## 2 Issue 157-Proposal Draft

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4 | Last modified: August 10, 2005=5pm, PDT
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6 |
7 denoted by «»): precise: are the same. message types directly. "
(C) Update Section 9.3.2, "Type Compatibility in Assignment", as follows:

- U.Update the section title to "Type Compatibility in Copy Operations"
- Update the first paragraph and first two bullet items following to read changes
"For «a copy operation to be valid, the data referred to by the from and to specifications MUST be of compatible types. The following points make this
- The «selection result of the» from-spec is a variable of a WSDL message * type and the «selection result of the» to-spec is a variable of a WSDL message type. In this case both variables MUST be of the same message type, where two message types are said to be equal if their qualified names
- The $«$ selection result of the» from-spec is a variable of a WSDL message type and the $«$ selection result of the» to-spec is not, or vice versa. This is not legal because parts of variables, selections of variable parts, or endpoint references cannot be assigned to/from variables of WSDL
- Uupdate the third bullet item to read (changes denoted by «»»):
- In all other cases, «if the selection results of the source (i.e. from-spec) and destination (i.e. to-spec) are XML Infoset Information or XML data model itmes, and the XML Schema types of those selections are known», then the source value MUST possess «the type» associated with the destination. Note that this does not require the types associated with the source and destination to be the same. In particular, the source type MAY be a subtype of the destination type. «The required XML Schema type checking can be determined by static analysis and/or evaluated at runtime, A BPEL processor MAY perform static analysis of expression/query language to validate compliance with this compatibility requirement, and reject a process definition if the requirement is violated. When a BPEL

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<\#>Correct a number of typos\|
<\#>Incorporate some comments from Monica and Rond
<\#>Add some other corrections and clarifications\|

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<\#>This cleanup will resolve Issue 51 as well
(
http://www.choreology.com/external/WS BPEL_issues_list.html\#Issue51 )
<\#>Yaron suggested that we migh ... [3]

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processor adopts an XML Schema type aware data model, it MAY perform the same analysis at runtime, where, on encountering a violation of the compatibility requirement, it MUST throw a bpws:mismatchedAssignmentFailure fault Note that when the default XPath 1.0 expression/query language binding is used, XML Schema runtime type-compatibility checking MUST NOT be performed, as the XPath 1.0 data model is not XML Schema type aware. $\ddot{\square}_{\square}$

- Remove the last paragraph of the section.

Note that that this will address Issue 51
(http://www.choreology.com/external/WS BPEL_issues_list.html\#Issue51) as well as Issue 157. In addition, Yaron has indicated that we may want to develop a standard approach to disable schema-type static analysis, but this is part of the discussion surrounding Issue 9
(http://www.choreology.com/external/WS BPEL issues list.html\#Issue9).

Editorial note: The below section is moved before section (C) above. See the "Formatted Proposal" for guidance.

## (B) Insert a new Section 9.3.1, "Selection Result of Copy Operations"2 before the existing 9.3.1, "Type Compatibility in Assignment", as follows:

- Selection Result of Copy Operations

There are 11 different types of information items in the XML Infoset model. Most of them are not relevant in the context of XML data manipulation as performed by <copy> operation- examples include Processing Instruction Information Item, Comment Information Item and Document Type Declaration Information Item.

The selection result of the from-spec or to-spec used within a <copy> operation MUST be one of the following three Information Items: Element Information Item (EII), Attribute Information Item (AII) or Text Information Item (TII). Note ${ }_{k}$ that EII and AII are defined in [Infoset], while TII is defined to bridge the gap between the XML Infoset Model and other common XML data models, such as XPath $1.0_{\kappa}$, TII jis defined as follows:. . Text Information Item (TII):
This is an Information Item of which an attribute points to a sequence of zero or more Character Information Items, according to the document order. When mapped to the XPath 1.0 model, it is a generalization of String-Value (which has zero or more characters) and Text Node (which has one or more characters). An RValue of a TII MAY be mapped to a Text Node, a String/Boolean/Number object in XPath 1.0, while an LValue of a TII MUST be mapped to a Text node,

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| Comment [M1]: Decide is thi ... [25] |
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| Comment [M2]: If in any was ... [40] |

If the selection result of a from-spec or a to-spec belongs to Information Items other than EII, AII or TII, a bpws:selectionFailure fault MUST be thrown. Note that if any of the unsupported Information Items are contained in the selection result, they MUST be preserved; the only restriction is that they MUST NOT be directly selected by the from-spec or to-spec as the top-level item.

