



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Bundesamt für Landestopografie swisstopo

wissen wohin
savoir où
sapere dove
knowing where



swisstopo

Snapshot und ein offenes API für georeferenzierte Bilder: Mehrwert aus (Geo)Metadaten auch für swisstopo Luftbilder

*Snapshot et une API ouverte pour les images géoréférencées.
Plus-value des (géo)métadonnées également pour les photos aériennes de
swisstopo*

HEIG-VD TERRITORIAL & MEDIA ENGINEERING (GIS & WEB SPECIALISTS)

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swisstopo

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Kolloquium *Colloque* swisstopo 4.02.2022

Supported by UNIZH & NGDI MITTEL

Bundesamt für Landestopografie swisstopo
SnapShot - API - swisstopo



Universität
Zürich ^{UZH}



Open Data Awards
2021



Generelles *Généralités*

Aufzeichnung *Enregistrement*

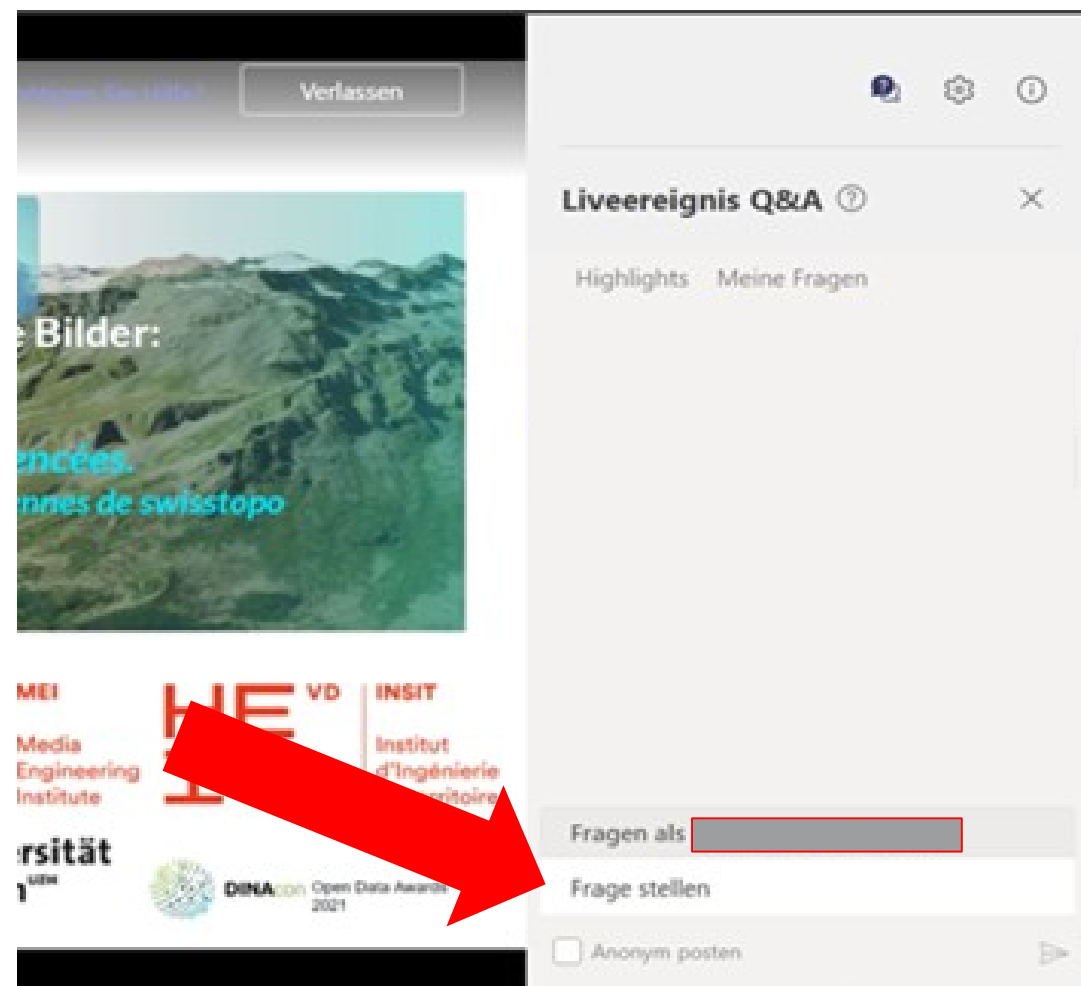
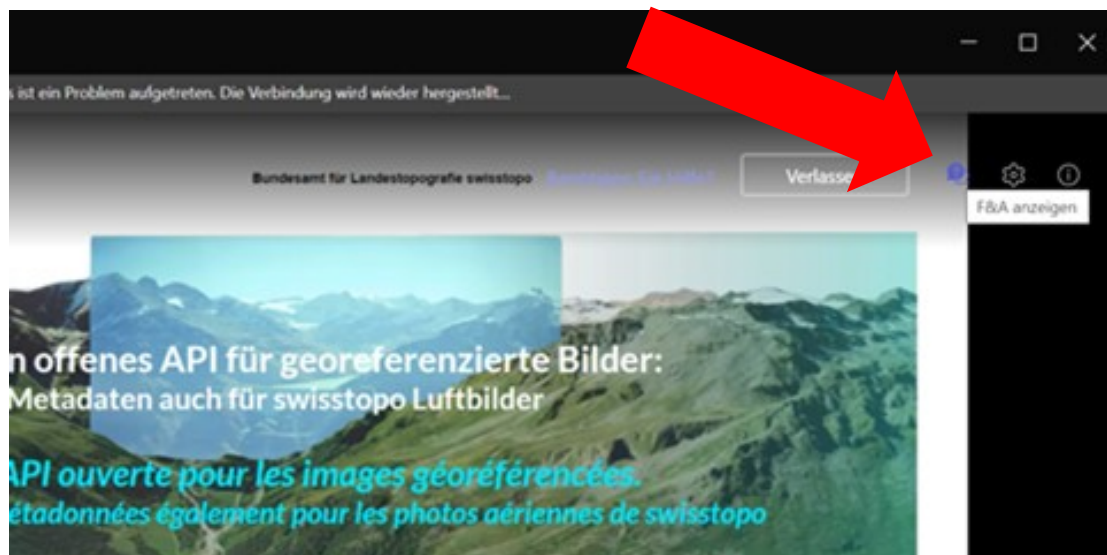
- Präsentation wird aufgezeichnet und steht danach unter www.youtube.com/swisstopo zur Verfügung
- *La présentation est enregistrée et est ensuite disponible sur www.youtube.com/swisstopo*

Chat

- Sie können **ab sofort** im Chat fragen stellen, wir werden sie laufend beantworten und am Schluss in der Diskussion auf Offene Punkte eingehen
- *Vous pouvez **dès à présent** poser des questions dans le chat, nous y répondrons au fur et à mesure et aborderons à la fin les points en suspens dans la discussion.*



Wo ist der Chat *Où est le “chat”*





Agenda

1. Background

Der Wert von historischen Bilder *la valeur de
photos historiques*

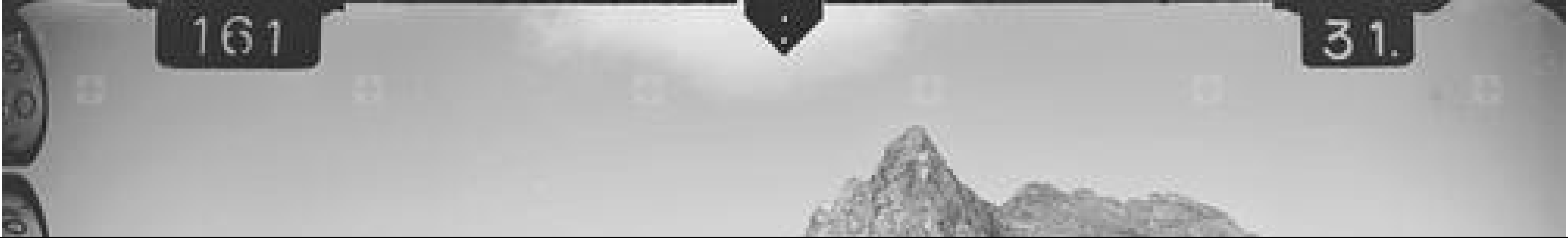
Das Smapshot Projekt *le projet Smapshot*

1. Idee *Idée*

2. Ziele des Projekts *Buts du projet*

3. Swisstopo *Swisstopo*

4. Fazit/Ausblick *Conclusion / perspectives*



1 .Background

Background

Jens





Background

Historische Bilder *Photos historiques*

-> Landschaftsinformationen *Informations sur le paysage*

-> Klimaänderung z.B. Gletscherschmelze *Changement climatique, p.ex fonte des glaciers*

-> Infrastruktur und Stadtentwicklung *Infrastructure et urbanisme*

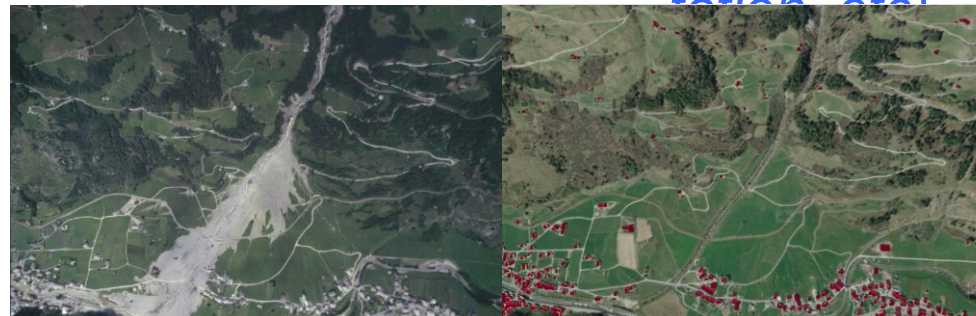
-> Umweltgefahren *Dangers naturels*

-> Entscheidungsfindung *Aide à la décision*

-> Wissenschaft *Sciences*

-> Aus der Vergangenheit lernen (Fernerkundung, -> *apprendre du passé (simulation, documen-*

Simulation, Dokumentation, etc)





Background

Historische Bilder *Photos historiques*

Nutzung ist erschwert :

- > Oft nicht digitalisiert und kategorisiert
- > In verschiedenen Sammlungen und an verschiedenen Orten

-> Verschiedene Standards

Umfrage (37 Teilnehmer):
ca. 40% digitalisiert
Meistens TIFF
Variable Auflösung (300-2000 DPI)
Häufigster Metadatenstandard : ISAD(G)

souvent utilisé

Utilisation difficile :

- > *Photos souvent pas numérisées et caté*
- > *Dans des collections différentes à des endroits différents*



-> Plusieurs sta

*Sondage (37 participants
ca. 40%
surtout*

*Résolution variable (300-
ISAD(G) : standard pour*



Vers un inventaire de collections photographiques
à valeur historique et paysagère



Background

Snapshot

- Crowdsourcing Plattform um historische

géolocalisation

Bilder in 3D zu verorten

historiques

Plateforme de crowdsourcing pour la

en 3D de photos

- Digitalisierte Bilder werden von der Crowd durch

dans Kontrollpunkte in einem virtuellen Globus verortet

de

Les photos numérisées sont géolocalisées

un à l'aide



points de contrôle

- Erstellen von Metadaten

z.B. Ortsnamen

Création de métadonnées

p.ex toponymes





2. Idee

Idée

Jens





Idee *Idée*

Proof-of-Concept einer NGDI, für geolokalisierte Fotografien mit geografischem Wert

Proof-of-Concept d'une INDG dédiée aux photographies géolocalisées à valeur géographique

Infrastruktur für geolokalisierte Fotografien
géolocalisées

API

API

Standards

Standards

Use-cases

Cas d'utilisation

Infrastructure pour des photos

The background of the slide features a grayscale photograph of a mountain peak, likely Mount Everest, under a cloudy sky. Overlaid on the top of the image are several film strip elements: a dark strip with the number '161' on the left, a central sprocket hole, and another dark strip with the number '31.' on the right. The main title is centered on a black horizontal band.

3. Ziele des Projekts

Buts du projet

Jens

The bottom portion of the slide shows a grayscale aerial photograph of a mountain range. The terrain is rugged, with steep slopes and deep valleys. A prominent, light-colored, diagonal feature, possibly a snowfield or a glacial deposit, runs across the middle of the range.



Ziele des Projekts *Buts du projet*

API (Application Programming Interface) open-source

-> Zugang zu der Smapshot-Datenbank

données Smapshot

-> Accès à la base de

-> Erstellung von Prozessen und neuen

processus et

-> Création de

Applikationen

nouvelles applications

Standards

Analyse von Standards für das API *Analyse de standards pour des API*

Use-Cases

-> Analyse von verschiedenen Use-Cases bezüglich des API's

-> *Analyse de plusieurs use-cases concernant l'API*

161

31.

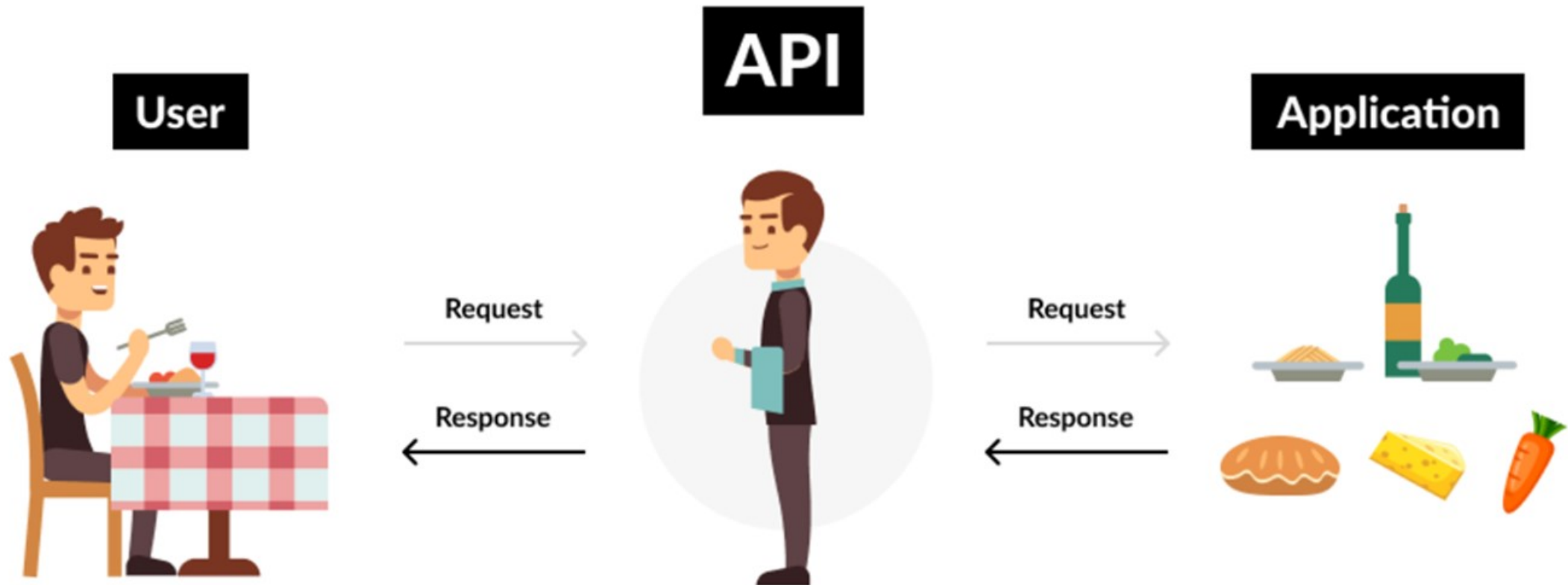
API

API

James, Jens, Martine

What is an API? (Application Programming Interface)

A software intermediary that allows two applications to talk to each other.





