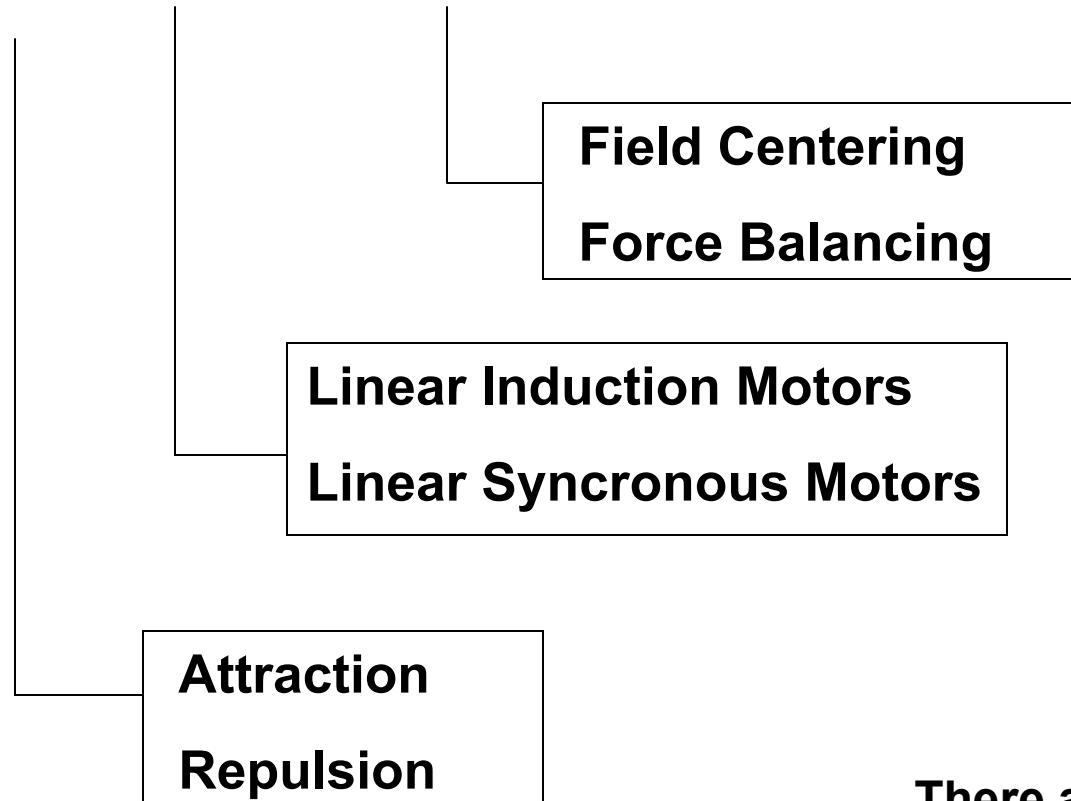


Maglev Definition

Magnetic forces used to:

Lift, Propel, and Guide a vehicle.



There are exceptions when it comes to guidance.

Is Maglev a Monorail?

Usually, but not always.

- **Most maglevs have two rails. These maglevs wrap around two rails while monorails wrap around their one rail. They do share many characteristics. For instance, neither can derail.**
- **There are maglev concepts that run in a trough.**
- **Another concept straddles a beam, but does not encircle it.**