In WS-BPEL, the <copy> operation is essentially a one-to-one replacement operation. That implies that both the from-spec and to-spec MUST select exactly one information item each, which includes the case of one TII. Note that this restriction indicates that literal values (the literal variant of from-spec) MUST only contain either a TII, or a single EII, as its top-level value.

When using a partnerLink-based from-spec and to-spec, such as:
<from partnerLink="partnerLinkX"
endpointReference="myRole|partnerRole" />
<to partnerLink="partnerLinkY" />
with another non-partnerLink-based from-spec and to-spec in a <copy> operation, these should be treated as if they produce an LValue and RValue of an EII of which [local name] is "service-ref" and [namespace name] is the WS-BPEL namespace.

Editorial Note: The below section is moved before section (B) above. See the "Formatted Proposal" for guidance.

## (A) Update Section 9.3, "Assignment", as follows:

- Update the second bullet item in paragraph 9 ("") a sequence of one or more character information items....") to read (changes denoted by «»): ,
o a sequence of «zero» or more «character information items»: this is mapped to a Text Node «or a String» in the «XPath 1.0 data model».

Editorial Note: This section must be merged with subsequent section (A) content. See the "Formatted Proposal" for guidance.

Editorial Note: The below section is moved after section (C) above. See the "Formatted * Proposal" for guidance.
(D) Insert a new Section 9.4.1, "Replacement Logic of Copy Operations" 2 before the existing Section 9.4.1, "Type Compatibility of Assignment", as follows:

## - Replacement Logic of Copy Operations



## Replacement Logic for WSDL Message Variables

When the from-spec and to-spec of a <copy> operation both select WSDL message variables, the following replacement logic MUST be executed:

All existing message parts in the destination WSDL message variable (referenced by the to-spec) will be removed and all existing message parts in the source WSDL message variable (referenced by the from-spec) will be copied and added to destination WSDL message variable.

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| <copy> operation |
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| Deleted: to further refine the behavior <br> of <copy> operation <br> Deleted: Remove all [children] and <br> [attributes] properties of the destination <br> EII. Then, copy and add all [children] and <br> [attributes] properties of the source EII to <br> the destination EII <br> Deleted: q <br> is "no" - i.e. not replacing target element <br> name. <br> Deleted: optional <br> Deleted: replaceElementName <br> Deleted: (either "yes" or "no") <br> Formatted: Font: (Default) Courier <br> New, 10 pt <br> Deleted: If replaceElementName <br> attribute at <copy> is set to "yes", an <br> extra replacement step <br> Deleted: will <br> Deleted: MUST be performed to <br> replace the target element-name with the <br> source element- <br> Formatted: Bullets and Numbering <br>  |

- RC (Replace-Content):
o To obtain the source content
- The source (from-spec) MUST yield one and only one Information Item. Otherwise, a selectionFailure fault MUST be thrownv
- Once the Information Item is yielded from the source, a TII will be computed based on the source Information Item as the source content. The XPath "string()" function will be applied to the Information Item to obtain its string-value as the source content, if the default XPath 1.0 binding is used in the from-spec. If , another expression language is used, an XPath function other than "string()" MAY be applied to the node to obtain the source content
- If the source is an EII with an xsi:nil="true", selectionFailure fault * MUST be thrown. (This check is performed during EII-to-AII or EII-to-TII copy).
o To replace the content:
- If the destination is an EII, remove all [children] properties (if any) and add the source content TII as the child of the EII.
- If the destination is an AII, replace the value of AII with the TII from the source. The value MUST be normalized, in accordance with the XML 1.0 Recommendation (section 3.3.3 Attribute Value Normalization http://www.w3.org/TR/1998/REC-xml-19980210\#AVNormalize).
- If the destination is a TII, replace the TII in the destination with the TII from the source.

