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Automated Guideway Transit System

KOBELCO AGT System

Yurikamome Tokyo

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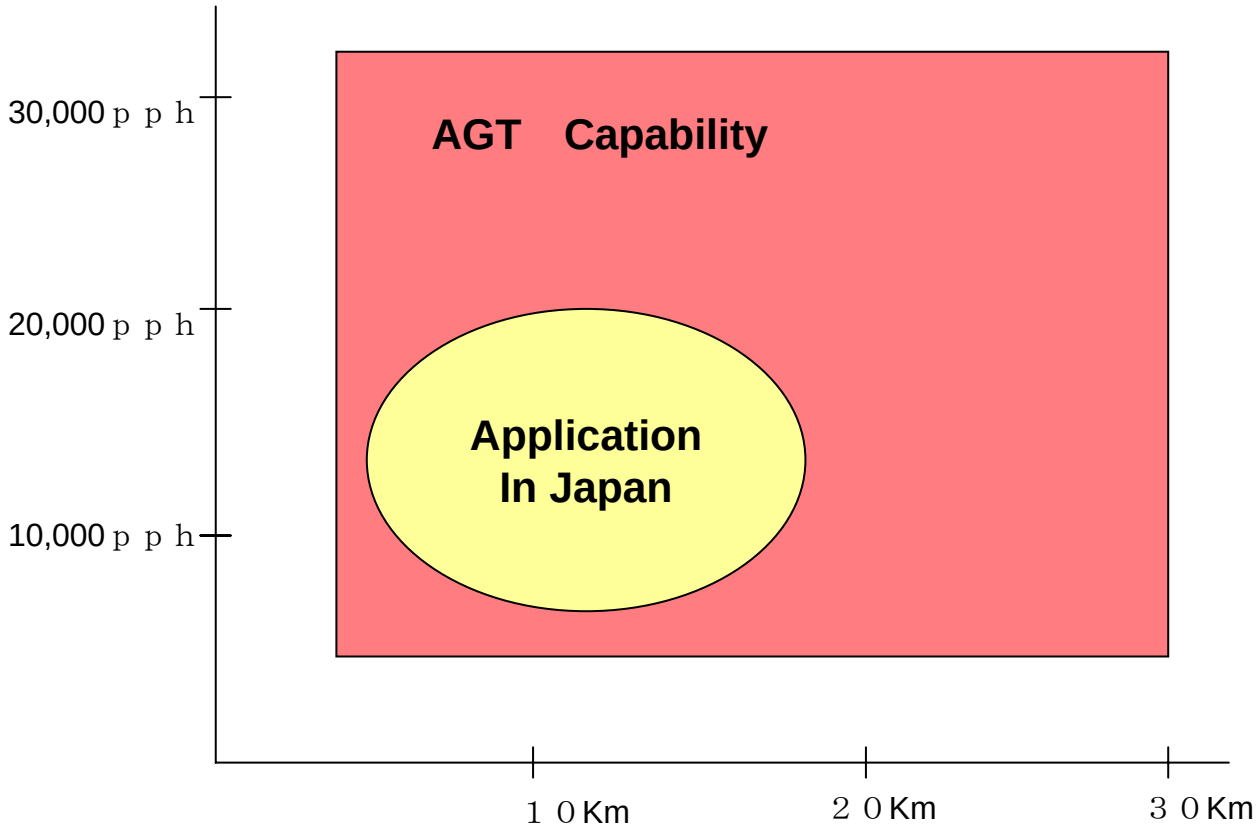
AGT System : In Brief

- A medium capacity, unmanned, guide-way transit, on rubber tires
- The first AGT system in Japan: EXPO'75 in Okinawa
- Current AGT projects in Japan: 'Yurikamome' extension in Tokyo, 'Toneri' line in Tokyo and 'Port liner' extension in Kobe

KRT-100 EXPO'75 site in Okinawa

YURIKAMOME Tokyo

AGT System: a Typical Application Range



(Actual passenger capacity is subject to change according to the conditions of each projects)

