Rotterdam North, A13 highway (Quirijn Kuchlein)

Highway X City

Future visions for urban ring roads

Amsterdam, Rotterdam, and Utrecht (The Netherlands)

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ALL IMAGES ARE PUBLISHED IN THE PUBLICATION: SNELWEG X STAD / HIGHWAY X CITY (Source: Boer, H. de, Boomen, T. van den, Hinterleitner, J., 2017)

INTRODUCTION

Rethinking urban mobility and infrastructure

The project addresses current and future transformations of infrastructures, particularly highways, in connection with new opportunities and challenges in adjacent urban areas. Its goal is to present new ideas on the future interplay between urban ring roads and cities. Highway X City was initiated by a group of partners and involved the collaboration of seven multidisciplinary teams from professional offices. These teams worked on five ring road locations proposed by the project partners: A13 Overschie and A20 Noordrand in Rotterdam, A10 Gooiseweg and A10 Lelylaan in Amsterdam, and the A27/A28 Science Park in Utrecht – the letter 'A' stands for '*Autosnelweg*', which means highway or motorway.

By embracing *Research by Design*, the participants worked on the above-mentioned challenges based on relevant case study locations in the cities of Amsterdam, Rotterdam, and Utrecht. In this approach, the participating professionals formed interdisciplinary teams with other stakeholders in a laboratory setting, where they studied the problem definition and came up with research-underpinned solutions in their drawings. As a result, spatial challenges and possible future scenarios for the new relationship between highways and cities were studied, discussed, and further elaborated using tactual pictures and images that could be understood and shared by all participants. This way, all participants became co-owners of the process, content, and results.

Highway X City laid new foundations for investigating the possible and probable effects of technologically advanced mobility solutions, such as massive electric or automated driving, and the subsequent reinterpretation of urban ring road areas along with the emergence of new spatial opportunities. In addition to providing concrete input for each specific site, the envisioned scenarios also put forward new and, in some cases, prototypical ideas on how to approach such challenges, inspiring future urban agendas and conveying new knowledge on integrated research and design through collaboration between the different disciplines and stakeholders involved.

Rotterdam North, A13 highway (Quirijn Kuchlein)

Amsterdam Sloterdijk, A10 highway viaduct underpass (Quirijn Kuchlein)

CONTRIBUTORS TO THE PROJECT

TU Delft, TU Delft DIMI, BNA Research, Ministry of Infrastructure and Water Management, Deltametropool Association, University of Antwerp, University of Gent, PBL Netherlands Environmental Assessment Agency, Amsterdam University of the Arts, Municipality of Rotterdam, Omgevingsdienst NL, Province of Utrecht, Municipality of Amsterdam, Municipality of Utrecht, Stegerwald Designs, Antenna-Men, Mecanoo, Abel Delft, Arnold Reijndorp, mauroparravicini architects, Openfabric, Kartonkraft, Noha, move Mobility, Bijvoet Architectuur & Stadsontwerp, Marit Janse, Moniek Driesse, Arie Langkeek, Peter Volken Smidt, Observatorium, Bureau Stadsnatuur, Benthem Crouwel Architects, Edwards Stadsontwerp, BonoTraffics, Except Integrated Sustainability, Venhoeven CS, Sweco, Martijn Al Landschapsarchitect, René Kuiken Urbanism, NEXT Architects, veenenbos en bosch landschapsarchitecten, fabric, UNStudio, Goudappel Coffeng, 2getthere, GeoPhy

Photograph/Collage: underneath the A20 highway in Rotterdam
(Team Mauroparravicini Architects, *Downgrading to upgrade)*

new emerging 'clean' modes of transportation

PROJECT RESULTS

Envisioning the future

Highway X City[1] began with a general outlook on the future relationship between highways and cities and then focused on location-specific challenges in areas identified by the municipalities of Amsterdam, Rotterdam, and Utrecht, which share overarching themes. Firstly, it considered the changes in inner-city mobility and the various policies discouraging the use of cars, particularly in urban areas inside the ring roads. Secondly, it took into account new emerging 'clean' modes of transportation, prioritising the use of public services, smaller electric-driven vehicles, and bikes. Thirdly, it aimed to make better use of public space in the vicinity of ring roads by rethinking the mutual relationships with the adjacent areas, especially when polluting factors are drastically reduced, and ring roads can be turned into city boulevards. In other words, Highway X City viewed ring roads not as physical elements intersecting the urban fabric and creating barriers and left-over spaces but as places of opportunities. This approach is necessary because today, as well as in the future, our cities cannot function without high-capacity arteries.

