Finanziato dall'Unione europea NextGenerationEU
Ministero dell'Università e della Ricerca
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Consiglio Nazionale delle Ricerche

ATON | WebXR services for Heritage Science

https://aton.ispc.cnr.it/site/

E-RIHS.it
EUROPEAN RESEARCH INFRASTRUCTURE FOR HERITAGE SCIENCE

ISPC

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H2IOSC

Scenarios

Interactive 3D presentation on the web
no installation required

Cross-device
mobile devices, workstations, museum kiosks, XR devices, ...

OUTPUT

Online virtual museums, 3D/4D front-ends for digital libraries, semantically enriched 3D models, multi-layer 3D scenes, immersive experiences, AR/VR digital collections, 360 virtual tours, ...

Interoperable 3D standards adopted

ICS > 35 > 35.040 > 35.040.30

ISO/IEC DIS 12113

Information technology — Runtime 3D asset delivery format — Khronos glTF™ 2.0

- ISO standard designed for the web
- Support advanced **materials** (PBR - *Physically-Based Rendering*)
- Support **animations**
- **Interoperable** & **reusable**
- **Extensible** (eg. metadata enrichment)

- **Multi-resolution** format
  Meshes & Point-clouds
- From small objects to **planetary scale**
  without limitations on geometry or textures
- **Interoperable** & **extensible**

What ATON framework offers - overview

Liquid presentation
automatically adapt to user device (mobile, workstations, XR devices)

Immersive VR/AR
for 3DOF and 6DOF devices

Virtual tours
of linked 360 panoramas

Real-time synchronous collaboration
multi-user sessions

Spatial UI
3D labels, media panels, buttons, etc...

Navigation modes
orbit, first-person, device-orientation and immersive VR

Advanced lighting
including IBL and Light Probes

Measurement tools

Camera/POV transitions
viewpoint handling and custom navigation constraints

Built-in Front-end
(*Hathor*)

3D semantic annotations
including free-form volumetric shapes

Copyright/metadata in 3D models
injection and automatic extraction

Plug&play architecture for *apps* and *plugins* (flares)

What ATON framework offers - examples

3D semantic annotations
including free-form volumetric shapes

Measurement tool

Immersive VR/AR
for 3DOF and 6DOF devices

Spatial UI
3D labels, media panels, buttons, etc.

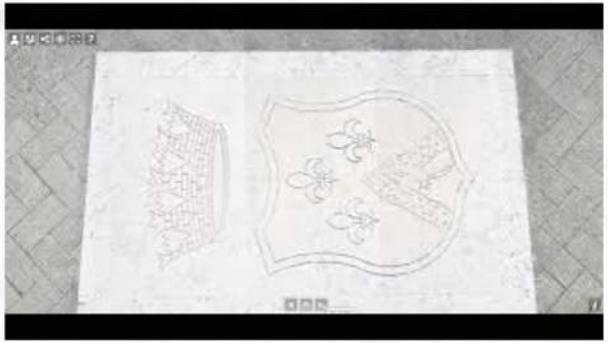
What ATON framework offers - examples

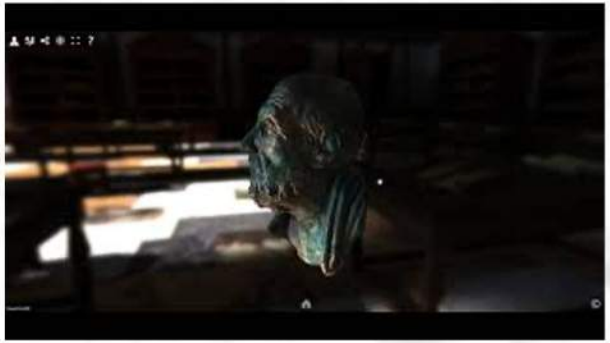
Virtual tours
of linked 360 panoramas

Built-in **navigation modes**
(orbit, first-person, device-orientation and immersive VR)

Camera/POV transitions
viewpoint handling and
custom locomotion nodes

Copyright/metadata in 3D models
injection and automatic extraction
(XMP)





What ATON framework offers - examples

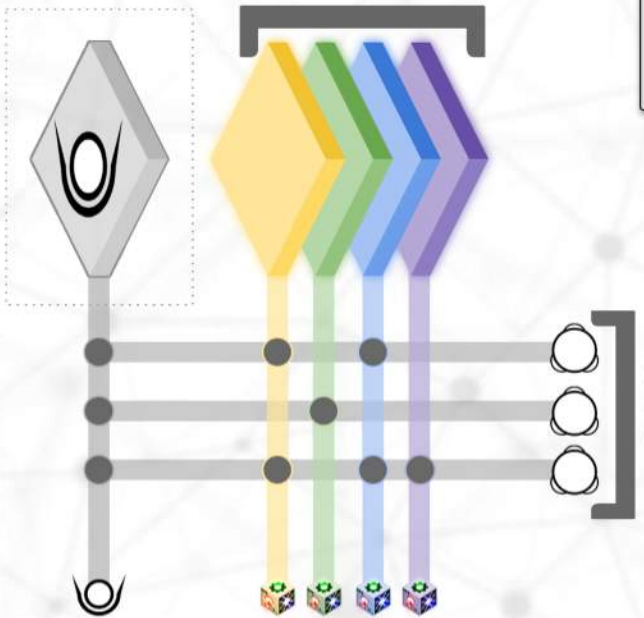
Advanced lighting
including Image-Based lighting and Light Probes

Real-time synchronous collaboration
multi-user sessions

What ATON framework offers - extendibility

Built-in front-end (*Hathor*)
with advanced features

Apps
plug&play your vertical app with custom UI, logic and features



Accelerated development + deployment of web-apps using ATON features

Flares
extend horizontally the instance with custom plugins, equipping apps

Plug&Play Architecture
to extend functionalities of the main instance

What ATON service offers

Certified server
secure connection for WebXR presentation, access to mic/camera, device orientation and much more...

Worldwide reachability
your content (assets & apps) are reachable everywhere

Persistent identifiers
for your 3D models, scenes and apps

Cloud data access
you manage your own assets via nextcloud storage

App hosting
you can develop, then plug&play your custom app on our node

Load balancing
handle large requests and traffic volumes

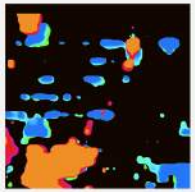
National & international projects using the service

Since 2016 more than **60.000** 3D models already hosted & accessible everywhere with persistent identifiers

NATIONAL AND INTERNATIONAL PROJECTS

Click to learn more

...



Full list: https://osiris.itabc.cnr.it/aton/index.php/projects/

ATON service integration/support/documentation

GitHub

Open-source repository
https://github.com/phoenixbf/aton

Documentation
for developers

https://t.me/ATON_Framework

International *open group*
community support, tutorials, discussion on upcoming features, …

Micro-services architecture
offers modularity, federation & deployment customization
based on Node.js

REST API for *integration* with other platforms or services
OpenAPI specification for discovery of service capabilities

Integration with **cloud systems** (data layer)
access to 3D scenes & collections

Scalable deployment within **Research Infrastructures** (RIs)