

# Network

A network is a set of elements that may be material, the infrastructure, and immaterial, electro-magnetic (waves) or informational, which ensure the establishment of relations between different places of a territory and between the entities that are occupying them.

It comprises not only linear, permanent or temporary, elements which express the existence of relationships and ensure that they are possible, but also nodal elements needed in order to organise flows and to make the system in which the network is included work.

Among linear elements may be mentioned railways, roads and motorways, waterways, telephonic and electrical cables, pipe-work needed for water conveyance and for purification, Hertzian connections, rivers and their tributaries forming hydrographical networks or, in a more abstract way, exchanges of information, of resources, social relationships, etc.

As for nodal elements, they refer to railway stations, airports, subway stations, interchanges in road and motorways networks, electrical transformers, manholes, railway bifurcations, satellites, or also, at another scale, to cities, banks, firms, persons when some maintain between them various (political, economic, social, etc.), numerous and regular relationships in the context of urban networks, of bank networks, of firms networks or of social networks.

Existence of networks is guided by a need for mobility, communication, exchange due to heterogeneity of geographical space. To satisfy such a need implies interconnection of geographical places. Interconnection allowed by transport and telecommunication networks.

The role of nodes in network working is essential, as they allow multiple exchanges, transfers, commutations and, hence, partly compensate the absence of direct links between each pair of places to serve.

Often places of access to networks, nodes are, in some cases, places of power, distinct from the other parts of the territory and hierarchically organised in function of the quality of service they are able to provide via the networks serving them. It is indeed discontinuity, the more or less pronounced rarity of entry and exit points that create power.

This discontinuity, which opposes to continuity of the territory, constitutes, with the performance of transport systems that serve it and with the structure, the morphology of their network component, one of the main explanatory factors of the differences in accessibility characterising geographical space.

The most usual representation of networks relies on simple graphical elements, points and arrows, which compose a mathematical object with numerous properties, the graph.

[gallery link="file" ids="1077"]

## Bibliographie