Note:
o Attribute values are not text nodes in XPath 1.0, Attribute nodes have a string value that corresponds to the XML normalized attribute value, which is a TII.
o Information Items referenced by the to-spec MUST be an LValue. In XPath 1.0 data model, ąTII LValue MUST be a Text Node

## Using <copy> to initialize variables

When the destination selected by the to-spec in <copy> is un-initialized, the destination variable or message part MUST first be initialized before executing the above replacement logic. The details initialization details are as follows:

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Deleted: <\#>are
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- For complex type and simple type variables, a skeleton structure, composed of

Formatted: Indent: Left: 36 pt, a DII and an anonymous EII (Document Element), will be created as an integral part of the initialization <assign>/<copy> operation. Once this skeleton structure is created, the above "replacement" logic cąn be reușed.

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- For element based variables, a skeleton structure, composed of a DII and an EII (Document Element) with the name matching the element name used in variable declaration, will be created as an integral part of the initialization <assign>/<copy> operation. Once this skeleton structure is created, the above "replacement" logic can be reused.
- For an uninitialized message part, the above two blocks of logic are reused, since a message part is either of a simple type, a complex type ${ }_{2}$ or an element.


## Handling Non-XML-Infoset Data Objects in <copy>

Simple type variables and values MAY be allowed to manifest as non-XML-Infoset data
objects, such as, boolean, string, or float, as defined in XPath 1.0. Same expressions may yield such a non-XML-Infoset data object, for example:
<from> number(\$order/amt) * 0.8 </from>
To consistently apply the above replacement $\operatorname{logic}_{e}$ such non-XML Infoset data MUST be handled aş Text Information Items (TII). This_logic is achieved through "to-string" data conversion, since a TII resembles a string object. More specifically, when the XPath 1.0 data model is used in WS-BPEL, the "string (object)" (http://www.w3.org/TR/1999/REC-xpath-19991116\#function-string) coercion MUST be used to convert boolean or number objects to String / TII. .

Note that this conversion is used to describe the expected result of <copy>. A WS-BPEL processor MAY skip the actual conversion for optimization if the result of <copy> remains the same, which would render the conversion redundant.

## XML Namespace Preservation

In the <copy> operation, the [in-scope namespaces] properties (similar to other XML Infoset Item properties) from the source MUST be preserved in the result at the destination. For example, when variables are serialized into XML text, a WS-BPEL processor will make use of a namespace-aware XML infrastructure, which maintains the XML Namespace consistency in the XML text, where in such a case, the infrastructure adds ${ }_{\mathbf{*}}$ XML Namespace declarations or renames_ prefixes used in XML Namespaces.

## Examples illustrating the replacement logic of copy operations: (pending editor group's decision on incorporating how many examples in the specification text)



```
- EII-to-EII
    XML Schema Context
    <xs:element name"po--ader">
    <xs:element name="poHeader">
        <xs:complexType>
        <xs:sequence>
            <xs:choice>
                <xs:element name="shippingAddr"
    type="tns:AddressType"/>
                <xs:element name="USshippingAddr"
    type="tns:USAddressType"/>
            </xs:choice>
            <xs:element name="billingAddr" type="tns:AddressType"/>
            </xs:sequence>
            </xs:complexType>
        </xs:element>
    --------------------------------
    "tns:USAddressType" is a type extended from "tns:AddressType".
            o Example 1
            ---------------------------------
                <assign>
            <copy>
                <from>$poHeaderVar1/tns:shippingAddr</from>
                <to>$poHeaderVar2/tns:billingAddr</to>
            </copy>
        </assign>
        ---------------------------------
        The above <copy> will replace the attributes and elements
        of the billing address in "poHeaderVar2" with those of
        shipping address in "poHeaderVar1".
            poHeaderVar1
        ----------------
        <tns:poHeader>
        ...
        <tns:shippingAddr verified="true">
            <tns:street>123 Main Street</tns:street>
            <tns:city>SomeWhere City</tns:city>
            <tns:country>UK</tns:state>
        </tns:shippingAddr>
        </tns:poHeader>
        ------------------
        poHeaderVar2: (before the copy)
        -----------------
        <tns:poHeader>
        <tnंs:billingAddr />
        ...
Page 7 of 17
```

