

A complex network diagram with various sized nodes (black, blue, grey) connected by thin grey lines. Some nodes are highlighted with larger circles. The background is light grey with faint circular patterns.

# EUROPEAN IRON AGE HILLFORTS MAPPING, 3D MODELING, RESURVEYING AND HISTORICAL OPEN DATA

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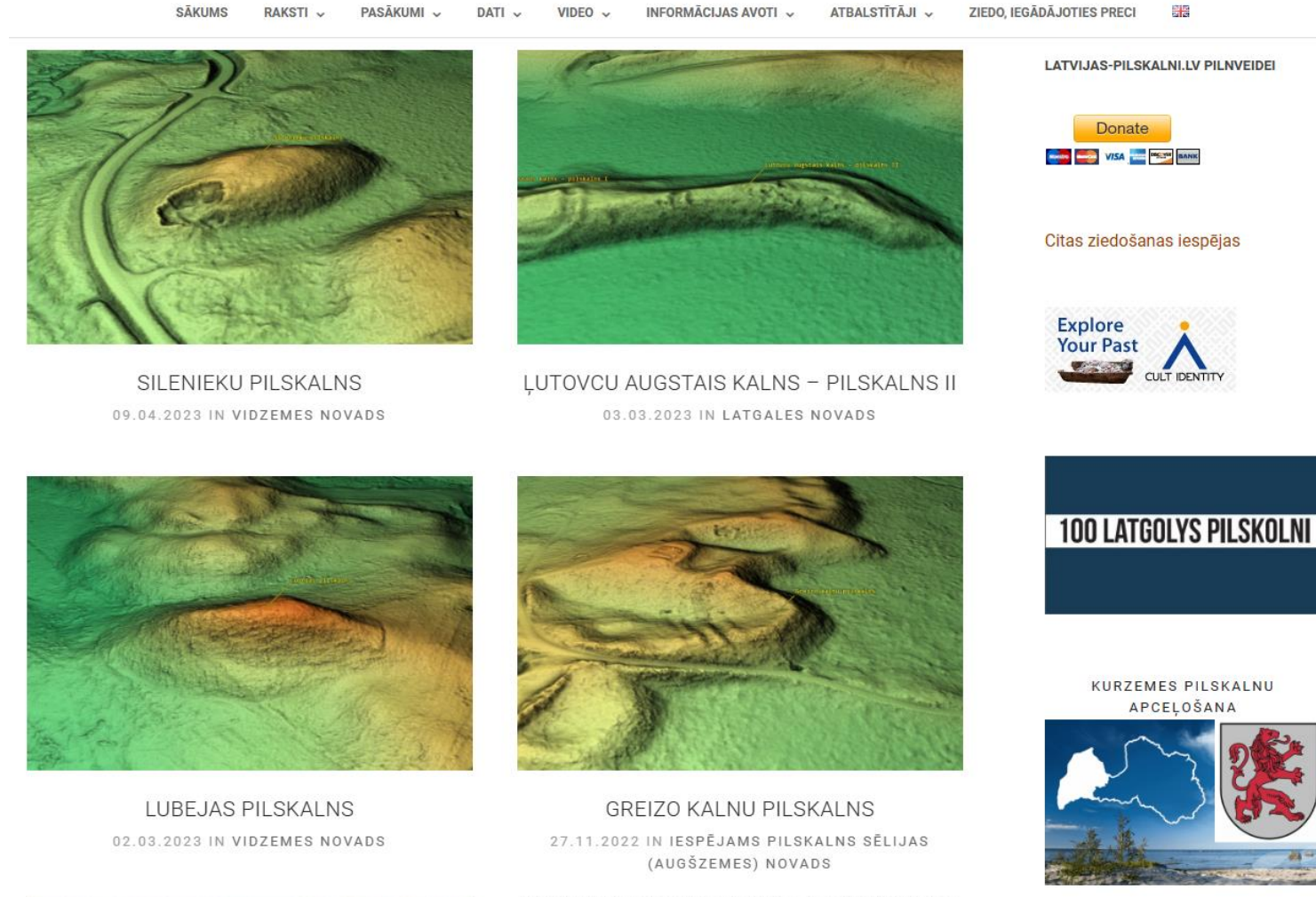
Gatis Kalniņš. Riga, 2023



