

# The birth of topology and graph theory: Euler's 7 Bridges of Königsberg/Kaliningrad, Russia

Sentinel-1 CSAR IW acquired on **14 October 2021** at 04:51:20 UTC  
Sentinel-1 CSAR IW acquired on **26 October 2021** at 04:51:20 UTC  
Sentinel-1 CSAR IW acquired on **07 November 2021** at 04:51:20 UTC  
Sentinel-2 MSI acquired on **13 March 2022** at 09:50:31 UTC

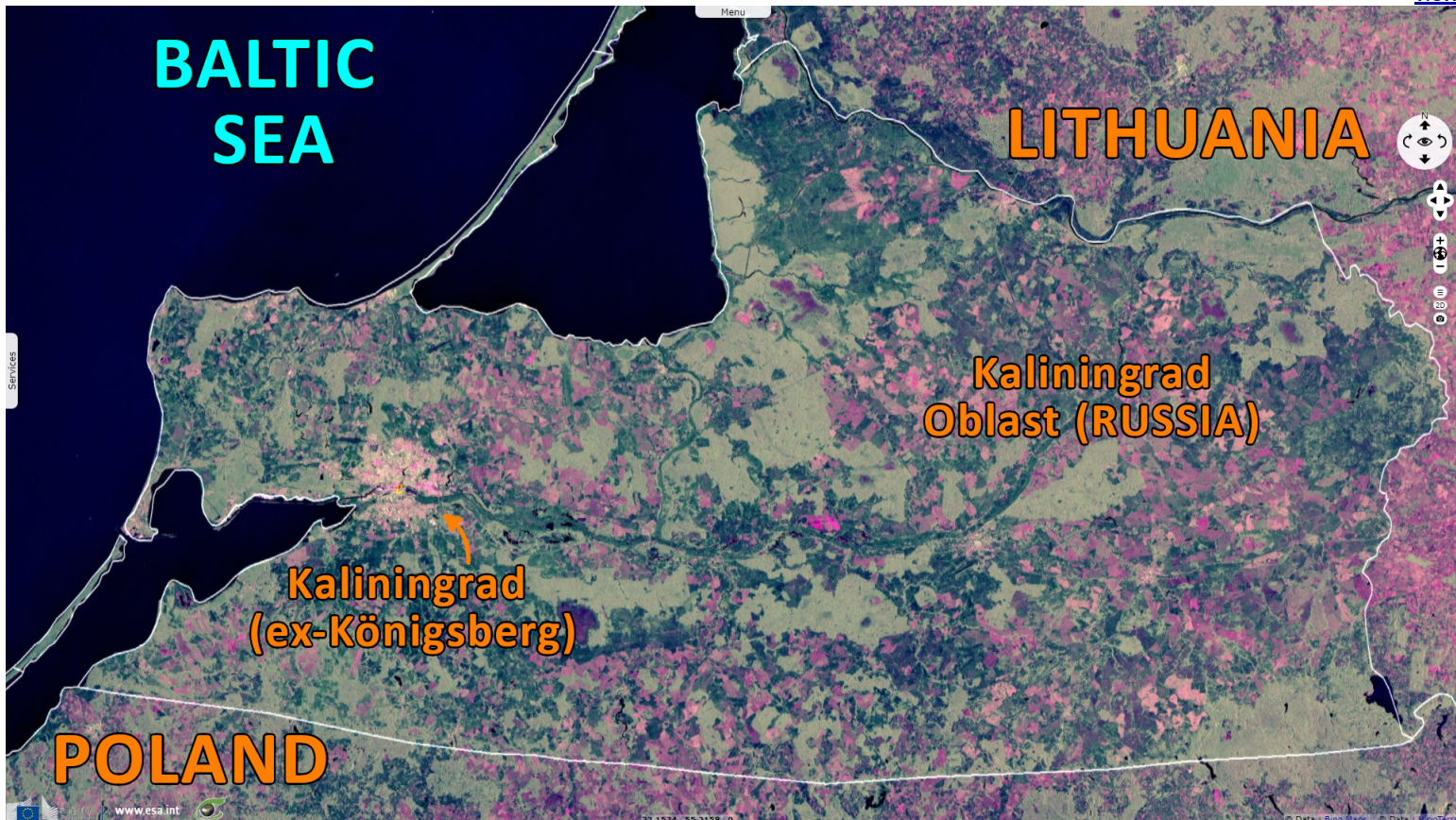
Author(s): Sentinel Vision team, VisioTerra, France - [svp@visioterra.fr](mailto:svp@visioterra.fr)

Keyword(s): Urban, infrastructure, Russia, Germany



[2D Layerstack](#)

