



@EVSymposium29
#EVS29

Electric Vehicle Symposium & Exhibition

June 19-22, 2016 | du 19 au 22 juin 2016

Montréal, Québec, Canada

Organized by:



Hosted by:



In Collaboration with:



Platinum Sponsors:

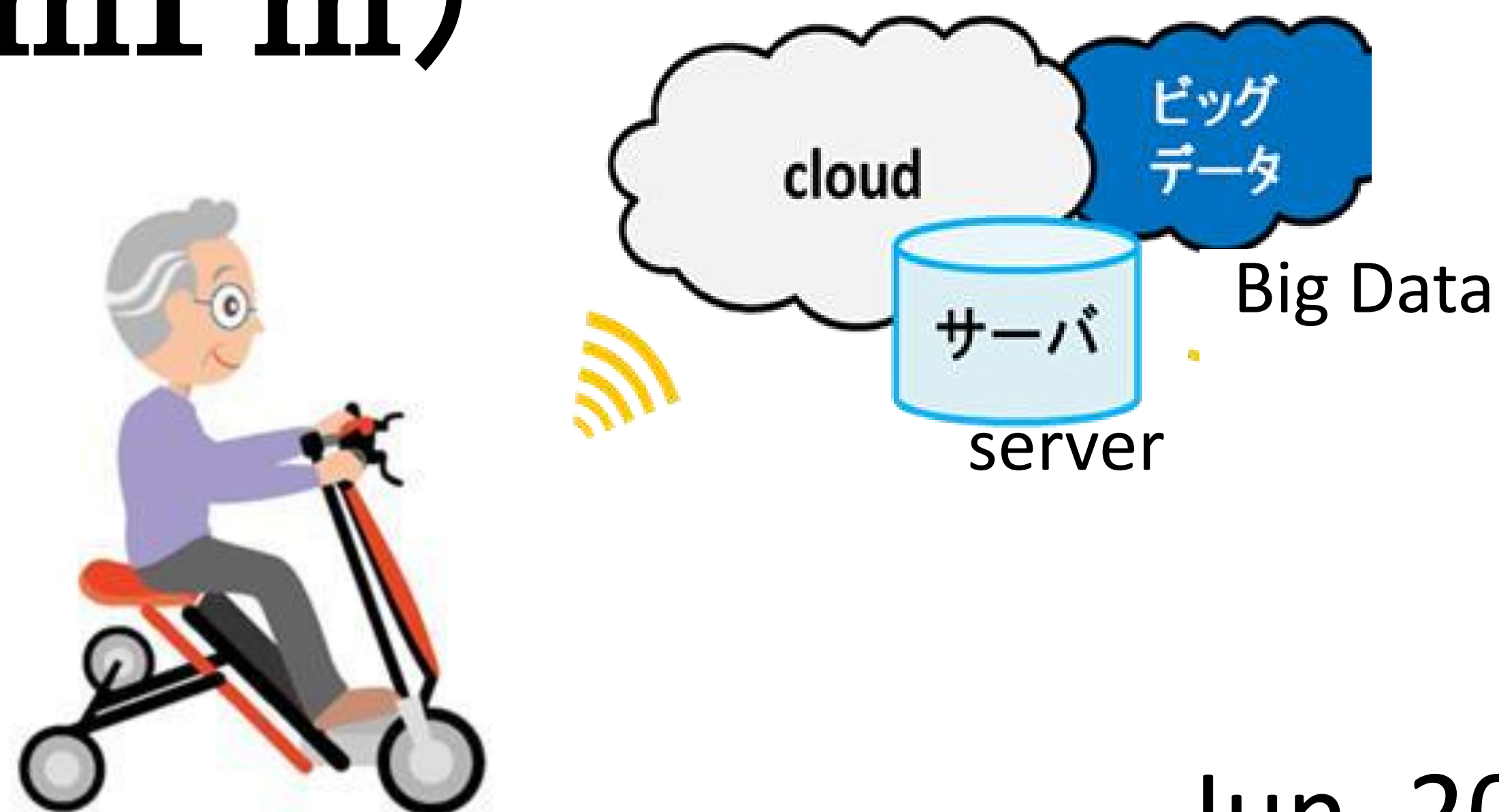


DRIVE ELECTRIC INNOVATION
PROPULSER L'INNOVATION EN MOBILITÉ ÉLECTRIQUE

EVS29.ORG

SMILE-First Project

Concept of our newly developing multi-Purpose mobility (mPm)



Agenda

1. Introduction: About **SMILE-First** Project
2. Background: Current situation of Japan
3. Concept of **Multi-Purpose Mobility** (mPm)
4. Research Result: Test ride
5. Conclusion: Future Plan

What is “SMILE-First Project”?

