ITS INFOTURM STUTTGART

VISION MOBILITY FUTURE

WHAT IS THE STUTTGART–ULM RAIL PROJECT?

INFRASTRUCTURE FOR THE FUTURE, MUCH MORE THAN A STATION, FACTS AND FIGURES.

AUGMENTED REALITY

EXPERIENCE THE PROJECT VIRTUALLY

1. DOWNLOAD THE FREE “ITS-BROSCHÜRE” APP

APP STORE GOOGLE PLAY STORE

2. SELECT THE “SCANNEN” MENU ITEM.

3. SCAN PAGES WITH THE AUGMENTED REALITY SYMBOL AND VIEW DIGITAL CONTENT.

THE PROJECT AT A GLANCE

TWO SUB-PROJECTS, A HOST OF BENEFITS

WHAT IS THE STUTTGART–ULM RAIL PROJECT?

THE STUTTGART–ULM RAIL PROJECT CONSISTS OF TWO SUB-PROJECTS: STUTTGART 21 AND THE NEW WENDLINGEN–ULM SECTION.

The construction of the high-speed line and digitalisation will give Baden-Württemberg the most state-of-the-art rail hub in Germany. The line consists of around 120 kilometres of new tracks and will reduce journey times between Stuttgart and Ulm to half an hour.

The project will bring tremendous improvements for both Stuttgart and Baden-Württemberg. Train passengers will benefit from shorter journey times on long-distance and regional services as well as numerous direct connections to Stuttgart and other destinations. The Stuttgart–Ulm Rail Project is also boosting the region's economy. It will create thousands of new jobs. Not only during the construction period, but also beyond.

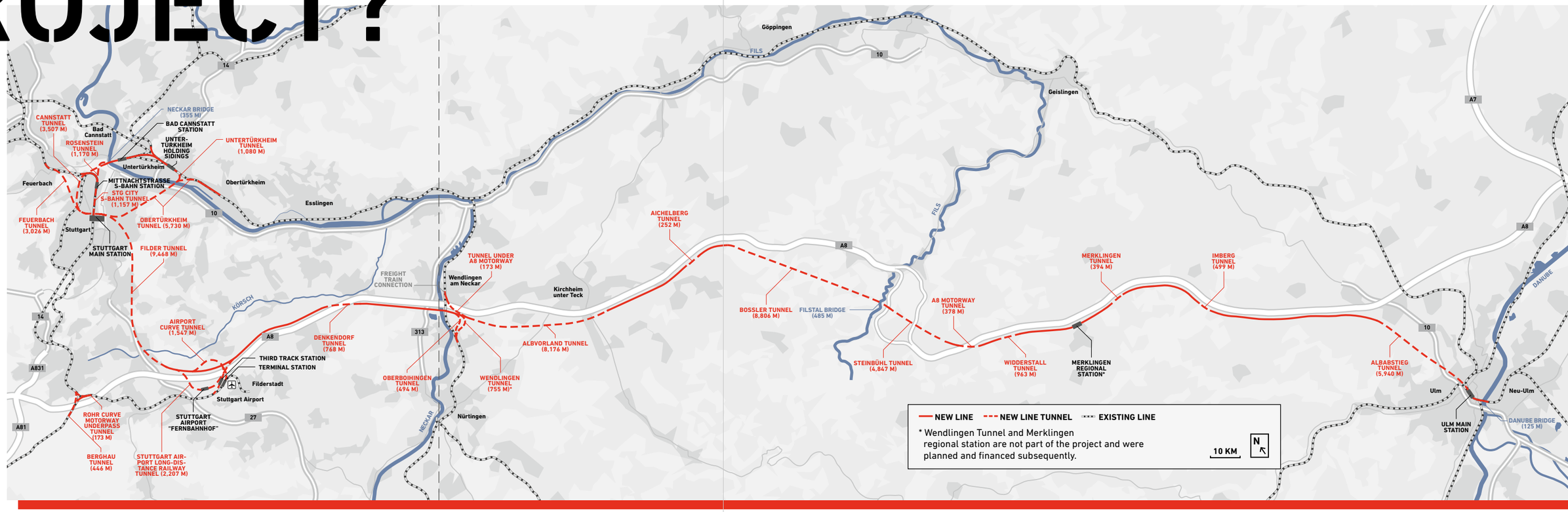
The project is encouraging investment and bringing money to the region.

Thanks to shorter journey times, the economic centres of Munich, Stuttgart and Frankfurt will be networked. Railways are unrivalled in speed compared to cars and plains. That preserves the climate.

The owner of the Stuttgart–Ulm Rail Project is Deutsche Bahn, which is tackling the project together with its partners. These are:

- **THE FEDERAL REPUBLIC OF GERMANY**
- **THE STATE OF BADEN-WÜRTTEMBERG**
- **THE STATE CAPITAL OF STUTTGART**
- **THE VERBAND REGION STUTTGART AND**
- **STUTTGART AIRPORT.**

The project is also being funded by the European Union through the federal government.



Stuttgart 21 | New Wendlingen–Ulm section

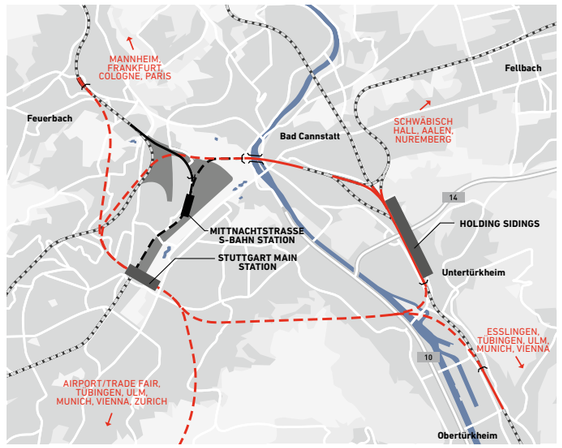
STUTTGART 21:
FOUR STATIONS AND AROUND 57 KILOMETRES OF NEW TRACKS.

The Stuttgart 21 project goes far beyond the high-profile remodelling of the main station. The entire Stuttgart rail hub will be restructured. In the process, the rail network will be expanded. Around 57 kilometres of tracks are being laid for long-distance and regional trains as well as S-Bahn traffic. In addition, four stations will be built as part of the project:

- ↳ **THE MAIN STATION AS A THROUGH STATION**
- ↳ **THE STATION AT STUTTGART AIRPORT**
- ↳ **THE MITTNACHTSTRASSE S-BAHN STATION AND**
- ↳ **THE HOLDING SIDINGS AT UNTERTÜRKHEIM.**

