

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

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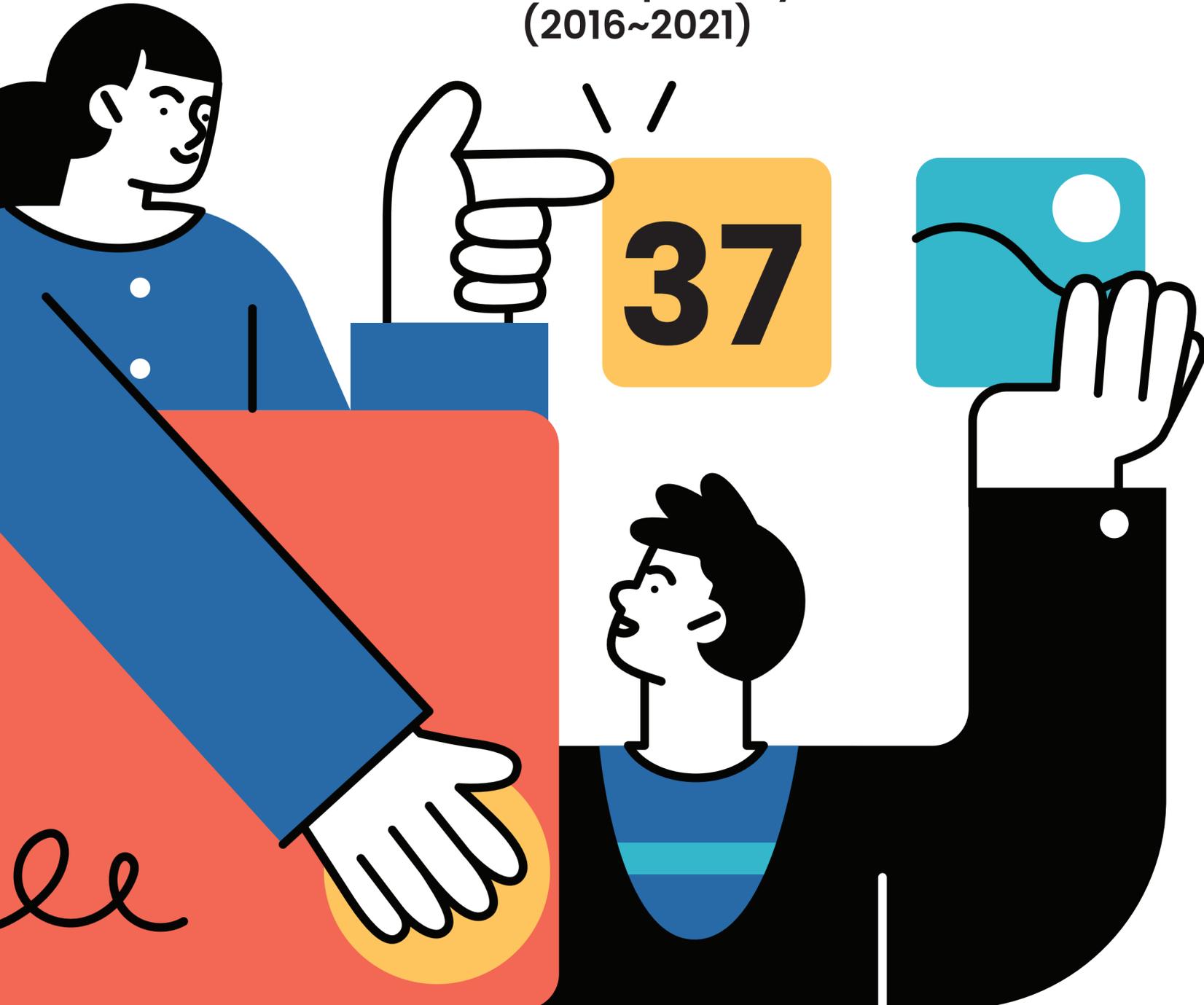


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- 1. Introduction**
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Increased 37 times higher than the one in the past 6 years (2016~2021)

