

Smart Energy City Action Forum

# Information Exchange Scheme for Electric Vehicle Emergency Charging Services Connected to Smart City Data Hub

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Transportation





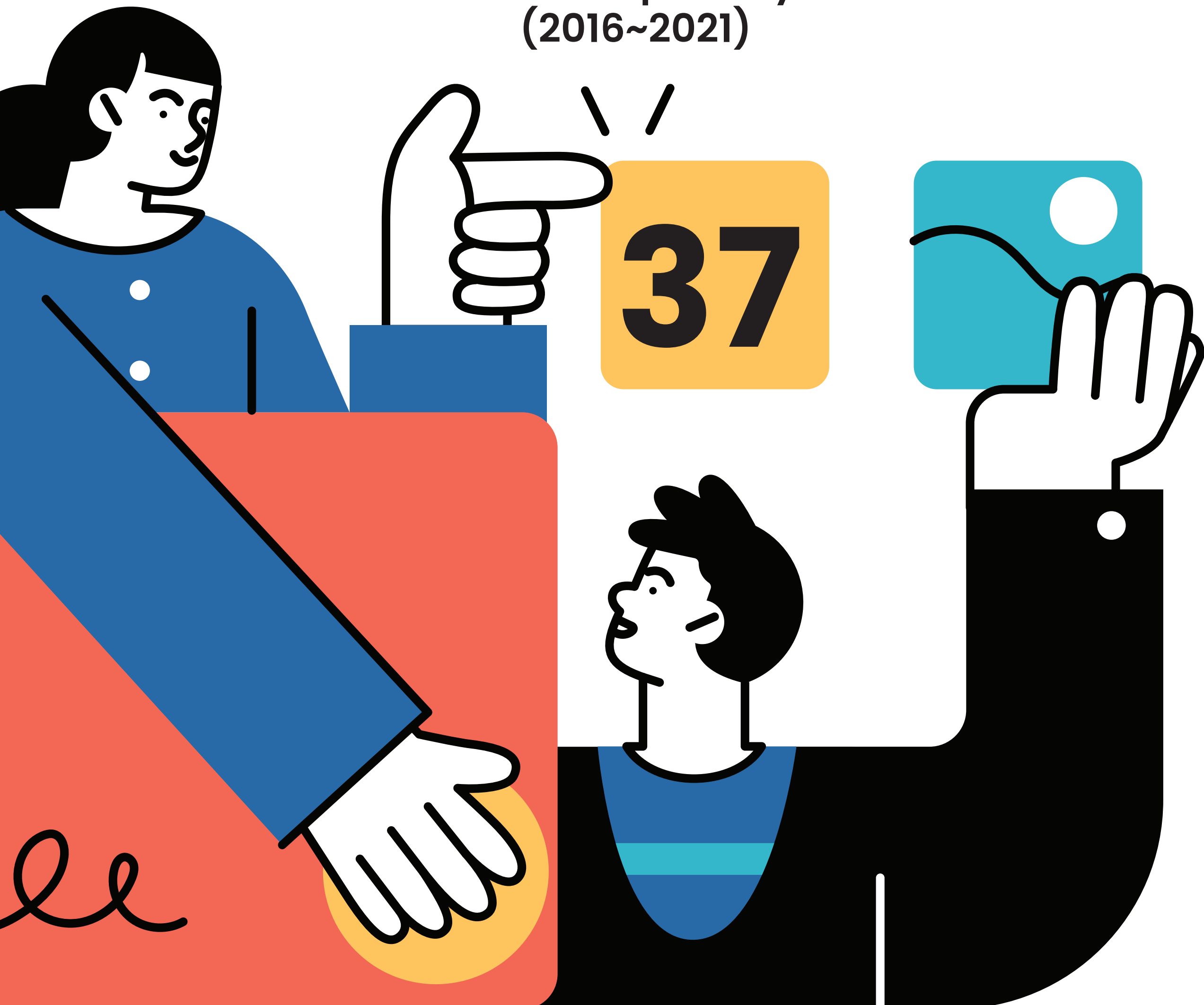
# Smart Energy City Action Forum Information Exchange Scheme for Electric Vehicle Emergency Charging Services Connected to Smart City Data Hub

1. Introduction
2. Contents
3. Conclusion



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Increased 37 times  
higher than the one  
in the past 6 years  
(2016~2021)