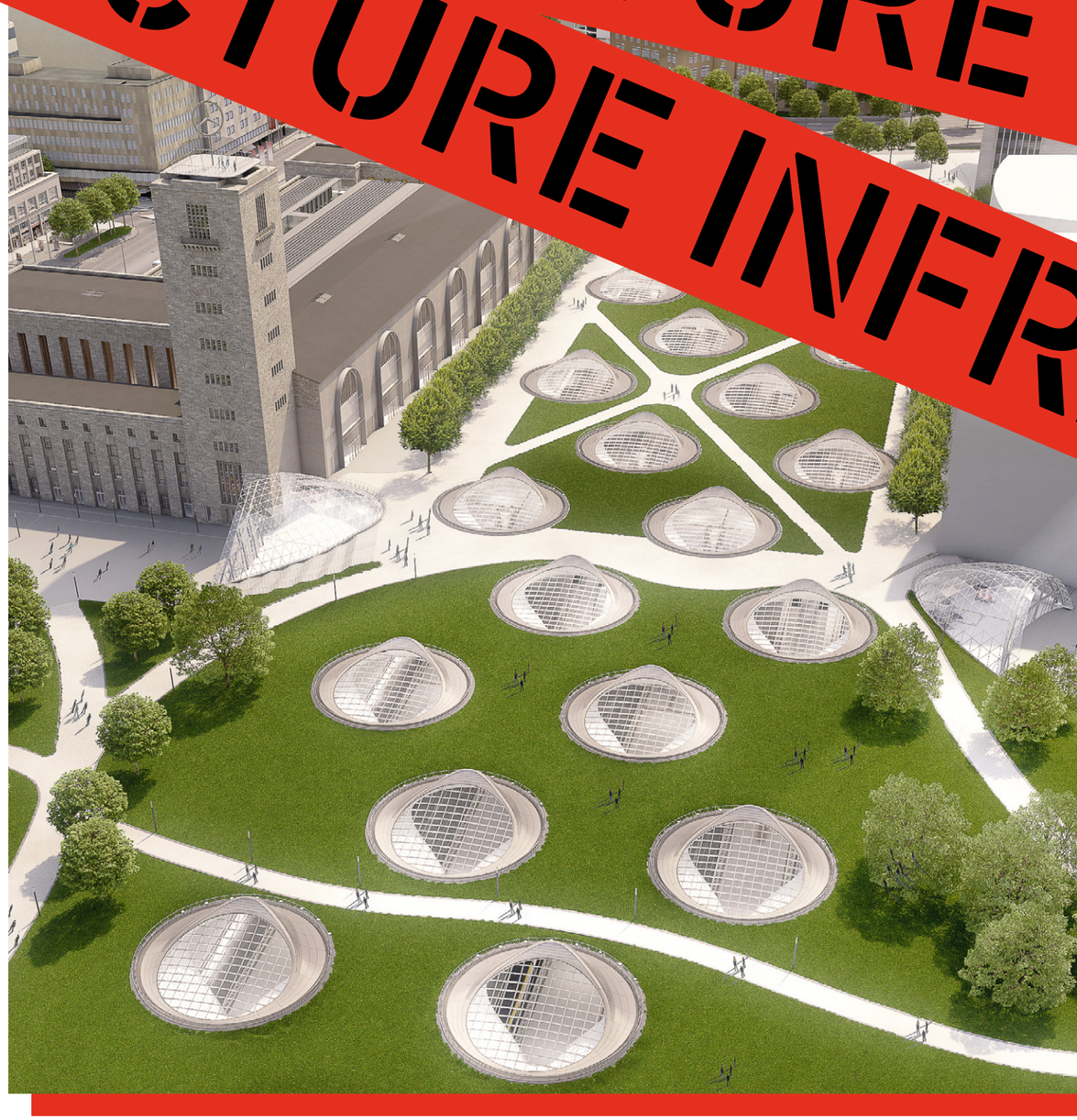
THE NEW MAIN STATION AS THE CENTREPIECE

The new Stuttgart Main Station is the centrepiece of the project. The terminus station will be converted into a through station. It will lie at right angles to the present tracks and will be well-insulated by the earth surrounding it. The station itself will have eight platform tracks and around 50 points. The eight tunnel tubes connected to the station will allow trains to reach Stuttgart and other surrounding destinations quickly and quietly. The new station has been designed to accommodate the doubling of passenger numbers compared to 2010. Here, every minute counts. The envisaged "Deutschlandtakt" synchronized timetable will only be made possible thanks to trains being able to arrive and depart more quickly at the new station.

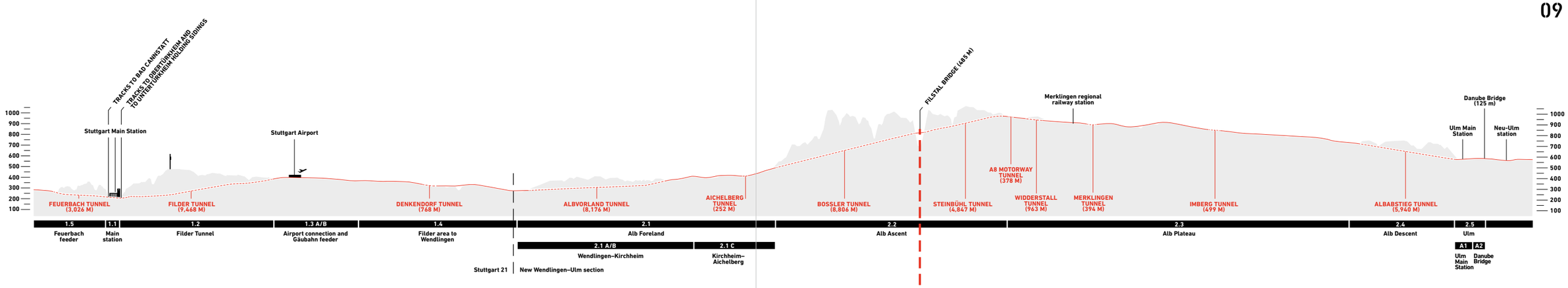


As part of the Stuttgart digital hub pilot project, all trains, including the S-Bahn, will be digitally controlled for the first time. This is the first project of its kind in Germany and should serve as a model for other rail hubs. Digitalisation will improve performance on the railways by reducing delays and increasing capacity.

The above-ground tracks will be removed when the new station is complete. The freed-up land will be turned into a new urban district: Stuttgart Rosenstein.



Infrastructure for today, tomorrow and future generations



FLOWING RAILWAY TRAFFIC

The through station will have half as many platform tracks as the old terminus station. And yet, it will be able to handle more trains with fewer delays.

THERE ARE THREE KEY REASONS FOR THIS:

- ↳ Trains entering and leaving the station will no longer get in each other's way.
- ↳ The number of incoming/outgoing tracks for long-distance and regional trains will rise from five to eight.
- ↳ In future, trains will be able to arrive and depart at 60 to 100 kilometres per hour. The present speed limit is 30 to 40 kilometres per hour.

A predominately underground railway ring will connect the new station to the existing network. New holding sidings will be built on railway premises in Untertürkheim.

S-BAHN: THE NEW MITTNACHTSTRASSE STATION

The S-Bahn will also benefit from Stuttgart 21. Currently, it has to share the tracks with regional trains. In future, these lines will be used exclusively by S-Bahn trains. Furthermore, the new Mittnachtstrasse S-Bahn station will serve Stuttgart Rosenstein. It will also enable faster transfers between Feuerbach and Bad Cannstatt.

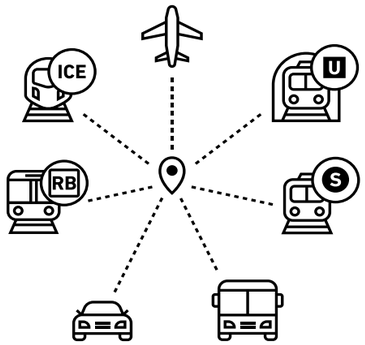
STUTTGART AIRPORT "FERNBAHNHOF": THE NEW TRAFFIC HUB

A new station for long-distance and regional trains is being built between Stuttgart Airport and the trade fair centre. Journey times from there to the main station in the city centre will be reduced from 27 to 6 minutes. In future, it will also be possible to reach most regions of Baden-Württemberg from the Stuttgart Airport "Fernbahnhof" without the need to change trains.