# **A BRIEF HISTORY OF THE PROJECT**

# Private initiative without state funding. The website [www.latvijas-pilskalni.lv](http://www.latvijas-pilskalni.lv) was launched in July 2017

SĀKUMS RAKSTI PASĀKUMI DATI VIDEO INFORMĀCIJAS AVOTI ATBALSTĪTĀJI ZIEDO, IEGĀDĀJOTIES PRECI



The screenshot displays the website's interface with a navigation menu at the top. Below the menu, four featured archaeological sites are presented in a grid. Each site includes a 3D topographic map, a title, and a date. To the right of the grid, there is a 'LATVIJAS-PILSKALNI.LV PILNVEIDEI' section with a 'Donate' button and logos for various payment methods (MasterCard, Visa, PayPal, Bank). Below this is a section for 'Citas ziedošanas iespējas' and a logo for 'Explore Your Past CULT IDENTITY'. At the bottom right, there is a banner for '100 LATGOLYS PILSKOLNI' and a section for 'KURZEMES PILSKALNU APCEĻOŠANA' featuring a map of Latvia and the coat of arms of Kurzeme.

**SILENIEKU PILSKALNS**  
09.04.2023 IN VIDZEMES NOVADS

**ĻUTOVCU AUGSTAIS KALNS – PILSKALNS II**  
03.03.2023 IN LATGALES NOVADS

**LUBEJAS PILSKALNS**  
02.03.2023 IN VIDZEMES NOVADS

**GREIZO KALNU PILSKALNS**  
27.11.2022 IN IESPĒJAMS PILSKALNS SĒLIJAS (AUGŠZEMES) NOVADS

LATVIJAS-PILSKALNI.LV PILNVEIDEI

Donate


MasterCard VISA PayPal BANK

Citas ziedošanas iespējas



Explore Your Past CULT IDENTITY

100 LATGOLYS PILSKOLNI

KURZEMES PILSKALNU APCEĻOŠANA



# Open data repository **opendata.latvijas-pilskalni.lv** launched in October 2019.

File Name ↓	File Size ↓	Date ↓
 Citi_objekti	-	April 29, 2021
 Macibu_materiali	-	February 22, 2022
 Merijumi	-	April 26, 2023
 Pilskalnu_3D_modelji	-	March 13, 2023
 Pilskalnu_fotografijas	-	April 30, 2023
 Senvietu_3D_modeli	-	October 23, 2020
 Senvietu_fotografijas	-	August 18, 2022
 Vesturiski_militari_objekti	-	March 19, 2021
 json	-	April 29, 2020
 xml	-	January 6, 2020
 Apliecinajums_par_datu_brivu_izmantosanu_signed..>	81.1 KiB	January 5, 2023



# Content of the website **ancientsites.eu** (after project «Cult identity» ends) opened on domain **www.senvietas.lv** in December 2019.



SĀKUMS

PAR PROJEKTU

OBJEKTI

MARŠRUTI

GALERIJA



Cilvēkus visos laikos ir vilinājis noslēpumainais un neizdibināmais. Senās svētvietas ir apvītas mītiem un leģendām, kas rosina zinātkāri un ļauj mums kaut nedaudz ielūkoties pagātnē. Līdz mūsdienām ir saglabājušās teikas un pieraksti, kas vēsta par piekoptajiem rituāliem senajās svētvietās- piemēram, ziedošana, dabas godināšana atbilstoši saules gada ritumam, uguns un mirušo kults.

