Innovative Public Transport Solutions and Enabling Infrastructure in Brazil

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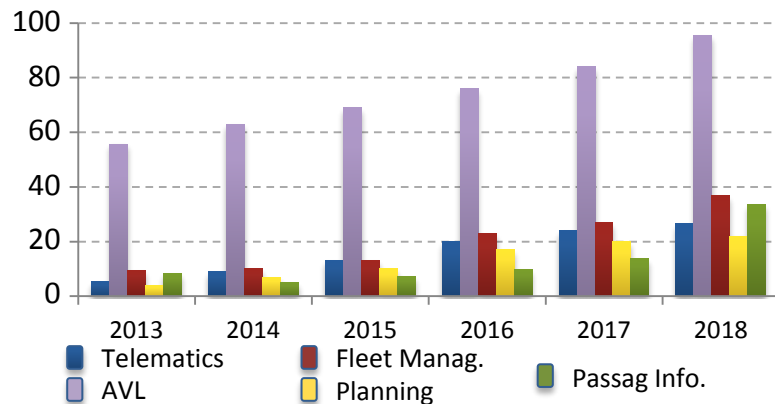
São Paulo, March 26thde 2015

Ticketing has triggered investments in other ITS Systems. Main AFC providers established themselves as Integrators and Turn Key providers, including of Sales Networks.

Implemented Units (in thousands)

Telematics **Fleet Manag.** **AVL** **Planning** **Passag Info.**

Facts & Figures AFC

Services	Average Monthly Fee
Telematics	US$60
Fleet Managment	US$40
Tracking (AVL)	US$ 30
Planning	US$ 80
Passenger Info	US$100
Integration and BPO	**US$ 200**
Ticketing	**US$ 90**

Market Penetration Expected

	2015	2019
Telematics	6,5%	25%
Tracking (AVL)	**56,5%**	**91%**
Fleet Management	12%	35%
Planning	7%	22%
Passenger Information	12%	32%

Source: ANTP, NTU, UITP, Idestra

- Current market for suppliers (estimations): US$ 90 Millions/year;

- Infrastructure Investments might lead to a US$ 250 Millions in the next 5 years;

- Complementary Sales Networks, Information Services and Integrated Services can add more US$ 200 Millions a year in equipments and services.

Brazilian ITS Market in PT has a new cycle of upgrade in current systems: focus on interoperability and added value services, targeting Banking, Mobile and Passenger Info. .
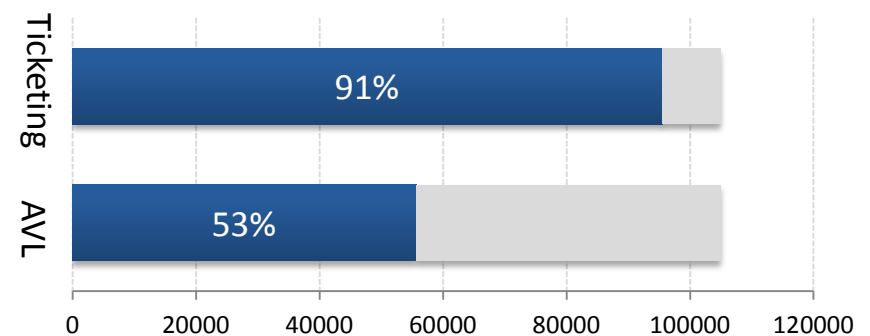
Public Transport vehicles- Thousands

Buses 250
105
Others 70
Permissionaries 39
Long Distance 20
Freight 15

Source: SFS, ANTP, NTU, UITP, Ministério das Cidades, FABUS

Ticketing & AVL – Cities + 100k Inhabitants
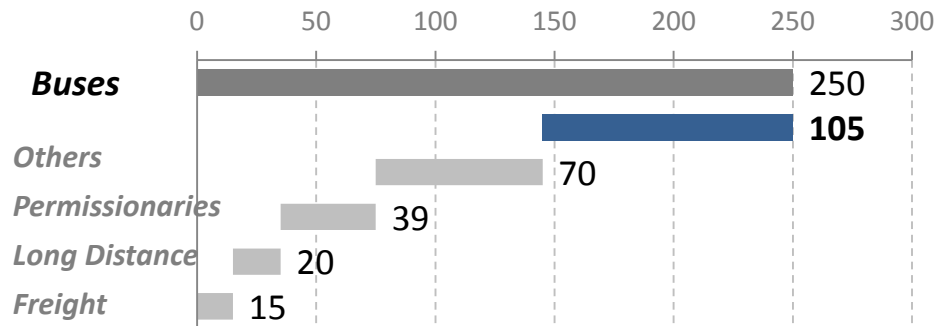
Ticketing 91%
AVL 53%

