Package 'frheritage'

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Title R Interface to Get French Heritage Data

Version 0.1.2

Description Get spatial vector data from the Atlas du Patrimoine (<http://atlas.patrimoines.culture.fr/atlas/trunk/>), the official national platform of the French Ministry of Culture, and facilitate its use within R geospatial workflows. The package provides functions to list available heritage datasets, query and retrieve heritage data using spatial queries based on user-provided sf objects, perform spatial filtering operations, and return results as sf objects suitable for spatial analysis, mapping, and integration into heritage management and landscape studies.

License GPL (>= 3)

Encoding UTF-8

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Imports jsonlite, happign, httr2, sf, xml2

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`all_ids` *Available layer datasets*

Description

A dataset containing available layer datasets from the French Ministry of Culture's "Atlas du Patrimoine" service.

Usage

```
all_ids
```

Format

A `data.frame` with 5 columns:

id (character) Layer id.

title (character) Layer title.

guid (integer) Layer guid.

code (character) Internal code, determined from tile.

departement (character) Layer department

Details

Contains only data available on the 96 departments of metropolitan France.

`get_deps` *Retrieve INSEE department codes from an sf object*

Description

This function retrieves the INSEE administrative department codes (`code_insee`) intersecting the features of a given `sf` object. It relies on the *Admin Express COG* WFS service provided by IGN, accessed via the **happign** package.

Usage

```
get_deps(x)
```

Arguments

`x`	An `sf` object defining the area(s) of interest.

Details

The function performs the following steps:

1. Transforms the input geometries to CRS:4326.
2. Computes centroids of the geometries.
3. Queries the IGN WFS service (*Admin Express COG*) to retrieve departments.
4. Performs a spatial join using `sf::st_intersects()`.
5. Extracts and returns unique `code_insee` values.

Notes:

- The function depends on the availability of the IGN WFS service.
- Large or complex geometries may cause the request to fail.
- In such cases, consider simplifying or reducing the spatial extent of `x`.

Value

A `character` vector of unique INSEE department codes intersecting the input geometries. Returns `NULL` if no intersection is found or if the WFS request fails.

Examples

```
if (interactive()) {

  # Minimal sf object (point in Paris)
  x <- sf::st_sf(
    geometry = sf::st_sfc(
      sf::st_point(c(2.35, 48.85)),
      crs = 4326
    )
  )

  # Retrieve department code
  get_deps(x)

  # Multiple locations (Paris and Rouen)
  x2 <- sf::st_sf(
    geometry = sf::st_sfc(
      sf::st_point(c(2.35, 48.85)),  # 75
      sf::st_point(c(1.09, 49.44)),  # 76
      crs = 4326
    )
  )

  get_deps(x2)

}
```

`get_heritage` *Retrieve and download heritage spatial data for a given sf object*

Description

This function retrieves and downloads spatial heritage datasets from the French Ministry of Culture's "Atlas du Patrimoine" service.

Usage

```
get_heritage(x, data_code, buffer = 2500, crs = 2154, verbose = TRUE)
```

Arguments

`x`	An `sf` object defining the area of interest.
`data_code`	A single `character` heritage dataset codes to retrieve. Valid codes can be obtained with `get_heritage_layernames()`.
`buffer`	A `numeric` value (default = 2500). Buffer distance in meters used to slightly expand geometries before querying.
`crs`	An `integer` or `sf::st_crs` object (default = 2154). Coordinate reference system used for spatial processing.
`verbose`	Logical. If `TRUE` (default), prints progress and diagnostic messages.

Details

It uses the spatial extent and inferred department(s) of the input `sf` object to query an internal registry of heritage datasets, then downloads and merges the corresponding spatial layers.

This function currently supports metropolitan France departments (96 units).

Internally, the function:

1. Validates the input `data_code` against an internal registry.
2. Prepares and optionally buffers the input geometry.
3. Computes spatial extents (bounding boxes) for each feature.
4. Assigns each feature to one or more administrative departments.
5. Filters available heritage records using an internal dataset registry.
6. Builds query URLs for the Atlas du Patrimoine service.
7. Downloads ZIP archives containing shapefiles.
8. Reads, validates, and merges the resulting `sf` objects.

