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ADVANCED BUS NETWORKS

ENHANCING BRT INTO URBAN NETWORKS

Public Transportation oriented urban development should aim at dense, mixed building environments with high quality public street space around stops, connected by polycentric networks.

Thus urban bus systems do not need continuous closed dedicated lanes, flyovers, left side exits to elevated platforms, central interchange stations. They do not have to follow the trunk/feeder logic.

Instead, BRT and Conventional Busses should be integrated and enhanced to area wide ABN - Advanced Bus Networks. They form multi-directed flexible networks with multiple (exchange) bus stops, priority at all junctions, dedicated lanes only at certain sections, low floor busses with only right side exits, stops at 18 cm sidewalk curbs at caps with straight bus approach. They are integrated in urban design and can be introduced and invested gradually step by step.

BRT - efficient through absolute priority
Since nearly two decades Bus Rapid Transit Systems are very efficient in terms of transportation performance, cost and consumption of space and energy. Most existing BRT lines are designed as widely separated systems with exclusive and dedicated lanes and stations. Future systems additionally may use more flexibilities of the rubber tyre system without rail-like separating effects: for better integration into urban structure, design and environment, and without giving up the advantages of BRT.

Urban density and public space for passengers
Only high urban density around stations can provide enough passengers, only mix of urban functions can provide all directions 24 hrs demand, only well designed public street space can provide attractive access for passengers. Integration can be achieved by integrating functional requirements into urban public street design and reducing monofunctional separated technical space (bus lanes, platforms, etc.).

Development from lines to urban networks
Advanced Urban structures follow a model of many different, specialized and equivalent centers rather than a hierarchy of centers and peripheries. This leads to quasi endless transportation networks with polyvalent nodes, directions and relations. Trunk /feeder systems do not quite reflect these objectives.

Level junctions, capacity limits, mixed traffic
The many junctions of a wider network must be on ground level; this is cheaper and more favourable for urban design and pedestrian access than flyovers. As busses can be given priority at green light only for one direction at a time, usual maximum BRT lane capacity is not possible. Assumed busses driving in groups of two (articulated), the result will be a maximum of about 25 busses per lane per hour. 25 vehicles per hour do not really justify a dedicated bus lane. So more than half of the way busses may as well lead a queue of private motor vehicles on the same lane without being disturbed or delayed. Dedicated bus lanes must be provided only at some street sections where congestion is decided to be located. This helps to save public urban space and fosters flexible street design, especially in small historical streets or in streets with less traffic.

No left doors, middle platforms, central stations
Mixed private and public traffic allows bus caps at general sidewalk, which integrate bus waiting with window shopping and strolling. This is much better than the unavoidable dedicated platforms for PT lanes in the middle of the street. As exchange to the opposite direction is very unusual also within middle platforms, even in middle lane sections right side platforms are suitable. So left side bus doors are expendable. This makes busses cheaper and more flexible for use in different places, situations and purposes. Network models also do not really need central exchange stations with their double left turn capacity problems. Decentral interchange takes place at any junction from one sidewalk to the next, this therefore being places of intensive urbanisation and pedestrian crossing in all directions.

Curb stops at caps, low floor technology
18cm tyre protecting curbs at caps in straight bus approach position together with low floor busses offer overwhelming advantages in comfort, speed and long term economy. All other solutions should only be intermediate. Elevated platforms of 40-60cm should not be installed at all: they cause severe urban functional and design problems, car damage, and dangerous gaps for em- and disembarking, and prevent progress to gradual low floor equipping.