

Dutch Building Hardware Association  
**VHS**



# **VHS building hardware (BIM) standard**

version 1.0

## **Part 3 - Placeholder options**



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# 1 Terminology

BIM	Building Information Model: a technique for a conclusive and parametric building model. This technique is used in e.g. Revit and Tekla.
BMH protocol	An XML format defined by 'Bos Machine Handel' for the description of a 3D frame model for production. This protocol also contains the definitions for articles and operations, and is usable in a BIM environment
WHS protocol	A by 'DeltaPi Systems' defined XML format, based on the BMH protocol, for the definitions of articles and recipes in a BIM environment
XML format	A text format suitable for structured data.
Door/window frame	(In Dutch: kozijn) A frame with doors and/or windows and/or glass and/or panels
Geometry	The 3D shapes of an article and the applicable operations (pockets and drillholes)
Article	A hardware article that can be priced, ordered and applied in a frame
Placeholder	A temporary substitute for an end result. In this case the placeholder acts as a means to present options to the user to make a choice.
Options	Properties on an article which, while applying this article enables the user to make a choice. These properties can affect the shape or price
Recipe	A list of conditions on which an article is placed on a specific spot in a frame.
Cluster	A coherent combination of files for a specific hardware series

## 2 General

While applying an article from a recipe, it is very common that this article can exist with different properties with each its own Id. That means that the choice of this property means a different article. So the original article in the recipe must be replaced by another. For every choice a different recipe can be created, but that would mean an enormous redundancy.

Using Placeholder articles on which a choice can be made by the user enables the creation of compact and more flexible recipes.

## 3 Examples

### 3.1 Different color means different articles.

The user wants to place an article through a recipe, then selecting a color from the assortment of the supplier, and have an article placed with the correct Id.

In this case the user should, when applying the recipe, get a dialog with the color choice. That choice steers the application of the correct article and should be stored in the element on which the recipe is applied.

### 3.2 A lock with a brand, backset and PC size

The user wants to apply a lock with a free choice of the brand, backset and the PC size.

All the locks have a distinct brand, backset and PC size. So the combination of these properties results into a different article.

