



# START!

SusTAinability tRansiTion  
of borderlands

Summer School | Pskov | 2021

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## Three-Dimensional Cities and Urban Underground Space

Бобылев Николай Геннадьевич, к.т.н., n.bobylev@spbu.ru

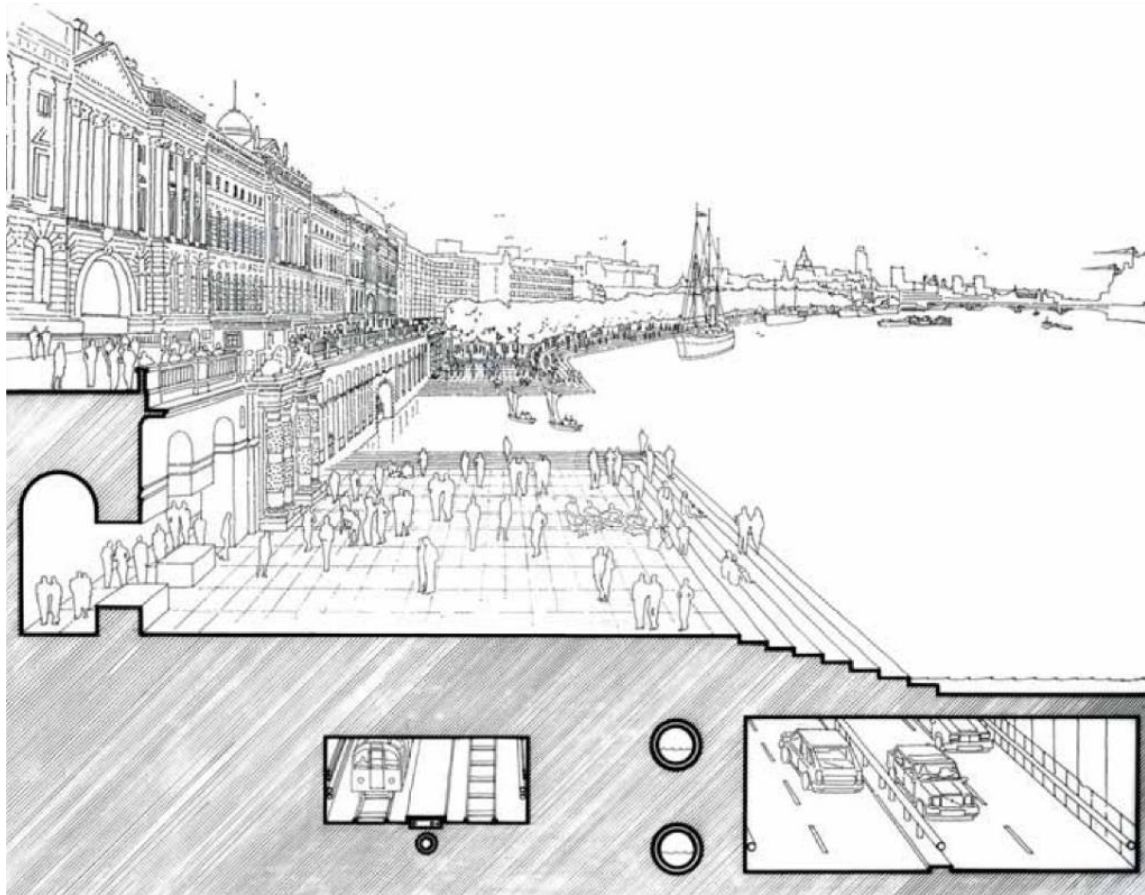
Санкт-Петербургский государственный университет;

ФАУ Единый научно-исследовательский и проектный институт  
пространственного планирования Российской Федерации



Санкт-Петербургский  
государственный  
университет





**1910**

Cities of the Future by Eugène Hénard

Source: Royal Institute of British Architects, Town Planning Conference London, 10-15 October 1910, Transactions (London: The Royal Institute of British Architects, 1911):345-367.