                                    Formatted: Bullets and Numbering
    ```
    </tns:poHeader>
```

    </tns:poHeader>
    ------------------
    ------------------
    poHeaderVar2: (after the copy)
    poHeaderVar2: (after the copy)
    ------------------
    ------------------
    <tns:poHeader>
    <tns:poHeader>
    <t!
    <t!
    <tns:billingAddr verified="true">
    <tns:billingAddr verified="true">
        <tns:street>123 Main Street</tns:street>
        <tns:street>123 Main Street</tns:street>
        <tns:city>SomeWhere City</tns:city>
        <tns:city>SomeWhere City</tns:city>
        <tns:country>UK</tns:state>
        <tns:country>UK</tns:state>
        </tns:billingAddr>
        </tns:billingAddr>
    </tns:poHeader>
    </tns:poHeader>
    -----------------
    -----------------
    O Example 2 *
O Example 2 *
-----------------------------
-----------------------------
<assign>
<assign>
<copy keepSrcElementName="yes">
<copy keepSrcElementName="yes">
<from>$poHeaderVar3/tns:USshippingAddr</from>
        <from>$poHeaderVar3/tns:USshippingAddr</from>
<to>$poHeaderVar2/tns:shippingAddr</to>
        <to>$poHeaderVar2/tns:shippingAddr</to>
</copy>
</copy>
</assign>
</assign>
-------------------------------
-------------------------------
poHeaderVar3
poHeaderVar3
----------------
----------------
[tns:poHeader](tns:poHeader)
[tns:poHeader](tns:poHeader)
...
...
<tns:USshippingAddr verified="true">
<tns:USshippingAddr verified="true">
[tns:street](tns:street)123 Main Street</tns:street>
[tns:street](tns:street)123 Main Street</tns:street>
[tns:city](tns:city)SomeWhere City</tns:city>
[tns:city](tns:city)SomeWhere City</tns:city>
[tns:country](tns:country)USA</tns:state>
[tns:country](tns:country)USA</tns:state>
[tns:zipcode](tns:zipcode)98765</tns:zipcode>
[tns:zipcode](tns:zipcode)98765</tns:zipcode>
</tns:USshippingAddr>
</tns:USshippingAddr>
</tns:poHeader>
</tns:poHeader>
-----------------
-----------------
poHeaderVar2: (before the copy)
poHeaderVar2: (before the copy)
[tns:poHeader](tns:poHeader)
[tns:poHeader](tns:poHeader)
...
...
<tns:shippingAddr />
<tns:shippingAddr />
</tns:poHeader>
</tns:poHeader>
-----------------
-----------------
poHeaderVar2: (after the copy)
poHeaderVar2: (after the copy)
[tns:poHeader](tns:poHeader)
[tns:poHeader](tns:poHeader)
...

```
...
```

```
<tns:USshippingAddr verified="true">
```

<tns:USshippingAddr verified="true">
[tns:street](tns:street)123 Main Street</tns:street>
[tns:street](tns:street)123 Main Street</tns:street>
[tns:city](tns:city)SomeWhere City</tns:city>
[tns:city](tns:city)SomeWhere City</tns:city>
[tns:country](tns:country)USA</tns:state>
[tns:country](tns:country)USA</tns:state>
[tns:zipcode](tns:zipcode)98765</tns:zipcode>
[tns:zipcode](tns:zipcode)98765</tns:zipcode>
</tns:USshippingAddr>
</tns:USshippingAddr>
</tns:poHeader>
</tns:poHeader>
-----------------
-----------------

- EII-to-AII
XML Data Context
creditApprovalVar:
<tns:creditApplication appId="123-456">
<tns:approvedLimit code="AXR">4500</tns:approvedLimit> </tns:creditApplication>
--------------------------------
o Example 1
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```

```

<assign>
<copy>
<from>\$creditApprovalVar/tns:approvedLimit</from> <to>\$approvalNotice2Var/@amt</to>
</copy>
</assign>
------------------------------
approvalNotice2Var: (before <copy>)
------------------------------
-------------------------------
approvalNotice2Var: (after <copy>)
<tns2:approvalNotice amt="4500" />