THIS WILL BENEFIT

- ↳ ten million airline passengers per year,
- ↳ more than a million trade fair visitors per year and
- ↳ a quarter of a million people in the catchment area of the new station.

With the long-distance bus station and a light rail connection, a traffic hub will be created between rail, road and airspace.



Filstal Bridge at Mühlhausen

NEW WENDLINGEN–ULM SECTION: SPEEDING UP TRAVEL IN THE SOUTHWEST

60 KILOMETRES OF TRACKS BETWEEN WENDLINGEN AM NECKAR AND ULM FOR INCREASED CAPACITY AND SHORTER JOURNEY TIMES.

Most of the route to Ulm runs parallel to the A8 motorway. Where this is not possible, the route passes through four long tunnels. At around 85 metres, one of the highest railway bridges in Germany has been constructed in the Filstal valley at Mühlhausen. On some parts of the old line across the Swabian Jura (Filstal valley route), trains have to decelerate to 70 kilometres per hour. In contrast, they can travel at speeds of up to 250 kilometres per hour on the new section.

The new section entered into operation on 11 December 2022. Journey times between Stuttgart and Ulm on long-distance services using the new section are around 15 minutes shorter than journeys on the Filstal valley route. This also benefits passengers travelling between places like North Rhine-Westphalia and Bavaria. The daily number of long-distance services between the two state capitals Stuttgart and Munich has increased by around 20 to 90. The high-speed section has also allowed many new and attractive regional services to be added. For example, the new Merklingen – Schwäbische Alb station has opened up rail travel to an entire region.

The new section has also taken the strain off the Filstal valley railway, allowing MEX services to be improved in the area. When Stuttgart 21 opens, the new section will reach its full potential. Journey times between Stuttgart and Ulm on long-distance services will be reduced to just 27 minutes.

BONATZ BUILDING

THE EXISTING TRAIN STATION BUILDING WAS CONSTRUCTED BETWEEN 1914 AND 1928 AND IS NAMED AFTER ITS ARCHITECT, PAUL BONATZ.

THE BONATZ BUILDING – WITH ITS LARGE ENTRANCE HALL AND TOWER – WILL BE PRESERVED.

THE NEW MAIN STATION

THE CENTREPIECE OF THE PROJECT

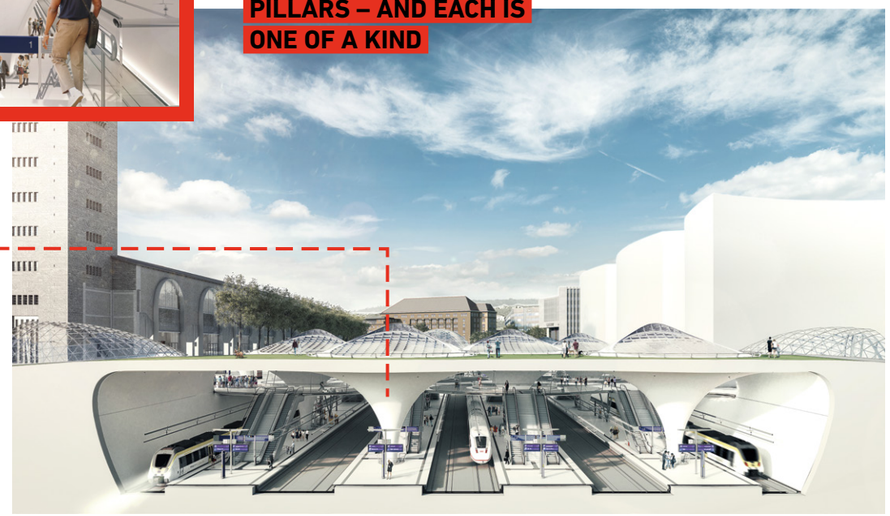
THE NEW
MAIN STATION

THE NEW STUTTGART MAIN STATION WILL LIE AT RIGHT ANGLES TO THE PRESENT TRACKS AT A DEPTH OF ABOUT 11 METRES. IT WILL HAVE EIGHT TRACKS WITH FOUR CENTRAL PLATFORMS, EACH OF WHICH WILL BE 420 METRES LONG.

The interior of the Bonatz Building will be modernised and will feature a new platform hall. Its roof will be accessible to pedestrians and will form the new Manfred-Rommel-Platz square. This will be immediately connected to the Mittlerer Schlossgarten park and will create a direct route between the city centre and the new urban district Stuttgart Rosenstein.

Cross section
of the future
platforms

28 CHALICE-SHAPED PILLARS – AND EACH IS ONE OF A KIND



OVERALL HEIGHT OF A PILLAR	UP TO 12 M
HEIGHT OF A PILLAR BASE	6 M
DIAMETER OF EACH PILLAR	32 M
FORMWORK AREA	APPROX. 1,000 M²

THE CHALICE-SHAPED
PILLAR IS GROWING

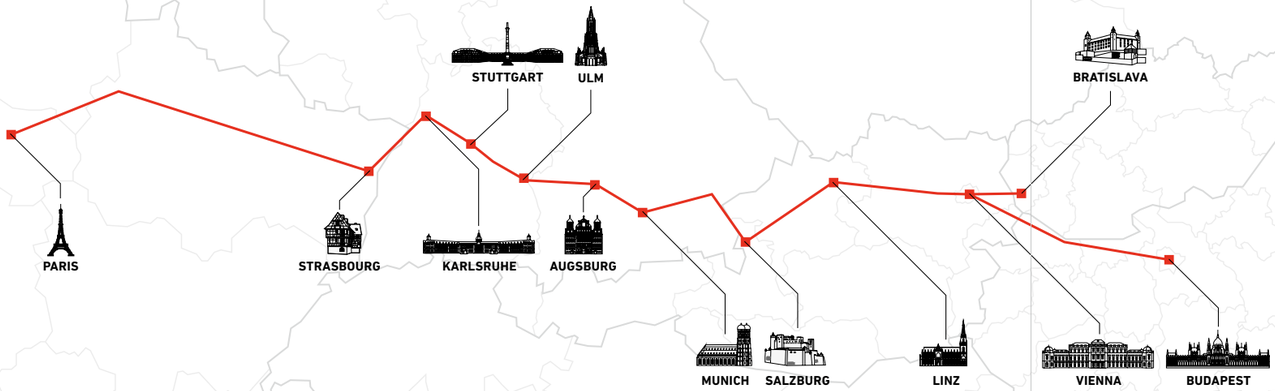
SHORT AND FULLY ACCESSIBLE ROUTES

Passengers will be able to access their trains more easily. The new Stuttgart Main Station will be reachable via short and fully accessible routes from all directions. The three distribution walkways running over the platforms will be accessible from ground level. Three lifts, five flights of stairs and seven escalators will lead to each platform. The walkways will make it quicker to change platforms. The distance between platform 1 and platform 8 will be no longer than 200 metres. Each platform will also provide direct access to the S-Bahn. The shortest distance from platform 1 to the Hauptbahnhof (tief) S-Bahn station will be just 50 metres.