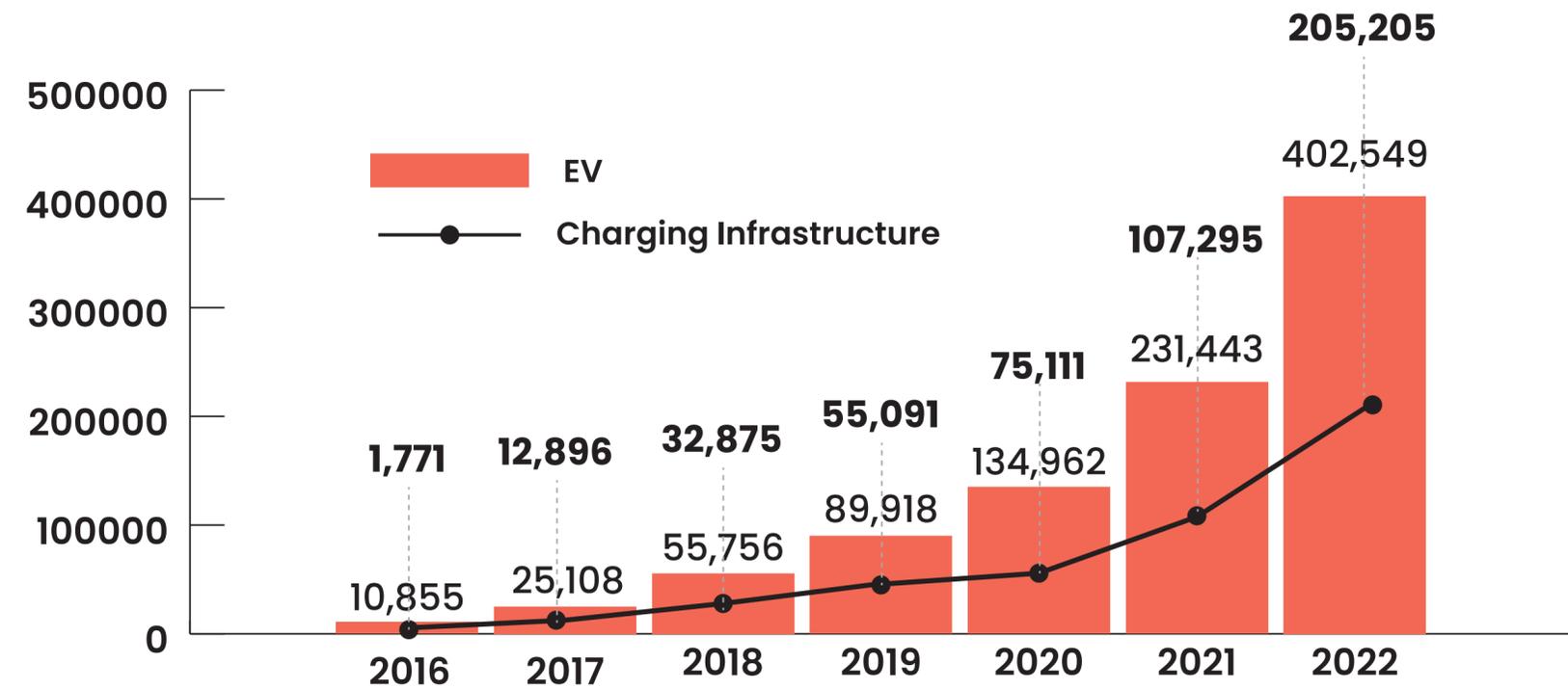


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Smart Energy City Action Forum

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



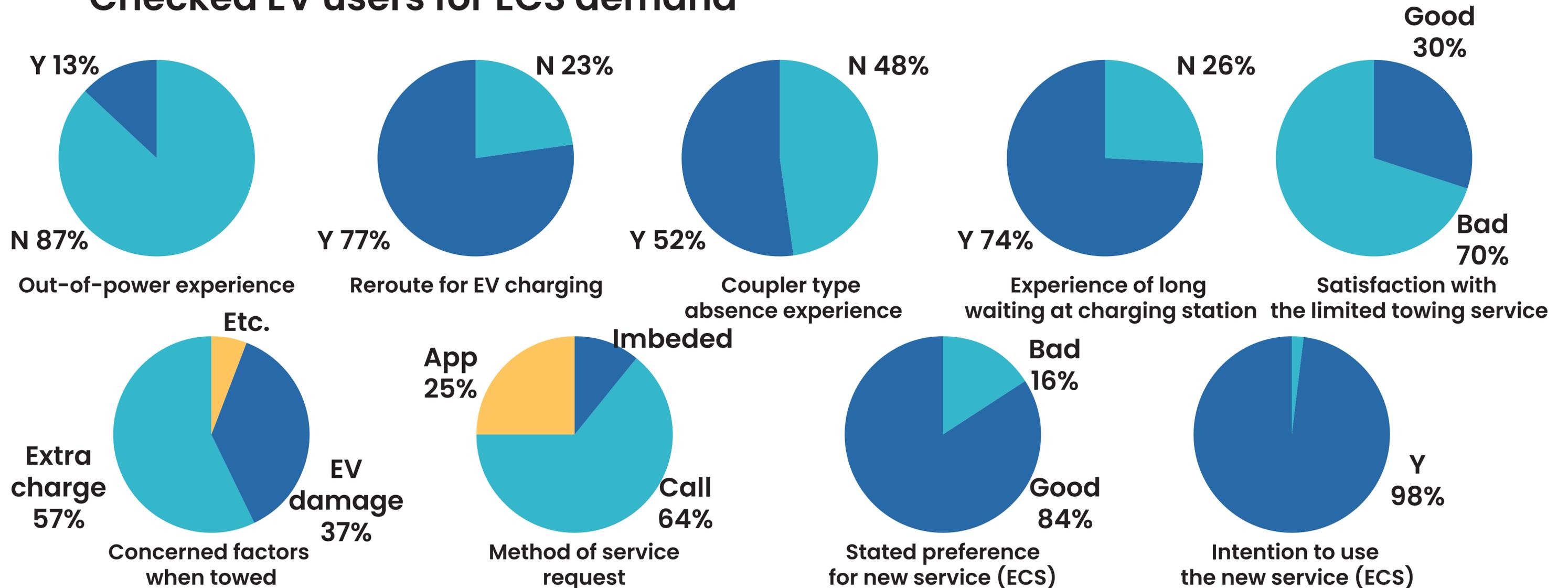
Emergency towing



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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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 ridehome 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."

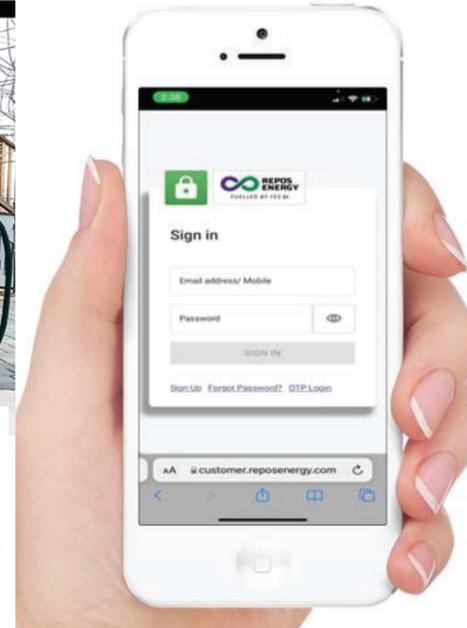
Charged recently sat down with Joshua for an update on BoostEV, which he describes as "the app that lets electric vehicle owners charge their EV's anywhere with the click of a button—like UberEats or GrubHub for hungry EV's."

