



EUSKO JAURLARITZA
GOBIERNO VASCO

euskotren



13th UIC
Sustainability Conference

13th UIC Sustainability Conference



INTEROPERABILIDAD THE BASQUE COUNTRY'S CASE

EUSKOTREN

Jorge Escoin



12, 13, 14 October 2016



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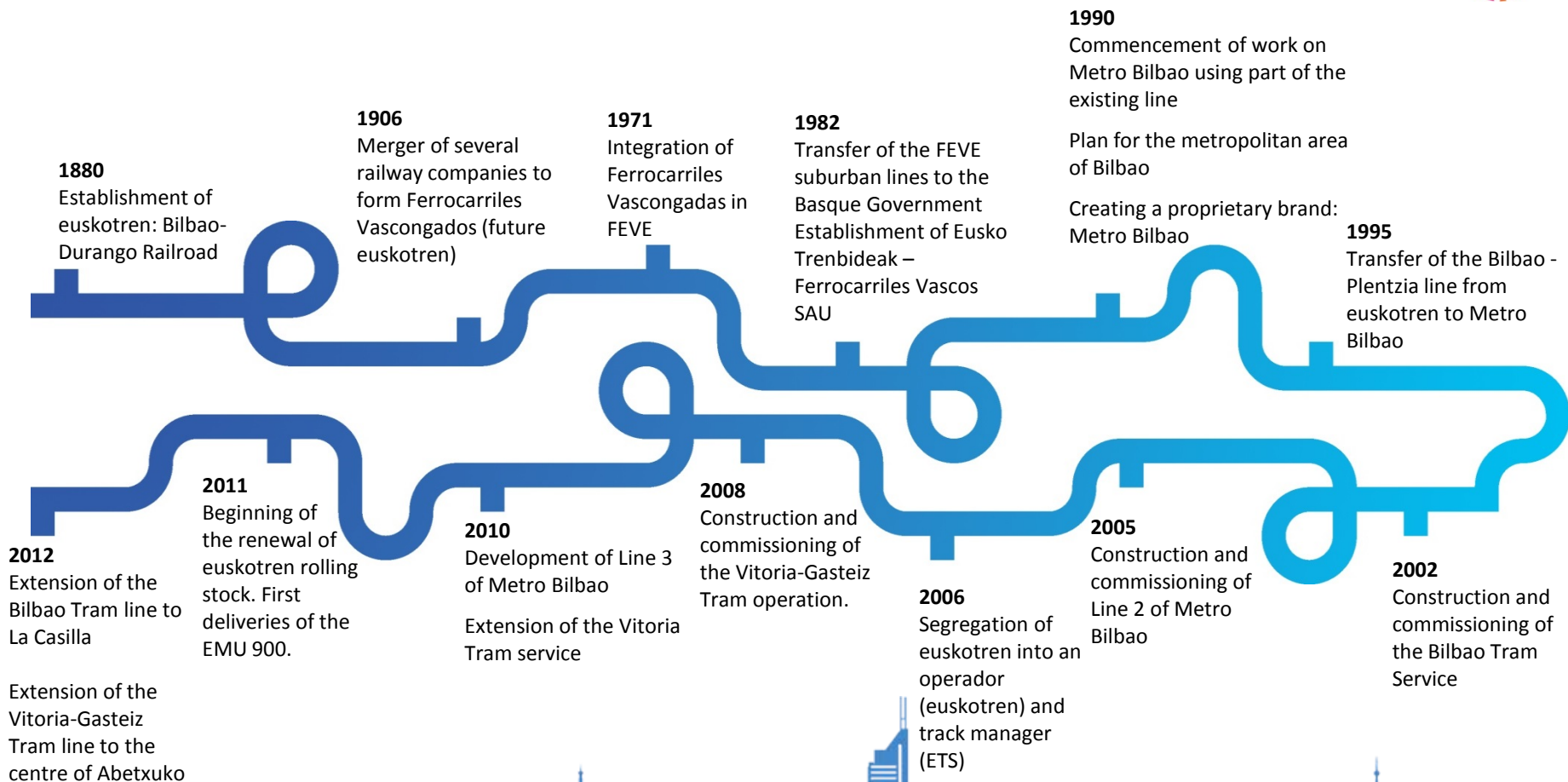
TRANSPORTUA
TRANSPORTES

euskotren



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Short trip around the history of Euskotren





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DEPARTAMENTU
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KONKORDIA

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Short trip around the history of Euskotren

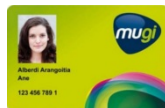
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Euskotren
today

Line 3 of
Metro Bilbao



Interoperability



Basque
Intercities in
HSR line



It comes from its past mission: to be the Basque Mobility Operator for all
basque citizens in all basque geography





Short trip around the history of Euskotren

euskotren



euskotren
trena

- Euskotren's metric gauge railway lines connect the Basque Country
- The lines, over 100 years old, have been modernised and, in the near future, ostensible improvements are expected: double lines, the new Donostialdea Metro service, new units...



