Data Label Position

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The goal is the rule **UN 2.3 Unify the position of legends and labels**
(in conjunction with **EX 1.1 Use appropriate chart types** *Grouped column charts*)
and define uniform positioning and display rules for data labels, as has already been done
for other visualization elements. The aim is to strengthen the uniform look and feel of the
IBCS.

UN 2.3   Unify the position of legends and labels

	Jan	Feb	Mar	Apr
▪ Berlin	5	5	2	6
▪ Zurich	5	3	4	4
▪ Vienna	5	4	2	3
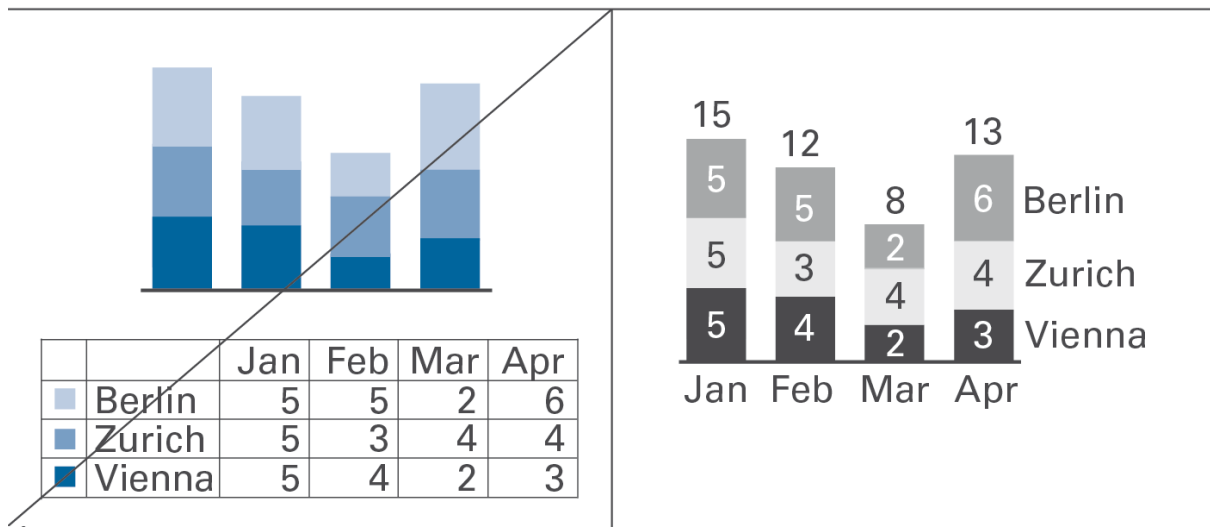
A standardized notation of *legends and labels* will improve legibility and speed up
comprehension of charts, see Figure UN 2.3.

Status quo

In the current version 1.1 the following rules apply to data labels
1. Omit labels of small visualization elements, use labels with not more than three
   digits, and avoid unnecessary and distracting labels (see also the SIMPLIFY rules SI
   5 "Avoid distracting details").
2. Write labels horizontally for better legibility.
3. Position labels next to their visualization elements. If this is not possible, use lines
   connecting the labels to the correct visualization elements.
4. In charts with horizontal category axes, position labels above or below the
   visualization elements, see the first and second figure here on the left. In stacked
   columns, either center labels in the data points (if the data points are large enough)
   or position them outside of the data points.
5. In charts with two value axes, position labels next to the visualization elements
   (above or below, right or left), see figure on the left. Large bubble visualization
   elements labels can also have centered labels.

The current visualization has the problem that the chart can only be read in the ideal case. In a chart with AC and PY as columns and PL as markers the readability can be poor if the values are very far apart values and only the AC values are displayed. However, if data labels for all series are displayed for their data points, there is an overlap if the values are very close together. Therefore, uniform, precise rules are required to correct this blurring.

Proposition

Point 4 is to be extended to distinguish between single column/bar charts and grouped column/bar charts. Single column/bar charts have exactly one y value (e.g. AC) per x value (category, date etc.) while grouped column/bar charts can have up to 4 y values per x value.

In the latter charts, a distinction is then made between two display modes, which can be selected depending on the business case.

1. Labels only for the first (AC) Series
   a. Used when only the data of the first series are important and the other series are only indicated in a supporting way.
2. Display labels for all series
   a. Used when the data labels are to be viewed from all scenarios and the series are equally important.

Display rules for business case 2

For IBCS 1.2 we should agree on one of the variants.
Both variants presented have the same visibility rules for the labels.
Both variants use a dynamic format for the data labels, which does not depend on the series but on the respective y value in the x category.