A JEWEL OF ARCHITECTURE AND ECOLOGICALLY SOUND

Christoph Ingenhoven is the architect behind the new main station. His design integrates the Bonatz Building into the new modern architecture. The hallmark of the new station will be 28 chalice-shaped pillars. These will form a unique concrete formwork construction of a type never built before. The pillars will set new standards in the combination of structural engineering and design. Narrow at their base, they will widen as they extend upwards. Together, they will connect to form the hall's roof. The three-dimensional curved surfaces of these unique structures will be reminiscent of a chalice. The formwork of each chalice-shaped pillar will cover an area of over 1,000 square metres. Each completed pillar will contain 350 tonnes of reinforcement steel distributed across at least 22,000 individually measured steel struts. The chalice-shaped pillars will play a second role in addition to their load-bearing function. 27 of the 28 have large, round "light eyes" measuring 200 m^2 sitting on top of them, which allow daylight to reach the platforms. As a result, scarcely any artificial light will be required during the daytime, which will save energy. The temperature inside the platform hall will remain at a comfortable level all year round, with incoming trains and the cooling air flowing in from the tunnel ensuring the required amount of air exchange. The earth above the platform hall will emit heat and cooling energy gradually and will have an insulating effect.

Main Line
for
Europe



FAST AND DIRECT TRAVEL

ITS PROJECT

EUROPE'S CITIES MOVE CLOSER TOGETHER

The new Stuttgart–Ulm axis is part of the "Main Line for Europe". The name refers to a network of railway lines for high-speed trains. It connects regions and major cities across five European countries. 34 million residents and 16 million workers live in these areas. The project originated with an initiative of the European Union (EU).

Stuttgart and Ulm are situated near the centre of this important route. The 1,500 kilometre-long stretch links Paris, Strasbourg, Munich and Vienna with Bratislava and Budapest. The line is the central west-east connection of the European railway network. Its expansion is contributing to the economic, political and cultural convergence between Western and Eastern Europe.

BADEN-WÜRTTEMBERG: IMPROVED PUBLIC TRANSPORT

THE STUTTGART–ULM RAIL PROJECT WILL IMPROVE RAILWAY TRAFFIC IN BADEN-WÜRTTEMBERG AS A WHOLE:

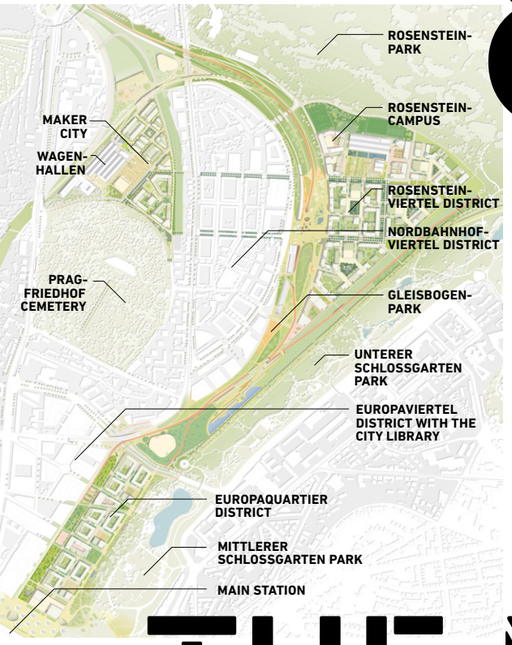
It would be impossible to implement the "Deutschlandtakt" clock-face schedule without the rail project. Here, every minute of travel time counts. The aim is for the main centres of Baden-Württemberg to be just under 30 minutes away from each other. Due to the new infrastructure, many connections will become faster and more direct. Eight million of the total eleven million residents will benefit from the rail project. Because they live in rural districts which can be accessed by new, fully connected regional train lines, for example. The Stuttgart–Ulm Rail Project means more trains can run. Journey times will be shorter and there will be new direct connections. There will be more options for changing trains and better connections, as services on long-distance and regional train lines will be better coordinated. The overall quality of travel will be enhanced.

Thanks to faster connections, regions are growing closer together. In future, living in Ulm and working in Stuttgart will be no problem. This also applies to other regions in the state. Companies will also benefit, as they will more readily attract skilled workers if they are quick and easy to reach.

THE STUTTGART REGION: FASTER AND BETTER TRAVEL

The existing terminus station will be converted into a through station. The trains then no longer have to change direction when they leave the station, but can instead simply continue their journey. In this way, it will be possible to link together traffic lines which currently terminate at the main station. Where passengers presently have to change trains, in future they will be able to simply remain seated. This will not only save time, but will also make travelling by train more pleasant.

THE RAIL PROJECT WILL ALLOW MANY CITIES TO BE REACHED MORE QUICKLY. THIS WILL STRENGTHEN THE ECONOMY AND ENHANCE QUALITY OF LIFE.



85

85 hectares
of space for a new
urban district

THE NEW STUTTGART ROSENSTEIN

STUTTGART

MORE INFORMATION FROM THE CITY OF STUTTGART

WWW.ROSENSTEIN-STUTTGART.DE/EN

The completion of the through station is offering the state capital of Stuttgart a unique opportunity. 85 hectares of land are being cleared. And plans are in place to transform the space into a new urban district, which will be known as Stuttgart Rosenstein.

Three areas are being planned: the Europaquartier, the Maker City and the Rosensteinviertel with the Rosenstein Campus. These areas will be connected by the Gleisbogenpark, which will run through the urban district like a green ribbon. A key concern of the urban development project, which is currently the largest in Stuttgart, is the creation of affordable housing. The urban district will also have schools, nurseries, sports facilities and cultural facilities.

WHAT STRUCTURE AND FORM SHOULD STUTTGART ROSENSTEIN TAKE?

The winning design in the urban development competition for Stuttgart Rosenstein was submitted by a working group put together by asp Architekten and Koeber Landschaftsarchitektur. Based on the winning design, the City of Stuttgart has developed the framework plan for Stuttgart Rosenstein. The city's citizens have also been closely involved in the project. Suggestions from public consultations have been incorporated into the plans.

A VISION OF MODERN URBAN DEVELOPMENT

Stuttgart Rosenstein will be a shining example of what a city of the future should look like. The future urban district will combine living, working and housing in an innovative way. This will involve implementing the concept of a "productive city", where residential and commercial areas and areas with production facilities are intertwined. The urban space will offer numerous communal areas and ways for people to come together. Residents of Stuttgart Rosenstein will be surrounded by green spaces while enjoying all the benefits of city life. The neighbourhoods in the individual areas will all feature green courtyards, roofs and façades as well as streets and parks with plenty of greenery. A square will be at the heart of each neighbourhood and will serve as an important focal point of community life. District hubs will turn the future urban district into a centre for modern forms of mobility with rental stations for cars, bikes and e-bikes. The hubs will also supply the district with everything it needs logistically and goods will reach people over short distances.

Crossing all social strata – from families and single people to shared living communities and senior citizens – everyone can live together in harmony in Stuttgart Rosenstein. Different generations will come together and actively participate in the community. Youth and multi-generation centres as well as places of culture and learning become meeting points. The plan to build a "city of short distances" will further contribute to the new urban district's lively character. The aim is to create an urban district where most of the facilities needed on a daily basis can be reached on foot or by bike in just five minutes. This will encourage residents to use their public spaces and become more active in the community.

THE MOTTO OF STUTTGART ROSENSTEIN IS "FOR EVERYONE. FOR THE FUTURE."

Stuttgart Rosenstein will have mixed-use neighbourhoods, where living, working, learning and cultural work are intertwined.

The new Stuttgart Rosenstein urban district will have plenty of green, open public spaces.

You can discover more about the new Stuttgart Rosenstein in the exhibition at Eichstrasse 9, 70173 Stuttgart.
Opening hours: Tuesday till Sunday, 12:00 till 18:00, free admission.