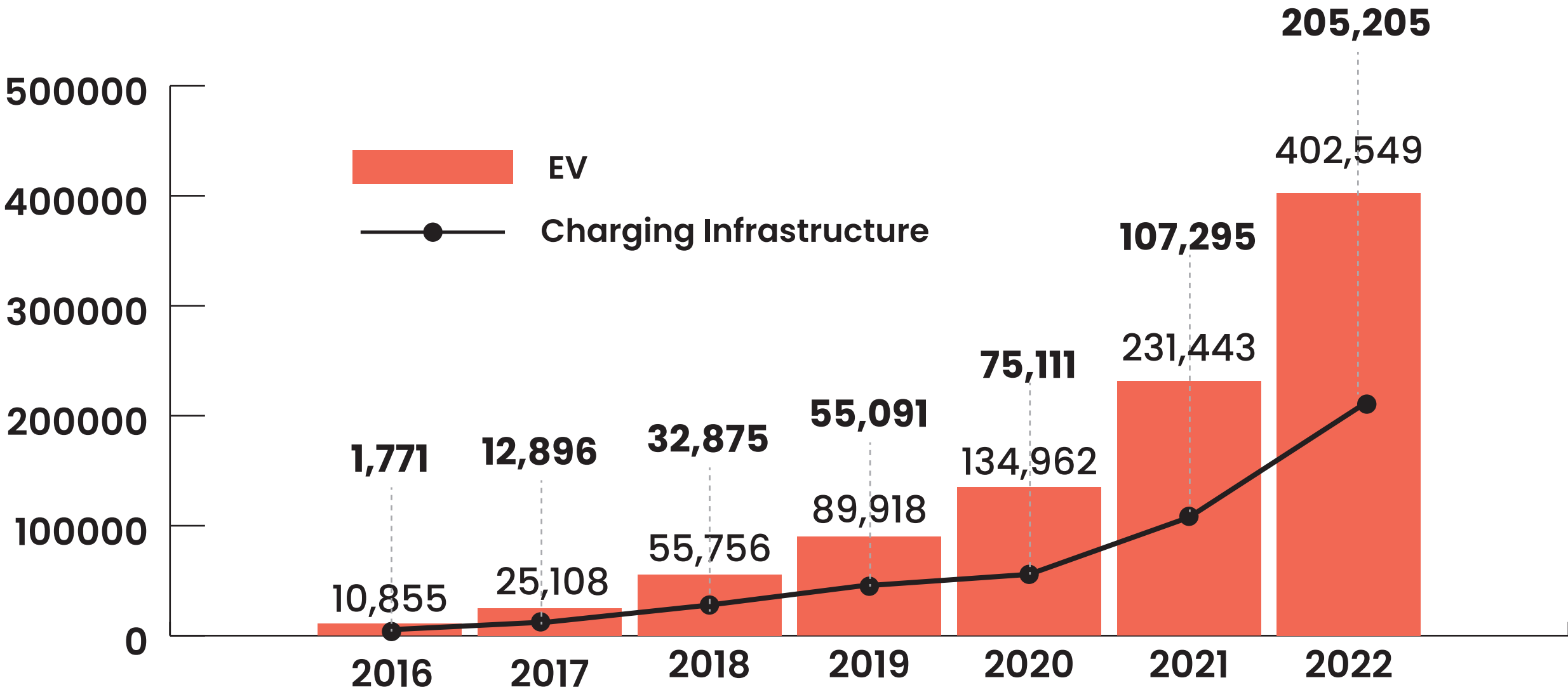


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# Introduction Electric Vehicles (EVs) Mobility in Smart City

Fastly growing trend of the number of EVs  
Lack of EV charging infrastructure



\*Ministry of Land, Infrastructure and Transport, Ministry of Environment (2022)

# Introduction

## Comparison of the current emergency services (refueling vs. recharging)

### Emergency service flow (the out-of-gas condition)

Internal combustion engine



service



Service operator

Emergency refueling



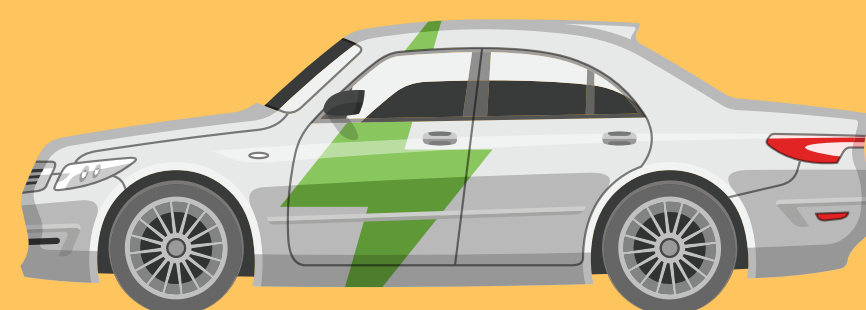
Emergency towing



Gas station

### Emergency service flow (the out-of-power condition)

EVs



Out of power



Service operator

No recharging service available



Emergency towing

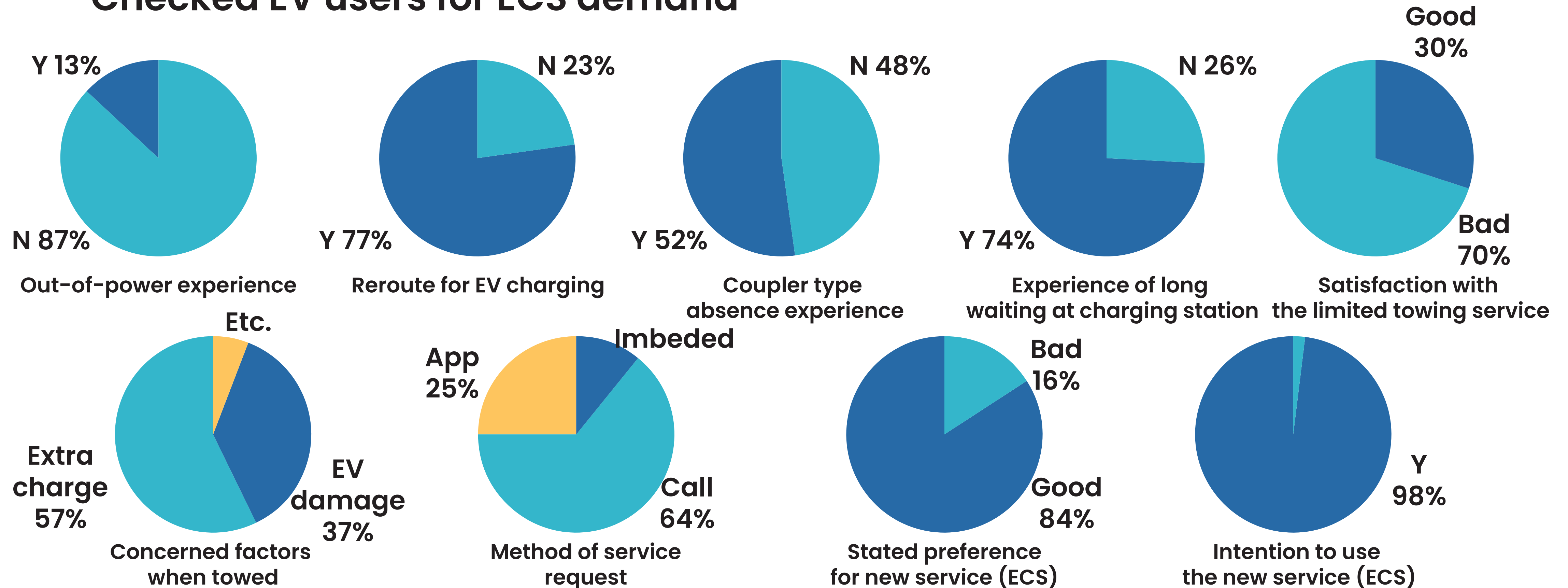


# Introduction

## Demand of EVs Users in current stage of EV emergency charging service (ECS)

Demand survey in 2022 (ECS for out-of-powered EVs)

Checked EV users for ECS demand





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# Introduction

## Early stage of EV emergency charging service(ECS) development

Being developed ECS in many countries

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THE INFRASTRUCTURE

### BoostEV

IS AN ON-DEMAND MOBILE EV CHARGING NETWORK, LIKE UBEREATS FOR HUNGRY EVS

SparkCharge's new platform lets drivers order up a fast charge anytime, anywhere

By Charles Morris

The EV ecosystem is a work in progress, and when it comes to charging infrastructure, there are some key pieces missing from the puzzle. There will surely be a need for some form of portable charging on demand, and this is the niche that SparkCharge is looking to fill with its new app platform, BoostEV. The company's modular, portable system—called the Roadie—is designed to make DC fast charging mobile. Now, EV drivers can order a charge at the push of a button on a smartphone app the way you might order a ridehare vehicle—anytime, anywhere.

SparkCharge co-founder and CEO Joshua Aviv spoke with Charged back in 2019, when the Roadie was in pre-production, and the company was working with prototypes. Now SparkCharge has deployed its system with the first wave of customers. A recent appearance on Shark Tank that ended in a deal with celeb investors Mark Cuban and Lori Greiner brought the company an avalanche of publicity.