Q&A with co-founder and CEO Joshua Aviv

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

Aviv: 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.



Role of Repos Energy



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Introduction

Standard trends related to EVs charging

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

Standard for EVs charging system

Standard for V2G communication

Standard for improved EVs charging system

Electric vehicle conductive charging system Ver.1

Electric vehicle conductive charging system Ver.2

Electric vehicle wireless power transfer (WPT) systems

Electric vehicle conductive charging system

Road vehicles - Vehicle to grid communication interface part

Vehicle to grid communication interface

Electric vehicle conductive charging system Ver. 3

Electrically propelled road vehicles

Electric propelled road vehicles Efficiency test method of DC

Electric vehicle wireless power transfer(WPT) systems

Information exchange for electric vehicle charging roaming service

Charging cables for electric vehicles of rated voltages up to and including 0.6/1 kV

KS
ISO/IEC

Electric vehicle charging station management system

2015

2016

2017

2018

2019

2020

2021

2022



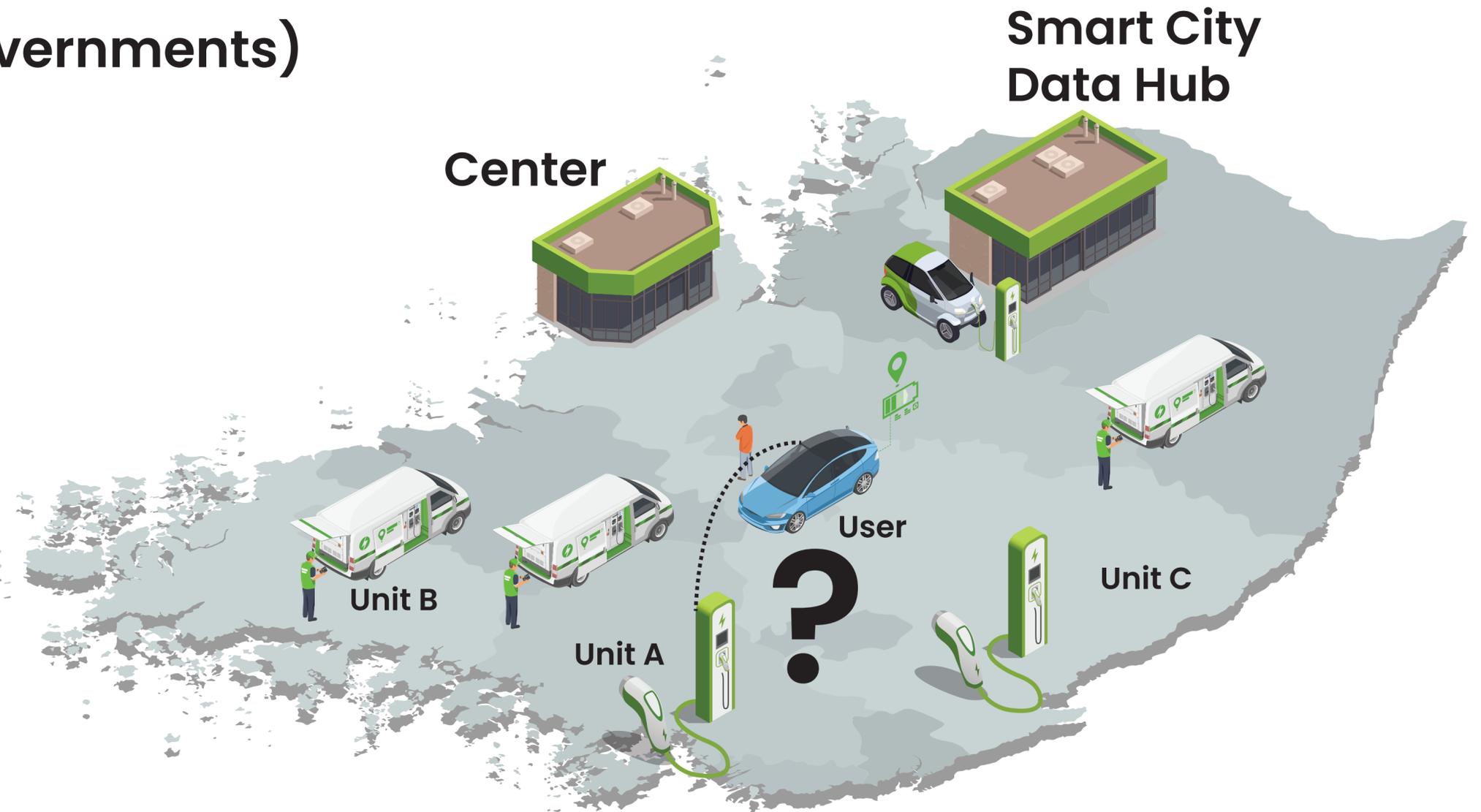
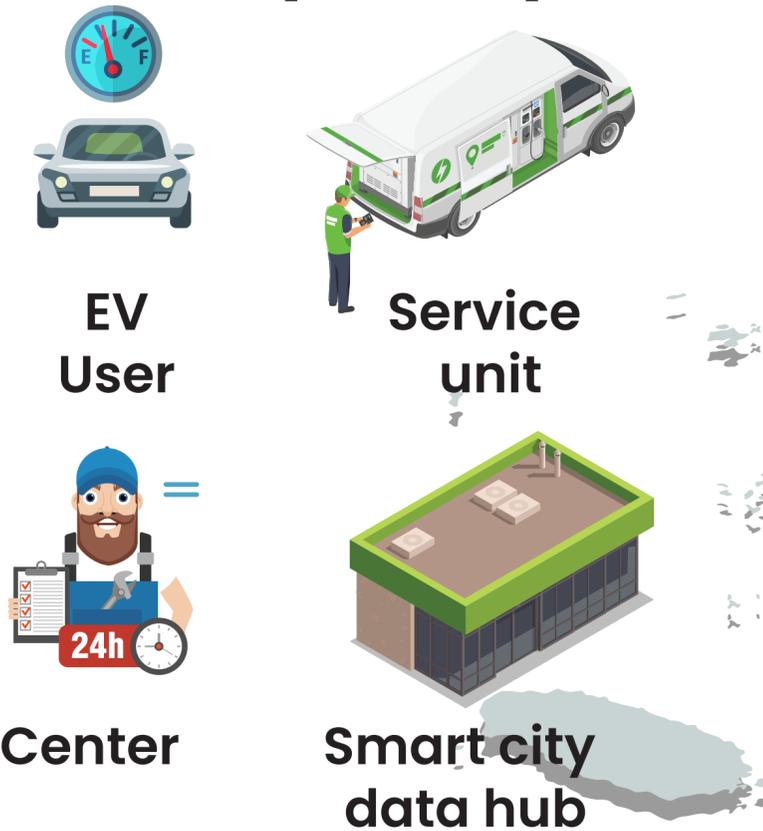
Introduction