Senči ticēja, ka koki un akmeņi, bīzīši un meži, pakalni un ūdens ir apveltīti ar brīnumainām spējām, kas palīdz dziedināt slimības, sargā no nelaimēm, kā arī nodrošina veselību un auglību. Mūsdienās dabas svētvietas no pirmā acu uzmetiena var likties kā vienkāršs akmens vai kalns, tomēr stāsti un mīti, kas nodoti no paaudzes paaudzei, vēsta ko citu. Tās ir aizraujošas liecības par mūsu senču seno vēsturi un izpratni par dabas spēku, cilvēku un dievu savstarpējām attiecībām.

Tas izrādījās samērā grūts pasākums – atkal atrast dabā bijušās svētvietas, par kurām dažkārt liecina vien nosaukums vai leģenda, jo gadsimtu gaitā notikusi aktīva saimnieciskā darbība, reliģiju maiņa, sacelti ciemati un daudzas vietas laika gaitā iznīcinātas. Un tomēr, pētījumu gaitā esam apzinājuši ne mazumu vēl esošo seno svētvietu, kurām katrai savs stāsts, katrai sava loma cilvēka dzīvē.

Mūsu datu bāzē pašlaik ir apkopota informācija par dabas svētvietām Rīgas, Vidzemes, Zemgales un Kurzemes reģionos Latvijā, Gavleborgas novadā Zviedrijā un Muhu un Juuru pagastos Igaunijā.