**2018**

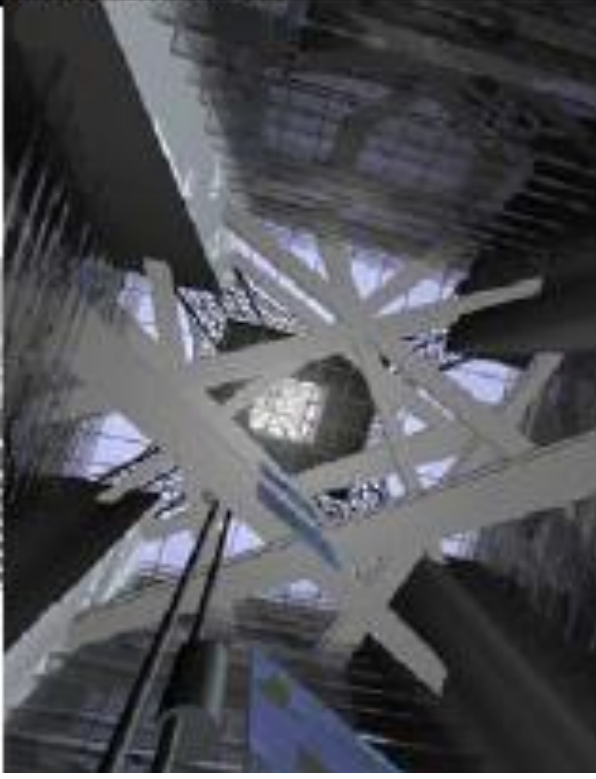
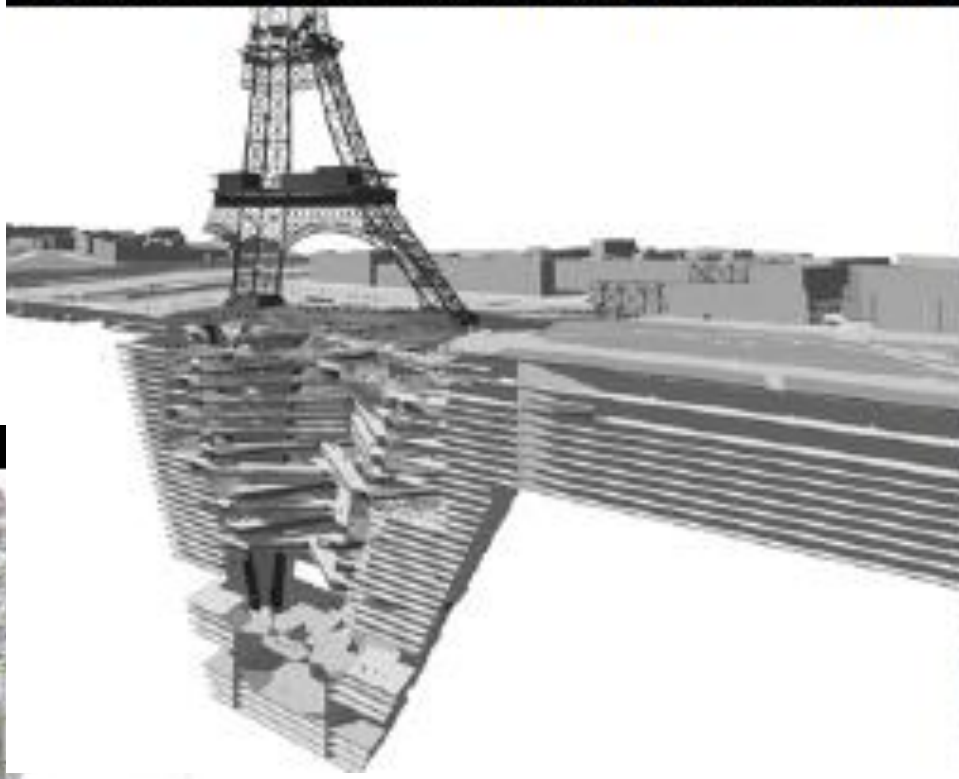
Hong Kong – MTR + road tunnel  
embankment waterfront

Source: Nikolai Bobylev.

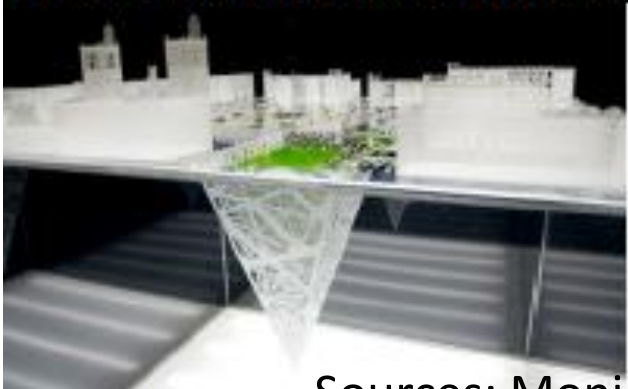




**Les dessous de la Tour Eiffel Project by Gilles Lefebvre et Matthieu Badie**



**Earthscaper project by Bunker or BRKR Arquitectura – Mexico**



Sources: Monique Labbe presentation at ACUUS 2012 – Mexico, Paris

Адаптация города к климатическим вызовам - Природоподобные решения - Технические решения



