

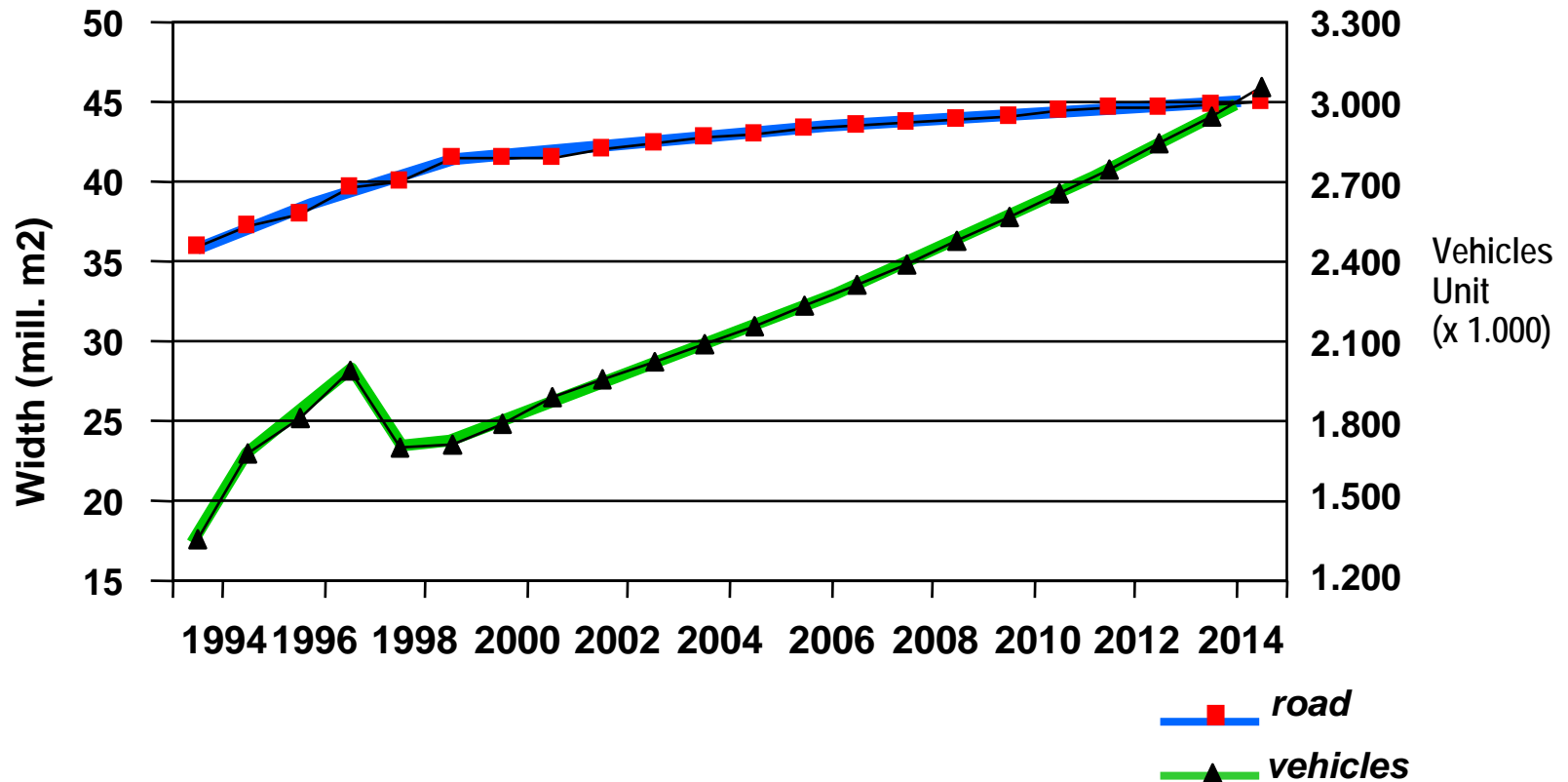


Photo courtesy of Dishub DKI Jakarta

Making TransJakarta Busway a world class BRT system

November 2007

ROAD WIDTH UTILIZATION BY VEHICLES GROWTH IN JAKARTA



Notes:

