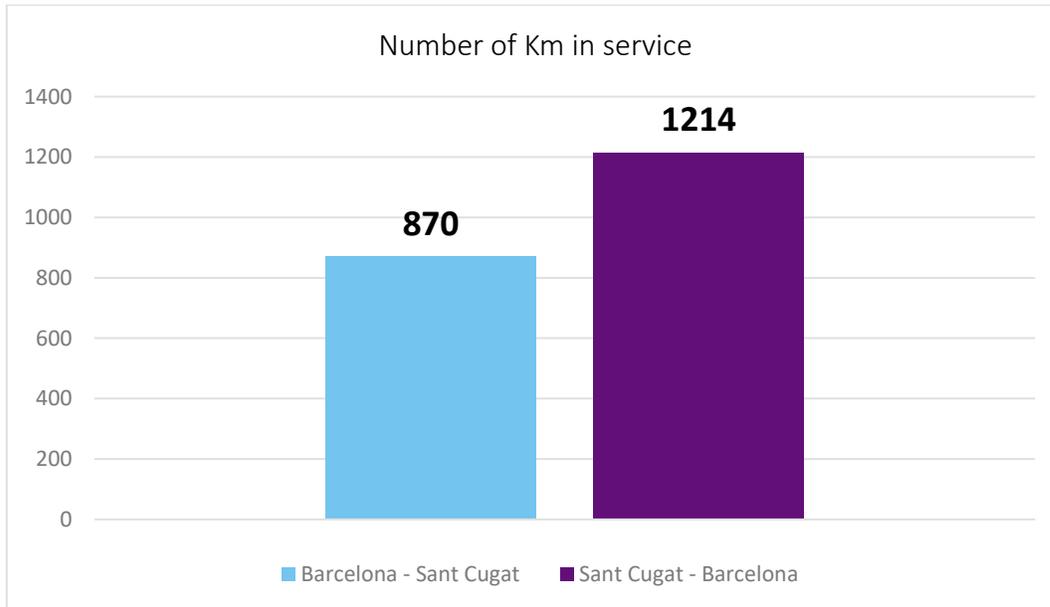
- **COVID lockdown:** The second wave obliged the Catalan government to recommend teleworking and some of the usual commuters stopped to use the service. In addition, the lockdown in France and other countries delayed the installation of the disinfection systems in the bus.
- **GDPR and mandatory contracts:** The European regulation does not allow to inform the company about the employees that are using the service, so we could not use internal communication channels. This situation also affects the involvement of the companies, especially when they must sign a contract (between company and operator) in order to let an unknown employee to use the service.
- **Regulation of discretionary transport services:** this aspect has not affected the pilot as the users had a 100% subsidy of the journeys but it will affect the future of service implementation as the companies (not the users) have to cover all the costs. The involvement of public bodies (i.e. Sant Cugat City Council) or the sandbox regulation could be useful ways to overcome this barrier. In addition, the operator permissions are very difficult to obtain and it led us to change the operator after one week of the pilot starting.

4. Results

As explained in previous chapters of this report, the dashboard of NEMI has been providing real-time information over the on-demand service and based on the KPI's that were defined previously.

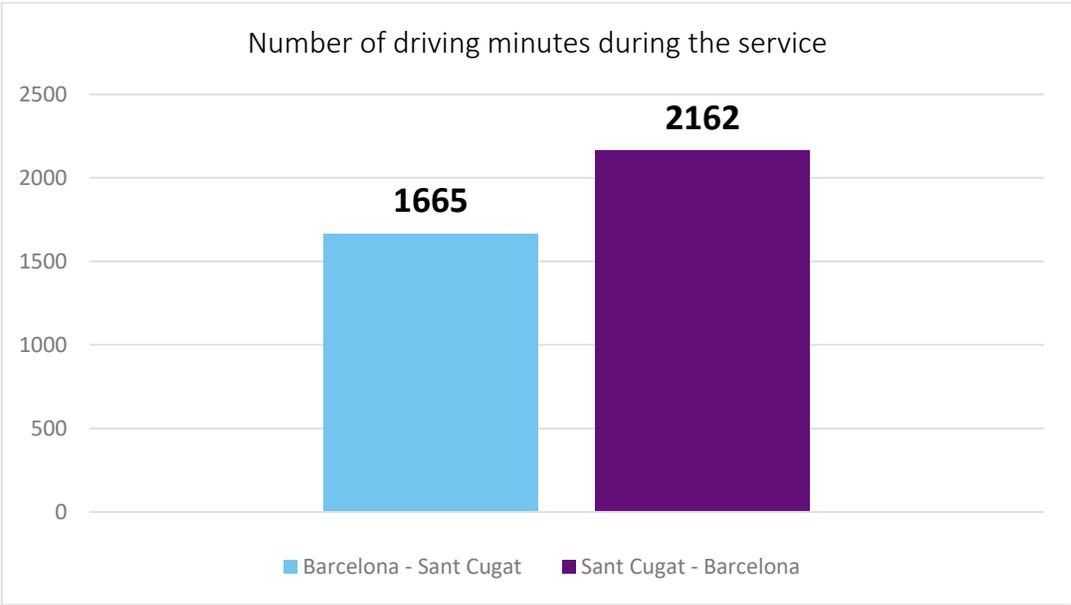
For this report and, previously to an in-depth analysis of the whole pilot in Sant Cugat, we would like to show the most relevant indicators that we have obtained. The data that is shown below contains the information for the whole period that the pilot was running, from 13 October to 27 November.