Merits

Item	AGT	Heavy Rail
Initial Cost	Low	High
Carrying Capacity	**Less than Heavy Rail**	Large
Grade Ability	Steep	Gentle
Turning Radius	Small	Large
Vibration, Noise	Low	High

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AGT System: Map in Japan

: Kobelco projects

Saitama New shuttle

Seibu Yamaguchi Line

Tokyo Toneri Line (under construction)

Kobe Rokko Liner

Yukarigaoka Koara

Kobe Port Liner

Hiroshima Astram Line

Tokyo Yurikamome

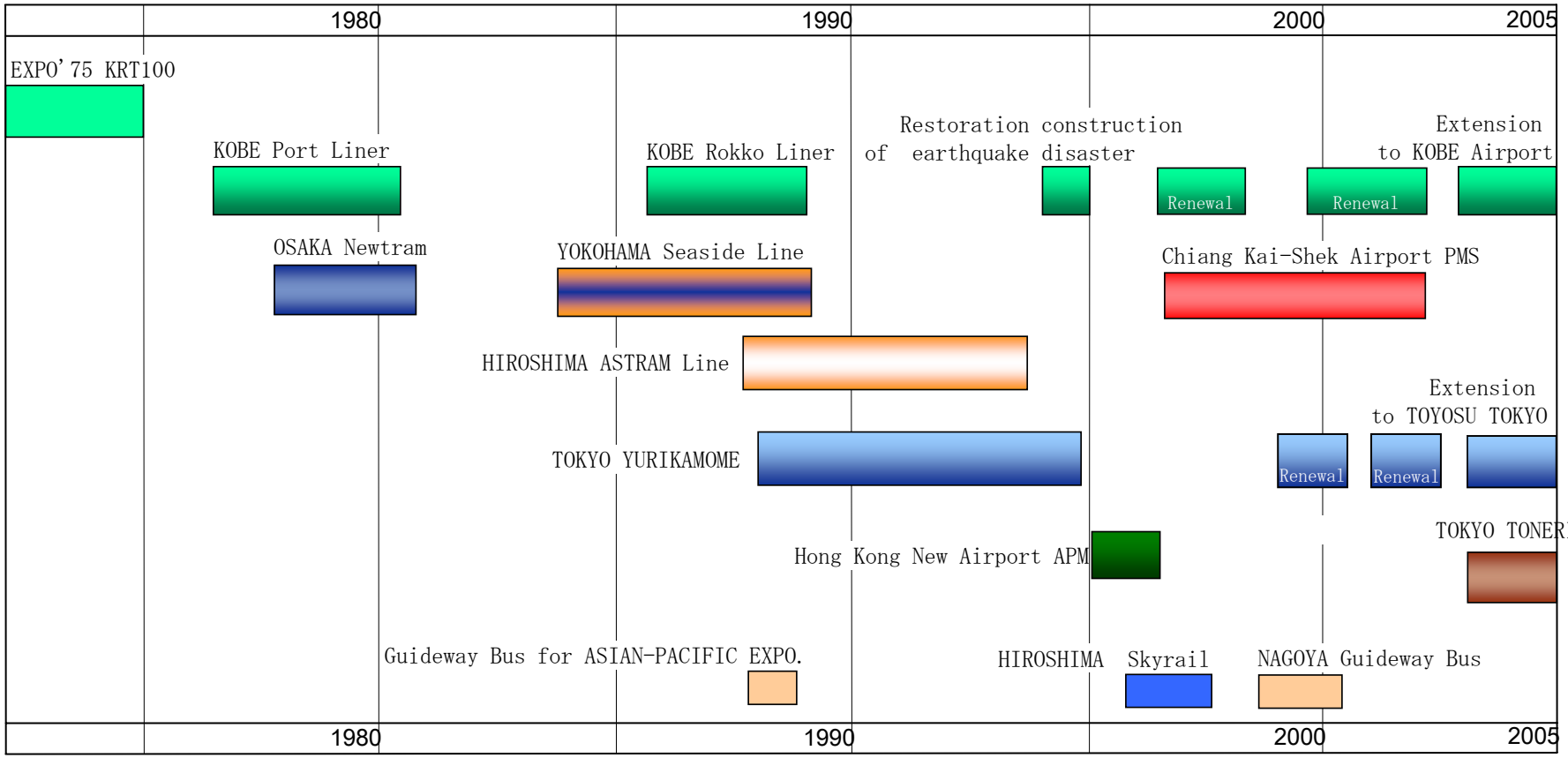
Yokohama Seaside Line

Tokadai Peach Liner

Osaka Newtram

Kansai Airport Wing Shuttle

AGT System: Kobelco Projects History



AGT System: Kobelco Projects Outline

Line	PORT LINER	SEASIDE LINE	ROKKO LINER	ASTRAM	YURIKAMOME	CKS SKY TRAIN
Site	KOBE	YOKOHAMA	KOBE	HIROSHIMA	TOKYO	TAIWAN
Length	6.4km	10.6km	4.5km	18.4km	12.0km	1.3km
Station	9	14	6	21	12	4
Train Composition	6	5	4	6	6	1(North) 2(South)
Train Operation	Automatic	Automatic	Automatic	Manual	Automatic	Automatic
Marshalling	Automatic	Manual	Automatic	Manual	Manual	Manual
Time required	18’00	25’10	10’00	LOCAL 35’00 RAPID 25’00	24’30	1’30
Minimum Headway	2’30	4‘00	2‘30	2‘30	2‘00	2’00
Capacity	75	75/74/66	60/54	50/44/40	55~60	69