2003 – 138 new vehicles perday, eq to 700 meters of Road Line/day (252 kms/ year)

1996 – 355 new vehicles perday, eq to 1.775 meters of road line/day (648 kms / year)

Key recommendations

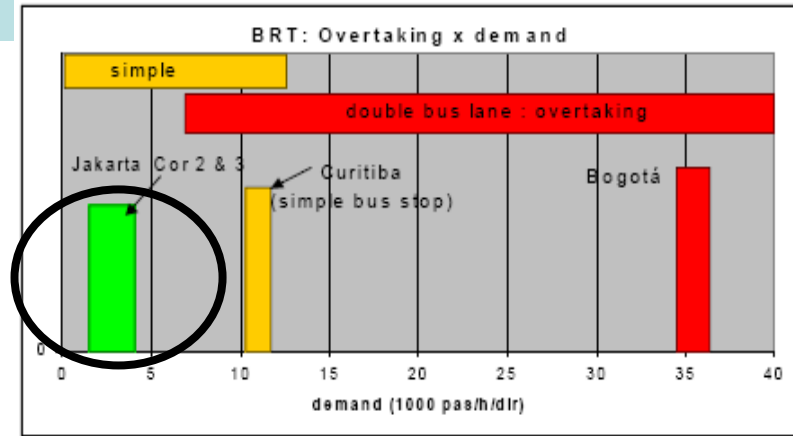
1. Increase **capacity significantly**, through increasing **busway average speed** by changing to two-door or articulated buses, changing roadway and intersection design, and easing congestion in mixed traffic
2. Improve **level of service** (fast traveling time & convenience) to optimize potential demand in the corridors, by **providing direct service** and **eliminating transfer** at crowded stations
3. Program **number of kms more efficiently** by applying integrated and efficient scheduling system, reducing **empty km (non-service)** through building required infrastructures (depots, refueling stations) located directly at the terminal points of the corridors
4. Aim for more economical **cost per km**, by introducing **competitive bidding** for new bus operators, reducing business risk and applying common financial scheme at prevailing market rate
5. Prepare a strong **legal basis** and adequate **commercial (contractual) arrangement** with private sector to ensure compliance and good governance practice
6. Set-up an **integrated, reliable and trustworthy fare collection system** to secure public confidence
7. Develop financial projection and to determine government subsidy and affordable public fare by calculating the overall cost of the BRT system (**technical tariff**), to ensure **long-term sustainability** of TransJakarta
8. Develop **required institutional infrastructure** as well as **strengthening BLU TransJakarta organization**, to cope with rapid expansion of infrastructure development
9. **Better coordination and socialization** for planning, design and construction of **new corridors** to regain **public support on busway** by minimizing traffic impact and to avoid disruptive during infrastructure development

Sources:

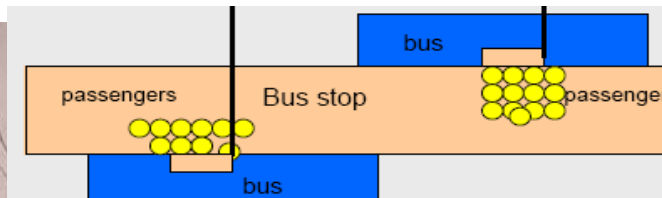
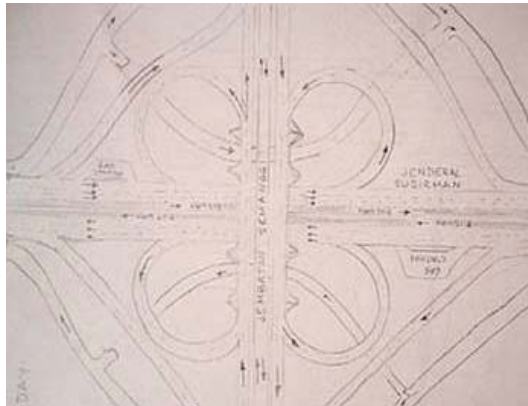
1. ITDP Technical Review, January 2004
2. ITDP Final Recommendation, June 2005, USAID
3. ITDP team observation and analysis 2007

