

FUTURE MOBILITY FOR RURAL COMMUNITIES

The Royal Automobile Club /
RCA challenge 2019/20



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Steve is Director of the RAC Foundation, an independent think-tank that commissions and disseminates research relating to motoring and roads issues. Steve authored an influential report on possible new approaches to investigating the causes of road collisions and is a regular contributor to a number of transport journals. Steve took the helm at the Foundation in May 2015 after a civil service career encompassing many transport-related roles, latterly as Director General for Roads, Traffic & Local on the main board of the Department for Transport.

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Acknowledgements and thanks

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FOREWORD

As our cities continue to grow much of the attention given to transport concentrates on themes of urban mobility.

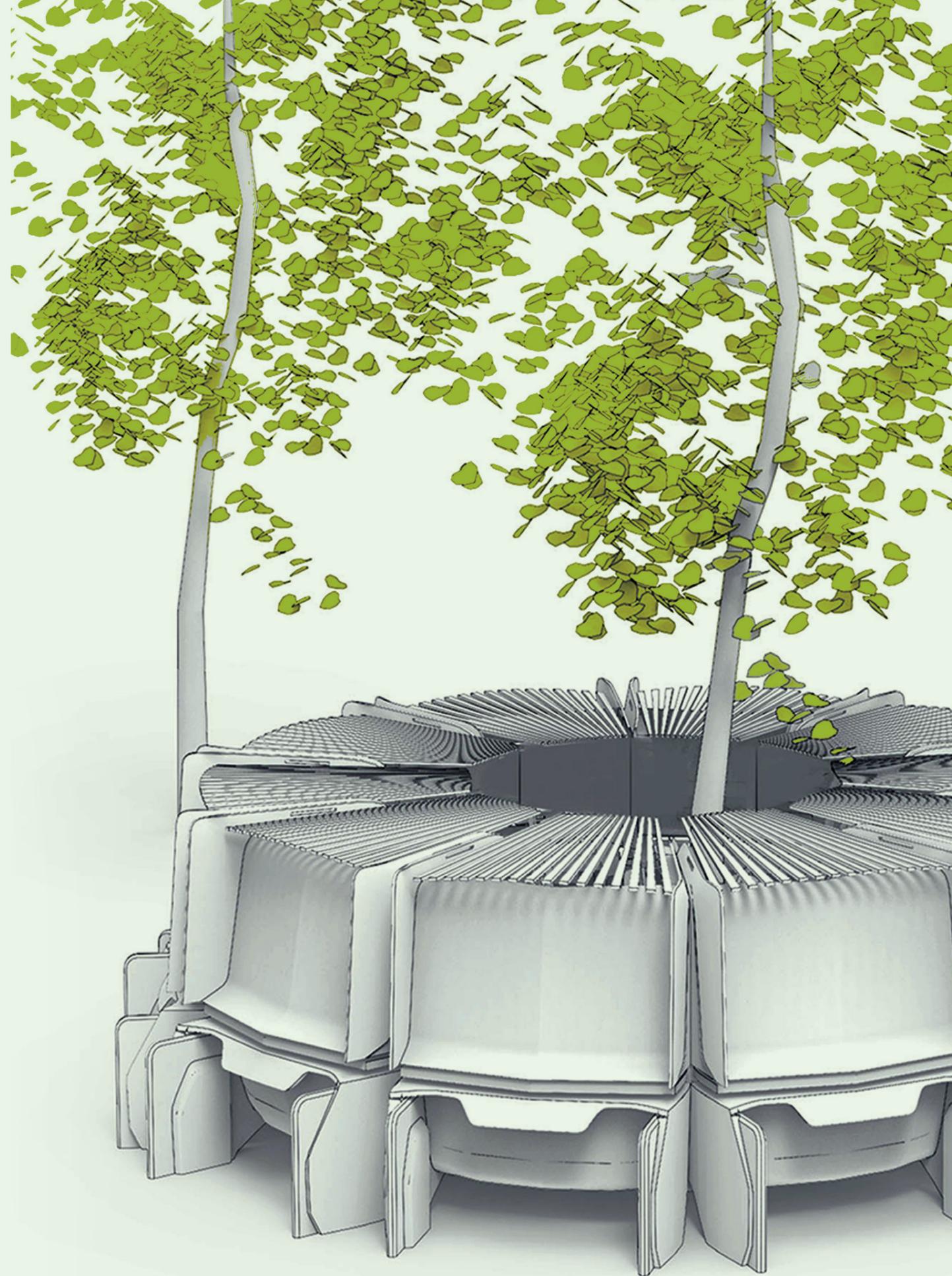
This is understandable perhaps, but even as our city conurbations spread, many of us still live in what might be thought of as 'satellite' or 'dormitory' towns and villages, with at least one member of the household commuting into the city for work.

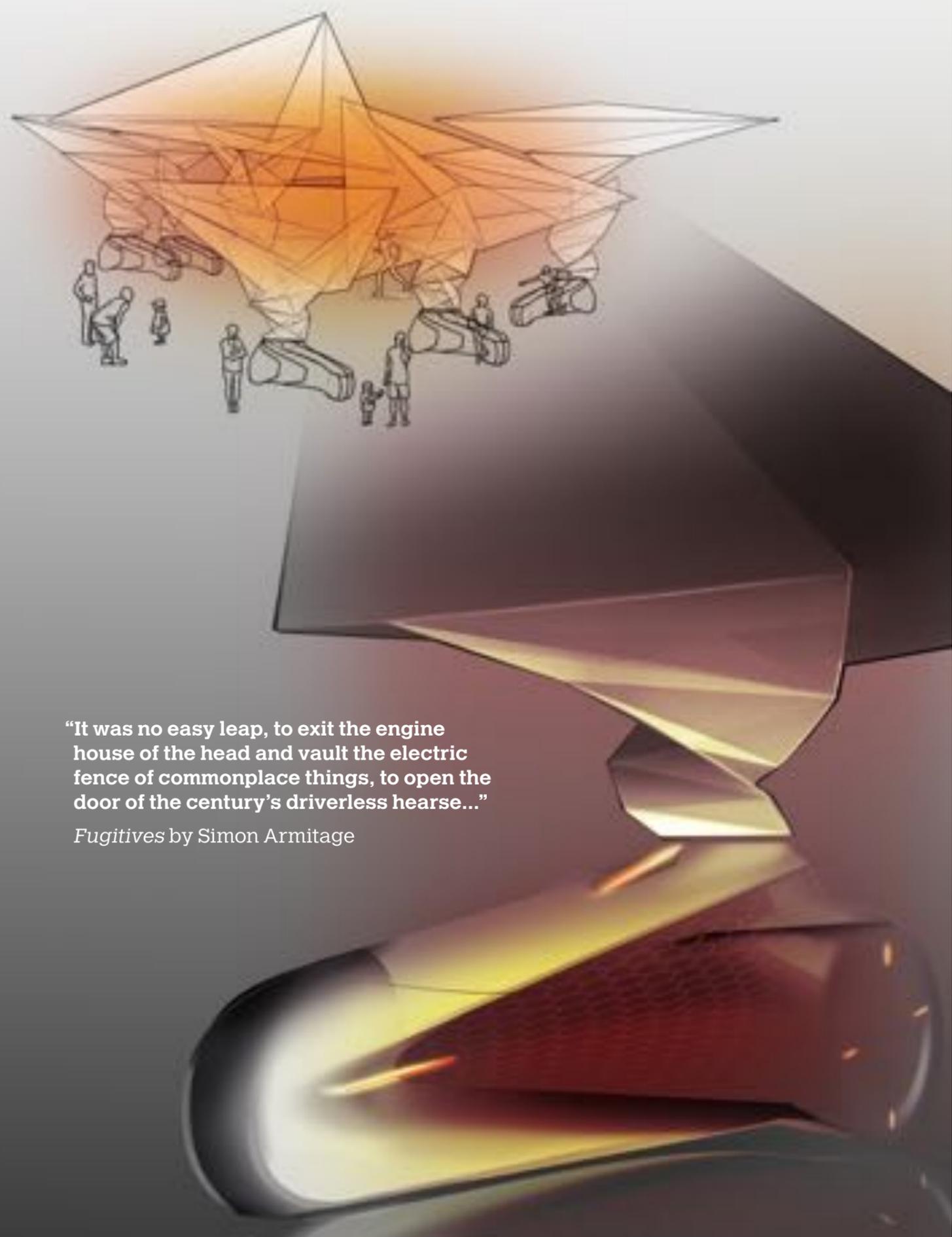
The commission for the challenge documented in this report was born of the fact that, even if they might use mass transit options for the trunk of their commuting journey, the people in those towns and villages often face something of a 'first-and-last-mile' challenge in getting between home and the railway station. Others, who don't commute into the city, might be making relatively short trips in places where public mass transit is never likely to be a viable option, because the population simply isn't large enough to generate adequate demand, and where narrow streets and country lanes create their own environmental and road safety issues.

So, the challenge we set the students was to cast their creative minds ten or more years hence and think about the transport needs of people whose homes fall outside the main conurbations, as illustrated by one typical small rural town in East Sussex. The purpose was not to arrive at a template for a particular transport service or vehicle but through the design process, to draw out the factors that should shape those services and vehicles in the future, as new technology and new materials open up the prospect of wholly new approaches.

What comes through most sharply is an appetite to re-connect people with places and with each other, whilst recognising that personalised travel is still likely to have its place. The designs in this report might not be headed to commercial production anytime soon, but the themes that emerge are relevant and will hopefully be thought-provoking material for all involved in developing today's transport solutions.