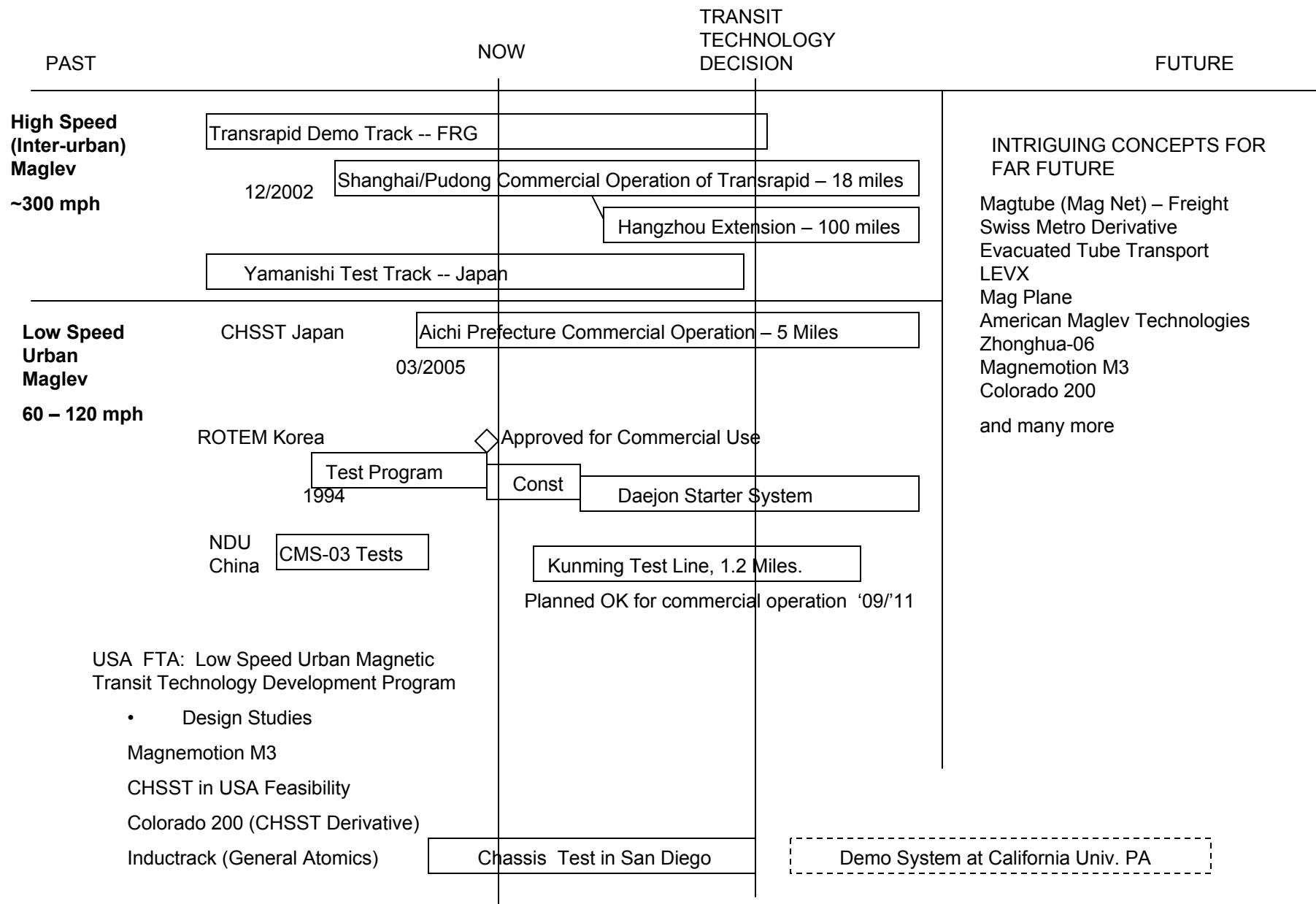
Why Maglev?

The following applies generally to all maglev concepts, with some variations. In particular, noise reduction from elimination of wheels is overcome by aerodynamic noise with high speed maglev.

- Quiet Operation → Physically Grade Separated
 - Safe
 - No effect on road performance
 - Low Construction/Operation Cost*
- No Traction Limitations
 - Climbs Steep Grades → Route Flexibility Vertically
 - Good Acceleration/Braking → High Average Speeds (seated)
 - All-weather Capability → Year-round Reliability
- “Soft” Guideway Following
 - Low Turn Radius → Route Flexibility Horizontally
 - Good Ride Quality → Passenger Comfort
- Few Moving Parts → Low Failure Rate
 - Reliable Operation
 - Low Maintenance Cost

* Vehicles not designed as aircraft: there is no need to withstand impacts. The result is lighter/cheaper vehicles and guideway and lower energy requirements.

MAGLEV OVERVIEW



MAGLEV OVERVIEW—HIGH SPEED

PAST	NOW	TRANSIT TECHNOLOGY DECISION	FUTURE
High Speed (Inter-urban) Maglev	Transrapid Demo Track -- FRG		
	Shanghai/Pudong Commercial Operation – 18 miles 12/2002		
		Hangzhou Extension – 100 miles	
~300 mph	Yamanashi Test Track -- Japan		



Transrapid



Yamanashi JR-Maglev

MAGLEV OVERVIEW – LOW SPEED URBAN

PAST	NOW	TRANSIT TECHNOLOGY DECISION	FUTURE
Low Speed Urban Maglev 60 – 120 mph	CHSST Japan ROTEM Korea	Aichi Prefecture Commercial Operation – 5 Miles, 9 Stations Approved for Commercial Use Test Program 1994	
		Construction Daejon Starter System Operation cf. 2009/2011	
NDU Chengdu China	CMS-03 Tests 2001	Kunming Test Line, 1.2 miles Planned OK for commercial operation in 2009/2011	
FTA* USA : Inductrack (General Atomics)	Chassis/Track Test	Demo System at California Univ. PA	

* Low Speed Urban Magnetic Levitation Transit Technology Development Program

CHUBU HIGH SPEED SURFACE TRANSPORTATION SYSTEM (CHSST)