Variant 1 (*for labels for all series*)
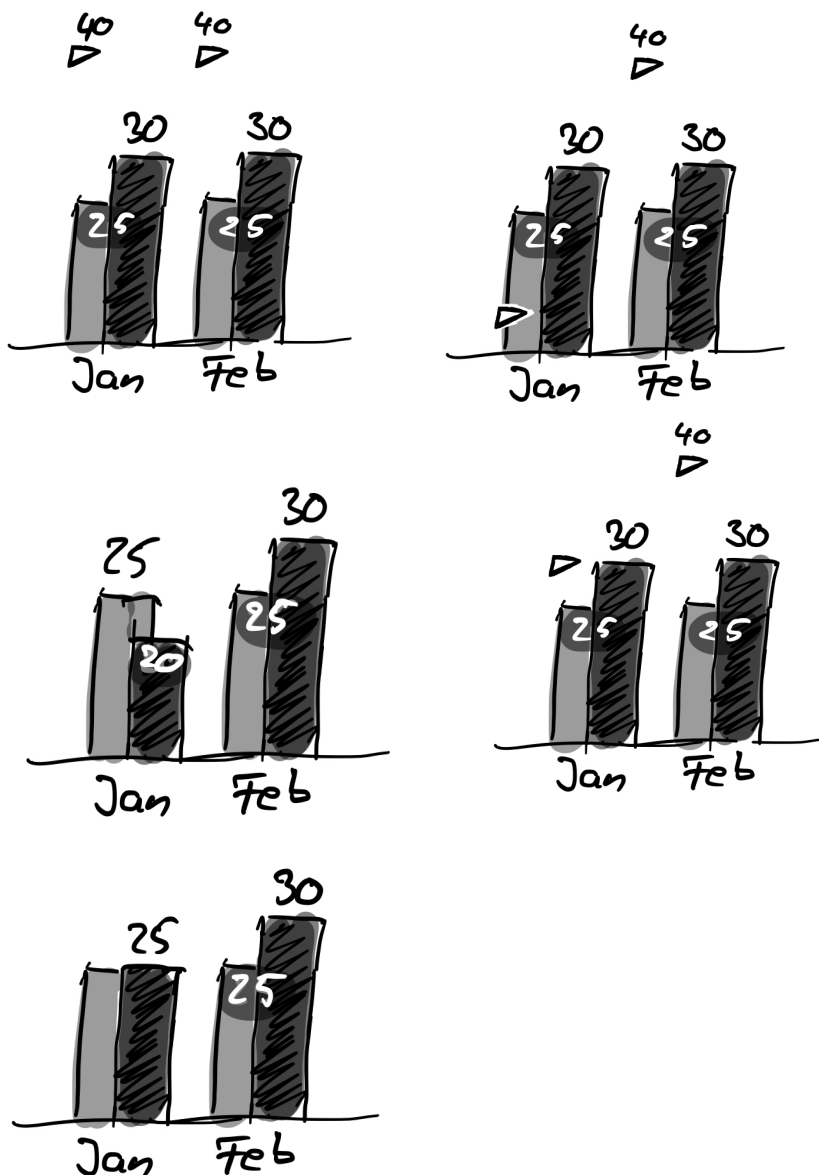
Visibility

- Secondary label is hidden when it is +- 1ems from the
  Primary label is removed.
- Marker label is hidden if it is inside a bar/ column
- Marker Label disappears when +- 1ems is removed from the primary label.

Bar with higher y-value (primary)

script	black

background	white, 50% opacity
location	above the data point

Bar with lower y-value (secondary)

script	white
background	black, 50% opacity
location	inside (at the top) of the data point

Markers

script	black
background	white 50% opacity
location	above the data point

Variation 2

Bar with higher y-value (primary)

script	black
background	transparent
location	above the data point

Bar with lower y-value (secondary)

script	white
background	transparent
location	oved to the right above the data point

Markers

| script	black
background	transparent
location	above the data point

Visibility
- Secondary label is hidden when it is +- 1ems from the Primary label is removed.
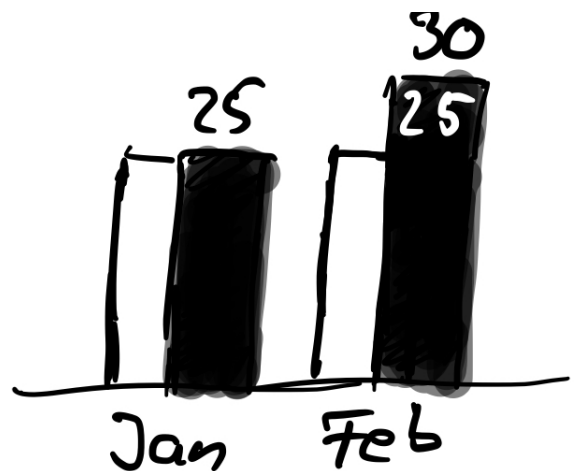
- Marker label is hidden if it is inside a bar/ column
- Marker Label disappears when +- 1ems is removed from the primary label.

