MULTISTREAM
A Multiresolution Streamgraph Approach to Explore Hierarchical Time Series

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A time series is a sequence of quantitative values taken at successive times.

- Examples
  - Meteorology: registers of rain over a period of time
  - Finances: evolution of the price of the currency over time
Time Series

Usually plotted using a line chart / dot plot
Multiple Time Series
Multiple Time Series

Some visualization problems:

- Readability
- Scalability
Multiple Time Series

Identification of patterns over time
A better visualization than line chart / dot plot for multiple time series?
Stackgraph

Time series are represented by colored layers
Streamgraph

Base line is on the middle Y axe

Streamgraph

Some visualization problems:

- Readability
- Scalability
How to improve **readability/scalability** of Multiple Time Series?
Hierarchical Time Series

Time series can be organized into a hierarchical structure
Our contribution: MULTISTREAM
Our contribution: MULTISTREAM
Our contribution: MULTISTREAM
Our contribution: MULTISTREAM Controller
Our contribution: MULTISTREAM

Hierarchy manager
MULTISTREAM IN ACTION

• VIDEO
Multiresolution view (Focus + Context)
Multiresolution view (Focus + Context)
Multiresolution view (Focus + Context)
Multiresolution view (Focus + Context)
Multiresolution view

\[ S = \text{screen display size} \]

\[ N = \text{number of time steps} \]
Controller

Link between the overview and the multiresolution view
Results
Hierarchy manager

- **Navigation** through the different levels of the hierarchy

- Allows **aggregation** and **disaggregation** in the hierarchical structure

- **Exploration**: filtering, highlighting
Conclusions