ATTRACTIVE TRAIN TRAVEL

BWEGT – THE FUTURE OF LOCAL AND REGIONAL TRAVEL

Baden-Württemberg

MORE INFORMATION FROM THE STATE OF BADEN-WÜRTTEMBERG

WWW.BWEGT.DE

SPEEDING UP THE TRANSPORT TRANSITION

What do Regional S-Bahn trains (RS), Metropol-express trains (MEX), regional trains (RB), regional express trains (RE) and interregional express trains (IRE) all have in common? They are operated on behalf of the State of Baden-Württemberg and are part of the bwegt fleet. Many of these regional and local trains are new, comfortable and easy to recognise from their white, yellow and black design featuring the state's colours. Over 350 of these trains will be in operation by the end of 2023. And from 2025, 130 modern double-decker trains will also be running in Baden-Württemberg.

bwegt brings together all the measures being taken to improve bus and train travel across Baden-Württemberg. Important partners such as the Federal State of Baden-Württemberg and the Baden-Württemberg regional transport services company (NVBW), railway companies and the 19 local transport networks have joined forces to make these improvements. The aim is for twice as many people to travel by bus and rail by 2030. To achieve this, Baden-Württemberg is embarking on important projects to add new lines, introduce more modern trains in the state design and increase service frequency.

The aim of all these improvements is to transform our transport system to help protect the climate and to make using public transport attractive, comfortable and convenient. Each passenger kilometre travelled by car produces 139 grams of CO_2, while each passenger kilometre travelled by train produces 60 grams of CO_2.

Train travel is becoming easier and easier in Baden-Württemberg. Trains will stop at stations at least once an hour between 5:00am and midnight. Express trains will connect the large cities and rural regions. Train stations will gradually be modernised and made fully accessible. Annual season tickets like the JugendticketBW for young people, the Deutschlandticket for travel across Germany and bwtarif tickets valid for travel across Baden-Württemberg will make bus and train travel cheap and flexible.

ELECTRIC TRAINS EMITTING FEWER AND FEWER POLLUTANTS

71 percent of the rail network in Baden-Württemberg is equipped with overhead lines. The state government's long-term objective is for most trains to be powered by electricity. But this will take time. Electrifying a railway line requires new pylons to be constructed and new power lines to be laid. More environmentally friendly diesel trains have already been put into operation to help speed up the reduction in the amount of pollutants produced by rail travel. Battery-hybrid trains offer another alternative. These trains are powered by electricity from a battery that is charged on sections with overhead lines. This means that only individual sections of the rail network need to be electrified for these trains to be used.

WHO IS RESPONSIBLE FOR LOCAL AND REGIONAL RAILWAY SERVICES?

Local and regional railway services are the responsibility of each federal state. The State of Baden-Württemberg orders, plans and finances the services using regionalisation funds from the German government. Almost 100 million train kilometres will be covered by local and regional railway services in Baden-Württemberg in 2023.

New contracts and calls for tender are resulting in more competition on the railway. Baden-Württemberg issues Europe-wide invitations to tender for individual lines. Any railway company can apply and the chosen company concludes a contract with Baden-Württemberg. This means that in addition to DB Regio, GoAhead, SWEG, SBS, SBB, AVG, BOB, SAB and other railway companies operate trains on the lines.

REGIONAL BUSES AND ON-DEMAND SERVICES

To close gaps in the public transport network, the Baden-Württemberg Ministry of Transport is funding the creation of regional bus lines. The aim of this is to connect remote small and medium-sized towns, villages and communities to the rail network to close gaps in the transport system. This will enable more and more rural regions that do not (currently) have access to the rail network to benefit from the hourly services offered daily across the state. There are currently 46 regional bus lines and the number is growing. The goal is to create a dense regional bus network that is used by as many people as possible. In places where only a few people live, it should be increasingly possible in future for residents to book a minibus using their smartphone. These buses will run on-demand and will transport residents to the nearest town or city or train station.

BWEGTPLUS – DISCOUNTS FOR CHOOSING A CLIMATE-FRIENDLY MODE OF TRANSPORT

More and more partners across Baden-Württemberg are supporting the switch to sustainable travel by bus and train. From tourist attractions and events to leisure facilities and shopping – passengers with a JugendticketBW, Deutschlandticket or bwtarif train ticket receive discounts as a thank you for choosing a climate-friendly mode of transport.

ITS PROJECT

The aim of all these improvements is to transform our transport system to help protect the climate and to make using public transport attractive, comfortable and convenient.

TRANSPORT FOR THE FUTU
THE FUTURE

EFFICIENT S-BAHN SERVICE FOR THE REGION

Verband Region Stuttgart

MORE INFORMATION FROM THE VERBAND REGION STUTTGART

WWW.REGION-STUTTGART.ORG

ITS PROJECT

THE S-BAHN IS THE BACKBONE OF PUBLIC TRANSPORT IN THE REGION

The Verband Region Stuttgart (VRS) has been responsible for the S-Bahn since 1996. S-Bahn trains serve more than 80 stations along seven lines daily. Every year, they bring over 100 million passengers comfortably to their destinations in an environmentally friendly manner.

PEOPLE MOVE AROUND DIFFERENTLY TO HOW THEY DID JUST A FEW YEARS AGO

Working people want to better combine their family and professional life. Working hours are becoming more flexible. This means that an increasing number of people rely on frequent services, even outside of peak times. Commuters expect numerous opportunities to change trains.

FOR THIS REASON, THE VRS IS EXPANDING THE S-BAHN NETWORK AND INCREASING THE FREQUENCY OF TRAINS.

Since the end of 2022, trains on almost all lines have been running at 15-minute intervals from Monday to Saturday. There are also 58 additional vehicles on the track. The VRS has invested well over 400 million euros in purchasing the new trains. This will make the S-Bahn service fit for the future. A modern digital train control system (ETCS) will be used to ensure more capacity and fewer delays. As part of the "Stuttgart digital hub" pilot project, this technology is currently being installed in the Stuttgart rail hub. ETCS will enable more trains to travel at more frequent intervals, transporting more passengers safely and comfortably to their destinations. The new technology will also allow some S-Bahn services which currently end at Schwabstrasse to continue to Vaihingen and then Böblingen.

THE NETWORK IS RUNNING MORE FREQUENT AND BETTER SERVICES

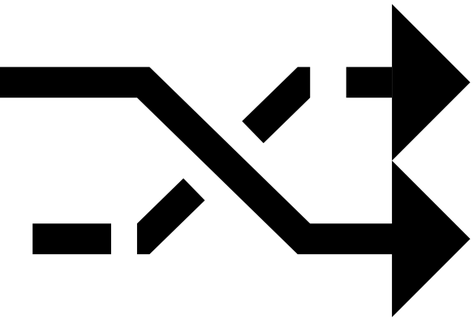
Stuttgart 21 will also significantly improve the regional transport service. This will partly be made possible by the regional train lines being fully connected by the new main station. These lines will create a transport system with numerous new direct connections, shorter journey times and better connecting trains. The airport will connect with long-distance and regional trains and will be transformed into a new transport hub. The S-Bahn trunk route will also be extended. At Mittnachtstrasse, there will be a new S-Bahn station between the main station and Bad Cannstatt. Trains on all lines will stop at Mittnachtstrasse. Passengers changing trains who are, for example, travelling northwards from the Rems valley and the Neckar valley or vice versa will enjoy much shorter journey times in the future. The S-Bahn network will also grow outwards. Extensions to Neuhausen auf den Fildern and Nürtingen have already been agreed and planning is underway.