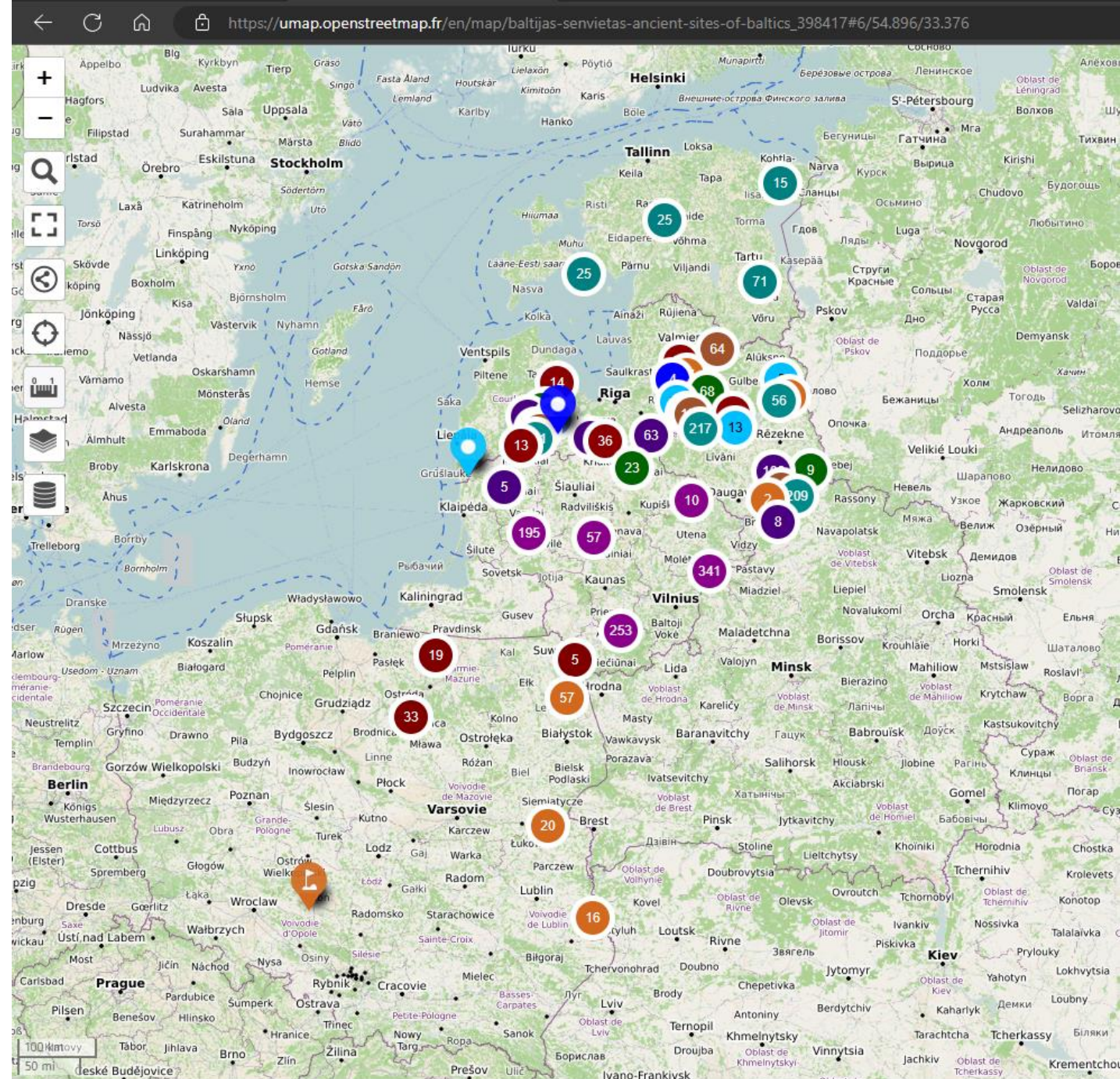


# In March 2020 hillforts data layer provided in LVM Geo application





In September 2020 united  
**Baltic Hillforts and Ancient sites map** created





2020 the project wins the **LATA annual award** in the private sector for the data repository **opendata.latvijas-pilskalni.lv**





# hillforts.eu website launched in 2022



## Project "Latvian hillforts" (LAT, EN)

A project maintained by ancient history enthusiasts. Information about Iron Age hillforts in Latvia. Descriptions, photos, 3D models. There are also links to social media accounts.

### [opendata.latvijas-pilskalni.lv](#)

Open Data Repository, where you can find 3D images of hillfort models, source code, etc. Everything is free to use and free of charge.

### [3D models of Latvian hillforts on Sketchfab](#)

The 3D models are built from open-access LIDAR raw data. The models are free to use and free of charge.

### [3D models of Estonian hillforts on Sketchfab](#)

The 3D models are built from open-access LIDAR raw data. The models are free to use and free of charge.

### [3D models of Lithuanian hillforts on Sketchfab](#)

The 3D models are built from open-access LIDAR raw data. The models are free to use and free of charge.

### [3D models of Poland hillforts on Sketchfab](#)

The 3D models are built from open-access LIDAR raw data. The models are free to use and free of charge.

## Project "Ancient sites" (LAT, ET, EN, SE)

Information on sites of ancient importance. Here you can also find information gathered in the framework of the "Cult Identity" project.

### [Map of Hillforts and Ancient sites](#)

Openstreetmap-based map with search and data export options.

### [3D model videos of Latvian hillforts on YouTube](#)

The 3D models are built from open-access LIDAR raw data.

