

International Transport Expert Council of Moscow City government – 07.07.-08.07.2017

## Development of public transport in a growing city



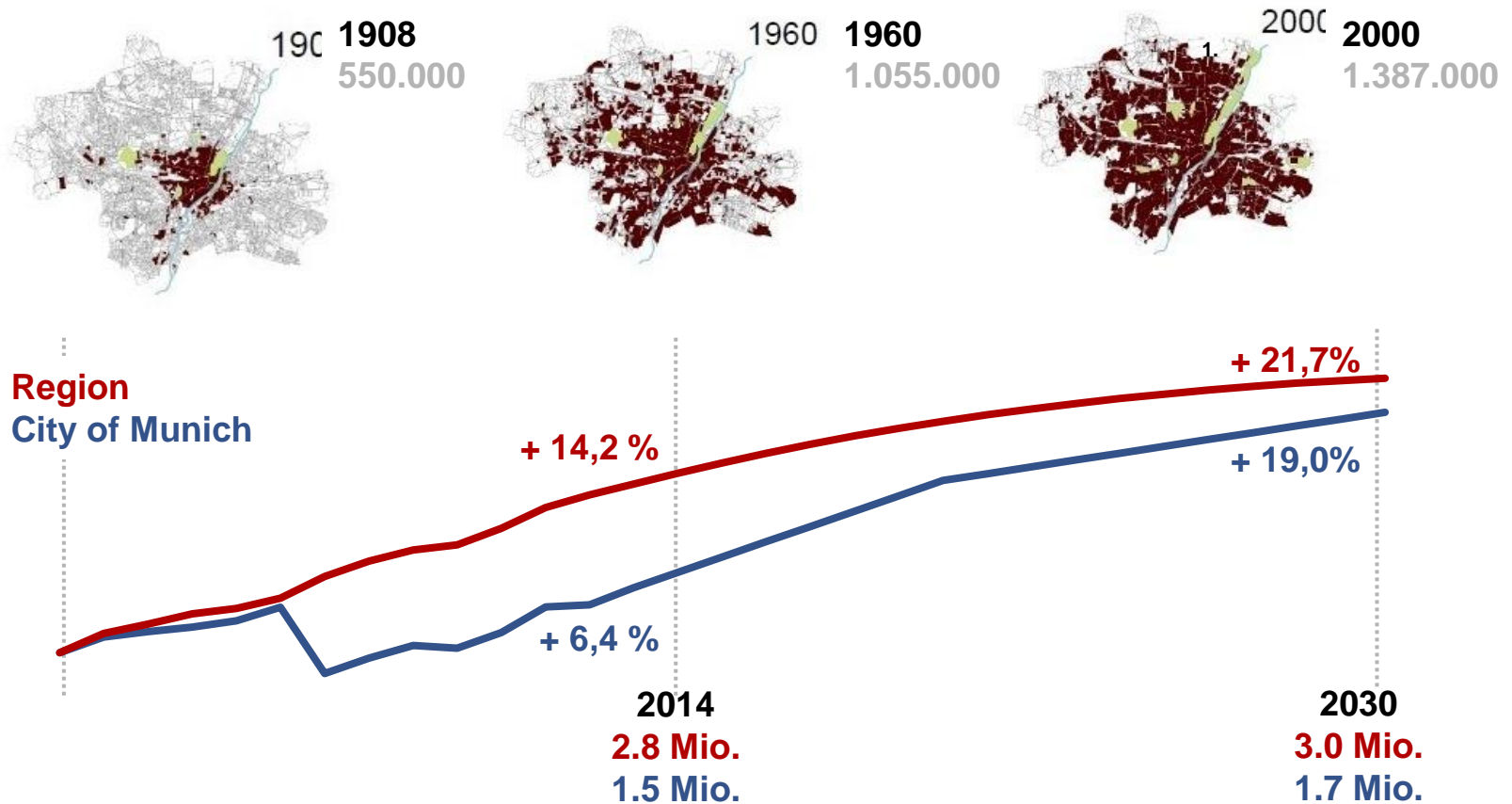
Gunnar Heipp, Director of Strategy and Planning Projects, Munich Transit Ltd. (MVG)

# Munich: Economic Engine and Quality of Life

- Munich is the biggest single economic engine of Germany
- Munich is an important education center (Universities TUM/LMU, Business Schools, Training Companies)
- Munich offers a huge number of attractive jobs in many different sectors
- Rich cultural offer with excellent reputation (Bayerische Staatsoper, Residenztheater, Philharmonic Orchestra, German Museum, Pinakothek d. Moderne etc.)
- Munich has a wide variety of leisure activities (parks&gardens, close to the Alps, markets etc.)
- Munich has been ranked highly in the quality of life surveys worldwide in the last years
- Public Transport is a top priority besides being a city of car making and bicycles



# Munich is growing fast at European scale



Quelle: Referat für Stadtplanung und Bauordnung 2012; Bayerisches Landesamt für Statistik 2014



