Course of
Digital Management Consulting

Contributing to sustainable mobility to/from Tor Vergata

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Overview

Tor Vergata University of Rome is a large community engaging more than 30,000 people in different roles and with different commuting schedule. The mobility of all these commuters is rather problematic and supported to a limited extent by the public transportation.

Commuters to & from Tor Vergata University

Faculty	Teaching staff	Admin. staff	Students
Economy	130	56	4,688
Law & Rectorate	101	504	2,195
Engineering	230	100	5,376
Humanities	145	39	5,218
Medicine	396	178	7,713
Natural Sciences	270	111	3,883
Total	**1,272**	**988**	**29,073**

Source: Tor Vergata Mobility Plan 2021

You are asked to design an IT tool/app that might contribute to reduce the environmental footprint of the mobility to/from the university.

In order to do so, you are asked to use:
- the design thinking approach to identify the key features of a potential
- the agile approach to plan how to prioritize the key features of your proposal

As to the design thinking approach, you will have to:
1. Analyse the context to get insights into the problem
2. Identify a prototype for a possible solution with its main features

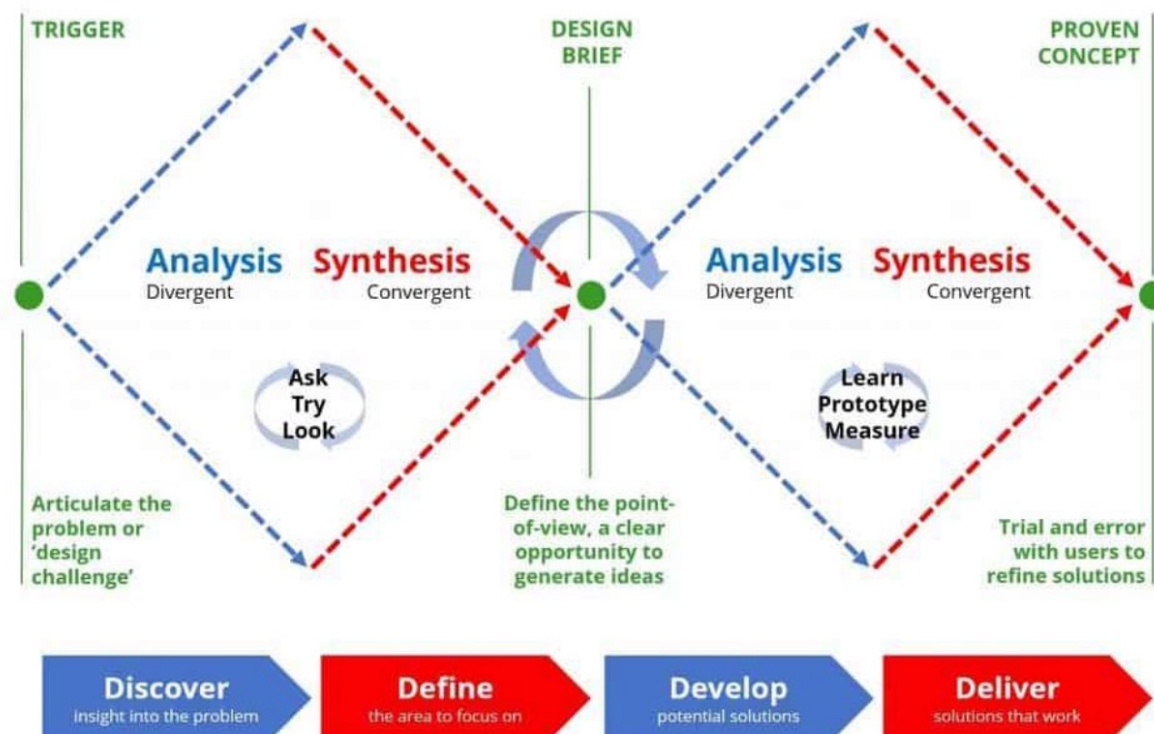As to the agile approach you will have to:
1. Define a possible high-level plan leveraging on the agility approach to be more responsive/effective
2. Prepare a backlog dealing with the prioritization issue.

All the information can be collected in a presentation to show the details for each topic and the methodologies and techniques adopted.

In order to complete your assignment, you will be required to draw on your personal experience, on the general information provided in the appendix and on additional data you will specifically collect for this assignment.