Integrating innovation

In most design proposals, the questions of spatial quality, accessibility, liveability, etcetera go hand in hand with the foreseeable innovations concerning transportation and mobility. To provide a certain thematic framing, two studies were offered to the participating teams: *'Elektrisch rijden in 2050: gevolgen voor de leefomgeving'*[2], published by the Netherlands Environmental Assessment Agency, and *'Chauffeur aan het stuur? Zelfrijdende voertuigen en het verkeer- en vervoersysteem van de toekomst'*[3], published by KIM, the Dutch Institute for Transport Policy Analysis. Several design proposals make it clear that the ring road zone, while becoming more attractive, needs to accommodate new transfer nodes that will become pivotal for transferring goods and people from international, national, and metropolitan networks to the city centre.

Transforming city ring roads

Some teams are presenting more visionary proposals, such as UNStudio, which envisions a scenario in which cars do not enter the city, and people and goods switch to electric transport modes in attractively designed

Impression of the Lelylaan, crossing the A10 west highway in Amsterdam (Team UNStudio, *The Hub, A multifunctional node in the urban network)*

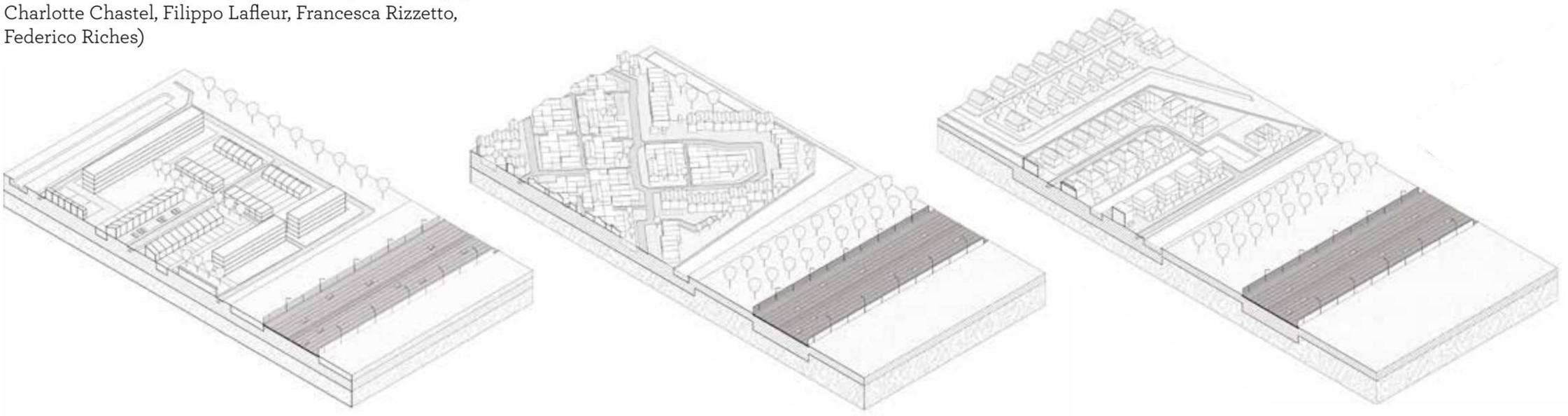
Impression of the A13 highway at Rotterdam Overschie
(Team Mecanoo, *A pact for Overschie)*

Impression of the A27 highway in Utrecht, *Station Uithof*
(Team Venhoeven CS, *An Accesible, Healthy City)*

Perspective section on the Gooiseweg in Amsterdam, *Gooiseweg*, (Team NEXT Architects, *From autonomous infrastructure to framework for the city)*

Photograph A20 highway in Rotterdam (Team Bijvoet, *Rijkswaterwegpark 20, Hospitality in the Highway Landscape)*

The urban typologies of the ‘50s, ‘70s and ‘90s and their revitelization options because of a new relation to the highway (Team Fransje Hooimeijer, Charlotte Chastel, Filippo Lafleur, Francesca Rizzetto, Federico Riches)



ng better use of
ic spaces

future transfer hubs around the city. Other teams, such as Mecanoo or Mauroparravicini Architects, foresee ring roads with multiple uses. Smart vehicles will enable diverse users to coexist, adapting to different demands and facilitating new urban developments on and around ring roads.