Open Date	Feb.1981	Jun.1989	Feb.1990	Aug.1994	Nov.1995	Jan.2003

AGT System: Configuration

Rolling Stock: Rubber tire, Air Suspension

Track : Concrete running surface, Guide rail, Switch

Power Supply: Substation, Traction, Electric room, Power rail

Signal, Communication : ATP, ATO, ATS, Telecommunication system

Station : Ticketing System, Platform Screen Doors

Depots: Detention, Inspection lines, Maintenance facilities

ATP: Automatic Train Protection
ATO: Automatic Train Operation
ATS: Automatic Train Supervision

AGT : specification I

Vehicle :	Car Width	2.5 m
	Car Length	8-10 m
	Passenger capacity	45-100 passengers
	Train	1-9cars
Minimum Headway		3.0 minutes-1.5minutes

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AGT : Specification II

Maximum Speed : 70 km/h

Acceleration, deceleration : 3.5 km/h/s

Emergency deceleration: 4.5 km/h/s

Train stop accuracy: ±30 cm

Min. turning radius: 100m (main track), 30m (side track)

Max. grade : 6% (main track), 9% (side track)

Max. Cant : 10%

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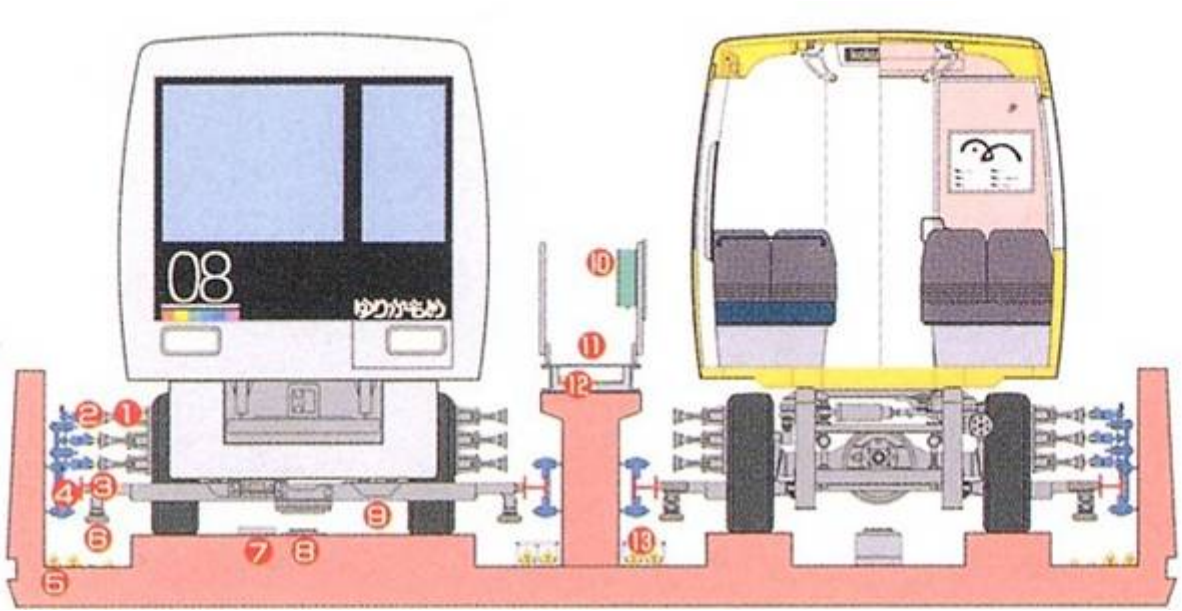
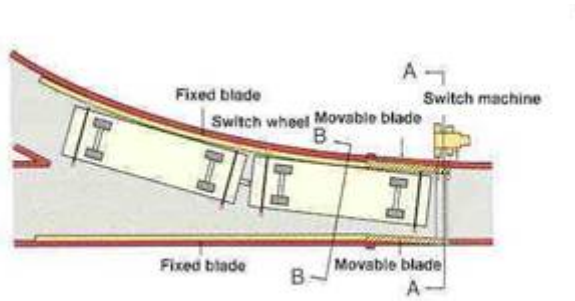
Example: a typical configuration