Critical infrastructure: G-Cans, Tokyo is an underground infrastructure for prevention of flooding during rainy season  
Source: G-Cans project, Tokyo (<http://www.g-cans.jp/>)

# Elon Musk launches high-speed underground tunnel

Elon Musk has unveiled a prototype underground tunnel in Los Angeles designed to transport cars, at high speed, around the city. The goal is a network of tunnels to alleviate chronic traffic congestion.

19 Dec 2018



Elon Musk's Not-A-Boring Competition tunneling solutions and answer the question, "Can you beat the snail?"

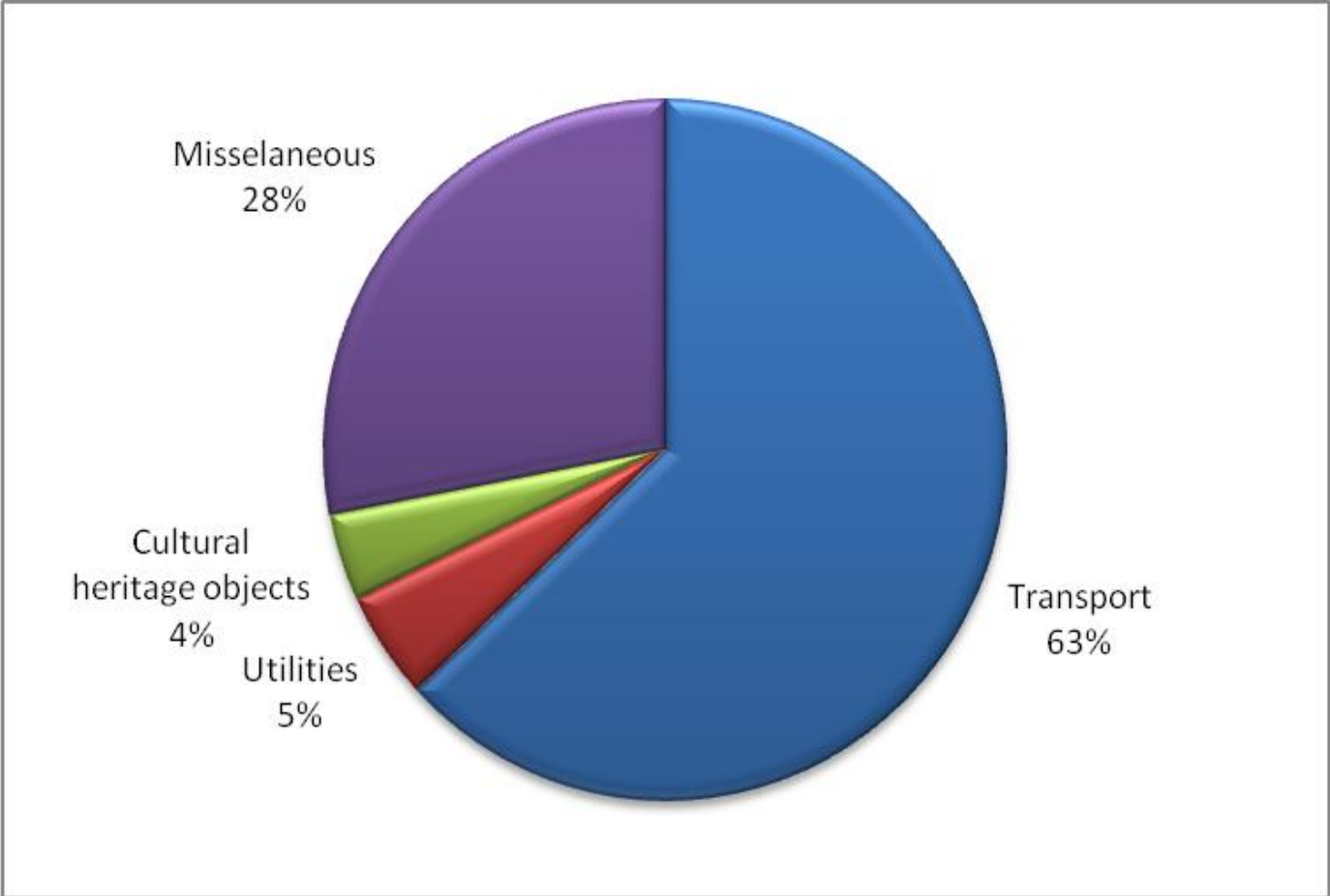
<https://www.boringcompany.com/competition>

twelve teams advanced through the technical design reviews to compete at the competition, which was held in Las Vegas, Nevada on September 12, 2021.