Comparison

How can an owner retrieve the data from volunteers ?

- No API
 - Process is done by multiple people every time (Snapshot team + owner admin)
 - Manual operations
 - Manipulation of csv files (data conversion, formats, etc.)
- API
 - Implemented once based on clear format and documentation
 - Can be run automatically

Error prone



Open Sourcing / Open Access

snapshot 2.0.0 OAS3

The participative time machine.

[snapshot - Website](#)

Servers

▼

Authorize



default



POST `/auth/local/login` Authenticate with a local user account.

POST `/auth/local/register` Registers a local user account.

GET `/collections` List image collections.

GET `/collections/{collectionId}` Retrieve one image collection.

POST `/corrections` Submit a correction on an image.

GET `/corrections` List image corrections.

PUT `/corrections/{correctionId}` Update a correction as a validator. The new correction is automatically accepted.

PUT `/corrections/{correctionId}/state` Validate or reject a correction.



← → ↺ snapshot.heig-vd.ch/visit/181179 ←

← Back to the map

Comet Photo AG oblique photographs
in colors (1957–1999/Part 1)

Walliser Alpen, Rhôneal, Haut de Cry

March 1982

Add a caption

Download Shop Share
Observations



On the Snapshot webpage we can see the image attributes

Using the API we can fetch this data from the server

```
{
  "count": 1,
  "rows": [
    {
      "title": "Walliser Alpen, Rhôneal, Haut de Cry",
      "longitude": 7.295900000000005,
      "latitude": 46.206700000000005,
      "media": {
        "image_url": "https://snapshot.heig-vd.ch/api/v1/data/collections/29/images/thumbnails/181179.jpg"
      }
    }
  ]
}
```

`https://snapshot.heig-vd.ch/api/v1/images?lang=en&limit=5&id=181179&publish_state=published&attributes=title&attributes=longitude&attributes=latitude&attributes=media`



API use cases (1) - Web components

Image nearby carousel

```
<script type="module" src="https://cdn/element_smapshot.js"></script>  
<element_smapshot lat="46.947949" long="7.447434"></element_smapshot>
```

S M A P S H O T



More information: https://smapshot.heig-vd.ch/development_documentation

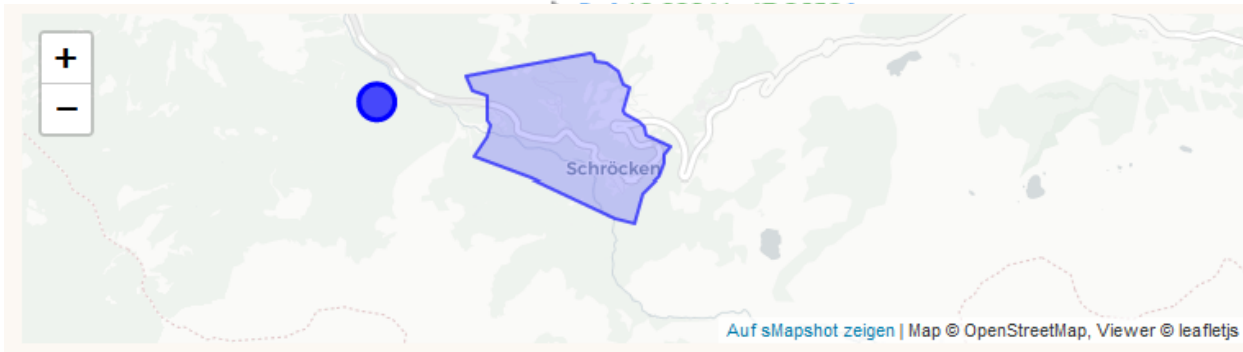


API use cases (2) - Image footprint

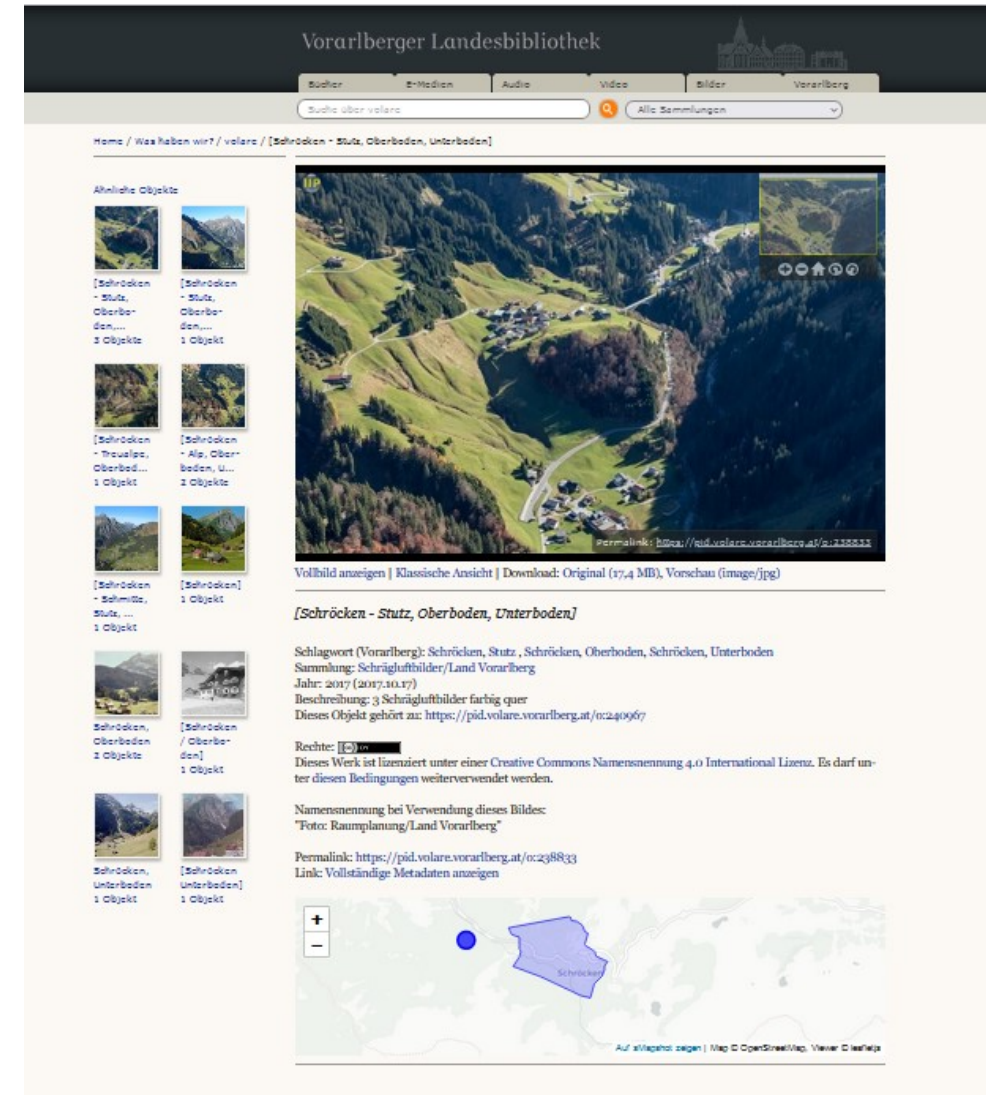
<https://smapshot.heig-vd.ch/api/v1/images/195471/footprint>

GeoJSON

```
▼ footprint: Object { type: "MultiPolygon", crs: {...}, coordinates: [...] }
  type: "MultiPolygon"
  ► crs: Object { type: "name", properties: {...} }
  ▼ coordinates: [[...]]
    ▼ 0: [[...]]
      ▼ 0: [[...], [...], [...], [...], [...], [...], [...], [...], [...], [...], ... ]
        ► 0: [ 10.07708, 47.26448 ]
        ► 1: [ 10.07989, 47.26495 ]
        ► 2: [ 10.09004, 47.26606 ]
```



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SmapShot - API - swisstopo





API use cases (3) - Photographic observatories

Fotografische Landschaftsbeobachtungen *Observatoires photographiques du paysage*

Langzeitbeobachtung von Landschaftsveränderungen *Observatoires à long terme des changements du paysage*

Konzept : Fotos werden vom gleichen Ort zu verschiedenen Zeitpunkten aufgenommen

Concept : Photographies prises du même lieu à des moments différents dans le temps





API use cases (3) - Photographic observatories

Zeit als zusätzliche Dimension *Temps comme dimension supplémentaire*

Problem : Langzeitfinanzierung

Problème : financement à long terme

-> Zusammenlegung von Ressourcen

-> Mutualisation de ressources

-> z.B geteilte Datenbank

 -> p.ex base de données

partagée



Bundesamt für Raumpolitik und Landschaftsplanung
Massetferthof, Graubünden, Schweiz
SnapShot - API - swisstopo

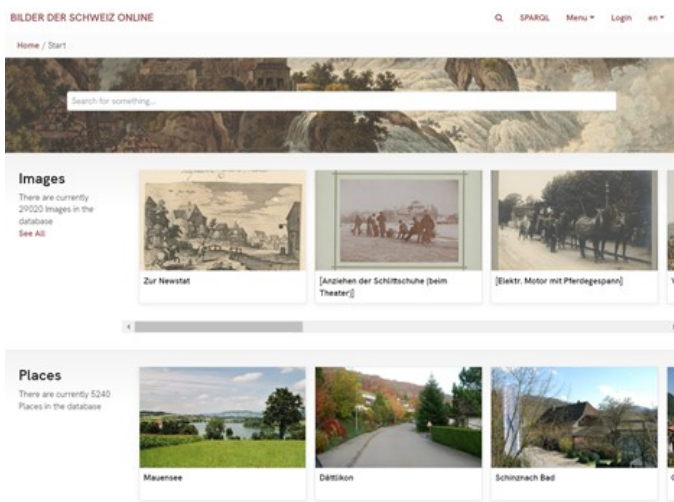


Observatoire photographique Parc Chasseral



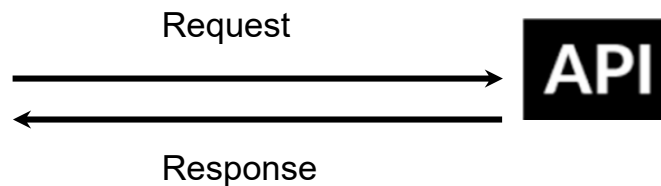
API use cases (4) - SARI Swiss Art Research Infrastructure

Two platforms: BSO and Smapshot



BSO - Bilder der Schweiz Online

<https://bso.swissartresearch.net>



Smapshot

Requests from BSO to Smapshot through Smapshot API :

- Retrieve coordinates of geolocalized images.
- Display embed 3D view on BSO.
- Retrieve the observations made by the volunteers.
- Send and update images directly from BSO to Smapshot (limited to IIIF images).



API use cases (4) - SARI Swiss Art Research Infrastructure

Geolocated images: Embed 3D view

BILDER DER SCHWEIZ ONLINE

Q SPARQL Menu Login en

[Locarno]
URI: <https://resource.swissartresearch.net/artwork...>
Type: Object, Object, Human-Made Object

1823 (ca.)

Home / [Locarno]


Open in Viewer

[Locarno]
Locarno, vista generale dall'est. Imbarcazione; Lago Maggiore; pescatore

Depicts [Locarno](#)

External Links [HelveticArchives](#) [IIIF Manifest](#)

Dates 1823 (ca.) Creation

Contained in [nb-913563](#)

Persons [Wetzel, Johann Jakob](#) (Creation)

Dimensions
Bild 19,6 x 27,7 cm
Blatt 19,6 x 27,7 cm
Rahmen 43,8 x 54,6 cm

Technique [Handschrift/-zeichnung](#) [Bleistift](#)


Altitude: 200m | Coordinates: 46.1709, 8.8078
Cesium Data attribution
Open in Viewer

BILDER DER SCHWEIZ ONLINE

Geolocated images

There are currently 854 Geolocated images in the database
[See All](#)



[Locarno]



[Wollishofen. Panorama Bahnhof Wollishofen]

GET /images

[https://snapshot.heig-vd.ch/api/v1/images?state\[0\]=validated](https://snapshot.heig-vd.ch/api/v1/images?state[0]=validated)

Direct link to Snapshot widget:

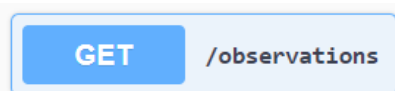
https://snapshot.heig-vd.ch/embed/owner/sari/original_image/nb-919209



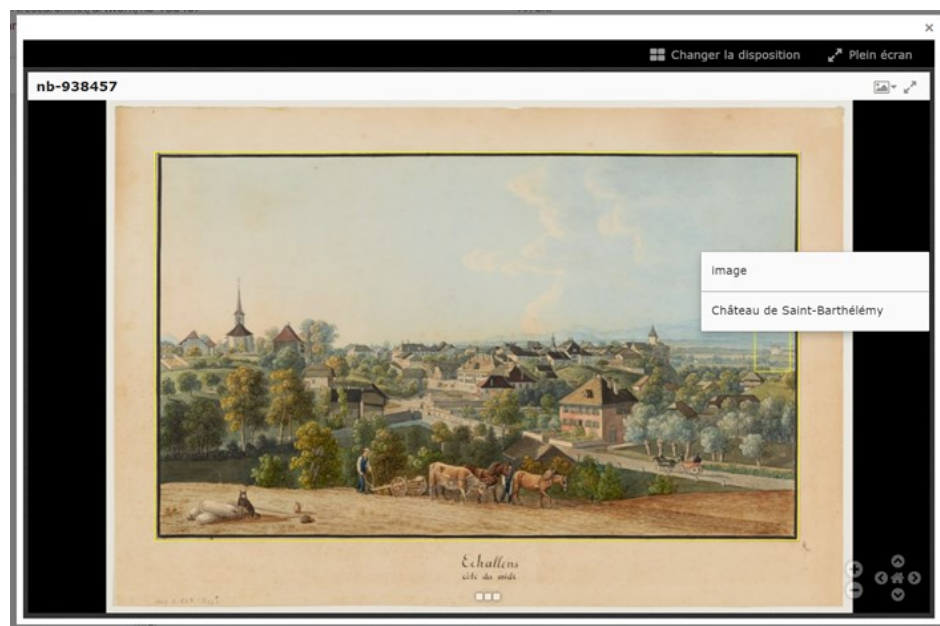
API use cases (4) - SARI Swiss Art Research Infrastructure

Observations

Daily request to Snapshot through Snapshot API to get the last observations and display them on BSO.