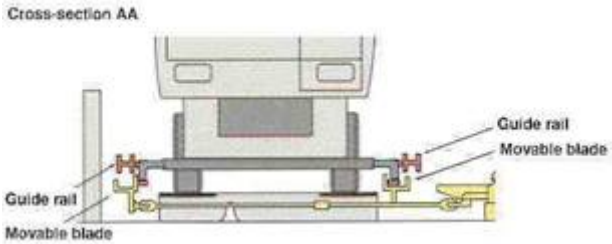
Tokyo Yurikamome

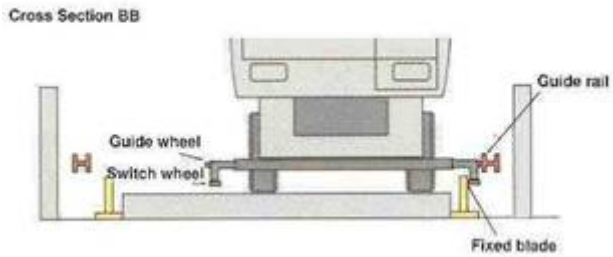


①Power Collector
②Power Rail
③Guide Roller
④Guide Rail
⑤Feeder Cable
⑥Switch Guide Roller
⑦ATO Transponder
⑧Data Communication Loop
⑨Running Surface
⑩Telephone
⑪Maintenance Walkway
⑫Signal and Communication Cable
⑬Power Distribution Cable

Example: Track and Switch







-A track of flat concrete running surface for comfort ride

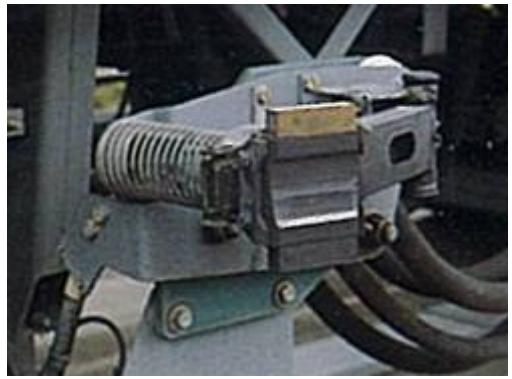
-H shaped guide-rail to minimize lateral vibration