In February, the company officially launched its new BoostEV platform in select cities—it's now available in Austin, Boston, Chicago, Dallas, Los Angeles, New York City, Raleigh, Richmond, San Diego, San Francisco and Santa Cruz. Launch partners include Allstate Roadside, Spiffy and others who teamed up with SparkCharge to create a quick and convenient charging service that can deliver a portable Roadie charging system to any location the driver desires.

"When SparkCharge appeared on Shark Tank, I knew they were on the cusp of something game-changing, and this is it," said Mark Cuban. "They have created a new, innovative EV charging infrastructure that eliminates the stress of range anxiety for all EV owners."

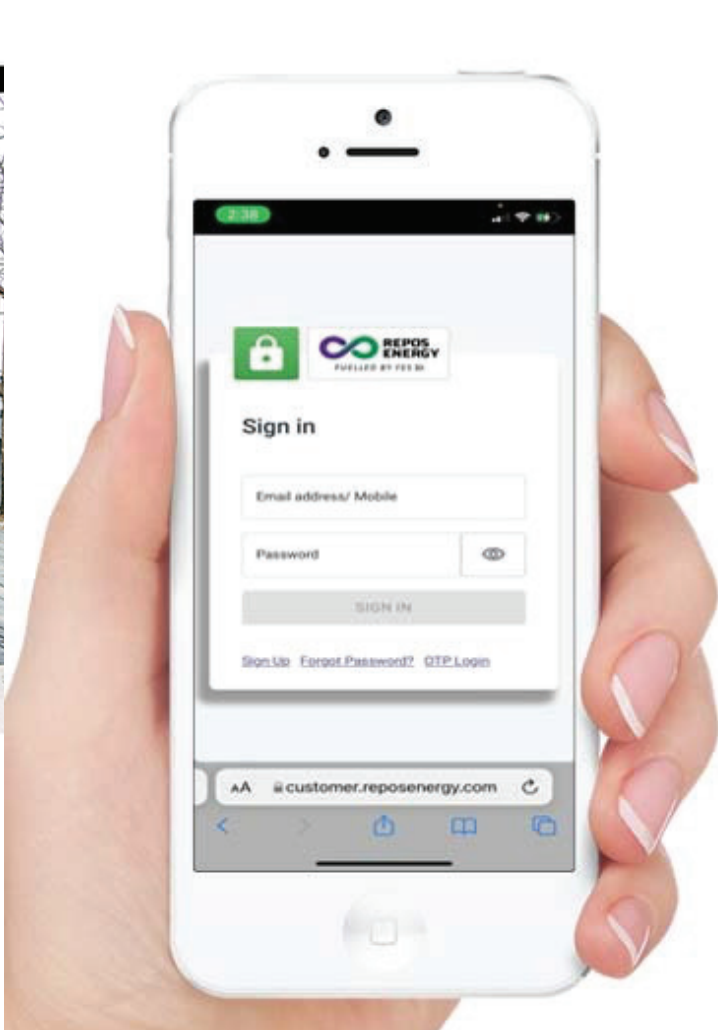
Charged recently sat down with Joshua for an update on BoostEV, which he describes as "the app that lets electric vehicle owners charge their EV's anywhere with the click of a button—like UberEats or GrubHub for hungry EV's."

**Q&A with co-founder and CEO Joshua Aviv**

**Q:** Charged: Congratulations on graduating from the prototype phase into production. Tell us more about your new business model.

**A:** Josh: Now we're in full production, we're rocking and rolling. The factory in Buffalo is shipping out units every day now. That's basically fully operational. We can ship thousands of units a year now.

When it comes to the business model, I think previously people saw us as a roadside use case, and while that's true, BoostEV is not just roadside—it's on-demand. It's charging as a service, or CAAS. Anytime, anywhere,

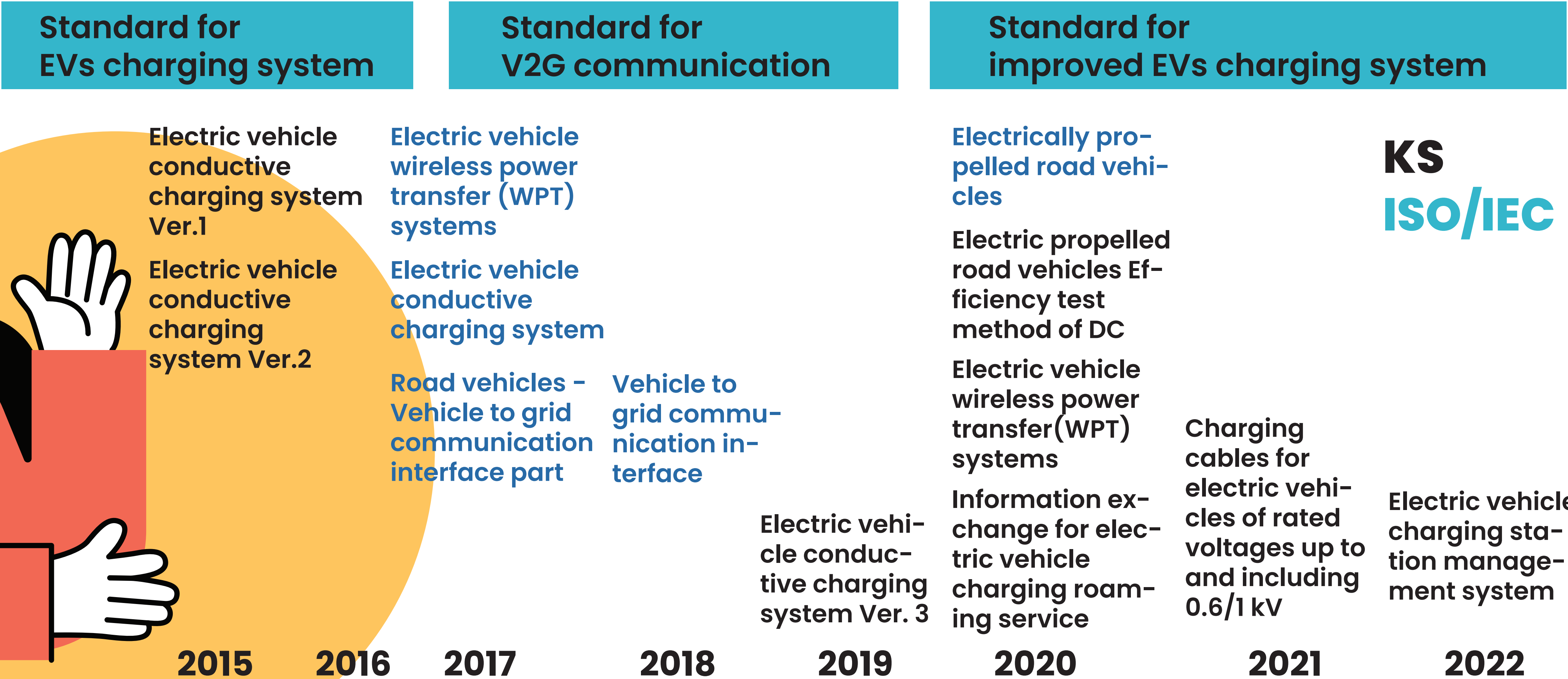




# Introduction

## Standard trends related to EVs charging

Development of several domestic and international standards related to EVs charging systems