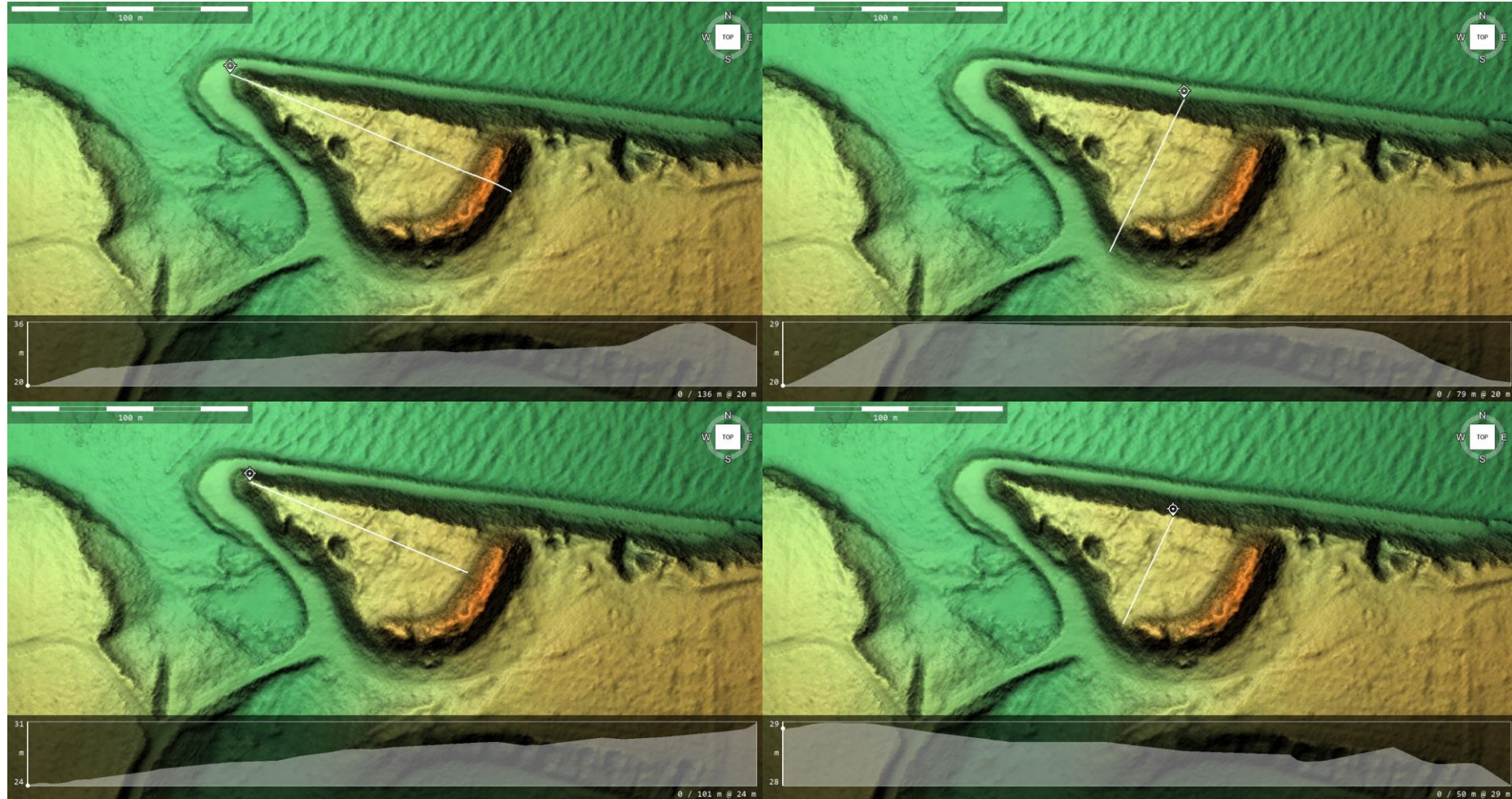
### [3D model videos of Estonian hillforts on YouTube](#)

The 3D models are built from open-access LIDAR raw data.

### [3D model videos of Lithuanian hillforts on YouTube](#)

The 3D models are built from open-access LIDAR raw data.