SMILE-First

First of all, **S**ymbiotic **M**obility robot with **I**ntelligent watching (MIMAMORI) system makes happy **L**ife **E**veryone and earth, which system can watch not only a robot User both **D**irectly with Integrating Biosensors and **R**emotely with Cloud Service but also **L**ocal Residents by the User **S**afely and **S**ecurely.

By Dr. Kondo, NIES
(NIES: National Institute for Environmental Studies)

2. Background: Current situation of Japan



Home



Bus



(出典)トヨタ車体

② Super-compact electrical vehicle

Background

Current situation in Japan



Town (Station)

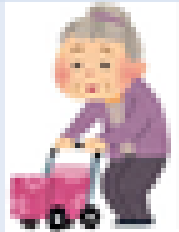
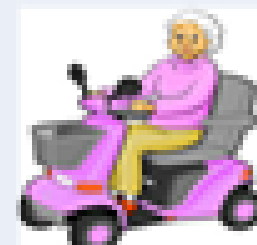


③ Public Transportation

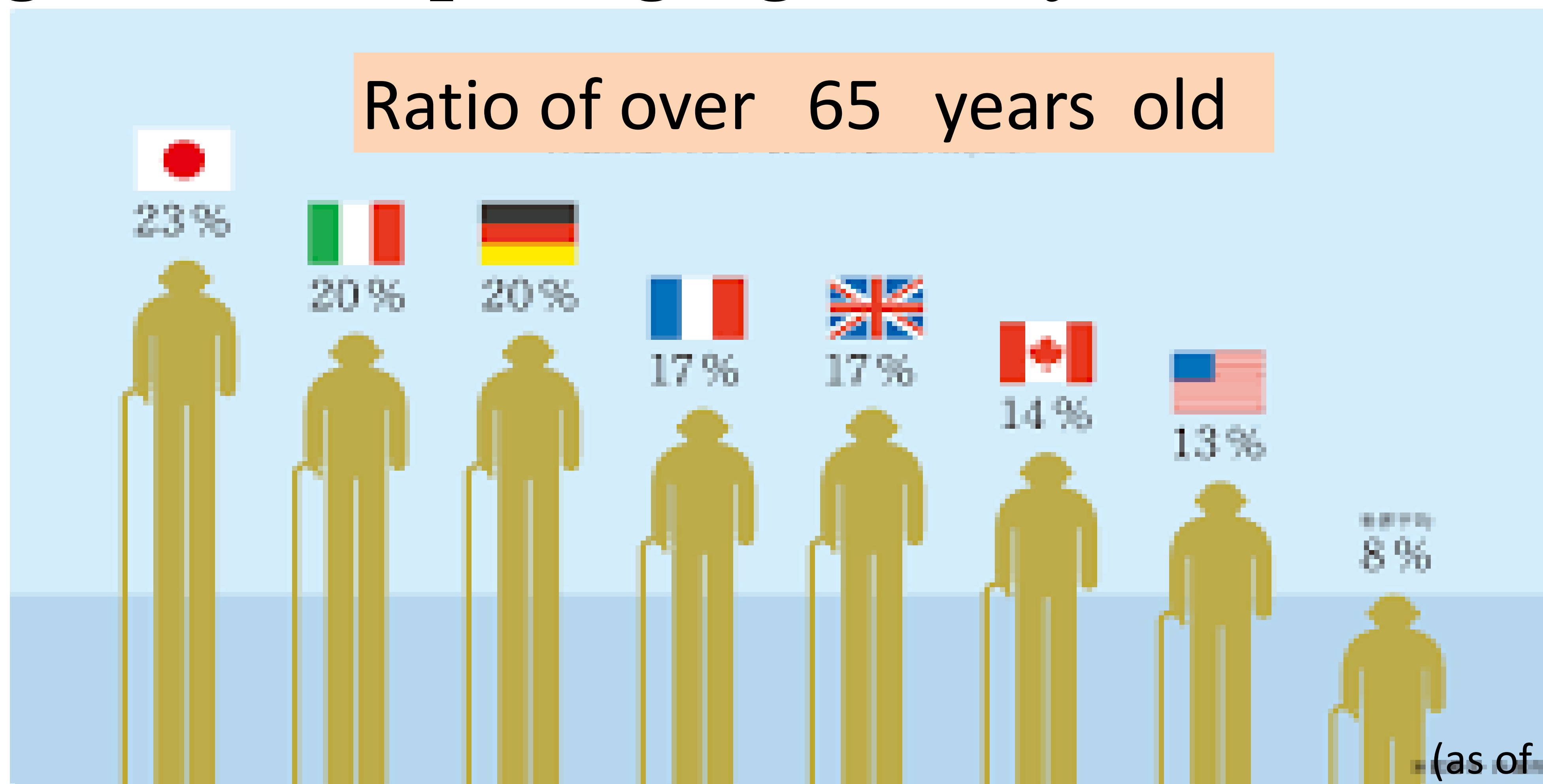


Station

Current situation of terminal transportation

Category (Item)		Speed / Power	User	Moving Area	Weight /Price (approximation)	Condition into Public Transportaion
Walker (Shopping Trolley)		≒2km/h Man-Power	Elder	Sidewalk	5kg 20,000JPY	○
Senior Car (Mobility Scooter)		~6km/h Electric Motor	Elder	Sidewalk	100kg 400,000JPY	△ (Assistance required)
Next-generation personal mobility		~10km/h Electric Motor	Young ~ Middle	Special Robot Area	20kg 250,000JPY	△ (Need to fold)
Bicycle		~20km/h Man-Power	Young ~ Elder	Roadway (Sidewalk)	10-20kg 20,000JPY~	△ (Need Carring-Bag)
ELECTRIC ASSIST BICYCLE		~20km/h Electric Assist	Young ~ Elder	Roadway (Sidewalk)	20kg 60,000JPY~	△ (Need Carring-Bag)
Super-compact electric vehicle		~60km/h Electric Motor	Young ~ Elder (Need Licence)	Roadway	約400kg 600,000JPY	×

Background : Super-aging society





Background: Research

Test-ride event



The test-ride event was conducted for three days from 28th to 30th July 2015 in “Toyota Ecoful Town”, Japan.

67 elderly people who are over 65 years old participated in this events.

(Left: conventional mobility scooter, Middle and right : mPm)