Need to organize the information exchange scheme to embrace

Service scope

Smart cities (local governments)

Service participants



Smart Energy City Action Forum

2. Contents

Information Exchange
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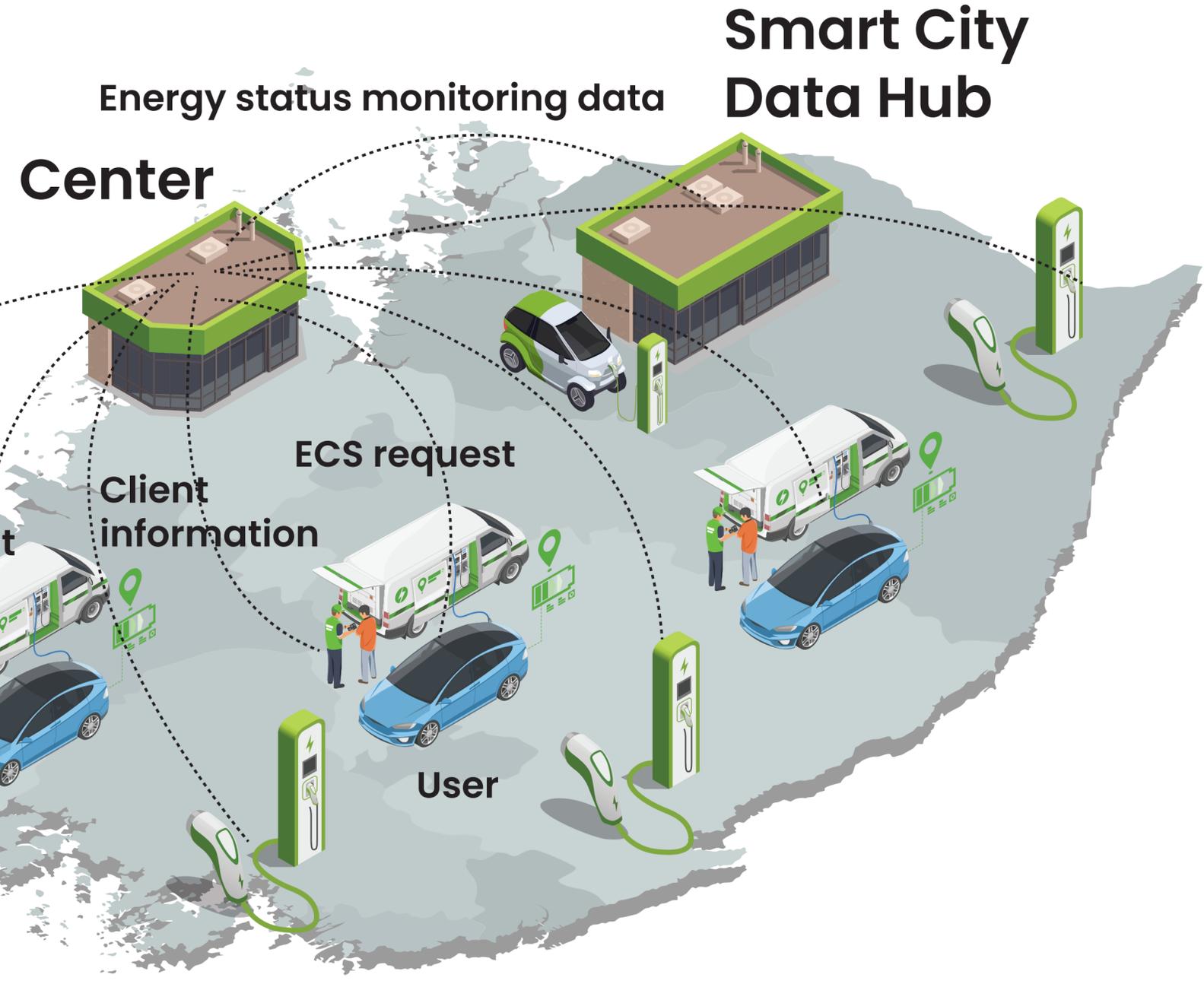
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Data and information linkage structure of ECS