Steve Gooding, RAC Foundation Director





“It was no easy leap, to exit the engine house of the head and vault the electric fence of commonplace things, to open the door of the century’s driverless hearse...”

Fugitives by Simon Armitage

EXECUTIVE SUMMARY

This project outlines the work of 35 MA students on the Intelligent Mobility Programme at the Royal College of Art, supported by the RAC Foundation, the Royal Automobile Club and Intelligent Mobility Design Centre. Students worked with the community of Wadhurst, located in the High Weald in East Sussex, to understand their needs, concerns and aspirations as well as to experience the physical geography and restrictions that can be found in rural towns and villages across the United Kingdom.

They developed a diverse range of mobility solutions that expressed and explored the value of community in a rural setting, the importance of inclusion in an area that is aging more rapidly than their urban cousins and the opportunities to deliver greater levels of sustainability and quality that might be achieved by sharing as well as advanced forms of technology infrastructure.

They reimagined inclusive micro-mobility suitable for young and old; a streamlined bus for the narrow rural lanes; a dynamic street lighting system that protected the value of darkness and the safety of pedestrians; opportunities for vehicles to act as community hubs – for families, entrepreneurs and the wider village community; as well as methods for sharing and supporting sustainable aims through material and technology choices.

The projects show the value of an open-minded client as well as open and receptive designers and communities. These students represent the future of the mobility design community from around the world and, if they are given the opportunity to take these skills into industry, we will see innovations in the world of mobility that are both desperately needed and currently lacking in the transport sector as it stands today.

INTRODUCTION

This project builds on previous collaborations between the RAC Foundation, the Royal Automobile Club, the Royal College of Art's Intelligent Mobility MA programme and the Intelligent Mobility Design Centre. Previous projects focused on the needs of often-marginalised groups, including elderly people, and those with additional mobility needs. This project, on the other hand, looked specifically at the mobility needs of rural communities – identified as a vitally important sector, given the increasing separation between rapidly growing smart cities and the stark contrast to often neglected and underinvested rural communities.

The ambition of this project is to highlight the diverse opportunity for new mobility solutions by adopting a more intense design research approach. This approach is adopted because it allows us to explore and unpack the underlying systemic, social and technical issues that are involved in rural mobility and use the insights from this analysis to identify a range of alternative mobility scenarios.

Focusing on the village of Wadhurst in East Sussex the project challenged the thirty-five students from the Royal College of Art's Intelligent Mobility Master's Programme to think through questions such as; *'how do commuters and those living in suburban or rural environments realise their future mobility needs?' 'How will they get to and from the local train station or other interchange, take their children to school, pick up shopping or drop off their partners, meet friends and family, and maintain social connections?'* They were also encouraged to think about the wellbeing of the whole community.

The task was then to design a new mobility vision – either a vehicle, mobility system or artefact, which would help people be mobile, healthy and able to live freely and without compromise in a rural village environment. The timeframe for the challenge was set at 2030 and beyond to give the students licence to create a new form of mobility that is visionary and ambitious and takes advantage of potential improvements to come in transport and material technology over the next decade.

The individual designs documented in this report illustrate the imagination and creativity of a group of design students drawn from across the world. But it is the unique insights highlighting the areas to be targeted and opportunities to be taken, and the design process to be followed – placing the user at the heart of the design process – that is the most compelling outcome of this project.

PART I THE CHALLENGE AND APPROACH

The 35 students involved in this project were first years on the Intelligent Mobility MA at the Royal College of Art. Culturally they represent a global mix – including the UK and Europe, India, China and South Korea; and they come from a range of design backgrounds – including those with degrees in automotive design, product design, engineering and interior design.

Process

To support their inquiries, students were introduced to the residents of Wadhurst, a small market town of 5,000 people in East Sussex, and investigated the mobility needs of the community. They were offered the support of transport planning, policy and design experts, provided with a summary of recent neighbourhood planning reports and ran workshops with residents to understand their hopes and fears for the future as well as the problems and challenges they face in getting around and into and out of Wadhurst today.

The teams undertook the following research tasks through the project:

- Literature review
- Analysis of the Wadhurst Neighbourhood Plan
- Online survey of Wadhurst Community members
- Discovery workshop in Wadhurst
- Team concept ideation, iteration and development

Literature review

Students were given a number of source documents to help them understand the challenges associated with mobility and rural communities, including reports from UK transport campaigns, European research around rural mobility and the RAC Foundation:

- Better Transport Campaign
- Transport for new homes
- European Network for Rural Development Smart Villages Portal
- Sharing is caring? Not quite. Some observations about 'the sharing economy'
- RAC Foundation publications including:
 - *The car and the commute*
 - *Inclusion and empathy*

About the Wadhurst community

Students were also given access to the Wadhurst Neighbourhood Planning documents that included feedback on five areas of community life including 'Getting around', 'Local economy', 'Wellbeing & leisure', 'Environment' and 'Design, development & character'. While only some of these issues were directly related to the mobility design challenge, it was important to give students a broad context in order that they could develop a holistic understanding of the opportunities and challenges faced by the community.

Their analysis and insights revealed that residents want to reduce congestion and increase parking. They want to upgrade pavements, improve crossing points and reduce traffic speed. They also wanted better off-road cycle and footpaths.

Key economic issues included the sustainability of the high street; support for developing small businesses including working from home, reduction of congestion, increased parking to encourage shopping, and improvements to broadband and public transport.

Around 20% of residents are senior citizens and, despite highly motivated community organisations, many felt restricted by changes in local culture and non-inclusive infrastructure.



Figure 1 (above)
Wadhurst site visit, September 2019
Key groups that the students were introduced to during their site visit included elderly residents; members of a local community support group; parents, children and teachers at the primary and secondary school; the sports centre staff and spontaneous meetings with residents while exploring the town.

Figure 2 (below)
Students discussing mobility challenges with older residents, September 2019
Students were then teamed up with residents who had signed up for an evening workshop. The workshop allowed teams to work with these people in small groups to understand their hopes and fears, the challenges they faced during journeys around the

community and opportunities for future mobility products and services that might help to overcome problems and even create delight.

Residents mainly focused on the beauty of the surrounding countryside rather than the challenges associated with the climate crisis, and their principal concerns were around maintaining the rural feel and zero tolerance towards litter on the streets.

The neighbourhood planning team contacted a wide range of people to help us understand the opportunities and challenges that they faced, together with their hopes and fears for the future of Wadhurst and their mobility services. We had responses from 36 members of the public:

Half were currently working, half retired, 25% were parents, 20% commuted regularly, two were young people, and one considered themselves a learner and another an antique!

90% used a personal or family car to get around, over 80% walked regularly, 60% used the train, 20% cycled and less than 15% used the local bus service.

Respondents loved the community and village feel, and the ability to access the countryside and get to London relatively easily by train.

Figure 3
Wadhurst collaborative workshop

The workshop ended with teams building prototype future vehicles using Lego, card and their collective imaginations. These prototype models ranged from micro-mobility to autonomous buses and even the development of a cable car system

from the village centre to the local train station and beyond. Students were also introduced to a range of design methods in order to provoke reflections on their personal ambitions for the Intelligent Mobility programme as well as the rural futures project in particular. These are detailed in Annex [A].



PART 2

EIGHT PERSPECTIVES ON RURAL VILLAGE MOBILITY

The following summaries outline the eight proposals that were developed by the student teams over the 5-week project.

A FIRST AND LAST MILE SOLUTION FOR ALL – BYE

Antti Alasalmi, Benedetta Ippoliti, Heewon Choi, Patryk Musielak, Yongjian Tong

Wadhurst is a village where many people make a multi-mode journey – such as rail commuters to London – or would wish to make relatively short trips ill-suited to mass transit solutions, but what makes for a solution that recognises the different physical and personal requirements of people seeking personal mobility from their teens to their later years? Much attention has been given to the first and last mile for freight traffic, but what about trips of that length for people?



When we asked residents to imagine the future for Wadhurst they expressed the hope that the high street and community would thrive, that parking and transport would improve and that technology would make things better rather than worse. Their hope was that:

There will be more public transport. There will be local activities for teenagers and more affordable entertainment for people in the village ... that the village becomes a place where technology can solve many of the transport problems we have today.