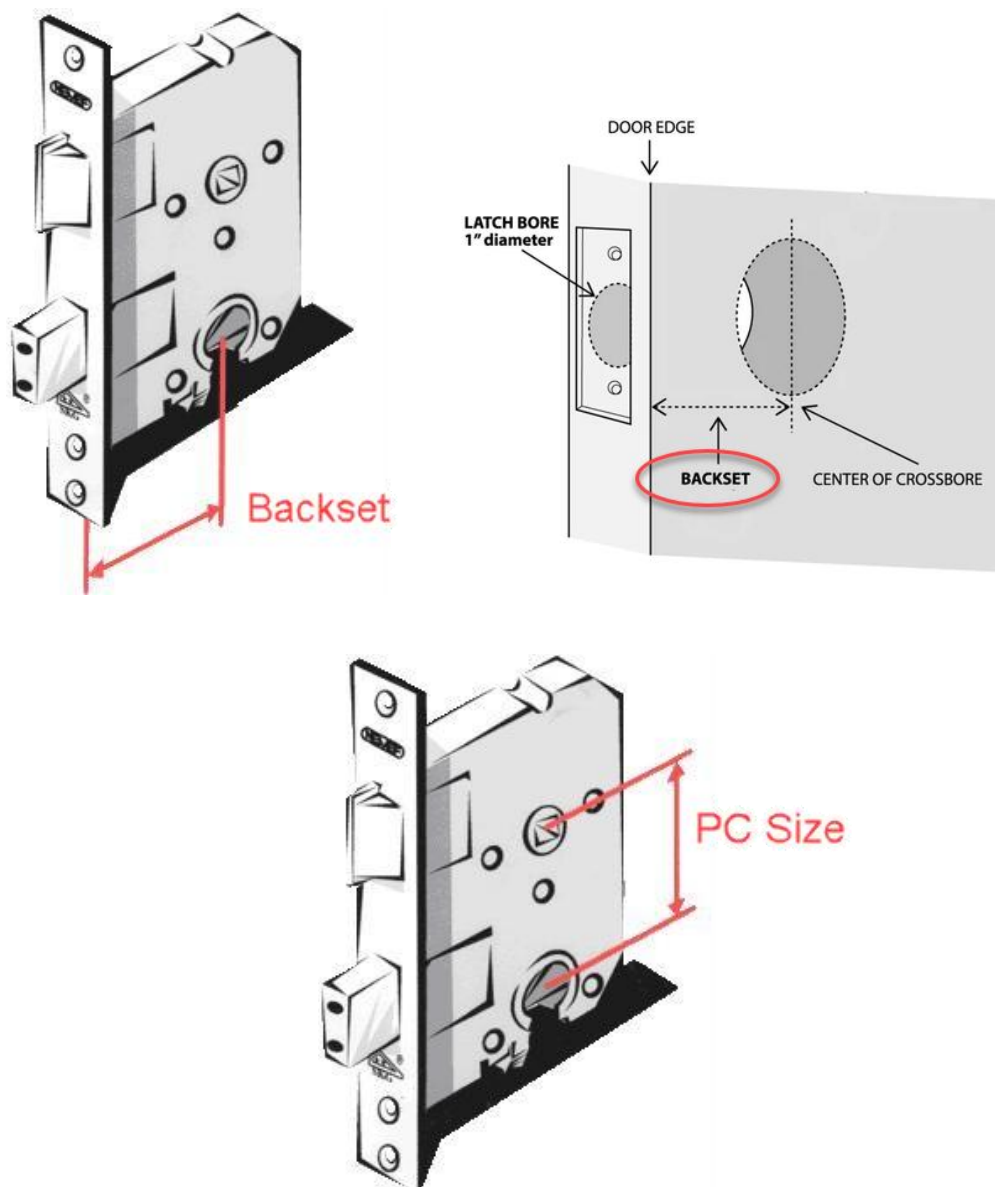


Figure 1

## 4 HardwareArticle Placeholder

For dealing with the examples above a Placeholder article will be used. This article is not a real article in the assortment of the supplier, but has an option list of article links. If that article is applied (by applying a recipe with the conditions of this article all met), then the user gets the choice of a list of articles. Choosing an article means that the placeholder article is replaced by the real article.

### 4.1 Placeholder option list

The creator of the placeholder (the manufacturer of the articles), can add any kind of property, with any value in the option list. A placeholder is, basically, a way to filter out by properties, the articles mentioned by the placeholder. The creator can use a string, or two strings, or a string and a double, and the end user will somehow state what values he wants to use, and the matching article is then parsed.

## 4.2 One UI per Placeholder

When a placeholder is referred to multiple times in the recipe, and so applied multiple times, only one UI per distinct placeholder must be used. So the answer for a placeholder is applied on all occurrences. If a hinge is placed as a placeholder (e.g. for choice of the color) and there are four hinges on a door, this must result in one choice, not in four.

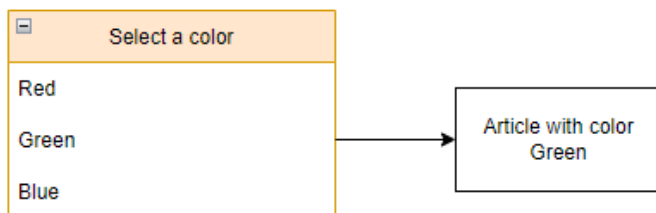
However, if we want to make the top hinge a different color, there must be a possibility to make a separate choice for this top hinge, without creating a different placeholder (which should mean a lot of redundancy).

In this case an optional 'Group' field can be added to the placeholder reference in the recipe, see the XML example below. Default this field is omitted or empty.