https://smAPSHOT.heig-vd.ch/api/v1/observations?state=validated&image_id=205585



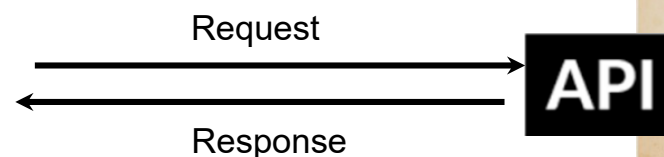
BSO - Bilder der Schweiz Online

<https://resource.swissartresearch.net/artwork/nb-938457>

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SmAPSHOT - API - swisstopo

<https://smAPSHOT.heig-vd.ch/visit/205585>



Snapshot



API use cases (4) - SARI Swiss Art Research Infrastructure

Sending and updating images

POST

/images

<https://smAPSHOT.heig-vd.ch/api/v1/images>

PUT

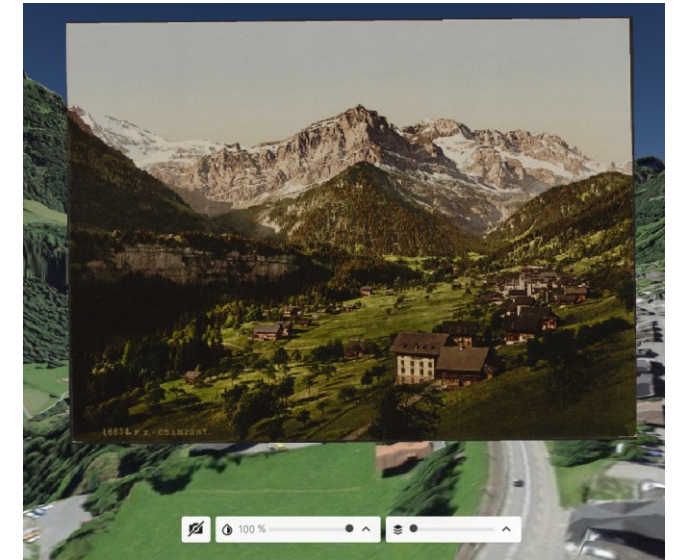
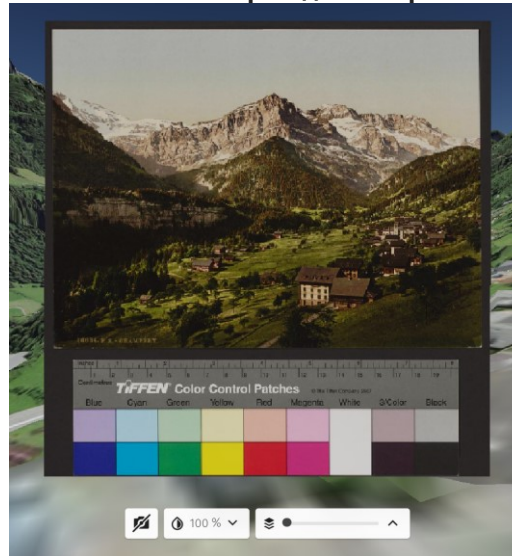
/images/{id}/attributes

<https://smAPSHOT.heig-vd.ch/api/v1/images/205585/attributes>

Body:

```
{
  "title": "Champéry",
  "caption": "village",
  "collection_id": 1,
  "iiif_data": {...}
  ...
}
```

<https://smAPSHOT.heig-vd.ch/api/v1/images/205585/attributes>





Standards *Standards*

Nicolas, Martine





Geo-
information

Photo by [Valdemaras D.](#) on [Unsplash](#)



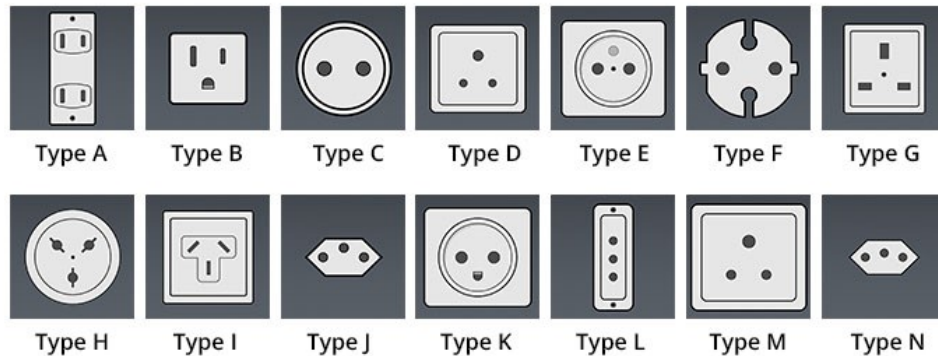
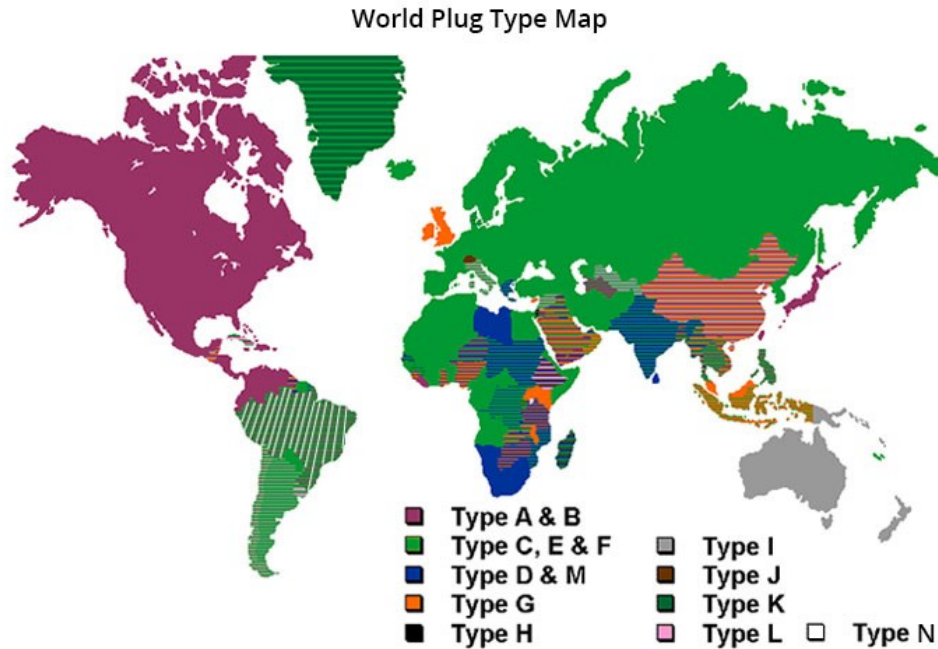
Culture
heritage

Photo by [Ming Han Low](#) on [Unsplash](#)



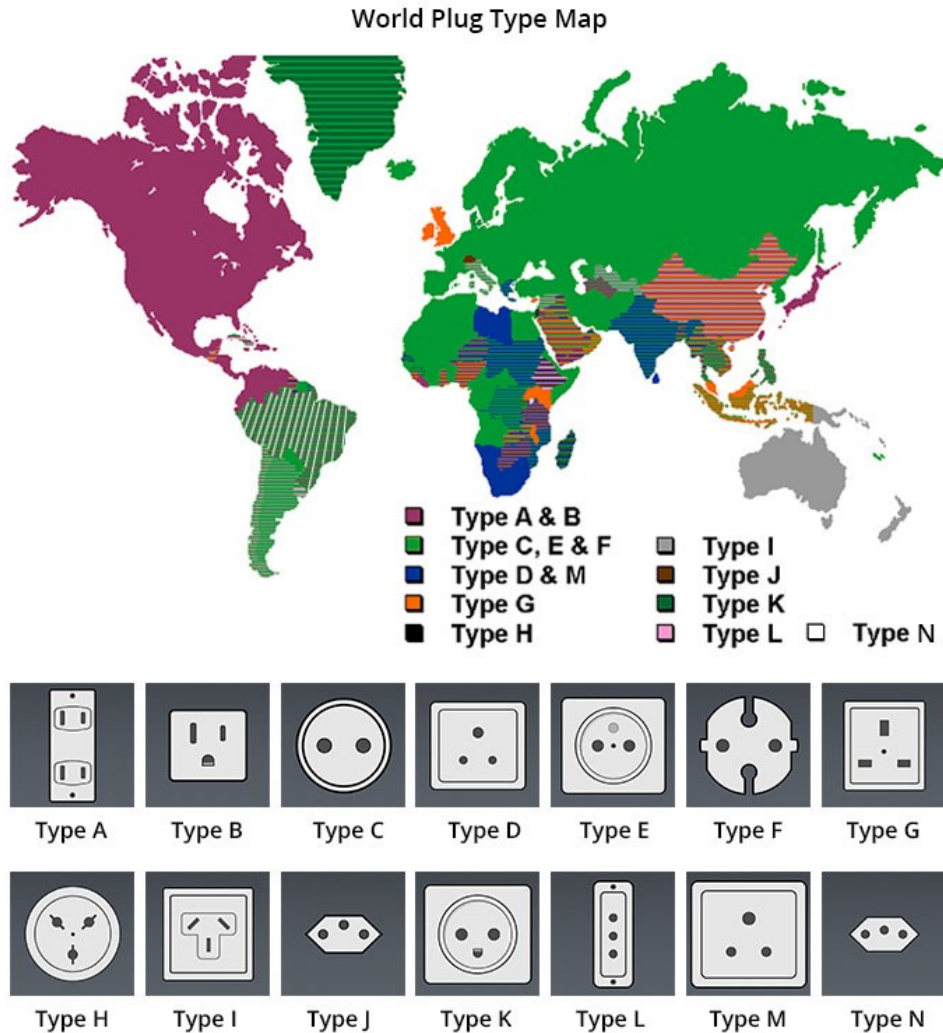
Standards

Why do we need standards ?