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tranbia

- With the collapse of traffic in cities and growing environmental concerns, euskotren has developed its urban tram services in Bilbao and Vitoria, becoming, in the latter, the main means of transport in the city



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autobusa

- Services on behalf of the Provincial Councils of Bizkaia and Gipuzkoa in relation to certain bus concessions
- euskotren road activities are intended as an addition to the railway lines with a view to providing citizens with a comprehensive service



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kargo

- The concern for cost efficiency, road safety and Environmental Protection encourage businesses and the government to seek alternatives to transporting freight by road





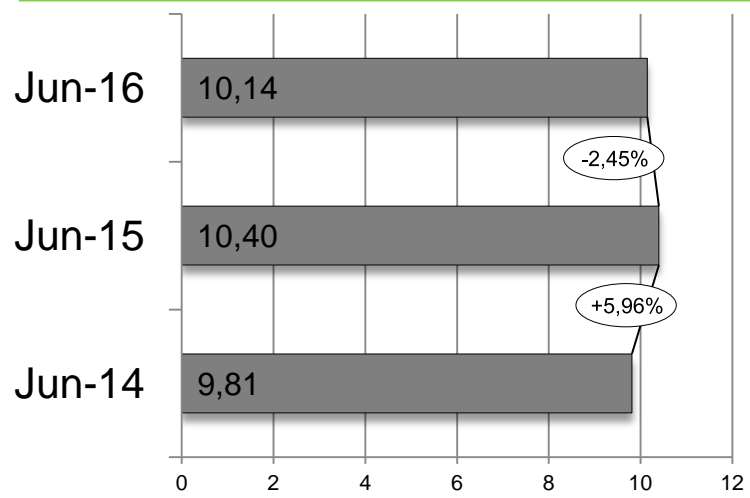
Our compromise with sustainability



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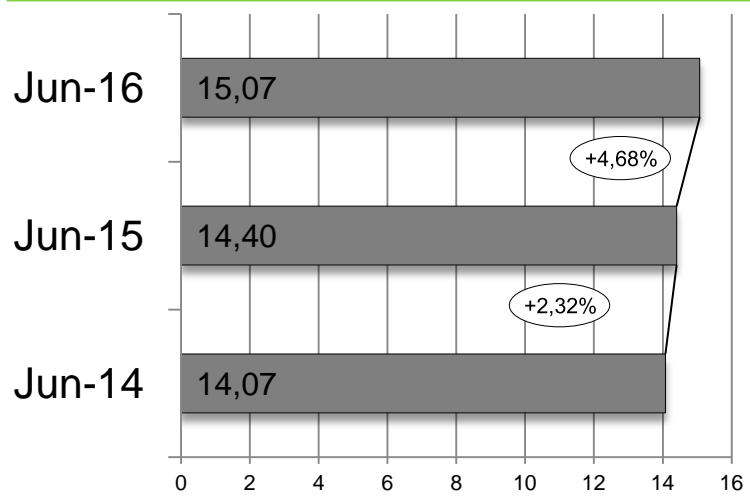
Greenhouse gases emission

tm CO₂e (Miles)



External costs savings

Millions EUR



167.966 oaks...
absorbs these emissions



400 football fields
surface...



1.874 inhabitants
generate these emissions
per year

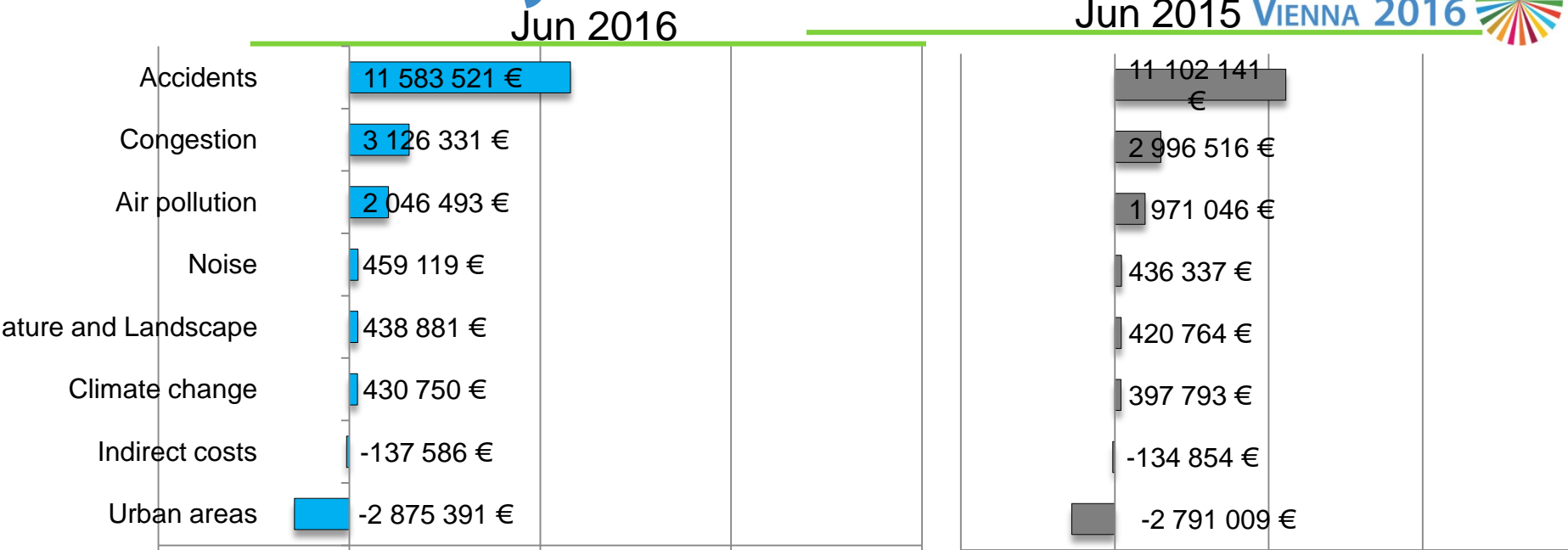


Which it corresponds to the
population of
Soraluze...