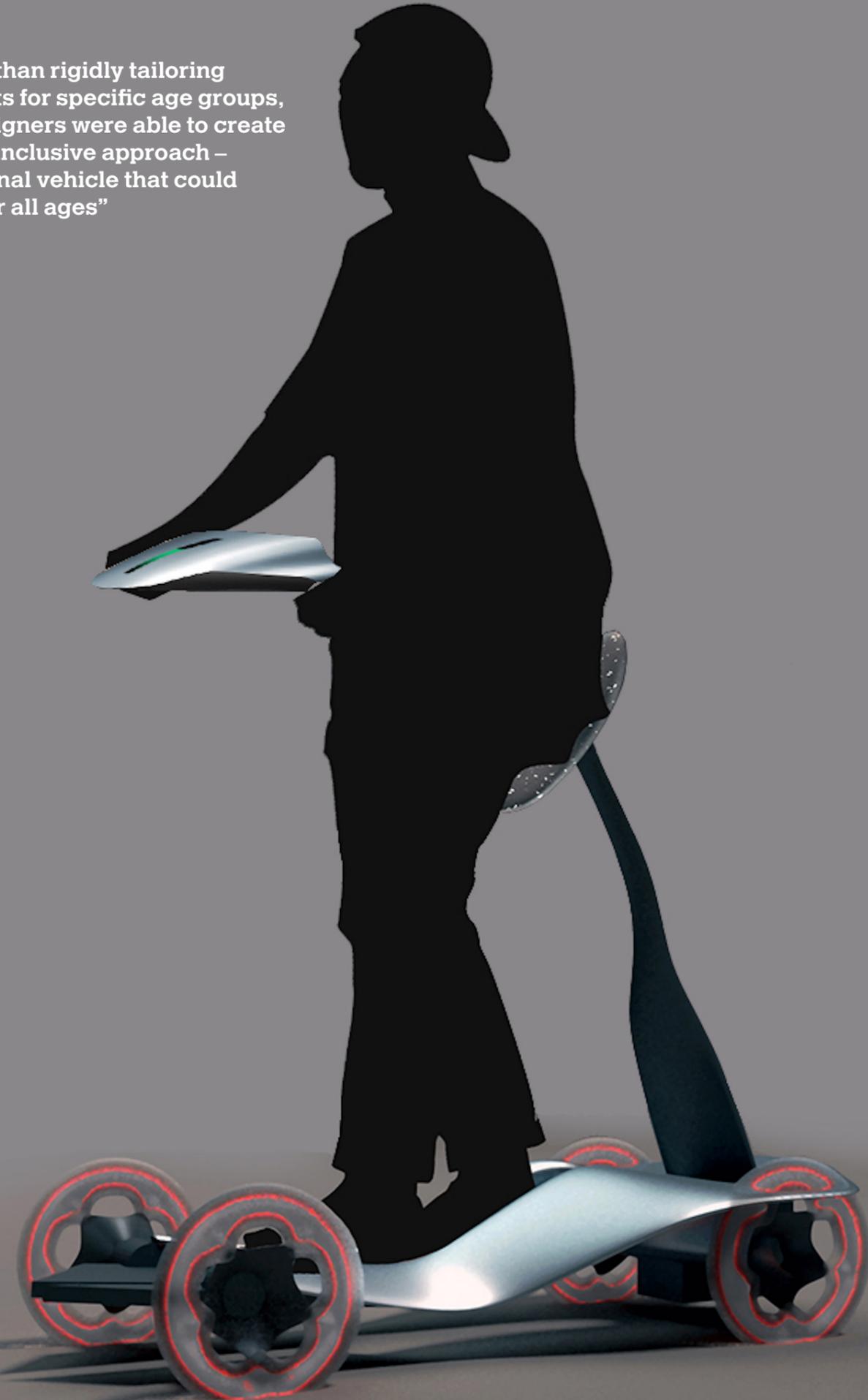
The concept of the *ByE* is to provide an inclusive first and last mile personal mobility solution that supports the needs of senior citizens whilst also providing a fun and low carbon way for young people and other residents to get around the community.

It is a 'three-function' electric scooter that can be used in standing, scooting or sitting mode. The *ByE* can be ridden like a skateboard to attract younger riders, opened to use like a modern electric scooter or adjusted to allow riders to lean on the seat when tired or unable to stand without support.

It aims to overcome both physical and psychological barriers to local mobility, reduce isolation and remove the stigma attached to traditional mobility scooters.

The idea is to generate a convenient, stigma-free solution based on the way it can be reconfigured in multiple different ways, but be as suitable for a commuter needing to carry a portable solution on their train journey as it is for a young person heading into town or an older person accessing local shops and services.

“Rather than rigidly tailoring products for specific age groups, the designers were able to create a more inclusive approach – a personal vehicle that could work for all ages”



A FLEXIBLE BUS TO FIT THE STREETS – JUSTABUS

Douglas Leroy, Jinhui Xu, Min Keun Choi, Ruocong Liu

The streets of Wadhurst long pre-date the arrival of the modern motorcar or bus. Local citizens expressed concern about the impact of modern motor vehicles simply in terms of the amount of road space they take up, the result being:

Having to leap into the hedge as cars use the lanes as shortcuts to avoid the centre of the village which is invariably congested.

I would love to cycle regularly to Wadhurst instead of going by car. I live 2 miles outside Wadhurst along a very busy road which I don't feel safe on.

They also wanted a better bus service:

The bus service is only once an hour and stops at seven in the evening on weekdays. It is non-existent on a Sunday...

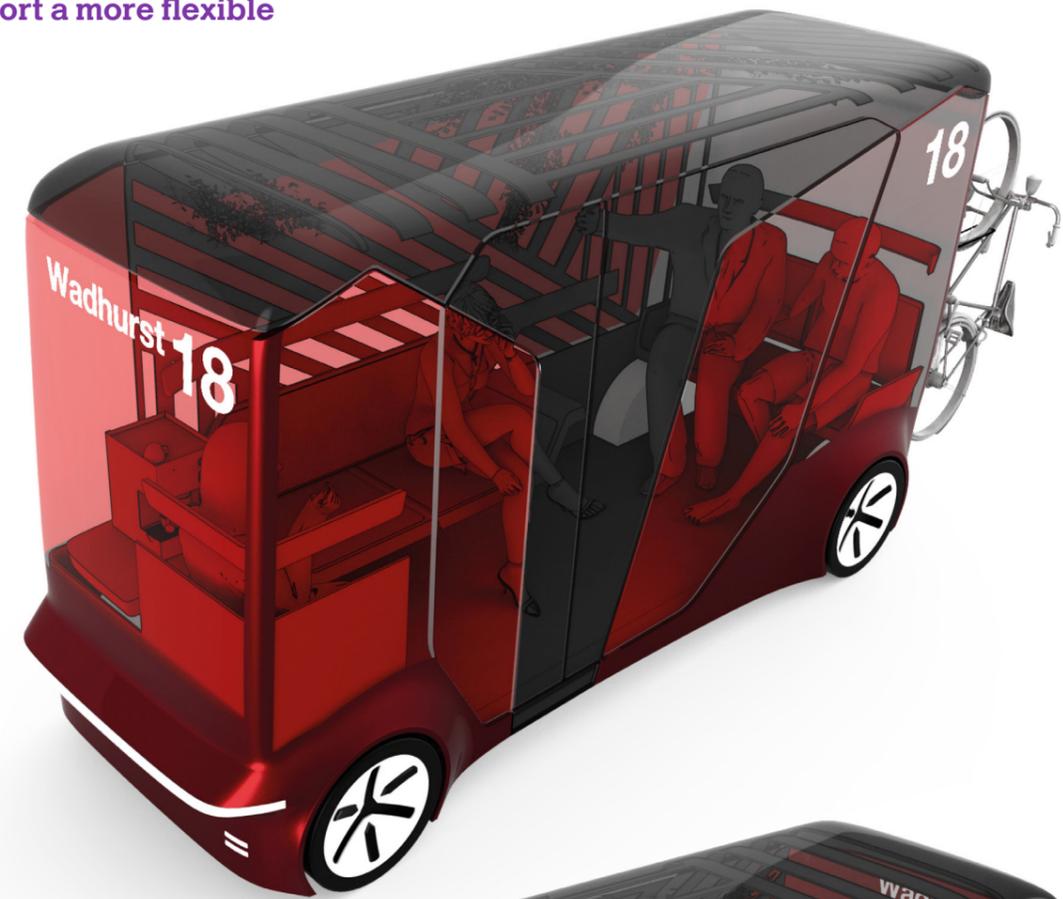
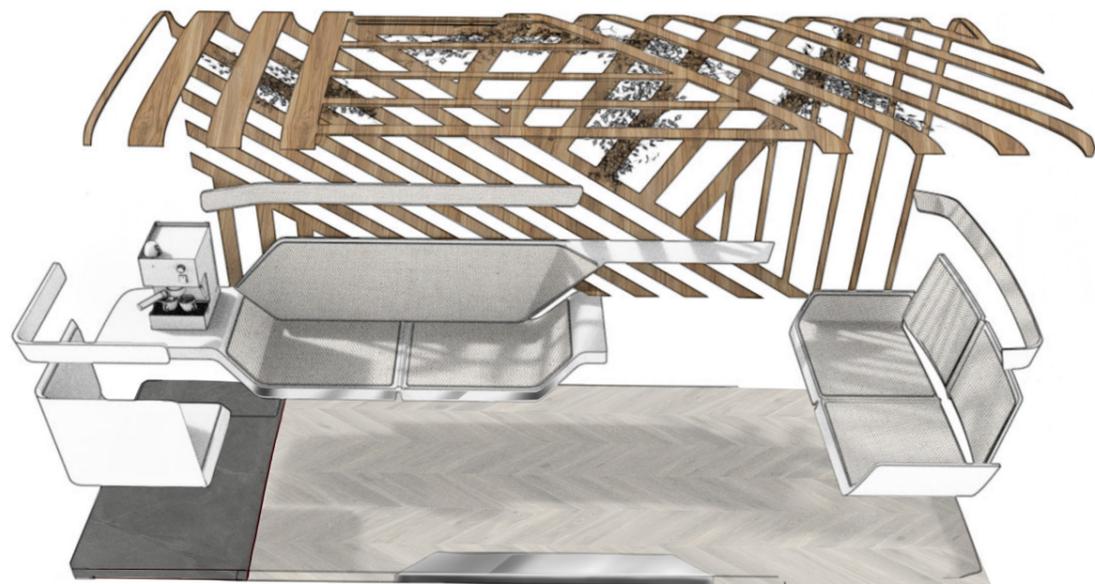
JUSTABUS is a mobility service that helps residents be part of an even stronger community. The bus is half the width of a regular car and gives more space to cyclists and pedestrians.

During busy hours, the bus is public and dedicated to congested destinations like Wadhurst Train Station. Between these hours it can be booked to support other local needs.

While it has self-driving features, the service is supported by an assistant who helps passengers depending on their needs – from collecting a less able resident on a trip to the shops to taking kids to Bewl Water with their cycles. In this way, the team believes that the assistant acts as a bridge between people and the arrival of artificial intelligence.