So the distinct for grouping the placeholder choices should work on the combination Name and Group

## 4.3 Let's look at example Different color means different articles.

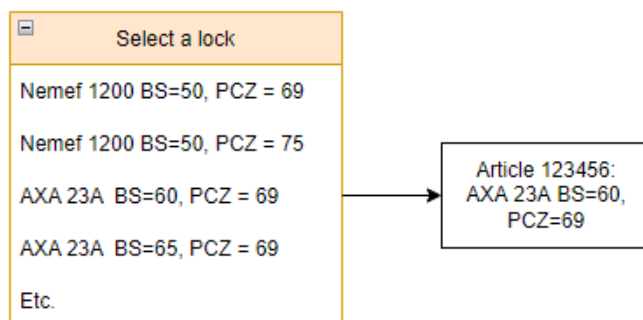
Now that has become simple: the article is defined as Placeholder article with a list of articles with the various colors in the assortment of the supplier/manufacturer. Choosing a color means applying the article with the correct Id and RGB value.



## 4.4 Example A lock with a Backset and PC size

A list can be made with all the locks with the different brands, backsets and PC size value combinations. This can be presented to the user in several ways:

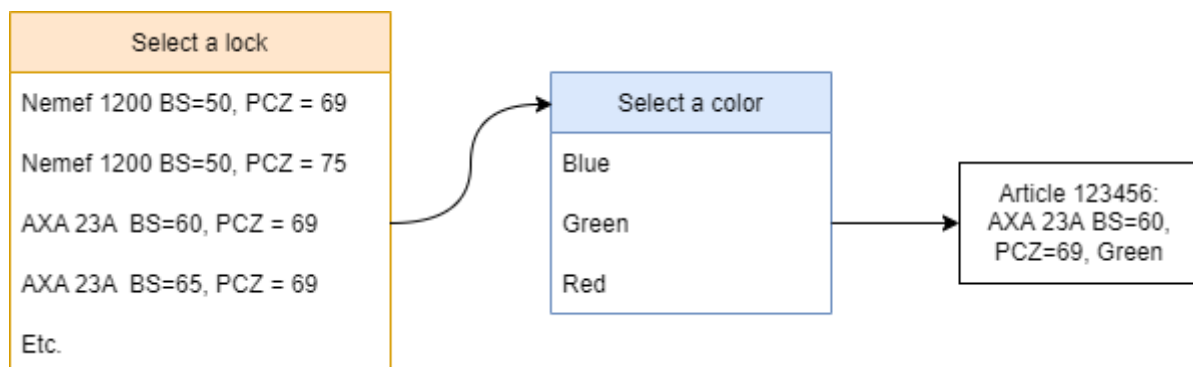
1. One (potentially very long) list:



2. Use the different properties to form a 'property grid'. These properties can be presented per piece to the user (the selected property of one can work as a filter for the next one, but not necessarily so). So the user can first pick a brand or type (Nemef or Axa), then a backset (this can be refined to: only the backsets of the selected brand ), then a PC size (can be refined to: only the PC sizes of the selected brand and backset).

#### 4.5 Combination of Placeholders

We can combine the use cases: suppose we have a lock (with backset and PC size properties), and those locks come in various colors (maybe a bad example, but let's assume this a valid situation). In that case the list of locks with the backset/PC size options consist of a list of Placeholders. Selecting a lock means selecting a Placeholder with article options. This will trigger the choice of an article with the correct color.



## 5 Cancelling a choice

If the application of a recipe contains placeholders, the user must make a choice for each distinct applied placeholder. If the user cancels one of these choices, the whole application of the recipe becomes invalid and must be rolled back with a clear notification: an article is missing.

## 6 XML format

### 6.1 Extension

A placeholder is a 'dummy' article, but to make an easy distinction it must have a distinct extension. As it is a list of links, the extension is '.Links'

### 6.2 Link list

If the placeholder is applied in a recipe with all its conditions met, the user must make a choice from a list, and the result is the definite real article. In the placeholder the list of choices is defined as links:

```

<Links>
<Link Path="article3.Article">
  <String Name="Color" Value="Red"/>
</Link>
<Link Path="article4.Article">
  <String Name="Color" Value="Green"/>
</Link>
<Link Path="article4.Article">
  <String Name="Color" Value="Blue"/>
</Link>
</Links>
  