1. Increase capacity significantly, through increasing busway average speed by changing to two-door or articulated buses, changing roadway and intersection design, and easing congestion in mixed traffic

- 1,000-4,000 passengers per direction per hour is far below international standard; 10,000-12,000 in Curitiba (simple bus, no overtaking lane) or 35,000 in Bogotá (articulated bus, overtaking lane)
- Congestion is the main issue, on both **mixed traffic** and **busway lanes** which are not enforced
- **Intersection delays** are also contributing factor, as traffic light signal phases are not efficient and some cycle time are too long (>2 minutes)
- In corridor 1, most of the problem mainly due to excessive boarding and alighting time of single door buses



	Average boarding time (seconds)	Capacity (pass/h)	Bus stop time (seconds)	Speed (km/h)	Fleet (buses)
Present Situation	2.5	2700	45	17	60
Improving boarding	1.7	3700	35	19	56
Bus with two doors	0.5	6000	22	21	51
With articulated bus	0.3	9600	18	23	26



2. Improve level of service (fast traveling time & convenience) to optimize *potential demand* in the corridors, by providing direct service and eliminating transfer at crowded stations

- More than 80%* passengers transfer at **Kp.Melayu, Senen, Harmony**

- No transfer at **Halimun** by providing direct service from Ragunan to Dukuh Atas

- Eliminate transfer at **Kampung Melayu**:

Cililitan – Senen (weekdays)

Cililitan - Ancol (weekend)

- Eliminate transfer at **Harmony**:

Pulogadung - Kalideres

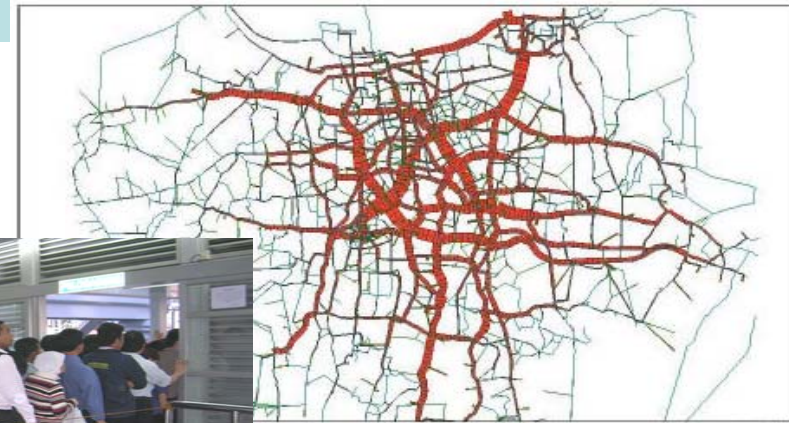
Rawabuaya - ASMI

Senayan - Senen

Blok M – Kalideres

Blok M – Pulogadung

- To capture demand better, TransJakarta should start a **feeder system** with a workable fare integration