- EII-to-TII
Formatted: Bullets and Numbering
XML Data Context
creditApprovalvar:
<tns:creditApplication appId="123-456">
<tns:approvedLimit code="AXR">4500</tns:approvedLimit>
</tns:creditApplication>

```
--------------------------------
```

    o Example 1
    o Example 2
Formatted: Bullets and Numbering

```
    <assign>
    <copy>
            <from>$creditApprovalVar/tns:approvedLimit</from>
            <to>$approvalNotice4Var/text()</to>
        </copy>
    </assign>
    -------------------------------
    approvalNotice4Var: (before <copy>)
    <tns4:approvalNotice></tns4:approvalNotice>
```



```
Since there is no text node under"tns4:approvalNotice",
selectionFailure fault will be thrown. No replacment logic
will be executed.
```

o Example 3: EII-to-EII for direct comparison to EII-to-TII Formatted: Bullets and Numbering

```
<assign>
    <copy>
        <from>$creditApprovalVar/tns:approvedLimit</from>
        <to>$approvalNotice4Var</to>
    </copy>
</assign>
-----------------------------
    Page 10 of 17
```

```
approvalNotice4Var: (before <copy>)
```

approvalNotice4Var: (before <copy>)
[tns4:approvalNotice](tns4:approvalNotice)</tns4:approvalNotice>
[tns4:approvalNotice](tns4:approvalNotice)</tns4:approvalNotice>
------------------------------
------------------------------
approvalNotice4Var: (after an EII-to-EII <copy>)
approvalNotice4Var: (after an EII-to-EII <copy>)
<tns4:approvalNotice code="AXR">4500</tns4:approvalNotice>
<tns4:approvalNotice code="AXR">4500</tns4:approvalNotice>
--------------------------------
--------------------------------

- AII-to-AII
$\underline{\text { XML Data Context }}$
orderDetailVar:
--------------------------------
<tns:orderDetail amt="2299"/>
---------------------------------
0 Example $1 \quad$ Formatted: Bullets and Numbering
---------------------------------
<assign>
<copy>
<from>\$orderDetailVar/@amt</from> <to>\$billingDetailVar/@amt</to>
</copy>
</assign>
------------------------------
billingDetailVar: (before <copy>)
----------------------------
--------------------------------
billingDetailVar: (after <copy>)
-------------------------------
-------------------------------
- AII-to-EII
Formatted: Bullets and Numbering
XML Data Context
orderDetailVar:
--------------------------------
<tns:orderDetail amt="3399" />

```
o Example 1
```

<assign>
    <copy>
            <from>$orderDetailVar/@amt</from>
            <to>$billingDetailVar/tns1:billingAmount</to>
            </copy>
```
</assign>
--------------------------------
billingDetailVar: (before <copy>)
<tns1:billingDetail id="8675309">
<tns1:billingAmount code="F00B2R"></tns1:billingAmount>
</tns1:billingDetail>
-------------------------------
billingDetailVar: (after <copy>)
<tns1:billingDetail id="8675309">
<tns1:billingAmount
code="F00B2R">3399</tns1:billingAmount>
</tns1:billingDetail>
-------------------------------

- AII-to-TII Formatted: Bullets and Numbering
orderDetailVar:
<tns:orderDetail amt="4499" />
----------------------------------
o Example $1 \quad$ Formatted: Bullets and Numbering
----------------------------
<assign>
<copy>
<from>\$orderDetailVar/@amt</from>
<to>\$billingAmount2Var/text()</to>
</copy>
</assign>
--------------------------------
billingAmount2Var: (before <copy>)
[tns2:billingAmount](tns2:billingAmount)0</tns2:billingAmount>
Page 12 of 17

```
--------------------------------
billingAmount2Var: (after <copy>)
<tns2:billingAmount>4499</tns2:billingAmount>
```

- TII-to-TII

```
postalCodeVar:
<tns:postalCode>95110</tns:postalCode>
```

-------------------------------
o Example 1