Source: SFS, ANTP, NTU, UITP, Ministério das Cidades, FABUS

Main Highlights

- Brazil: 4º largest Public Transport Market and 2nd Bus manufacture ;

- 90% of PT carried on Bus;

- Focus on Urban+100: cities with +100.000;

- Accounts for nearly 50% in Latam.

Main Highlights

- Of 105k selected base:
  - 56% have AVL
  - 100% have AFC;
  - Estimated Smartcards issued and currently in Operation: 85 million.
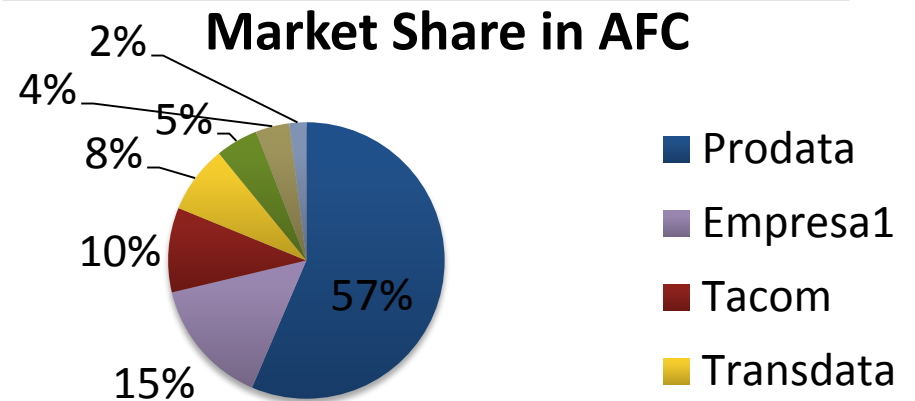 - 120.000 AFC terminals.
  - 30.000 Sales Points

There are 4 Main Groups of Players, which compete directly or indirectly , based in de origins (national, international) and main offers.

Players

National Players

Integration/BPO

TIVIT
Performance. Criativa.