Some elderly people said that

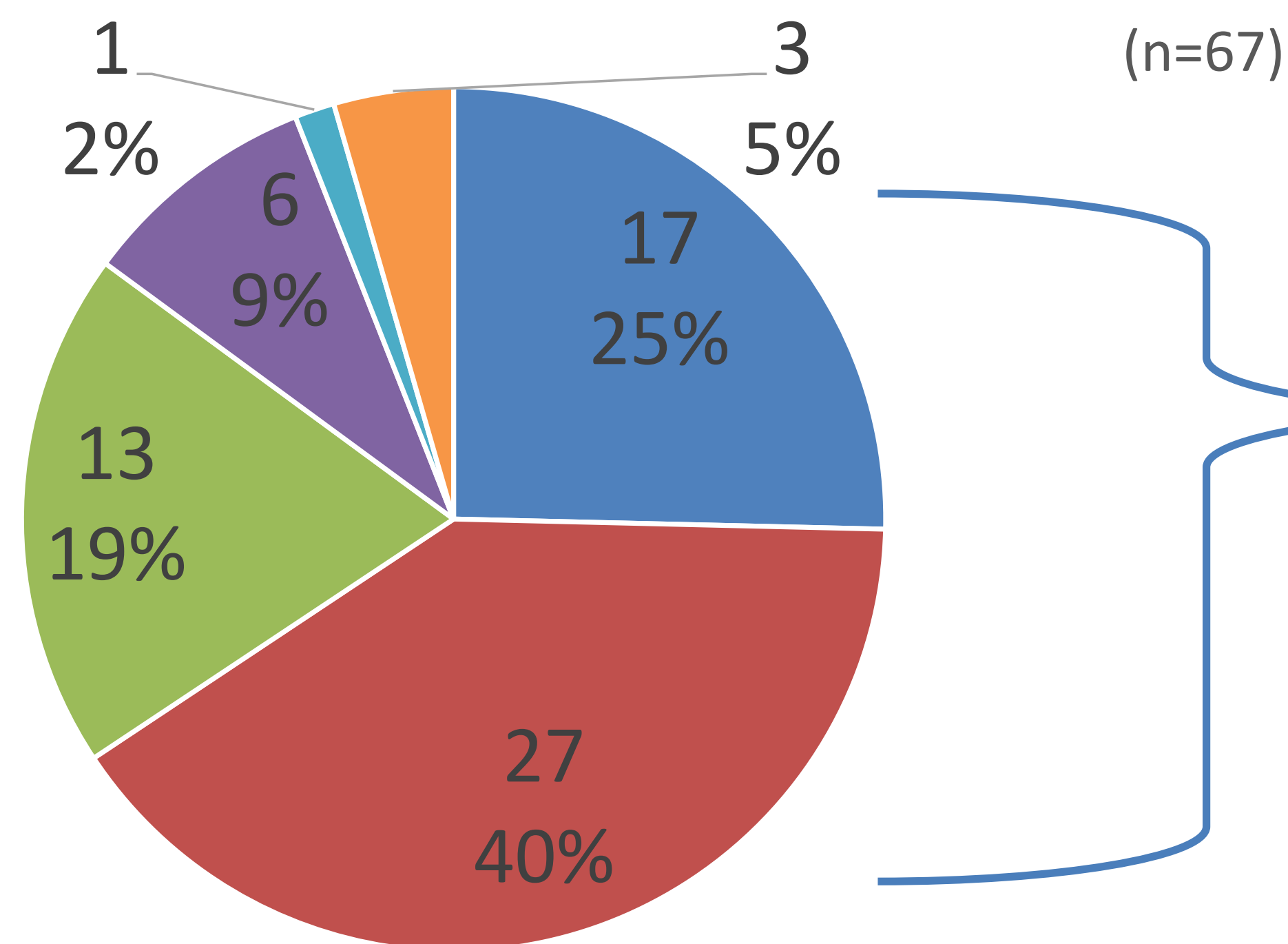
“I don’t want to ride on a conventional mobility scooter, because of neighbors’ eyes that they think I became old-age or physically-disabled.”

Sweeping away of negative image

Question

- Some elderly people said that "I don't want to ride on conventional senior cars, because of neighbors' eyes that they think I become old-age or physically-disabled." However this new extremely ultra-compact electric mobility can sweep away such a negative image.

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree
- No answer



Results:

Over 65%



<現状>

Current status

<人間と機械の融和の姿>

Picture of "harmony of human and machine"



車椅子で生活

Wheelchair



歩行が困難

Difficulty in walking



ご自宅・施設内での利用
庭先・近所へのお散歩

Use in home and facilities
Outing to neighborhood



自動車で送迎

Drop and pickup



自動車を運転

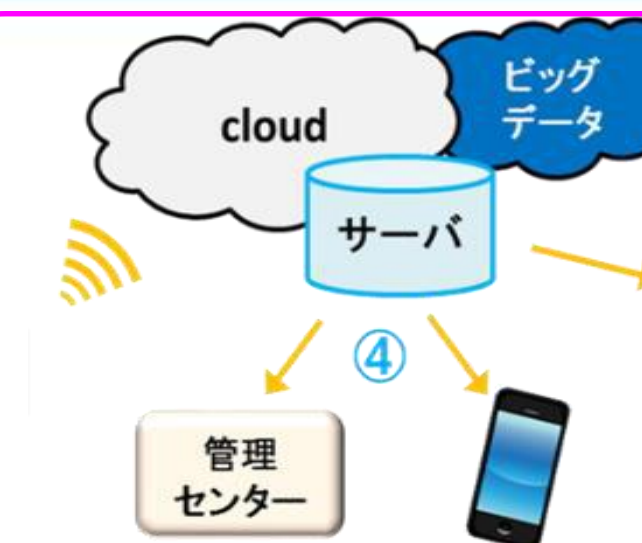
Drive himself



Shops/コンビニ

近所へのお出かけ
公共交通への持ちこみ

Outing to neighborhood
Carry into public transports



3. Concept

Concept of Multi-Purpose Mobility (mPm)

Mobility Concept

◆ Basic Concept:

CO₂ emissions reduction would be carried out before you notice!