# Urban Development connected to Public Transport

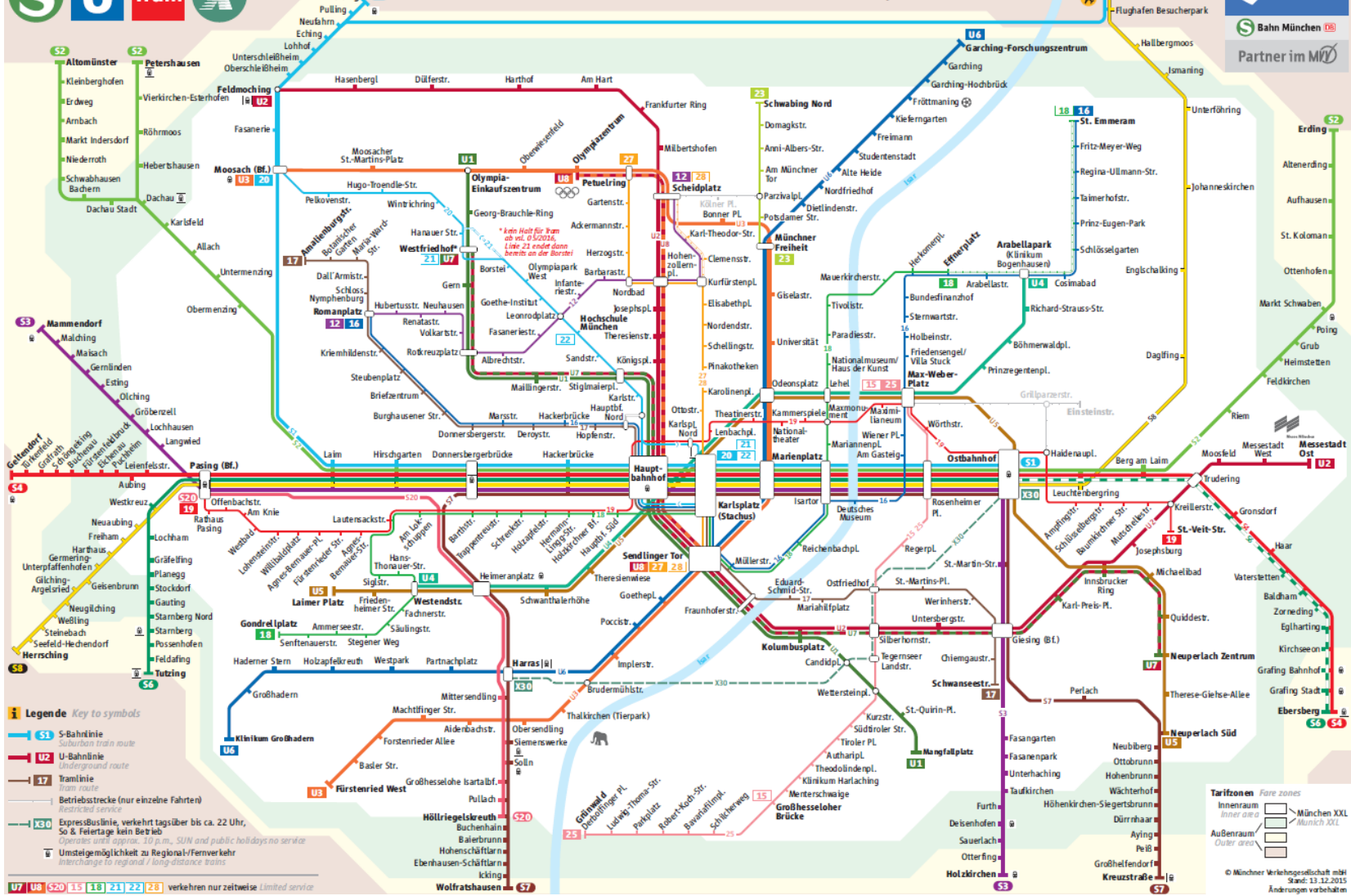




# Important Rail Network



## Schiennetz München mit ExpressBus



Partner im MIV

- Legende Key to symbols**
- S-Bahnlinie (Suburban train route)
  - U-Bahnlinie (Underground route)
  - Tramlinie (Tram route)
  - Betriebsstrecke (nur einzelne Fahrten) (Restricted service)
  - ExpressBuslinie, verkehrt tagsüber bis ca. 22 Uhr, So & Feiertage kein Betrieb (Operates until approx. 22 pm, Su & public holidays no service)
  - Umsteigemöglichkeit zu Regional-/Fernverkehr (Interchange to regional / long distance trains)
  - U7 U8 U20 15 18 21 22 28 verkehren nur zeitweise (Limited service)

**Tarifzonen Fare zones**

- Innenraum (inner area)
- Außenraum (Outer area)
- München XXL (Munich XXL)
- Munich XXL