Justabus's interior focuses on sustainable materials to reduce its impact on the environment and its exterior can be wrapped in posters to support local events or special occasions.

“Making use of new materials enabled the team to reimagine the design of a bus to fit within the limited street space and support a more flexible service model.”



“For many trips, walking offers the best environmental option so long as people feel safe – this solution delivers both on safety and on rural concerns about light pollution.”

LIGHTING THE FOOTWAY, NOT THE SKY – STAR ROAD

Chenming Li, Leesu Kim, Mengmin Cai, Mingwei Liu

While many people find themselves in their cars, their favourite way of getting around is by foot as it creates opportunities to chat with others and access the beautiful countryside around Wadhurst. People find the poor quality pavements, the lack of regular buses, the inability to cycle due to dangerous traffic and the distance of the station from their homes as major reasons why they can't use their preferred way of getting around.

I love to walk everywhere as I feel more connected with the village. I also like walking as I am not bound by timetables.

Wadhurst also takes part in the High Weald dark-sky community, which aims to help local people enjoy the nighttime view of the stars. At the same time,

residents have raised health and safety concerns about the areas of the town with no streetlights.

Star Road is an interactive lighting system that allows people to get around town safely without raising light pollution levels. Pebble-shaped light-emitting modules are installed onto the pavements. These modules are pressure-sensitive and hence will only be activated when required. It also includes connected intelligence that aims to provide a silent companion for a commuter on the way home, a helpful guide for a child to navigate around and a watchful protector for senior citizens in medical needs.

Using bioluminescent organisms called dinoflagellates, *Star Road* is a sustainable system that is aimed not only at helping residents get around during the night, but also to feel the emotions brought by star-gazing and help them to interact with each other.



BUILDING BLOCKS OF A MULTI-PURPOSE MULTI-GENERATION SOLUTION – DIMAXION

Anna Pittrich, Jiyang Lou, Linqi Yi, Yanhao Li

Creating a different mix of vehicles and improving access to the local railway station were constant themes in residents' hopes for the future:

Cycle paths, electric vehicle charging points, pedestrian only zones, incentivised 'ditch the car' initiatives, walking routes to other villages, more buses, pay as you go bike hire.

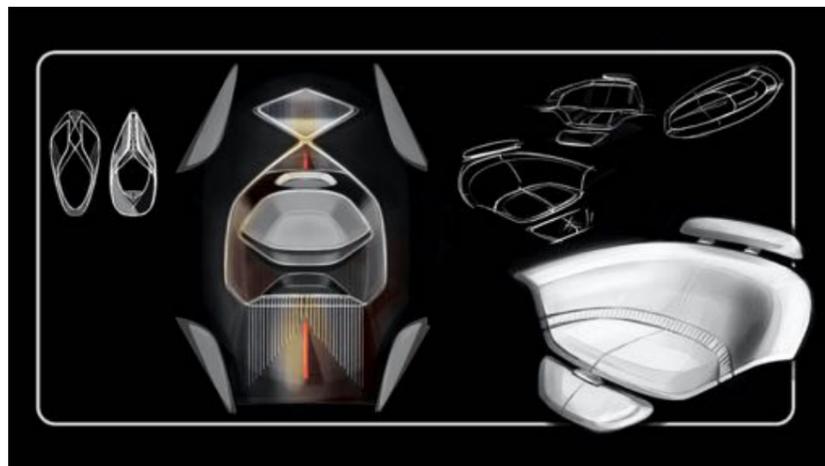
More electric cars, an e-bike share scheme for access to the Station. Autonomous vehicle pods, like at T5 Heathrow. Safe access for pedestrians and bicycles to the station.

Inspired by several timeless theories of Richard Buckminster Fuller, including map measuring, time management and a focus on parametric flexible structures, DIMAXION is a holistic concept combining small autonomous vehicles with an integrated architectural pavilion.

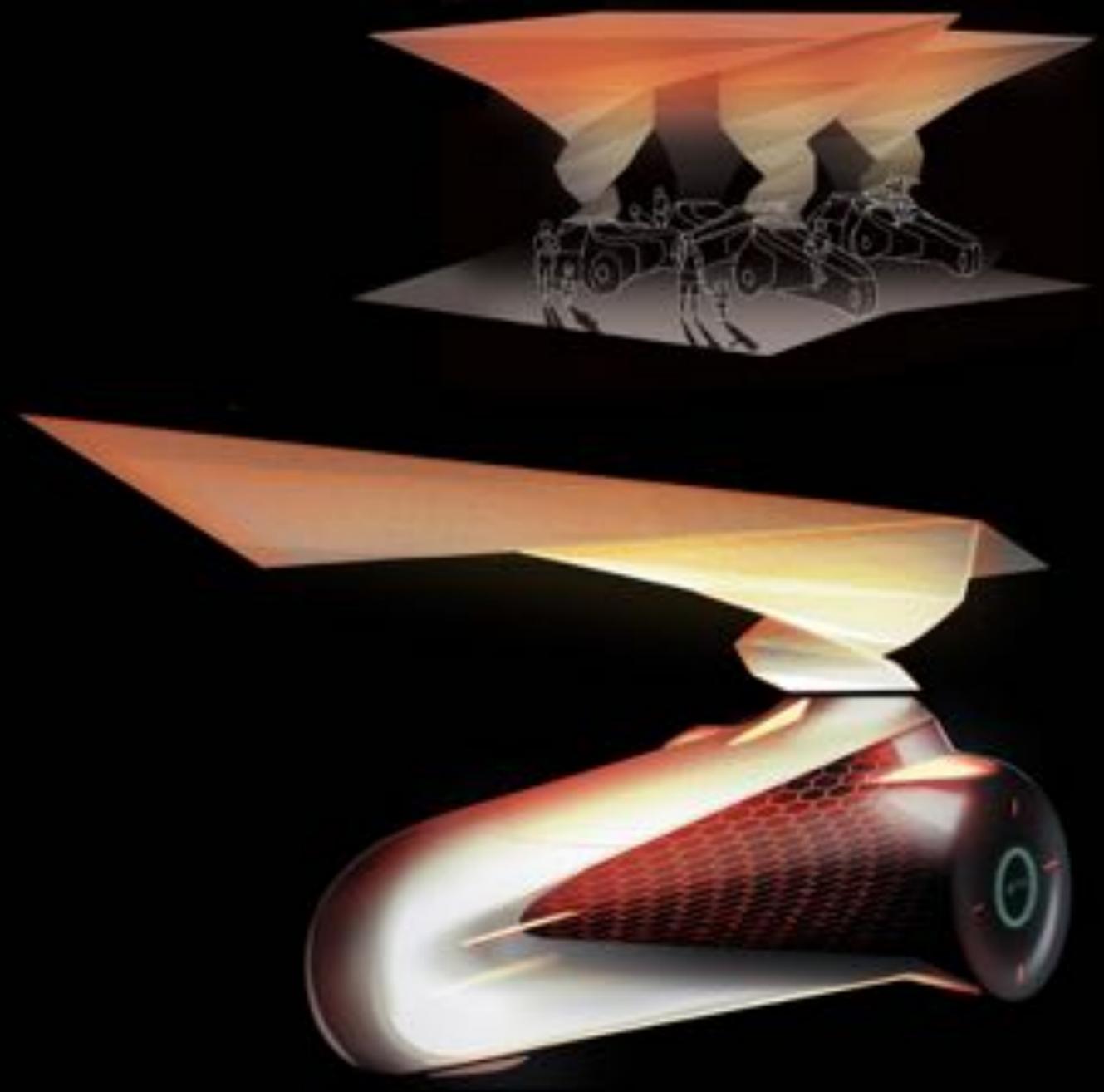
With the assistance of the DIMAXION system, Wadhurst's multi-generation families have the possibility to be more flexible in their daily lives without relying on others.

The concept is meant to be used by all ages, so it is easily able to bring children to school, employees to work or to the train, as well as the elderly to doctor's appointments or teatime with their friends. Furthermore, it can be combined so vehicles can help larger groups to travel together.

Besides autonomous journeys for short commutes, DIMAXION provides an opportunity to create covered architectural parametric pavilion spaces whenever and wherever people might need them.



“The defining feature of this design solution is that it not only brings people where they need to be, it brings them together in a social space building a better sense of community.”



AN ON-DEMAND OPTION THAT ADAPTS TO FIT THE USER – WAGO

Chengao Li, Guannan Zhu, Jiaheng Wei, Theo Mesplou

Better public transport to connect to surrounding areas and not just simply Tunbridge Wells or Hastings ... In this respect connection to and from the village to the local train station which is almost 2 miles away would be more appreciated by many elderly people, young families etc

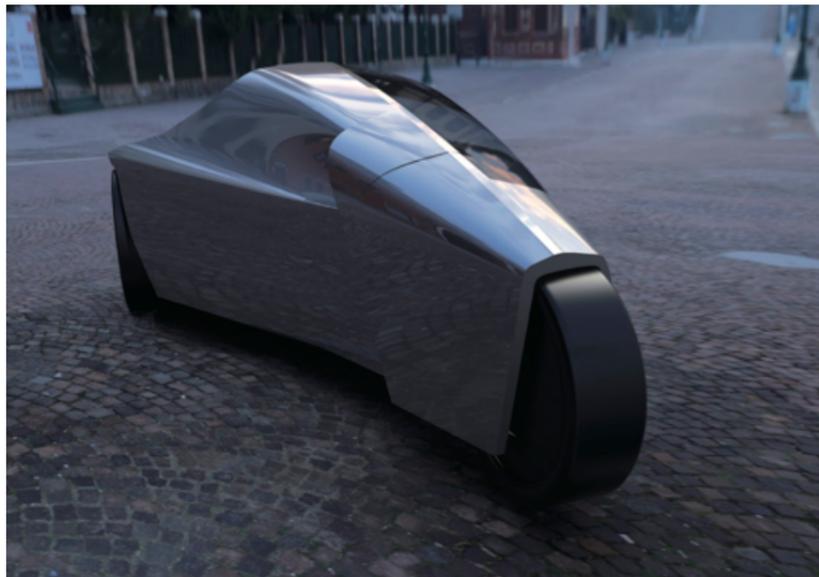
Ask anybody and they will tell you the state of the roads. It's like trying to navigate the surface of the moon.