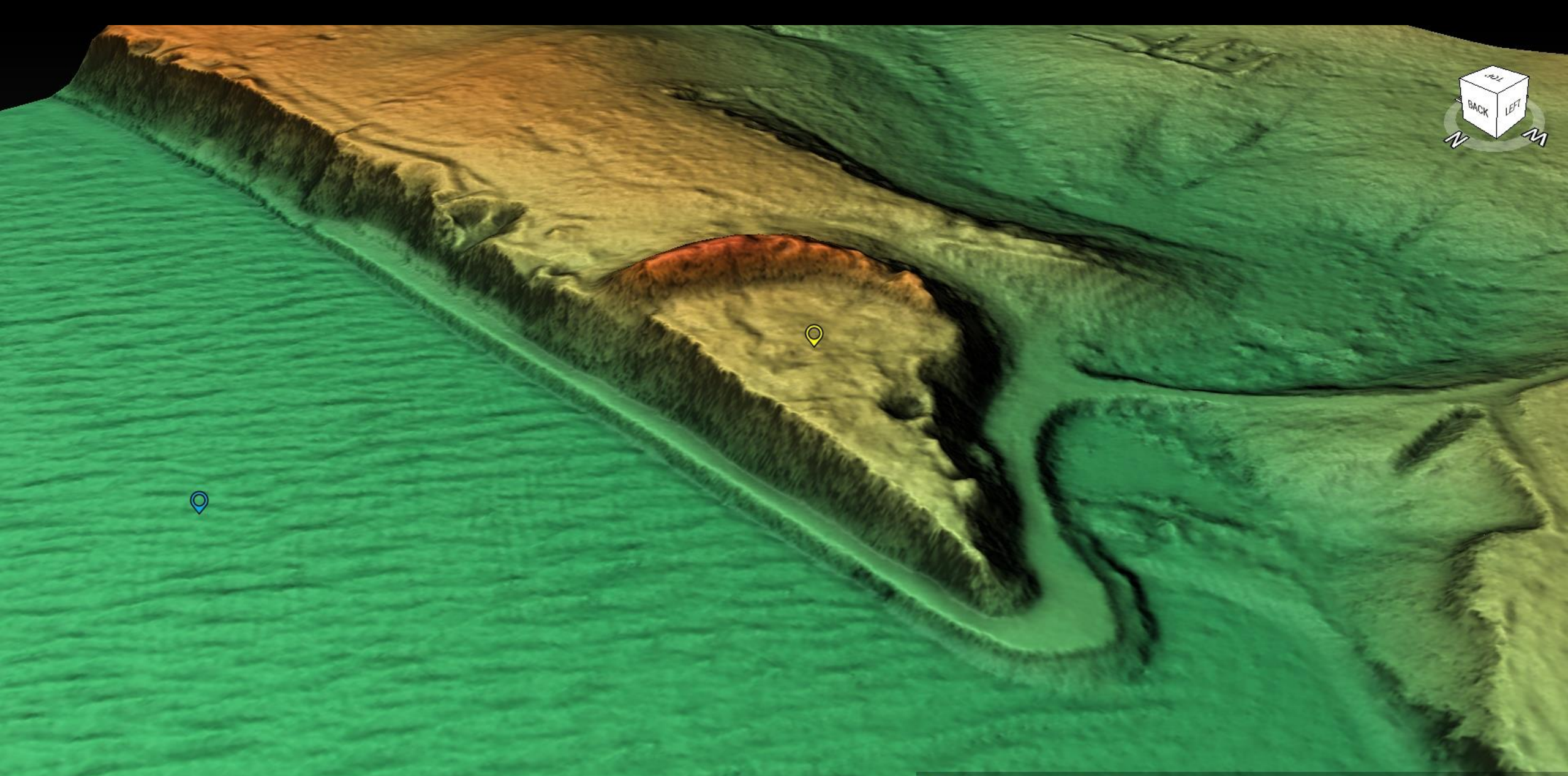
# 2022 – 2023 Digital resurveying of hillforts of Latvia, Estonia, Lithuania using 3D models





# OPEN DATA REPOSITORY

- [Opendata.latvijas-pilskalni.lv](https://opendata.latvijas-pilskalni.lv)
- Learning materials
- Measuring data
- 3D models of hillforts (total ~ 1123 models)
- Photos of hillforts
- Xml and Json data files



3D model

- Daugmales pilskalns
- Daugava
- Izmantoti brīvpieejas LiDAR dati un ortofoto no lgia.gov.lv.