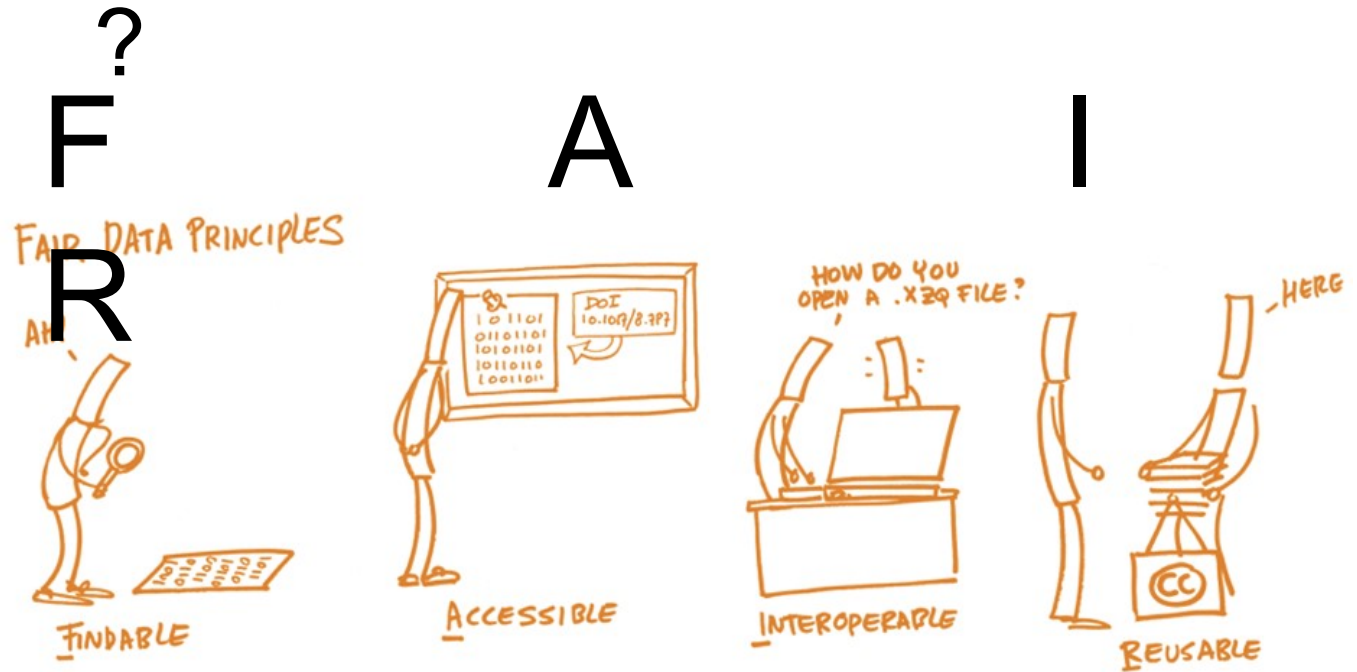




Standards

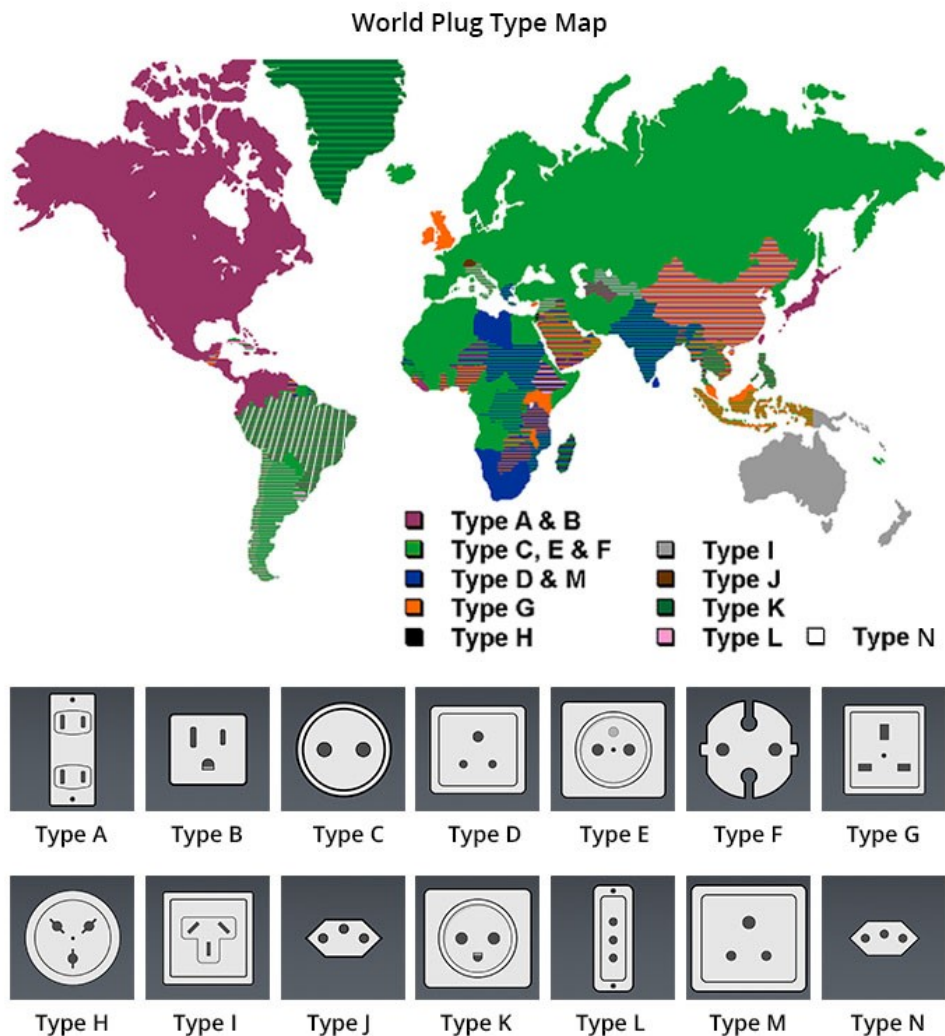


Why do we need standards

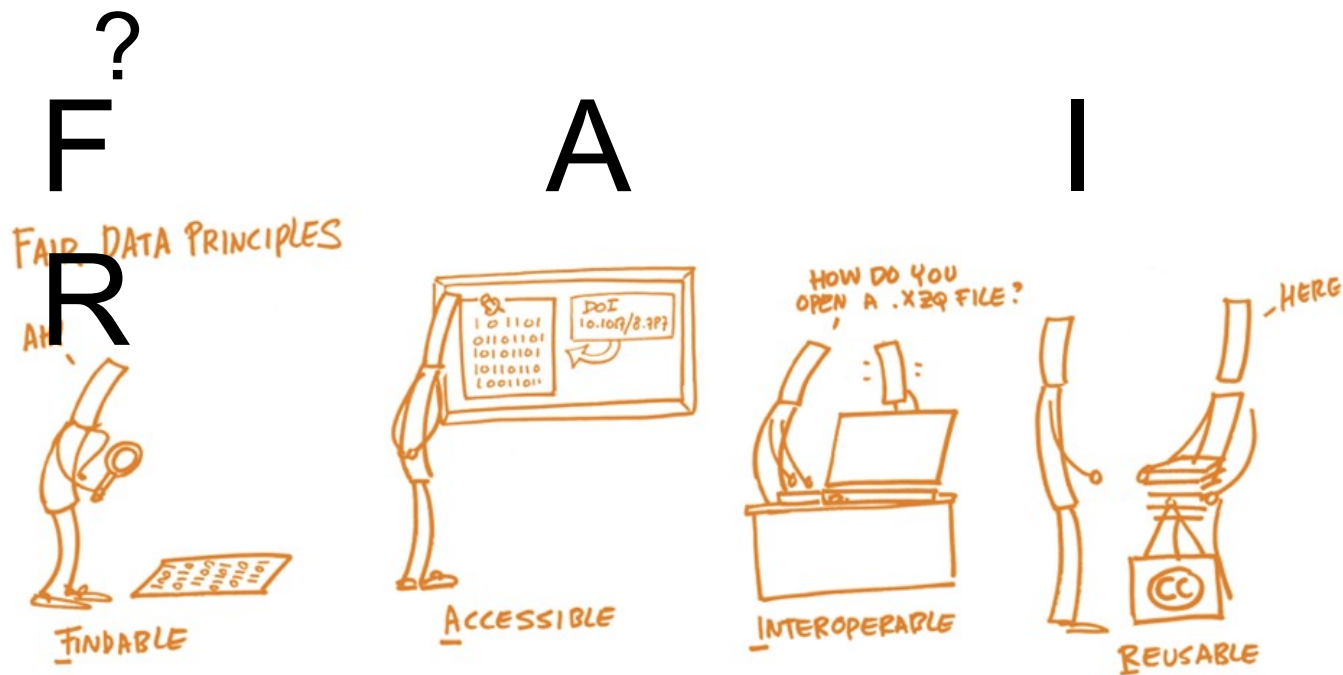




Standards



Why do we need standards



Open
Geospatial
Consortium



Findable



Accessible



Interoperable



Reusable



Standards

EXIF

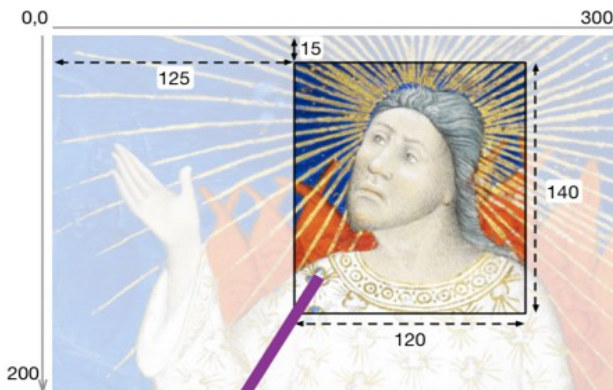
Tag Name		Field Name		Tag ID		Type	Count
				Dec	Hex		
A. Tags Relating to GPS							
GPS tag version	GPSVersionID	0	0	BYTE	4		
North or South Latitude	GPSLatitudeRef	1	1	ASCII	2		
Latitude	GPSLatitude	2	2	RATIONAL	3		
East or West Longitude	GPSLongitudeRef	3	3	ASCII	2		
Longitude	GPSLongitude	4	4	RATIONAL	3		
Altitude reference	GPSAltitudeRef	5	5	BYTE	1		
Altitude	GPSAltitude	6	6	RATIONAL	1		
GPS time (atomic clock)	GPSTimeStamp	7	7	RATIONAL	3		
...	...	...	...	...	...		
Reference for direction of image	GPSImgDirectionRef	16	10	ASCII	2		
Direction of image	GPSImgDirection	17	11	RATIONAL	1		



Standards

EXIF

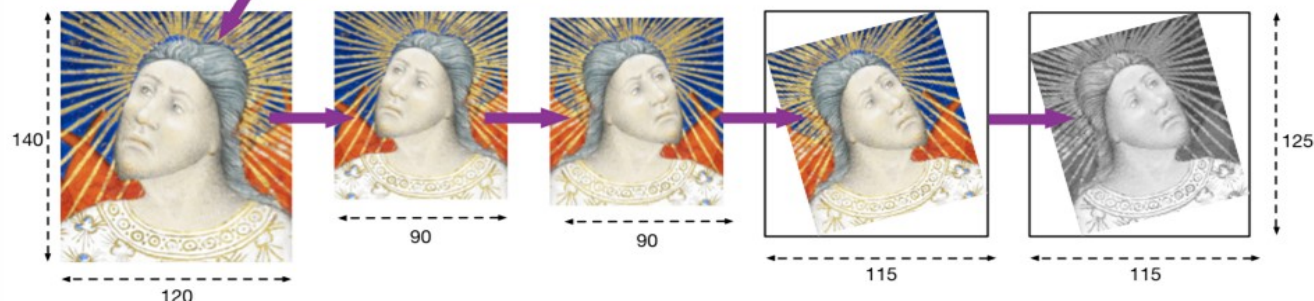
Tag Name	Field Name	Tag ID		Type	Count
		Dec	Hex		
A. Tags Relating to GPS					
GPS tag version	GPSTimeStamp	0	0	BYTE	4
North or South Latitude	GPSLatitudeRef	1	1	ASCII	2
Latitude	GPSLatitude	2	2	RATIONAL	3
East or West Longitude	GPSLongitudeRef	3	3	ASCII	2
Longitude	GPSLongitude	4	4	RATIONAL	3
Altitude reference	GPSAltitudeRef	5	5	BYTE	1
Altitude	GPSAltitude	6	6	RATIONAL	1
GPS time (atomic clock)	GPSTimeStamp	7	7	RATIONAL	3
...	...	...	...	...	...
Reference for direction of image	GPSImgDirectionRef	16	10	ASCII	2
Direction of image	GPSImgDirection	17	11	RATIONAL	1



Two working groups with a “geo” interest:

- [Map Technical Specification Group](#)
- [Map Community Group](#)

*Chaired by people at different Universities
(Yale, St-Louis, Princeton and Stanford)*





Standards



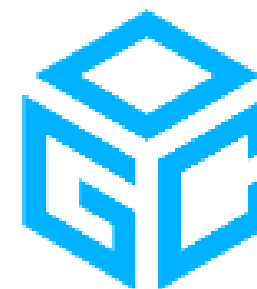
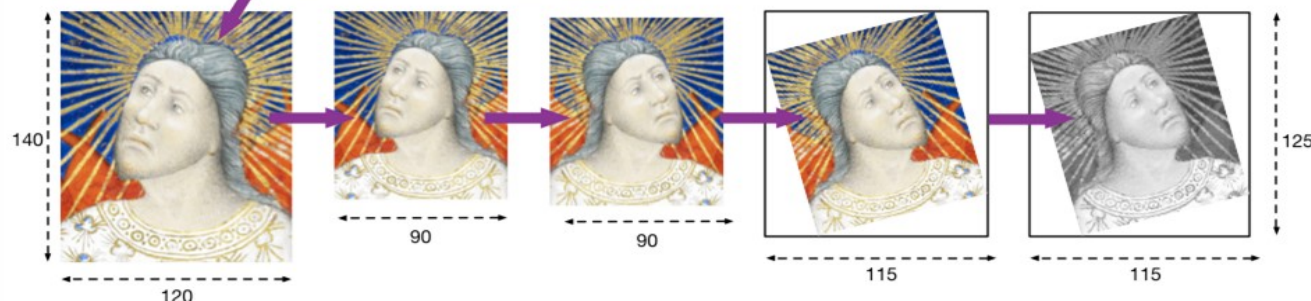
EXIF	Tag Name	Field Name	Tag ID		Type	Count
			Dec	Hex		
A. Tags Relating to GPS						
	GPS tag version	GPSTimeStamp	0	0	BYTE	4
	North or South Latitude	GPSLatitudeRef	1	1	ASCII	2
	Latitude	GPSLatitude	2	2	RATIONAL	3
	East or West Longitude	GPSLongitudeRef	3	3	ASCII	2
	Longitude	GPSLongitude	4	4	RATIONAL	3
	Altitude reference	GPSAltitudeRef	5	5	BYTE	1
	Altitude	GPSAltitude	6	6	RATIONAL	1
	GPS time (atomic clock)	GPSTimeStamp	7	7	RATIONAL	3
	...	...	...	...	...	...
	Reference for direction of image	GPSImgDirectionRef	16	10	ASCII	2
	Direction of image	GPSImgDirection	17	11	RATIONAL	1



Two working groups with a “geo” interest:

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(Yale, St-Louis, Princeton and Stanford)*



Open
Geospatial
Consortium



Standards





Standards



A Community
that **develops** shared **APIs**,
implements them in Software,
and **exposes interoperable** content



Standards



What can IIIF **do**?

- Rich image delivery
- Plug and play software
- Remix, assemble and reuse content
- Cite and share
- Support for attribution and access control
- Publish once, reuse often
- Annotate
- (...)



Standards

Current specifications

API	Current Version	Description
Image API	3.0.0	The IIIF Image API specifies a web service that returns an image in response to a standard HTTP(S) request. The URI can specify the region, size, rotation, quality characteristics and format of the requested image.
Presentation API	3.0.0	The IIIF Presentation API provides the information necessary to allow a rich, online viewing environment for compound digital objects to be presented to a human user, often in conjunction with the IIIF Image API.
Authentication API	1.0.0	The IIIF Authentication specification describes a set of workflows for guiding the user through an existing access control system.
Change Discovery API	1.0.0	The IIIF Change Discovery API provides the information needed to discover and make use of IIIF resources.
Content Search API	1.0.0	The IIIF Content Search API specification lays out the interoperability mechanism for performing searches of text annotations associated with an object within the IIIF context.