```

### 6.3 Recursive link list

A choice can itself be a placeholder, which must trigger the next choice:

```
<Links>
  <Link Path="article1.Article">
    <String Name="Backset" Value="24"/>
    <String Name="PC-Size" Value="128"/>
    <Bool Name="HasSomething" Value="True"/>
  </Link>
  <Link Path="article2.Article">
    <String Name="Backset" Value="44"/>
    <String Name="PC-Size" Value="128"/>
    <Bool Name="HasSomething" Value="False"/>
  </Link>
  <Link Path="PlaceholderSecondLevel.Links">
    <String Name="Backset" Value="33"/>
    <String Name="PC-Size" Value="54"/>
    <Bool Name="HasSomething" Value="False"/>
  </Link>
</Links>
```

### 6.4 Multiple Placeholders with the same name

Placeholders with the same name generate 1 choice to limit the question to the user.

However, placeholder can be given a optional group attribute a generate a distinct choice per group for that placeholder.

It can be omitted (null); empty ("" ) or filled in ("Top" of "Bottom").

(For compactness the 'Rule' part for each FixedPartElement is left empty):

```
<FixedPartRecipe Description="Scharnieren" ShowOnReport="true">
  <FixedPartElement XmlVersion="27" Name="" Anchor="Center" Rule=""
PathToArticle="26631.Article">
    <Offset X="0" Y="100" />
    <Rotation X="0" Y="0" />
    <HardwareAlignment>None</HardwareAlignment>
  </FixedPartElement>
  <!--note that if the group attribute is not supplied, the group is null-->
  <FixedPartElement XmlVersion="27" Name="" Anchor="Center" Rule=""
PathToArticle="hinge.Links">
    <Offset X="0" Y="-200" />
    <Rotation X="0" Y="0" />
    <HardwareAlignment>None</HardwareAlignment>
  </FixedPartElement>
  <FixedPartElement XmlVersion="27" Name="" Anchor="Center" Rule=""
PathToArticle="hinge.Links" Group="Top">
    <Offset X="0" Y="300" />
    <Rotation X="0" Y="0" />
    <HardwareAlignment>None</HardwareAlignment>
  </FixedPartElement>
  <FixedPartElement XmlVersion="27" Name="" Anchor="Center" Rule=""
PathToArticle="hinge.Links" Group="Bottom">
    <Offset X="0" Y="400" />
    <Rotation X="0" Y="0" />
    <HardwareAlignment>None</HardwareAlignment>
  </FixedPartElement>
</FixedPartRecipe>
```

## 7 UI Example

The recipe that is used as example not only contains references to .Article files, but also to references to .Links files. This means that it needs 4 choices of the user before the resulting real articles are determined and the recipe can be committed:

```
</FixedPartElement>
<FixedPartElement XmlVersion="31" Name="" Anchor="TopLeft" Rule="2201&lt;=height&lt;=2450,openingtype==Enkel,operation==Right,370&lt;=width&lt;=1650" PathToArticle="..\Article\215460.Article">
  <Offset X="0" Y="0" />
  <Rotation X="180" Y="0" />
  <HardwareAlignment>ChildFrame</HardwareAlignment>
</FixedPartElement>
<FixedPartElement XmlVersion="31" Name="" Anchor="TopLeft" Rule="2451&lt;=height&lt;=2800,openingtype==Enkel,operation==Right,370&lt;=width&lt;=1650" PathToArticle="..\Article\215462.Article">
  <Offset X="0" Y="0" />
  <Rotation X="180" Y="0" />
  <HardwareAlignment>ChildFrame</HardwareAlignment>
</FixedPartElement>
<FixedPartElement XmlVersion="31" Name="" Anchor="TopRight" Rule="360&lt;=height&lt;=2800,openingtype==Enkel,operation==Left,370&lt;=width&lt;=1650" PathToArticle="..\Placeholder\Keuze_Sluitplaat_IS.Links">
  <Offset X="0" Y="0" />
  <Rotation X="0" Y="0" Z="180" />
  <HardwareAlignment>ParentFrame</HardwareAlignment>
</FixedPartElement>
<FixedPartElement XmlVersion="31" Name="" Anchor="TopRight" Rule="360&lt;=height&lt;=440,openingtype==Enkel,operation==Left,370&lt;=width&lt;=1650" PathToArticle="..\Placeholder\Keuze_Sluitplaat_IS.Links">
  <Offset X="0" Y="0" Z="234" />
  <Rotation X="0" Y="0" Z="180" />
  <HardwareAlignment>ParentFrame</HardwareAlignment>
</FixedPartElement>
```