Our compromise with sustainability



Total external costs
savings:

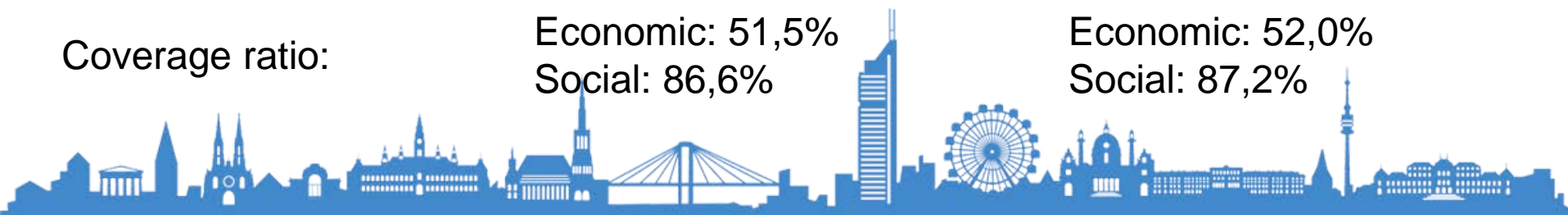
15.072.118€

14.398.734€

Coverage ratio:

Economic: 51,5%
Social: 86,6%

Economic: 52,0%
Social: 87,2%





Interoperability - background

The Basque Transport Authority (ATE), within the framework of the Bat-Barik-Mugi interoperability project, headed by the Department of Territorial and Environmental Policy of the Basque Government, developed a Master Plan or Road Map to try to establish the technical and operational elements required, as well as the budget and deadlines for its implementation in the three territories.

This interoperability consists in the possibility of **using the three Bat-Barik-Mugi cards in the three territories** with a prior agreement on the terms of use between the 3 authorities (CTB-ATTG-ATTA/ET).



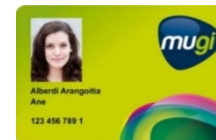
Interoperability - background

The Autonomous Community of the Basque Country consists of 3 Historical Territories with 3 Transport Authorities/Consortia at present; one for each territory: Bizkaia (CTB), Gipuzkoa (ATTG) and Araba (ATTA-ET) with the capacity to regulate transport policies in each territory. In addition, there is a Basque Transport Authority dependent on the Basque Government.

Bizkaia
CTB
Barik smartcard



Gipuzkoa
ATTG
mugi smartcard



Araba
ATTA - euskotren
BAT smartcard



Interoperability - background

Each authority has designed the following for its territory:

- 📍 A type of card (Barik in Bizkaia, mugi in Gipuzkoa and Bat in Araba),
- 📍 Various groups, fare policy, tickets and...
- 📍 A discount policy agreed with and supported by the operators that use the transport card in each territory

The technology used for the transport cards is different:

- 📍 Desfire-EV1 for Bat (Araba) and Barik (Bizkaia) with SAM security module
- 📍 Mifare Classic for the mugi (Gipuzkoa) with a software based security solution





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Interoperability



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All three smart cards are
inter-operable





Interoperability

- 📍 The simplest and most operational model that will make it possible to regulate this interoperability framework is to establish a relationship between the 3 consortia/authorities CTB, ATTA-ET or ATTG, in such a way that it is **not necessary to establish multiple cross agreements between all of the agents** and authorities or consortia in the other territories.