A focus on the Design Thinking approach

In your assignment, you are asked to follow the Double Diamond approach:

Adapted from: **Framework for innovation**
Design Council, UK
https://www.designcouncil.org.uk/our-work/skills-learning/tools-frameworks/framework-for-innovation-design-councils-evolved-double-diamond/

A focus on the Design Thinking approach

Activities to be carried out on the first diamond
*Upload on your folder by **Thursday May 11** the results of an initial cycle*

- **Discover**: analyse the issue, using interviews (or any other technique such, safari, shadowing, gemba walking, etc.) in order to get a clear list of problems. You might want to structure the discovery using user journey mapping (optional).
  On your G-folder you will have to report the list of problems (detailing the methodology you used for identifying them)

- **Define**: synthetize the many problems you identified into a few major ones, using the MoSCoW proritisation map or the affinity diagram (or any other technique) and then, with respect to the few main problems, apply the 5whys technique to identify a very significant root cause. You might want to select a few user personas and structure the define phase making reference to their key problem(s).
  On your G-folder you will have to show how you merged the problems and then used the 5whys to sorted out the major one.

A focus on the DT + agile approach

Activities to be carried out on the second diamond
*Upload on your folder by **Monday May 15** the results of an initial cycle*

- **Develop**: on the basis of the relevant problem you identified (the root cause), propose several solutions that might solve it using techniques like brainwriting, SCAMPER or any other technique you consider effective …

  On your G-folder you will have to list the many proposals you will have identified (detailing the methodology you used)

- **Deliver**: select among the many solutions you identified the one you will propose for prototyping, explaining the criteria based on which you made your choice (strategic relevance, risk assessment, feasibility, …), detailing the key features of your proposal.

  On your G-folder you will have to show the criteria you used for the selection process, with no need for a quantitive analysis.

Activities to be carried out on the agile approach
*Upload on your folder by **Wednesday May 17** the results of an initial cycle*

- **Prioritization**: prioritize the features of your proposal according to an agile approach
- **Retrospective**: reflect on how you can become more effective as a team

Because of time limits (and in line with the iterative approach of this methodology)
in your final assignment you might want to revise/enrich
each of the steps you are carrying out in this first cycle

Structure and timing of the assignment

Structure of the assignment (seven slides in total):

A cover page including the name of your proposal and the name of the group members

An overview on the Design Thinking process (maximum 2 slides)
- Discover phase
- Define phase
- Develop
- Deliver phase

A focus on your proposed solution (maximum 2 slides)
- Description with detailed features
- SWOT analysis

An overview on the Agile approach (maximum 2 slides)
- Prioritization
- Retrospective

Timing of the assignment:

- Assignments handed in by May 24th will be discussed on May 26th starting at 1:00 pm
- Assignments handed in by June 3rd will be discussed on June 5th starting at 4:00 pm
- Assignments handed in by June 20th will be discussed on June 22nd starting at 4:00 pm

You can hand in your assignment any time irrespective of when you are taking the written test
Your working materials uploaded in the folder during the course will **NOT** impact on your grade!
The assignment weight 50% of your final grade

The analysis of the current structure of collective transport at the service of the University is carried out by distinguishing accessibility to the Campus from the center of Rome and that from outside Rome.

2a) Accessing from the center of Rome
In this regard, accessibility to the Campus from the center of Rome with collective transport takes place mainly through the use of the underground line A and the exchange at Anagnina with the lines in operation on the first section of the Anagnina-Tor Vergata mobility corridor (line 20 express). In view of the growing demand for mobility and the obvious criticality of the connection between Anagnina and the University in the morning rush hours, in the recent past the 20L line was restored, functional upgrading of the 20 express line, limited to the morning peak hours and to the route serving the University. Despite the strengthening, the service offered continues to present evident criticalities, always within hours morning peak, when often the vehicles are already saturated at the departure terminus (Anagnina) with passengers who are often forced to wait for the next ride and for arriving late at your destination.
For those who gravitate to the Centocelle/Alessandrino area, the 552 line is available which arrives at the Tor Vergata Polyclinic passing through the Campus. This line allows the interchange with the new underground line C in the stations of Mirti and Alessandrino, which are anything but close to the Campus (the Metro C station on which the Campus gravitates is that of Torre Angela).
The macro-area of Natural Sciences, and marginally the Faculty of Medicine and the General Hospital, it is also served by the 500 line, which recently underwent a revision of its track, extended to the Torre Angela stop on metro C; like this, this line should function as an adduction/distribution service between the Campus and the new one subway line, although this objective does not currently appear to have been achieved primarily due to a line route meant more to serve neighborhoods crossed that to reach the aforementioned universities. That said, it turns out how also this line presents levels of service offered wholly insufficient compared to the question and is unattractive for university travel.
The collective transport offer is completed, in fact, with the passage of all COTRAL lines passing from/to Anagnina on the corridor Via O. Raimondo, Via della Ricerca Scientifica, Via della Sorbonne, Via Cambridge, Viale Gismondi, Via Cracovia, Via di Passo Lombardo towards the South, out of the Municipality.