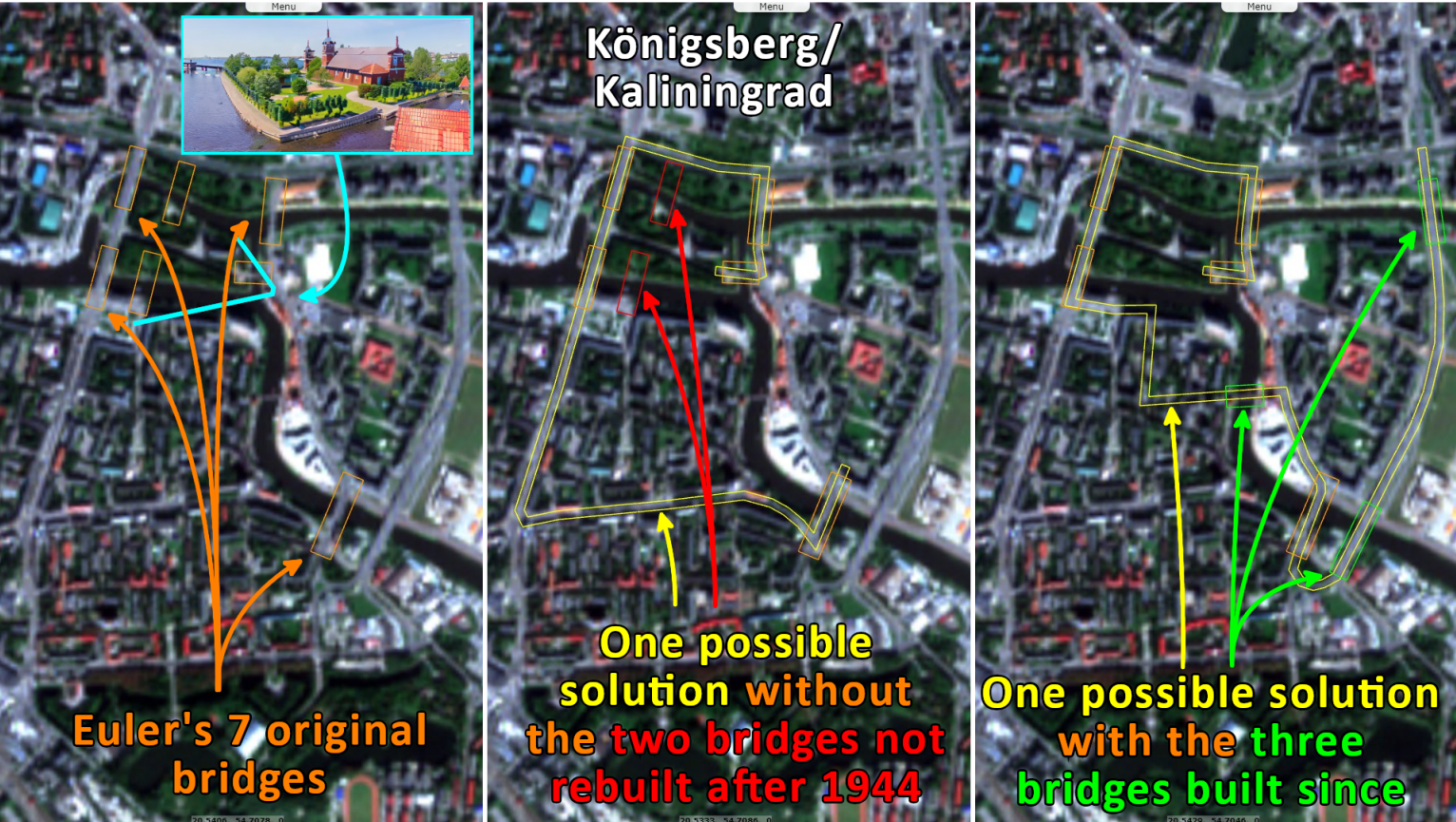
Fig. 1 - S1 (14.10.2021-07.11.2021) - In 1735, German scientist Leonhard Euler made some of the first work dedicated to topology & graph theory. [3D view](#)



He proved that it was not possible to plan a route that would cross each of the seven bridges of Königsberg exactly once.















Fig. 2 - S2 (09.09.2021) - All seven bridges were destroyed by an Allied bombing raid in 1944.



Only five were rebuilt in the city renamed Kaliningrad after its conquest by USSR. This new configuration and the new bridges built since provide multiple solutions to this renewed version of Euler's problem.

*The views expressed herein can in no way be taken to reflect the official opinion of the European Space Agency or the European Union.  
Contains modified Copernicus Sentinel data 2022, processed by VisioTerra.*

More on European Commission space:							
More on ESA:				<a href="#">S-1 website</a>	<a href="#">S-2 website</a>	<a href="#">S-3 website</a>	
More on Copernicus program:				<a href="#">Scihub_portal</a>	<a href="#">Cophub_portal</a>	<a href="#">Inthub_portal</a>	<a href="#">Colhub_portal</a>
More on VisioTerra:				<a href="#">Sentinel Vision Portal</a>	<a href="#">Envisat+ERS_portal</a>	<a href="#">Swarm+GOCE_portal</a>	<a href="#">CryoSat_portal</a>