◆ Realization of environmental, social and human friendly “Multi-Purpose Mobility”

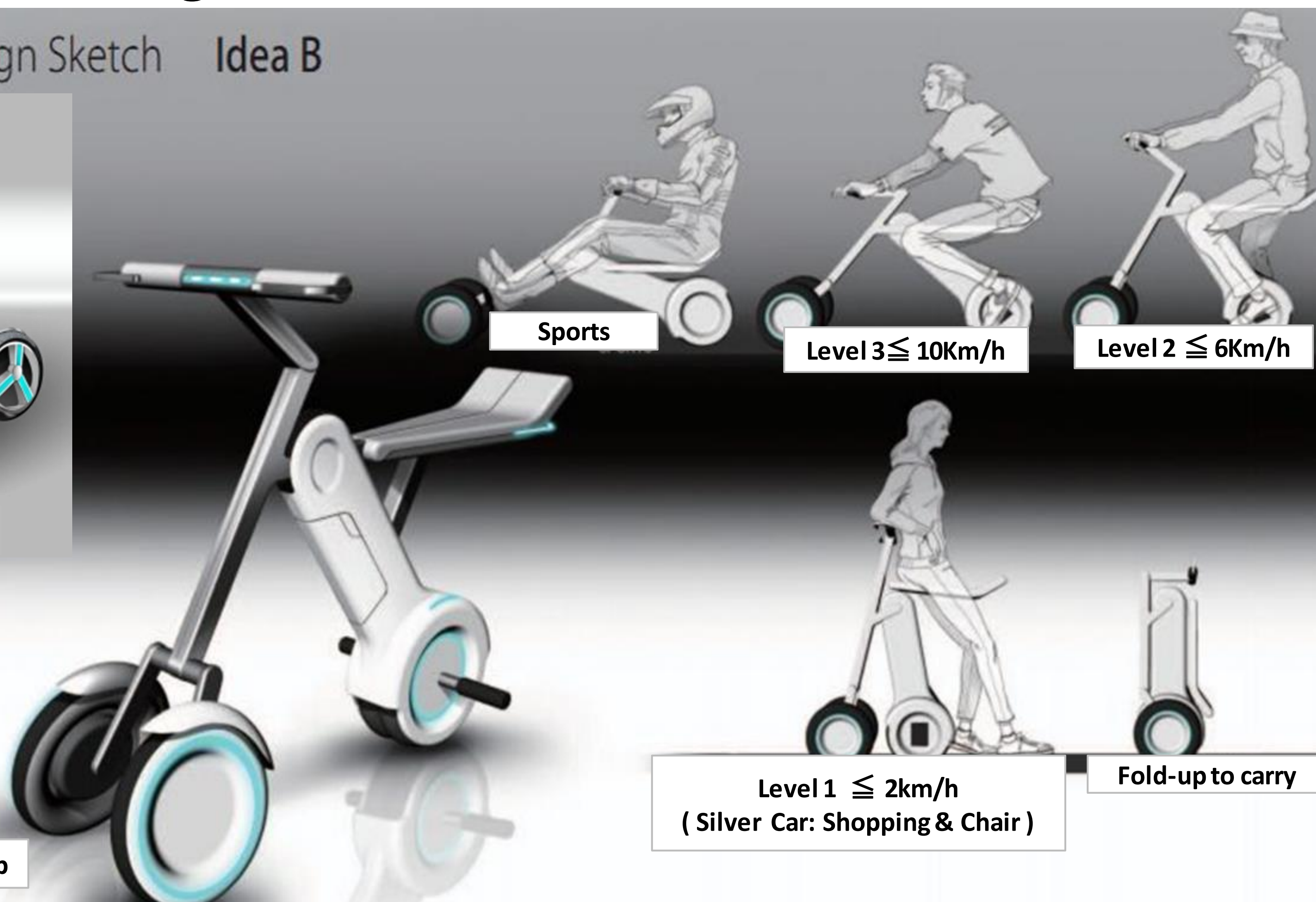
- Adapting to a super-aging society, men and women of all ages can chose smart mobility, and can spend healthy and wonderful life, and also
- People can move in seamless and smooth ways under good connection with public transportation
- Car accidents and social welfare costs could be reduced