© Münchner Verkehrsgesellschaft mbH Stand: 13.12.2015 Änderungen vorbehalten

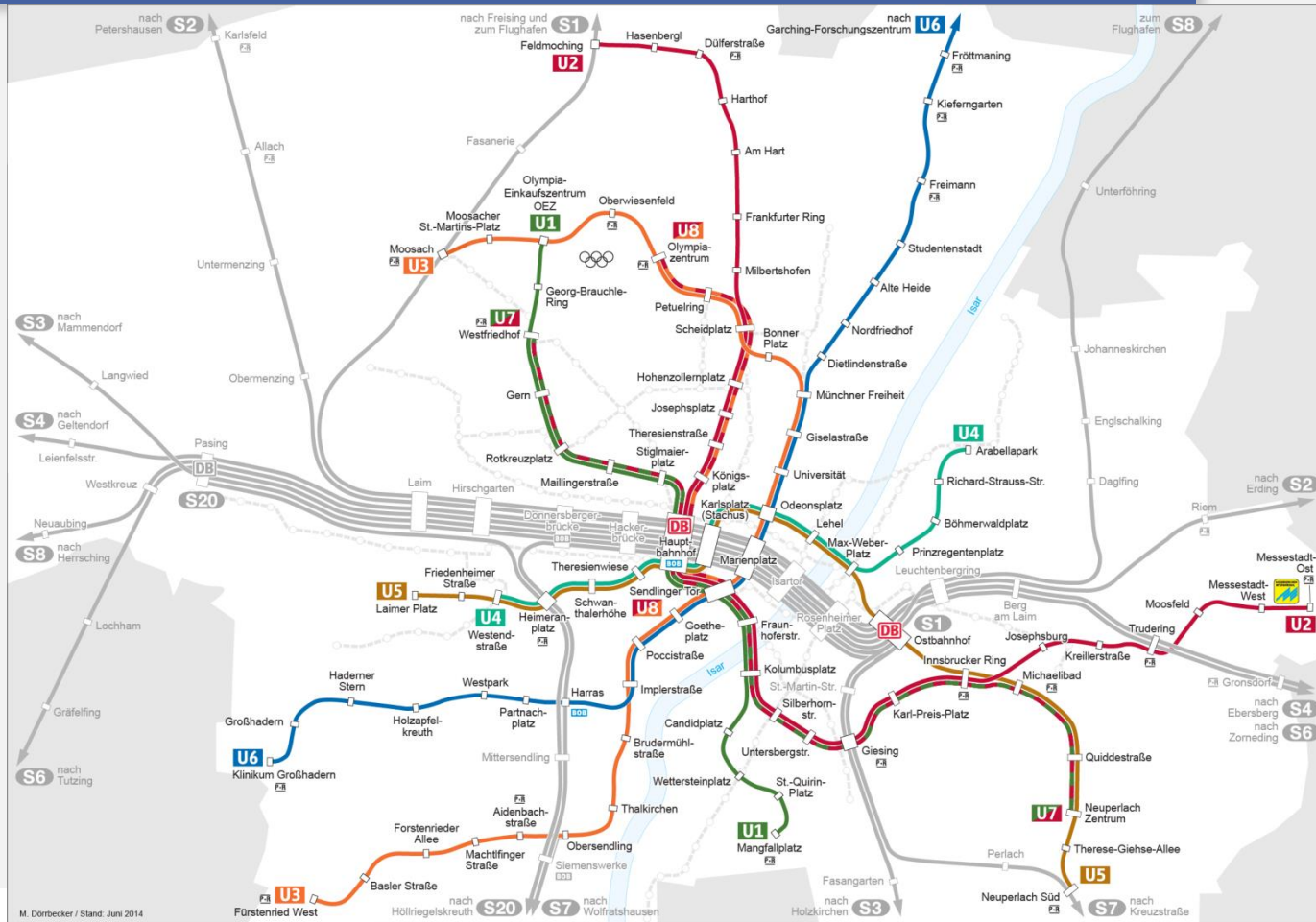
## Our metro lines in numbers

- 398 million passengers per year
- 8 lines
- 562 vehicles
- Maximum no. of vehicles in service:  
508 underground trains
- 100 stations
- Average distance between stations: 948 metres
- Network length: 95 kilometres

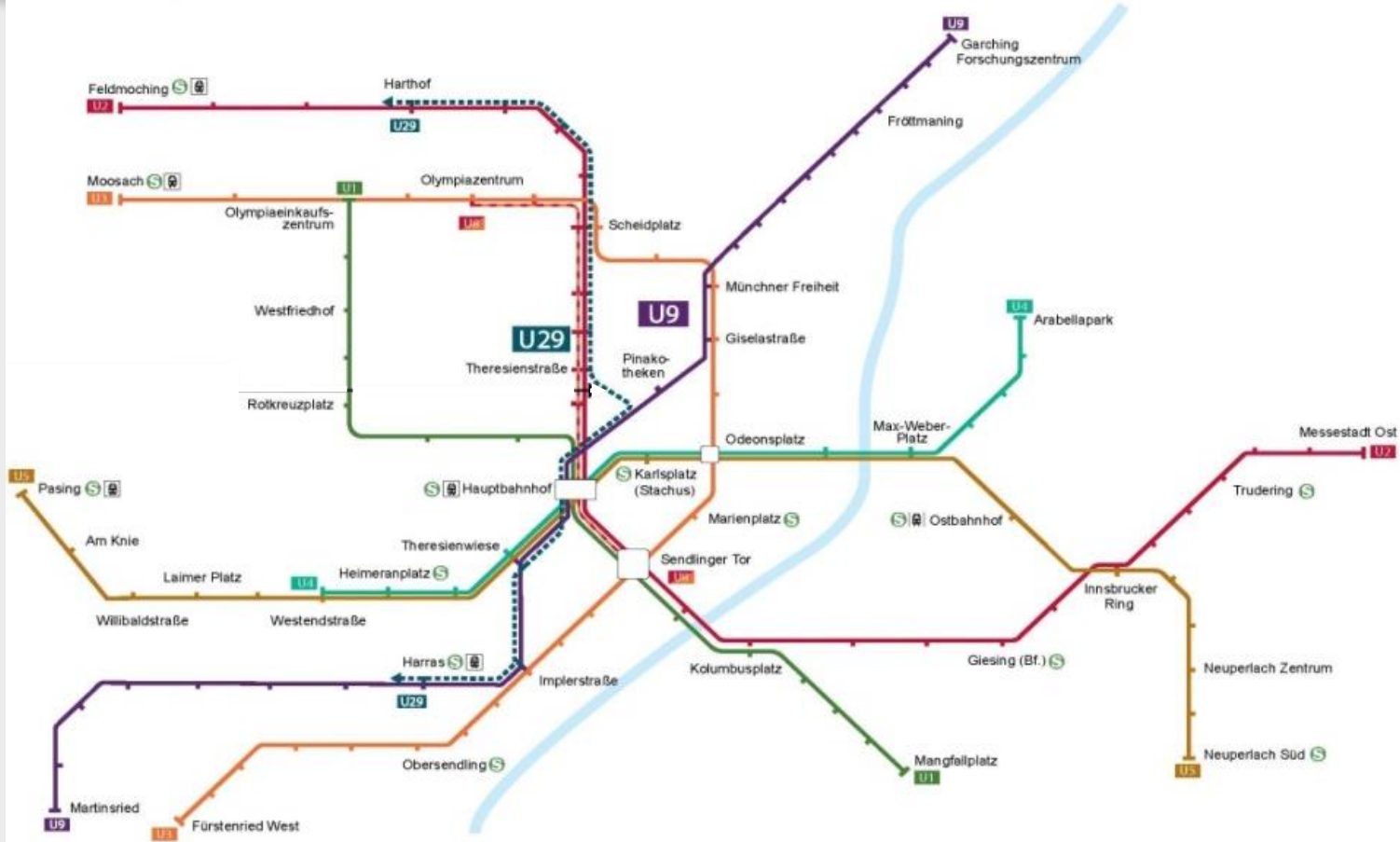
**The internationally acclaimed artist Ingo Maurer designed the light concept for the underground station Münchner Freiheit.**