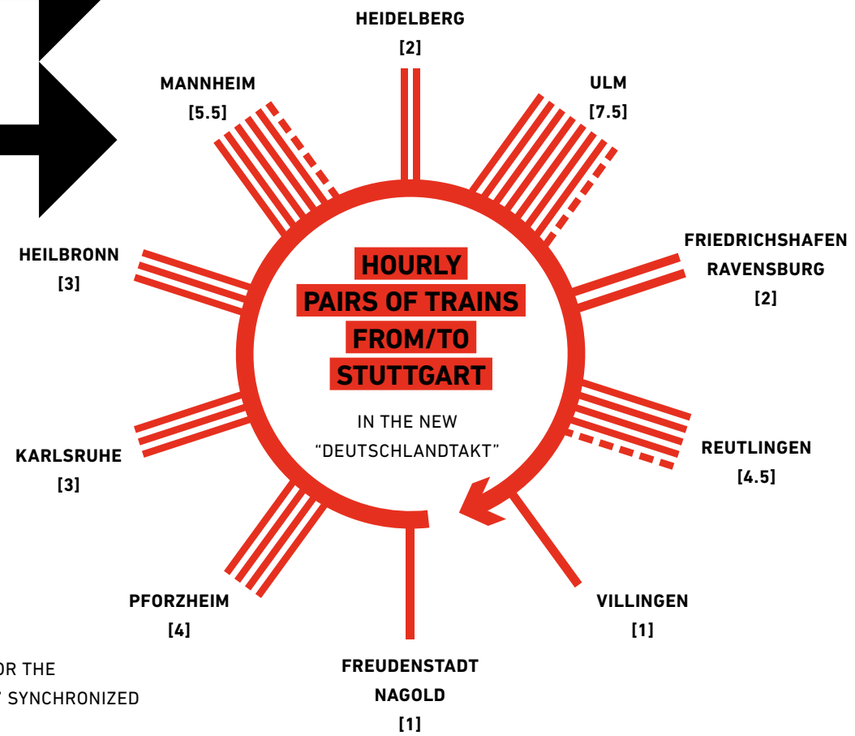
GREATER COMFORT

Since 2021, all S-Bahn trains in the region will gradually be given a fresh lick of paint, a modernised interior and new technology to make them fit for the future. Instead of their classic red colour, the trains will be painted in a radiant light grey. Eye-catching colours will be used for the doors and special compartments to make the trains easier and quicker to board at stations. New additional multi-purpose compartments will make travel easier for wheelchair users and passengers with bikes or pushchairs. The trains will be equipped with power outlets and new, larger screens will keep passengers informed about the train's current location and travel time. Free Wi-Fi has been available on board since mid-2017. What's more, passengers can now use the new train portal to access all travel information in real time on their mobile, tablet or laptop.

DEUTSCH-LANDTAKT AND DIGITAL HUB

A SYNCHRONIZED TIMETABLE FOR THE ENTIRE COUNTRY AND NEW DIGITAL TECHNOLOGY.





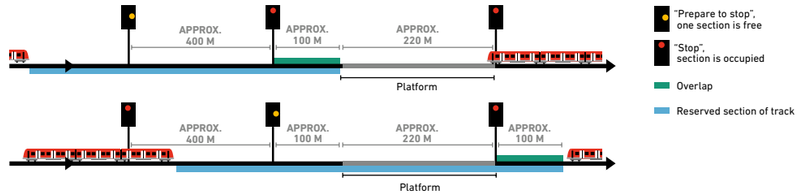
ITS PROJECT

3RD EXPERT PLAN FOR THE "DEUTSCHLANDTAKT" SYNCHRONIZED TIMETABLE FOR 2030

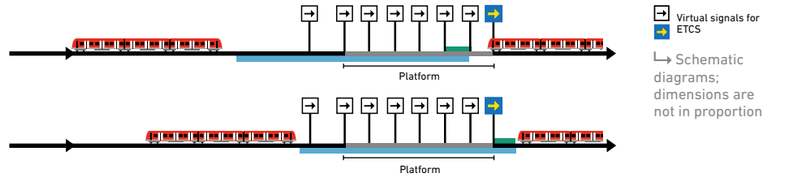
THE STUTTGART RAIL HUB WILL BE THE FIRST IN GERMANY TO BE UPGRADED BY DEUTSCHE BAHN.

ETCS FILM

FLOW OF RAIL TRAFFIC WITH CONVENTIONAL CONTROL AND SAFETY TECHNOLOGY



FLOW OF RAIL TRAFFIC WITH ETCS



Schematic diagrams; dimensions are not in proportion

THE NEW "DEUTSCHLANDTAKT" SYNCHRONIZED TIMETABLE

FROM 2030, THE AIM IS FOR TWICE AS MANY PEOPLE TO TRAVEL BY RAIL THAN IN 2010. ONE STEP TOWARDS THIS IS A SYNCHRONIZED TIMETABLE FOR THE ENTIRE COUNTRY KNOWN AS THE "DEUTSCHLANDTAKT".

Lots of trains from different lines will travel through stations with important hub functions. Trains will arrive at regular times, making the timetable easy to remember. For example, a half-hour interval for long-distance services is envisaged between Mannheim, Stuttgart and Ulm.

The aim of the "Deutschlandtakt" is to efficiently coordinate long-distance and regional trains. Because it applies to the whole of Germany, its scope extends well beyond the implementation of Stuttgart 21. The planned "Deutschlandtakt" is, however, reliant on Stuttgart 21. The current plans for the "Deutschlandtakt" synchronized timetable envisage a basic offering of 33 long-distance and regional trains per hour for the future Stuttgart Main Station. This is more than ever before and is one third more than in December 2021 (25 trains per hour). The planned schedule would be impossible without Stuttgart 21.

The new rail hub creates the conditions for the politically driven aspiration to double passenger numbers.

STUTTGART DIGITAL HUB

The conventional signalling systems along the tracks are omitted. They are being replaced by electronic displays for the train driver. New digital technology optimises tomorrow's train traffic. This means that more trains in shorter intervals can take more passengers to their destinations faster and more reliable. Stuttgart 21 and the S-Bahn network will be the pioneers of this transformation, as, by 2025, the Stuttgart rail hub will become the first in Germany to be upgraded by Deutsche Bahn. The new through station is just part of the Stuttgart hub. The hub also includes all the stations and lines in the surrounding area. By 2030, the new systems will have been installed across the region, including on the S-Bahn network. Digital technology will be used to improve travel for more than half a million passengers every day.

A KEY PART OF THE DIGITAL TECHNOLOGY IS THE EUROPEAN TRAIN CONTROL SYSTEM (ETCS).

The ETCS train control system monitors a train's journey and uses "stop" signals to prevent it from continuing along the track. To do so, the ETCS gathers information from tracks, trains and signal boxes. Computers process the data and convert the results into instructions. ETCS is used or scheduled to be used in over 60 countries worldwide. In combination with other systems, it will help to increase the number of trains while improving punctuality.

SUSTAIN-ABILITY

LESS NOISE

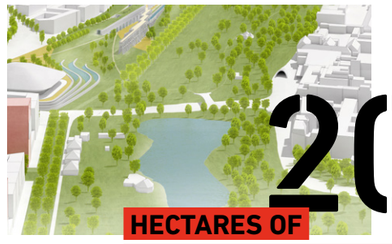
In future, residents of the Stuttgart Basin will hear almost no noise from passing trains. This is because the layers of soil above the railway tunnels act as a natural silencer.