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

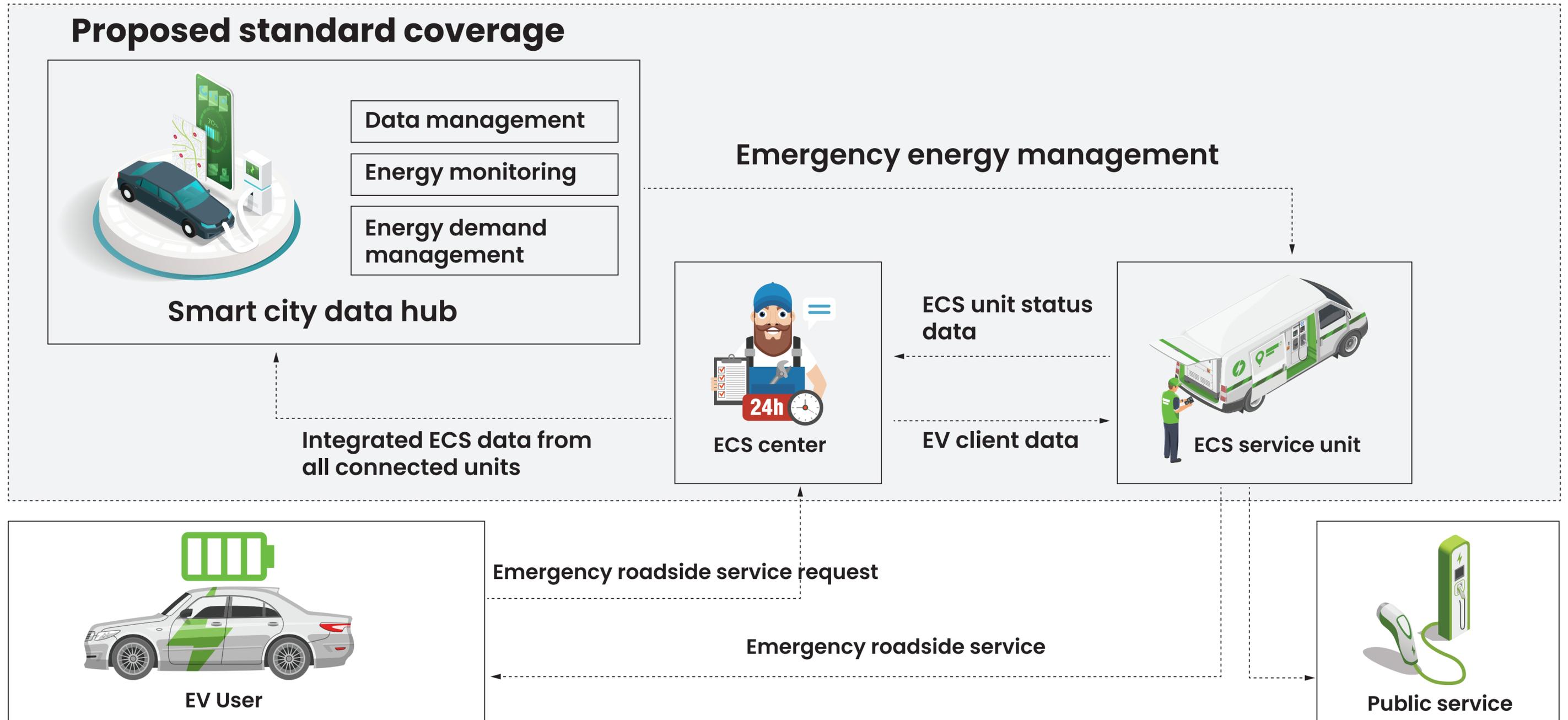
Energy information management
in municipal territory
for emergency condition



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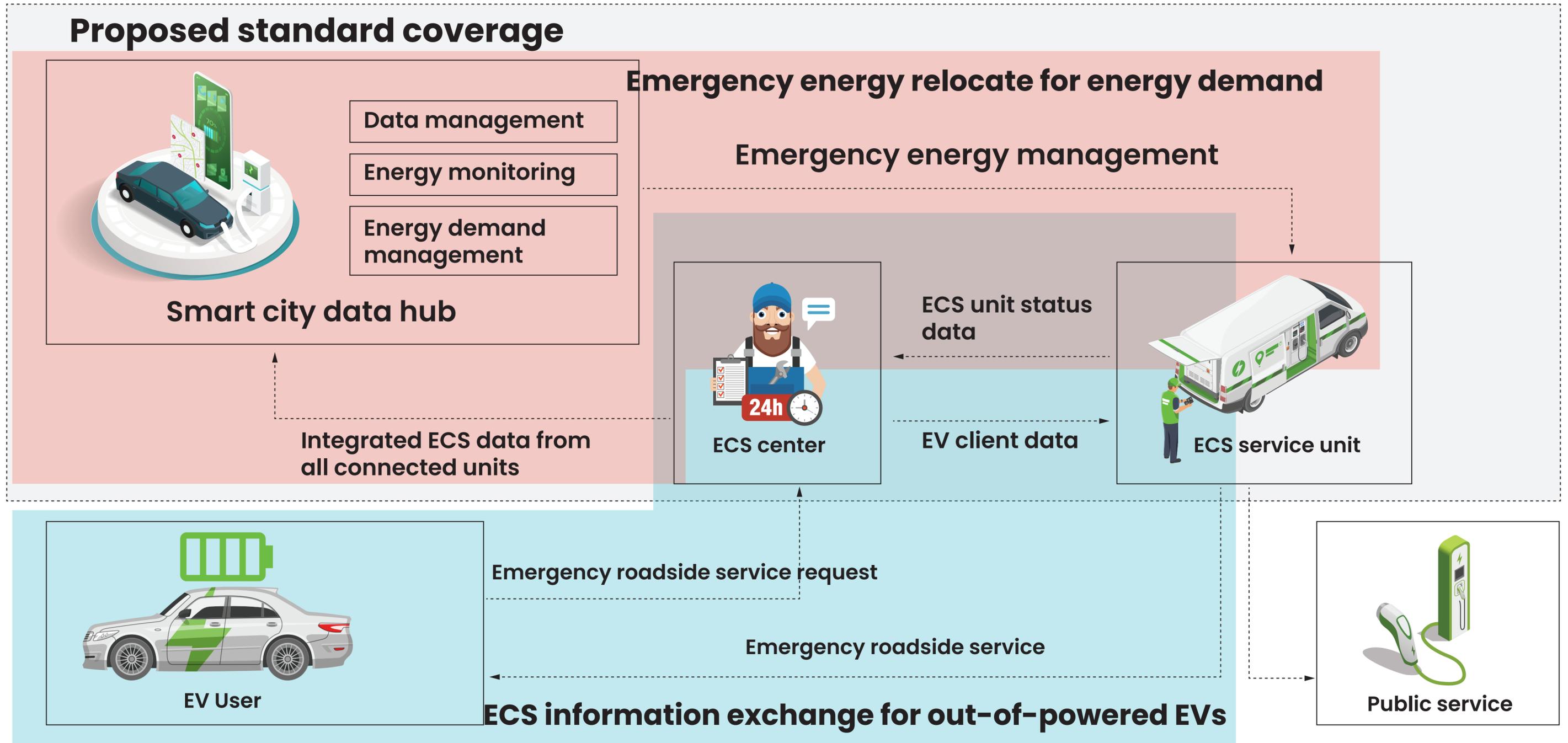
Data and information linkage structure of ECS



