

1. An effective multi-modal integration: indispensable condition of success for modern urban rail systems.

The majority of inhabitants of urban areas take daily trips which include connections from one vehicle to another. This universal situation is due as much to the complexity of urban geography as to the constant growth of cities in all countries of the world. In urban areas blessed with urban rail systems, these connections are most often of the following type for trips between residence and workplace:

- (i) suburban train > subway or suburban train > bus
- (ii) bus > subway and/or vice-versa
- (iii) (more rarely) bus > bus.

Studies show that the demand for public transport is highly sensitive to the nature of these connections, the most important criteria for passengers being 1) the number of connections per single trip, 2) the economic impact of the connections (double payment or not) as well as 3) the quality of the connection. “Quality” is measured principally by the time spent waiting, but also by criteria purely subjective such as the comfort of the wait (adequate facilities, seating) or security.

Urban and suburban rail systems are at the core of this problem of integration. Their demand varies wildly depending on whether or not they have adequate facilities for connections and whether or not they are efficiently combined with the non-rail network, or in essence, whether or not they are correctly *integrated*.

In cities of medium size, the introduction of an LRT allows the transport system to have a structured axis, which serve to accelerate trips, and as a result, promotes of public transport. Still, the efficacy of these modes of transport measured in passenger per kilometer often depends in large part on the quality of connections with the existing bus network. With the development of the PPP principle, this factor has become an important condition of the success of any new system. Private operators will not accept to participate in the investment costs of an LRT unless the revenues from operation (i.e., the future estimated passenger demand of the system) offers them a sufficient return on capital employed. The same multi-modal integration so strongly desired by passengers has also become a basic necessity for private operators and investors. Public authorities are also taking note, as an integrated and efficient system generating greater operating revenues helps increase the portion of investment which can be financed by the private operator investor, thus reducing the public expense.

The experience of Connex in LRTs and, more generally, in operating urban transport networks has convinced us that the launching of any urban rail project (including the modernization of existing systems) must always take into account the concept of connections and should therefore always be preceded by an adequate restructuring of the bus network within the transport perimeter under consideration. One could consider then that one of the essential areas of expertise expected of an LRT operator should be to also have a strong experience in urban bus systems!

2. The importance of the contractual framework

The operation of an LRT can never be expected to be carried out based on short-term contracts. There are several reasons:

- Training of personnel for a new system can last for several years

- Maintaining equipment and railways requires long-term planning
- The quality of service can only be improved by a succession of actions and adaptations.
- Marketing and commercial policies designed to increase demand only show results when carried out over time.
- The interest of public authorities is to merit from a trusted and well-performing operator, without having to periodically search for a new one.

Long-term contracts also allow the operator to make investments linked to the LRT using its own resources, for example: station furnishings, parking, ticketing systems, or equipment at maintenance facilities. As these investments cannot be amortized with a short-term contract, the validity of operation contracts generally correspond to the period necessary to amortize investments made by the operator.

In an operation contract without commercial risks (the operator's revenue is not dependant on the number of passengers transported), investments made by the operator are limited to those facilities and equipments strictly linked to the operation itself, and the length of the contract normally set between 7 and 10 years.

However, recent years have seen big developments in projects based on the PPP model (Public Private Partnerships), in which the operator assumes risks and obligations above and beyond those mentioned above: risks on passenger numbers, obligations to invest in heavy assets (rolling stock, signaling, systems, etc.) These contracts are inspired by projects in Europe, notably France, by the fact that they delegate public services. They permit the public transport authority to connection a portion of the costs associated with introducing the LRT to the operator investor. The development of this model under the form of a BOT or a concession is of great interest to many public authorities for reducing public expenses, however it requires a demanding contractual framework.

In this model, the rights and obligations of a future operator/concessionaire are defined in a contract which is usually quite complex, and the quality of this contract is crucial for the realization of the project. Essentially, if the contract is advantageous for the operator/concessionaire, then they will accept the idea of financing a portion of the investment for the project. The experience of Connex in this type of contract has developed over time and today regroups almost all possible contractual scenarios. LRT systems operated by Connex in France, Spain, Sweden, Ireland, the Czech Republic, Australia, and soon in Israel, number a total of 11, and make Connex the world's number one operator of LRTs.

To maximize the chances of success for an LRT, a multi-modal integration and a restructuring of the existing bus networks are necessary conditions, as mentioned above. This may require that the LRT concession contract also integrates the operation of the network of buses within the perimeter of influence of the project. The exact definition of this detail is carried out on a case by case basis, as a function of need as well as of the authority's desire to entrust the management of their multi-modal integrated network to a single operator. This is the case in the city of Bordeaux in France (population 600 thousand), where Connex operates a fleet of more than 500 buses alongside a tramway (Alstom) with a new technology that draws electrical power from an underground system. It is also the case of Rouen, where Connex is the concessionaire of the entire network of public transport in the urban area (population 400 thousand), including an LRT, buses and taxis. Rouen was the first experience in France where operations of an urban multi-modal network were conceded to a single operator.

This will also be the case, we hope, in Japan, where we hope to have a public authority grant us the management of a complete network, according to the details discussed above.