Partial failures are tolerated: invalid or empty responses for individual requests are skipped.

Value

A single `sf` object containing all retrieved heritage features. Returns an empty `sf` object if no data is found or all requests fail.

Examples

```
if (interactive()) {

  # Define a minimal spatial object (WGS84 point)
  my_sf_layer <- sf::st_sf(
    geometry = sf::st_sfc(
      sf::st_point(c(2.21, 48.82)),
      crs = 4326
    )
  )

  # Retrieve heritage spatial data
  res <- get_heritage(
    x = my_sf_layer,
    data_code = "IMMH",
    buffer = 2000,
    crs = 2154,
    verbose = TRUE
  )

}
```

`get_heritage_ids` *Retrieve heritage layer IDs for a given sf object*

Description

This function retrieves available heritage dataset identifiers from the French Ministry of Culture's "Atlas du Patrimoine" service.

Usage

```
get_heritage_ids(x, buffer = 2500, crs = 2154, verbose = TRUE)
```

Arguments

`x`	An `sf` object defining the area of interest.
`buffer`	A `numeric` value (default = 2500). Buffer distance in meters used to slightly expand geometries before querying.
`crs`	An `integer` or `sf::st_crs` object (default = 2154). Coordinate reference system used for spatial processing.
`verbose`	Logical. If `TRUE` (default), prints progress and diagnostic messages.

Details

It uses the spatial extent and inferred department(s) of the input `sf` object to query the service.

Internally, the function:

1. Aggregates nearby geometries using `buffer` input.
2. Determines the corresponding INSEE department code for each geometry, using `happign::get_wfs()`.
3. Computes the bounding box of each geometry.
4. Queries the "Atlas du Patrimoine" service feed for all available metadata records (IDs, titles, GUIDs) within each bounding box.

Value

A `data.frame` with the following columns:

id Numeric identifier extracted from the record GUID.

title Record title as published in the service feed.

guid Full GUID (unique resource identifier).

departement Department code associated with the spatial query.

code Internal code associated with the layer.

Returns an empty `data.frame` if no records are found or the request fails.

Examples

```
if (interactive()) {
  # Create a minimal sf object defining the area of interest.
  # A simple point geometry is sufficient to trigger spatial queries.
  my_sf_layer <- sf::st_sf(
    geometry = sf::st_sfc(
      sf::st_point(c(2.21, 48.82)),
      crs = 4326
    )
  )

  # Retrieve available heritage dataset identifiers intersecting
  # the spatial extent derived from the sf object.
  ids <- get_heritage_ids(my_sf_layer)
}
```

`get_heritage_layernames` *Get heritage layer codes and labels*

Description

This function provides a reference table mapping internal codes to explore heritage layer available datasets from French Ministry of Culture's "Atlas du Patrimoine". Optionally, it can filter the table to return only selected codes.

Usage

```
get_heritage_layernames(code = NULL)
```

Arguments

`code`	Optional `character` vector of layer codes to filter. If `NULL`, the full reference table is returned.

Details

The available codes and their meanings are:

- `IMDN` — Domaines nationaux
- `IMMH` — Immeubles classes ou inscrits
- `IMUN` — Patrimoine Mondial UNESCO – Emprise surfacique des biens
- `LACR` — Architecture Contemporaine Remarquable
- `PADN` — Protection au titre des abords de domaines nationaux
- `PAMH` — Protection au titre des abords de monuments historiques
- `PAUN` — Patrimoine Mondial UNESCO – Zone tampon des biens
- `SICI` — Sites classes ou inscrits
- `SIPR` — Sites patrimoniaux remarquables
- `ZPPA` — Zones de presomption de prescriptions archeologiques

Value

A `data.frame` with two columns:

code Official heritage layer code (character).

label Descriptive label (character).

Examples

```
# Get the full table of heritage layer codes
get_heritage_layernames()

# Filter for specific codes
get_heritage_layernames(c("IMMH", "SICI"))
```

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