Cittati

digicon *

Ticketing + T&M Add Value

TACOM

DATAPROM

PRODATA
mobility Brasil

Empresa1
Soluções em Bilhetagem Eletrônica

Transdata smart

International Players

ITS/Ticketing

Trapeze

VOLVO

IVU TRAFFIC TECHNOLOGIES AG

CUBIC

xerox

CARD4B SYSTEMS
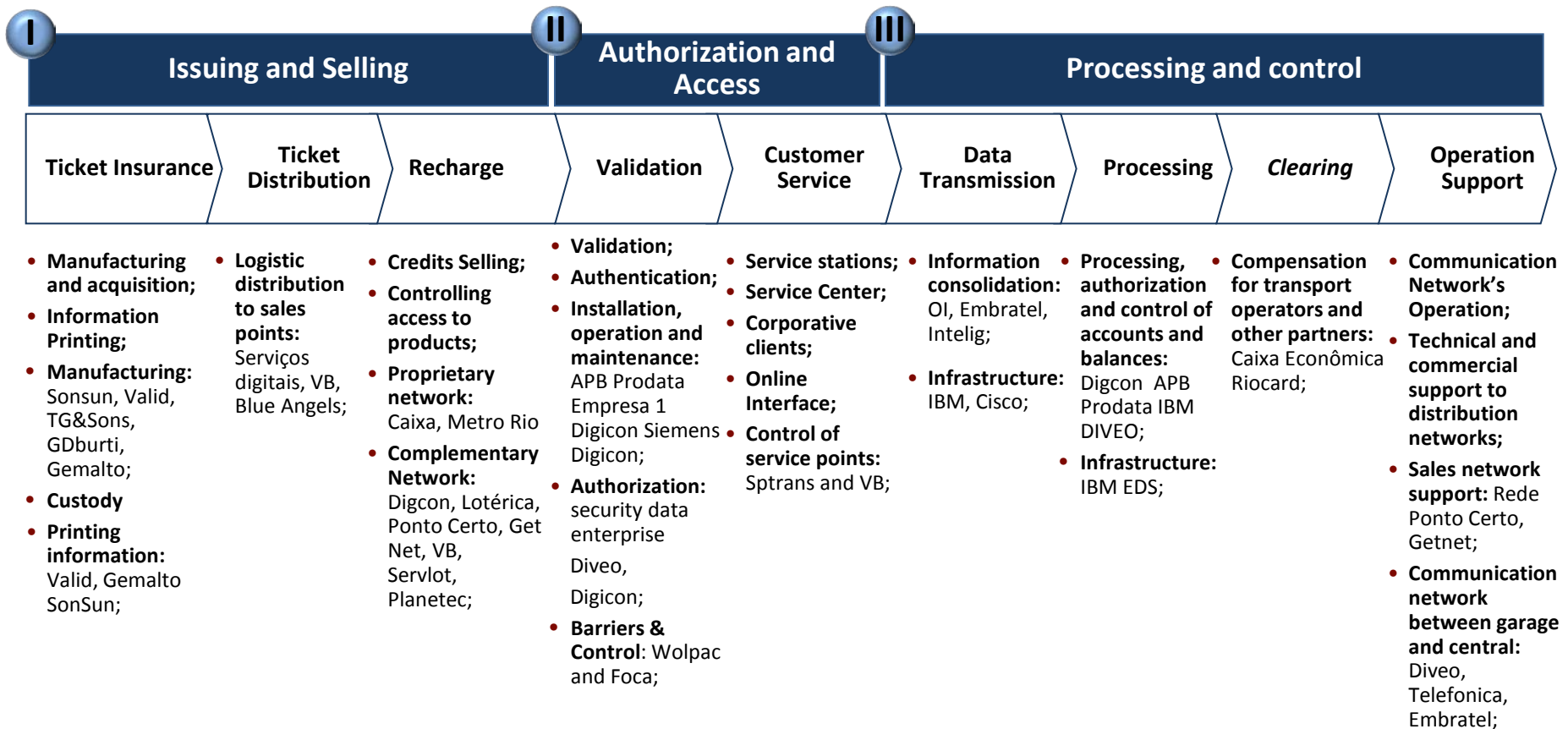
Integração/BPO

IBM

SIEMENS

INDRA

SONDA IT
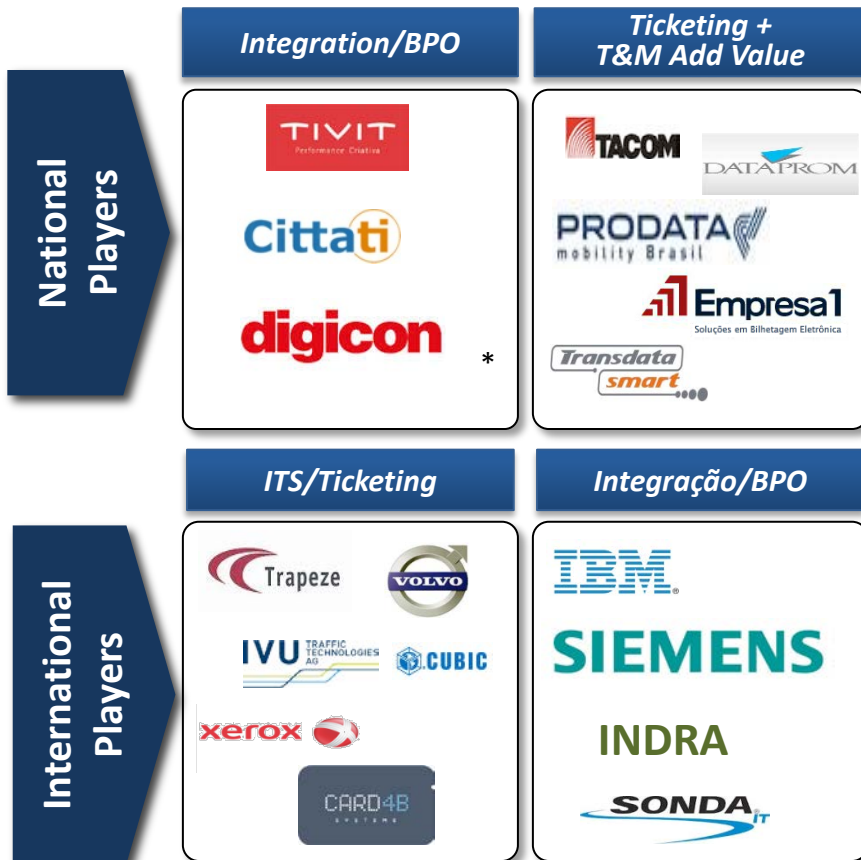
Main Highlights

- More than 30 players in the Market;
- International Players have few projects (Xerox, INDRA, Telvent);
- No current market leader, with the exception on AFC (Prodata Mobility, with an estimated 57% market share)
- Traditional Integrators like IBM, Siemens, Thalles and Telvent have been present but fece challenges to adapt its offer and Business Models.

Market Share in AFC

2%
4%
5%
8%
10%
15%
57%

- Prodata
- Empresa1
- Tacom
- Transdata

ANTP   idestra   UITP ADVANCING PUBLIC TRANSPORT   ViajeoPLUS   ipt INSTITUTO DE PESQUISAS TECNOLÓGICAS

Although relatively Concentrated, the Brazilian ITS Market has a relatively big number of players, mainly do to third parties Services and Infrastructure Providers.

Value chain and players* of AFC in Public Transport: summarized outlook:

I — Issuing and Selling | II — Authorization and Access | III — Processing and control

Ticket Insurance	Ticket Distribution	Recharge	Validation	Customer Service	Data Transmission	Processing	Clearing	Operation Support
• Manufacturing and acquisition; • Information Printing; • Manufacturing: Sonsun, Valid, TG&Sons, GDburti, Gemalto; • Custody • Printing information: Valid, Gemalto SonSun;	• Logistic distribution to sales points: Serviços digitais, VB, Blue Angels;	• Credits Selling; • Controlling access to products; • Proprietary network: Caixa, Metro Rio • Complementary Network: Digcon, Lotérica, Ponto Certo, Get Net, VB, Servlot, Planetec;	• Validation; • Authentication; • Installation, operation and maintenance: APB Prodata Empresa 1 Digicon Siemens Digicon; • Authorization: security data enterprise Diveo, Digicon; • Barriers & Control: Wolpac and Foca;	• Service stations; • Service Center; • Corporative clients; • Online Interface; • Control of service points: Sptrans and VB;	• Information consolidation: OI, Embratel, Intelig; • Infrastructure: IBM, Cisco;	• Processing, authorization and control of accounts and balances: Digcon APB Prodata IBM DIVEO; • Infrastructure: IBM EDS;	• Compensation for transport operators and other partners: Caixa Econômica Riocard;	• Communication Network's Operation; • Technical and commercial support to distribution networks; • Sales network support: Rede Ponto Certo, Getnet; • Communication network between garage and central: Diveo, Telefonica, Embratel;

*Few Examples

6

A traditional greenfield approach is unlikely to succeed. Local presence and understanding of local tech and business environment are key components.

Opportunities

- Low presence of international companies and large groups;

- Lack of technological offer of second generation platforms and more sophisticated software (MFI, algorithms, advanced architectures, systems integration, standards compliance);

- Competitive costs of production and software development → Export base for Latin America;

- Entry of players capable of innovation and integration;

- Local competition mainly Small and Middle Size, but open to technological partnerships and investment, with solid parent companies.

Trends

- Demand of more sophisticated ITS Offer, due to BRT and CCC implementations in the main Cities;

- Understanding of ITS as capable of generating ancillary revenues;

- Sources of financing more secure and inexpensive;

- Stronger Presence of International Players: Telvent, Xerox; CUBIC, IBM, Siemens , CARD4B.

- Standardization.

Source: DealMaker

Context

- High technological capability, but low investment in value-added differentiation through innovation;

- Market closed and conservative, with extremely poorly qualified decision makers;
  - Change of paradigm in some metropolitan areas are in progress → in line with international trends and practices;

- Market decision maker with mainly private but changing in the the face of new investments in infrastructure by governments;

Barriers

- Market is highly sensitive to cost; local production and financing is a must;

- Players with brand and business relationships established;

- Poorly qualified buyers;

- Predatory competition; Brazil is a difficult market to enter without a local case/presence;

- Need to establish basic services and local distribution; Distribution model by Partner already tested without success by international companies.

Drivers of Growth and Change...