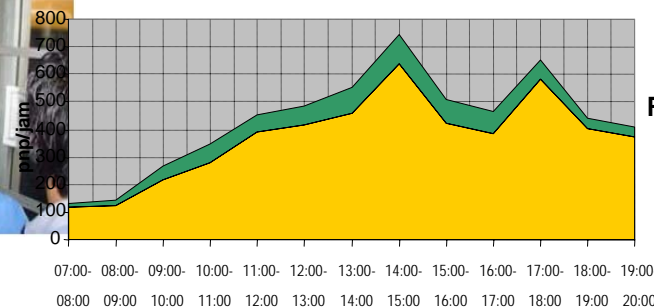


Jakarta – Desire Lines

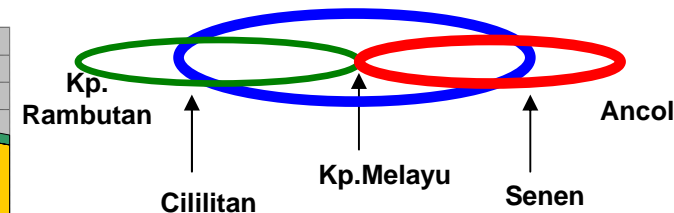
	CORRIDOR	LENGTH (km)	Frequency (AM)	Demand (AM)
1	Blok M-Kota	12,9	296	12546
2	Pulo Gadung-Bundaran HI	12,2	254	11631
3	Daan Mogot-Djuanda	13,4	495	12548
4	Pulo Gadung-Tanah Abang	12,2	571	17319
5	Kampung Melayu-Ancol	11,3	631	11396
6	Kampung Melayu-Cideng	11,6	315	4295
7	Pasar Minggu-Manggarai	9,2	524	10228
8	Ciledug-Cawang	23,5	912	16170
	Total	106,3		



TOTAL PENUMPANG DI SENEN



■ pnp trans ■ Non Transfer (masuk dr Senen)



Sources:

*ITDP surveys, October 2007

4. Aim for more economical cost per km, by introducing competitive bidding for new bus operators, reducing business risk and applying common financial scheme at prevailing market rate

- The major expenses (around 70%) of **TransJakarta's expenditures** is to pay the cost per km of Bus Operators, which consist of two parts: The Investment Return for the capital invested and the Operational Cost.

The components of Cost per Kilometer::

- **FINANCIAL COSTS**
INTEREST ON LOANS/COMMISSIONS L/C/FEES
- **AMORTISATION OF INVESTMENTS**
BUSES/OTHER ASSETS
- **PROFIT**
REASONABLE ON EQUITY
- **OPERATIONAL EXPENSES**
FUELS/TIRES/SPARE PARTS/LABOR/MAINTENANCE
- **OVERHEAD**
MANAGEMENT/PUBLIC service/ SOFTWARE/SUPERVISION

Some further review and analysis is needed to improve the **base assumptions for cost per km** calculation:

- All operator's investment is calculated based on **100% debt (no equity at all)**
- Relatively **high cost of fund** or interest rate on debt (20,5%)
- **BOT vs. BOO** scheme
- **Spare parts, service & maintenance fees** are relatively **high (12%)** although they can be done internally (no Authorized Sole Agent - ATPM)
- Potential **redundancy** on overhead costs (management)?
- **Bus price** is quite high?
- **Margin on cost** – no incentive to be efficient for operator

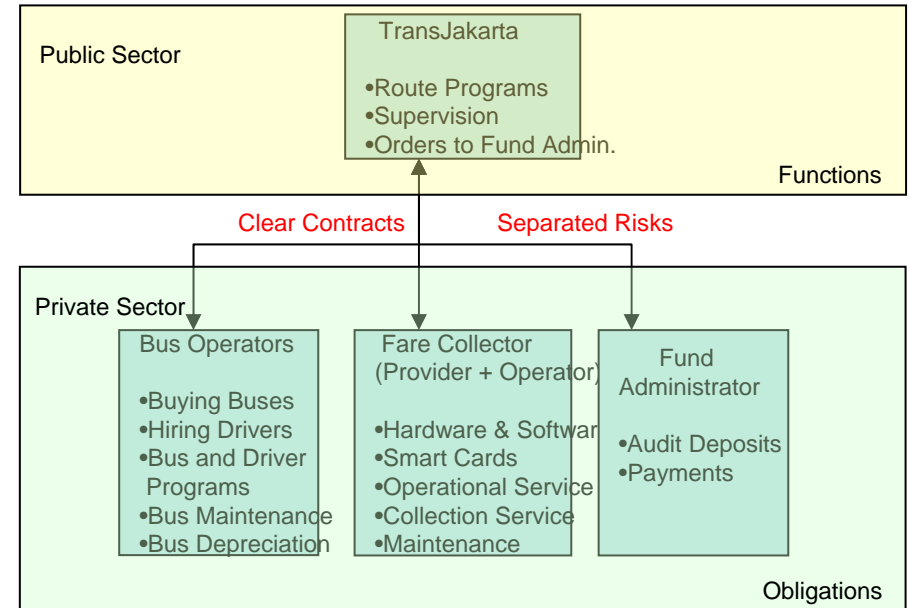
BLU TransJakarta and ITDP will work with **Ernst & Young** to develop proper model of cost per km, and fair value of cost per km.