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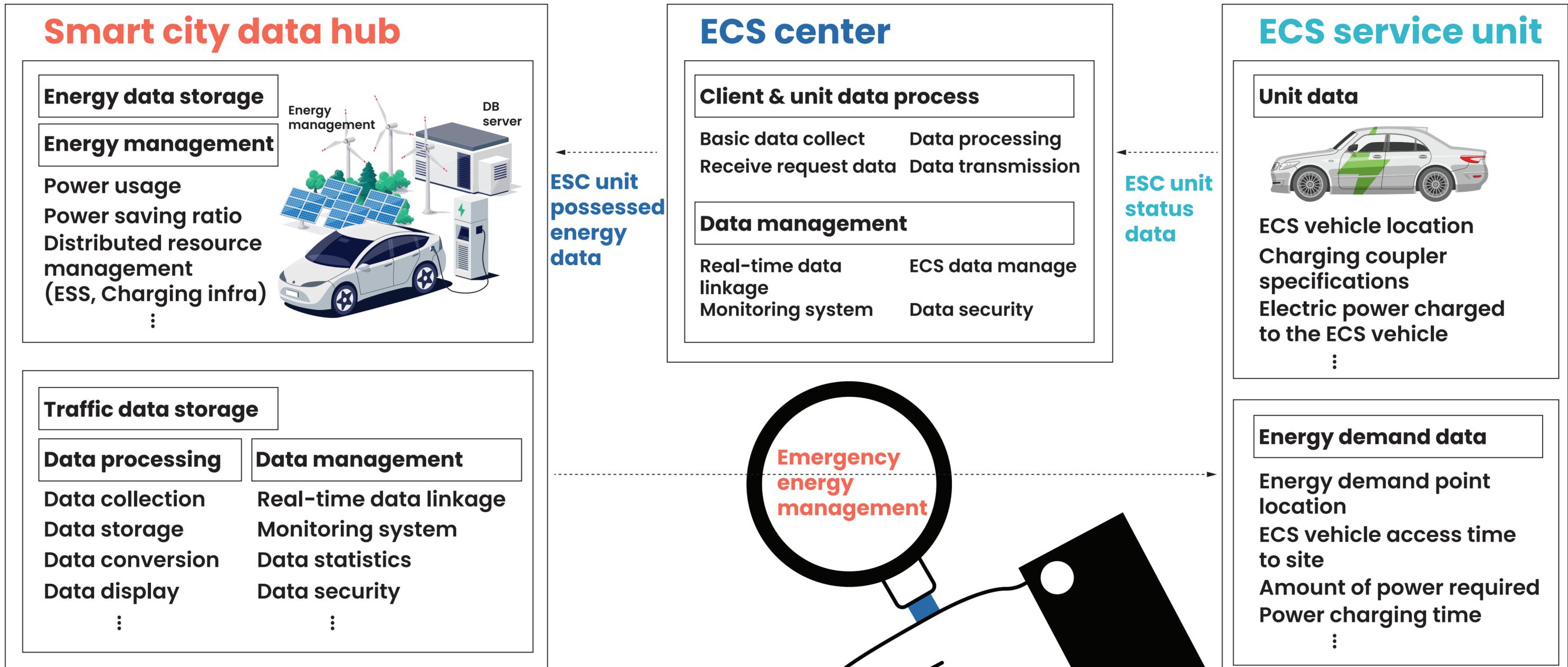
Data and information linkage structure of ECS



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Emergency energy relocate for energy demand

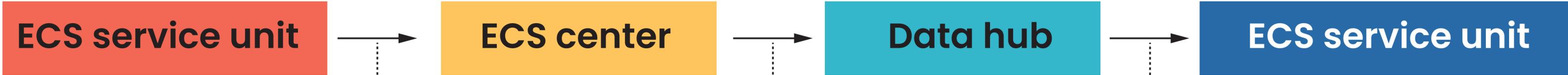


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Contents

Emergency energy relocate for energy demand

Information exchange scheme for smart city emergency energy relocate



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

4. 데이터 교환정보 명목

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

긴급충전서비스 운영자에게 제공하는 기본정보(배터리, 충전번호, 긴급충전서비스 시스템 정보, 복
 무 통신 연결기 정보) 긴급충전서비스 운영자에게 제공하는 상용정보(충전 가능 여부, 충전 가능
 전압량 등) 데이터 세트는 <표 3-13> 같이 정리된다.