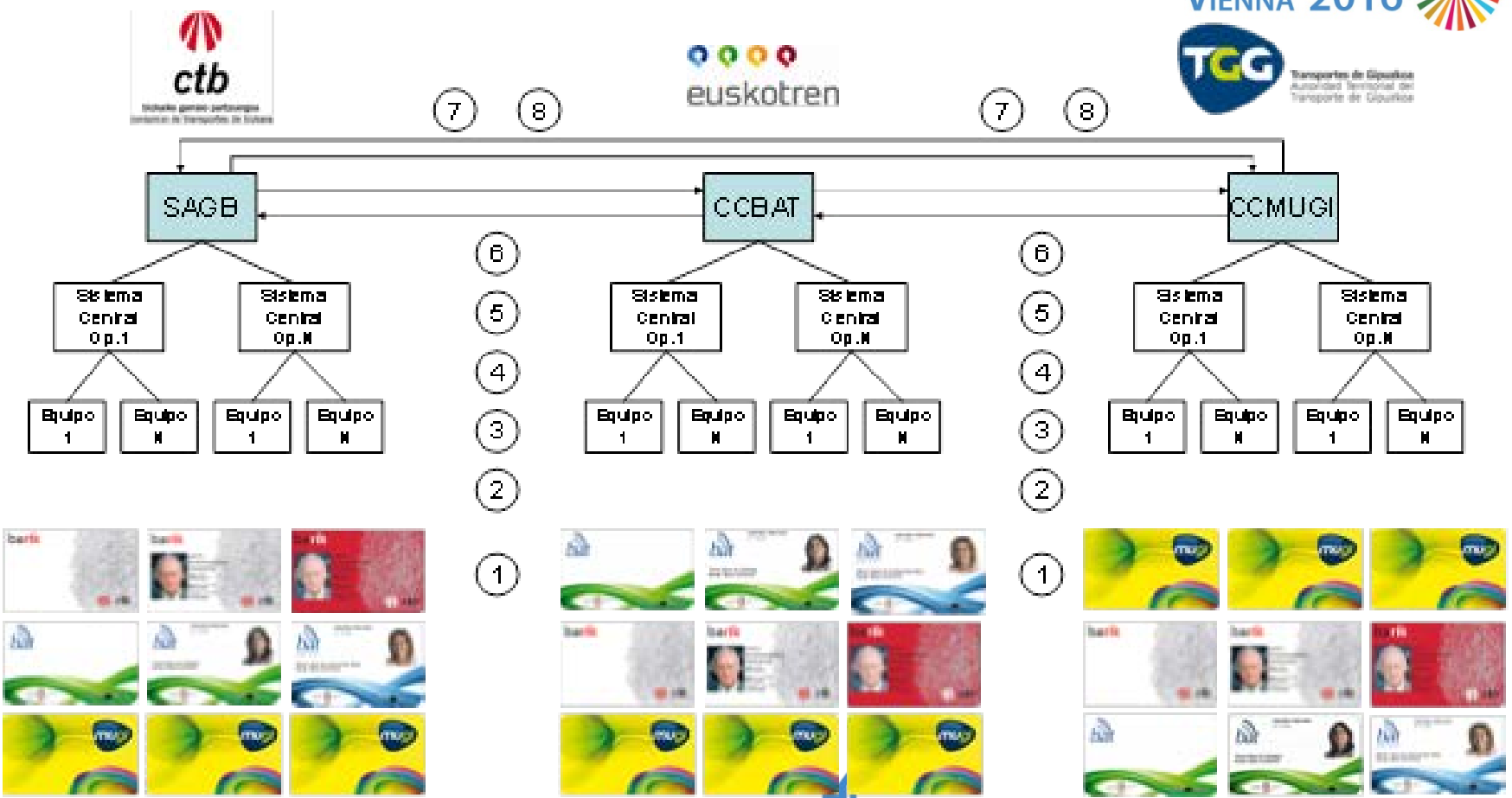


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Transportes de Gipuzkoa
Autoridad Territorial del
Transporte de Gipuzkoa

Interoperability - relationship





Interoperability - relationship

The relationship model entails a multilevel analysis of possibilities, alternatives and conditions:

- 📍 **Card:** Analysis of effects at the card level. Functionally supported card types, features, profiles, tickets, discounts, etc. . Technically: Type of CI technology, EFT, how to implement the desired operations on the guest card
- 📍 **Device-Card Communication:** It will be necessary to develop the relevant processes for the guest card
- 📍 **Agent/operator devices:** Must be changed through the previous programming, file, delivery, etc.
- 📍 **Operator's Central Systems:** Need to change the programming to process the transactions of the guest card





Interoperability - relationship

- 📍 **Device-Central Operator System Communication:** The capacity or need to amend the communications protocol of the device regarding the central system of the operator to upload the required information from a guest card must be studied
- 📍 **Central Systems - Compensation System Communications:** Need to analyze the capacity or need to amend the protocol to process the transactions of the guest card
- 📍 **Compensation Systems:** Need to change the programming to process the transactions of the guest card
- 📍 **Communications between Compensation Systems:** To be developed in full to be able to exchange operations by guest cards with the compensation system of origin.





Interoperability - scope

The modal scope in the three territories covers all modes of public transport operating with each type of card:

- 📍 In **Araba**: euskotren tram, DFA and Tuvisa Buses
- 📍 In **Bizkaia**: one scenario can be considered:
 - Initially undertake key operators (Metro Bilbao, euskotren, euskotren tram, Bizkaibus and Bilbobus which account for 88% of demand) and subsequently the rest, which include a number of smaller operators
- 📍 In **Gipuzkoa**: euskotren, Lurraldebus, city buses in Donostia, Errenteria, Irun, Arrasate, Hernani, Eibar and Oiartzun and Taxibus services. The implementation plan must be agreed upon.



Interoperability - scope

- 📍 In general, the idea is to be able to use all the types of cards in the three territories
- 📍 The three systems issue 2 types of cards:
 - Anonymous Card: Contains a **transport wallet** and allows group travel
 - Personalized Card: Contains a transport wallet and does not allow group travel. Temporal tickets: Annual pass, season tickets, Tourist tickets, etc.





Interoperability - scope

- 📍 The universal ticket by definition is **the transport wallet** and interoperability in the Basque Country initially and essentially focuses the this system
- 📍 The entire balance handled by the Barik and Bat systems correspond to income realized, whereas the mugi incorporates the concept of "virtual money" by which, during the top-up process, a personalized card is credited with an additional amount that is proportional to the top-up in real money





Interoperability - challenges



Topology

Defined by each territory's Authority/Consortia. **Reorganize**



Fares

Defined by each territory's Authority/Consortia. **Euskotren's fare for inter-territorial trips.**



Recharge

Euskotren's ATM recharges the three smartcards. Also Kutxabank



Actions

The equipment is synchronized with each territory' central system to apply any kind of action: black-lists, block, increase/decrease money, etc.

Common protocol





Interoperability - challenges

Communication

The Authorities/Consortia of each territory must be informed of all the transactions including the proprietary and guest smartcards. **Common protocol**

Customer service

Euskotren provides customer service in all territories with any kind of smartcard, no matter if proprietary or guest.

Technology

Three cards, two technologies. **Convergence.**

ADMINISTRATIVE BUREAUCRACY

Four Consortia, four administrations. **Leadership.**



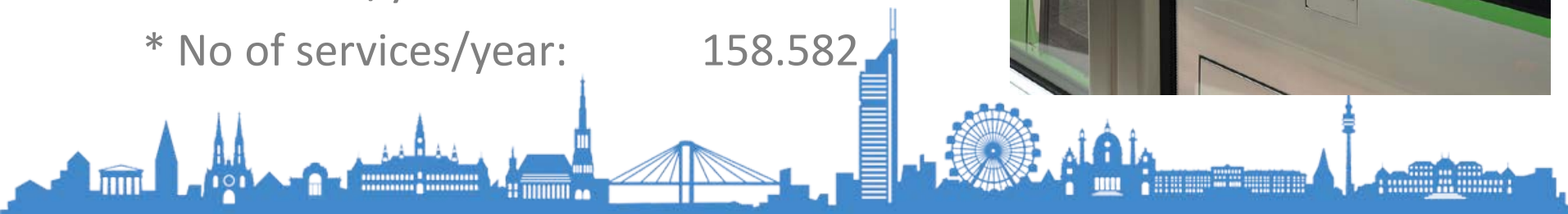


Interoperability - projects



euskotren
tranbia

* No of lines:	3
* km of lines:	13,5
* Stations:	34
* Drivers:	91
* No of trains:	19
* Passengers/year:	10.399.175
** Train.km/year:	824.870
* No of services/year:	158.582