```
<assign>
    <copy>
            <from>$postalCodeVar</from>
            <to>$shippingPostalCodeVar</to>
            </copy>
        </assign>
        ------------------------
```

        shippingPostalCodeVar: (before <copy>)
        <tns:shippingPostalCode>0</tns:shippingPostalCode>
        -------------------------------
        shippingPostalCodeVar: (after <copy>)
        <tns:shippingPostalCode>95110</tns:shippingPostalCode>
        --------------------------------
    - TII-to-AII Formatted: Bullets and Numbering




shippingAddressVar:
-------------------------------
<tns1:shippingAddress />
-------------------------------
o Example 1 Formatted: Bullets and Numbering

```
<assign>
        <from>$postalCodeVar/text()</from>
        <to>$shippingAddress1Var/@postCode</to>
        </copy>
        </assign>
        -------------------------------
        shippingAddress1Var: (before <copy>)
        <tns1:shippingAddress postCode="" />
    -------------------------------
approvalNotice1Var: (after <copy>)
<tns1:shippingAddress postCode="94304" />
--------------------------------
- TII-to-EII Formatted: Bullets and Numbering
XML Data Context
postalCodeVar:
<tns:postalCode>94107</tns:postalCode>
0 Example 1 Formatted: Bullets and Numbering
```

```
*
```

* 

<assign>
<assign>
<copy>
<copy>
<from>$postalCodeVar</from>
            <from>$postalCodeVar</from>
<to>$shippingAddress2Var/tns2:postalCode</to>
            <to>$shippingAddress2Var/tns2:postalCode</to>
</copy>
</copy>
</assign>
</assign>
--------------------------------
--------------------------------
shippingAddress2Var: (before <copy>)
shippingAddress2Var: (before <copy>)
<tns2:shippingAddress id="9035768">
<tns2:shippingAddress id="9035768">
[tns2:postalCode](tns2:postalCode)</tns2:postalCode>
[tns2:postalCode](tns2:postalCode)</tns2:postalCode>
</tns2:shippingAddress>
</tns2:shippingAddress>
--------------------------------
--------------------------------
shippingAddress2Var: (after <copy>)
shippingAddress2Var: (after <copy>)
<tns2:shippingAddress id="9035768">
<tns2:shippingAddress id="9035768">
[tns2:postalCode](tns2:postalCode)94107</tns:postalCode>
[tns2:postalCode](tns2:postalCode)94107</tns:postalCode>
</tns2:shippingAddress>

```
        </tns2:shippingAddress>
```

```
    ----------------------------------
\Delta
Below is an explanation of the concepts of XML Namespace Preservation as defined in the text proposed in part ( \(D\) ).
Explanation of the concepts of XML Namespace Preservation Concepts
defined in (D) (not an addition or modification to the specification)
With the replacement logic defined above in the text to be inserted in (D), in most cases no XML namespace declaration conflicts exist between the source (i.e. the selection result of the from-spec) and destination (i.e. the self-or-parent of the selection result of the to-spec), The XML namespace mechanism is flexible enough to handle such cases for example:
```

```
<foo:bar xmlns:foo="http://foo.com">
```

<foo:bar xmlns:foo="http://foo.com">
<!-- this "foo:bar" element is pointed
<!-- this "foo:bar" element is pointed
        by to-spec as the destination of copy -->
by to-spec as the destination of copy -->
<foo:abc xmlns:foo="http://foo2.com" />
<foo:abc xmlns:foo="http://foo2.com" />
<!-- this "foo:bar" element is pointed
<!-- this "foo:bar" element is pointed
        by to-spec as the destination of copy -->
by to-spec as the destination of copy -->
</foo:bar>

```
</foo:bar>
```

However, some cases exist where a non-trivial conflict may be encountered - for
example:
v1:
<foo:bar xmlns:foo="http://foo.com" foo:attr="valueA" />
v2: (before copy)
<p:parent xmlns:p="http://foo.com"
xmlns:foo="http://foo.some.com">
<p:bar foo:attrX="valueY" />
</p:parent>
With the following $\leq c o p y \geq$ operation, we would encounter a conflict in the use of prefix
"foo" in foo:attr and foo:attrX, which are associated with "http://foocom" and
"http://foo.some.com":
<assign>
<copy>
<from>\$v1</from>
<to xmlns:p="http://foo.com">\$v2/p:bar</to>
<copy>
</assign>

To resolve this conflict, the underlying namespace-aware infrastructure is allowed to

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-
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rename prefixes to those which do not conflict, if necessary. For example, after the copy operation is completed, V2 may look like the following:
v2: (after copy)
<p:parent xmlns:p="http://foo.com"
xmlns:foo="http://foo.some.com">
<p:bar xmlns:foo2="http://foo.com" foo2:attr="valueA" />