<https://iiif.io/api/image/3.0/>

<https://iiif.io/api/presentation/3.0/>

<https://iiif.io/api/auth/1.0/>

<https://iiif.io/api/discovery/1.0/>

<https://iiif.io/api/search/1.0/>

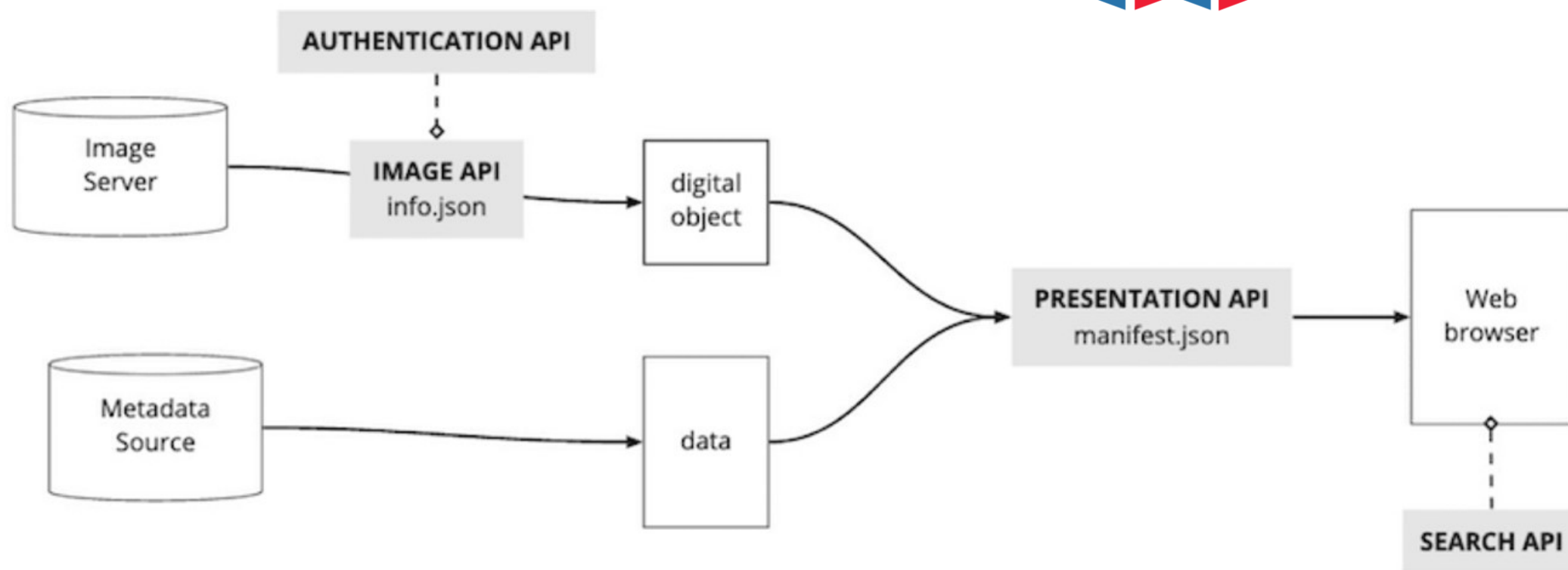


Standards



Delivery

Viewing





Standards

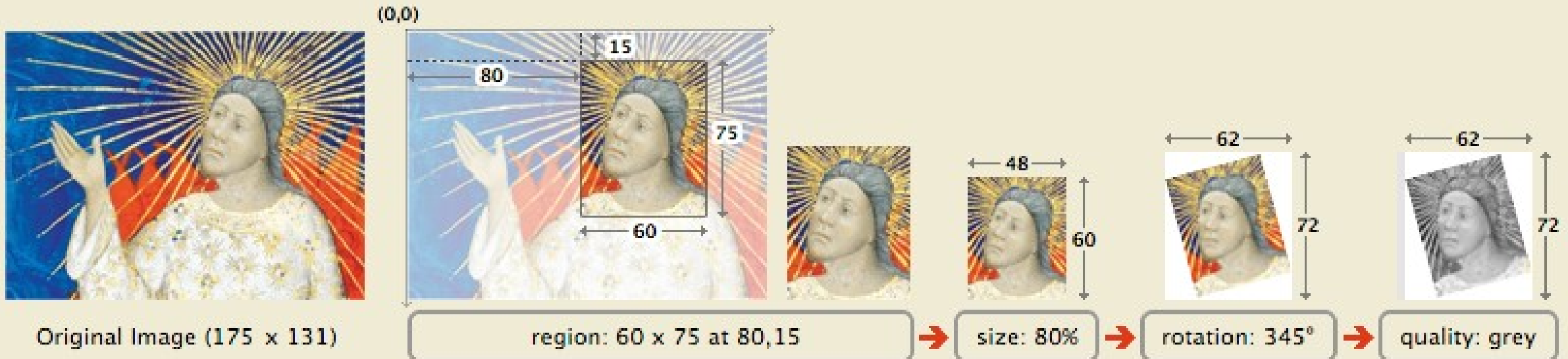
IIIF Image API

<https://iiif.io/api/image/3.0/>

Order of Implementation

<http://www.example.org/image-service/abcd1234/80,15,60,75/pct:80/345/grey.jpg>

region size quality rotation format





Standards

IIIF Image API - example from SARI

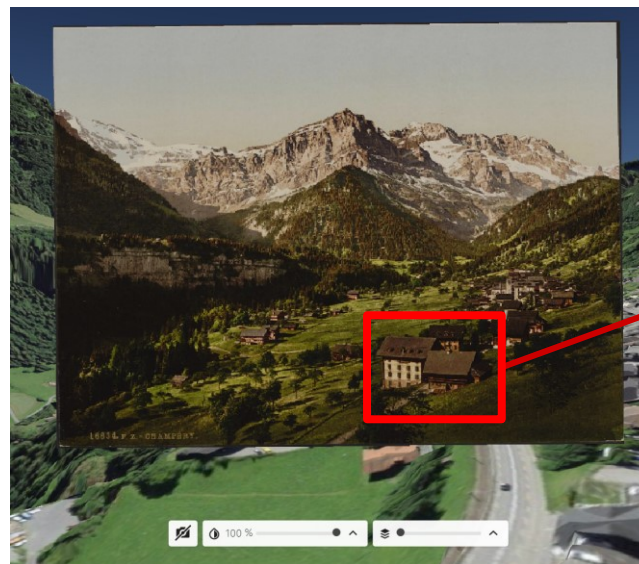
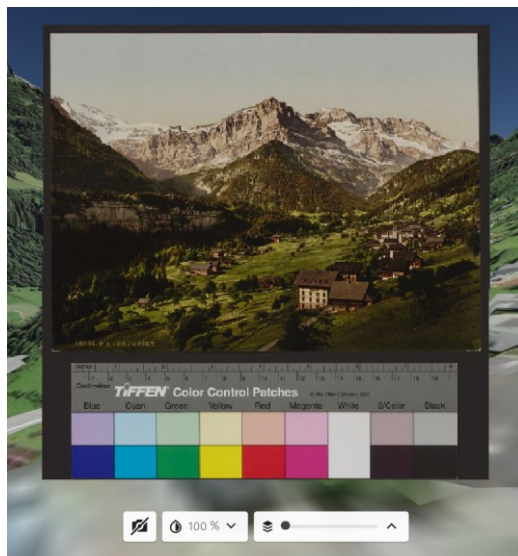


default image: <https://www.e-rara.ch/zuz/i3f/v20/12822483/full/600,/0/default.jpg>

cropped image: <https://www.e-rara.ch/zuz/i3f/v20/12822483/60,60,3565,2660/600,/0/default.jpg>

region

width



Extraction of specific elements possible
Region: 2033,1879,754,577

Example of cropped region

<https://resource.swissartresearch.net/artwork/zbz-990055077710205508>



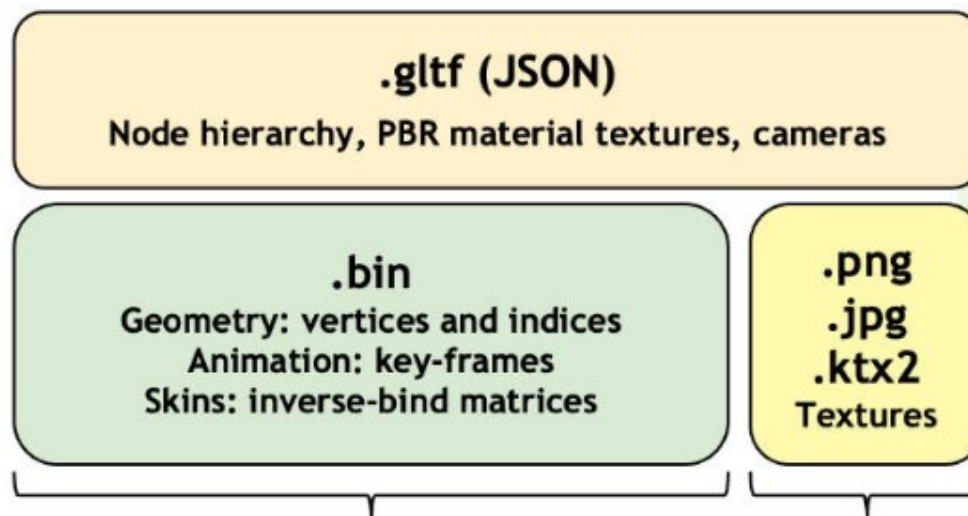
Standards

K H R O N O S[®]
G R O U P





Standards



Geometry



Texture based
PBR materials

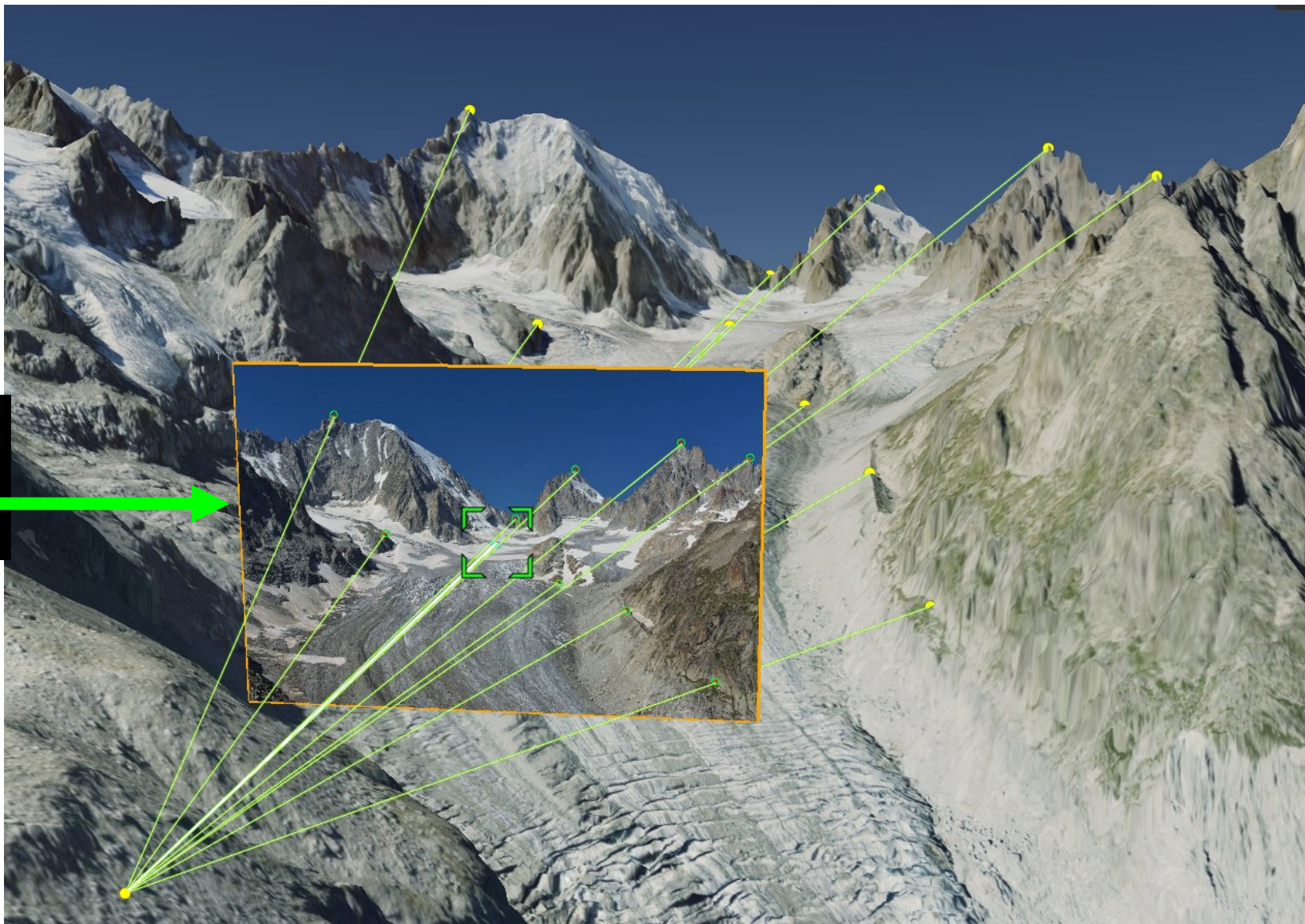
**PBR stands for
“Physically-Based Rendering”**

Mandatory Metallic-Roughness Materials
Base Color (Albedo) | Metalness | Roughness
Emission | Normal Map | Baked Ambient Occlusion

Optional Specular-Glossiness Materials
Diffuse | Specular | Glossiness

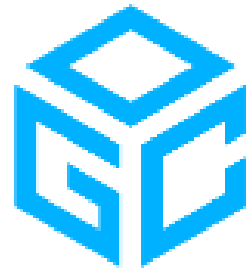


Standards





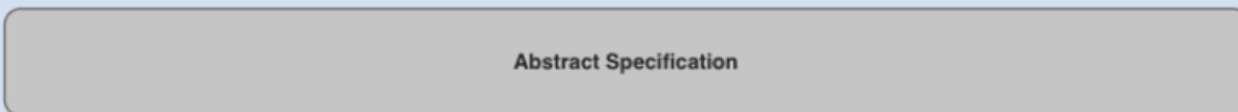
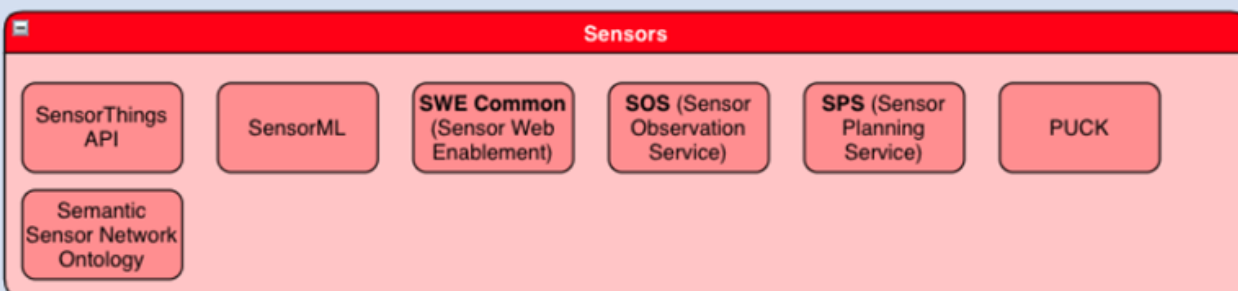
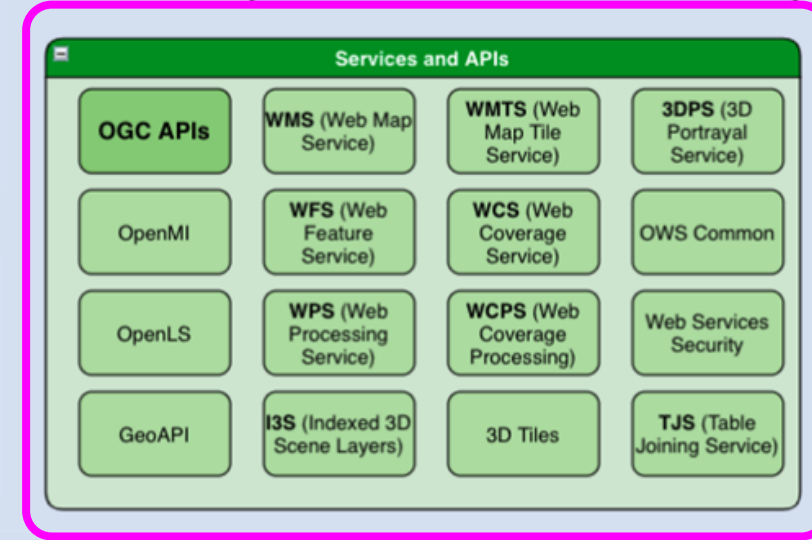
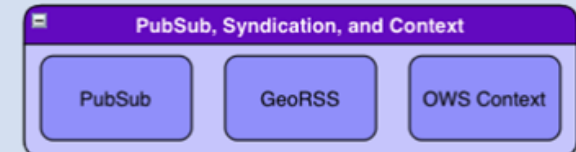
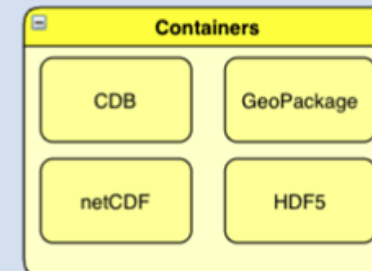
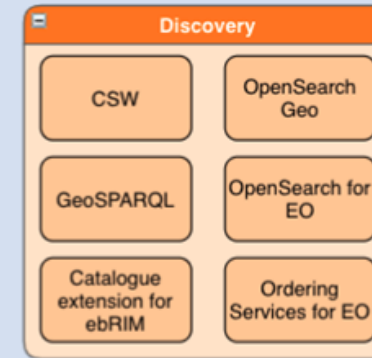
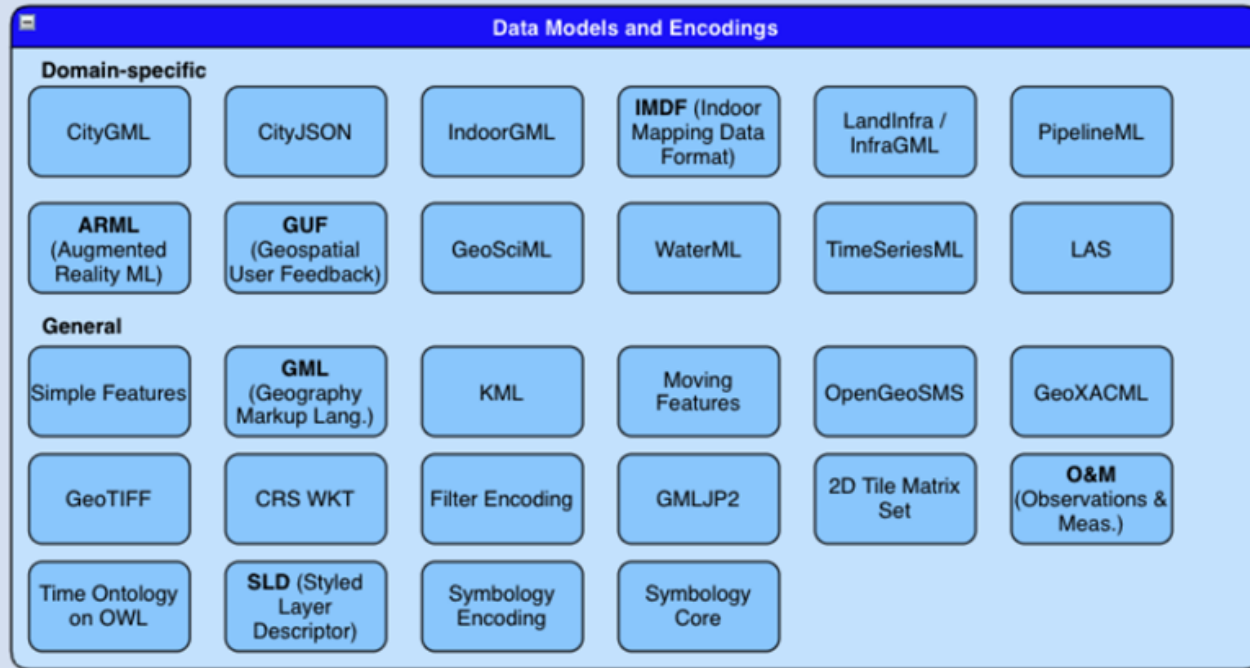
Standards