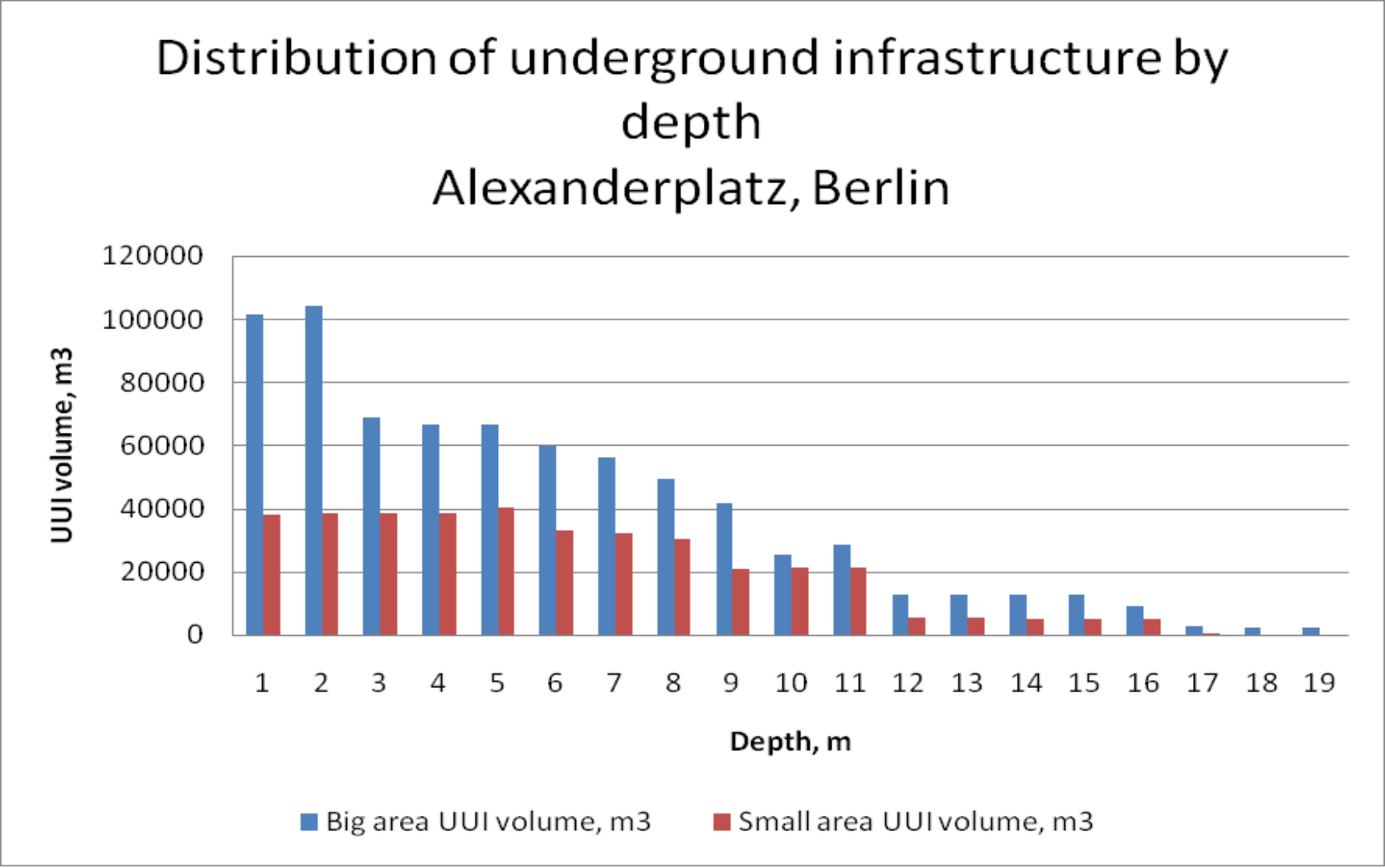
source: <https://www.bbc.com/news/av/technology-46622582/elon-musk-launches-high-speed-underground-tunnel>