# Metro Network



# Future Metro-corridor U9

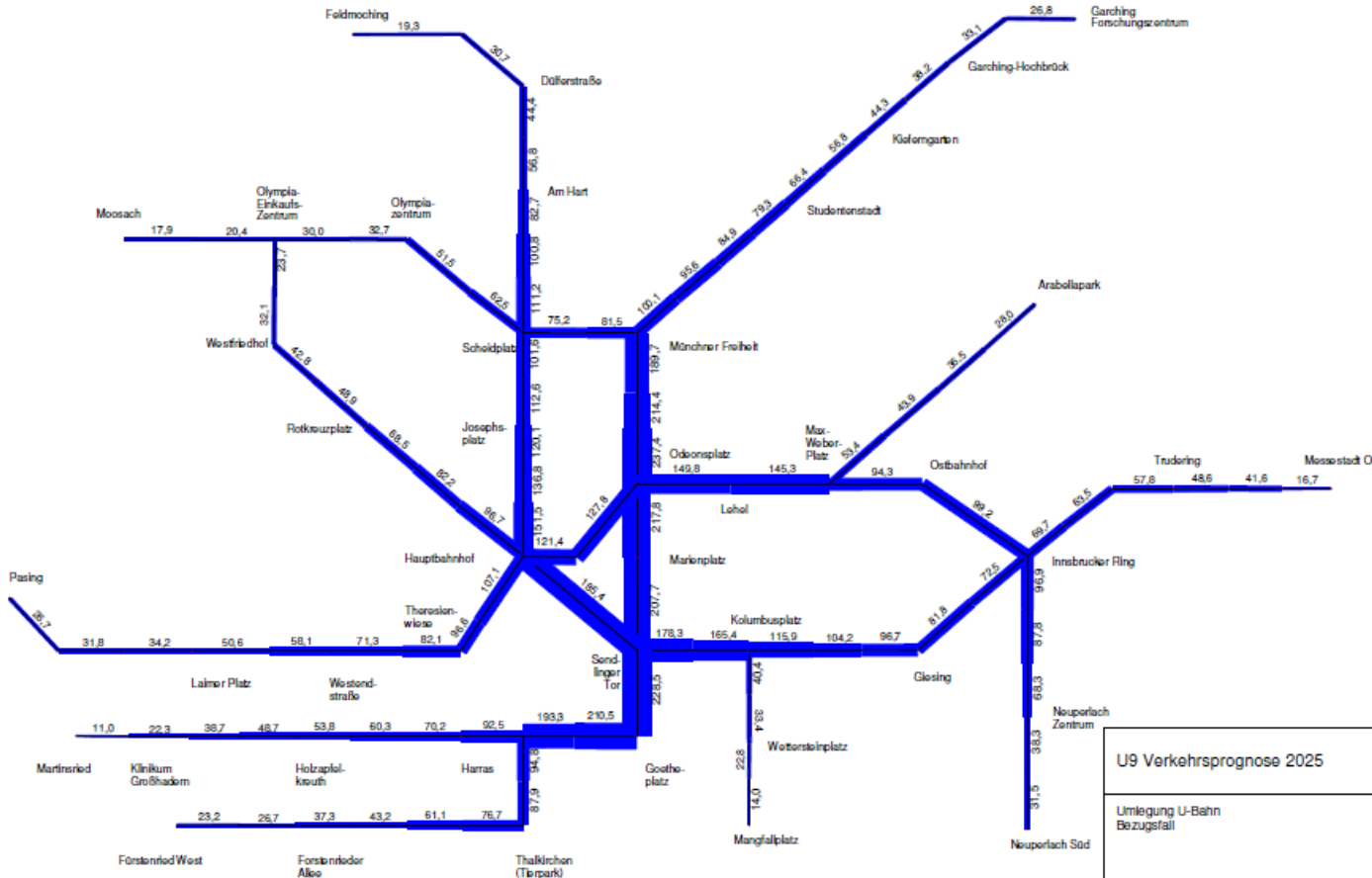




# Future Metro-corridor U9: load before

## U9 Verkehrsprognose 2025 – Bezugsfall Umlegung U-Bahn

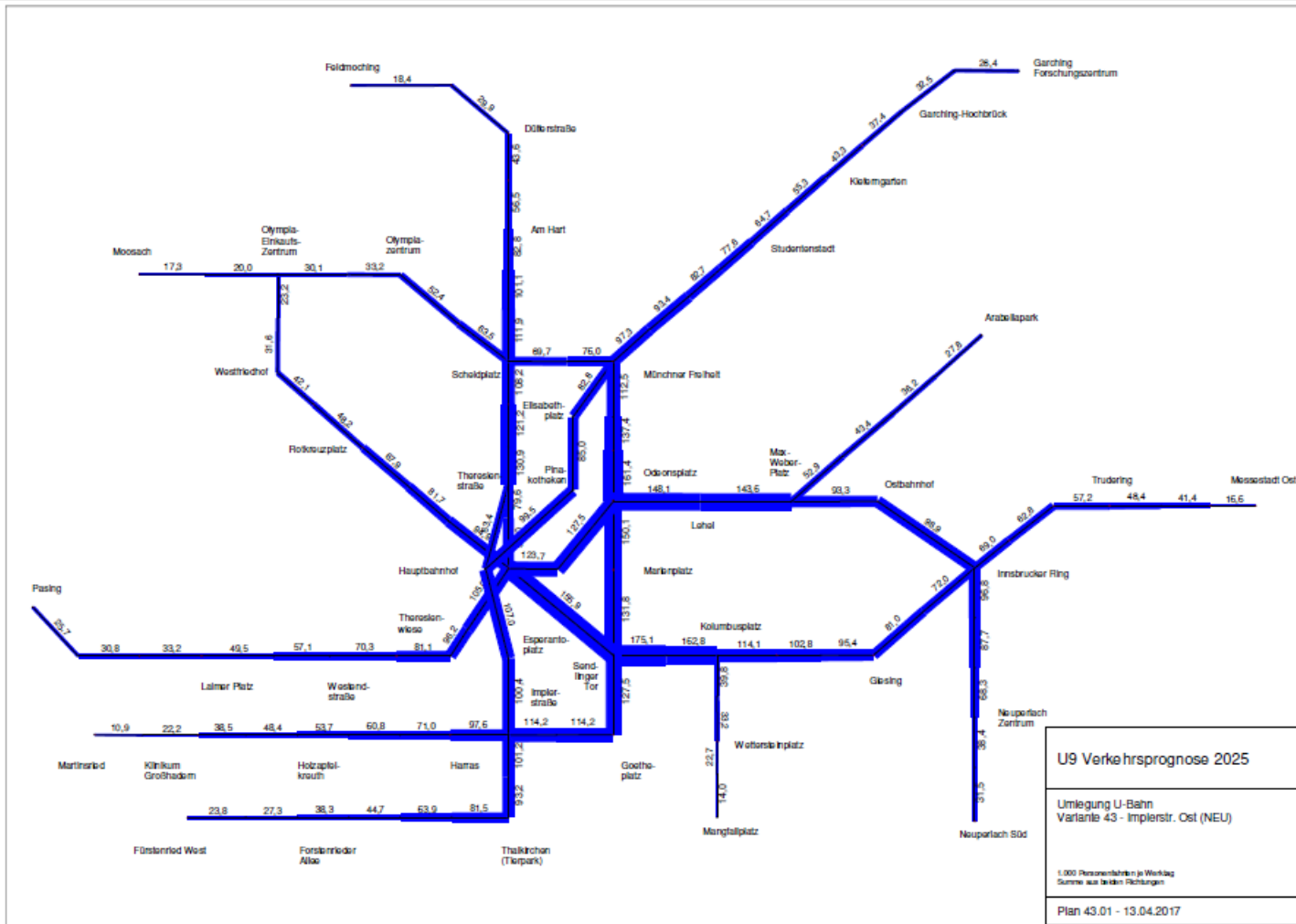
Szenario ohne U9 in 2025



# Future Metro-corridor U9: load after

## U9 Verkehrsprognose 2025 – Mitfallvarianten 41-43 Umlegung U-Bahn – Variante 43 (Implerstraße Ost – Konzept A)

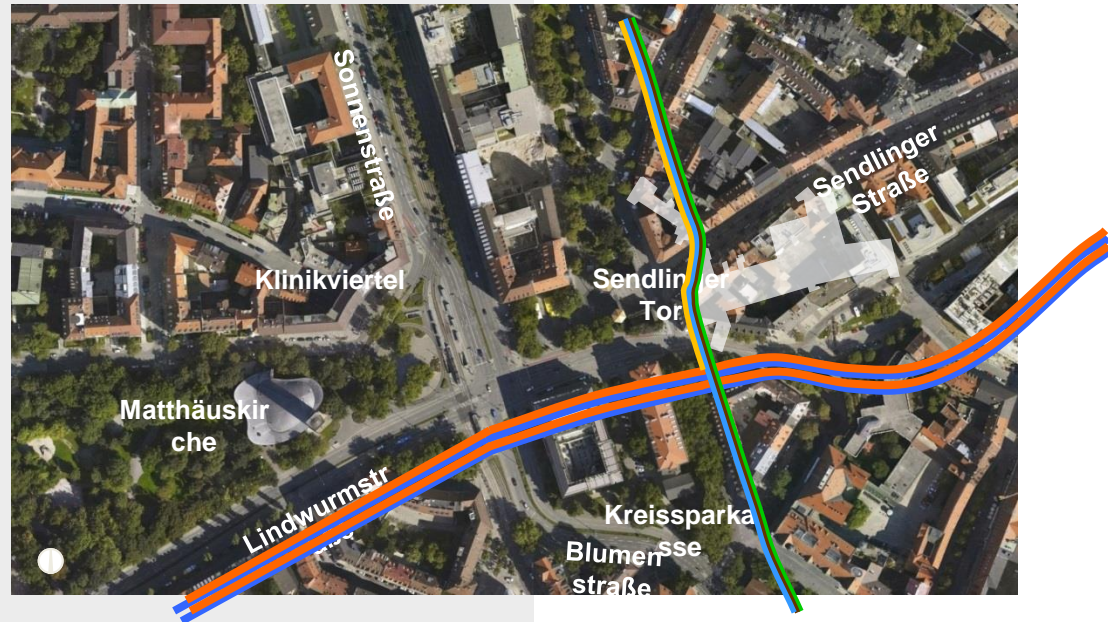
Szenario mit U9 in 2025





## Modernization Metro Stations: Sendlinger Tor

- **45** years old (lock floor, U3/U6)
- **13** lines crossing (6 Metros, 5 Trams, 2 Busses)
- **1.350** subway departures per day (= every minute)
- **145.000** passengers per day (on/off/transfer), of which about half are transfer passengers



## Metro Station Sendlinger Tor: Future

- Renovation of structural and plant engineering fire protection
- Rehabilitation of the existing structure
- Renewal of technical equipment including all elevators and escalators
- Reorganization of the architecture including barrier-free expansion
- Barrierfree Extension: lifting of all platforms by 5 cm, widening of the ramp in the lock floor and lower slope, additional elevators and escalators, construction of a tactile control system





## Our buses in numbers

- 193 million passengers per year
- 71 routes and 14 night lines
- More than 500 vehicles (including vehicles of private MVG Partners)
- Maximum no. of vehicles in service: 454 buses
- 974 stops
- Average distance between stops: 495 metres
- Network length: 482 kilometres