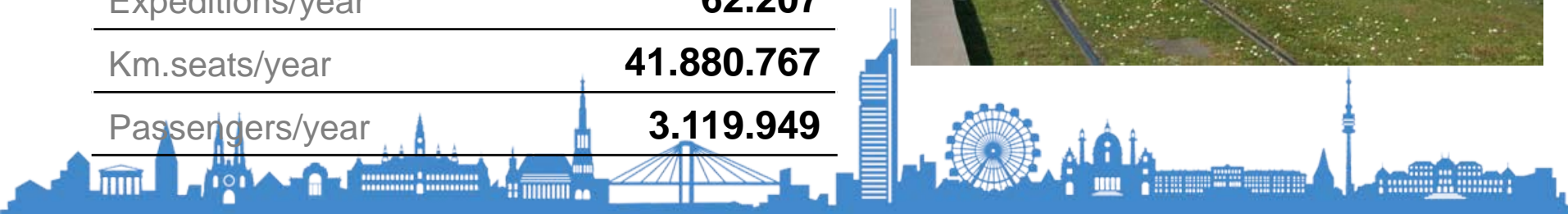


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Interoperability - projects



Year	2002
Lenght	5,531 km
No of stations	14
% single track	31,1%
% electrification	100%
% ATP	0%
Frecuencias	10'
No of Trams	8
Expeditions/year	62.207
Km.seats/year	41.880.767
Passengers/year	3.119.949





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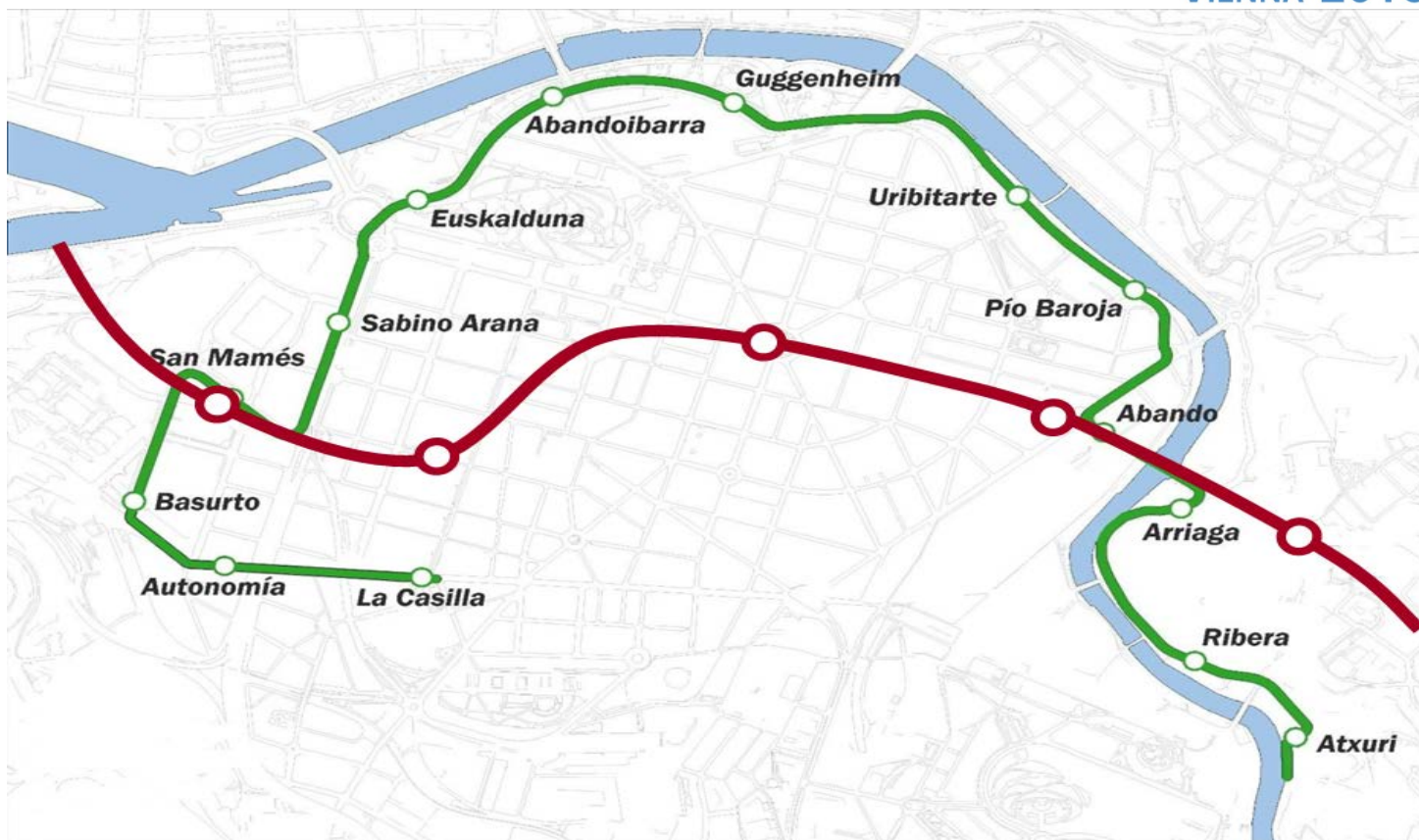
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Interoperability - projects