Total number of km in service: 2,084 km, divided according the two senses of the trips.

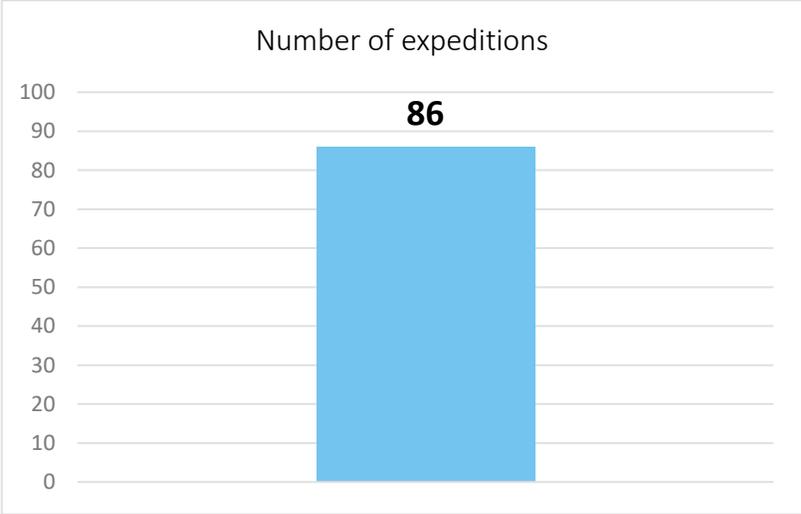


According to the pilot estimations, 158Tn of CO₂ emissions were saved in comparison with a conventional operational scheme.

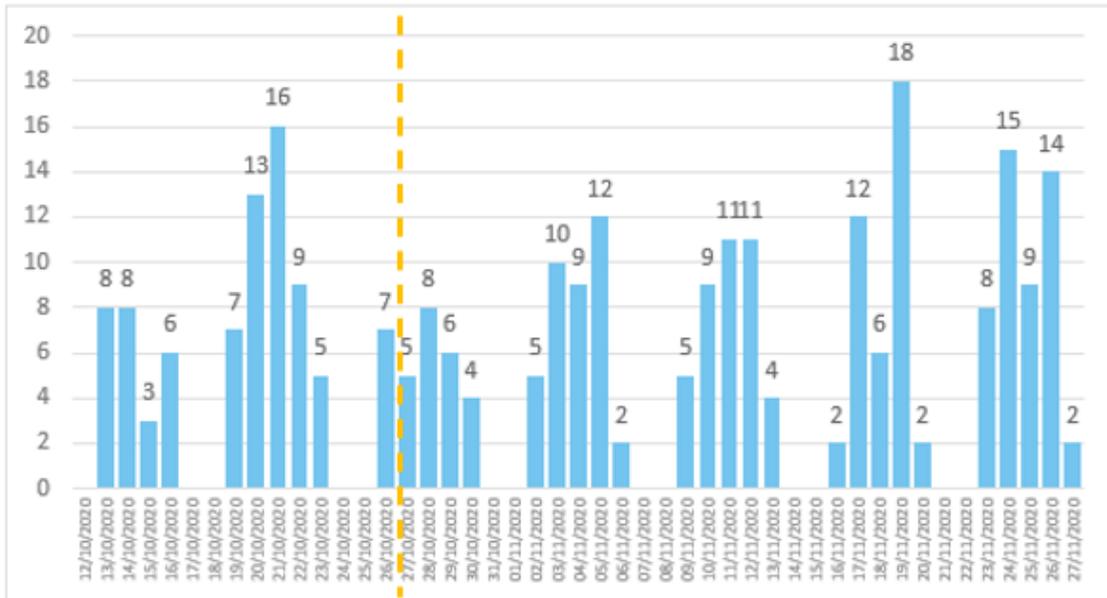
Total number of driving minutes during the service: 3,827 minutes, divided according the two senses of the trips.



