persephone builds on top of RJDemetra
the focus lies on hierarchical time series
  visualization (interactive plots)
  diagnostics
only available on GitHub.
  still under development: interfaces might change
  CRAN release is planned for this year

```r
remotes::install_github("statistikat/persephone")
library(persephone)
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Overview

- **persephone** builds on top of **RJDemetra**
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persephone objects can be constructed from time series

```r
class(AirPassengers)
## [1] "ts"
```

```r
per_obj <- per_x13(AirPassengers)
```

Now, different methods can be called for the object `per_obj`.

```r
per_obj$run()
window(per_obj$adjusted, end = c(1950, 12))
```

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
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Plot Types

Original, SA and Trend Series

Autocorrelations of the Residuals

SI Ratios and Seasonal Factors by Period

Normal Q–Q Plot
Plot Types

Original, SA and Trend Series

Autocorrelations of the Residuals

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Hierarchical Models

- hierarchical ts: time series that can be broken down into several components
- typical example: price indices
- tree-like structure
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- typical example: price indices
- tree-like structure
Hierarchical Models (2)

Several persephone objects can be combined to a hierarchical time series.

```r
data(ipi_c_eu, package = "RJDemetra")
ht <- per_hts(
    NL = per_x13(ipi_c_eu[, "NL"]),
    FR = per_x13(ipi_c_eu[, "FR"]),
    IE = per_x13(ipi_c_eu[, "IT"])
)
ht$run(); ht
```

```
## component class     run seasonality log_transform
## tramoseats      TRUE Present      TRUE
## NL             x13Single  TRUE Present FALSE
## FR             x13Single  TRUE Present FALSE
## IE             x13Single  TRUE Present FALSE
## arima_mdl   (3 1 1)(0 1 1) 1     NA
## (0 1 1)(0 1 1) 2 0.2644848
## (0 1 1)(0 1 1) 3 0.2716330
## (3 1 1)(0 1 1) 5 0.2251183
```

---

www.statistik.at slide 10 | July, 2019
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```

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<th>run</th>
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<th>log_transform</th>
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Hierarchical Plots

ht$run()
plot(ht)

Original, Directly and Indirectly Adjusted Aggregate Series

Mar. 1990: Original 299.5 Direct SA 275.07
Indirect SA 275.66

1990 2000 2010
Hierarchical Plots

```
ht$run()
plot(ht)
```
Closing Remarks

Further plans:

- Eurostat quality report
- dashboards
- methods for comparing direct and indirect adjustments
- hierarchical time series with dynamic weights

More information (including this presentation) can be found on GitHub pages.

- https://statistikat.github.io/persephone/

Thank you for your attention!
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Thank you for your attention!