-An automatic switch with fixed and movable blades

Example: Traction and other power collection

Power Rail

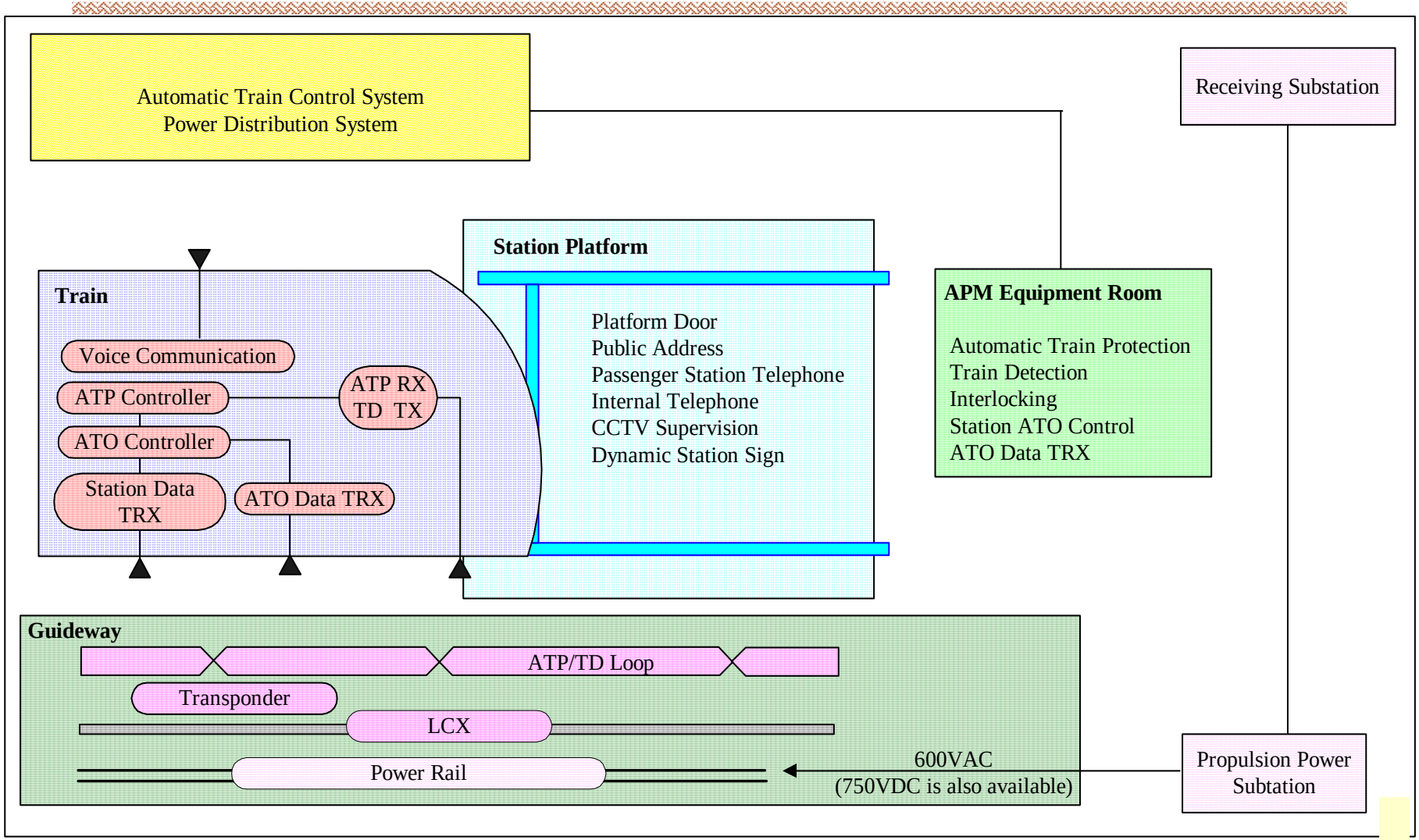
DC 750V Connection
(AC600V available)