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

구분	데이터명	내용	비고
기본정보	제공자 정보 ID	긴급충전서비스 운영자에게 제공된 서비스 제공자 ID	
	제공자 사업등록번호	제공자 사업등록번호	
	사업장 이름	제공자 대표자 이름	
	사업장 위치	긴급충전사업장 위치(GPS, 주소, 번호)	
	사업장 도로명주소	긴급충전사업장 도로명주소	
	사업장 전화번호	제공자 대표자 및 관리번호	사업장
	사업장 주소	제공자 대표자 및 관리번호 주소	기본정보
	사업장 지역명	제공자 대표자 및 관리번호 지역명	
	사업장 주소	제공자 대표자 주소	
	사업장 도로명주소	제공자 대표자 도로명주소	
상용정보	복합 충전 가능 여부	제공자가 운영하는 복합 충전정보 여부	
	복합 충전 가능 충전 수	제공자가 보유한 긴급충전차량 수	
	복합 충전 가능 충전 수	제공자가 보유한 긴급충전차량 수	
	복합 충전 가능 충전 수	제공자가 보유한 긴급충전차량 수	
	복합 충전 가능 충전 수	제공자가 보유한 긴급충전차량 수	
	복합 충전 가능 충전 수	제공자가 보유한 긴급충전차량 수	
	복합 충전 가능 충전 수	제공자가 보유한 긴급충전차량 수	
	복합 충전 가능 충전 수	제공자가 보유한 긴급충전차량 수	
	복합 충전 가능 충전 수	제공자가 보유한 긴급충전차량 수	
	복합 충전 가능 충전 수	제공자가 보유한 긴급충전차량 수	

ECS service unit

ECS unit basic information
 ECS unit status information

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

이용자에게 긴급충전서비스를 제공하는 현장 긴급충전서비스 제공자에 대한 기본정보(위치, 전화
 번호, 긴급충전서비스 시스템 정보, 복무 충전 연결기 정보) 이용자에게 긴급충전서비스를 제공하는
 현장 긴급충전서비스 제공자에 대한 상용정보(충전 가능 여부, 충전 가능 전압량 등)는 <표 3-14>
 같이 정리된다.

<표 3-14> 긴급충전서비스 운영자가 제공자에게 전달하여야 하는 데이터(데이터 세트 02)

구분	데이터명	내용	비고
기본정보	이용자 ID	서비스 관리기관에 가입된 이용자 ID	
	이용자 이름	전기 자동차 이름과 모델	이용자 기본정보
	이용자 주소(번호)	전기 자동차 이름과 모델(번호)	
	전기 자동차 이름	전기 자동차 이름	
상용정보	전기 자동차 충전량	충전하는 전기 자동차 충전량(타입, 용량, 충전번호)	
	요청 위치	발신한 전기 자동차 위치(GPS, 위도, 경도)	이용자 상용정보
	요청 도로명주소	발신한 전기 자동차 위치 도로명주소	
	요청 일자	긴급충전서비스 요청 일자	
	요청 시간	긴급충전서비스 요청 시간(LUTC)	
	전기 자동차 충전량	전기 자동차 충전량(타입, 용량, 충전번호)	

Integrated ECS data from all connected units

Recharging target basic information
 Recharging target status information
 Recharging target request information

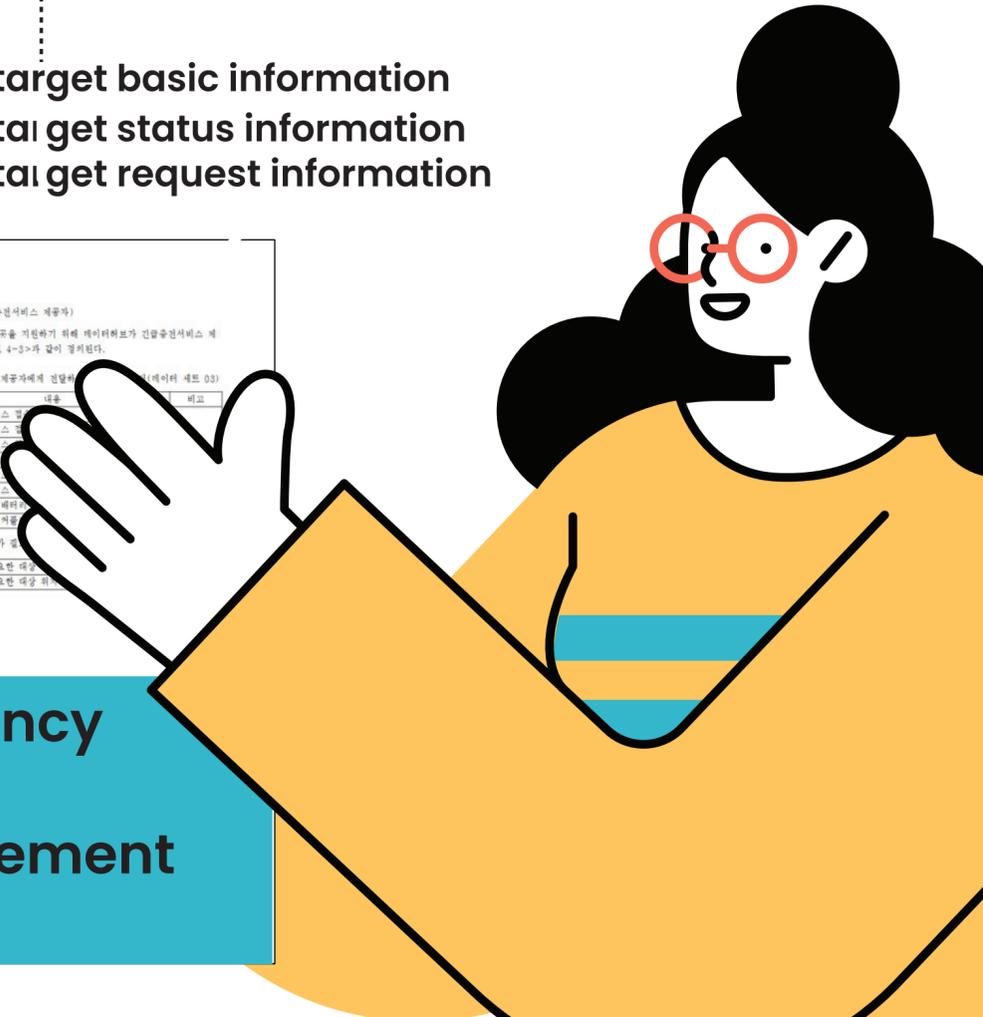
4.3. 데이터 세트 03 (데이터허브 - 긴급충전서비스 제공자)