5. Prepare a strong legal basis and adequate commercial (contractual) arrangement with private sector to ensure compliance and good governance practice

- The contract should provide the right for the bus operators **to operate** on the BRT system (**not to own the corridor**), as directed by BLU TransJakarta (the BRT Agency).
- The fare to be paid per kilometer should be written down in a **legal document** together with the formula to recalculate automatically when the technical fare changes, to include the rules to use Contingency Fund and the rules to distribute **the risk and benefits** in case of big variances of the financial model conditions.

Some issues on existing legal arrangement:

- Legal basis for direct appointment of bus operators
- Concession of government asset?
- Bus operator owns the corridor or 'ijin trayek'?
- Guarantee minimum number of km per day



- Currently BLU TransJakarta and ITDP are working with law firm **Hadiputranto, Hadinoto & Partners (HHP Baker McKenzie)** to develop contract drafting for bus operator
- In addition, HHP will also provide legal opinion

6. Set up an integrated, reliable and trustworthy fare collection system to secure public confidence

Current ticketing system has **limited security**:

- No multi-trips ticket (smart card) are available now
- Coupon (paper) ticket in the new corridors (4-7)
- Reliability of turnstiles and point of sales (POS)
- The revenue collected by ticketing operator isn't going directly deposited to the bank

A good ticketing system should have:

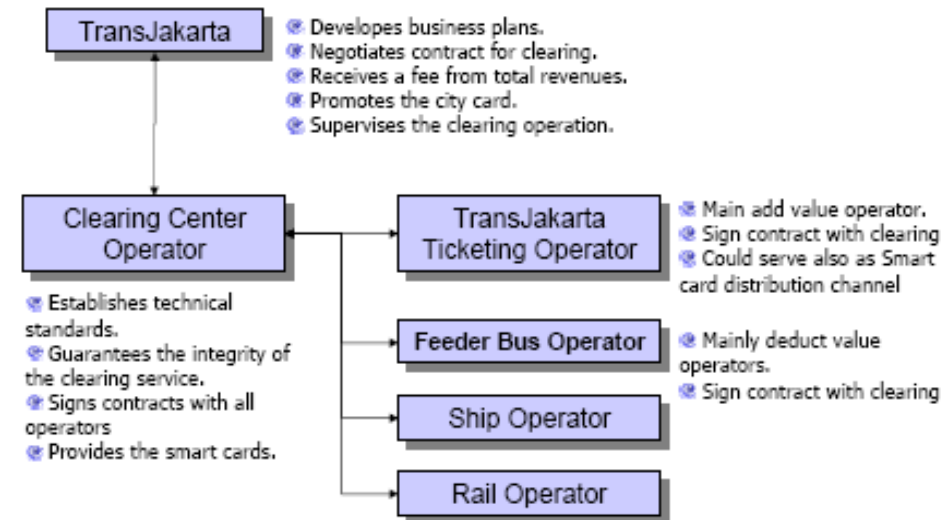
- The money manager (usually a bank)
- The equipment provider
- The ticket provider
- The ticketing system operator
- The transit authority

The Ticketing system in **Jakarta needs**:

- To be retooled to provide full range of ticketing needs
- **To be sufficiently secured to public confident the revenue was used properly**
- Institutional structure to give good ticketing service and operation
- To be integrated with other transport providers



The following can be the institutional arrangement for the implementation of a multi application card.



