

A-LIVE [Accelerated - Large Infrastructure Viability Experiments]

Suburban Subway



Backgrounds

Following the award of the 2022 FIFA world cup games in 2010, Qatar embarked on an ambitious infrastructural program. The Doha metropolitan region recently saw the completion of three Metro lines, (Red, Green and Gold) and 37 stations, serving the capital and its suburbs. Future phases include the introduction of a fourth line (Blue) and the extension of the network beyond the Doha metropolitan area, including over 60 additional stations.

Qatar, a British protectorate until 1971, derives basically all its income from its extensive gas reserves exported as Liquid Natural Gas (LNG). In 2019 Qatar's GDP per person became the highest in the world.



In the Doha Capital region metro lines run underground, in suburban areas an elevated track system is used.

The past three decades the country experienced a sustained and rapid development, resulting in a massive construction boom and urban expansion. Over 96% of Qatar's +2.8 million inhabitants now live in urban areas and traditional (Bedouin) living has almost entirely disappeared.

Qatar's economic boom could only be realized by attracting large numbers of expatriates and workers, now making up over 90% of the total population.

Large income differences between Qataris and expat white collar staff, in stark contrast to low-wage laborers from developing countries, usually housed in labor-camps, make for a very stratified society.

Framework

Following independence, a team of planners led by the British company Llewelyn Davies developed the country's first Structure Plan. A typical product of its time, exclusive zoning and focus on traffic engineering set the foundations for an entirely car oriented sprawling suburban development, continued to this day.

Qatar's harsh climatic conditions, with temperatures soaring over 45 degrees Celsius in summer make the car the preferred choice of transport even for walkable distances. Door-to-door private car mobility offers unrestricted (climatized) access anywhere-anytime via an extensive and high-capacity road network. Development of alternative (public) transport thus faces major challenges competing with all the conveniences of the (private) car.

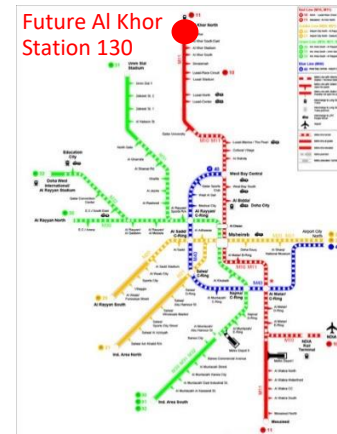
Specifically feeding commuters into the (Metro) transport network, and intermodal exchange between public transport modes and private car proves difficult.

Project:

Anticipating the extension of the `Red` Metro line up to Qatar`s second city of Al Khor, students will develop actual urban-architectural detailed proposals for Al Khor`s Metro station (nr. 130) and Transit Oriented Design (TOD) pilot-projects for adjacent areas, streetscapes and pedestrianized connectivity with Al Khor Downtown and Mall.

Two development scenarios will be considered:

1. Tunnel based construction, requiring to locate the Metro station on a private plot.
2. `Open cut` following existing road infrastructure and Right of Way (ROW) areas, the subway station can be located within the public owned ROW.



Design & Research focus

The design-projects and supporting research are to focus on innovative and seamless intermodal integration of `hard` linear mass transport (subway station) and individual private and smart shared mobility systems within a low-density suburban context. Projects are to anticipate cloud-based connectivity, automated and ultimately autonomous vehicles, guiding the design and development of both Metro station and TODs.

Studio organization

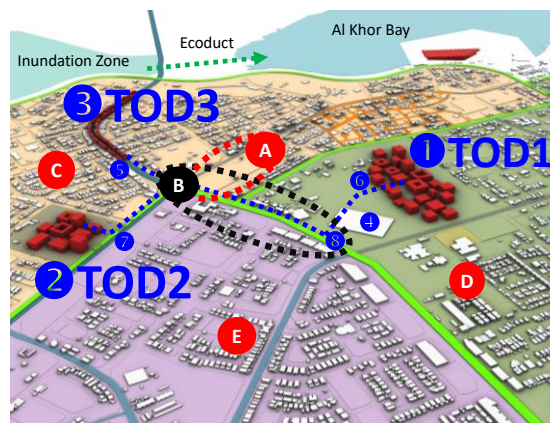
`A-LIVE` is organized as a Design-Lab aiming to generate a coherent output enabling to participate to public discussions in simultaneous dialogue with professional, civic and governmental actors & decision-makers.

Each student is thus expected to pro-actively contribute to the overall progress of the `A-LIVE` design-studio. For the final individual output, each student must address at least two of the following six topics and contribute to `A-LIVE`s collective dissemination (7), or `Delivery-As-One`.

1. **Seamless connectivity: development of innovative public- and private/shared transport exchange design solutions.**
2. **Program development & urban-architectural design TOD 1.**
3. **Program development & urban-architectural design TOD 2.**
4. **Landscape development & urban-architectural and or landscape design TOD 3.**
5. **Research on innovative mobility solutions.**
6. **Data acquisition & management and pro-active design-oriented processing of external input.**
7. **Collective dissemination A-LIVE; → DELIVERY AS ONE.**

Available materials:

- GIS, dwg, Rhino, Sketchup plans & 3D models
- Regional Structure and Master Plans
- Zoning plans
- Qatar & Abu Dhabi Urban Design Compendiums
- Extensive picture library
- Various (technical) information, (Traffic, Infra, Qatar Railway, ...)



1. **Al Khor Mid-Town (TOD 1)**
2. **AK Sport Club (TOD 2)**
3. **Al Thakhira Commercial Blvd. (TOD 3)**
4. **Al Khor Mall**
5. **130 North Exit**
6. **130 East Exit**
7. **130 West Exit**
8. **130 South Exit**
- A. **Station 130 Option 1**
- B. **Station 130 Option 2**
- C. **Traffic Loop North**
- D. **Traffic Loop East**
- E. **Traffic Loop South**

Organization (week 1)

[Note: due to Covid-19 final schedule, studio organization and location / online teaching and final output presentation format will be communicated only week 2]

- Introduction & project outline (on campus).
- Set-up project teams & collective work.
- Introduction to teamwork and `Delivery-As-One`.