ROTEM (HYUNDAI)



Development Vehicle



Production Vehicle

National Defense University, Changsha China



FTA General Atomics

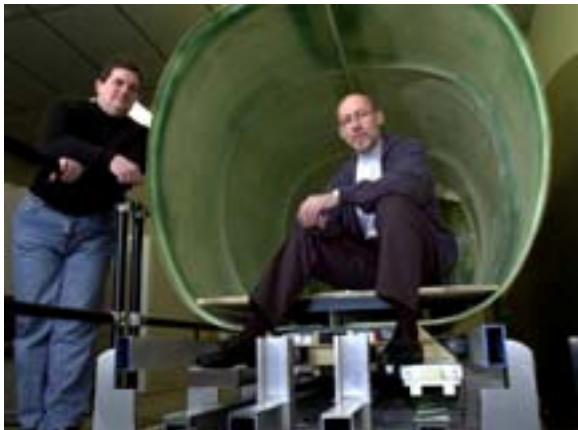


**Developmental
Chassis and Test
Track in San
Diego**

MAGLEV OVERVIEW – Intriguing Concepts for the Future

PAST	NOW	FUTURE
<p>USA FTA: Low Speed Urban Magnetic Transit Technology Development Program</p> <p>Completed Design Studies</p> <p>Magnemotion M3</p> <p>Inductrack</p> <p>CHSST in USA Feasibility</p> <p>Colorado 200 (CHSST Derivative)</p>		<p>Magtube (Mag Net) – Freight Swiss Metro Derivative Evacuated Tube Transport LEVX</p> <p>Mag Plane</p> <p>American Maglev Technologies</p> <p>Zhonghua-06</p> <p>M3</p> <p>Colorado 200</p> <p>and many more</p>

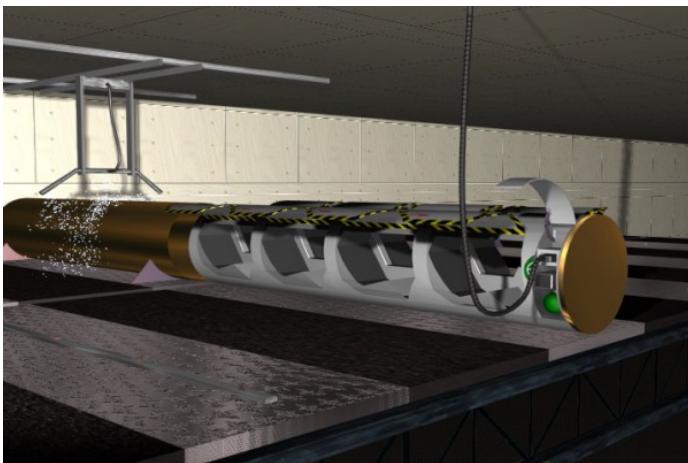
Concepts for the Future



Magtube (freight)



Swiss Metro



Evacuated Tube Transport

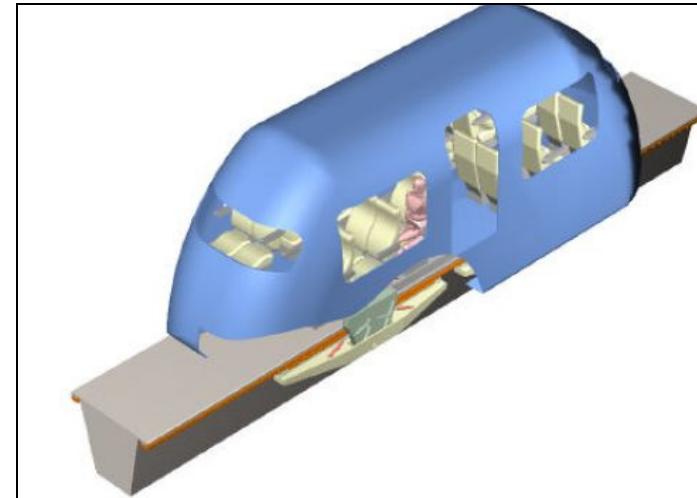


LEVX (Permanent Magnets)

Concepts for the Future



American Maglev Technologies



Magnemotoin M3



Magplane



Zhonghua-06

Concepts for the Future



Colorado 200 (FTA Study of CHSST Upgraded to 120 mph 10% grade [undegraded] for use in USA)

Introduction of Presenters

- Future Concepts
- Brad Swartzwelter Author of “Faster Than Jets”
- Jim Fiske Magtube Corporation

- Low Speed Urban Maglev
- Koji Kubota HSST Systems International (teleconference)
- Conrad Blankanze ROTEM

- Reminder: at 9:00 tomorrow Walter Kulyk of the FTA will present on maglev demonstration plans (teleconference)