The weight of even the quietest trains sends vibrations through the surrounding area. Where necessary, routes are fitted with suitable vibration-absorbing technology. So-called mass-spring systems or sub-ballast mats can be used, for example. Trains travelling at high speed through a long tunnel can produce a loud bang when exiting the tunnel. This bang is created by the air pocket which is compressed by the fast-moving train. When the train leaves the tunnel, the pocket expands suddenly just like when a balloon bursts. To prevent this, tunnels like the Filder Tunnel are designed with a special portal. When a train enters the tube, the pressure wave is automatically dissipated. No bang can be heard – not even at 250 kilometres per hour.

BETTER AIR

THE STUTTGART–ULM RAIL PROJECT WILL MAKE RAILWAY TRAVEL FASTER AND MORE ATTRACTIVE.

It will shift millions of passenger trips from road to rail. This is what surveys show. The new line will also take the strain off the existing rail network. Goods traffic will also benefit – in future, more goods will pass through the Filstal valley by rail instead of by road. Trains are more environmentally friendly than any other form of transport. For years, Deutsche Bahn has been considerably increasing the proportion of green electricity in the mix of energy consumed by its railways. The rail project will result in more trees, shrubs and meadows, which in turn will improve air quality.



20

HECTARES OF ADDITIONAL GREEN SPACE

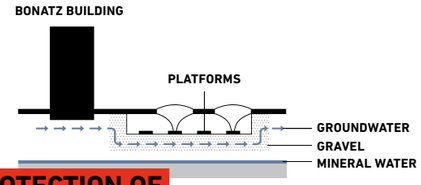
Stuttgart 21 will lead to more green space. The Schlossgarten park can be extended and additional green spaces will be created. Where there were once tracks, trees, shrubs and meadows will cover 20 hectares of land. This is an area as large as 30 football pitches. The rail project will also make it easier to protect the landscape. Green spaces on the outskirts of the city will be preserved. In many places, the new line will run directly alongside the motorway so that the landscape does not have to be cut in two again. This means that the road and railway will be confined to one place. What's more, the numerous tunnel sections will prevent the landscape from being distorted by above-ground tracks.

LOWER ENERGY REQUIREMENTS

The new Stuttgart through station does not need any artificial heating and hardly any artificial light during the day. Stuttgart Rosenstein is designed to be climate-neutral. It should produce more energy than it consumes.

PROTECTION OF ANIMALS AND PLANTS

Environmental and species protection is an important issue for the Stuttgart–Ulm Rail Project. Deutsche Bahn has arranged for a large number of trees to be planted and for land to be converted into new forests. It has also created new habitats for endangered species, such as bats, lizards and hermit beetles.



PROTECTION OF MINERAL WATER

During the construction of the main station, every effort is being made to protect Stuttgart's valuable mineral springs. This is made possible by comprehensive groundwater management. A system of pumps, pipes, treatment facilities, filters and monitoring wells regulates the groundwater level. The excavation must stay dry at all times. To this end, groundwater and rainwater are drained, cleaned and then returned to the surrounding soil. This method keeps pressure conditions in the soil constant, which prevents any rising and potential contamination of the mineral water. The valuable springs remain unaffected by the construction. The floor slab of the station is around 30 metres above the layers which carry the mineral water.

SUSTAINABLE FOR PEOPLE & THE ENVIRONMENT

CONSTRUCTION PROCESS AND CONSTRUCTION LOGISTICS

TUNNELLING

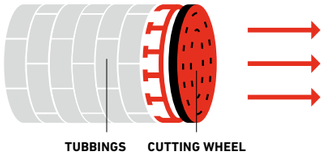
GEOLOGY AS THE KEY FACTOR
The method used to build a tunnel depends on various factors. The type of rock and the distance between the tunnel and the ground surface determine what technology is used. Furthermore, the geology dictates which machines the engineers will use. A tunnel can be constructed using either the cut-and-cover or the boring method.

↳ CUT-AND-COVER METHOD:
The tunnel is constructed in a trench. This method is used when a tunnel lies just beneath the surface. An example of this is the Widderstall Tunnel near Merklingen.

↳ BORING METHOD:
The tunnel boring method involves cutting the tunnel into the mountain without having to excavate a trench. Most of the tunnels in this rail project have been constructed in this way. Two methods are differentiated: the sprayed concrete method and the driving method including the use of tunnel boring machines.

SPRAYED CONCRETE METHOD:
LOOSENING, LOADING, CONCRETING
This work requires specialist tunnellers, who start by excavating rock and stone out of the mountain mass metre by metre. To do so, they work on the loose rock using excavators with pneumatic chisels. The tunnellers blast the solid rock to loosen it. Dumper trucks then bring the excavated material into the open. The cavity created is secured using arches, steel mats and a sprayed concrete lining. This produces the upper part of the tube in the form of a semi-circle, known as the crown. The lower half of the tube – known as bench and invert – is then excavated. This part will later on carry the foundation and the rail bed. Long stretches of sturdy plastic protect the tunnel walls against ground and mountain water. Lastly, the inner lining is concreted using a formwork carriage. At this point, the shell of the tunnel is complete.

DRIVING WITH MACHINES:
THE TUNNEL GROWS RING BY RING



Huge boring machines are suitable when tunnels run through uniform geological strata. The use of these powerful tools is particularly worthwhile with long tunnels. In this project, these are the Filder Tunnel, the Bossler Tunnel and the Albvorland Tunnel. The rotating cutting wheel of the tunnel boring machine breaks the rock, which is then removed through the machine into the open air. After a set distance, the machine is stopped and the exposed cavity is lined with pre-fabricated concrete parts called tubbings. Seven of these tubbings form a ring. Any voids remaining between the tubbings and the surrounding mountain are grouted. Then construction continues with the next section. In this way, the tunnel grows ring by ring.

RAILWAY TECHNOLOGY AND SUPERSTRUCTURE

INTERIOR CONSTRUCTION:
THE TUNNEL IS PREPARED FOR RAIL TRAFFIC
When the shell is complete, railway technology is installed in the tunnel. This takes approximately two years. This railway engineering equipment includes:

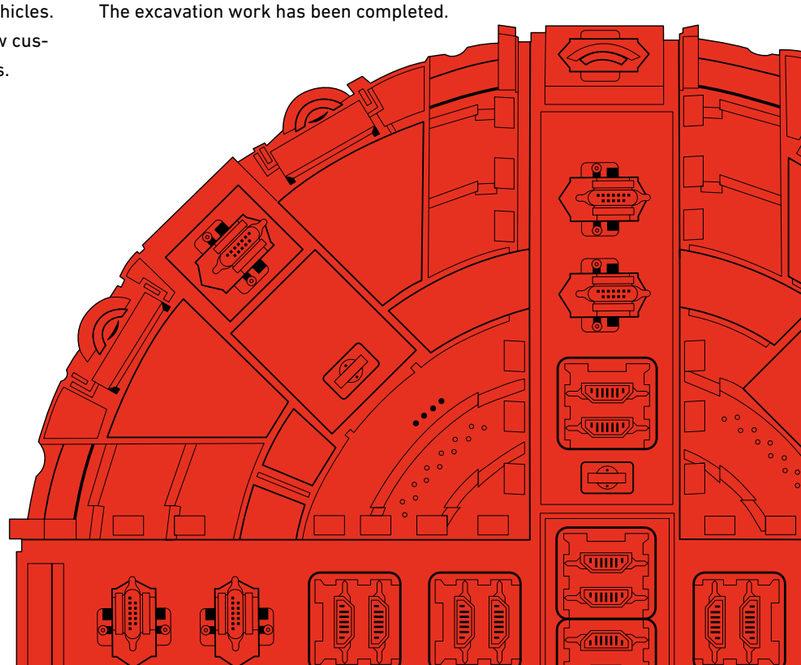
↳ tracks and points
↳ overhead contact line
↳ signalling technology
↳ telecommunications technology
↳ safety technology

SLAB TRACK:
A CONCRETE TRACK BED
The tracks in the tunnels of the Stuttgart–Ulm Rail Project will mostly be laid on a substrate of reinforced concrete. This is referred to as a "slab track". The track bed does not consist of ballast, but of solid elements such as concrete or tarmac. In an emergency, it can be driven on by rescue vehicles. In Germany, this construction method is now customary for routes used by high-speed trains.