# Функциональное использование городского подземного пространства



Source: Bobylev, Nikolai (2010) Underground Space Use in the Alexanderplatz Area, Berlin: research into the quantification of Urban Underground Space use. Tunnelling and Underground Space Technology, Elsevier, 31p

# Пространственное распределение объема использования городского подземного пространства



Source: Bobylev, Nikolai (2010) Underground Space Use in the Alexanderplatz Area, Berlin: research into the quantification of Urban Underground Space use. Tunnelling and Underground Space Technology, Elsevier, 31p



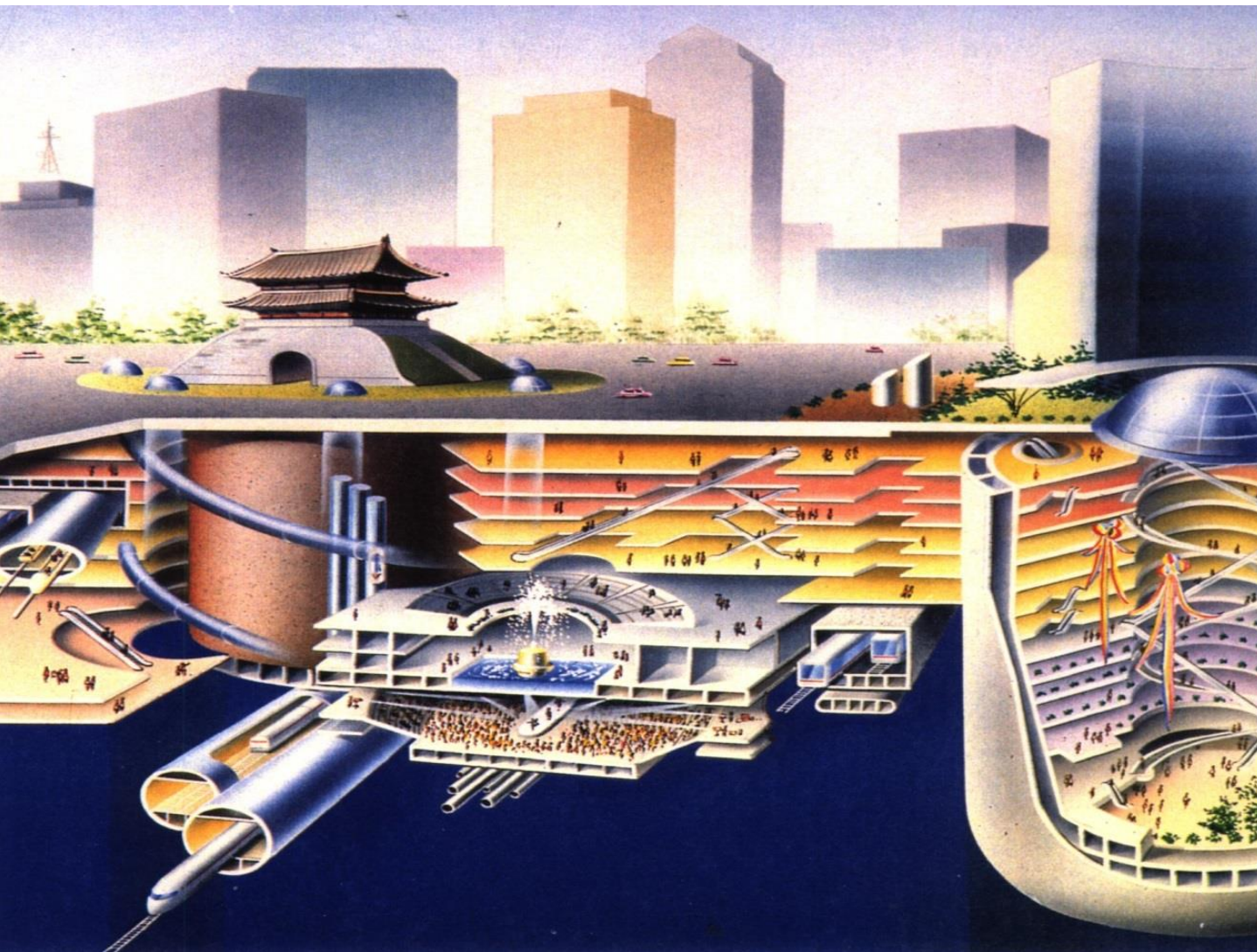