Wago is a vehicle designed to help young and old feel free and unlimited, as both groups are currently extremely limited in terms of mobility. Buses do not go frequently, or do not go at all, which forces them to ask someone with a driver's license to take them somewhere. This, in combination with badly maintained and inefficiently used roads, causes congestion, which then causes unsafe conditions and unhappy people.

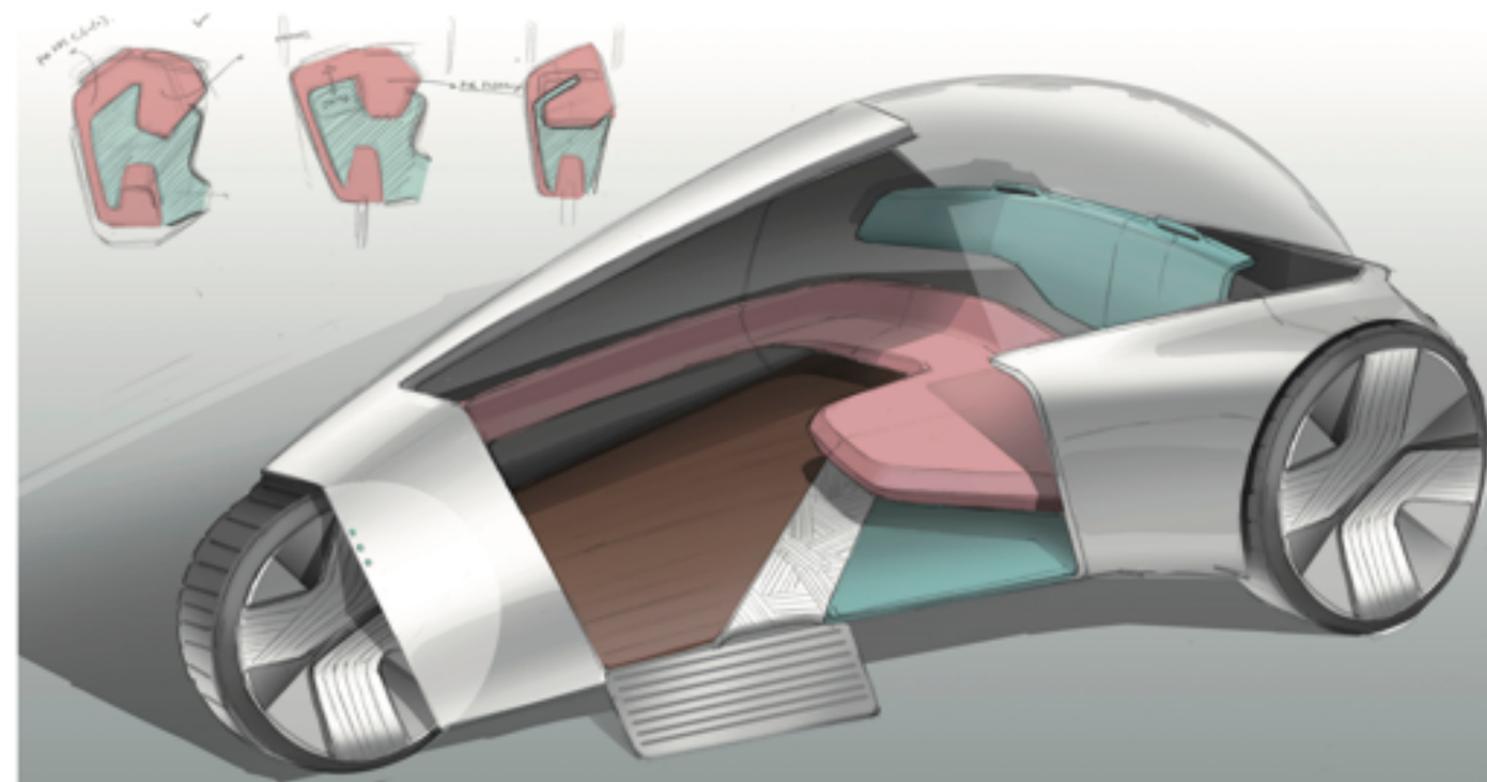
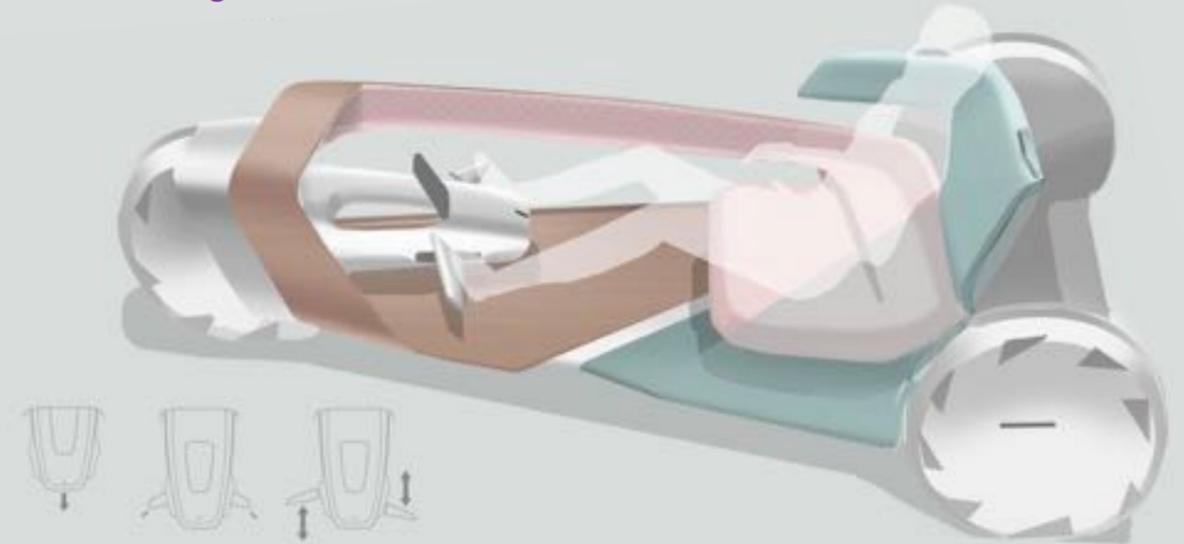
Wago is therefore designed to take users wherever they want, whenever they want, and reduce space usage on the road. To achieve this, it can fold in and out.

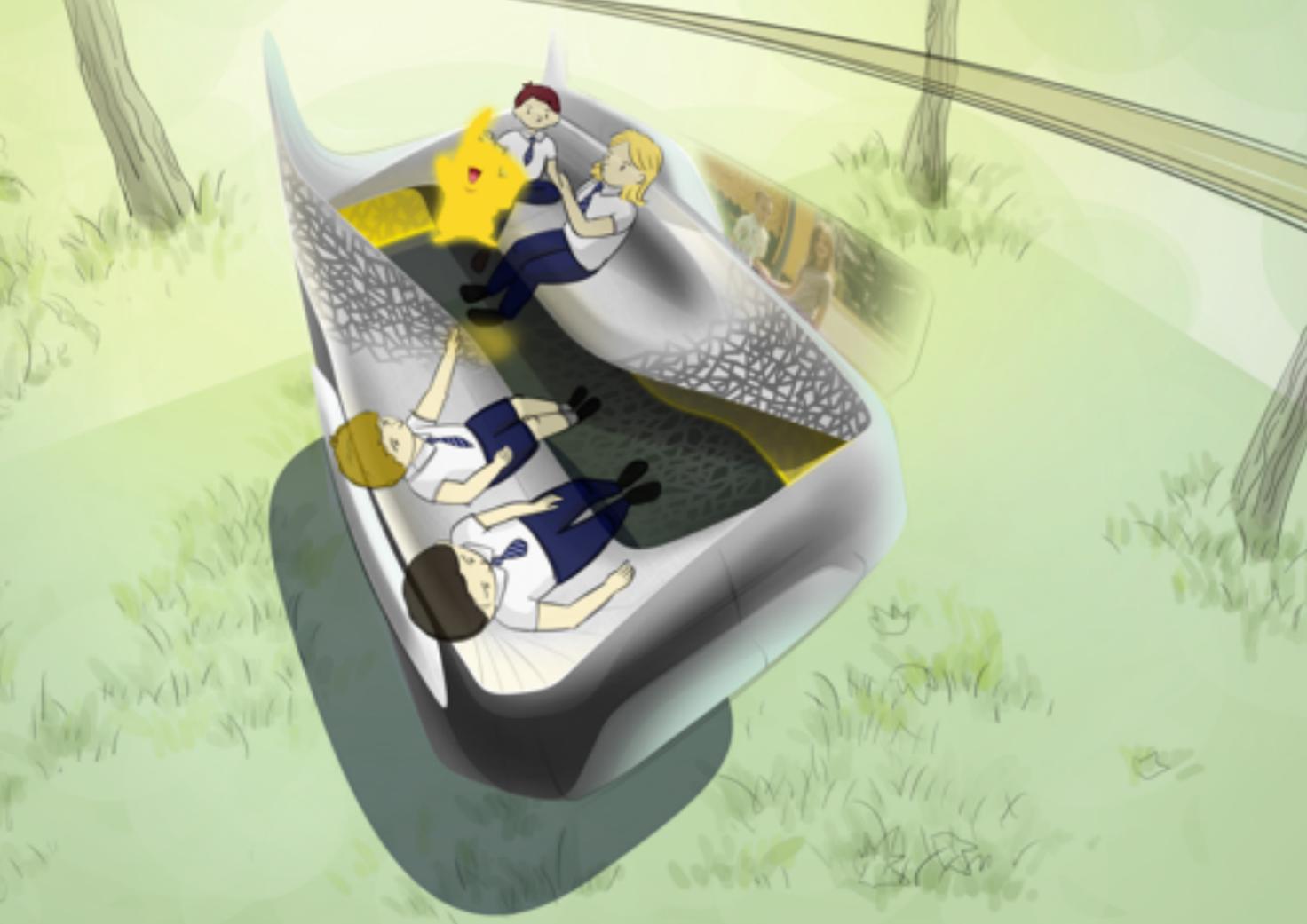
Folded in, it is designed to carry a single person, with minimal storage, while taking up minimal space on the road. This state is geared more towards young people, as it can also be driven. With three wheels, it leans into corners, just like a three-wheeled scooter, which makes it more fun to drive.