Derivation

The derivation shows the different variants for the representation of the data labels. And this only for the sake of completeness
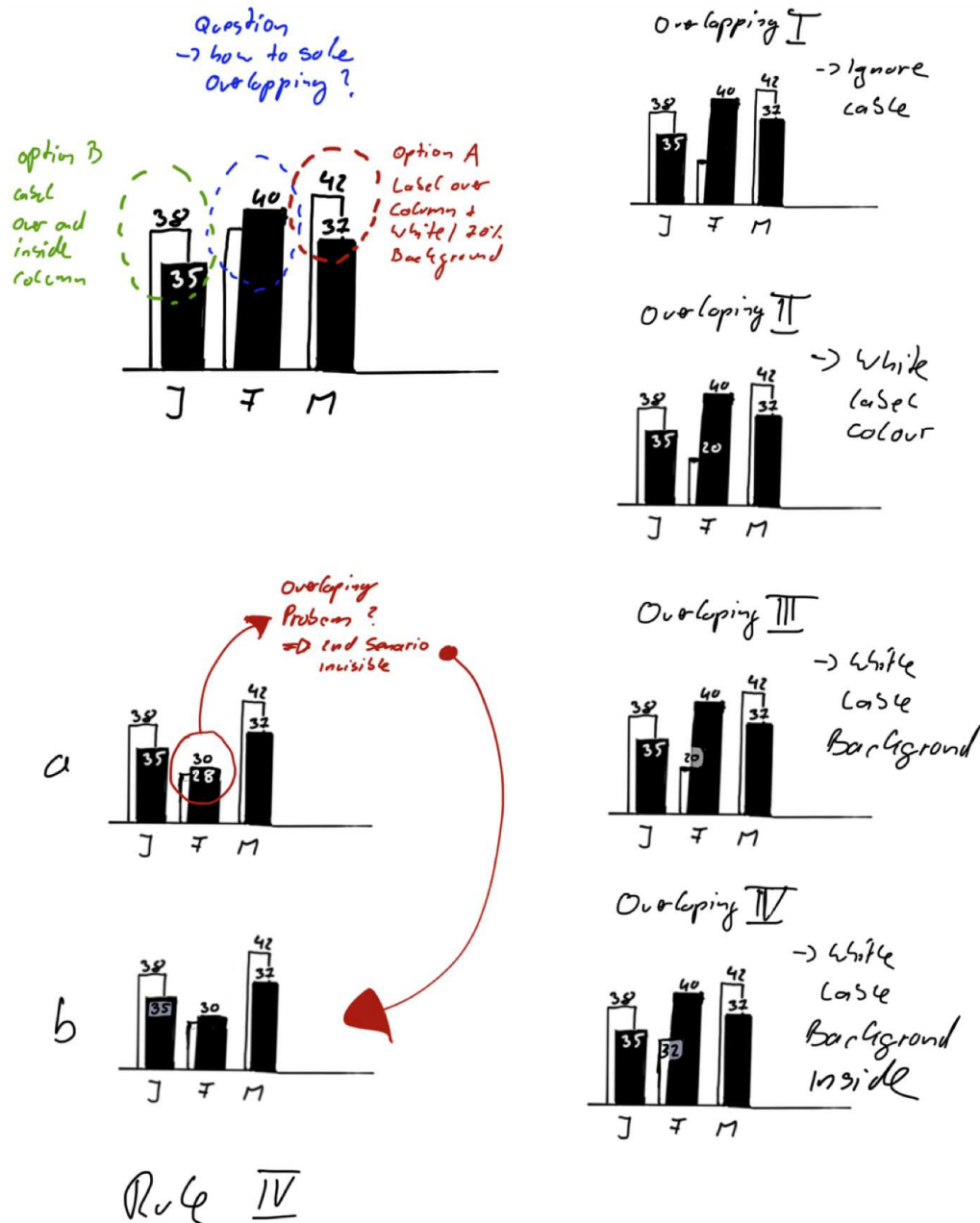
Recap

- Introduction of the terms single column/bar chart and multi column/bar chart

- Introduction of 2 modes for the multi column/bar chart
    1. Only 1 series has data label
    2. As many series as possible have data labels
- Standardization of label format, position and visibility rules.