

An Overview of Rail Practices in Latin America

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Table of Contents

1. What is ALAMYS
2. Ongoing projects in Latin America
3. Best practices
 1. Brown-field CBTC
 2. Extension of Rolling Stock
 3. Real Estate Development
4. Summary



WHAT IS ALAMYS?

18

21

«Sharing experiences, promoting knowledge and best practices»

«Promote mobility, intermodality and sustainable services solution»

1986



2017

Latin American Association of Metros and Subways - Partners



38 Principal Members



35 Adherent Members

Ongoing projects in Latin America

With a share of almost 80% of the overall population being urban dwellers, Latin America has got one of the highest urbanization rates world-wide.



The process of urbanization is accelerated and exponential!!!



Competitive and efficient rail transport



Increased demand for transportation

Ongoing projects in Latin America



Ongoing projects in Latin America

CONSTRUCTION NEW LINE IN 2017

OPERATOR	KM UNDER CONSTRUCTION	ESTIMATED VALUE IN MILION US\$
Metrorrey (línea 3)	7,5	420
SITEUR (línea 3)	22	1.050
Metro de Panamá (línea 2 y línea 3)	47,7	5.000
Metro de Bogotá (línea 1)	24,5	3.185
Buenos Aires (línea E y línea H)	5	543
Metro de Quito	22	2.222
Metro de Lima (línea 2 y 4)	35	5.500
Metro de Santiago (P63, más extensión 6 y 2)	46,2	4.100
Metro Bahia	23	2.500
Metro Santo Domingo (línea 2)	34	1.650
Metro Fortaleza	25,8	2.804
Metro de Sao Paulo (línea 5, línea 15, línea 17 y línea 6)	75,6	8.217
TOTAL	368,3	37.192

Ongoing projects in Latin America

«THE TIP OF THE ICEBERG»



370 km of network
US\$ 37.000 MM



**But, deficit
in our region is real**

TODAY

1.142 km Latin American (Main Partners ALAMYS)

498 km Iberian Peninsula (Main Partners ALAMYS)

Best Practices Brown-Field Introduction of CBTC

Basic Figures Santiago Subway System

	L1	L2	L4	L4A	L5	Total
Cantidad de Estaciones	27	22	23	6	30	108
Longitud (Km)	20	21	24	8	30	103
Flota de Coches	414	156	198	18	289	1.075
Flota Trenes	48	23	33	6	43	153
Pasajeros / año (MM)	260	121	120	20	146	670



Cifras a Dic. 2016



Best Practices Brown-Field introduction of CBTC

Line 1 Description



- ✓ 1 million of passengers per labor day
- ✓ Main line: 20Km, 27 stations
- ✓ 11 Main Line interlockings
- ✓ Track connection with Line 2
- ✓ Passenger interchange with Lines 2, 4 & 5
- ✓ Depot with 20 storage positions
- ✓ Test track (600 meters)
- ✓ 44 Passenger Trains (32 NS07 & 12 NS93), different consists (7, 8 & 9 cars)
- ✓ Existing ATC (ATP+ATO) 90" theoretical design, 105" real operation

Best Practices Brown-Field introduction of CBTC



Best Practices Brown-Field introduction of CBTC

Results:

- ✓ Implementation has brought down frequency to 80 sec.
- ✓ Has increased operational flexibility
- ✓ Has improved operational safety
- ✓ Has made possible UTO operation without passenger
- ✓ Has increased energy efficiency
- ✓ Has confirmed features in terms of maintenance (lower rate of errors)



Best Practices Low Budget Rolling Stock Modernization

Conversion of a train formatted by 6 carriages to a train formatted by 9 carriages, Model FM-86