Folded out, it can carry one person and large items like walkers, or one extra person. This mode is fully autonomous, which increases comfort and ease of use. As the vehicle is autonomous, no parking is needed. You get in wherever you want, and get out wherever you want, paying by time used.

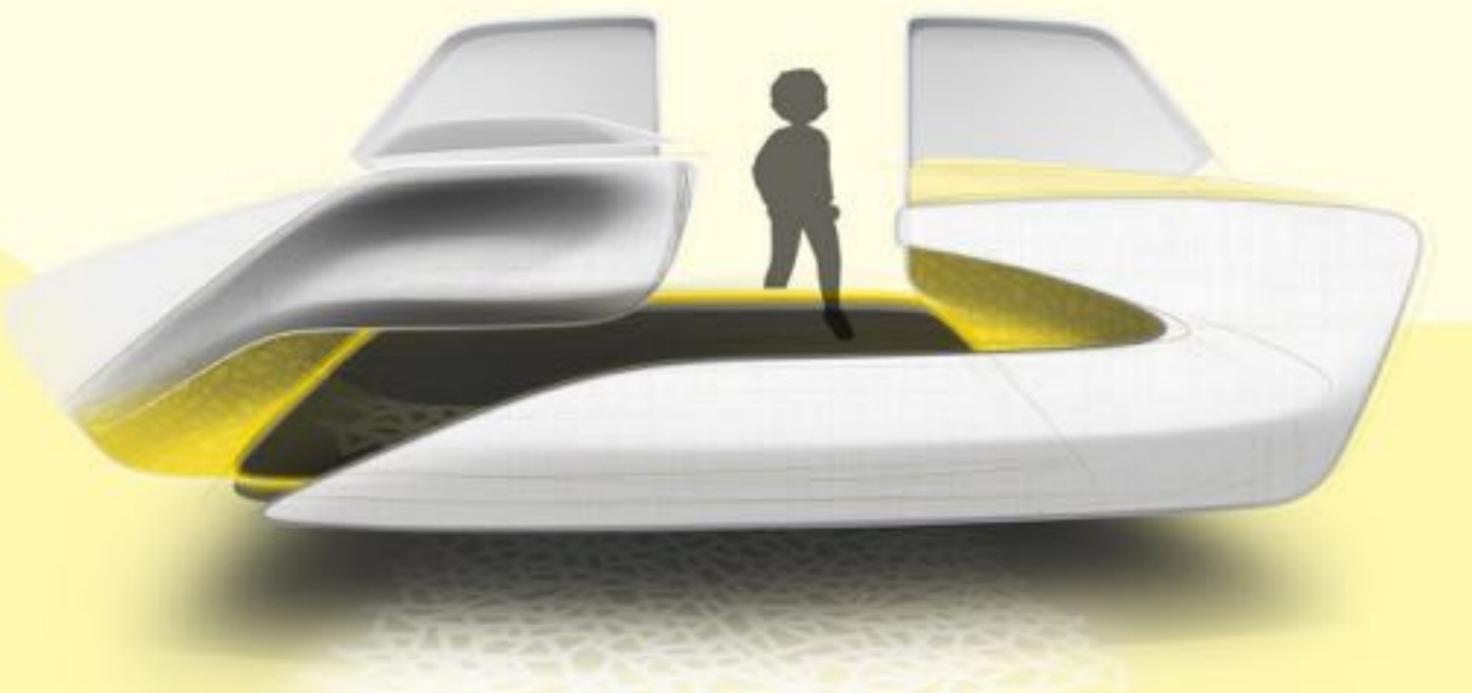


“The answer to narrow roads and single person transport? This team turn 180° away from the large vehicles suited to urban mass transit and shrank the design to fit the need.”





“Several novel concepts feature in this design, but the stand out theme, once again, is on communal and community-building travel.”



COMMUNITY-BUILDING THROUGH COMMUNAL TRAVEL – MISSING LINK

Jay Morris, Tianyu Wu, YoungJae Kim, Zixuan Zhao

What do Wadhurst residents like?

Views of the countryside, the people you meet, cycling through the lanes on a summer's day taking in the views, walking the footpaths.

If anyone has 10 million to spare, a cable car that goes from the station to the High St with stop-offs in Durgates.

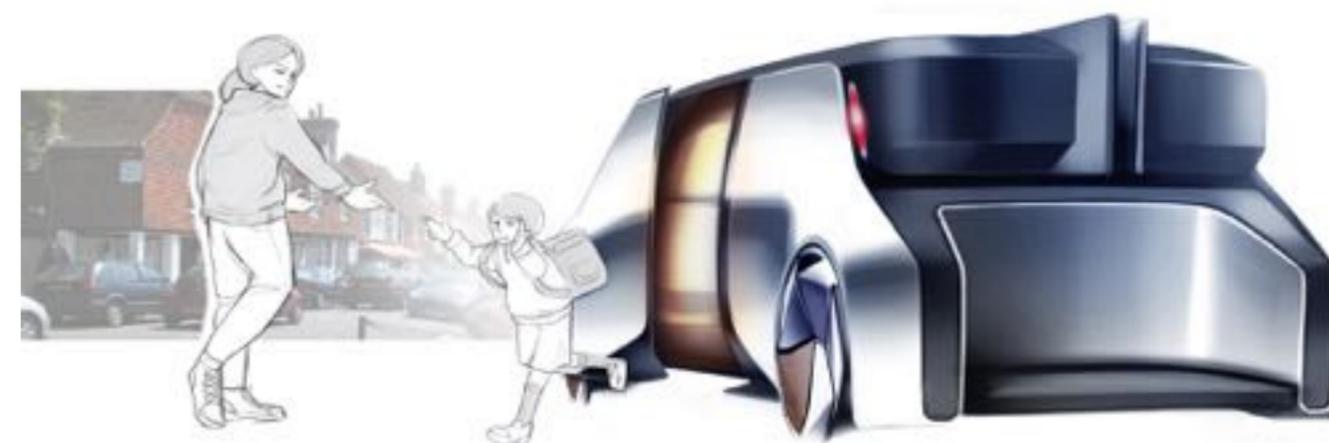
And what might they be willing to do themselves?

We could car share more. I'm not sure of the bus routes so have never taken one.

The 'Missing Link' project focuses on creating a mobile communal space for rural villagers, which can tighten social bonds. Families and other social groups could spend time together in the vehicle during their journey. The project seeks to recreate this active social life accommodated in the moving, autonomous vehicle

'Missing Link' is run by a subscription, where a group of people could reserve their own mobility pods, tailored by their own routes in desired time. Instead of having multiple, short journeys with individual cars, it focuses on transporting groups in one vehicle within a single journey, decreasing the numbers of private cars on the road. Each vehicle is accompanied by a personalized AI system from an individual or a family, overseeing the safety of the vehicle when it's on the road, and enabling them to connect to different pods while they are travelling.

To reach out further distances, the vehicle uses a suspended cable system to travel conveniently and connect with nature as well. The vehicle uses a Smart-Glass technology in order to blend into the nature, without disrupting the view of the rural scenery.



DELIVERING LOCAL PRODUCE AND THE LOCAL PRODUCER – CARNIER

Domenico Perna, Marie Torrens, Zheming Zhang, Wenhao Zhang, Seok-woo Choe

The Carnier is a vehicle that is a part of a system that aims to:

- Support the self-sustenance of rural communities
- Increase the general wellbeing of the community
- Strengthen the meaning of community by bringing individuals together

The vehicle helps market gardeners sell their products in two ways:

- Making the process of setting up a market easy.
- Acting as an autonomous delivery service that can bring fresh food every day in all neighbourhoods of the town.

Carnier is composed of two parts that can act together or separately:

- The carrier can be used as personal transport for the farmer.
- The Cargo bay can be used as a pop-up shop for the market or become an autonomous delivery vehicle.

Another target of the system is to bring the community together, giving people the opportunity of sharing unused food or other goods in the town. People can use the autonomous delivery vehicle to drop the goods that they want to share and that otherwise might be wasted or under-utilised.