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# Introduction

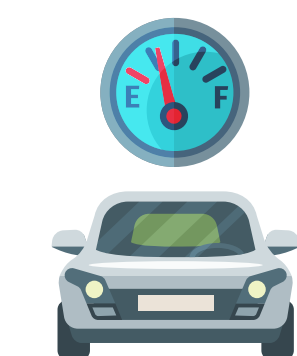
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Need to organize the information exchange scheme to embrace

Service scope

Smart cities (local governments)

Service participants



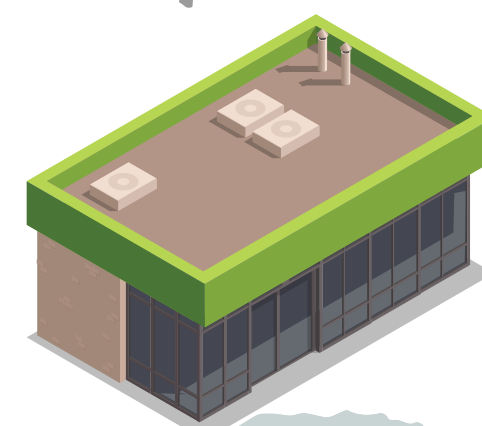
EV  
User



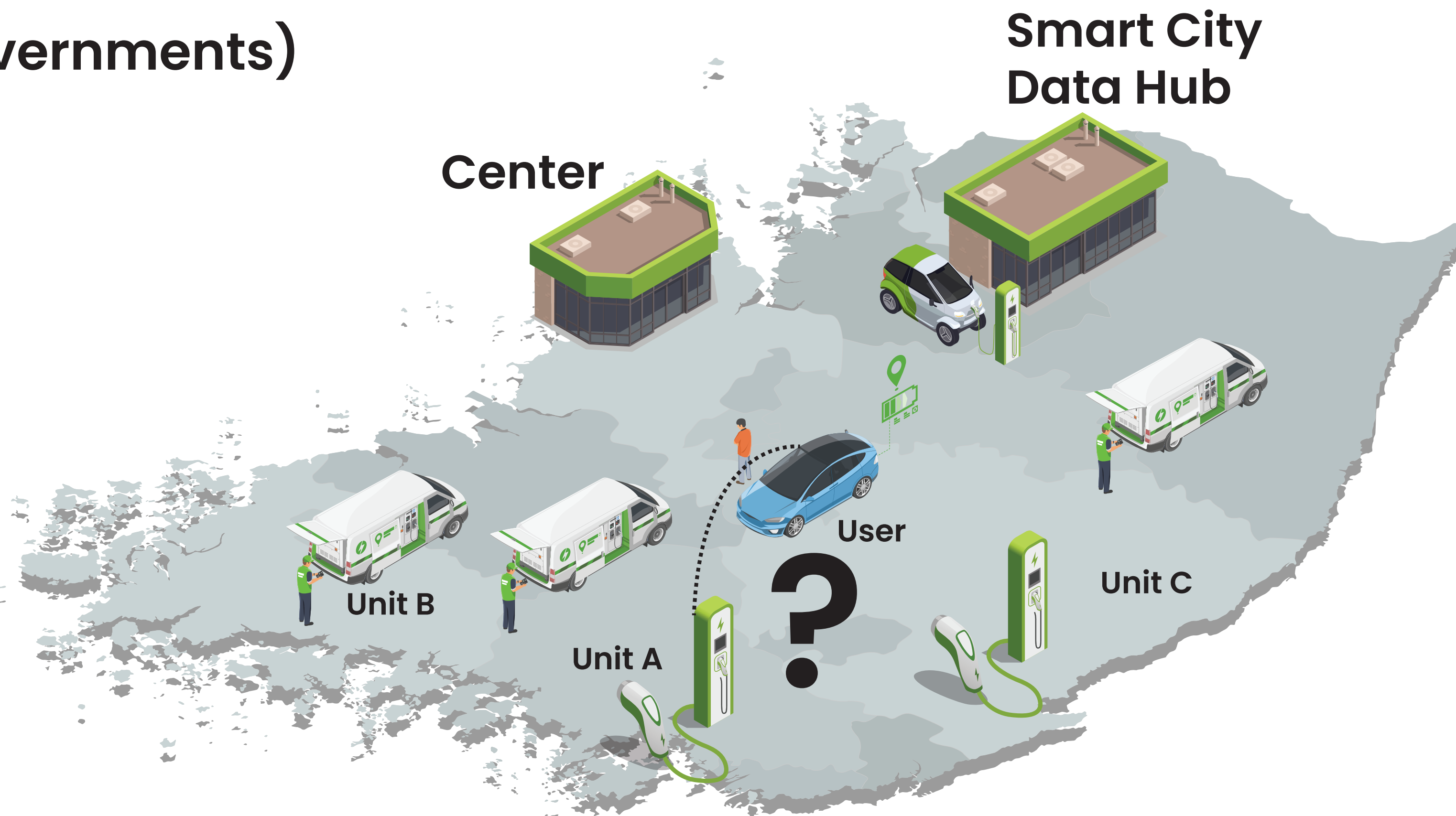
Service  
unit



Center



Smart city  
data hub



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# 2.Contents

Information Exchange  
Scheme for Electric  
Vehicle Emergency  
Charging Services  
Connected to Smart  
City Data Hub





