

Fostering smarter mobilities and connecting efficiently various transport modes to railway stations is a long lasting effort of stations's conceptors and station managers. However, the making of an entire intermodal hub is not the only affair of railway operators but is going along with a larger dynamic of urban development. Intermodality is conditioned by the supply of a wide range of collective transport as well as multifactorial evolutions (social, economical, cultural) that encourage ecomobilities and make urban ride and walk possible, useful and nice.

Even if intermodality is yet a reality in many metropolitan stations, a growing consensus emerges among station managers that a step forward has to be done. In this sense, intermodality is no more a mere matter of fact, or a technical part of the maintenance of a station, but a strategic option. Achieving a better interaction between the station and its urban and economic environment helps making a station more attractive and rentable.

A good technical and rational organisation of an intermodal station may be really insufficient to meet future station's requirements. In the scenario of fast growing transportation demand, volumes and types of flows may differ greatly with existing ones. Hence, this communication deals with innovative solutions meant to enhance intermobility. The communication starts from the statement that intermobility is not only a matter of "bigness" of station, nor a question of intensity of railway activity, but an element in the growing complexity of station's management and governance.

Capitalizing the experience of four years partnership with SNCF "Gares&Connexions", the authors explain how scientific and innovation trends may address some operative challenges. A first part defines intermobility as a transversal lever of change in a general system of station's constraints; a second part presents the interest of simplified visualization models to take the best from tech and science and transfer into station competitiveness.

Part 1 : Intermobility is a new manner of thinking station development

How can we obtain seamless movement in and around a large urban railway station ? The answer is not merely technical, nor is it a matter of conception of space. Intermobility derives from a multidimensional approach and stays as a challenge in a interconnected network of radical changes facing station's conception and management in the future. It's a challenge that suppose overcoming contradictory demands. In this sense, complex thinking (in the field of complexity sciences and design thinking) help framing and negotiating with all these multidirectional movements and sometimes opposite ongoing constraints .

Stations are exposed to more and more new and contradictory injunctions of change. They have to be flow oriented but, in the same time, welcome more sedentary activities (the so desired shopping plots and waiting rooms; they have to be urban icons but must offer sobriety and adaptation to multipurpose uses; they offer advanced esthetical design experiences but integrate higher technical and technological processes and devices; they cultivate openness to urban trends but have to reinforce in the same moment security parameters; they address exclusive services but have to give comfort to every user; they often are seen as a lever for transformation and modernization of the city while capturing and transmitting its memory; they follow new norms and face short term financial constraints, while being integrated to metropolitan and regional projects of territorial development, which are set to deliver long term benefits.

Part 2 : Innovation as part of station's adaptation to future

Several railway operators are conscious of the urgent necessity to go beyond the best actual and up to date professional know how and consider innovation (with the part of risk attached to real scale experiments) as an important part of their mission. This communication is limited to software innovation and deals here about the capitalization of information

concerning passenger's (and more general station's users). Gathering more comprehensive knowledge and having the possibility to predict with better precision several patterns of station use becomes more and more central to operators. We develop the way in which adapted visualization and modelization processes help transforming gradually an intermodal station to a more "intermobile" place. More precisely, innovation helps overcome such limits as : the scalability of classical microscopic indoor movement; the quantitative and qualitative integration of information into big data systems