- **Regulatory Demand**
- **SLAs and regulation** demand tools, services, hardware and more sophisticated applications;

- **Investments:** mobility projects demanding **interoperability,** like Concessions in Rio de Janeiro, Belo Horizonte, Brasília, Curitiba, Campinas, etc. PAC II and PAC III
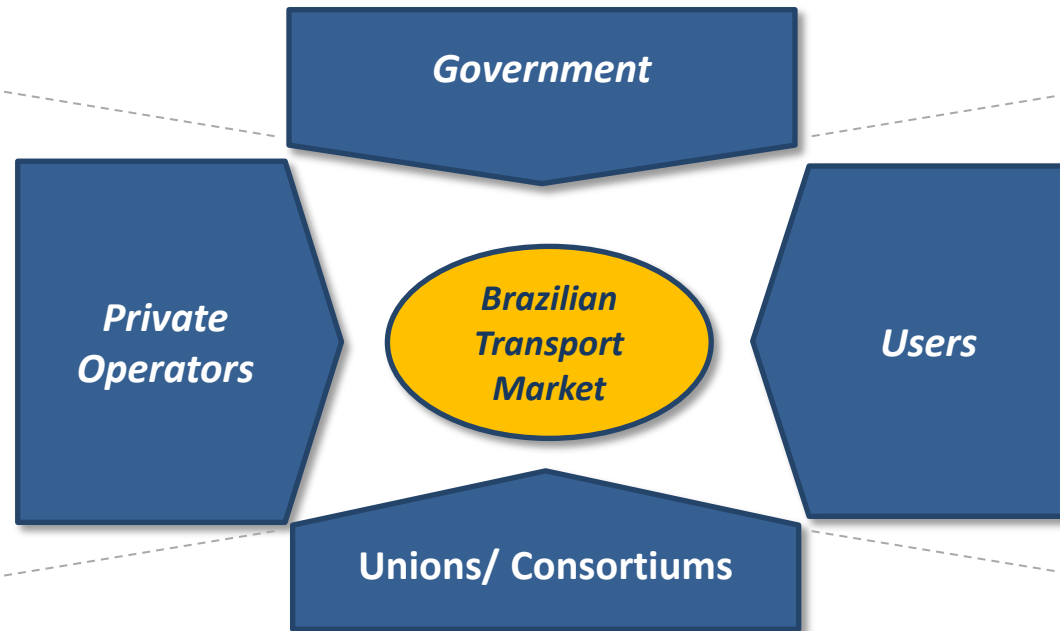
- Low Growth;
- Regulated Prices;
- **Demand for cut of costs and bigger productivity;**
- **Demand for capturing Accessory Revenues**

- **Pressure for more quality on services delivered;**
- **Pressure for lower tariffs and extension of Subsidized Tickets.**

Government

Private Operators

Brazilian Transport Market

Users

Unions/ Consortiums

- **Interoperability and Technological Standardization;**

- **Integrated Operations, capture of new clients.**

Chapter 1	Market Facts
Chapter 2	**Cases & Innovation Trends**
	Advanced Payments

Brazil has high penetration of Mobile Access, but a penetration ratio of Banking Services still below developed countries.

Main Highlights

- More than 1/3 of Population +16 has no bank account : +50 Million people;
- Mobile Penetration ratio of 120% (+ 240 Million Mobile Accounts
- 80% of Mobile Lines Pre-Paid;
- Less than 25 million Pre-paid Cards (non-mobility); **less than 1million contactless;**
- More than 85 million Pre-Paid Cards (Mobility

Main Assumptions

- Banks have a clear focus in controlling vertically the Payments Chain;
- Accessory revenue of cross services are very profitable;
- Pre-Paid Services and Mobile Services are Key to capture non-covered clients;
- Cost of acquisition, risk and management costs might be lowered trough Mobile Payments and Pre-paid Services.

Banks and Acquirers are system-ready and migrating ATMs and POS, but lack of Killer application and uncertainty regarding legislation and NFC standardization slowing mass adoption and card replacement. They are so naturally looking for the correct partner.

Clearly the Mobility Cards are the natural target. Although based in proprietary technology, with low-security and governance, a technology upgrade is necessary to allow convergence with Banking and Mobile Payment Industry.

- 6 million cards issued in Rio de Janeiro Metropolitan Area, more than 55% penetration.

- More than 7,5 million cards issued in Sao Paulo Metropolitan Area, more than 65% penetration.