# 2

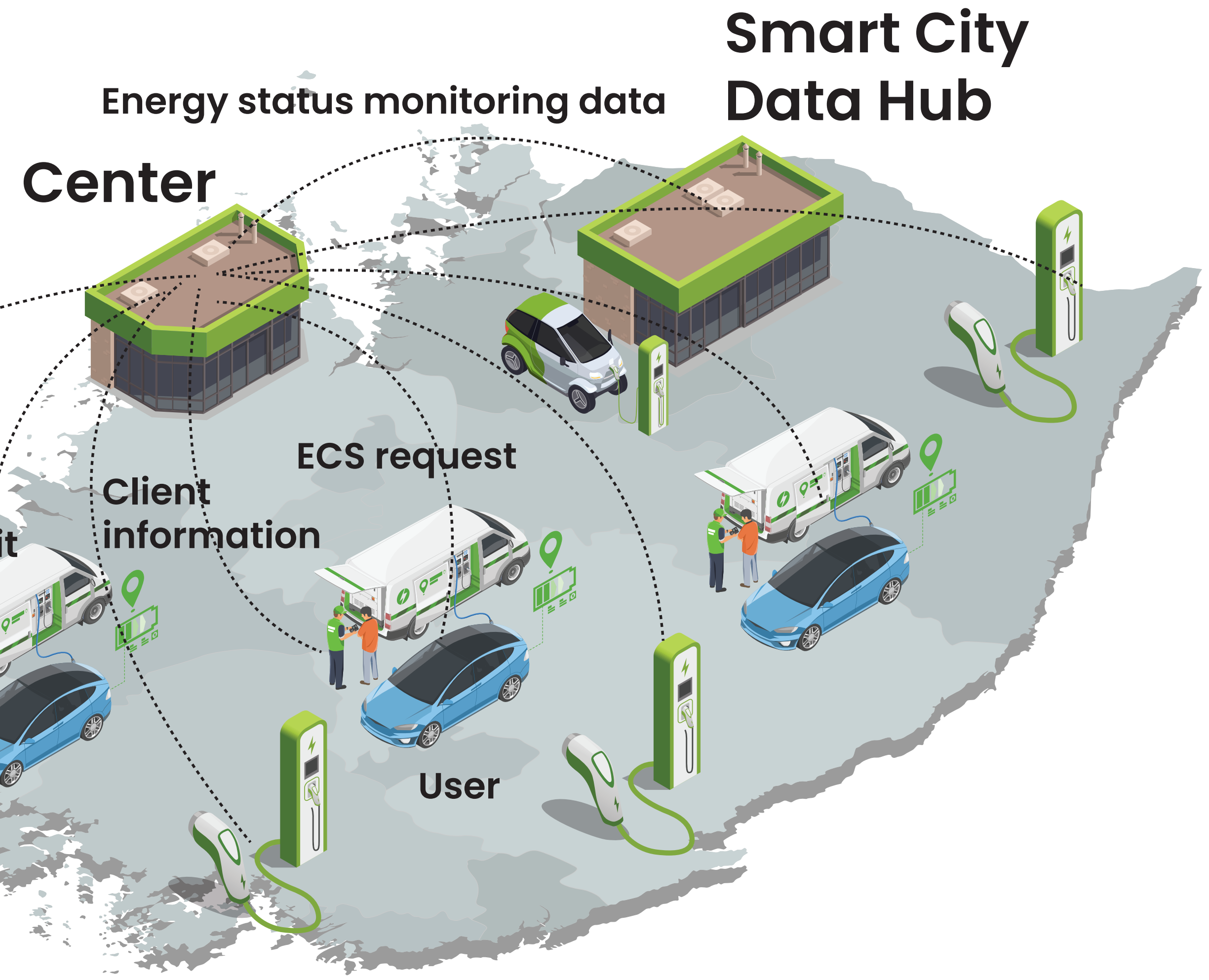
## Smart Energy City Action Forum

# Contents

### Data and information linkage structure of ECS

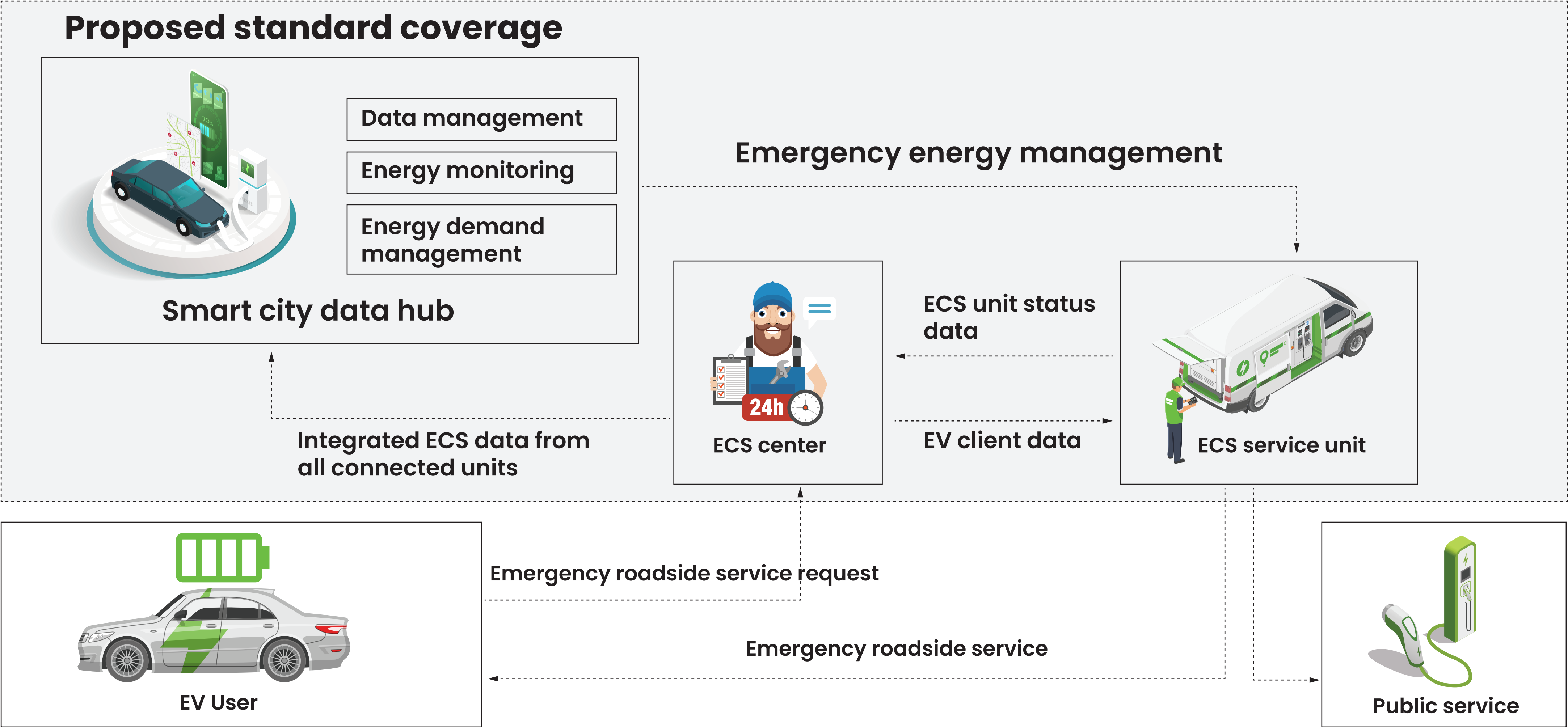
Local ECS unit data  
(basic and status info; e.g.,  
the amount of electricity held, etc.)