Accessibility and urban quality

Other teams that address the current situation focus on its discrepancies and challenges. This is the case for Benthem Crouwel, Venhoeven CS, and Next, who all concentrate on improving the accessibility and spatial quality of the areas around and outside the ring roads. While team Benthem Crouwel conducts a careful study of traffic flows leading to E-bikes, Venhoeven CS chooses a light rail connecting to a nearby station to revitalise the area by attracting more potential users. For team Next, the highway goes underground, opening up better connections between the two parts of the city and delivering a lively, mixed-use area above and around the infrastructure.

Departing from slightly different research interests, team Bijvoet primarily examines the various connotations, including nature and fauna, and activities of the area. The intention is to create a visual inventory, the so-called ‘treasure map,’ enabling a closer look at opportunities and possible synergies between all parties operating in the location.

Although different in underlying motivations, all proposed interventions address the necessity of increasing social values in the project areas at various scale levels. Urban programmes, such as affordable housing and public amenities with green and blue spaces, are supported by a suitable degree of accessibility for pedestrians, bikes, and other forms of slow traffic.

1. Snelweg X Stad Highway X City, BNA onderzoek, 2017.
2. Elektrisch rijden in 2050: gevolgen voor de leefomgeving, Planbureau voor de Leefomgeving, 2012. Translation of the title in English: ‘Electric driving in 2050: consequences for the living environment’.
3. Chauffeur aan het stuur? Zelfrijdende voertuigen en het verkeer- en vervoersysteem van de toekomst, Kennisinstituut voor Mobiliteitsbeleid (KIM), 2015. Translation of the title in English: ‘Driver at the wheel? Self-driving vehicles and the traffic and transport system of the future’.

places of opportunities

EVALUATION

Inspiring results

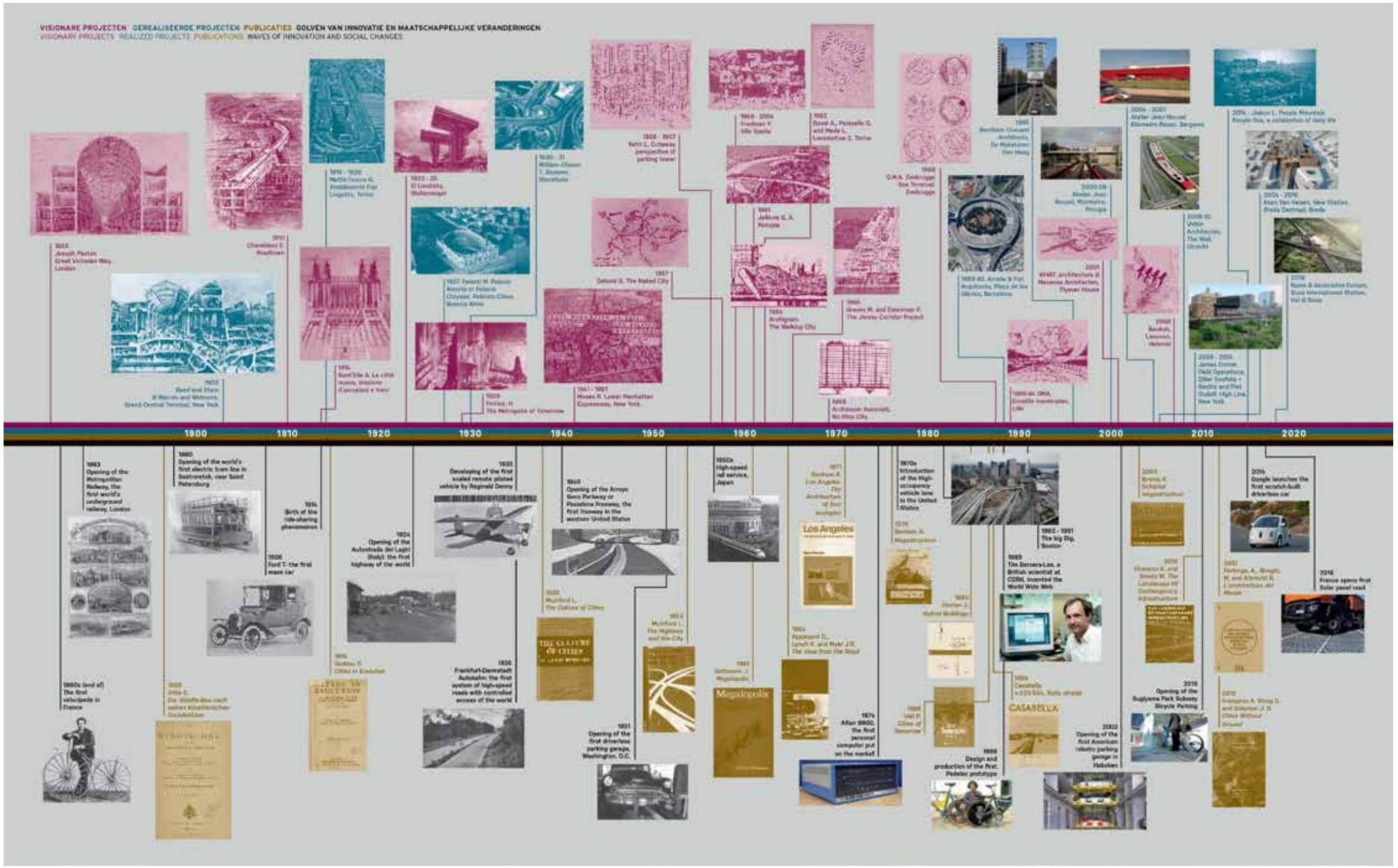
In practice and academia, breaking through habitual sectoral ways of thinking and related procedures can be challenging. Adopting Research by Design as a working approach, however, helps to overcome disconnections between disciplines and operational sectors, enabling agreement on shared actions and achieving better-integrated results. In this respect, the project has proved to be very successful. The project's outcomes were remarkable in terms of content. They contributed to establishing integrated collaborative encounters among the various disciplines, stakeholders, and institutions usually involved in such complex processes.