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Interoperability - projects

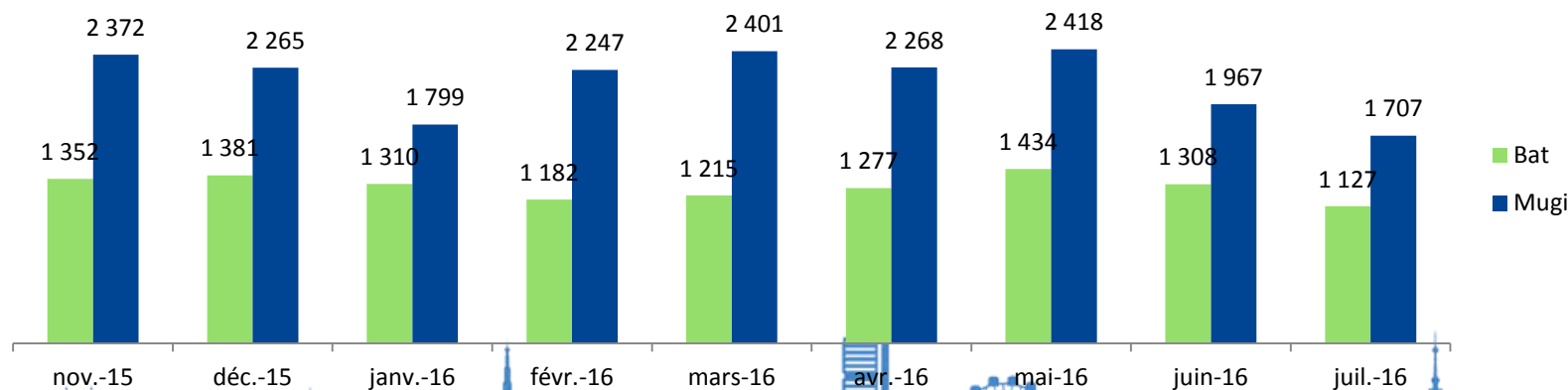
Bilbao's tram has had 4.380.809 passengers between feb-15 and jul-16. Interoperability level in July is at 1,33% of total journeys

Distribution of passengers by Fare System

Fare system	feb-15	mar-15	abr-15	may-15	jun-15	jul-15	ago-15	sep-15	oct-15
Bat	729	1.102	1.189	1.158	1.117	828	517	952	1.197
Mugi	1.540	1.909	1.837	1.926	1.689	902	683	2.025	2.513

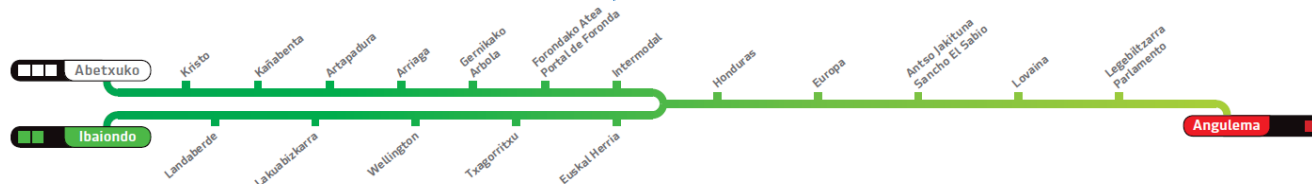
Fare system	nov-15	dic-15	ene-16	feb-16	mar-16	abr-16	may-16	jun-16	jul-16	Total
Bat	1.352	1.381	1.310	1.182	1.215	1.277	1.434	1.308	1.127	20.375
Mugi	2.372	2.265	1.799	2.247	2.401	2.268	2.418	1.967	1.707	34.468