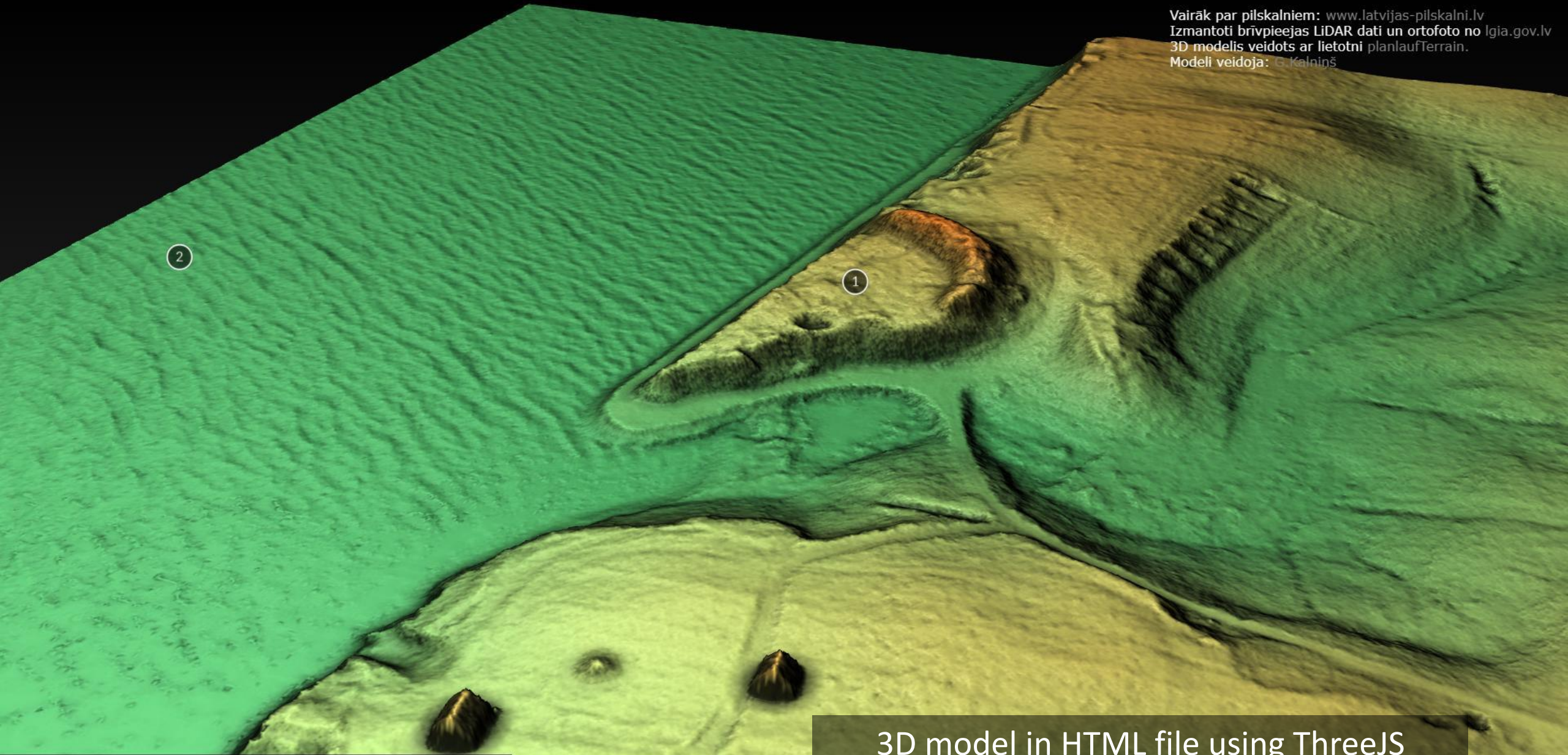
Daugava

Daugmales pilskalns

3D model with ortophoto



Vairāk par pilskalniem: [www.latvijas-pilskalni.lv](http://www.latvijas-pilskalni.lv)  
Izmantoti brīvpieejas LiDAR dati un ortofoto no [Igia.gov.lv](http://Igia.gov.lv)  
3D modelis veidots ar lietotni planlaufTerrain.  
Modeli veidoja: G. Kalniņš