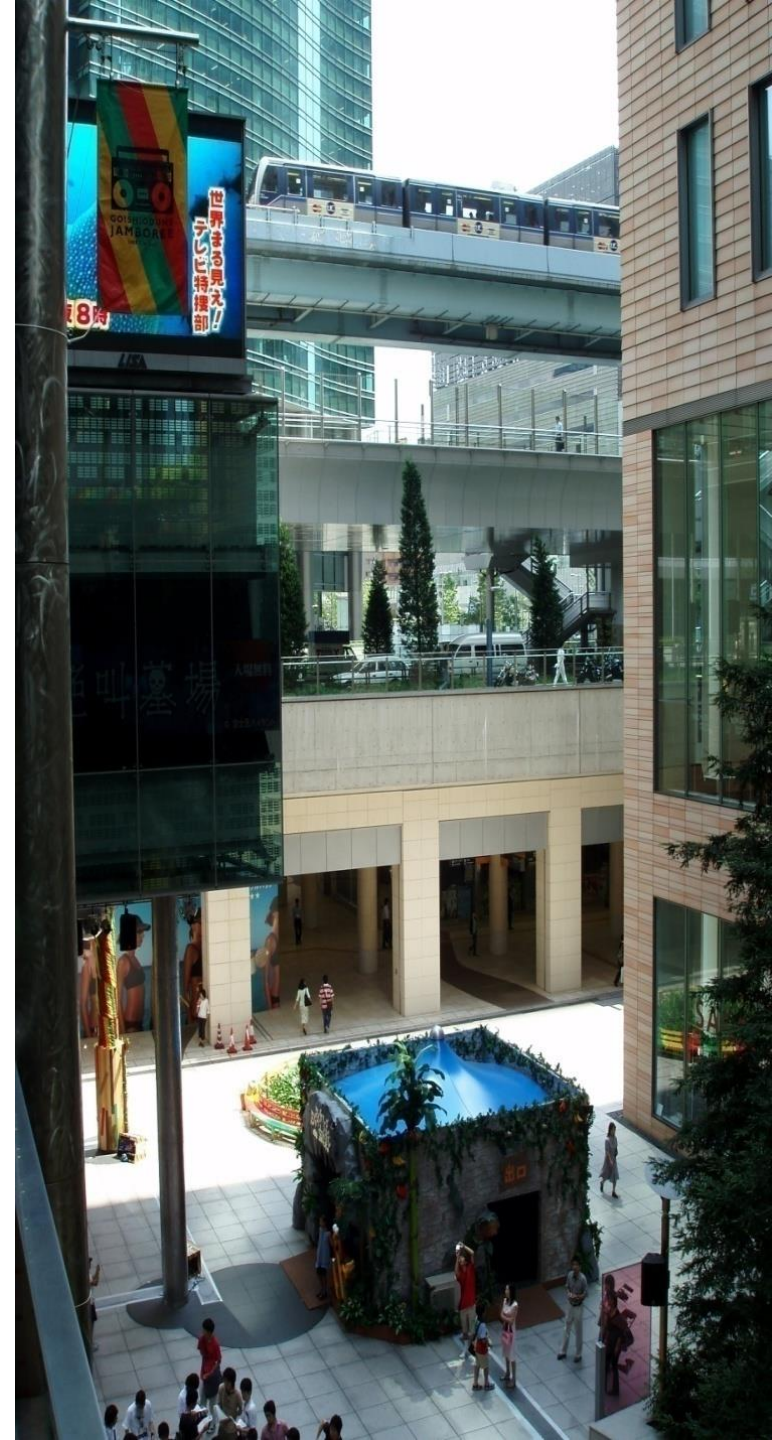


Photo: Nikolai Bobylev - Tokyo







*Photo: Sebastian Greuber – Max-Schmeling Halle, Berlin*





*Photo: Nikolai Bobylev - London*



*Sources: Monique Labbe presentation at ACUUS 2012 – Bilbao, Paris, London (Canary Warf), Lyon*





*Photo: Nikolai Bobylev - Bangkok*



*Photo: Nikolai Bobylev – Berlin, Potzdamer Platz*





*Photo: Nikolai Bobylev – Frankfurt Airport, walkway between terminals*





*Photo: Nikolai Bobylev – Lisbon*



*Photo: Nikolai Bobylev – Monte Carlo*





*Photo: Nikolai Bobylev – San Fransisco*



## References

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