Which can be shown like this:

This is defined in a .Links file:

Name	Ext	Size	Date	Attr
[-.]		<DIR>	24-02-2024 17:24	—
MM-MP-1202z-H_20mm	Recipe	126.195	21-11-2022 07:50	-a-
Keuze_Sluitplaat_VZ	Links	530	21-11-2022 07:52	-a-
Keuze_Sluitplaat_IS	Links	551	21-11-2022 08:12	-a-
Keuze_Oploopplaat_RS	Links	540	21-11-2022 07:53	-a-
Keuze_Oploopplaat_LS	Links	540	21-11-2022 07:53	-a-

In which are 4 Entries:

```
<?xml version="1.0" encoding="utf-8"?>
<Links>
<Link Path="..\Article\34931.Article">
<String Name="Type_Sluitplaat_VZ" Value="20mm Sluitplaat met POS."/>
</Link>
<Link Path="..\Article\365392.Article">
<String Name="Type_Sluitplaat_VZ" Value="30mm Sluitplaat met POS."/>
</Link>
<Link Path="..\Article\34974.Article">
<String Name="Type_Sluitplaat_VZ" Value="26mm Sluitplaat"/>
</Link>
<Link Path="..\Article\360443.Article">
<String Name="Type_Sluitplaat_VZ" Value="30mm Sluitplaat"/>
</Link>
</Links>
```

That are shown like this:

Opties	Naam van de link
Keuze_Sluitplaat_IS Keuze_Oploopplaat_RS Keuze_Sluitplaat_VZ Keuze_Greep	<div>           Type_Sluitplaat_IS           <div>             20mm-i.S. Sluitplaat met POS.              30mm-i.S. Sluitplaat met POS.              26mm-i.S. Sluitplaat              30mm-i.S. Sluitplaat           </div> </div>
Geselecteerd artikel:	

The last choice consists of a list with double naming:

```
<?xml version="1.0" encoding="utf-8"?>
<Links>
<Link Path="..\Article\54440.Article">
<String Name="Inbraakwerendheid" Value="Inbraakwerend SKG**"/>
<String Name="Type" Value="Greep met cilinder"/>
</Link>
<Link Path="..\Article\55713.Article">
<String Name="Inbraakwerendheid" Value="Niet Inbraakwerend"/>
<String Name="Type" Value="Greep zonder cilinder"/>
</Link>
<Link Path="..\Article\55647.Article">
<String Name="Inbraakwerendheid" Value="Niet Inbraakwerend"/>
<String Name="Type" Value="Greep met drukknop"/>
</Link>
</Links>
```

That needs 2 choices. The first choice narrows down the second choice:

Opties	Naam van de link
Keuze_Sluitplaat_IS ✓ Keuze_Oploopplaat_RS ✓ Keuze_Sluitplaat_VZ ✓ Keuze_Greep	Inbraakwerendheid Niet Inbraakwerend
	Type Greep met cilinder Greep zonder cilinder Greep met drukknop

Each choice is mandatory.

So only after completion it can be committed:

Selecteer artikel uit de opties

Opties	Naam van de link
Keuze_Sluitplaat_IS ✓ Keuze_Oploopplaat_RS ✓ Keuze_Sluitplaat_VZ ✓ Keuze_Greep ✓	Inbraakwerendheid Niet Inbraakwerend
	Type Greep zonder cilinder

Geselecteerd artikel: ..\Article\55713.Article

Ok

Like described in 5.3 a .Links file can also contain references to another .Links file. So choices can be narrowed down in any needed complexity.