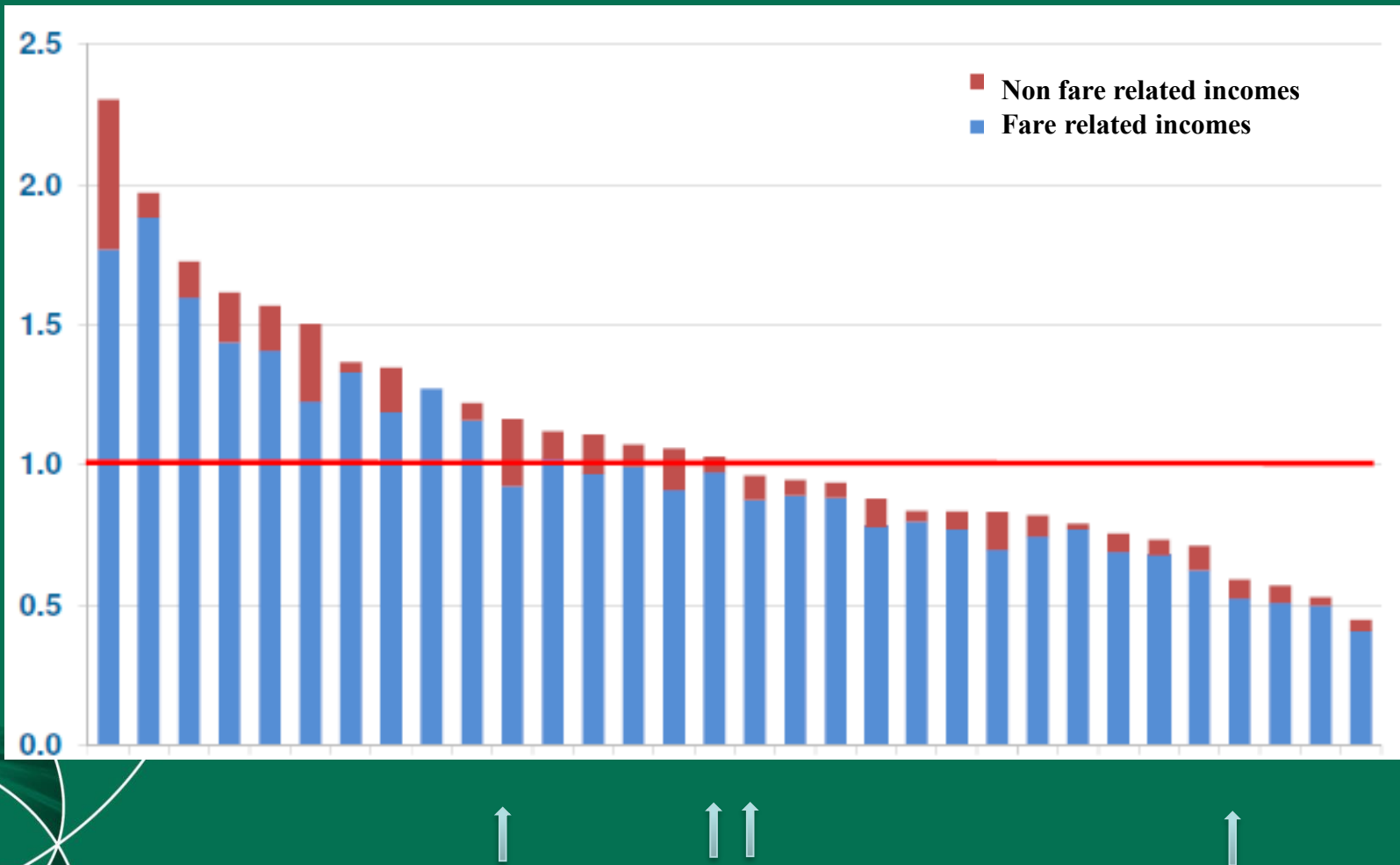
- The project, that was concluded in 2016, consists of the conversion of 1 train of 6 carriages to 1 train of 9 carriages, model FM-86, in order to increase capacity.
- The conversion was implemented internally by Metro Mexico-STC staff.

Movie



Real Estate Development

Total Income on Operational Costs of Subway Operators
(source: COMET/NOVA)



Real Estate Development

STREET (BNUP)

METRO LAND

STREET (BNUP)

METRO LAND



Surface Development

Land:

- Metro

Financing:

- Metro and Private
- Only Private

•Examples:

- OSD
- Portfolio
- Plazas de Bolsillo
- Future

VECTORES de Desarrollo Inmobiliario

Underground Development

Land:

- Metro/BNUP

Financing:

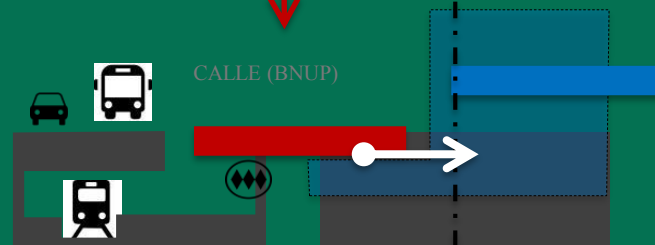
- Private

• Examples:

- Expansión retail
- Subcentro
- Pasillos comerciales
- Proyecto Fundamenta

CALLE (BNUP)

PRIVATE LAND



Connection Development

Sin TERRENO

Financiamiento:

- Privado

Examples:

- Conexión Vivo Corp
- Conexión Mall Plaza
- Conexión Compass
- Conexión Fundamenta

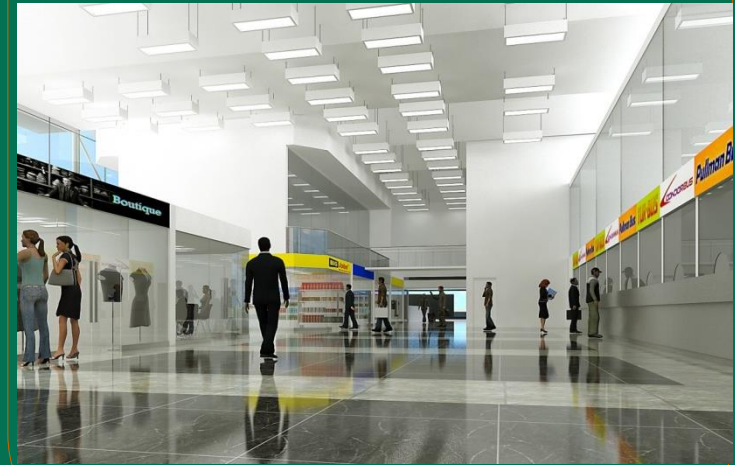
Real State Development

ABOVE
Surface development



OSD LOS LEONES SUR

BELOW
Underground Development



Examples
of
Real State
Development

NEXT TO
Connection Development



VIVOCORP - ÑUBLE L-6



Real State Development

- **Construction Trasanden** **Line 4** and Northeastern new access.
- The object of this project is **new infrastructure** with evacuation in less time to the line 4 way south north
- **Public Project – Private**
- **Implementation: 2016-2017**



Summary

- Boom in metro construction in Latin America
- Opportunities for US companies in a growing market- apparently not yet discovered
- Innovative solutions to high demand
- Efforts to maintain sustainable financing

