Quantities and Tolerances Proposal

The quantities and tolerances proposal covers the requirement to offer a container to add tolerance values to a specific quantity and to offer filter possibilities for quantities offered in different systems of measurement.

Simple Example

If you would like to specify a quantity like "481 kg", e.g. in a paragraph like
<p>The weight of the machine is 481 kg.</p>

It is maybe required to mark the quantity and the unit of measurement instead of entering it as flow text.

Example:
Editor: <p>The weight of the machine is <>481 kg</>.</p>

This can be used e.g. to handle the quantity different to the paragraph in post-processing tasks or to protect the quantity.

The XML code may look like this:
```xml
<quantity>
  <quantitygroup>
    <quantityvalue unitofmeasure="kg">481</quantityvalue>
  </quantitygroup>
</quantity>
```

The quantity is the container for the entire quantity entry.
The quantitygroup will be described in the next chapter.
The quantityvalue is the container for the quantity itself and the unit of measure as an attribute.
The reason for providing the unitofmeasure as an attribute is to offer you the possibility to define enumerated lists for specific units - if required.

SI/US Example

The quantities proposal helps you also to specify quantities for different systems of measurement.

In example you have to distinguish between SI and US values

SI: 481 kg

US: 1060.4 lb

Then you can enter the quantities accordingly:

Example:

Editor: <p>The weight of the machine is <>481 kg</><>1060 lb</>.</p>

You can then use DITA filter mechanism to filter the output depending on the selected system of measurement:

Rendering for SI: The weight of the machine is 481 kg.

Rendering for US: The weight of the machine is 1060 lb.

The XML code may look like this:

```xml
<quantity>
  <quantitygroup systemofmeasure="SI">
    <quantityvalue unitofmeasure="kg">481</quantityvalue>
  </quantitygroup>
  <quantitygroup systemofmeasure="US">
    <quantityvalue unitofmeasure="lb">1060.4</quantityvalue>
  </quantitygroup>
</quantity>
```

The quantity is the container for the entire quantity entry.

The quantitygroup is the container for one specific system of measurement.

The quantityvalue is the container for the quantity itself and the unit of measure as an attribute.

Tolerances:

The quantities proposal contains also the issue "tolerances".
See the following example:

$$100 \; {}^{+\,5}_{-\,10} \; \text{bar}$$

The quantities and tolerances proposal covers this requirement by adding an element quantitytolerance to the quantity.

Editor: `<p>`Pressure = `<>`100 bar`<>`+5`</>``<>`-10`</>``</>``</p>`

The XML code may look like this:

```xml
<quantity>
  <quantitygroup>
    <quantityvalue unitofmeasure="bar">100</quantityvalue>
    <quantitytolerance tolerancetype="plus">5</quantitytolerance>
    <quantitytolerance tolerancetype="minus">10</quantitytolerance>
  </quantitygroup>
</quantity>
```

The tolerancetype will contain the values: plus, minus, plusminus

Combined example:

If you require combining both: distinguish between SI and US as well as using tolerances, you may check the following example:

```xml
<quantity>
  <quantitygroup systemofmeasure="SI">
    <quantityvalue unitofmeasure="m">2</quantityvalue>
    <quantitytolerance unitofmeasure="mm" type="plus">5</quantitytolerance>
    <quantitytolerance unitofmeasure="mm" type="minus">2</quantitytolerance>
  </quantitygroup>
  <quantitygroup systemofmeasure="US">
    <quantityvalue unitofmeasure="ft">6</quantityvalue>
    <quantitytolerance unitofmeasure="in" type="plus">1/4</quantitytolerance>
    <quantitytolerance unitofmeasure="in" type="minus">1/6</quantitytolerance>
  </quantitygroup>
</quantity>
```

Notice: the quantitytolerance has a different unitofmeasure then the quantityvalue.