# UPSTREAM STUDIES

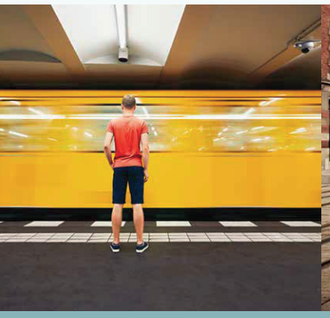
egis

# EGIS
# APPROACH

## A GLOBAL, ITERATIVE AND PROGRESSIVE APPROACH TO DEFINING THE PROJECT

### FIRST QUESTIONS

The definition of the project and its targets are the main objectives before going forward and entering into more technical details. This is the goal of the upstream studies. At this stage, the following questions have to be asked in order to define the scope of the project. These questions will implement the *"full picture"* of the project that will be kept all along the process.



**WHY ? WHO ?**

USERS NEEDS ?
PREDICTABLE DEMAND ?
STAKEHOLDERS ?

↓

**ATTRACTIVE PLACES, POPULATION, JOBS, MODELLING**

**HOW ?**

HOW WILL IT BE OPERATED ?

↓

**WHICH MODE OF TRANSPORT, SERVICE CRITERIA, OPERATION STUDIES**

**WHERE ?**

WHICH CORRIDOR(S), ROUTE(S) ?

↓

**NETWORK DEFINITION, CORRIDORS INDENTIFICATIONS, URBAN INTEGRATION**

**HOW MUCH ?**

CAPITAL COST (CAPEX) ?
OPERATION COST (OPEX) ?
REVENUE

↓

**SOCIO-ECONOMIC AND FINANCIAL ASSESSMENT MODELLING, BUSINESS CASE**

# EXPERTISE

## A DEPARTMENT DEDICATED TO THIS ESSENTIAL STAGE OF THE PROJECT

The Egis upstream studies approach is structured around three main skills:

### TRANSPORTATION PLANNING & TRANSPORT ECONOMICS STUDIES

- Socio-economical assessment *(population, employment ..)*
- Financial appraisal
- Urban and suburban traffic forecast
- Demand analysis
- Estimation of construction and operating costs

### HEAVY RAIL & URBAN TRANSPORT OPERATION STUDIES

- System capacity studies
- Schematic track layout
- Benchmarking, journey time estimation, rolling stock fleet size
- Reliability of operation and management of back-up modes
- Interfaces with other modes *(pedestrians, connecting stations, roads, tram)*

### URBAN PLANNING, TRANSPORT INTEGRATION & FUNCTIONAL DESIGN

- Integration of public transport infrastructure into its urban environment
- Urban organisation strategy: alignment, corridor and surrounding roads
- Functional studies: identification of the stations / stops locations, integration with other modes *(pedestrians, cyclists and other modes of transport)*
- Functional design of metro stations, cable car stations and interchange centres

# ITERATIVE & PROGRESSIVE APPROACH

A phase of *diagnosis* precedes the project definition (urban & needs identification) to have a good understanding of the issues and the site constaints.

Then, the upstream studies follow a *convergence approach* with three successive steps: the opportunity studies, the feasibility studies and the concept design.

This convergence approach is essential for the definition of the project and to avoid going backwards during the technical phases, i.e. Preliminary Design and Detailed Design.

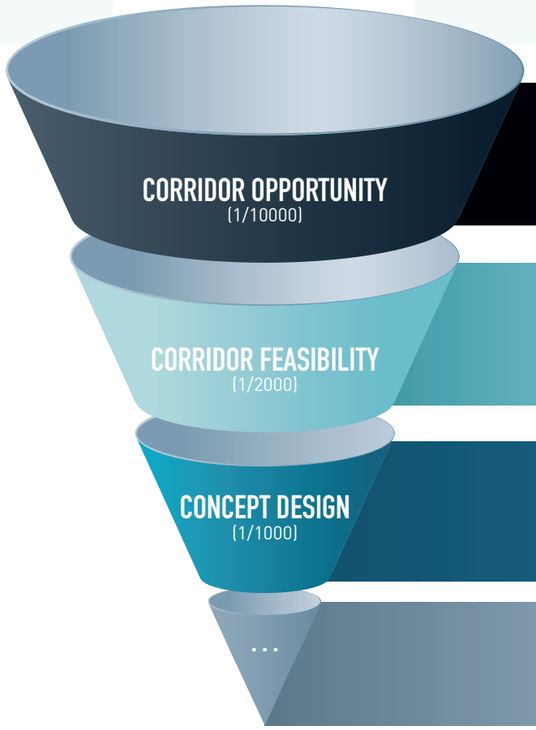
For each of these three steps, all the topics shown opposite are studied with an *increased precision* following an *iterative loop* of definition and assessment.