The vehicle has been designed to look friendly & interactive (the exterior surface can act as a big digital screen to display messages). It also uses local materials, including wood and textiles, for some parts of the interior and exterior to create a balance between tradition and technology.



“A vehicle designed to wear its environmentally friendly credentials proudly on its sleeve - a futuristic, flexible design but with a faint echo of the vintage ice-cream wagon about it.”



FROM CAR PARK TO COMMUNITY HUB – SOHO

**Abhidnya Kothavade, Dinesh Raman,
Joseph Zammit, Xiao Yang, Sharon
Ramalingam**

Wadhurst residents recognised the need for radical solutions in order to preserve the community feel of their village, whilst being realistic about its attractions for London rail commuters:

The risk is that people are too inward thinking and selfish ... to recognise that we are going to have to radically change how we get around in the future... that Wadhurst does not move with the times and that we become a dormitory town for commuters with no real village "heart" and community.

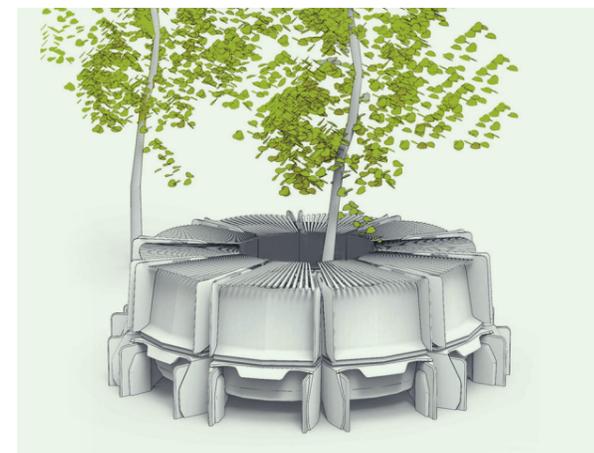
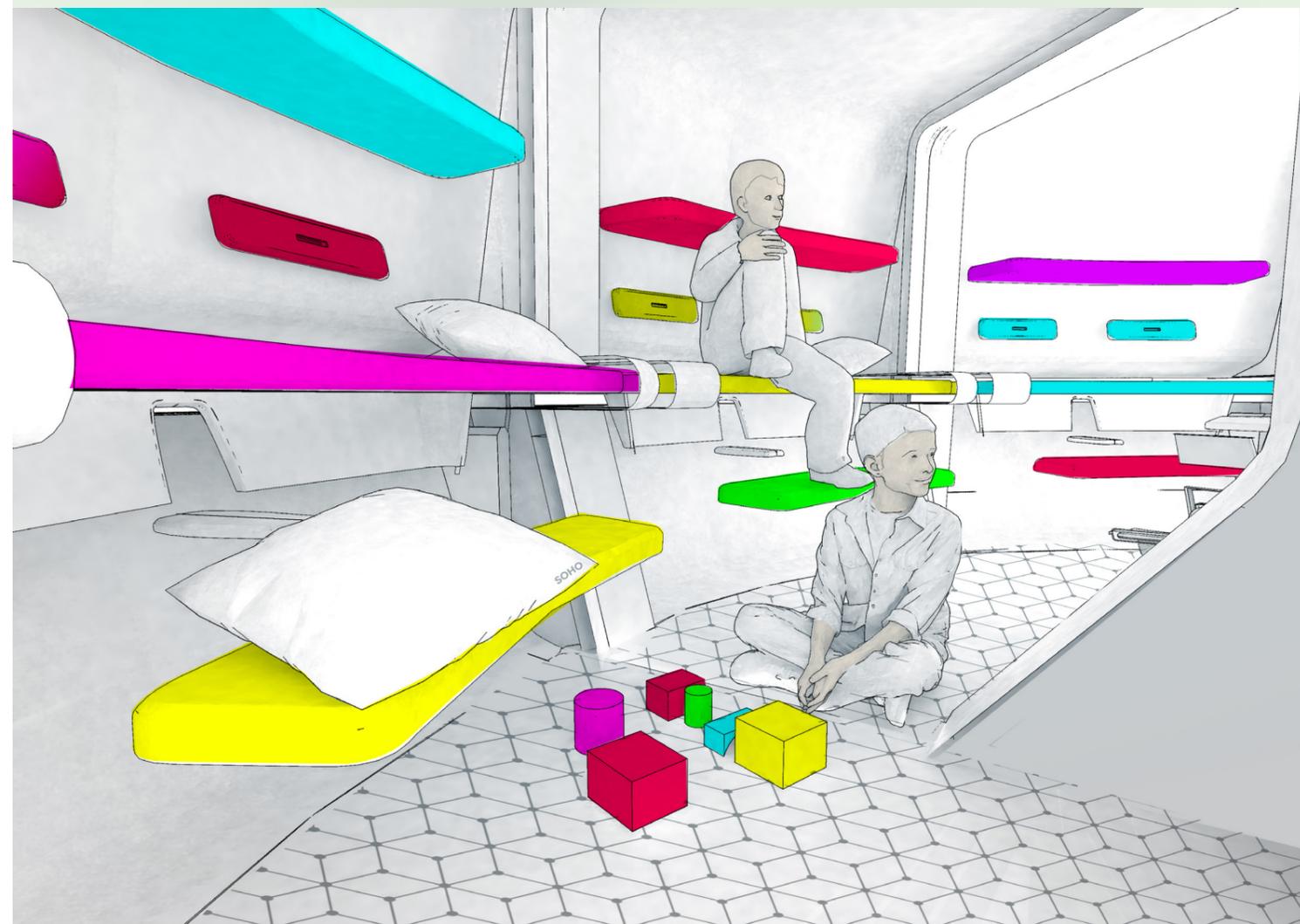
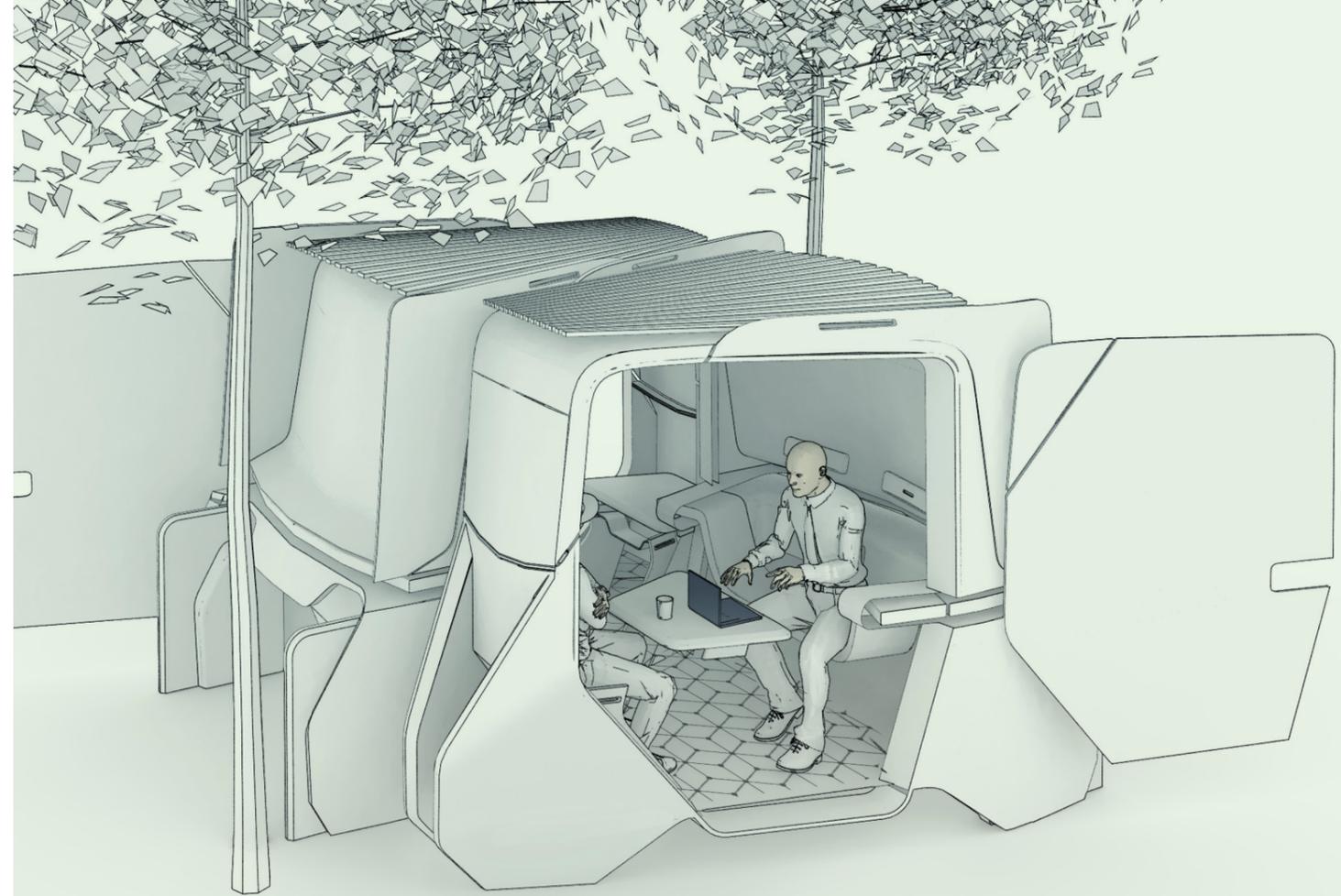
Wadhurst is an ideal place to live for people working in London who desire to escape the bustling city for the rolling countryside of the Weald. Despite the sense of community that exists, London commuters remain mostly unseen. This concept focuses on growing the sense of community and togetherness through the creation of shared spaces, which are few and far between in Wadhurst.