```
</p:parent>
```

or
<p:parent xmlns:p="http://foo.com"
xmlns:foo="http://foo.some.com"> <p:bar p:attr="valueA" />
</p:parent>
The details of renaming prefixes are dependent on the underlying namespace-aware infrastructure, which is outside of the scope of this specification. As the above examples illustrate, there is usually more than one way to rename prefixes to handle this conflict when producing XML namespace consistent data.

When a schema-aware data model is used at runtime in WS-BPEL, a similar prefix renaming mechanism MAY? be used to handle namespace declaration conflicts, where QName values of attribute or text form are used.

Editorial Note: The below section is moved before section (B) above. See the "Formatted Proposal" for guidance.
(A) Update Section 9.3, "Assignment", as follows,

- .Update the <copy> syntax to read (changes denoted by «»):
<copy $\underline{\text { kkeepSrcElementName="yes|no"? } » \gg ~}$
from-spec
to-spec
</copy>,
- Insert the following before paragraph 16 ("An optional validate attribute can be used with the assign activity....") as follows:
"An OPTIONAL keepSrcElementName attribute of the <copy> construct can be used to specify whether the element name of the destination (as selected by the tospec) will be replaced by the element name of the source (as selected by the fromspec) during the copy operation. For details, please see Section 9.3.1,
"Replacement Logic of Copy Operations".."

Editorial Note: This section must be merged with subsequent section (A) content. See the "Formatted Proposal" for guidance.

Page 16 of 17

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| ```<copy> from-spec to-spec </copy>``` |  |
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A

## Clean up section

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## (formally numbered as 9.3.1)

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Note:

This cleanup will resolve Issue 51 as well.
( http://www.choreology.com/external/WS_BPEL_issues_list.html\#Issue51 )
Yaron suggested that we might want to find a standardized way to turn off schema-type static analysis. That will be a part of Issue 9 discussion.
( http://www.choreology.com/external/WS_BPEL_issues_list.html\#Issue9 )

## Details of Changes:

Under section "Type Compatibility in Assignment" (formally numbered as 9.3.1):
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In all other cases, the types of the source and destination are XML Schema types or elements, and the constraint is that the source value MUST possess the element or type associated with the destination. Note that this does not require the types associated with
the source and destination to be the same. In particular, the source type MAY be a subtype of the destination type. In the case of variables defined by reference to an element, moreover, both the source and the target MUST be the same element.

The semantics of a process in which any of the matching constraints above is violated is undefined.
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However, since XPath 1.0 data model is not schema aware, no XML Schema type checking is performed at <copy> operation during runtime,

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| Insert a new section on "Selection Result of Copy Operations" before the section of "Type Compatibility ..." to state the replacement and XML information item nature of <copy>. Here are the details of that section: |  |  |
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If the selection result of a from-spec or a to-spec belongs to other kinds of

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tems, a bpws:selectionFailure fault MUST be thrown. Note that if any of the unsupported Information Items are contained in the selection result they
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MUST be preserved, the restriction is only that they MUST NOT
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be selected directly as the top-level item by the from-spec or to-spec.

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The Text Information Item (TII)
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or [normalized value] property of an AII

## Martin

If in any way this is not a restriction in XPath, we should have RFC 2119 language to provide the necessary constraints.

This attribute is added to support the substitutionGroup pattern in XML Schema.
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(That is, "selectionFailure" checking from BPEL 1.1 is retained.)

If the source is an EII with an xsi:nil="true", selectionFailure fault MUST be thrown. (This
formed during EII-to-AII or EII-to-TII copy).

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| or the [normalized value] property of an Attribute Node |  |  |

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will add xmlns related attributes in XML-based text
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Is it sufficient to leave text here as is if the earlier sections talk about RFC 2119 responsibility for replaceElementName? TBD

