Design and development of a location-based mobile city dashboard

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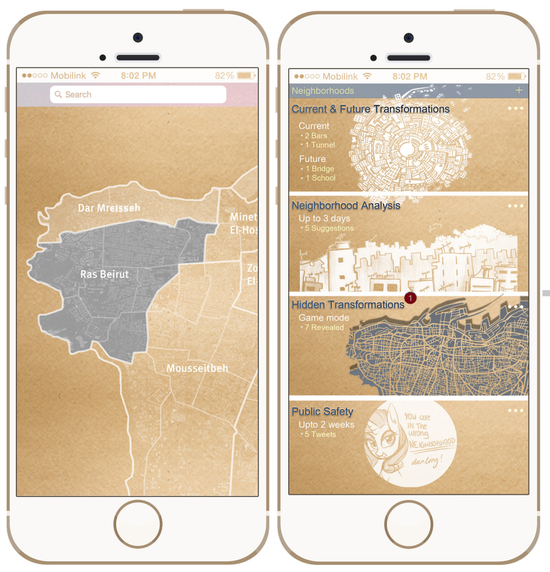
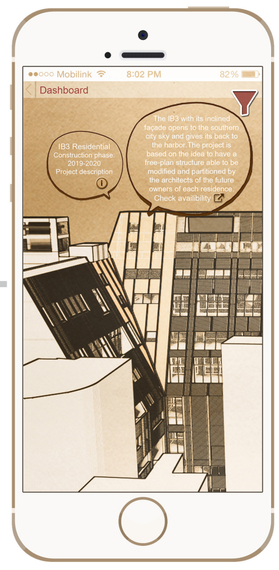
Urban dashboards have developed in the last few years as a visual language through which the smart city is represented.The volume of open data produced by smart cities brings a fundamental challenge into the modern world. To address this problem a new form of data visualization emerged – city dashboards. The aim of this research is to build a city dashboard prototype for the city of Beirut. The performed research study investigated the role of existing urban dashboards and developed a new approach, where urban dashboards inform the citizen about past, present and future scenarios transforming the city. A creative view of mapping in the context of urban transformation is explored due to the changing nature of spatial and temporal structures in today's world [1]. The proposed prototype explores a new design space for city dashboards.

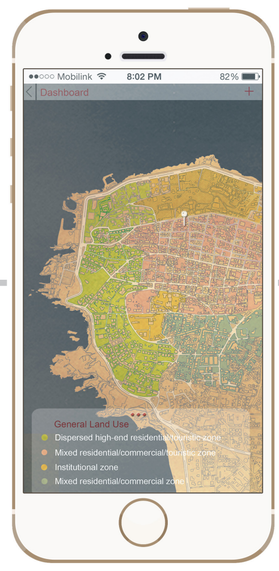


ADOPTED METHODS

1. Comparative study: investigating the content of existing dashboards.
2. User questionnaire: investigating the usability of existing dashboards.
3. Conceptual development: generating an early design presentation based on the following questionnaire results and conclusions resulting from the comparative study:
   - Neighborhood analysis
   - Urban transformation dashboard
   - Participation functionalities
   - Mobile access and display
   - Map-based representations
   - Public safety features
4. Concept evaluation: assesing the proposed concepts with a user evaluation.
5. Physical implementation: creating a final prototype.

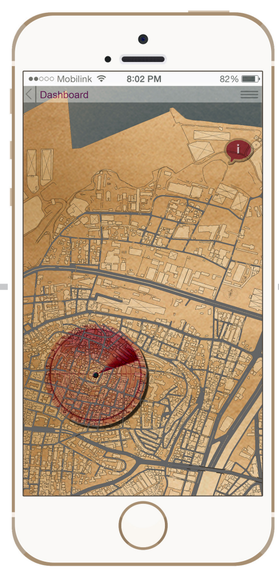


The first feature brings the user to the current and future transformations taking place in his neighborhood. A 3D model displays the existing neighborhood and the final state of a future project.



