Package ‘cleangeo’

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Title  Cleaning Geometries from Spatial Objects
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Suggests  testthat, knitr, markdown, pbapply
Description  Provides a set of utility tools to inspect spatial objects, facilitate handling and reporting of topology errors and geometry validity issue with sp objects. Finally, it provides a geometry cleaner that will fix all geometry problems, and eliminate (at least reduce) the likelihood of having issues when doing spatial data processing.
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The `clgeo` package provides a set of utility tools to inspect spatial objects, facilitate handling and reporting of topology errors and geometry validity issues. Finally, it provides a geometry cleaner that will fix all geometry problems, and eliminate (at least reduce) the likelihood of having issues when doing spatial data processing.

### Author(s)

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### Description

Function to clean a spatial data collection

### Usage

```r
clgeo_Clean(sp, errors.only = NULL, strategy = "SF", verbose = FALSE)
```

### Arguments

- **sp**: object extending the `Spatial-class` as defined in `sp`
- **errors.only**: an object of class vector giving the types of errors for which the output should be bounded. Default value is NULL (i.e. the output will include features for which both errors and errors were raised.).
- **strategy**: advanced strategy to clean geometries. Default is "SF", alternate values are "POLYGONATION," "BUFFER" (old methods).
- **verbose**: Indicates whether the clean logs have to be printed. Default value is FALSE.

### Value

an object extending the `Spatial-class` as defined in `sp`, with cleaned geometries.
Note

About cleaning strategy: The polygonation method is a tentative alternate method to triangulation
to clean geometries and to the classical often used 'buffer' approach. In the polygonation method,
triangulation is skipped and a re-polygonation intuitive algorithm is applied to rebuild the source
invalid geometry into one or more valid polygonal geometries. With the progress done on validating
geometries, especially with sf, the default method in cleangeo has now been switched to the use of
sf::st_make_valid

Author(s)

Emmanuel Blondel <emmanuel.blondel1@gmail.com>

Examples

```r
require(sf)
file <- system.file("extdata", "example.shp", package = "cleangeo")
sf <- sf::st_read(file)
sp <- as(sf, "Spatial")

sp.clean <- clgeo_Clean(sp)
report.clean <- clgeo_CollectionReport(sp.clean)
clgeo_SummaryReport(report.clean)
```

Description

Function to clean a Polygon-class object by polygonation.

Usage

`clgeo_CleanByPolygonation.Polygon(p, verbose = FALSE)`

Arguments

- `p` : object of class Polygon-class as defined in `sp`
- `verbose` : Indicates whether the clean logs have to be printed. Default value is FALSE.

Value

a list of objects of class Polygon-class as defined in `sp`, with cleaned geometries.
Note
The polygonation method is a tentative alternate method to triangulation to clean geometries. In this method, triangulation is skipped and a re-polygonation algorithm is applied.

Author(s)
Emmanuel Blondel <emmanuel.blondel1@gmail.com>

Description
Function to clean a Polygons object by polygonation

Usage
clgeo_CleanByPolygonation.Polygons(p, verbose = FALSE)

Arguments
p 
object of class Polygons-class as defined in sp
verbose Indicates whether the clean logs have to be printed. Default value is FALSE.

Value
an object of class Polygons-class as defined in sp, with cleaned geometries.

Note
The polygonation method is a tentative alternate method to triangulation to clean geometries. In this method, triangulation is skipped and a re-polygonation algorithm is applied.

Author(s)
Emmanuel Blondel <emmanuel.blondel1@gmail.com>
**clgeo_CleanByPolygonation.SpatialPolygons**

### Description
Function to clean a `SpatialPolygons` object by polygonation.

### Usage
```
clgeo_CleanByPolygonation.SpatialPolygons(sp, verbose = FALSE)
```

### Arguments
- **sp**: object extending the `Spatial-class` as defined in `sp`
- **verbose**: Indicates whether the clean logs have to be printed. Default value is FALSE.

### Value
an object extending the `Spatial-class` as defined in `sp`, with cleaned geometries.

### Note
The polygonation method is a tentative alternate method to triangulation to clean geometries. In this method, triangulation is skipped and a re-polygonation algorithm is applied.