Total number of expeditions:



Number of commuters per journey:



Teleworking recommendation in Catalonia

Commuters per station: Barcelona – Sant Cugat:

Destination	Francesc Macià	Ferrer	GRIFOLS	Plaça Espanya	ASEPEYO	DABA	Esade Creapolis	SIGMA	Sants Estació	Via Augusta - Mitre	Via Augusta - Sarrià FGC
Via Augusta - Sarrià FGC											
Via Augusta - Mitre											
Sants Estació											
SIGMA				12					8		
Esadecreapolis				17							
DABA				1					18	2	
ASEPEYO				1					4		
Plaça Espanya											
GRIFOLS	2			4							6
Ferrer	43			3							5
Francesc Macià											

Commuters per station: Sant Cugat – Barcelona:

Destination	Origin										
	ASEPEYO	Plaça Espanya	Sants Estació	DABA	Francesc Macià	Via Augusta - Mitre	Esade Creapolis	Ferrer	Via Augusta - Pl. Orient	GRIFOLS	SIGMA
SIGMA											
GRIFOLS											
Via Augusta - Pl. Orient								11		6	2
Ferrer											
Esade Creapolis											
Via Augusta - Mitre				2				12			4
Francesc Macià				4				51		2	
DABA											
Sants Estació	3			12						1	10
Plaça Espanya	1			1			12	2		5	4
ASEPEYO											

5. Conclusions and Lessons learnt

After the ending of the pilot test, we can conclude the following aspects:

Number of kilometres travelled and driving minutes during the service: the bus travelled for a total of 2,084 km and 3,827 minutes, in a total of 86 expeditions. This makes an average of 24.2 km per expedition and 44.5 minutes. Comparing this service to a regular bus line, we estimate that it has saved 158Tn of CO₂ and some time savings from the users that we will know in more detail after the user survey analysis. Taking into account that there were two expeditions from Sant Cugat to Barcelona, the number of kilometres of these expeditions corresponds to 58,3% of total kilometres and the time travelled, 56.5%.

Round trips: the users of the service have not used it in general terms in a “round-trip” way. For instance, Ferrer employees used the service 51 times outbound and 74 times back. This could indicate that they already had the back from the company solved either by using other ways of public transport or by commuting with colleagues (carpooling). This is a very important aspect for the subsequent go-to-market strategy of the corporative on-demand service.

Days of the week: this service has been more used on Tuesdays, Wednesdays and Thursdays in five of the seven weeks while it has been running.

Interest in the service: the on-demand bus from Barcelona to Sant Cugat has reached vast interest among the companies based at Can Sant Joan Business Park, since 10 of them expressed it. On the same line, 96 employees from these companies were willing to use the service.

COVID lockdown: since the second wave associated to the pandemic started just after summer period in Spain and consequently the suggested restrictions from the Catalan government, we obtained a lower level of interest than could be expected and therefore, less participants. This aspect is shown mainly along the third, fourth and fifth weeks of the pilot, where the teleworking recommendations were thoroughly followed by companies in Catalonia.

In addition, there are several lessons learnt for developing future actions in this field taking advantage of the knowledge generated by COMMINSAFE project:

Lessons learnt and next steps: the final objective of the pilot is to test the methodology, the technical deployment and the user acceptance among other aspects to develop an efficient go-to-market strategy. During the 3 months of preparation + development of the pilot, there are several lessons that FACTUAL team has learnt:

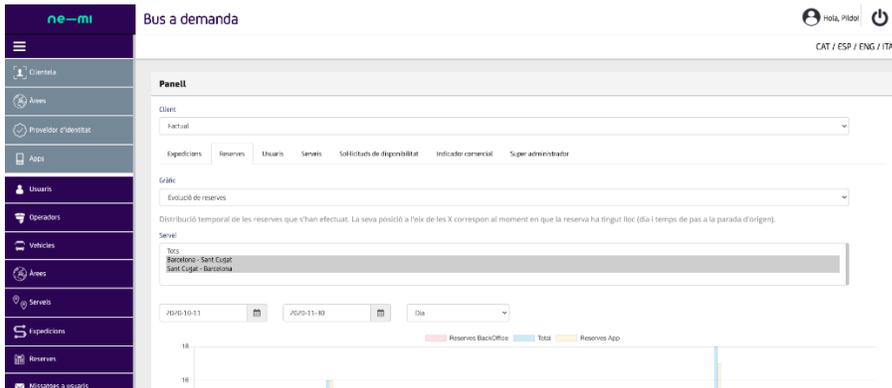
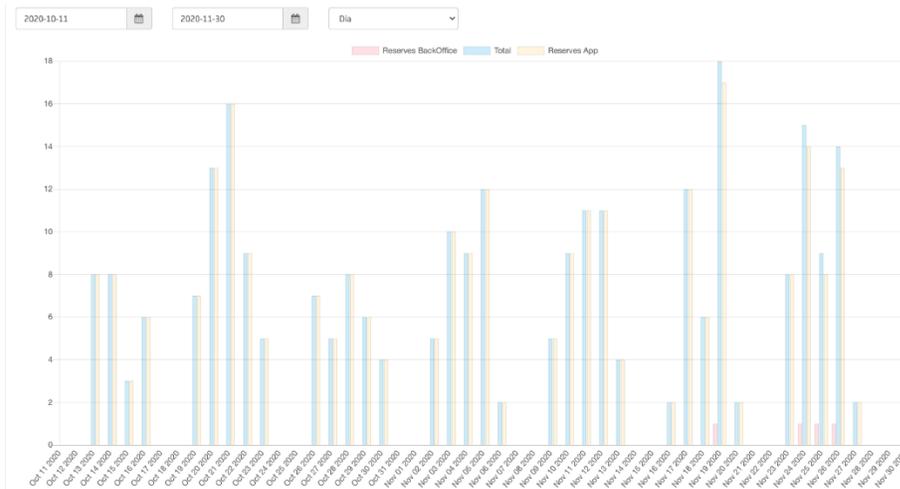
- **Regulation aspects:** the Catalan regulation is very strict on develop commuting services for more than one company and, by the way, Sant Cugat pilot was the first time ever that

an on-demand service is deployed for more than one company (different pick-up stations). As did during the pilot, the users cannot be charged directly and indirectly so the high user acceptance expected is a key aspect for developing this service by the companies. A number of companies have stated that they are interested in continue the service for their employees. In addition, regulation barriers can be overcome by using the **regulatory sandbox** that public administration will deploy in order to keep up with fast pace of innovation.

- **Pandemic aspects:** Spanish and Catalan government stated that the teleworking is recommended for all the companies and employees who travel to the workplace could be asked for a justification. This had a direct impact on the growing figures of the pilot and the continuation of the service (charging companies) will be revamped after the pandemic situation due to the current uncertainty. FACTUAL will take advantage of this to continue the meetings with key stakeholders to continue and expand the project (companies, public administration, i.e. AMB and Generalitat de Catalunya). In addition, Sant Cugat City Council could be interested in integrating new pick-up points inside the city so FACTUAL will further analyse the continuation of the project integrating Barcelona and Sant Cugat as well.
- **Mobility strategy:** another lesson learnt was that the companies are interested in developing a robust mobility strategy for several reasons: A) Keep the talent in the company, B) CRS: Corporate Social Responsibility to contribute to Green Deal objectives and C) Use of the parking space as a useful resource for the company. As companies would like to improve the mobility of all the employees (commuting from different parts of the territory), a strategy would be a corporate on-demand service as a backbone and other modes of transport for covering other journeys that cannot be covered by collective transport.

6. References

The main source of information for this deliverable is the NEMI dashboard:



7. Acknowledgement

The activity has received funding from the European Institute of Innovation and Technology (EIT), a body of the European Union, under the Horizon 2020, the EU Framework Programme for Research and Innovation.

Annex I

SURVEY TO USERS

Survey to users landing page:

The image shows a survey landing page with the following content:

- Logos:** CommINSAFE (Committing with Shared mobility covid-Free), AJUNTAMENT DE SantCugat, FACTUAL, eit Urban Mobility, and the European Union flag with the text 'EIT Urban Mobility is supported by the EIT, a body of the European Union'.
- Title:** Encuesta a usuarios del servicio de bus a demanda Covid-Free
- Text:** El piloto de servicio corporativo de bus a la demanda con condiciones COVID19-free finaliza el día 27 de Noviembre y nos interesaría conocer vuestra opinión sobre distintos aspectos del servicio.
- Requirement:** * Obligatòria
- Question 1:** ¿En qué empresa trabajas?
- Input:** La vostra resposta
- Question 2:** ¿Con qué frecuencia has usado el servicio? *
- Options:**
 - Cada día
 - Casi cada día
 - Una o dos veces a la semana
 - Una vez o dos veces al mes
 - No he usado el servicio
- Navigation:** Següent button, a progress bar, and the text 'Página 1 de 3'.