Evolution of Users by Fare System and month





Interoperability - projects



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Year **2008**

Lenght **8,542 km**

No of stations **20**

% single track **0,4%**

% electrification **100%**

% ATP **0%**

Frecuencies **7'5 and 15'**

No of Trams **11**

Expeditions/year **96.375**

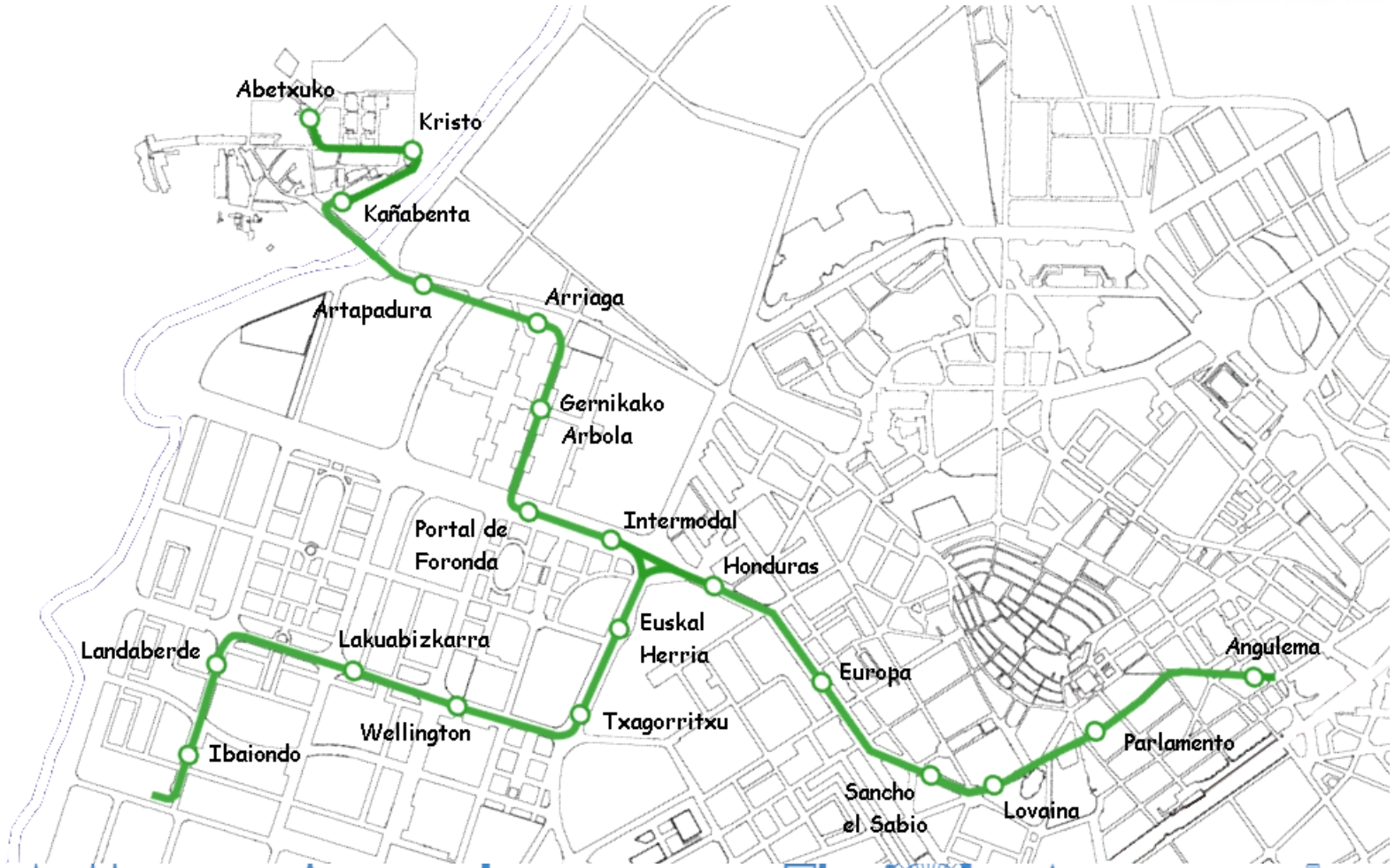
Km.seats/year **74.453.200**

Passengers/year **7.279.226**





Interoperability - projects



Interoperability - projects

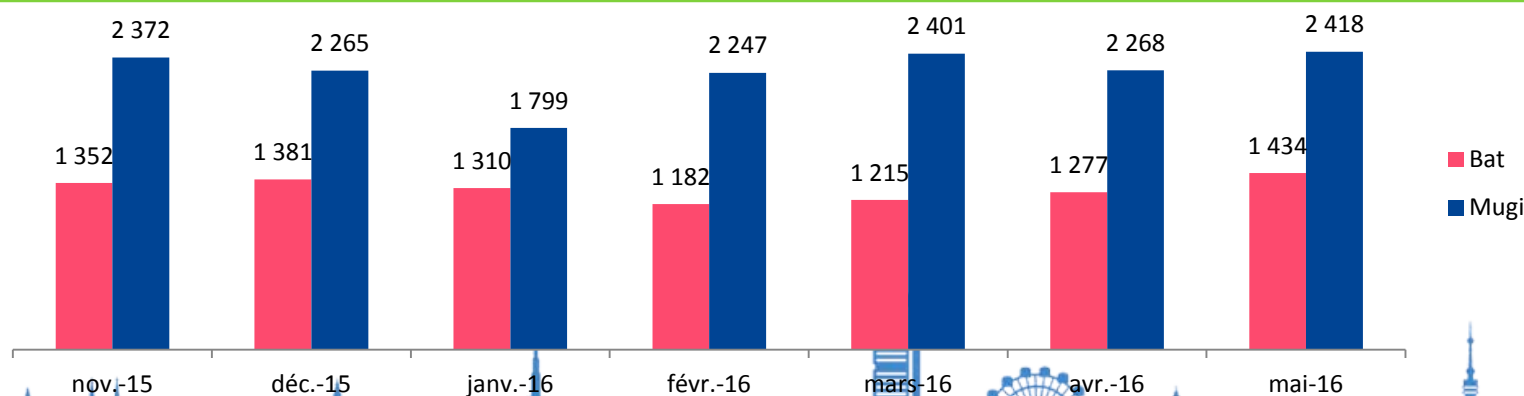


Vitoria's tram has had 9.667.942 passengers between may-15 and jul-16. Interoperability level in July is at 2,7% of total journeys

Distribution of passengers by Fare System

Fare system	may-15	jun-15	jul-15	ago-15	sep-15	oct-15	nov-15	dic-15
Barik	6.512	6.663	6.036	5.717	7.768	8.089	7.922	8.735
Mugi	3.087	5.895	5.316	4.430	9.100	10.873	10.864	10.775
Fare system	ene-16	feb-16	mar-16	abr-16	may-16	jun-16	jul-16	Total
Barik	7.659	7.831	7.655	8.173	8.212	8.395	6.980	112.347
Mugi	10.523	12.013	10.825	10.541	10.408	9.786	7.983	132.419