### Author(s)
Emmanuel Blondel <emmanuel.blondel1@gmail.com>

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**clgeo_CollectionReport**

### Description
Function to get a spatial data collection validation report. The function outputs a data.frame binding all geometry validity reports, each one produced by `clgeo_GeometryReport`.

### Usage
```
clgeo_CollectionReport(sp)
```

### Arguments
- **sp**: object extending the `Spatial-class` as defined in `sp`
Value

an object of class data.frame with the following columns:

• type eventual rgeos issue
• valid geometry validity status (according to OGC specifications)
• issue_type type of geometry issue
• error_msg caught message when error raised about geometry
• warning_msg caught message when warning raised about geometry

Author(s)

Emmanuel Blondel <emmanuel.blondell@gmail.com>

See Also

clgeo_GeometryReport

Examples

```r
require(sf)
file <- system.file("extdata", "example.shp", package = "cleangeo")
sf <- sf::st_read(file)
sp <- as(sf, "Spatial")

report <- clgeo_CollectionReport(sp)
```

Description

Function to get a geometry validation report: The report informs on the following:

• type eventual rgeos issue
• valid geometry validity status (according to OGC specifications)
• issue_type type of geometry issue
• msg caught message when error raised about geometry

Usage

clgeo_GeometryReport(spgeom)

Arguments

spgeom object extending the Spatial-class as defined in sp
Value

an object of class list giving the following:

- type eventual rgeos issue
- valid geometry validity status (according to OGC specifications)
- issue_type type of geometry issue
- msg caught message when warning raised about geometry

Author(s)

Emmanuel Blondel <emmanuel.blondell@gmail.com>

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Describe

Wrapper method to try performing rgeos::gIsValid call and catch eventual warnings or errors (in particular GEOS exceptions).

Usage

clgeo_IsValid(sp, verbose = FALSE)

Arguments

- sp object extending the Spatial-class as defined in sp
- verbose object of class "logical". Default value is FALSE.

Value

an object of class "logical". TRUE if valid, FALSE otherwise

Author(s)

Emmanuel Blondel <emmanuel.blondell@gmail.com>

Examples

```r
require(sf)
file <- system.file("extdata", "example.shp", package = "cleangeo")
sf <- sf::st_read(file)
sp <- as(sf, "Spatial")
clgeo_IsValid(sp)
```
clgeo_SummaryReport

Description
Function to get summary of a spatial data collection report returned by `clgeo_CollectionReport`

Usage
`clgeo_SummaryReport(report)`

Arguments
- `report` a report object as returned by `clgeo_CollectionReport`

Value
an object of class `table` giving the report summary. The summary gives the counting by value for each of the report columns:

- `type` eventual geometry issue
- `valid` geometry validity status (according to OGC specifications)
- `issue_type` type of geometry issue
- `msg` caught message when error raised about geometry

Author(s)
Emmanuel Blondel <emmanuel.blondel1@gmail.com>

See Also
`clgeo_CollectionReport`

Examples
```
require(sf)
file <- system.file("extdata", "example.shp", package = "cleangeo")
sf <- sf::st_read(file)
sp <- as(sf, "Spatial")

report <- clgeo_CollectionReport(sp)
clgeo_SummaryReport(report)
```
Function to get the list of index of suspicious geometries within a spatial data collection, given a spatial data collection report returned by the function `clgeo_CollectionReport`.

Usage

```r
clgeo_SuspiciousFeatures(report, errors.only = NULL)
```

Arguments

- `report`: a report object as returned by `clgeo_CollectionReport` for which the output should be bounded. Default value is `NULL` (i.e., the output will include features for which both errors and warnings were raised).
- `errors.only`: an object of class `vector` giving the types of errors for which the output should be bounded. Default value is `NULL` (i.e., the output will include features for which both errors and warnings were raised).

Value

An object of class `vector` giving the numeric indexes of spatial objects tagged as suspicious (i.e., that are not valid according to OGC specifications).

Author(s)

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See Also

- `clgeo_CollectionReport`

Examples

```r
require(sf)
file <- system.file("extdata", "example.shp", package = "cleangeo")
sf <- sf::st_read(file)
sp <- as(sf, "Spatial")

report <- clgeo_CollectionReport(sp)
v <- clgeo_SuspiciousFeatures(report)
```
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