Open
Geospatial
Consortium



Standards





Standards

Approved and Candidate OGC API Standards

OGC API – Discrete Global Grid Systems



OGC API – Records



OGC API - Maps



OGC API - Styles



OGC API - Tiles



Tile Matrix Set

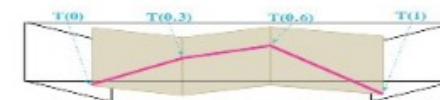
OGC API - Common



OGC API - Routes

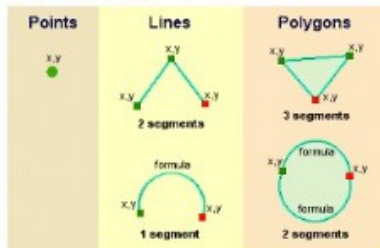


OGC API – Environmental Data Retrieval



Trajectory

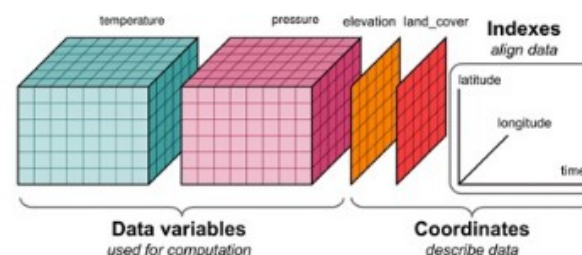
OGC API - Features



OGC API - Processes



OGC API – Coverages



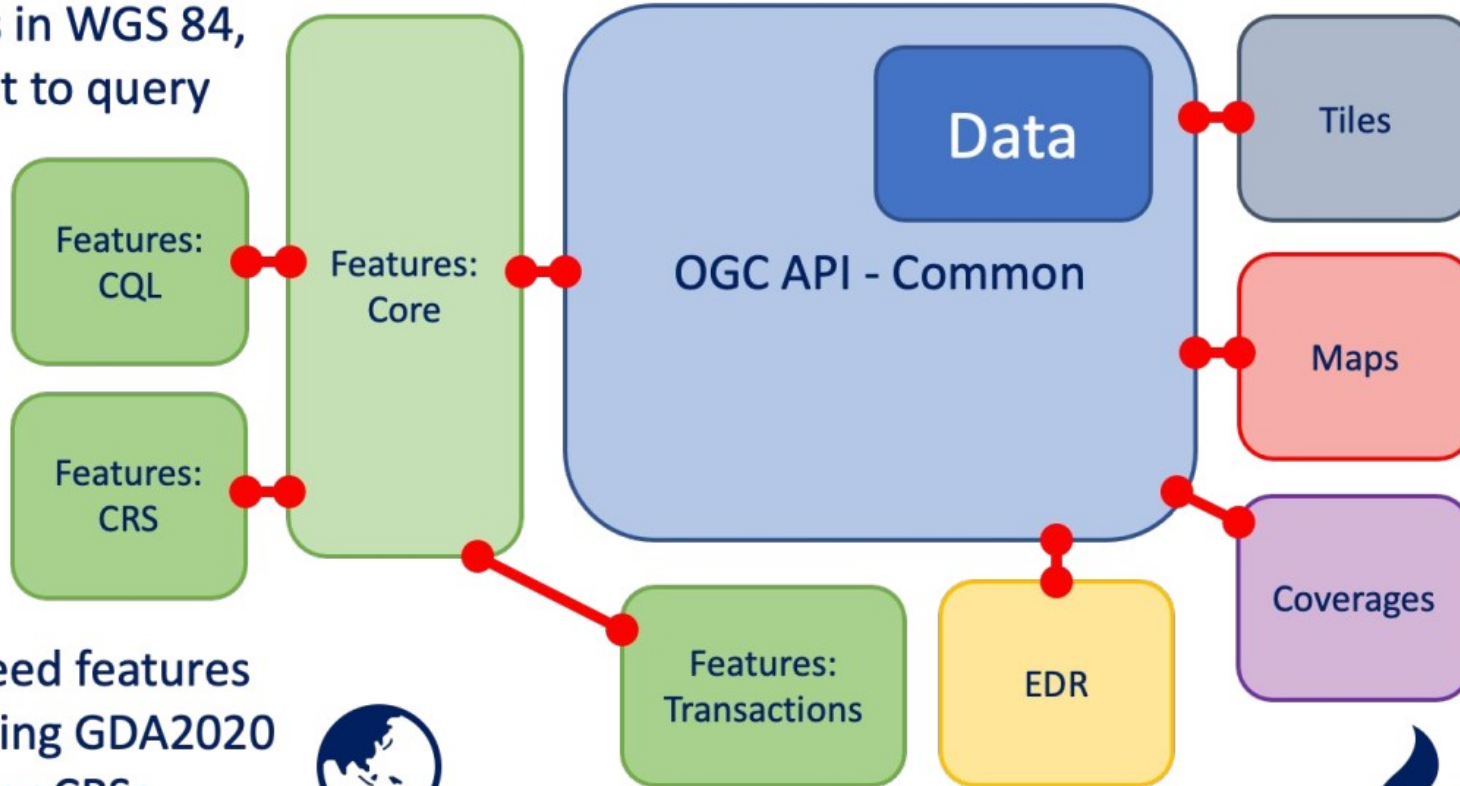
Green border
means
approved



Standards

Deployment Model Example

User: just want
features in WGS 84,
but want to query



User: tile it up
and make it
work on my
phone



User: need features
supporting GDA2020
and other CRSs



User: I am a
fire incident
commander:
give me
everything



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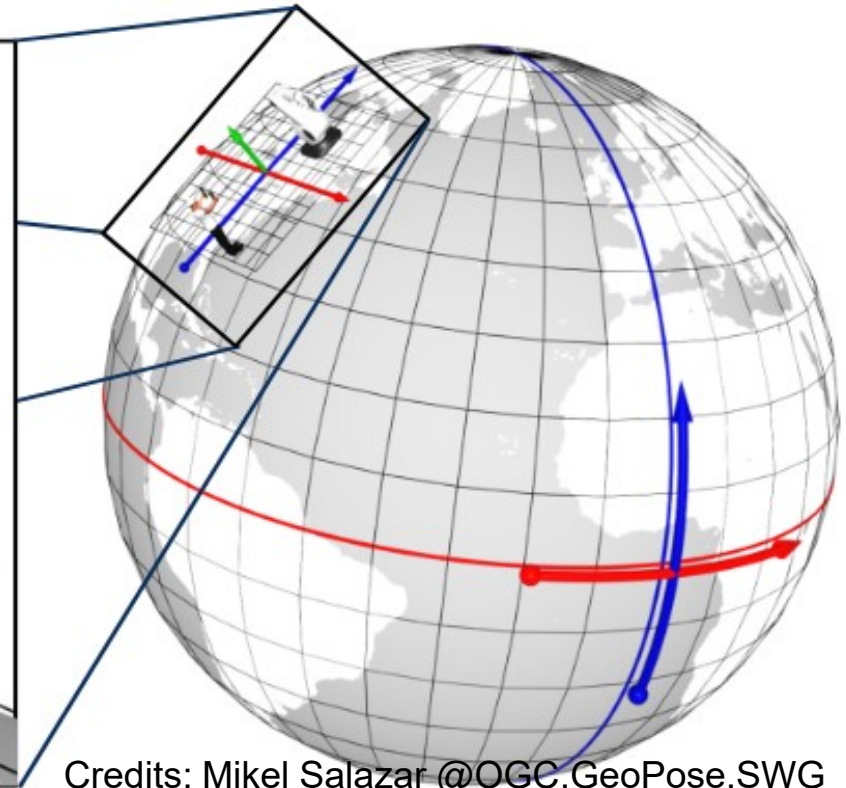
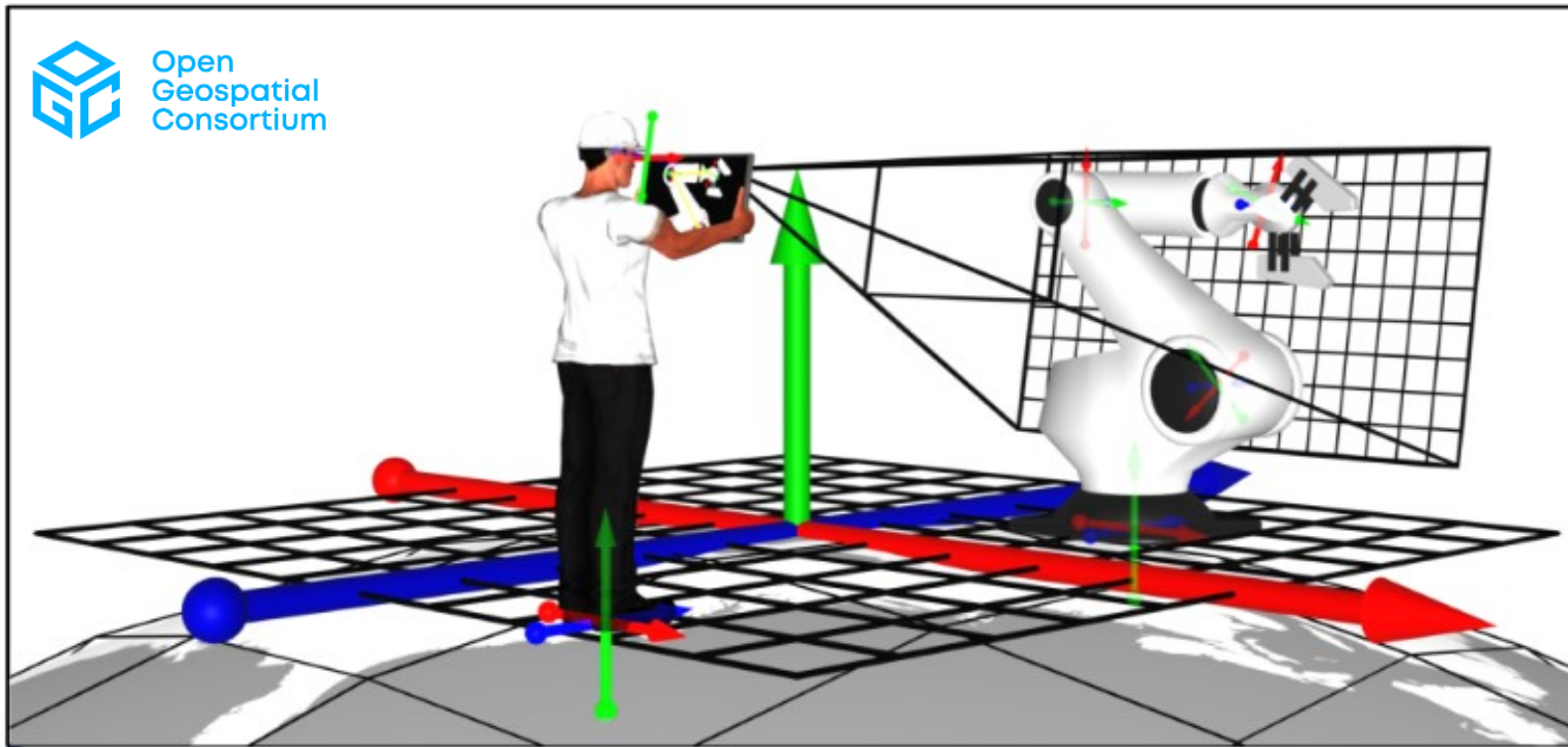
Bundesamt für Landestopografie swisstopo
SmapShot - API - swisstopo



Standards

OGC - GeoPose

*A **GeoPose** is a **Fixed Pose** related to a geospatial **Ephemeris Object** (the Earth) via a **Topocentric Reference Frame**.*



<https://service.geopose.io/solar/solarpose/YPR?longitude=7.45165&latitude=46.92868&height=552>



Standards

[Landing page](#) / [Feature collections](#)

Collections

[footprints](#)

[viewsheds](#)

[toponyms](#)

[images](#)

[Landing page](#) / [Collections](#) / [images](#)

[JSON](#)

images

Available CRSs

- <http://www.opengis.net/def/crs/OGC/1.3/CRS84>
- <http://www.opengis.net/def/crs/EPSSG/9.6.2/4326>
- <http://www.opengis.net/def/crs/EPSSG/9.6.2/3857>

Extent

West

-43.29859000000001

South

-22.990585324294635

East

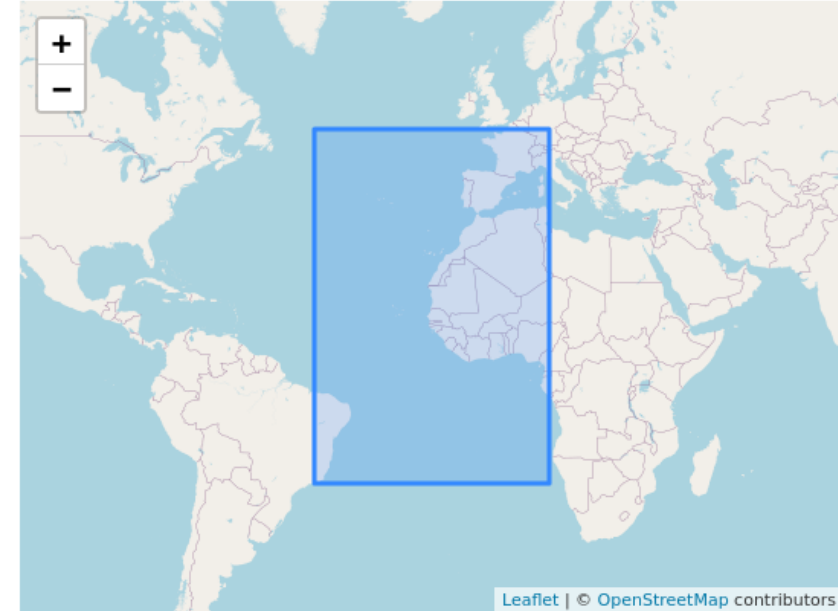
10.816694837022231

North

50.15239791888186

Links

- [Feature collection as JSON](#)
- [images items as GEOJSON](#)
- [images items as HTML](#)
- [Schema for images](#)



Standards

```
▼ geometry:
  ▼ coordinates:
    0: 7.241951
    1: 46.140455
    2: 1681.721004
  type: "Point"
  id: "1212"
  ▶ links: [...]
```

<https://smAPSHOT-beta.heig-vd.ch/wfs3/collections/images/items/1212.geojson>

```
▼ properties:
  apriori_altitude: 200
  azimuth: 318.04976673795755
  collection_id: 2
  date_shot: "1962-08-01"
  ▼ download_link: "https://smAPSHOT.heig-vd.ch/api/data/collections/2/images/1500/1212.jpg"
  focal: 2022.296634335003
  geolocalisation_id: 2131
  ▼ geopose:
    ▼ angles:
      pitch: -6.634901775911445
      roll: -3.462656864968962
      yaw: 318.04976673795755
    ▼ position:
      h: 1681.7210038275014
      lat: 46.14045529329568
      lon: 7.241951264836277
  geotag_created: true
  geotag_timestamp: "2018-04-05T09:23:40.587"
```