2b) Accessing from outside Rome

The extra-urban collective transport services are structured according to hierarchical levels in where the rail system represents the main level, which is integrated/completed by the services on extra-urban road (operated by COTRAL) for municipalities outside the areas of influence of railways services; urban road services are structured in such a way as to create the maximum possible adduction to higher level networks, first of all the railway network.

In this functional scheme, the Tor Vergata Campus presents a reversal of roles in the services offered on the carrier level as, despite there being a reference railway station in the area (Tor Vergata), the demand for mobility from outside Rome on collective transport is mainly fulfilled by the army surface road transport from the COTRAL, which provides for the passage of numerous lines within the campus (on the Via di Passo Lombardo, Via Cracovia, Viale Gismondi, Via Cambridge, Via della Sorbonne, Via della Ricerca Scientifica, Via O. Raimondo) before reaching the terminus of Anagnina (interchange with Metro line A).

Accessibility to our Campus should be guaranteed by the station Tor Vergata railway, part of the Rome–Frosinone-Cassino-Naples line belonging to the fundamental network of Rete Ferroviaria Italiana S.p.A., on which the services are offered regional railways of the FL6 line. The conditional is a must since the absence of an efficient supply service to the aforementioned station effectively limits the potential of the Tor station Vergata to "only" the role of private-road exchange station for commuter travel between the Castelli Romani (Frascati and Grottaferrata) and Rome.

Considering that for times and frequency of service the few COTRAL runs that pass for the Campus and for the Tor Vergata station they cannot be considered a system of adduction for the station, our University (see next chapter on the initiatives in course) continues to take charge of providing a minimal adduction connection made with a vehicle of limited capacity (about 50 seats) and times as synchronized as possible with the arrivals/departures of the main trains at peak times, which is used daily by about a hundred university users, even if the potential catchment area is much higher and is currently satisfied with the use of the car. In fact, considering only students resident in the municipalities gravitating in the area of influence of the aforementioned railway line, is possible to estimate a potential pool of a few thousand trips for the most part that can be acquired from railway services in the presence of an adequate connection system with campuses. In the absence of the aforementioned shuttle, everyone using the train would be in fact forced to arrive at Rome Termini and then from there they should move towards Tor Written like those who come from the center of Rome; that would translate to about two hours of travel per day more than the use of the Tor Vergata station and one connection direct bus to the Campus, which obviously would make the alternative practically inexistent.

For the completeness of the current picture of accessibility to the University on railways, it would exist a theoretically feasible alternative for those coming by train from outside Rome, which consists in using the Ciampino railway station, where the FL4 and FL6 lines converge (the latter is the one that also passes through Tor Vergata station), from which to continue with the urban line 515 up to Anagnina, to then reach the Campus with the services of the corridor of the mobility described above (line 20 express); this alternative turns out to be little in practice attraction for several reasons: poor synchronization of service times with those of start/end of activities on campus; low reliability of the service which (like all services on rubber) is carried out in proximity to road traffic with journey times that in the rush hours expand beyond belief due to congestion.

As regards the road infrastructure system serving transport private sector, the infrastructural endowment has in fact remained the same as inherited from the Jubilee of 2000, which with the coplanar roads to the A1 and via della Sorbona allows you to reach ous campuses. Performance analysis of the road network serving the university area highlights problems typically and widely found in the Roman area due to the presence of widespread congestion during peak hours at the beginning and end work activities.

Source: Tor Vergata Mobility Plan 2021