The multidisciplinary composition of the design teams and the involvement of specific stakeholders from the beginning provided the best conditions to search together for the most striking challenges linked to the assignment. In this way, transcending a specific discipline-related or sector-tied approach, the laboratory setting contributes to detecting and defining the problems. Working in this way is research-driven because the team uses design to problematise the matters at stake and determine a common agenda. Additionally, design helps to envision, clarify, and share findings during the project, assisting and leading communication among the various experts.

The project was interconnected with research and education activities at TU Delft of urban typology (team Hooimeijer) and the timeline (team Cavallo). The urban typology research connected future, cleaner mobility to the environmental healing of the urban typologies in the 1950s, 1970s and 1990s. The new options were connected to revitalisation of the urban typologies. The timeline focused on the direct interplay between the development stages of mobility infrastructures and the advent and the establishment of specific building typologies.

Remarkably, some follow-up studies emerged after the project. Several locations around the highways of Rotterdam are indicated as potential development areas in city plans. Also, inner and outer ring connections, especially for cyclists, are now on the agenda for improvement of both the city and Rijkswaterstaat. For the municipality of Amsterdam, the study confirmed the potential of the area surrounding the ring road, as the highway zone was already part of the city planning.

Finally, it is worth mentioning the unique interactive moments that were carefully planned throughout the project, such as the masterclasses where researchers and experts from academia and practice interacted with the design teams and students based on shared themes and challenges. Many presentation moments facilitated fruitful encounters between practice, research, and education. The set-up of the project, the involvement of certain partners, the formation of multidisciplinary teams, and the way the teams worked and interacted at different times with various audiences, including the masterclasses, all served as important stepping stones. Together, these became an approach and model followed and refined in subsequent projects, such as *Stad van de Toekomst* or *Stad X Ruimte*.



Timeline of visionary projects, realised projects and remarkable publications
(Team Roberto Cavallo, Valentina Ciccotosto, Manuela Triggianese,TU Delft, *In view of the terminal)*

CONCLUSION

Practical impact on Dutch research

This project was part of a series of multidisciplinary research-by-design-driven projects involving the Ministry of Infrastructure and Water Management, Deltametropool Association, BNA Research, several Dutch cities, TU Delft DIMI, and other partners. The fruitful collaboration among these organisations has generated increasing interest. As a result, the community of institutions, practitioners, scientists, educators, and other interested third parties is constantly growing nationally and internationally.

This initiative has been a great source of inspiration for addressing the many mobility and environmental challenges connected with urban transformations that are on the agenda of cities in the Netherlands and abroad. Furthermore, the topic is tackled at several levels, in various disciplines, and with different stakeholders, making it suitable for linking with many other initiatives, even those not design-oriented. The project showcases a set of exemplary design proposals tied with compelling visuals, making them suitable for all types of educational purposes. Highway X City has given rise to several multidisciplinary educational Bachelor and Master courses, mainly design-based projects. The project has also impacted the Dutch research scene from a practical perspective because it involved established offices. In some cases, specific project results have become part of a shared professional jargon. Various new research initiatives in national and international networks have been inspired by themes, discussions, and results brought forward in the Highway X City project framework.

Colophon

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