**22 kilometres of bus lanes stand for punctuality during the rush hour.**



## Capacity increase 2010 – 2020

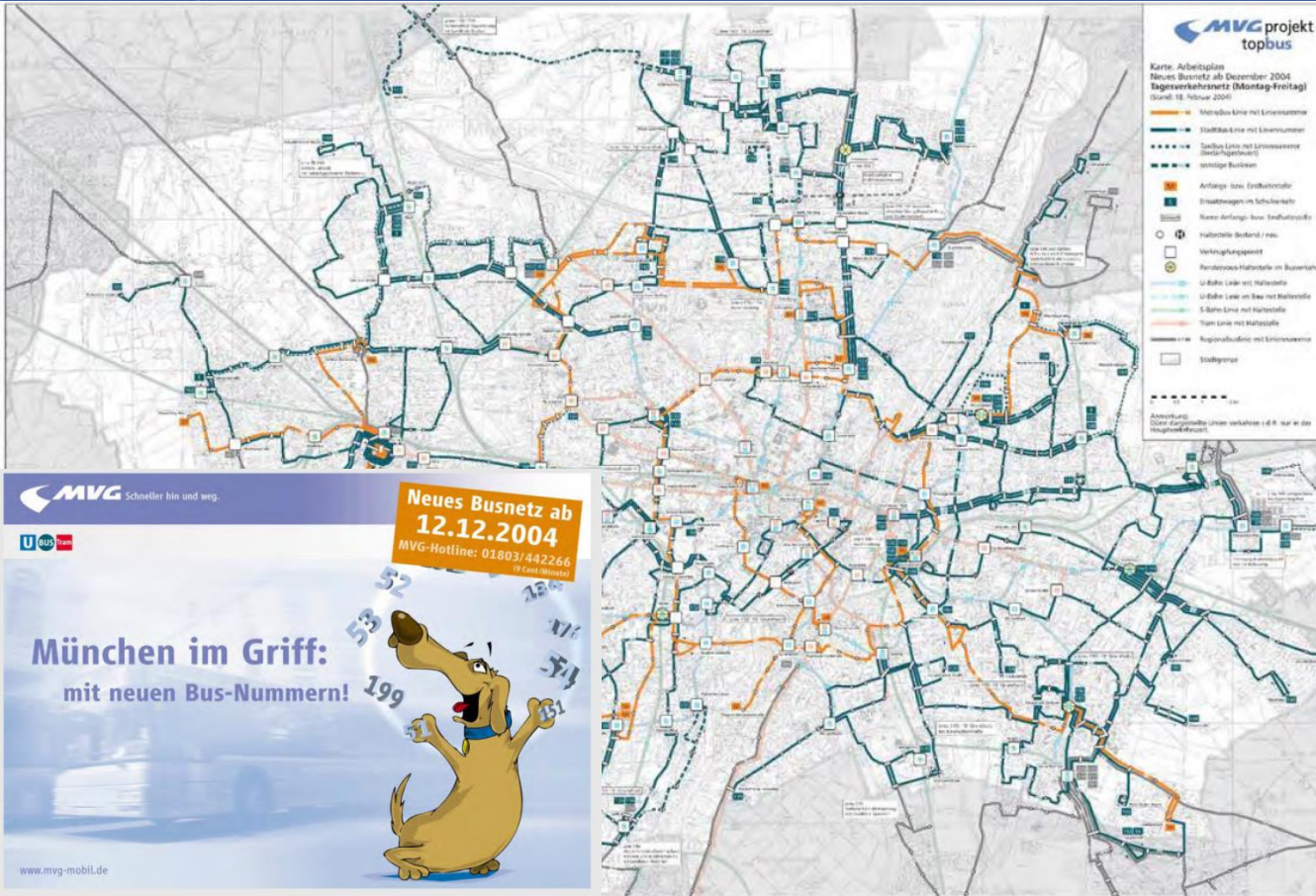
- MVG capacity increases by 2-3 per cent per year
- Demand determines the offering
- Improvement of frequency and line routing, as well as line extensions to new parts of city
- During 5 years after the launch of the new bus network in 2004: passenger increase of 12 per cent compared to the previous one

**Intelligent planning and modern technology continuously improve the MVG service.**





# New Network and New Line Number System



- Rail lines: 1-39
- Night buses: N40-N49
- MetroBus lines: 50-69
- Normal lines to center and tangential: 130-159
- Normal lines western districts: 160-169
- Normal lines north: 170-179
- Normal lines north-east: 180-189
- Normal lines south-east: 190-199
- Special events: 70-99
- Rail replacement: 101-129
- Express Bus: X30-X99
- Museum Line: 100



## Vehicles and Service Operation

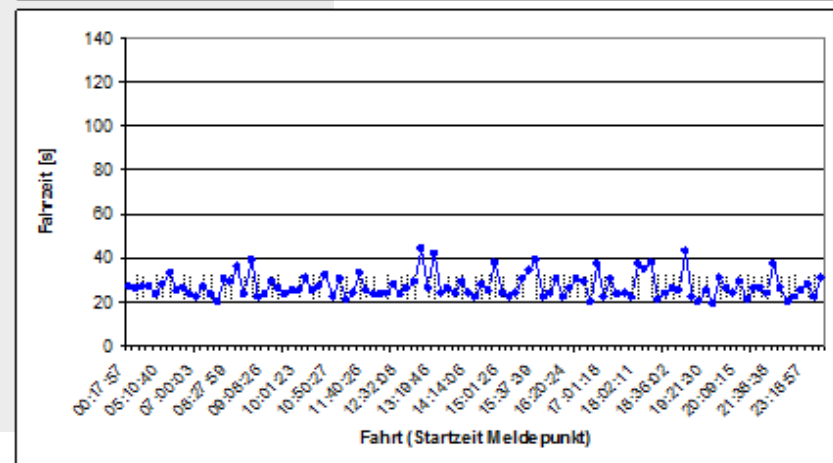
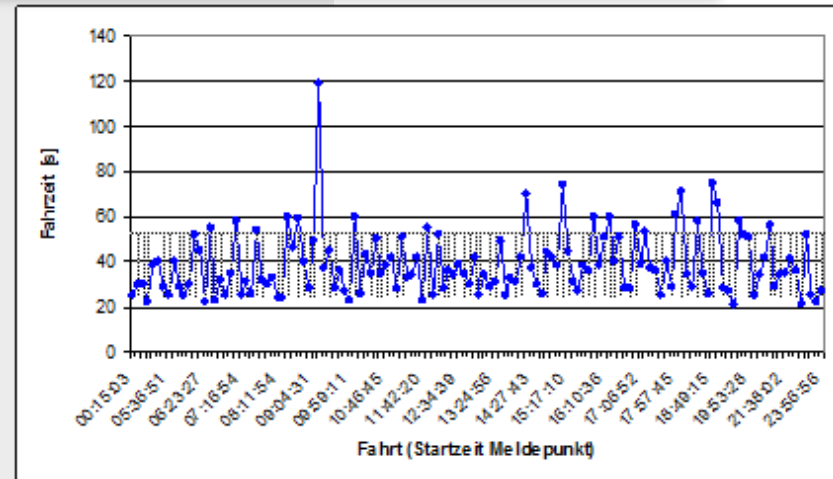
- Low floor vehicles:  
99% of tram and 100% of buses
- „Kneeling“ to reduce height difference, specially designed bus stops
- As many doors as possible
- Boarding by all doors, no ticket control by driver (proof-of-payment-system), no ticket sales by driver (ticket machines in all buses and trams and at important stops)