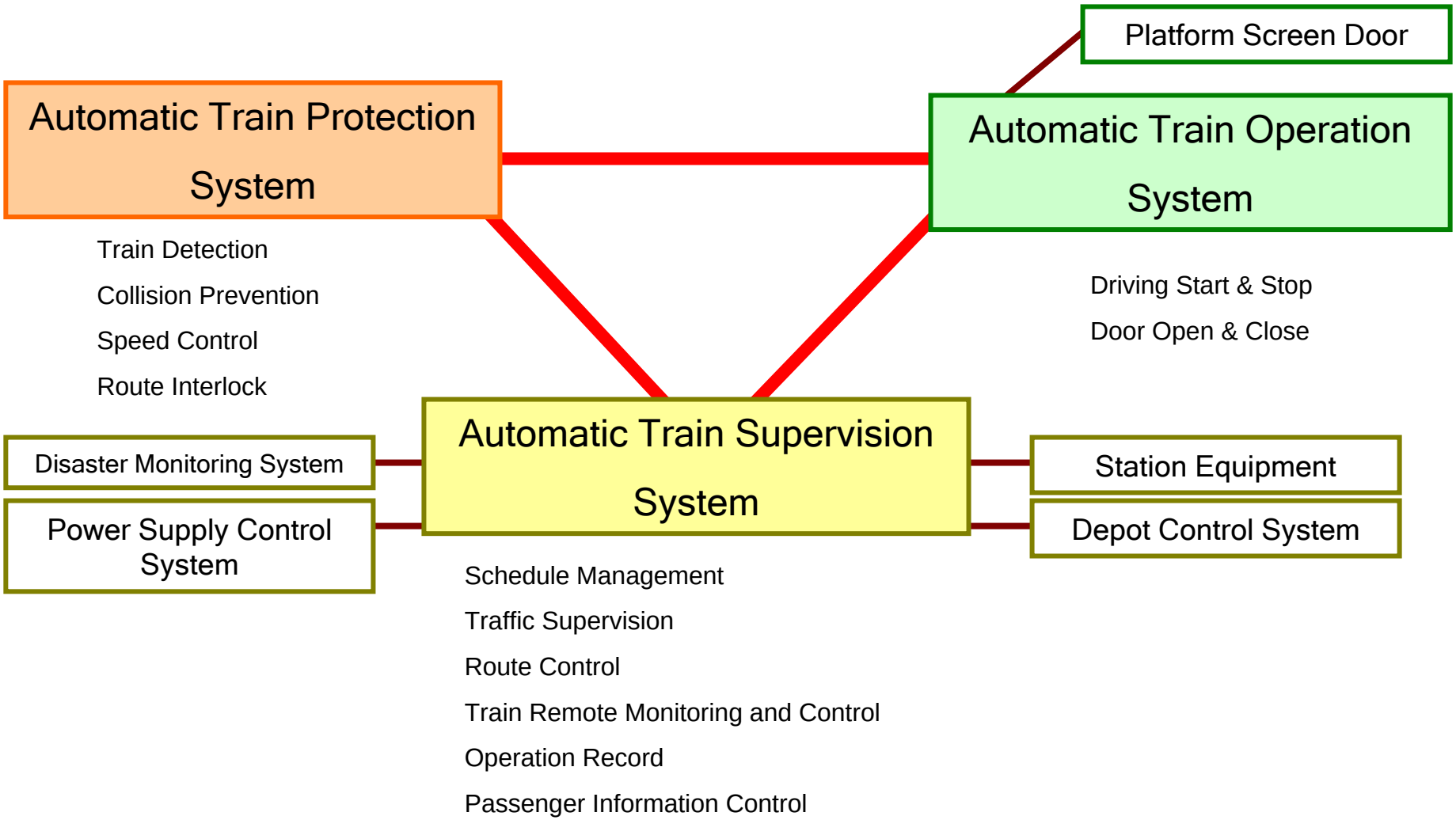
Vehicle Power Collectors

Vehicle propulsion and auxiliary power go entire length of guideway.

System Engineering : System Chart



System Engineering: ATC (Automatic Train Control)



Example: Station equipment & communication

Automatic platform screen doors

The automatic platform screen doors open automatically in harmony with train doors, to allow passengers to get on board/ off board.

The platform screen doors are higher than the train doors and open wider to absorb train stop margin.

Door monitoring

The video surveillance system with a closed-circuit television (CCTV) and central control monitors cover all station platform doors areas.

Example :Maintenance and storage

Functions are:

Departure test,

Cleaning, washing and routine maintenance of the vehicles, such as

-Body and interior parts
-Propulsion equipment
-ATP and ATO equipment
-Air conditioning equipment
-Brake system

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Rokko-Liner

END

Thank you for your attention!