Evolution of Users by Fare System and month



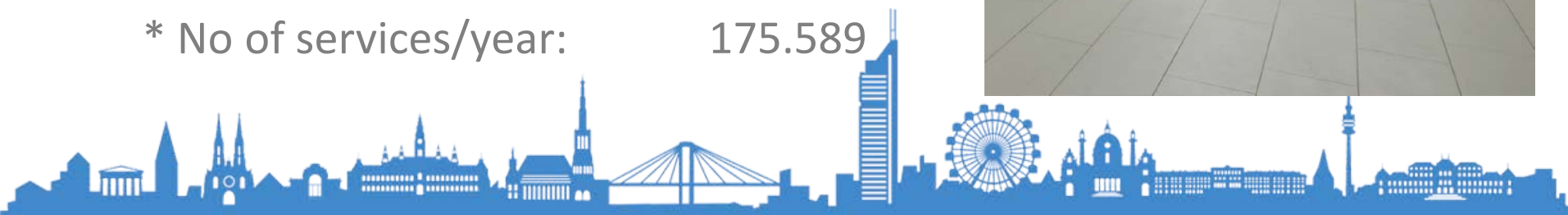
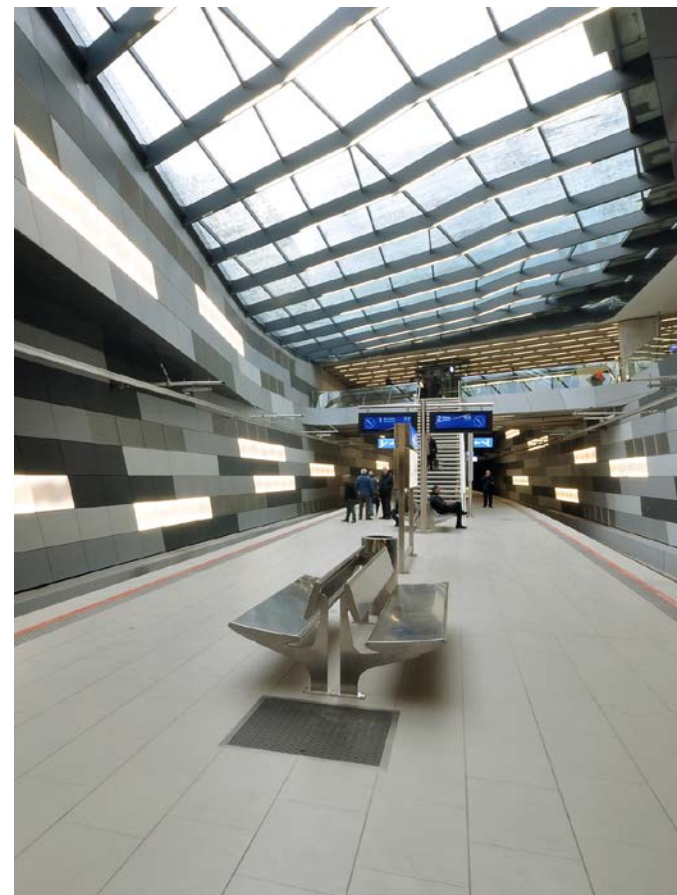


Interoperability - projects



euskotren
trena

* No of lines:	4
* km of lines:	187
* Stations:	78
* Drivers:	185
* No of trains:	75
* Passengers/year:	15.576.099
** Train.km/year:	4.465.319
* No of services/year:	175.589





Interoperability - projects





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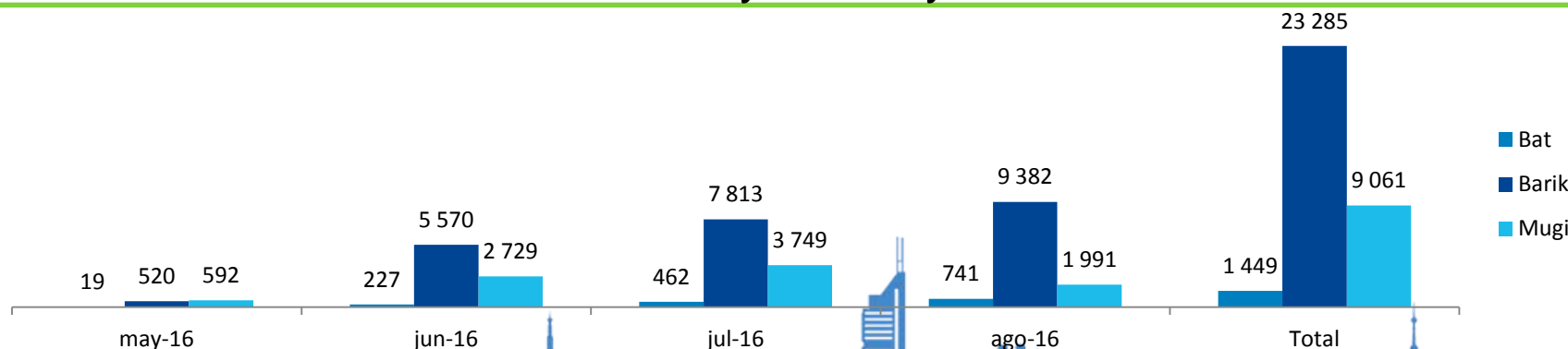
Interoperability - projects

The “Linea General” railway has had 9.565.971 passengers between jan-16 and aug-16. Interoperability level in Aug is at 1,1% of total journeys

Distribution of passengers by Fare System

Fare system	may-16	jun-16	jul-16	ago-16	Total
Bat	19	227	462	741	1.449
Barik	520	5.570	7.813	9.382	23.285
Mugi	592	2.729	3.749	1.991	9.061

Evolution of Users by Fare System and month





Interoperability - present

- 📍 Euskotren allows interoperability in the rail and tram systems
 - 📍 Bilbao Tram
 - 📍 Vitoria-Gasteiz Tram
 - 📍 Bilbao – San Sebastian (Donostia) railway
 - 📍 Bilbao – Bermeo railway
 - 📍 Larreineta Cablecar
- 📍 Metro Bilbao allows interoperability only with BAT smartcard





Interoperability - future

- Extension of the Linea General's interoperability to the Linea 3, and also to Linea 1 and Linea 2 of Metro Bilbao. Train and Tram service **fully interoperable in 2017**
- Extension of the interoperability to bus transport in Araba, the first territory to be **entirely interoperable**.
- In 2019-2020 euskotren will begin to operate the **HSR Intercities** in the Basque Country, **interoperability** will be deployed too
- Tram and train were the first steps: extension to other operators in all territories
- ¿Single common fare policy? ¿Unique smartcard?





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ERREKUPERTUTASUNA
RECOVERING
RESILIENCE

euskotren



THANK YOU!
MUCHAS GRACIAS!
VIELEN DANK!
MERCI BEACOU!
ESKERRIK ASKO!