The questions of this survey are the following:

The pilot of on demand corporate bus service with Covid-free conditions ends on November 27 and we would be interested to know your opinion on different aspects of the service.

1. Frequency of use:

a) Every day

- b) Almost every day
 - c) Once or twice a week
 - d) Once or twice a month
 - e) I have not used the service
2. If he/she has not been used by the service, Why didn't you use the service?
- a) The itineraries did not suit my needs
 - b) Recommendation / Obligation to telework
 - c) Other reason: Indicate _____
- End of interview

3. If you have used the service.
General assessment of the service (scale 1-5)

From question 4 to 10, in table format:

- 4. Comfort and convenience of the vehicle (1-5)
- 5. Punctuality of the bus (departure and arrival) (1-5)
- 6. Importance of Covid measures (1-5)
- 7. On-demand bus application functionality (1-5)
- 8. Possibility of making prior reservation (1-5)
- 9. Real-time bus position information (1-5)
- 10. Customer service (1-5)

11. What mean of transportation do you use more often to go to work?

- a) Bus
- b) Bus + Train (FGC)
- c) Bus + Car
- d) Car
- e) Shared car
- f) Other mode of transport: _____

12. What price per trip would you be willing to pay for this service?

- a) Less than € 1
- b) Between € 1 and € 2
- c) Between € 2 and € 3
- d) More than € 3

13. Do you think your company should provide an on demand bus service to its workers?

- a) Yes
- b) No
- c) Another answer: _____

14. Space to make a comment or suggestion: _____

We have received your responses. Thank you very much for your participation.

SURVEY TO COMPANIES

Survey to users landing page:

The image shows a survey landing page with the following content:

- Logos:** CommiNSAFE (Commuting with Shared mobility covid-Free), AJUNTAMENT DE SantCugat, FACTUAL, eit Urban Mobility, and the European Union flag with the text 'EIT Urban Mobility is supported by the EIT, a body of the European Union'.
- Title:** Encuesta a empresas del servicio de bus a demanda Covid-Free
- Text:** El piloto de servicio corporativo de bus a la demanda con condiciones COVID19-free finaliza el día 27 de Noviembre y nos interesaría conocer vuestra opinión sobre distintos aspectos del servicio.
- Note:** * Obligatoria
- Question 1:** ¿Cómo valora la participación de trabajadores de su empresa en la prueba piloto de servicio corporativo de bus a la demanda? *
- Scale:** 1 2 3 4 5
- Labels:** Muy insatisfactoria (left) and Muy satisfactoria (right)
- Question 2:** ¿Qué motivos cree que son más importantes para implantar un servicio corporativo de bus a la demanda en una zona como el Polígono Can Sant Joan? (Pregunta multirespuesta) *
- Options:**
 - Mejorar la accesibilidad y la movilidad de los trabajadores
 - Retener el talento en la empresa
 - Apostar por una movilidad más sostenible
 - Otros:

The questions of this survey are the following:

The pilot of on demand corporate bus service with Covid-free conditions ends on November 27 and we would be interested to know your opinion on different aspects of the service.

1. How do you assess the participation of workers from your company in the pilot test of on demand corporate bus service? (scale 1-5)
2. What reasons do you think are most important to implement an on demand corporate bus service in an area like Can Sant Joan? (Multi-answer question)

- a) Improve accessibility and mobility of workers
- b) Retain talent in the company
- c) Bet on a more sustainable mobility
- d) Other reasons

Justification for the answer: _____

3. What aspects could be a barrier to implement an on demand corporate bus service in an area such as Can Sant Joan? (Multi-answer question)

- a) Cost of the service
- b) Labour mobility is not a problem for workers
- c) Workers come from very different parts of the territory
- d) Other reasons:

Justification for the answer: _____

4. Are you interested in the implementation of an on demand bus service in case of lowering the current restrictions due to the pandemic? (scale 1-5)

5. Does the company have a Business Mobility Plan or Travel Plan?

- a) Yes
- b) No

6. What price per trip would you be willing to pay for this service?

- a) Less than € 1
- b) Between € 1 and € 2
- c) Between € 2 and € 3
- d) More than € 3

7. Space to make a comment or suggestion: _____

We have received your responses. Thank you very much for your participation.