- More than 3 million cards issued in Sao Paulo Metropolitan area.

Mobility Cards have a penetration ratio superior than any bank in metropolitan areas and are successful to target the unbanked population.

A few initiatives are on the move, with a focus in implementing hybrid Contactless EMV and Transport Cards and NFC Mobile Recharge. A few Pilots on course, but lacking a sustainable Business Model.

Bom + (Metropolitan Mobility Card of São Paulo)

- MasterCard Pre-Paid + Contactless proprietary Schemes
- Focus on Pre-Paid and Non-Banking Clients

Bradesco Prime

- Focus on Top of Wallet to Premium Clients;
- Dual Interface + Visa Pay Wave
- Future Recharge of Mobility cards in ATMs.

PONTO CERTO (Bilhete Único SPTRANS)

- Recharge of Mobility Cards over the Phone trough NFC;
- Debit on user account or trough pre registered credit card.

Biometric ID for SNU (Special Needs User) , trough fingerprint or Image ID is being implemented in several cities, with relevant results in Fraud Identification and auditing.

Ilhéus, Bahia

- Image ID System (backoffice processing)
- Relevant reduction in fraud and number of issued card
- UITP LAD PTx2 Award

Niterói, Rio de Janeiro

- Fingerprint ID;
- Reduction of issued cards ;
- Sharing of profile with other operators trough Bilhete Único

Aracaju , Sergipe

- Recharge of Mobility Cards over the Phone trough NFC;
- Debit on user account or trough pre registered credit card.

Chapter 1 | Market Facts

Chapter 2 | **Cases & Innovation Trends**

Passenger Information in Social Networks and Mobile Apps

Lack of traditional infrastructure lead users to collaborate trough with non-operator and non-regulator originated information, structuring "communities". Mobile Apps are consolidating network Information, non integrated at metropolitan Level.

Twitter , Facebook, Instagram and What's Up communities

- Scheduling and journey time information and security info;
- Accidents and Occurrences in the Network;
- Ombudsman and Public Pressure Alternatives.

Apps with Integrated Network Info

- I.e. Moovit and Google Apps;
- Integrated Journey Planning;
- Integrated change of Schedules and Notification.

Connectivity

- Wifi on stops and buses: better service perception;
- Bring your device concept.

Lack of ITS Planning and Fleet Management platforms by traditional operators and BRTs Implementation brought the opportunity for centralized CCOs, integrated with Traffic Management and another CCOs , mainly Security Forces and Metro and Rail Operations .

COR RIO

- CITY CCO Concept;
- Integrated with representatives of different Public Services;
- Integrated with CET-RIO Metro, Supervia, BRT System, SMTR and Rioônibus CCOs

BHTRANS CCO

- Integrated Traffic Management and PT CCO became the CITY CCO;
- Standardized devices and applications for the complete Bus Fleet (+ 3000 buses);
- Integrated PI, AFC, FM, and AVL Systems and Databases

PRA QUEM COMEÇA OU TERMINA
O DIA NA MADRUGADA!

N NOTURNO
REDE DE ÔNIBUS DA MADRUGADA
DA 0H ÀS 4H

São Paulo agora com ÔNIBUS 24 HORAS.

SPTRANS CCO – (Under Development) –Noturno Pilot

- Centralized Operation of the Bus Fleet (+15.000 buses); arguably to become the biggest centralized operation of a bus network in the world
- Bring your device concept being enforced to operators.

Motivated by the request of our colleagues, we would like to contribute with a few suggestions regarding the topics pointed as of interest.

- **Which topics/in which field do you see cooperation between EC and Latin America?**

Standardization, open data, advanced payments, SOA for ITS, BRT ITS Architecture.

- **Why do you think research in such topics is needed for cooperation?**

Lack of Standardization, proprietary ITS architecture implemented and opportunity to Value Added Services and Passenger Information in cooperation with Banking and Mobile Industry.

- **What are potential benefits and impacts for such cooperation?**

Open Markets and bring cost cuts in supply. More efficient and higher quality of service to users. Improvement of the BRT Technology

- **What conditions/framework/supports are essential to carry out such cooperation?**

To establish a technical cooperation with trusted entities and support consulting for the local initiatives like ABNT ITS Special Commission, UITP ITS Commission and ANTP ITS Commission.

THANK YOU.

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