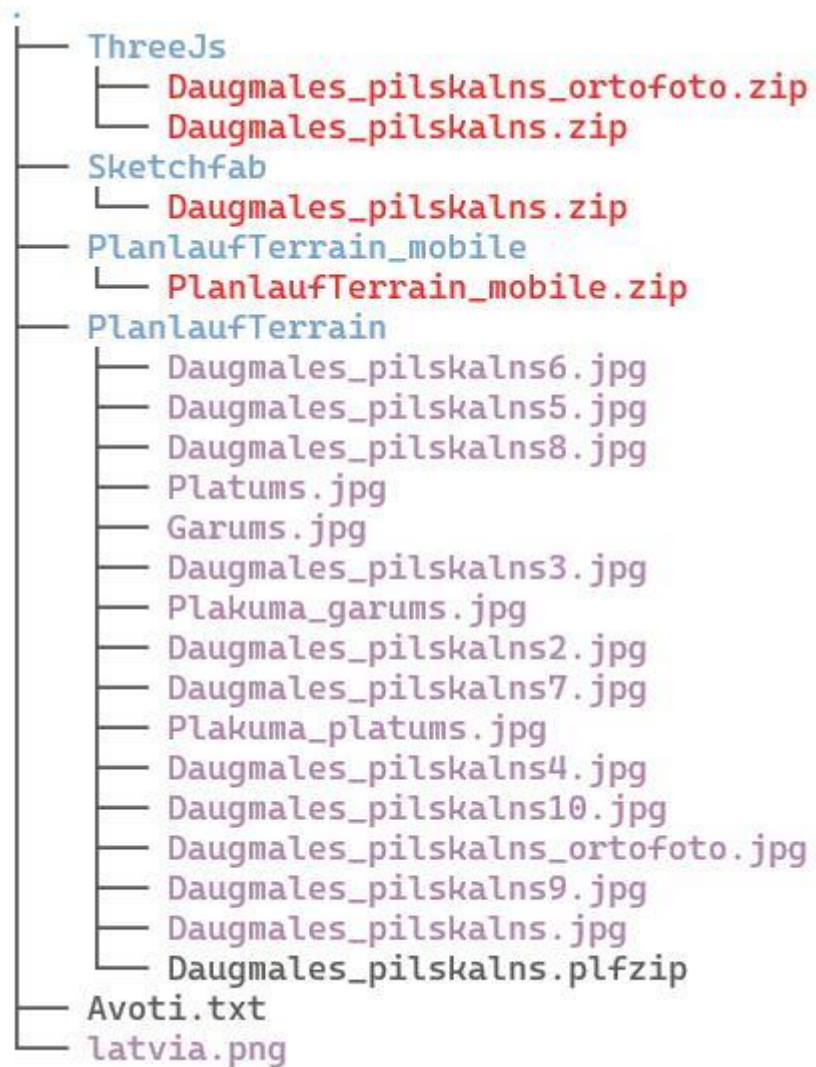
3D model in HTML file using ThreeJS







## Typical folder structure





# CHALLENGES AND ISSUES

- Each country has its own approach for Lidar data providing
- Different Lidar data quality
- Citizen science projects currently do not have access to state-provided data repositories for data backup
- Citizen science projects currently do not have a conditional "green corridor" for informing the public about the development of the project (for example, press releases are sent to a national news agency, but this news does not reach the mass media)

# DEVELOPMENT PERSPECTIVES

- A new website with united data of ancient sites and mound sites
- Route planner for travelers
- An improved open data repository containing more metadata – dimensions, shape, location characteristics (eg river catchments), etc.
- A mobile app that would make it easier to find objects in nature with the help of augmented reality





# THANK YOU FOR YOUR ATTENTION

[www.latvijas-pilskalni.lv](http://www.latvijas-pilskalni.lv)  
[opendata.latvijas-pilskalni.lv](http://opendata.latvijas-pilskalni.lv)  
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