### PROJECT DEFINITION

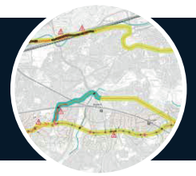
- → Users needs
- → Stakeholders expectations
- → Traffic & transportation studies *(traffic, parking, transport network ...)*
- → Alignment
- → Urban integration
- → Mode of transport
- → Operation principles
- → Transport Master Plan
- → Urban Mobility Plan

### PROJECT ASSESSMENT

- → Demand
- → Service Quality
- → Environmental & urban impacts
- → Investment cost
- → Operation simulation
- → Project implementation *(planning)*
- → Road traffic impacts




PROJECT DEFINITION, CHOICE OF THE TRANSPORT MODE, CORRIDOR ANALYSIS



ANALYSIS OF THE OPTIONS AND POTENTIAL PINCH POINTS

URBAN INTEGRATION BASED ON THE PREFERRED OPTION

NEXT PROJECT STAGES AFTER THE UPSTREAM STUDIES:
- PRELIMINARY DESIGN (1/500)
- DETAILED DESIGN (1/200)
...

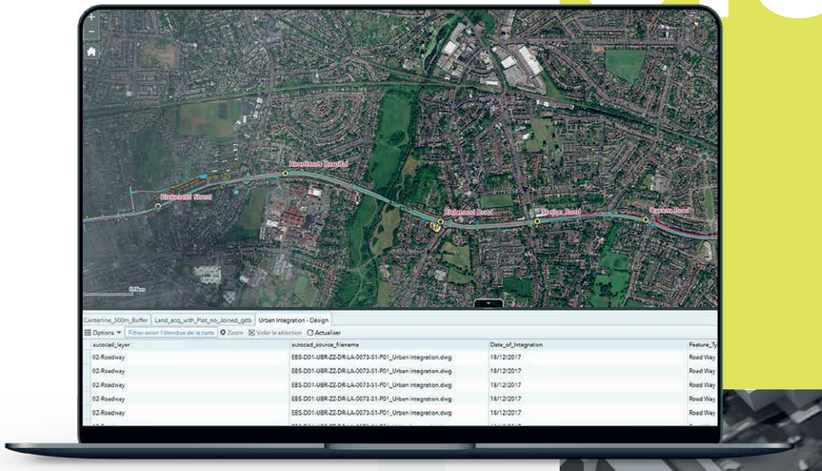
# **ADAPTED** TOOLS

## HELP OUR CLIENTS TO COMMUNICATE AROUND THE PROJECT

Communication is at the heart of the upstream studies' concerns for a better *project acceptability* by the citizens. That is why during the upstream studies phase, Egis pays attention to the communication supports produced for the project.

## GIS GEOGRAPHIC INFORMATION SYSTEM

ASSESSMENT TOOL TO COMMUNICATE ON SPECIFIC TOPICS LINKED TO THE SITE AND THE PROJECT



## PERSPECTIVES

VISUALISATIONS OF THE PROJECT PRODUCED DURING THE URBAN INTEGRATION PHASE. ALLOW THE CLIENTS AND THE STAKEHOLDERS TO HAVE A VIEW OF THE PROJECT WITHIN ITS LOCAL ENVIRONMENT

## TOOLS DEVELOPED IN-HOUSE

Egis has developed its *own tools and software* which guarantee an expertise adapted to the upstream studies' challenges and constaints as well, as well as for the study zone.

- → **Terese** for demand forecasts and public transport models
- → **SimOne** and **Terminus-TC** for urban operation simulations
- → **Finance-TC, Eco-TC, Predicou tram / metro / train** for financial and cost appraisals
- → **PredicouCARBONE** for carbon footprints

## OTHER COMMERCIAL TOOLS USED

- → **Demand forecast:** EMME, Cube
- → **Urban operation simulation:** Vissim and Grasil
- → **Railway operation:** Viriato, Opentrack, Railsys
- → **Pedestrian dynamic flows:** Viswalk
- → **Design:** Revit Architecture, Autocad, Photoshop, Illustrator, 3DS Max, Blender, CG Animations

# UPSTREAM STUDIES

**Improving the mobility efficiency within their territories is the main objective for** many regional and local authorities. It is for this reason that they initiate public transport projects.

**The upstream studies** represent a **key step** to help the **authorities** to define their projects, from the choice of the transport mode, to the socio-economic appraisal and the insertion of the public transport within its urban environment.

To support the local authorities at this crutial stage of a project, Egis has developed a **recognised expertise** adapted to each context.

| RAILWAY | METRO | LRT | CABLE CAR |
|---|---|---|---|
| 12 000 | 750 | 800 | 100 |

KM OF LINES

# CHALLENGES

**A public transport project comes with challenges that will define the efficiency of the system. Most of these challenges are studied during the upstream phase:**

- Modal shift from cars to public transport *(pollution, noise, congestion)*
- Improved connectivity, seamless travel, creation of travel opportunites
- Better quality of transport *(reliability, speed, comfort, frequency)*
- Improved transport capacity
- Better efficiency of operation link
- Triggers urban and property developments
- Transport projects as a tool for urban requalification

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