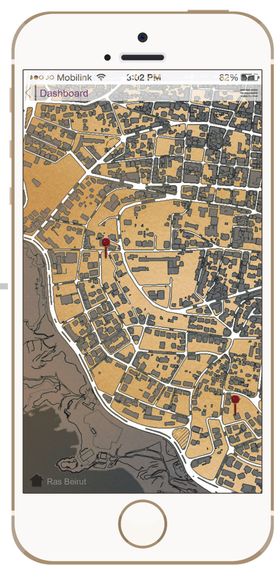
The second feature provides a land use analysis in order to reveal the transformations in the urban fabric of a specific neighborhood.The user is able to detect the direction of change in his neighborhood.

The feature also allows the citizens to participate in improving their own neighborhood.The user can for instance pin a suggestion and check other people's suggestions as well as to vote on suggestions.



The third feature provides the user two options: either to play a game or to get a surprise notification in order to discover the locations and stories of hidden transformations in Beirut.

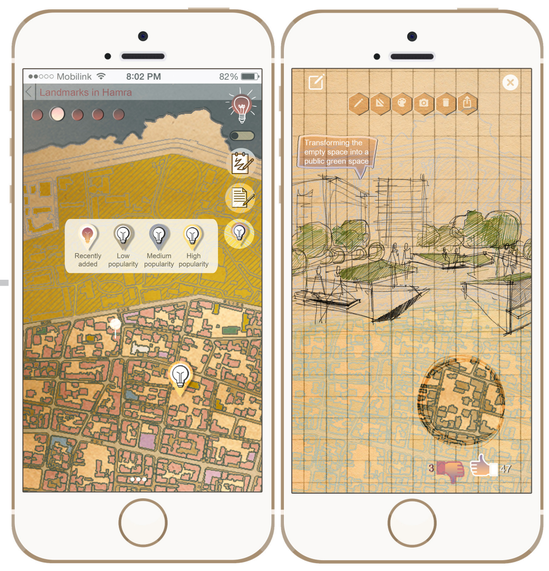
While the user is trying to solve the hints, this feature will allow him to have a deeper look into the physical aspect as well as the conceptual, historical or philosophical aspect behind a certain transformation.

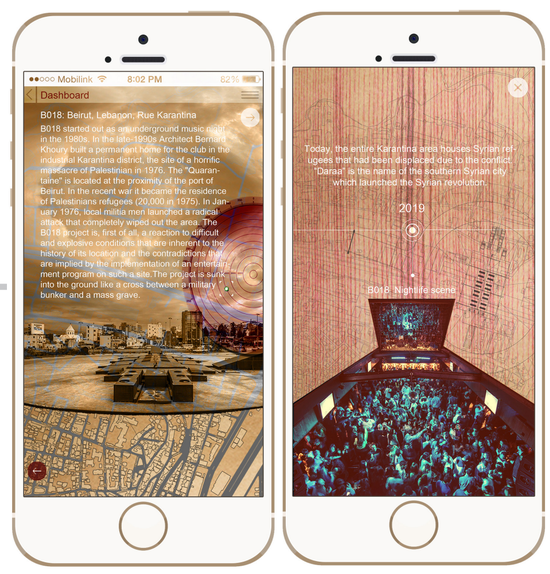


As a final feature the dashboard suggests the public safety feature. This feature visualizes geo-located ISF tweets taking place in the user's neighborhood. (ISF: internal security force of Beirut)

MOCKUP IMPLEMENTATION

The user flow of Beirut mobile city dashboard displays the various scenarios that the users will encounter while navigating through the app. All displayed maps were initially DWG files, where the frame, the amount of details, scale, zoom level and measurements were executed using AutoCAD. The 3D model of the building and it's surrounding is rendered using 3ds Max. Afterwards the maps and the 3d view were imported to Adobe Photoshop in order to merge all layers. Transitions and animations have been added in the Marvel App.





CONCLUSION

"Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody" [2]. The proposed city dashboard supports the idea of a city which is open to change, which is hackable by its own residents, thus, making data accessible in the possibility of intervening. This purpose is fulfilled by providing an inner understanding of the city, by engaging people with ongoing developments, and by establishing collectives around shared issues of concern [3].

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KEYWORDS

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PROTOTYPE LINK

REFERENCES

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[2] Jacobs, J. (1992). *The death and life of great American cities : orig. publ. 1961.* New York: Vintage Books. De

[3] Lange, M., & De Waal, M. (2013). *Owning the city: New media and citizen engagement in urban design.* doi:10.5210/fm.v18i11.4954

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