Energy information management  
in municipal territory  
for emergency condition



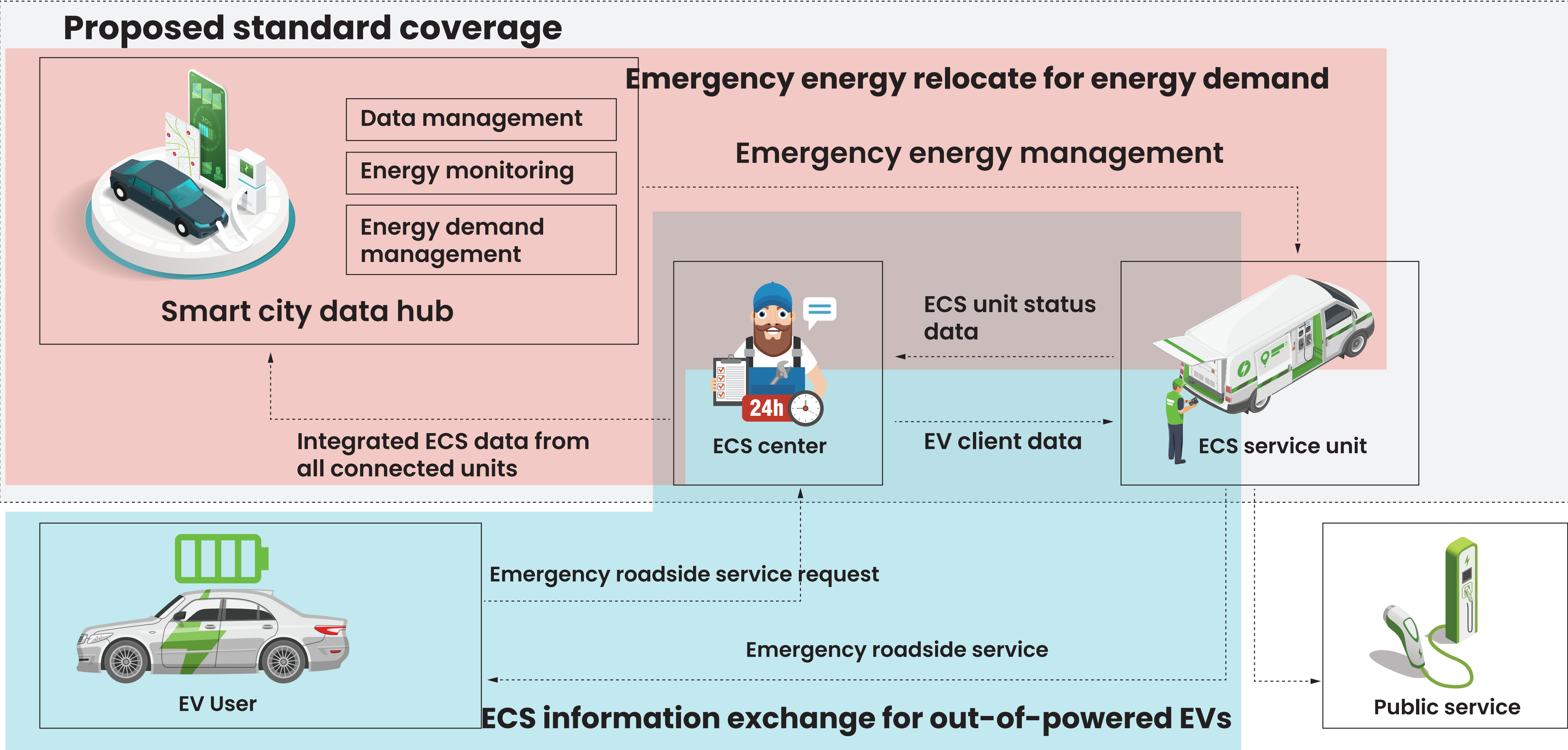
# Contents

## Data and information linkage structure of ECS



# Contents

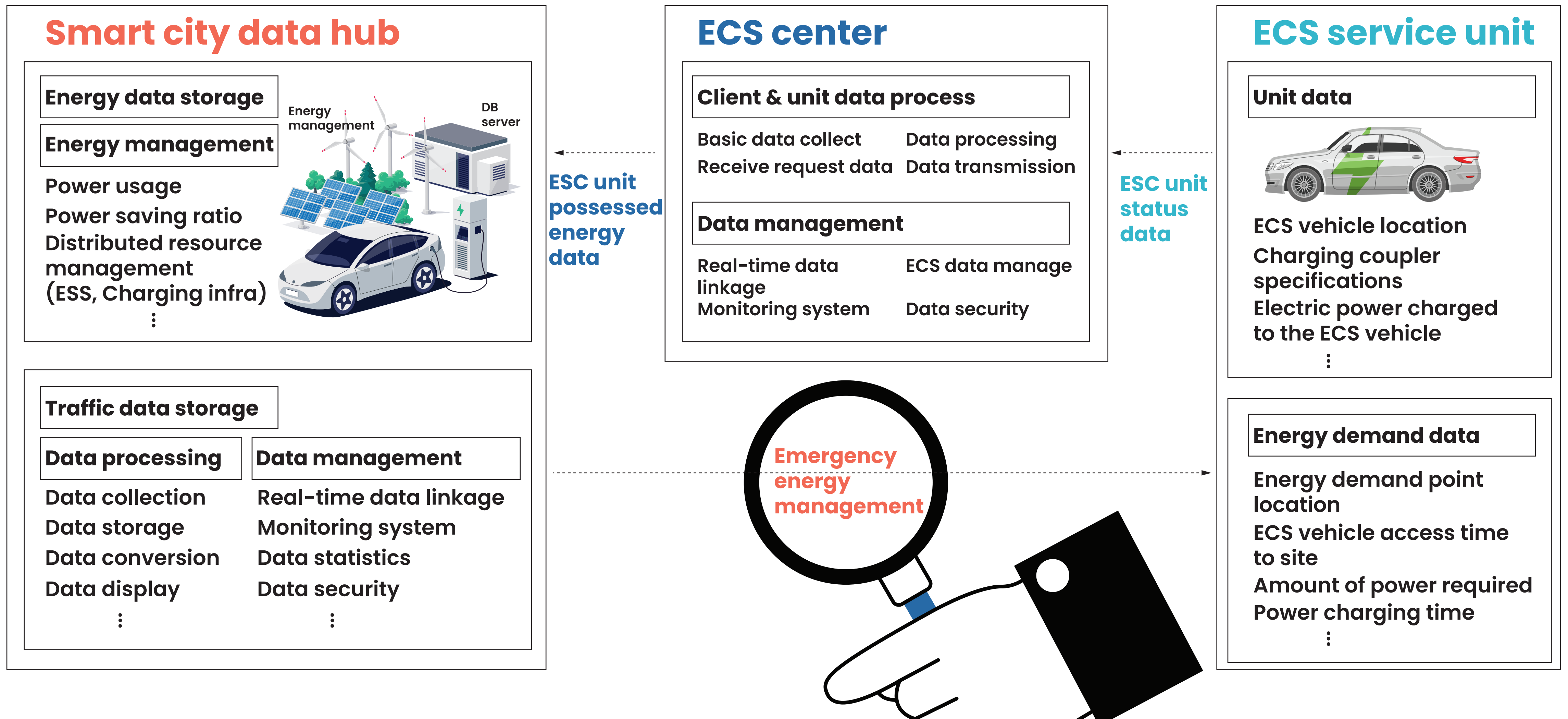
## Data and information linkage structure of ECS