January 13, 2005

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7. Develop financial projection and to determine subsidy and affordable public fare by calculating the overall cost of the BRT system (Technical Tariff) to ensure long-term sustainability of TransJakarta,

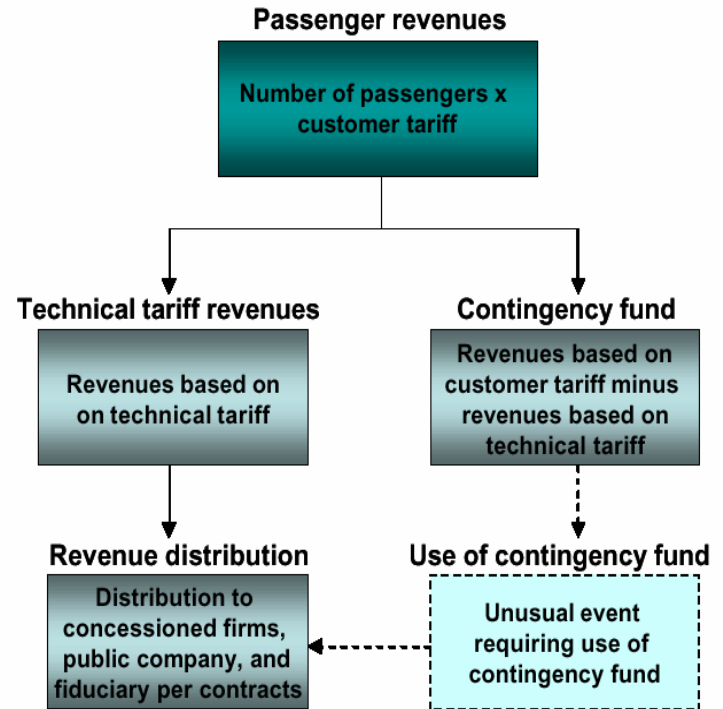
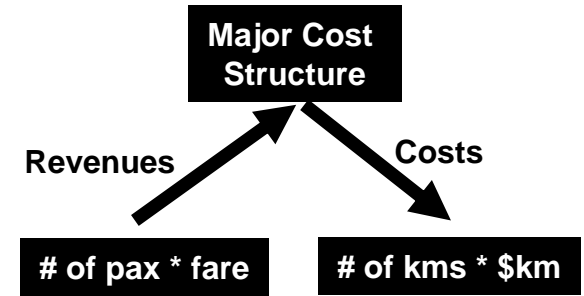
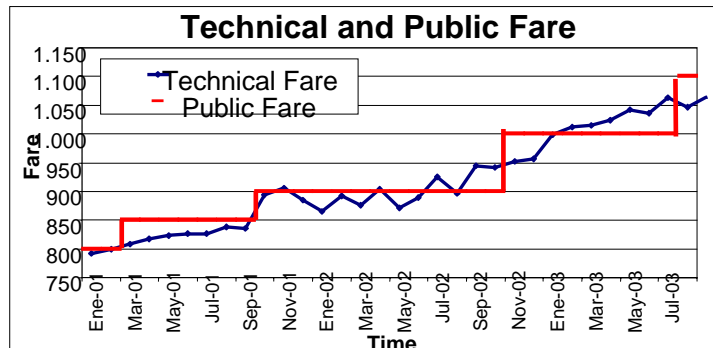
Recommendations for BLU TransJakarta:

- It is important to elaborate an **Economic Model** for whole system of TransJakarta to know the **Technical Fare** and its relation with the **Public Fare**. This model must be done for the entire system.
- To have the information about the demand and the revenues for the entire business, and the **distribution of the revenues** to the parties involved in the system.
- It is important to **check and to balance** the decision about **the number of kilometers** and its effects on the **public fares**.