Demo : <http://smAPSHOT-beta.heig-vd.ch/wfs3/>

powered by :



server



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4. swisstopo

swisstopo

Théo

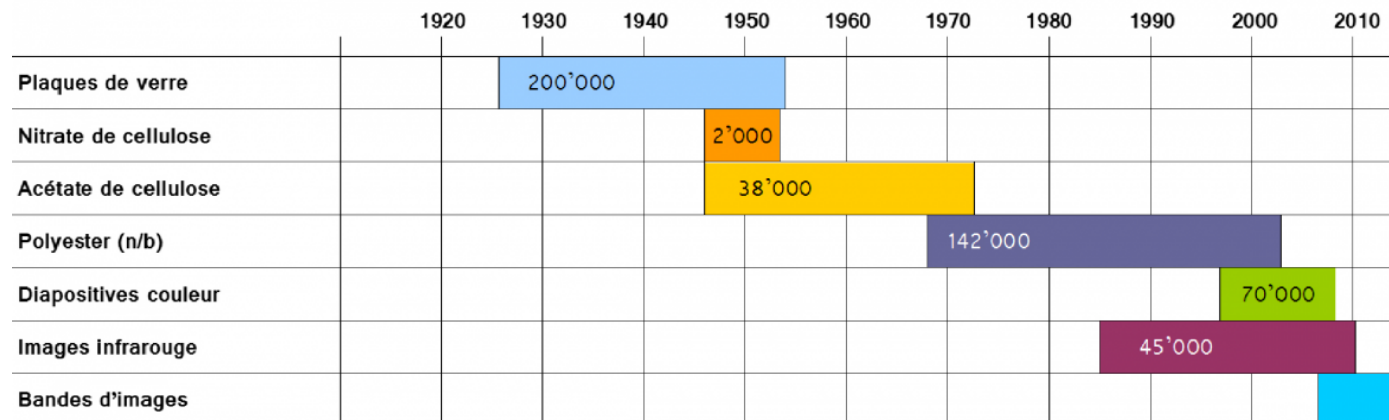
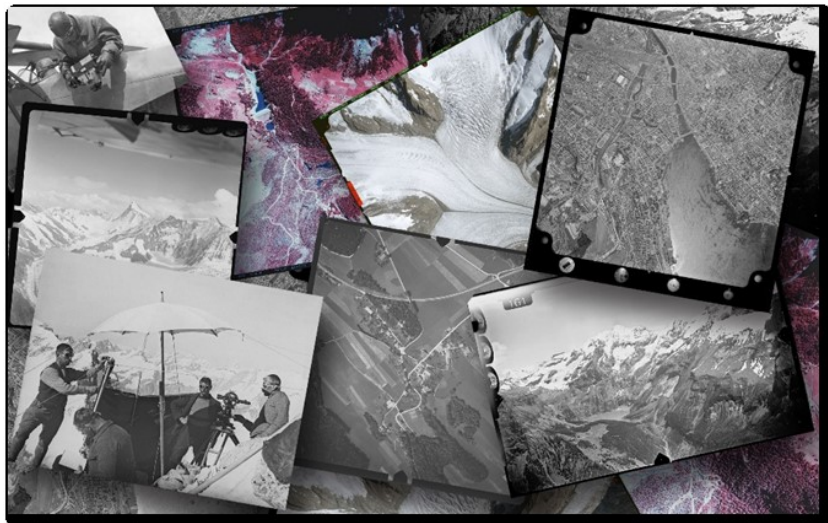




Historische Bilder Swisstopo

Images historiques Swisstopo

- Ca. halbe Million analoge Aufnahmen
 - Zeitraum: 1880 bis heute
 - Inhalt: Luftbilder, Terrestrische Aufnahmen und Arbeitsdokumentation
- *Environ un demi-million d'enregistrements analogiques*
 - *Période : 1880 à aujourd'hui*
 - *Contenu : Photos aériennes, prises de vue terrestres et documentation de travail*



*Collections dans LUBIS (images de mesure)
et dans MEMOBASE (images documentaires)*



Historische Bilder swisstopo - Bildsammlung

Images historiques swisstopo - collections

- Terrestrische Aufnahmen
- Luftbilder Siegfriedkarte
- LB Landeskarten 1:25k und 1:50k
- LB für die Gesamtnachführung der LK 1:25k und 1:50k
- Farbige Luftbilder SWISSIMAGE
- Auftragsaufnahmen der KSL
- LB - Übersichtsplänen
- LB Photoatlas 1946
- Technische Aufnahmen
- *Prises de vue terrestres*
- *Photos aériennes - carte Siegfried*
- *PA - cartes nationales au 1:25k et 1:50k.*
- *PA - mise à jour complète des CN 1:25k et au 1:50k.*
- *PA en couleur SWISSIMAGE*
- *Prises de vue réalisées par le SCPVA*
- *PA - plans d'ensemble*
- *PA pour l'Atlas photo 1946*
- *Prises de vue techniques*



Snapshot und Swisstopo *Snapshot et Swisstopo*

2 swisstopo Sammlungen georeferenziert durch Snapshot:

- Terrestrische Aufnahmen, 57'726 Bilder (100%)
- Luftbilder Vermessungsdirektion V+D, 10-15'000 Bilder (Package 1, 1'250 Bilder, 99%), um die Georeferenzierung von ca. 100'000 Bildern zu ermöglichen

2 collections swisstopo georeferenciées par Snapshot:

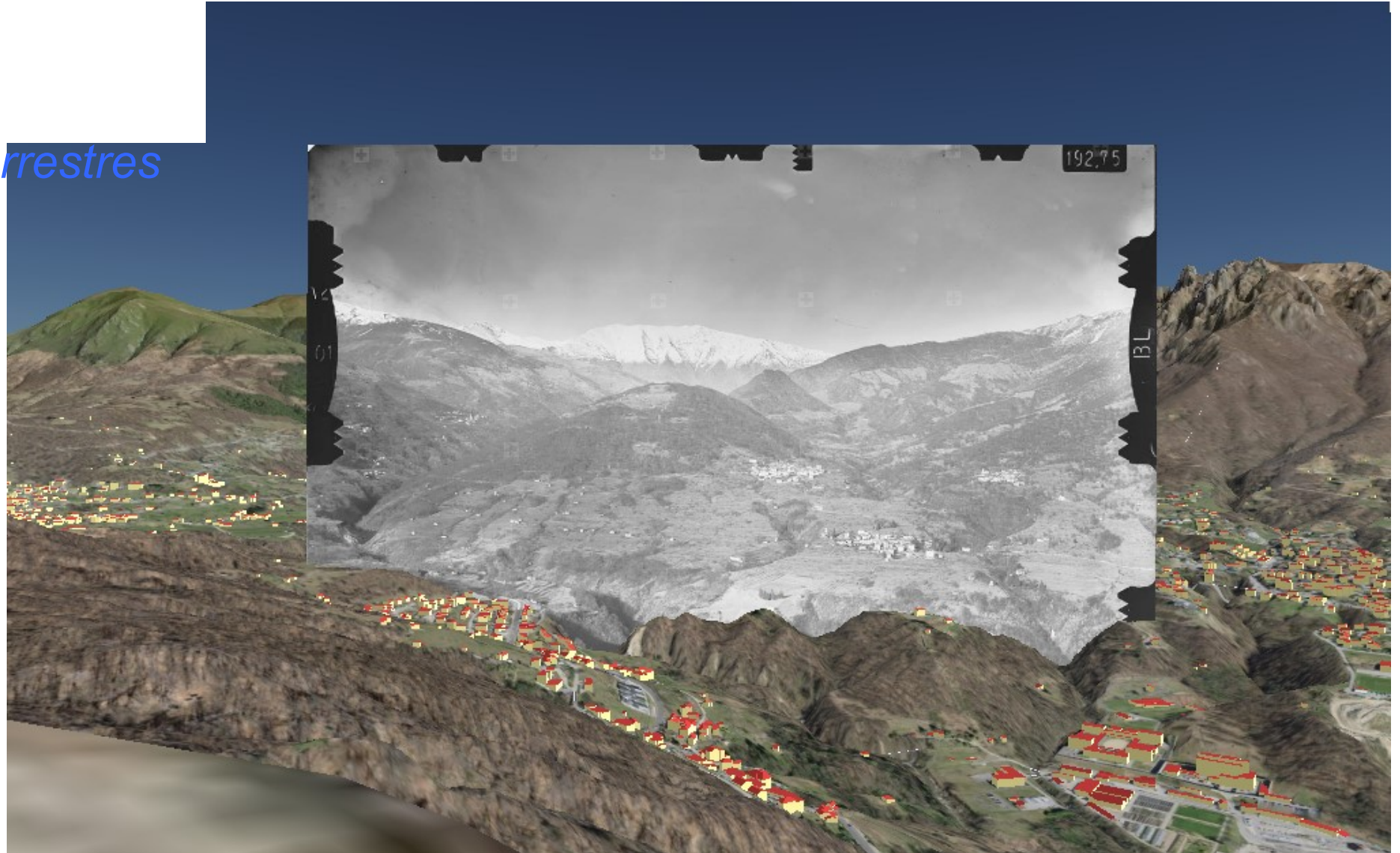
- *Prises de vue terrestres, 57'726 images (100%)*
- *Photos aériennes Direction des Mensurations D+M, entre 10-15'000 images (Package 1, 1'250 images, 99%) pour permettre le géoréférencement d'environ 100'000 images*



Snapshot und swisstopo *Snapshot et swisstopo*

Terrestrische
Aufnahmen

Prises de vue terrestres





Snapshot und swisstopo *Snapshot et swisstopo*

Luftbilder

Vermessungsdirektion V+D

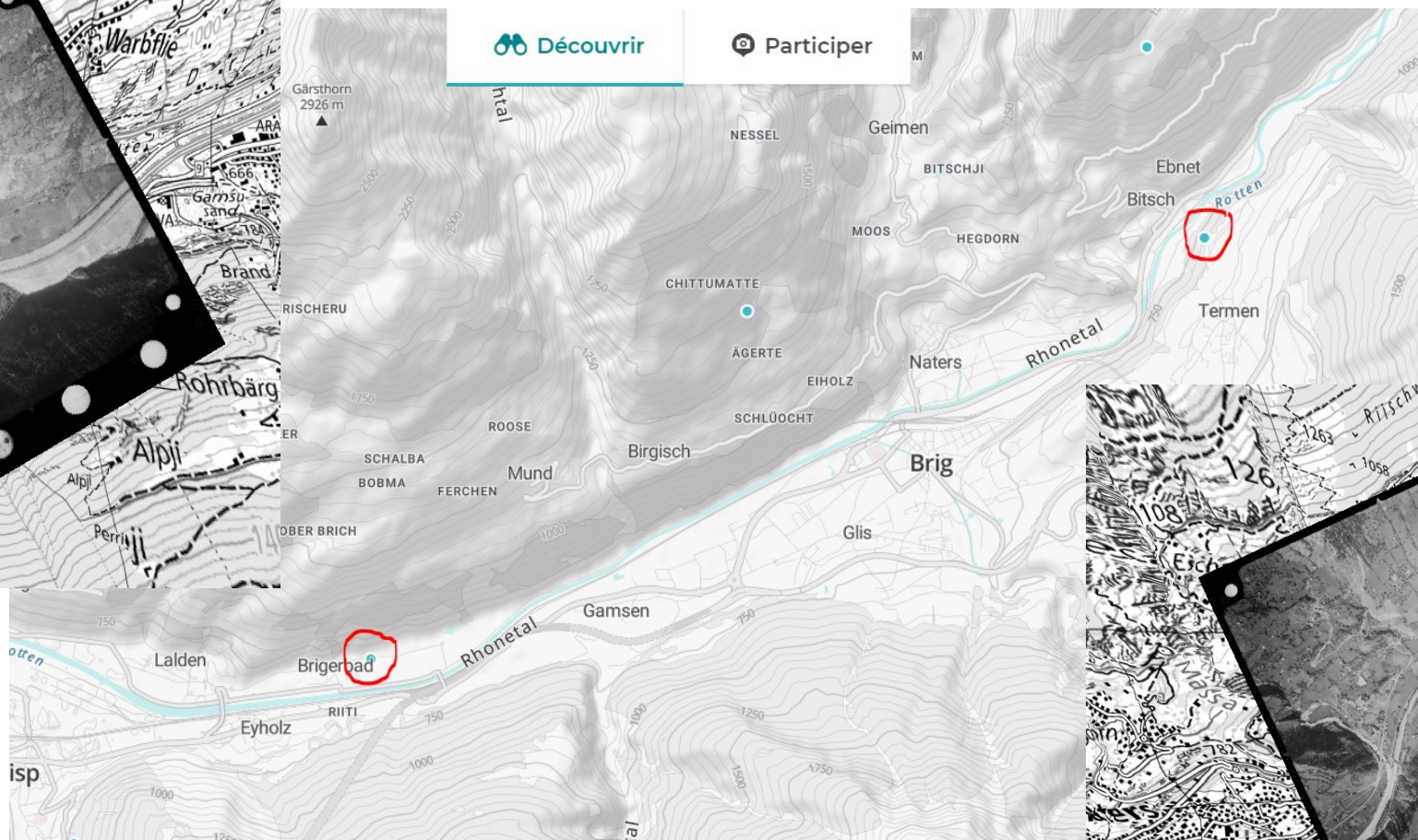
*Photos aériennes Direction
des Mensurations D+M*

[Contribuer / Snapshot
\(heig-vd.ch\)](#)