# Contents

## Emergency energy relocate for energy demand



# Emergency energy relocate for energy demand

# Information exchange scheme for smart city emergency energy relocate



ECS unit basic information

ECS unit status information

### Recharging target basic information

### Recharging target status information

### Recharging target request information

[illegible]

## ECS service unit

[illegible]

## Integrated ECS data from all connected units

구분	항목	내용	비고
기본 정보	결구 번호	· 건물종결처리번호	
	결구 년	· 건물종결처리번호	
	결구 월	· 건물종결처리번호	
	결구 일	· 건물종결처리번호	
	결구 시	· 건물종결처리번호	
	결구 분	· 건물종결처리번호	
제외기 사항	· 출진 대상자 제외기		
	· 출진 대상자 지움		
요청 정보	· 출진 대상자가 있음		
현황	GPS 유도 위치 파보	· 해당자가 필요한 대상자	
	GPS 유도 위치 파보	· 해당자가 필요한 대상자	

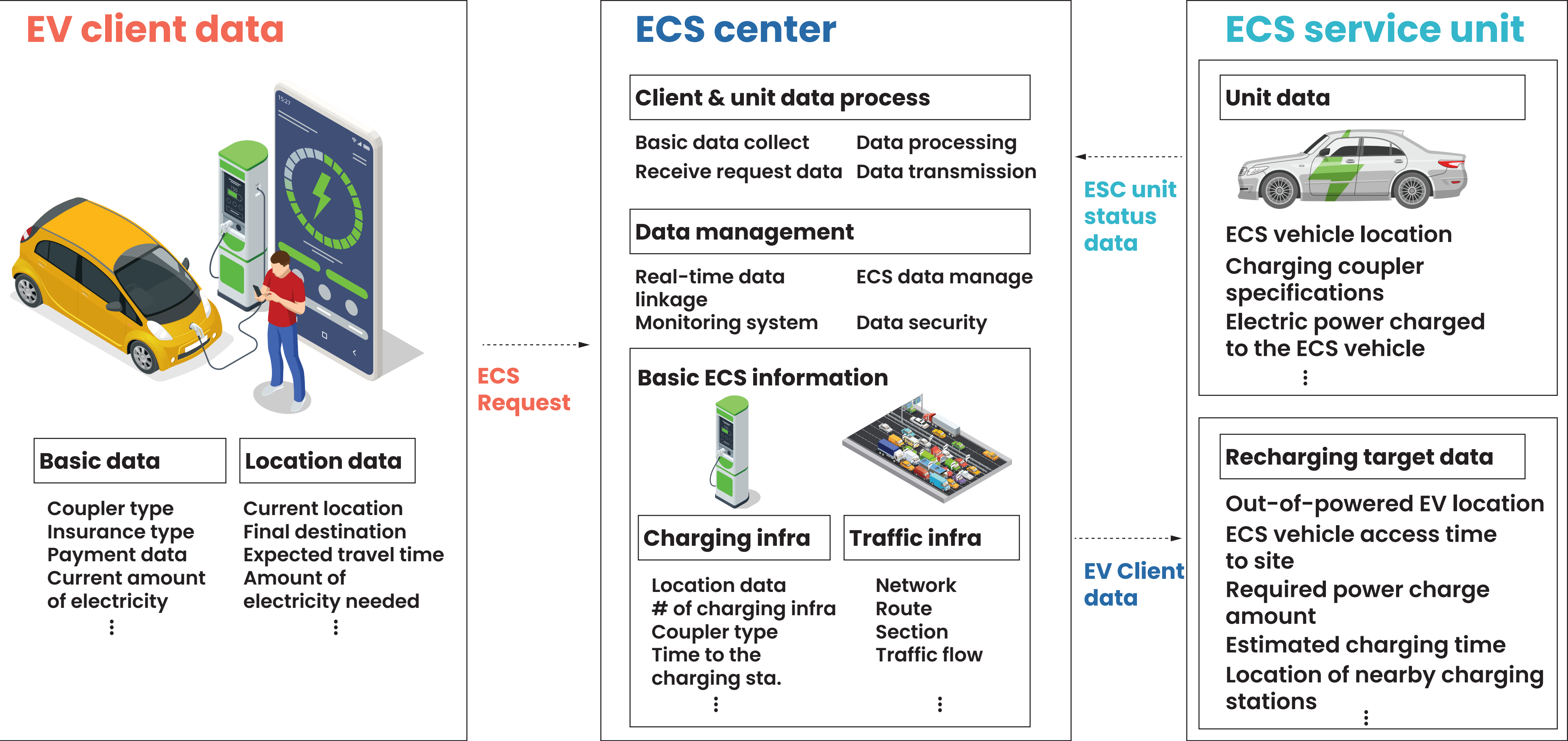
## Emergency energy management data



Contents

Emergency energy relocate for energy demand

ECS information exchange for out-of-powered EVs





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# Contents

## ECS information exchange for out-of-powered EVs

### Information exchange scheme for out-of-powered EVs recharging

ECS service unit

ECS center

ECS service unit

ECS unit basic information  
ECS station status information  
ECS vehicle status information  
ECS battery status information  
ECS dispatch information

Client basic information  
Client's EV charging information  
Client's EV location information  
Client request information

4. 데이터 교환정보 정의

4.1. 데이터 세트 01 (전급송전서비스 제공자 - 전급송전서비스 운영자)

전급송전서비스 운영자에게 제공하는 기본정보(위치, 전화번호, 전급송전서비스 시스템 정보, 보유 충전 연료기 용량)와 전급송전서비스 운영자에게 제공하는 상황정보(충전 가능 여부, 충전 가능 전압 등) 데이터 세트는 <표 3-13>과 같이 정의된다.