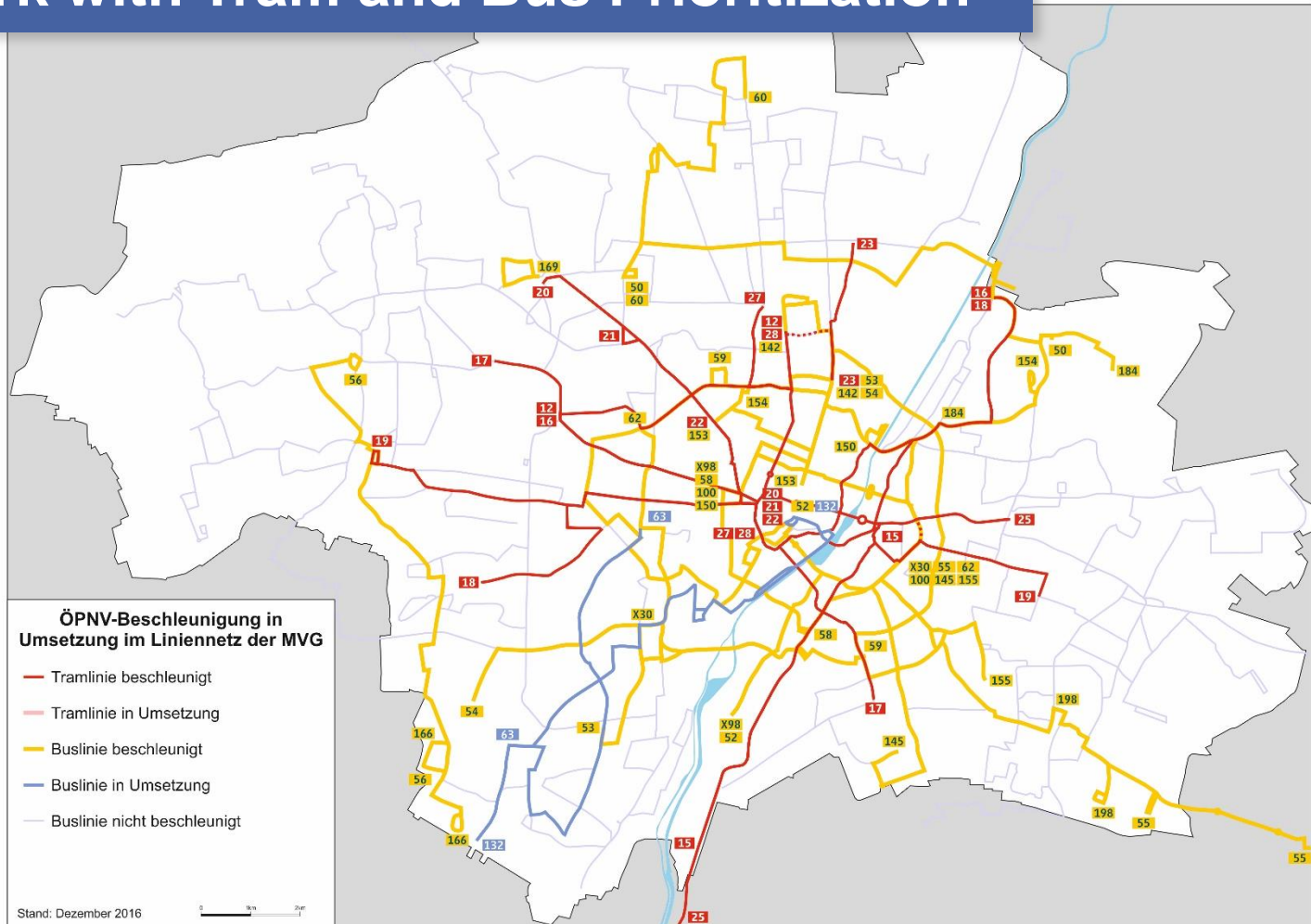


# Measures for Public Transit Prioritization

- Traffic lights
- Separate Right of Way
- Design of bus and tram stops
- Vehicles and Operations
- Quality Management as a permanent process including human behaviour



# Network with Tram and Bus Prioritization



## Separate Right of Way



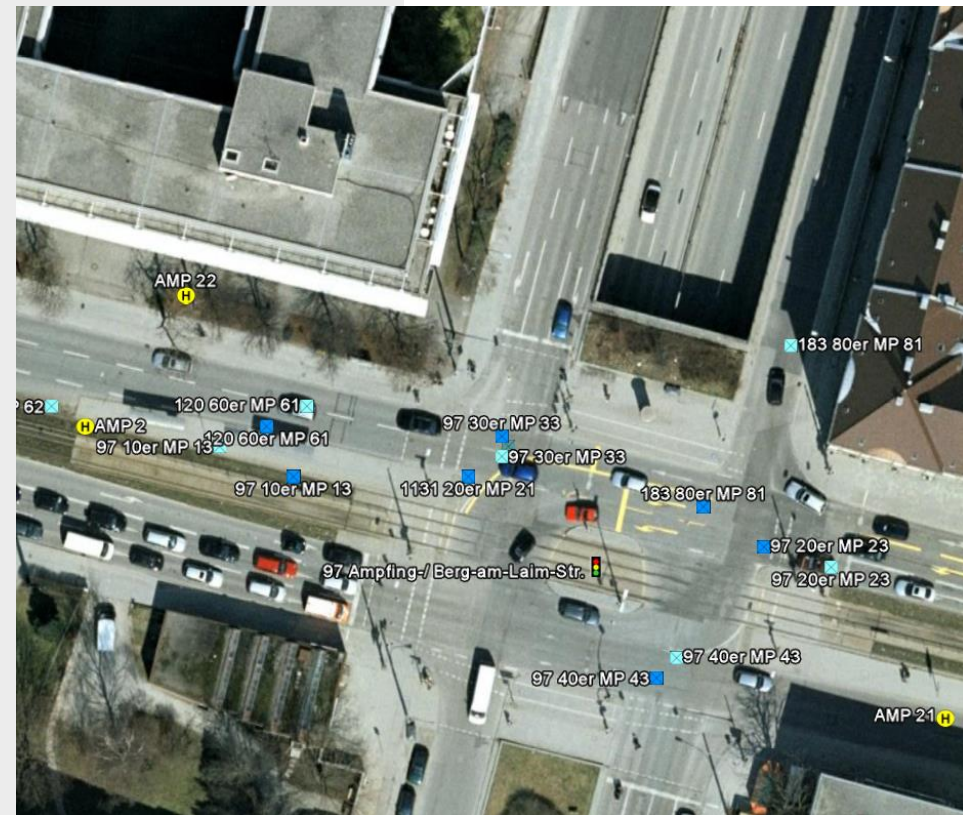
Candidstraße (Linie 54)