The solution we coined as "Carchitecture" is a one of a kind smart mobility and infrastructure concept. It is focused on repurposing dormant vehicles used by London commuters parked at the station from mere mobility devices to something that can create temporary shared spaces, using two or more vehicles; helping villagers to create on-demand spaces we call SOHOs. These spaces are able to support a variety of purposes such as small pop up markets, cafes, meeting or workspaces, crèches and much more, with the potential of creating local jobs and encouraging local businesses.

The vehicles can be configured linearly or radially to form seamless interior spaces that range from small to large. As well as this, the dormant vehicles can also be used as on-demand public transport shuttles throughout the day.

The system works on a subscription model owned by London commuters, thus helping the village to develop. The smart SOHO app is used to support demand specific spaces or mobility and creates a platform for the villagers to interact. The concept brings the community and vehicles together to maximise their true potential.

"This solution aims to re-connect the 'invisible' city commuters who provide the economic lifeblood of rural towns and villages to the communities where they, and their families, live."





PART 3 KEY INSIGHTS AND CONCLUSIONS

The students who undertook this project were first year students from the Royal College of Art's Intelligent Mobility MA programme. They provide a unique and important perspective on rural England, having a multi-national composition, and also, being newly introduced and exposed to the challenges of rural British mobility – which, for most, was a completely new experience and design opportunity. They also represent a uniquely 'Gen Z' perspective – which has almost certainly influenced and coloured their specific concerns and approaches.

“Students provide a unique and important perspective on rural England”

As a result, their ideas and approach benefitted dramatically from the diversity of different personal and cultural perspectives inherent to each student team. Through the design research process we established, they were also able to evolve their thinking, analyse and understand the deeper interconnected challenges relating to mobility.

“Collaborating with the RAC Foundation afforded an openness and freedom to look beyond traditional mobility typologies”

It is also important to note that in collaborating with a leading independent organisation – the RAC Foundation, rather than a traditional OEM – they were afforded an openness and freedom to look beyond traditional mobility typologies. The five themes that emerged from the project reveal the profound challenges and opportunities within mobility design for the rural community as follows:

“Shared mobility can cement rural communities”

First, and perhaps strongest, was the desire to preserve and promote a sense of community, which prompted the students to explore how vehicles could be considered as an integral part of future village life. The solution proposed in Carnier highlights a previously untapped opportunity, and in proposing the mobilisation of local food production, collection, delivery and consumption – connects community while delivering a range of additional health and economic benefits.

“Stakeholders need to be engaged and included”

Second, all the projects highlight the importance of adopting a community and demographically inclusive design strategy – both to gain support for initiatives and to build ownership in the embryonic stages of idea development.

The ideas they create also develop the opportunities for social inclusion and wider stakeholder engagement via mobility. For example, SOHO proposes a unique business model, which overlaps the provision of mobility services (for commuters) with that of hireable static working spaces (for non-commuting residents). In so doing the concept bridges distinctly different community needs through a visionary and aesthetically unique proposition.

“Minimising environmental impact”

Third, the mobility solutions developed all sought, in some way, to minimise environmental impact or promote a more sustainable option for Wadhurst.

In some cases, this was addressed by re-thinking the system infrastructure and combining existing road networks with new mobility, as well as, pragmatically, exploiting principles of thoughtful and good design. Justabus, has a dramatically narrow profile to enable single lane use – freeing up road space for other road users. However it also explores the use of natural materials for the interior – while offering an exterior that can be used to deliver community information and if necessary store bicycles for passengers in transit on longer journeys – making the most of its minimally invasive architectural form, language and volume.

“The role of technology”

Fourth, although it was no surprise to see electric propulsion and autonomous mobility feature heavily in the designs, some projects sought to explore and exploit radically new material technologies to deliver their proposal. Star Road, is such an example – proposing the use of bio-luminescent living dinoflagellates to provide an alternative form of street lighting which can be integrated at ground level and minimises the need for physical street furniture. The Star Road concept was motivated by a desire to preserve the dark sky community and the use of bioluminescent technology would be part of a networked and smart system. This would include sensors, actuators and processing to enable the system to adapt in real time to different use patterns and give a fundamentally different form of person-system interaction that was both more discreet and intelligent.

“Design is a key catalyst”

Finally, it is important to highlight that the work and approach of the designers on this project embody the value of a design-led approach – which is to catalyse and communicate previously unimagined opportunities. The range and scope of the designers' visions include new perspectives on future vehicles, while others explore true infrastructural challenges and identify radical alternatives to public and social cohesion and mobility needs.

In conclusion, the visions of future mobility for rural communities developed in this project reflect the ambition and imagination necessary to radically address the opportunity inherent to this sector. They also demonstrate the real value of working from a design led approach and with partners who have a declared intent to look for positive new alternatives to the UK's mobility needs.

ANNEX A: THE DESIGN PROCESS

The project provided the programme with a number of valuable pedagogical benefits as students start their MA programme. These include the value of partnership in providing a direction and platform for students to present their work through, the benefits of teamwork in design education, a rapid introduction to design methods as a critical part of design practice, and the importance of a people-centred and participatory approach to support design discovery, definition and development.

While this project built on previous partnerships between the Royal Automobile Club, RAC Foundation and the RCA, it also introduced a new theme that provided additional opportunities and challenges.

The focus on place provided students with an opportunity to understand people in the context of communal life rather than as individual actors within a complex system.

Additionally, the project allowed students and the RCA's design research team to investigate the underlying motivations of the community as displayed through Wadhust's neighbourhood plan and the involvement of community groups.

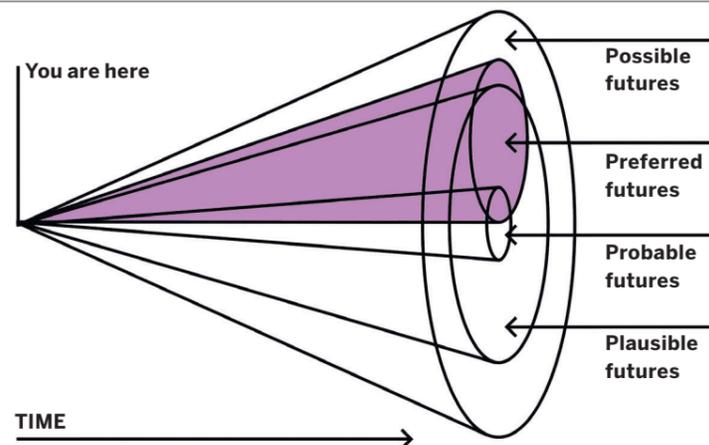
This focus and level of engagement spurred an increased interest in mobility systems and social spaces and widened the range of areas for investigation from personal mobility to the role of mobility in the social, economic and even cultural life of the community.

Students were also introduced to a range of design methods in order to provoke reflections on their personal ambitions for the Intelligent Mobility programme as well as the rural futures project in particular.

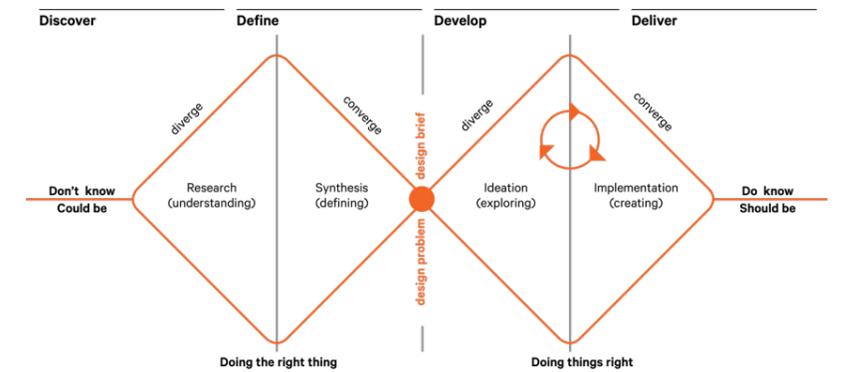
These included Joseph Voros' foresight future cone, the design council's generic 'double diamond' process and a range of specific methods from Dunne and Raby's Critical Design to participatory and co-design approaches.

Students were also provided with opportunities to test their design directions with tutors, judges and residents on an informal basis. This enabled them to clarify who they were serving, the key ingredients for a successful solution together with the scope to brainstorm, evolve and challenge their design direction before presenting final proposals to judges just 5 weeks after the start of the project.

Cone of Possible Futures, Joseph Voros, 2000



Design Council's Double Diamond Framework for Innovation, 2004



Digicars, 2012/13, United Micro Kingdoms (UmK) series CGI rendering by Tommaso Lanza © Dunne & Raby



Participatory Design, Origins in Scandinavian cooperative design methods, 1970s



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The Royal Automobile Club is globally recognised as Britain's home of motoring and is Britain's longest-standing and most influential motoring organisation. Founded more than a hundred years ago on a love of motoring, with a dedication to the rights and best interests of motorists, the Club is proud of its motoring history, with a heritage that is important to the present day.

The Royal Automobile Club Foundation for Motoring Ltd is a transport policy and research organisation which explores the economic, mobility, safety and environmental issues relating to roads and their users. The Foundation publishes independent and authoritative research with which it promotes informed debate and advocates policy in the interest of the responsible motorist.

The Royal College of Art is a public research university in London, United Kingdom. The only entirely postgraduate art and design university in the world, it offers postgraduate degrees in art and design to students from over 60 countries. The RCA's Intelligent Mobility Design Centre (IMDC) leads research at the intersection of people, mobility and technology within a complex and changing urban and global environment.

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