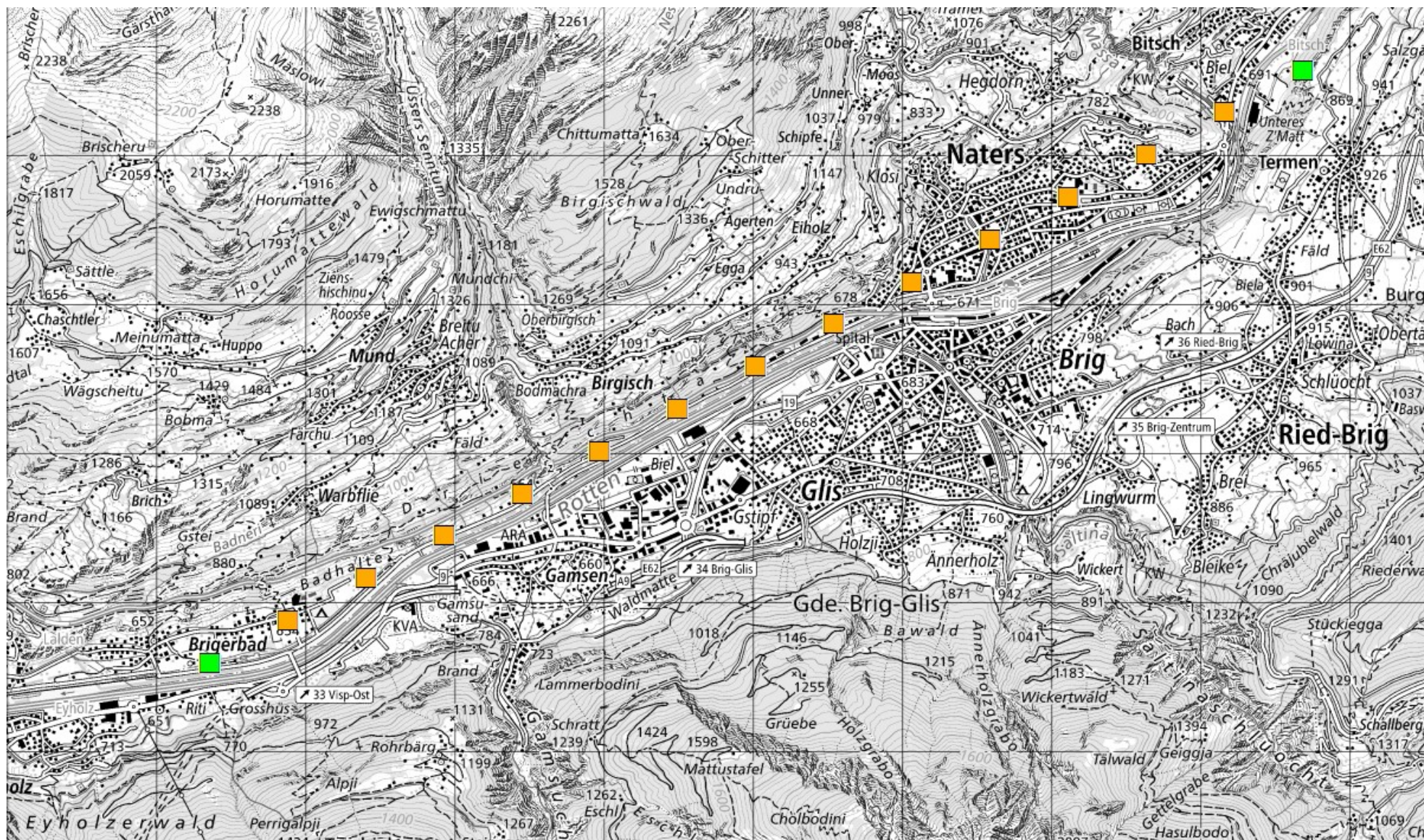


Snapshot und swisstopo *Snapshot et swisstopo*





Snapshot und swisstopo *Snapshot et swisstopo*

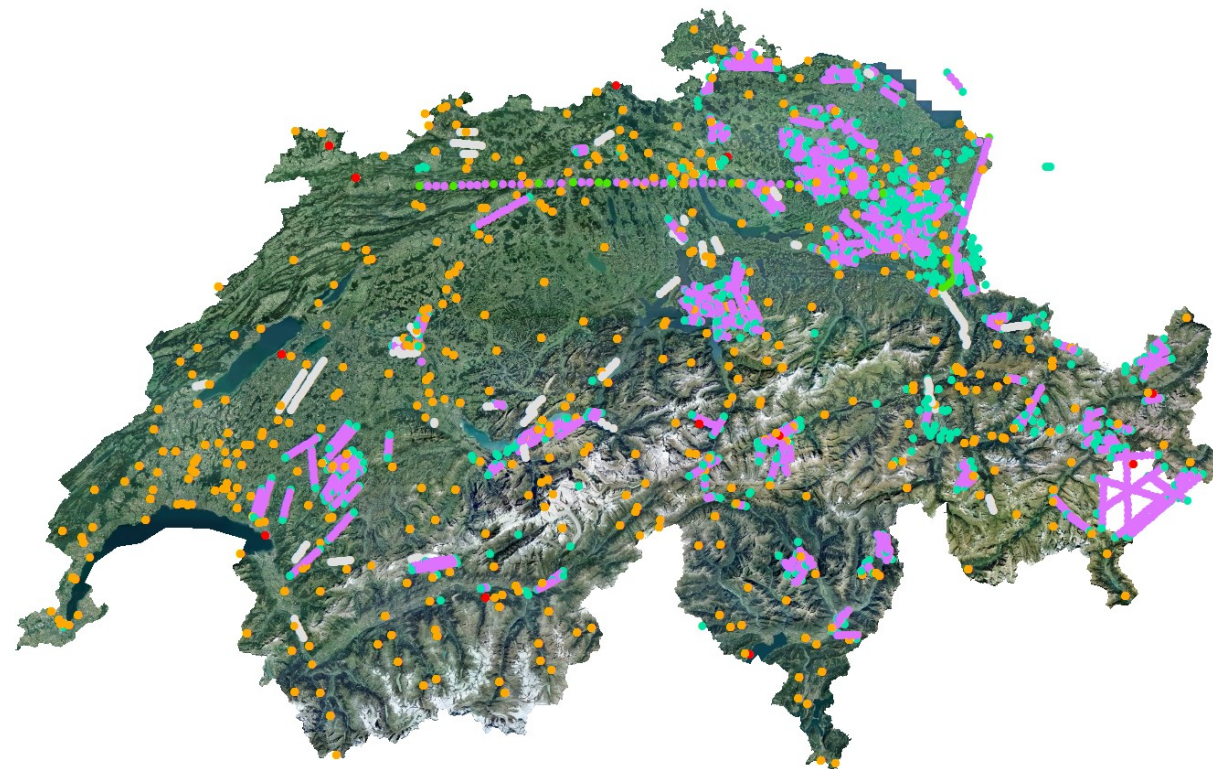
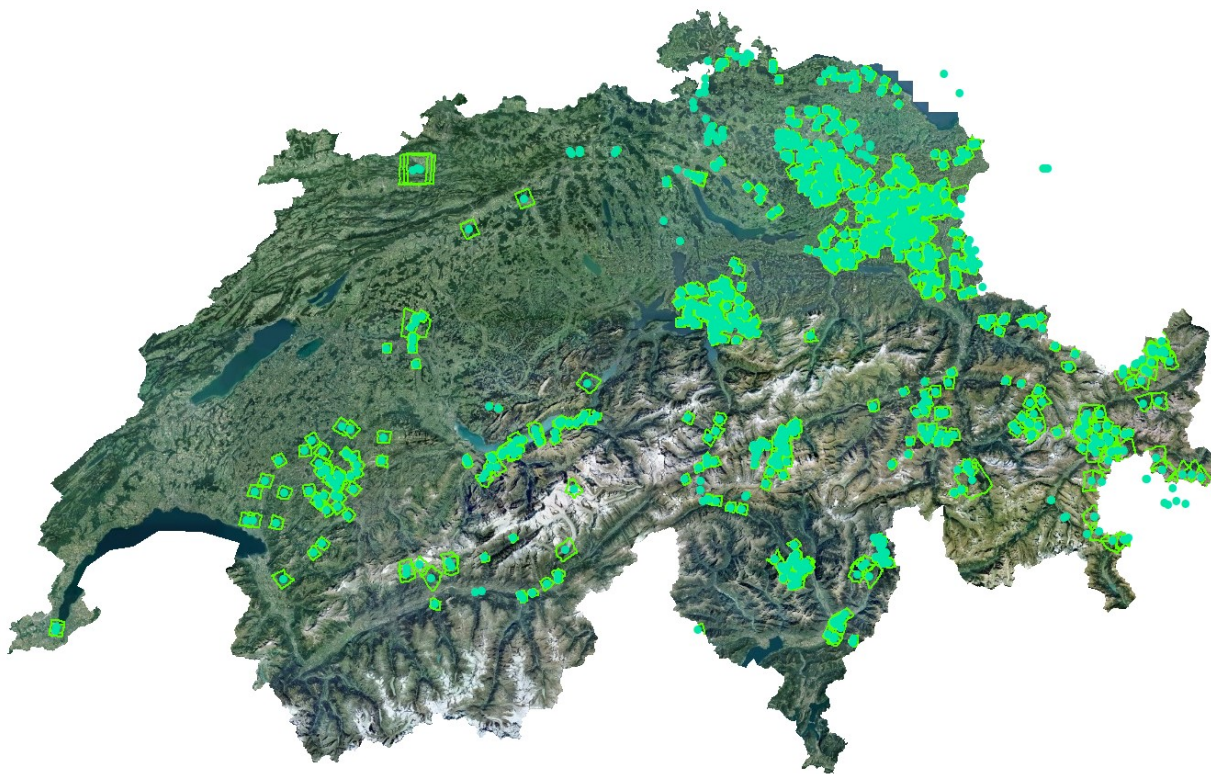


Bundesamt für Landestopografie swisstopo

SmapShot - API - swisstopo



Snapshot und swisstopo *Snapshot et swisstopo*





Aktueller Vorgang *Fonctionnement actuel*

swisstopo liefert einen Ordner mit Overviews und einen mit Metadaten via filetransfer.admin.ch.

swisstopo livre un dossier avec les overviews et un autre avec les métadonnées par filetransfer.admin.ch.

```
delivery/  
└── YYYY/  
    ├── data/  
    │   └── YYYY_vd_to_geolocate.csv  
    └── quickviews/  
        ├── XXX-XXX-XXX.jpg  
        ├── ...  
        └── ...
```

Die Metadaten werden als csv (utf-8, semikolon) geliefert.

Attribut	Beschreibung	Bemerkung
INVENTORY_NUMBER	Inventarnummer	
IMAGE_NUMBER	Bildnummer	
FILENAME	Dateiname, abgeleitet aus Inventarnummer	
REGION	Hinweis auf den Ort/die Region der Aufnahme	
YEAR	Aufnahmejahr	
FOCAL_LENGTH_MM	Brennweite in mm	neu ab 2022
MEDIUM_WIDTH_MM	Breite des Bildträgers in mm	neu ab 2022
MEDIUM_HEIGHT_MM	Höhe des Bildträgers in mm	neu ab 2022
LONGITUDE	A-priori Ost-Koordinate in WGS84, hergeleitet aus REGION	neu ab 2022
LATITUDE	A-priori Nord-Koordinate in WGS85, hergeleitet aus REGION	neu ab 2022



Aktueller Vorgang *Fonctionnement actuel*

Manueller Download (csv file) der Metadaten und Integration in die Originaldatenbank.

Téléchargement manuel (csv file) des métadonnées et intégration dans la base de données originale.

The screenshot shows the 'Export Metadata' interface of the Smapshot application. The left sidebar contains navigation options: 'My parameters', 'Validations', 'Export' (highlighted), 'e-mail', 'Data' (highlighted), 'Management', 'My georeferencings', 'My observations', 'My corrections', and 'My ranking'. The main content area is titled 'Dashboard / Export / Data'. It features a 'Select Data' section with a 'Type' dropdown set to 'Images'. Below this is a 'Validation' section with fields for 'Start date', 'To', and 'End date'. A 'Collections' dropdown is set to 'Luftbilder Vermessungsdire...'. The 'Image original Id' field contains the text 'values separated by comas'. A 'Retrieve Data' button is visible. The 'Export Options' section includes a 'File name' field, a 'Cell Auto-Width' radio button set to 'False', a 'Format' dropdown set to 'CSV', and an 'Export' button. A warning message states: 'Only the first elements are displayed. Full data will be exported.' Below this is a table with the following data:

Id	Image original Id	latitude	longitude
202149	409812	47.2241467215379	8.45656523712995
202150	425587	47.6439644015108	9.20508389236683
202151	394068	47.1684396523959	9.13903962377415



Ausblick aus dem API: swisstopo-Smapshot

Perspectives données par l'API: swisstopo-Smapshot

- Automatischer Download, Update und Upload von swisstopo-Metadaten.
- Grosse Zeitersparnis bei der Weitergabe von Informationen.
- Fast-Live-Aktualisierung der Datenbanken im Viewer map.geo.admin.ch
- *Download, Update et Upload des métadonnées swisstopo de manière automatique.*
- *Grand gain de temps dans le transfert d'informations.*
- *Mise à jour quasi live des bases de données et dans le viewer map.geo.admin.ch*



Ausblick aus dem API: swisstopo-Smapshot

Perspectives données par l'API: swisstopo-Smapshot

- Erhöhung der Interoperabilität dieser Daten
- Hervorhebung von Sammlungen, die der breiten Öffentlichkeit nicht unbedingt bekannt sind
- *Augmentation de l'interopérabilité de ces données*
- *Mise en valeur de collections pas forcément connues par le grand public*



Ausblick aus dem API: swisstopo-Smapshot

Perspectives données par l'API: swisstopo-Smapshot

Technische Aufnahmen

Prises de vue techniques





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5. Fazit

Conclusions

Jens, David



Fazit *Conclusion*

- Historische georeferenzierte Bilder : grosses Potenzial!
- API : funktionierendes, dokumentiertes Open-Source API
-> Erste Use-cases (SARI, Landschaftsbeobachtungen, Widgets)
- Standards : Geo-Standards vs Medienstandards
- *Photos historiques géolocalisées : grand potentiel!*
- *API : fonctionnel, documenté et open-source.*
-> Premiers cas d'utilisation (SARI, OPP, Widgets)
- *Standards : standards géo vs standards média*



Fazit II *Conclusion II*

1. API & Nutzerinterface: Geodaten ausserhalb des klassischen Geo Kontext nun nutzbar
2. “once only” API für LUBIS / SMAPSHOT / luftbildindex.ch und weitere

-> Zugang und damit NUTZUNG Luftbilder/Terrestrische Aufnahmen wird einfacher

Dank **Offenen Standards, Offener Software und der Orchestrierung**

Wo geht die Reise hin? zu “einer zentralen Infrastruktur für Luftbilder“

1. *API & interface utilisateur : Données géographiques désormais utilisables en dehors du contexte géo classique*
2. *API "once only" pour LUBIS / SMAPSHOT / luftbildindex.ch et autres*

-> L'accès et donc l'UTILISATION de photos aériennes / de prises de vue terrestres devient plus simple.

*Grâce aux **standards ouverts, aux logiciels ouverts et à l'orchestration.***

Où va-t-on ? vers "une infrastructure centrale pour les photos aériennes"

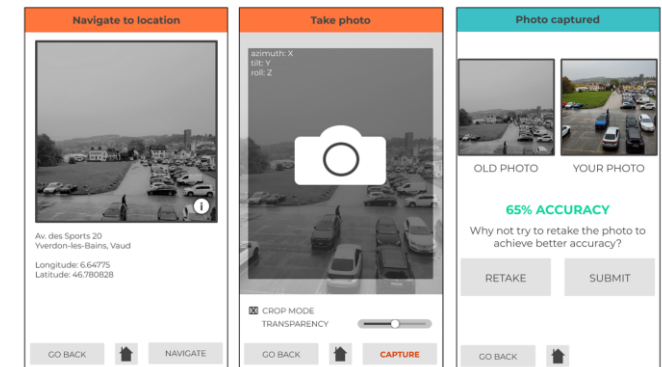


Outlook

- **Benutzung von historischen georeferenzierten Bildern**
-> Metadaten, Landschaftsanalysen, Rephotographie etc
- **Automatische Georeferenzierung**
-> KI : Benutzen von Luftbildern, um Algorithmen zu trainieren, um Objekte wiederzuerkennen
- **Integration in anderen Applikationen (web, desktop, mobile)**
- *Utilisation de photos historiques géoréférencées*
-> *Métadonnées, analyses paysagères, rephotographie etc.*
- *Géoréférencement automatique*
-> *IA : utilisation de photos aériennes pour entraîner des algorithmes de reconnaissance d'objets.*
- *Intégration dans d'autres applications (web, desktop, mobile)*



Rephotography M Scherer



MSc Thesis U Lund
C Karlsson / A Hirschfeld



Aufnahme wird unter www.youtube.com/swisstopo zur Verfügung stehen

Video est enregistrée et disponible sur www.youtube.com/swisstopo