<표 3-13> 전급송전서비스 제공자가 운영자에게 전달하여야 하는 데이터(데이터 세트 01)

구분	데이터명	내용	비고
기본정보	제공자 등록 ID	전급송전서비스 운영자의 계약된 서비스 제공자 ID	
	제공자 사업등록번호	제공자 사업등록번호	
	사업장 이름	제공자 대표자 이름	
	사업장 위치	전급송전사업장 위치(GPS, 위도, 경도)	
기본정보	사업장 도로명주소	전급송전사업장 도로명주소	
	사업장 전화번호	제공자 대표자 및 센터 전화번호	
	휴대폰 번호	제공자 대표자 및 현장요원 휴대폰 번호	
	사업장 이메일	제공자 대표자 및 센터 e-mail	
상황정보	현장 주소	제공자 현장 주소	
	계약 일자	제공자가 서비스 계약자와 계약한 일자	
	등록 충전 가능 수	제공자가 운영하는 현장 충전요원 수	
	보유 배터리의 용량	제공자가 보유한 전급송전차량 가능 배터리의 용량	
상황정보	보유 배터리의 충전량	제공자가 보유한 전급송전차량 가능 배터리의 충전량	
	보유 배터리의 개수	제공자가 보유한 전급송전차량 가능 배터리의 개수	
	보유 차량의 충전	제공자가 보유한 충전 차량의 충전	
	충전 가능 차량 수	현장 충전 가능한 차량 수	
상황정보	충전 가능 차량 수	현장 충전 가능한 차량 수	
	타 충전 차량 위치	타 충전차량 위치(GPS, 위도, 경도)	
	배터리별 충전량	현재 전급송전차량 가능 배터리의 충전량	
	충전 가능 여부	현재 전급송전차량 가능 배터리의 충전 가능 여부	
상황정보	충전 일자	충전 일자(년, 월, 일)	
	충전 일자	충전 일자(년, 월, 일)	

ECS unit status data

4.2. 데이터 세트 02 (전급송전서비스 운영자 - 전급송전서비스 제공자)

이용자에게 전급송전서비스를 제공하는 현장 전급송전서비스 제공자에 대한 기본정보(위치, 전화 번호, 전급송전서비스 시스템 정보, 보유 충전 연료기 용량)와 이용자에게 전급송전서비스를 제공하는 현장 전급송전서비스 제공자에 대한 상황정보(충전 가능 여부, 충전 가능 전압 등)는 <표 3-14>과 같이 정의된다.

<표 3-14> 전급송전서비스 운영자가 제공자에게 전달하여야 하는 데이터

구분	데이터명	서비스 제공자
기본정보	이용자 ID	서비스 제공자
	이용자 이름	전기
	이용자 휴대폰 번호	전기
	전기 자동차 차량번호	전기
상황정보	전기 자동차 위치	현장
	요청 위치	요청 위치
	요청 차량	요청 차량
	요청 시간	요청 시간
상황정보	전기 자동차 충전 가능 여부	전기 자동차 충전 가능 여부
	전기 자동차 충전 가능 전압	전기 자동차 충전 가능 전압

EV client data





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# 3. Conclusion

**Information Exchange Scheme for Electric  
Vehicle Emergency Charging Services  
Connected to Smart City Data Hub**

Conclusion

Expecting efficiency enhancement in EVs charging ecosystem

based on the standardization of “EVs ECS information exchange scheme”

Activation of emergency charging business



Increased utilization of ECS manager-provider information exchange

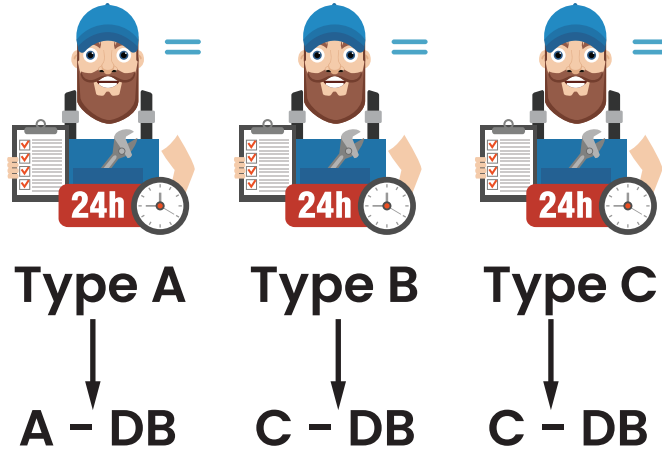


Improving EV service

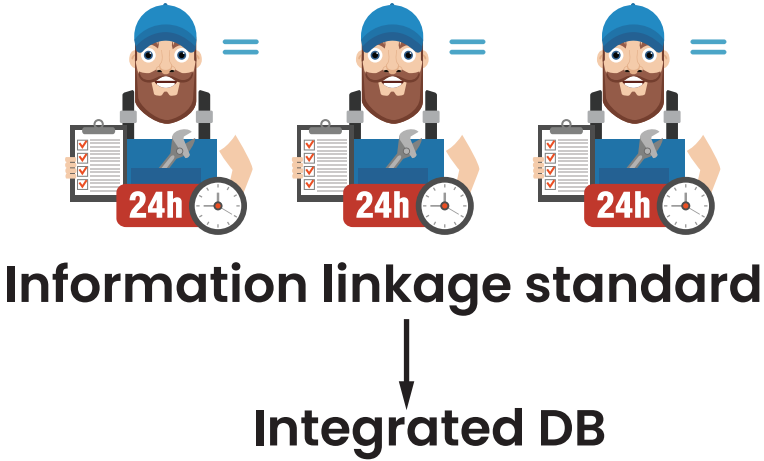


Integration of various subject data within the same service

Before

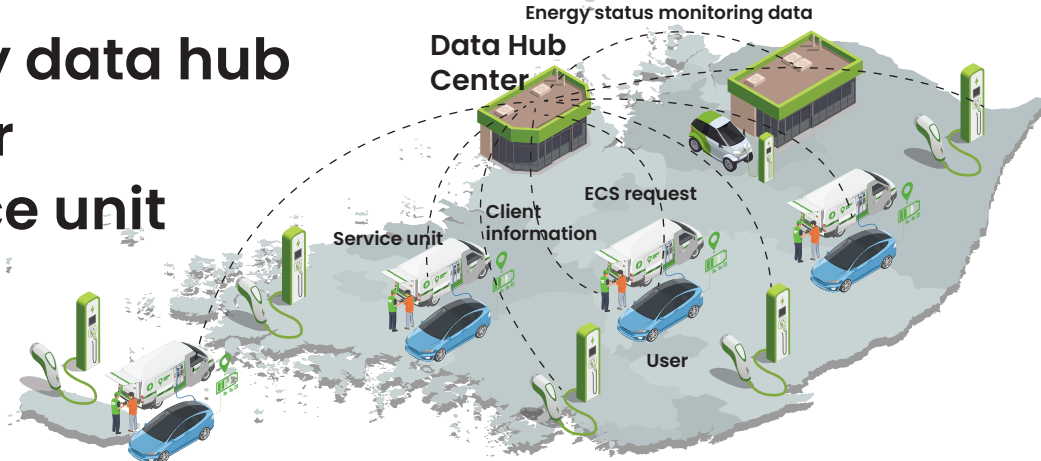


After



Arrange smart city emergency energy demand solutions

Smart city data hub  
ECS center  
ECS service unit



Efficient emergency roadside service for EV users