As the result,

- CO₂ emissions can be reduced, thus prevent global warming

Design Concept & Target

Design Sketch Idea B





Home

Tourist spot / Office / School
(Last 1 mile)



Bus



PHEV, EV, FCV (Low CO2)

Smile & Seamless Mobility (Fantastic
for Everyone & Earth)



Town (Station)



Public Transport (Carry-on)



Park (Small space)



Station / Rental Shop



walker



Mobility Scooter



Skateboard Mode

Another function with Wheelchair



Silver car
シルバーカー
(~2km/h)



Senior car
シニアカー
(~6km/h)



Skateboard
スケートボード
(~10km/h)

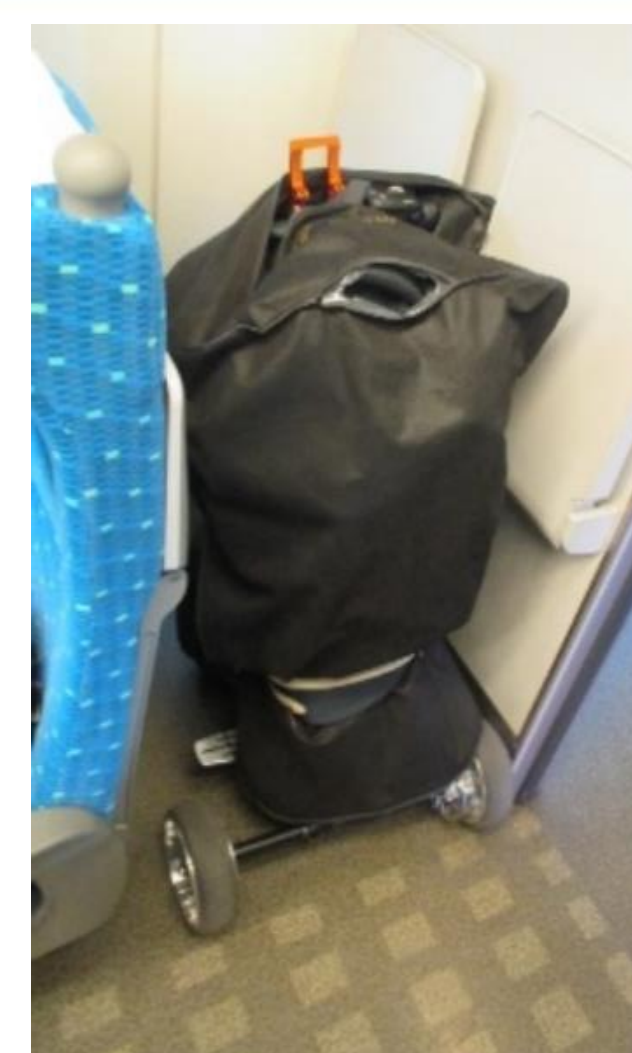


Support wheelchair
汎用車椅子と連結



- General (typical) wheelchair acceptable
- Good for Care receiver & Caretaker
- Compact & Lightweight