CONSTRUCTION LOGISTICS

40 million tonnes of excavated material. This is how much soil and rock was moved for the Stuttgart–Ulm Rail Project. Along the new Wendlingen–Ulm section, the construction firms disposed of the excavated material themselves. In the case of the Stuttgart 21 sub-project, this only applies to just over half of the about 20 million tonnes of material. The rest was brought by lorries from the construction sites to the central collection point at the Nordbahnhof station. They moved almost exclusively along a specially constructed, four-kilometre-long construction road system. This meant that inner-city road traffic remained virtually unaffected by S21 construction vehicles. Noise and dust immissions were kept to a minimum.

At the construction site, or at the latest at the central collection point, the material was examined and categorised. Trains then transported the material away by rail in an environmentally friendly way. A single train replaced around 40 lorry journeys. The excavation work has been completed.



Cutting wheel of a tunnel boring machine

ARRIVE ⇄ MORE QUICKLY

Shorter
travel times

ITS PROJECT

FAST AND COMFORTABLE TRAVEL

↳ BETTER CONNECTIONS

Trains arriving from all parts of the country stop in Stuttgart Main Station everyday. For this reason, Stuttgart is an important interchange for Deutsche Bahn. Thanks to the Stuttgart–Ulm Rail Project, passengers will be able to reach their destinations more quickly with fewer changes. More than eight million of the eleven million residents of Baden-Württemberg live in rural districts which will benefit from the fast new connections.

TRAVEL TIME BEFORE INITIAL OPERATION OF THE NEW WENDLINGEN-ULM SECTION (DECEMBER 11TH 2022)

TRAVEL TIME SINCE DECEMBER 11TH 2022

TRAVEL TIME WITH STUTTGART 21

The shortest regular travel time is listed in each case.

* Travel times until December 11th 2022 by bus

SHORT & SWEET

The chalice-shaped pillars are the hallmark of the new Stuttgart Main Station. They form the hall's roof.

28
CHALICE-SHAPED PILLARS

20
HECTARES FOR MORE GREEN SPACE

At least 20 hectares are earmarked for the expansion of the existing parks and green areas.

85
HECTARES FOR STUTTGART ROSENSTEIN

The new urban district is designed to be sustainable and climate-neutral.

1

Six S-Bahn lines will stop at the new Mittnachtstrasse S-Bahn station.

NEW CENTRAL INTERCHANGE STATION IN THE S-BAHN NETWORK

ITS PROJECT

27

Stuttgart and Ulm are moving even closer together.

MOTION RIDE

MINUTES TRAVEL TIME

250
KM/H HIGH-SPEED LINE

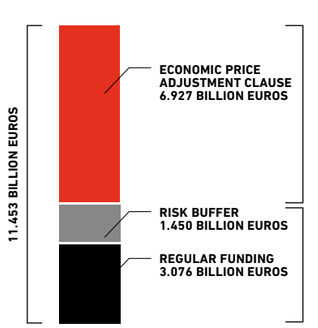
Trains will travel at speeds of up to 250 kilometres per hour on the new line between Stuttgart and Ulm.

81
BRIDGES

The Stuttgart–Ulm Rail Project will build 81 new bridges: 44 for Stuttgart 21 and 37 for the new Wendlingen–Ulm section.

15.438
BILLION EUROS OF FINANCING FOR THE ENTIRE STUTTGART–ULM RAIL PROJECT

This comprises 11.453 billion euros for Stuttgart 21 and 3.985 billion euros for the new Wendlingen–Ulm section.

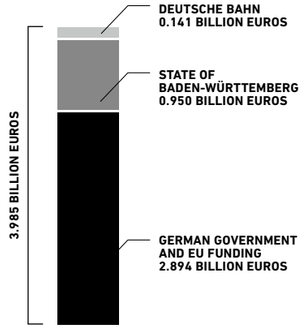


In accordance with the financing agreement from 2009, the shares of financing are still to be divided

4.526 BILLION EUROS

The shares of financing have been agreed and are divided as follows in accordance with the financing agreement from 2009:

↳ Deutsche Bahn companies	1.563 billion euros
↳ German government and EU funding	1.413 billion euros
↳ State of Baden-Württemberg	0.931 billion euros
↳ State capital of Stuttgart	0.292 billion euros
↳ Stuttgart Airport	0.227 billion euros
↳ Verband Region Stuttgart	0.100 billion euros



STUTTGART 21
The current financing amounts to 11.453 billion euros (figure correct as of December 2023). This includes a risk buffer of 0.5 billion euros.

NEW WENDLINGEN–ULM SECTION
The total financing amounts to 3.985 billion euros (figure correct as of July 2020).

EXPERIENCE THE FUTURE IN THE INFOTURMSTUTTGART

Visit the InfoTurmStuttgart (ITS) on platform 16 at Stuttgart Main Station. Our multimedia and interactive exhibition brings the Stuttgart–Ulm Rail Project and the related future developments to life. It is spread across four floors and provides a fantastic view across the construction site.

AN EXHIBITION FOR EVERYONE

- ↳ Digital content provided via monitors, iPads and augmented reality
- ↳ Haptic models
- ↳ Specially developed games and digital applications for children
- ↳ All the exhibition content is also available in English
- ↳ Fully accessible thanks to lift access, tactile wall strips, QR codes, touchable exhibits, audible room descriptions available through a Bluetooth transmitter, plain language

GUIDED TOURS

Our construction site and exhibition tours are led by expert guides and provide fascinating insights and interesting background information on the Stuttgart–Ulm Rail Project.

CONFERENCES

From customer meetings and conferences to private discussions, our ITS conference room can be booked for a wide range of occasions. It offers a unique central location in a venue dedicated to topics concerning the future.

EVENTS

With our construction site open days, exciting partnerships, activities and events in the ITS and online, we offer ways for people of all ages to discover what's happening on the construction site.

You couldn't get any closer to the action: the InfoTurmStuttgart is located right in the heart of the construction site.

Digital and multimedia exhibits

OPENING HOURS

Open daily	10:00 – 18:00

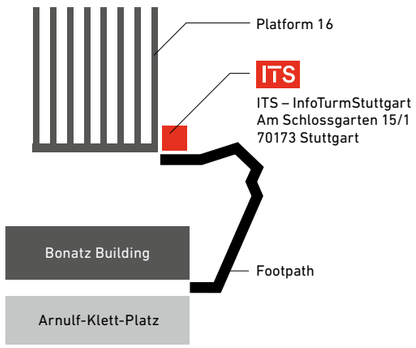
FIND OUT MORE ONLINE

KEEP UP TO DATE WITH OUR SOCIAL MEDIA CHANNELS @INFOTURMSTUTTGART

ITS-PROJEKT.DE/EN

The project website provides a wide range of information on Stuttgart 21 and the new Wendlingen–Ulm section, including photos, films, 360-degree tours and webcams of the construction sites as well as detailed maps, original plans and much more.

BAHNPROJEKT-STUTTGART-ULM.DE



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