스마트시티 영역 내 에너지가 필요한 곳을 지원하기 위해 데이터허브가 긴급충전서비스 제
 공자에게 전달하여야 하는 데이터는 <표 4-3>과 같이 정리된다.

<표 4-3> 데이터 허브가 긴급충전서비스 제공자에게 전달하는 데이터(데이터 세트 03)

구분	데이터명	내용	비고
기본정보	주소 번호	긴급충전서비스 및	
	주소 번호	긴급충전서비스 및	
	주소 번호	긴급충전서비스 및	
기본정보	주소 번호	긴급충전서비스 및	
	주소 번호	긴급충전서비스 및	
	주소 번호	긴급충전서비스 및	
요청정보	에너지 요청	에너지 요청자가 요청	
	현장 GPS 위치 좌표	에너지가 필요한 대상	
	현장 GPS 위치 좌표	에너지가 필요한 대상	

Emergency energy management data

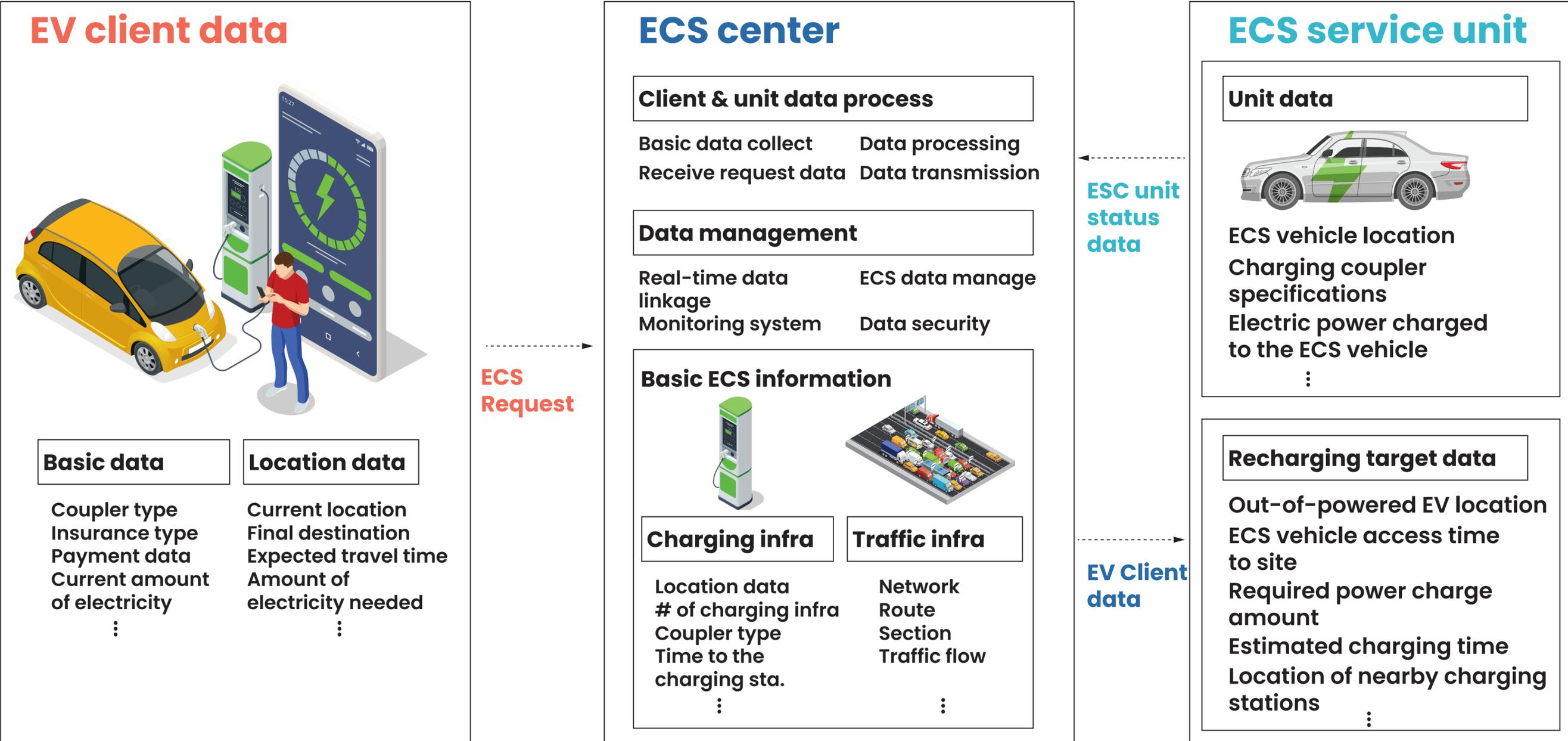


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Contents

Emergency energy relocate for energy demand

ECS information exchange for out-of-powered EVs





Smart Energy City Action Forum

3. Conclusion

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

3

Smart Energy City Action Forum

Conclusion Expecting efficiency enhancement in EVs charging ecosystem

based on the standardization of "EVs ECS information exchange scheme"