Wheelchair & multi-purpose mobility



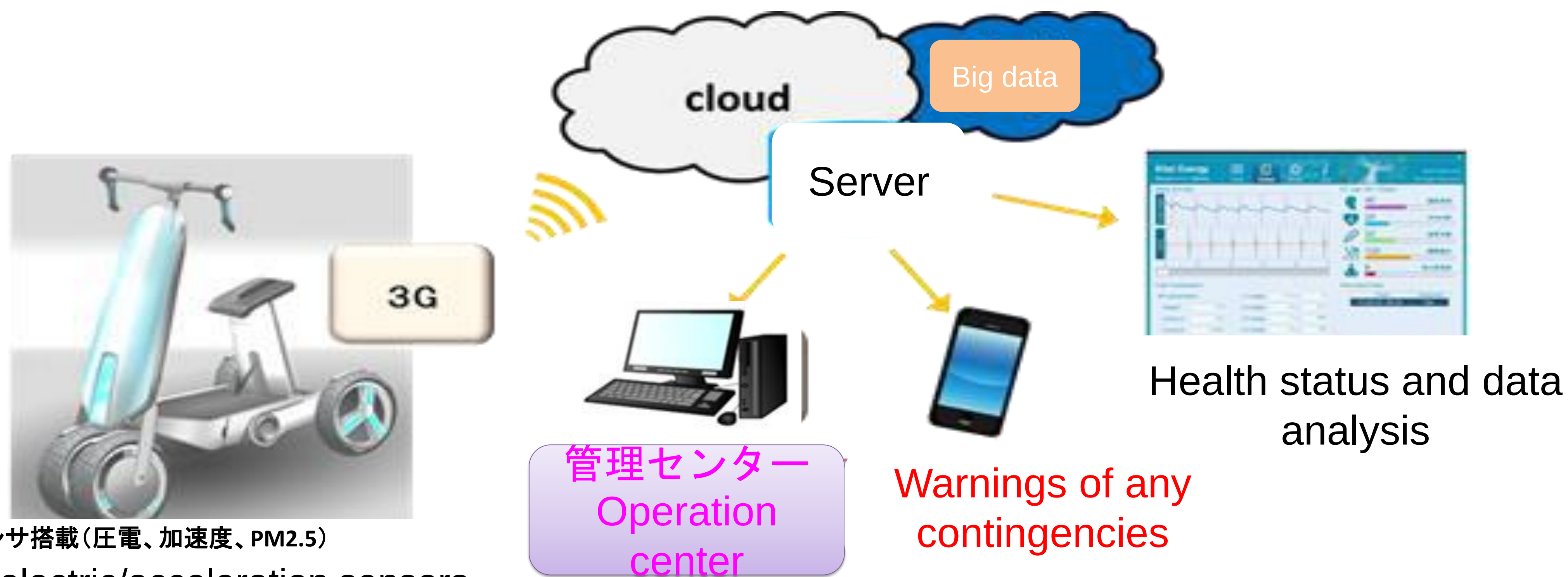
Special Function:

Normal wheelchair & AGV (Automatic Guided Vehicle) support system



For 2020 Olympic and Paralympic

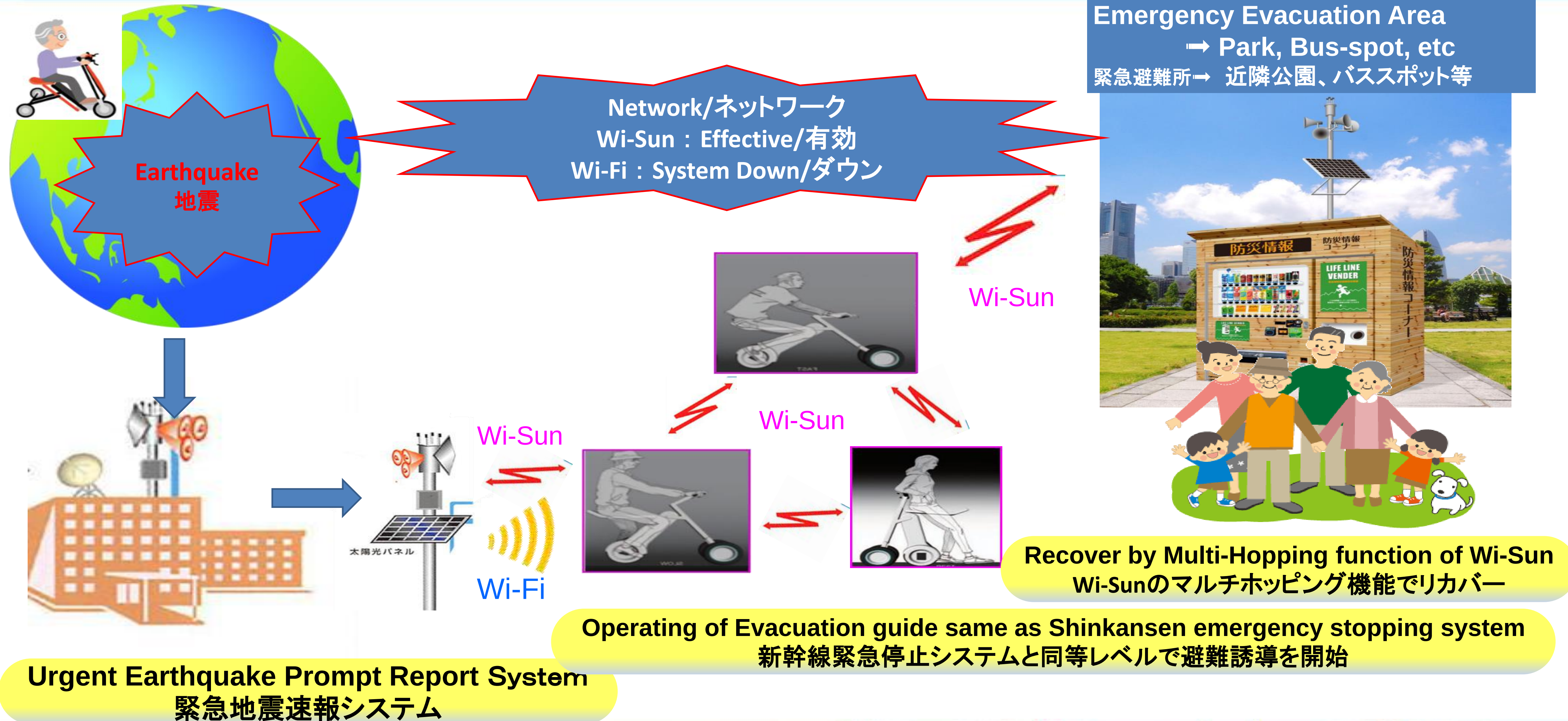
Establishment of watching (MIMAMORI) system to watch health status and any contingencies of elderly person

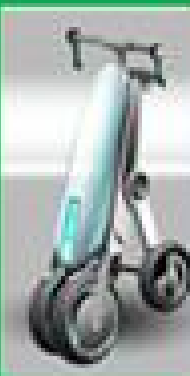


各種センサ搭載(圧電、加速度、PM2.5)

Piezoelectric/acceleration sensors

Future Plan



Category (Item)		Speed / Power	User	Moving Area	Weight /Price (approximation)	Condition into Public Transportaion	
Walker (Shopping Trolley)		≒2km/h Man-Power	Elder	Sidewalk	5kg 20,000JPY	○	
Senior Car (Mobility Scooter)		~6km/h Electric Motor	Elder	Sidewalk	100kg 400,000JPY	△ (Assistance required)	
Multi-Purpose Mobility (Transformable、Portable、Compact)		~2km/h Walker	Young ~Elder & physically disabled person	Sidewalk	15kg 150,000JPY (Target)	○  (Folding Type)	
		~6km/h Mobility Scooter					Special Robot Area
		~10km/h Personal Mobility		Sidewalk			
		Wheelchair & mPm (Joyint System)					
							
Next-generation personal mobility		~10km/h Electric Motor	Young ~ Middle	Special Robot Area	20kg 250,000JPY	△ (Need to fold)	
Bicycle		~20km/h Man-Power	Young ~ Elder	Roadway (Sidewalk)	10-20kg 20,000JPY~	△ (Need Carring-Bag)	
ELECTRIC ASSIST BICYCLE		~20km/h Electric Assist	Young ~ Elder	Roadway (Sidewalk)	20kg 60,000JPY~	△ (Need Carring-Bag)	
Super-compact electric vehicle		~60km/h Electric Motor	Young ~Elder (Need Licence)	Roadway	約400kg 600,000JPY	×	

Thank you for your attention

Let's try together!



New Prototype (No.4)

Kondo Yoshinori, NIES (National Institute for Environmental Studies)
Junichi Yasu, RANET / Accurate Systems / Co-Researcher of NIES
Mitsutoshi Kano, TOYODA IRON WORKS