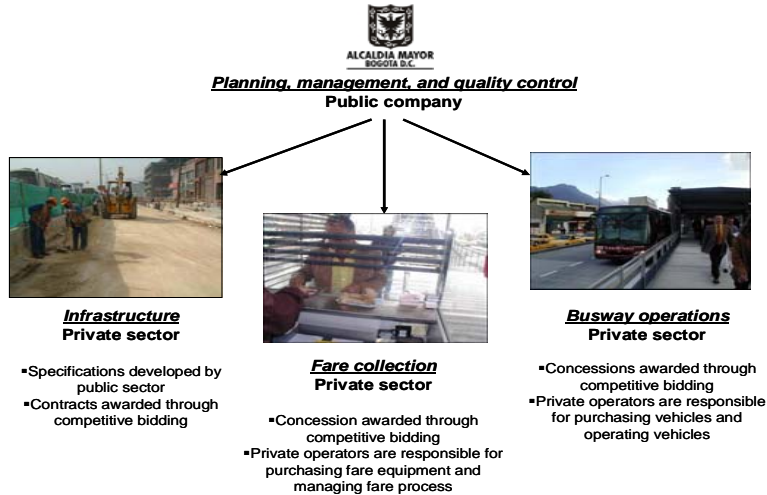
Technical Fare =

$$\text{No.Kms} \$\text{KmST} + \text{No.Pax} \$\text{Rec} + \text{No.Pax} \% \text{Aut.} + \$\text{FA}$$

No.Pax



8. Develop required institutional infrastructure as well as strengthening BLU TransJakarta organization, to cope with rapid expansion of infrastructure development

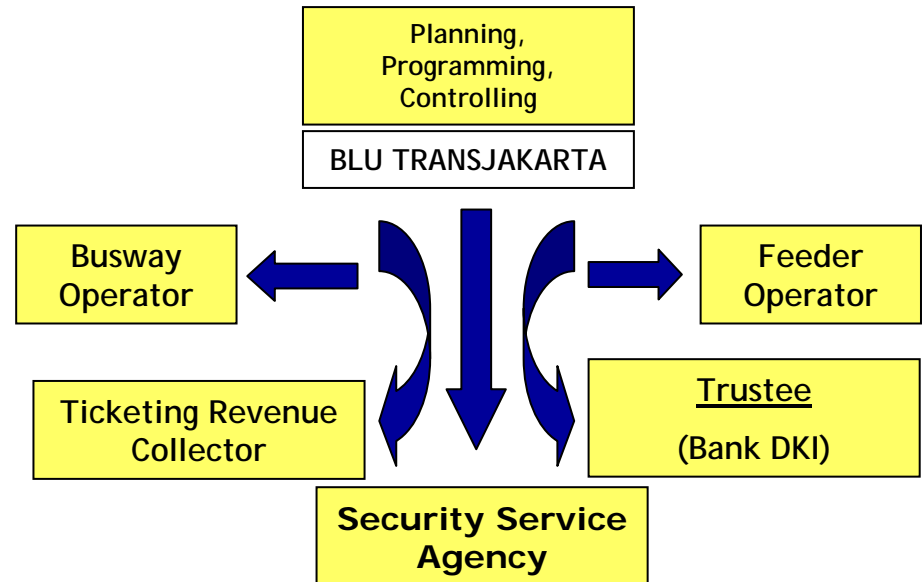


In order to function optimally as TransMilenio, **BLU TransJakarta should be empowered to:**

- Regulate routing/service in the BRT corridors
- Conduct competitive bidding and negotiate contract directly with bus & ticketing operators, and bank
- Directly control the farebox revenue and manage budget allocation
- Plan & propose new corridors

Within BLU TransJakarta organization, **a check and balance** between **kilometers (or service) and fares** is needed to guarantee its sustainability, by managing two aspects:

- **Operational** - to program and control the **number of kilometers**, in terms of frequencies and bus routes, for the bus operators.
- **Economic/panning** – to calculate the effects of the number of kilometers on the **technical and public fare** (economical implications of the number of kilometers).



9. Better coordination and socialization for planning, design and construction of new corridors to regain public support on busway by minimizing traffic impact and to avoid disruptive during infrastructure development

Suggested an inter-departments team works directly for Governor, for comprehensive solution involving transportation, environment, energy, economic development, and city spatial planning...

Main possible causes of traffic impact:

- *Bottle-neck (narrowing)*
- *Too frequent U-turn*
- *Construction method*
- *Traffic light phase & cycle time*
- *Traffic volume at certain period*
- *Conflict traffic at intersections or malls*
- *'Nge-tem' (public transport blocked the line)*



Possible solutions:

- *De-tour*
- *Traffic restraints; eg. public transport*
- *Contra-flow*
- *Adjust traffic signal phases & cycle time*
- *Change roadway (one-way)*
- *Simplify traffic flow at intersection*
- *Construction method (widening first, 24hrs, one side)*