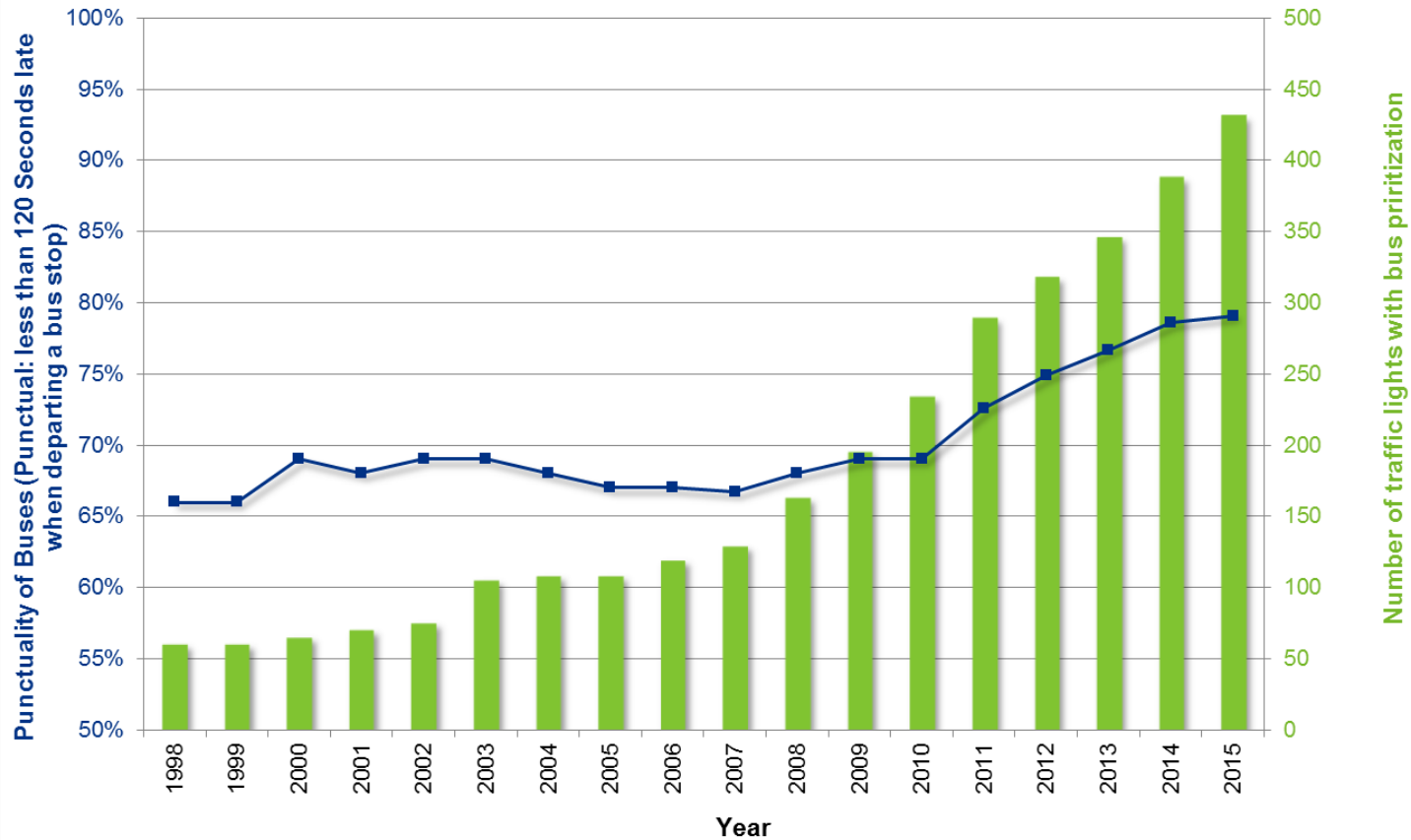
# Quality Management: Analysing Traffic Light Data and Position of Radio Telegrams of Vehicles automatically

LSA 97 vom 06.10.2010

Uhrzeit	MP	Linie	Route	Kurs	Signalprog	Umlaufzeit	PÜ	Detektor
09:17:16					2	106		
09:17:32							60	
09:17:34							3	
09:18:10							4	
09:18:28							62	
09:18:28							65	
09:18:39							1	
09:18:50	21	19	2	8				
09:18:58							2	
09:19:02					2	120		
09:19:18							60	
09:19:41	22	19	2	8				
09:20:02							3	
09:20:03	23	19	2	8				
09:20:21							4	
09:20:39							62	
09:20:39							65	
09:20:50							1	
09:21:02					2	11		
09:21:09							2	
09:21:13					2	120		
09:21:22	11	19	1	10				
09:21:29							60	
09:21:52	12	19	1	10				
09:22:12	13	19	1	10				
09:22:12							3	
09:22:31							4	
09:22:49							62	
09:22:49							65	



# Increased Punctuality by Transit Prioritization



## Further Results of Tram and Bus Priority

- Increased Ridership:
  - Example MetroBus 53 growth of 12% after prioritization. High customer satisfaction.
- Higher Revenue by more passengers
- Economic Benefits for MVG:
  - 16% less tram vehicles needed (18 trams) and in addition 15 buses saved
- Savings of 10 to 15 million € per year in operational costs by public transit priority so far, plus reduced energy costs (10%)
- More, and more satisfied customers with bus system





Thank you for your attention!



For more information :

[www.mvg.de](http://www.mvg.de)