AUTOMOTIVE BASICS

Just a collective information..

APPLICATION LAYER (SWC)

The naming convention applies to the following subclasses of the class SwComponentType:
ApplicationSwComponentType

EcuAbstractionSwComponentType

ServiceSwComponentType

ComplexDeviceDriverSwComponentType

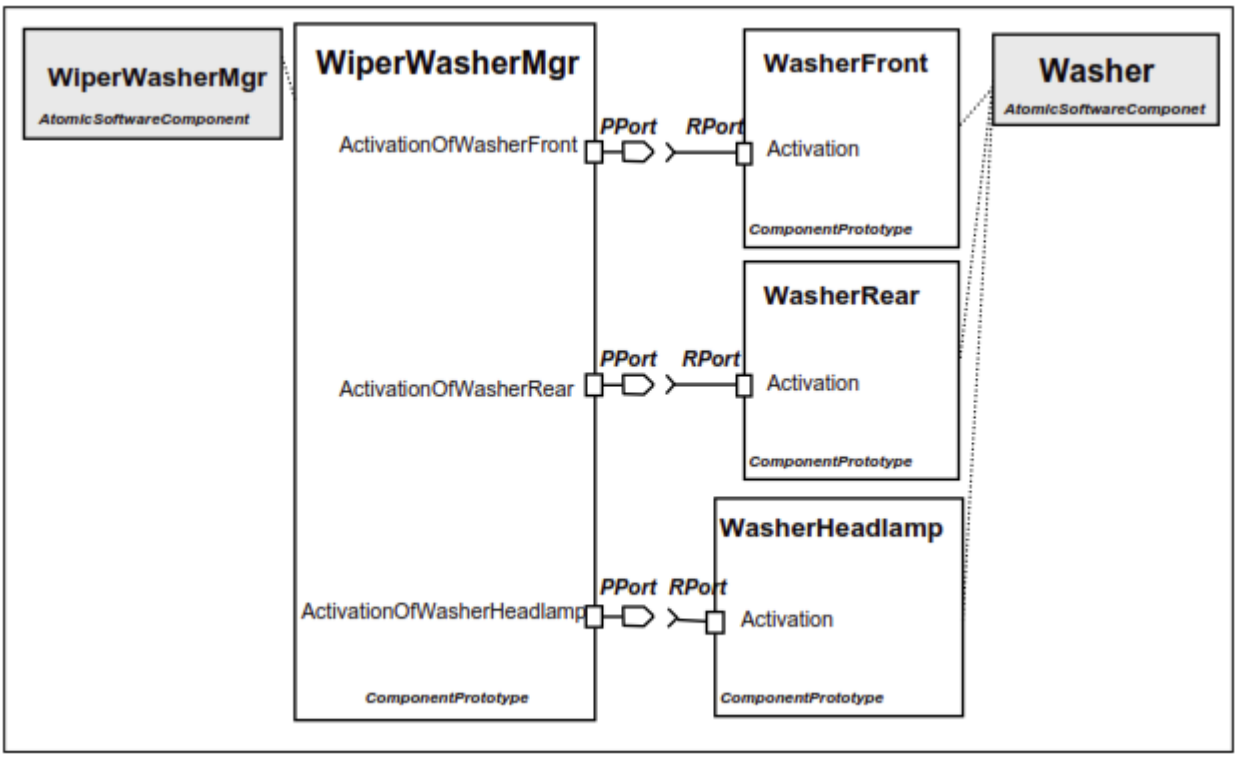
SensorActuatorSwComponentType

ParameterSwComponentType

ServiceProxySwComponentType

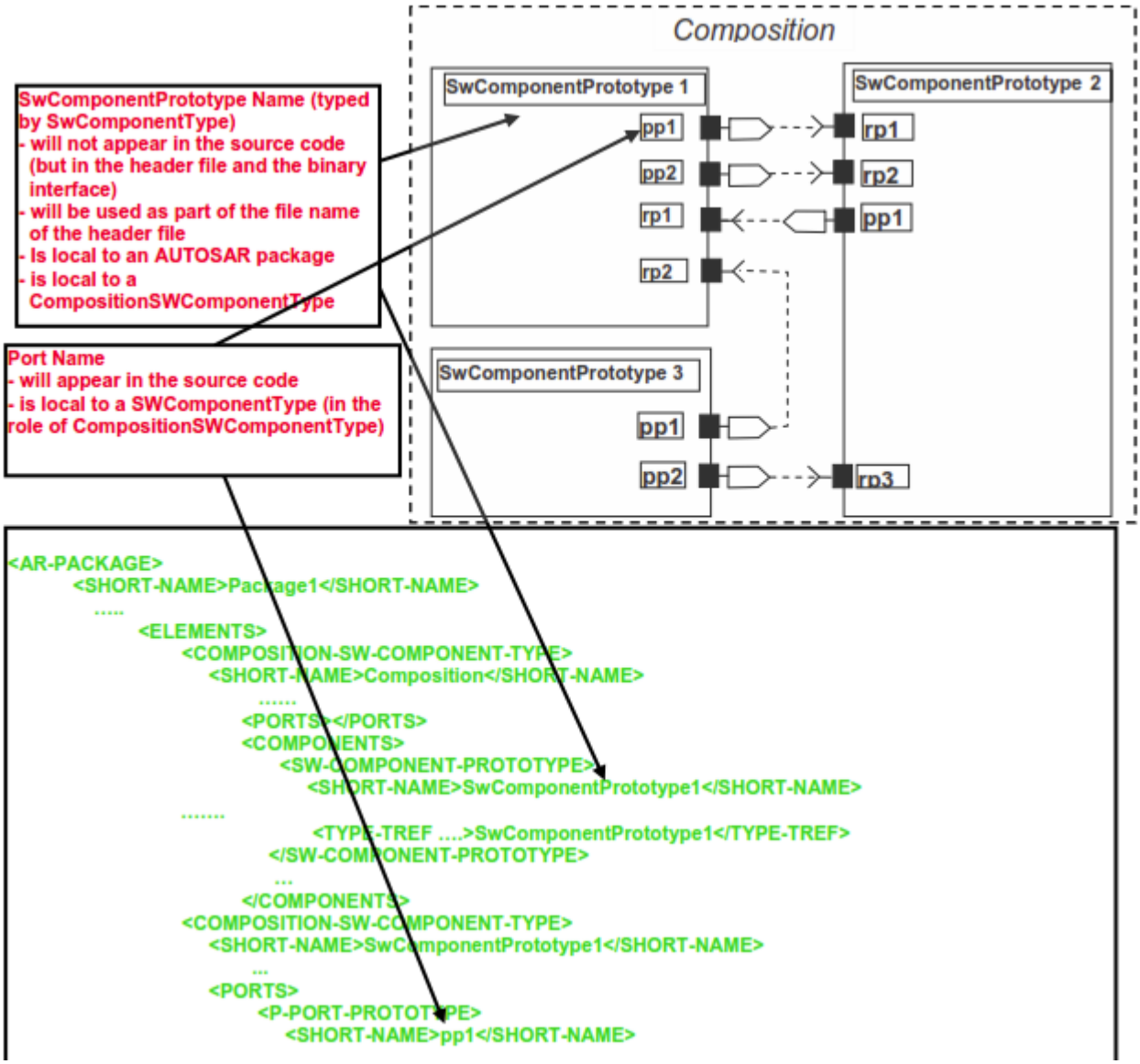
NvBlockSwComponenType

Ports:

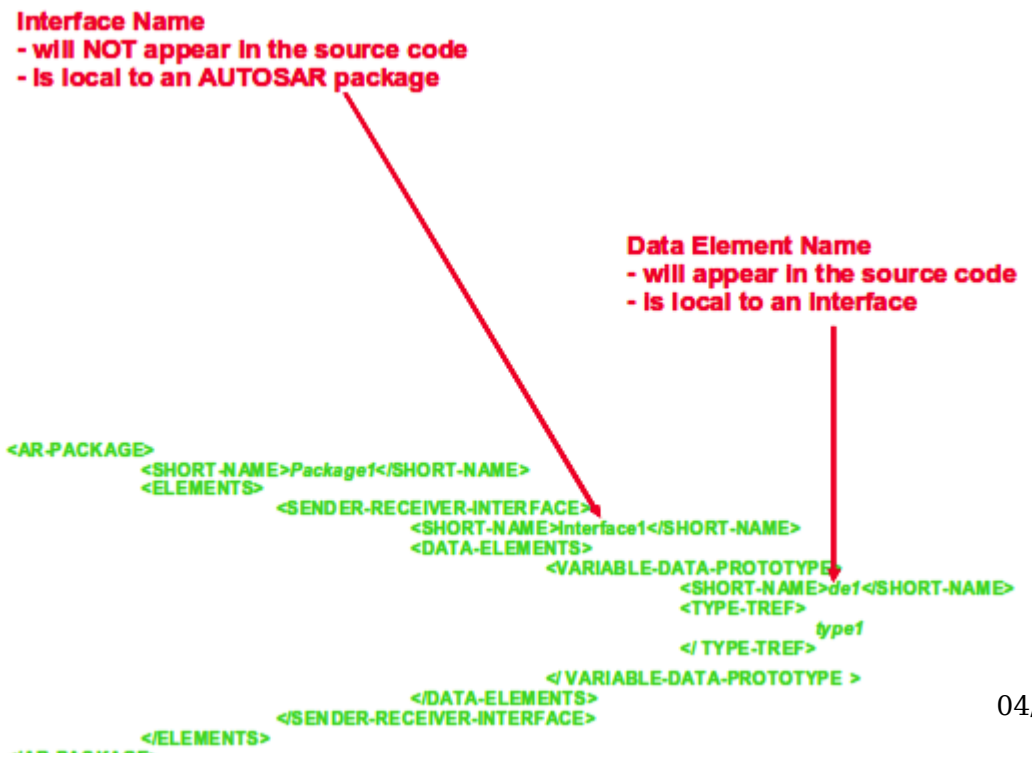


Ports of multiple ComponentPrototypes

Components:

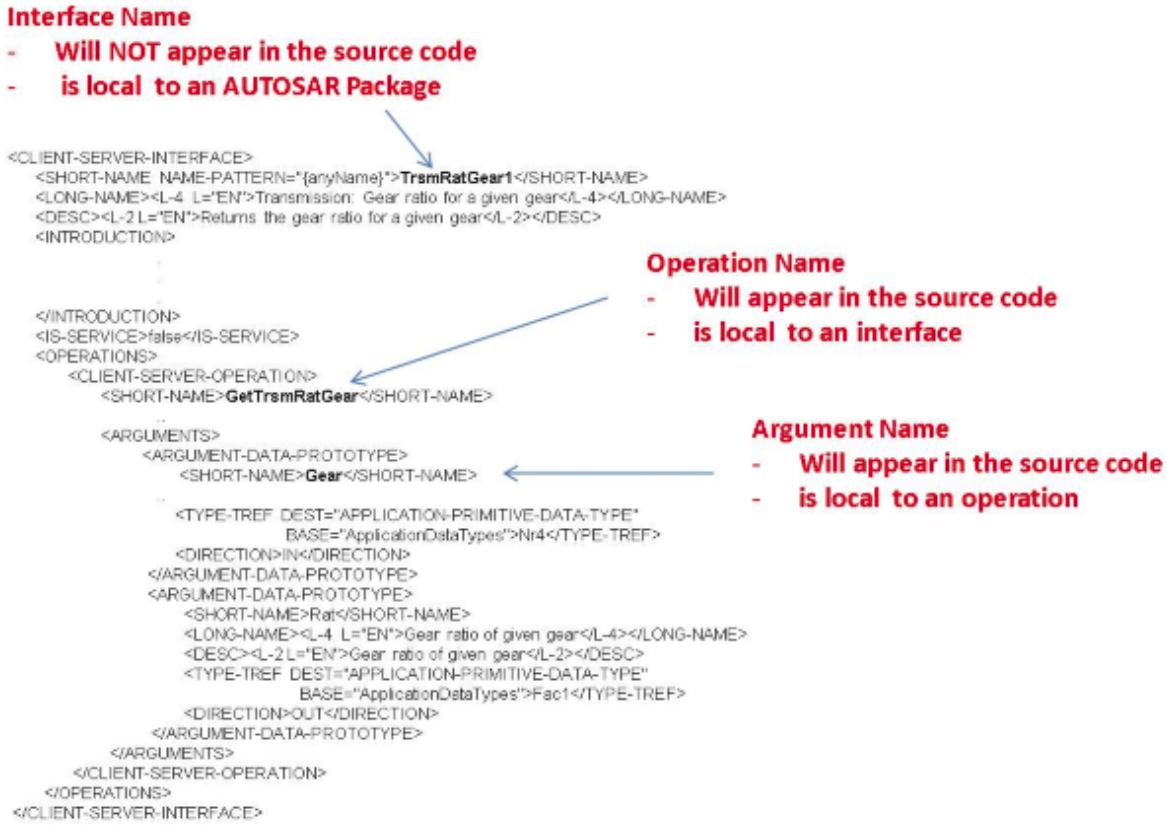


Sender Receiver Interfaces and Data Elements:



</AR-PACKAGE>

Client Server Interfaces, Operations, and Arguments:




```
<CLIENT-SERVER-INTERFACE>
   <SHORT-NAME NAME-PATTERN="{anyName}">TrsmRatGear1</SHORT-NAME>
   <LONG-NAME><L-4 L="EN">Transmission: Gear ratio for a given gear</L-4></LONG-NAME>
   <DESC><L-2 L="EN">Returns the gear ratio for a given gear</L-2></DESC>
   <INTRODUCTION>
      .
      .
   </INTRODUCTION>
   <IS-SERVICE>false</IS-SERVICE>
   <OPERATIONS>
      <CLIENT-SERVER-OPERATION>
         <SHORT-NAME>GetTrsmRatGear</SHORT-NAME>
         .
         <ARGUMENTS>
            <ARGUMENT-DATA-PROTOTYPE>
               <SHORT-NAME>Gear</SHORT-NAME>
               .
               <TYPE-TREF DEST="APPLICATION-PRIMITIVE-DATA-TYPE"
                          BASE="ApplicationDataTypes">Nr4</TYPE-TREF>
               <DIRECTION>IN</DIRECTION>
            </ARGUMENT-DATA-PROTOTYPE>
            <ARGUMENT-DATA-PROTOTYPE>
               <SHORT-NAME>Rat</SHORT-NAME>
               <LONG-NAME><L-4 L="EN">Gear ratio of given gear</L-4></LONG-NAME>
               <DESC><L-2 L="EN">Gear ratio of given gear</L-2></DESC>
               <TYPE-TREF DEST="APPLICATION-PRIMITIVE-DATA-TYPE"
                          BASE="ApplicationDataTypes">Fac1</TYPE-TREF>
               <DIRECTION>OUT</DIRECTION>
            </ARGUMENT-DATA-PROTOTYPE>
         </ARGUMENTS>
      </CLIENT-SERVER-OPERATION>
   </OPERATIONS>
</CLIENT-SERVER-INTERFACE>
```

SWC Internal Behaviour:

```
<?xml version="1.0" encoding="UTF-8"?>
<AUTOSAR xmlns="http://autosar.org/2.1.2">
  <TOP-LEVEL-PACKAGES>
    <AR-PACKAGE>
      <SHORT-NAME>swc_root</SHORT-NAME>
      <ELEMENTS>
        <INTERNAL-BEHAVIOR>
          <SHORT-NAME>intBehSwc1</SHORT-NAME>
          <COMPONENT-REF DEST="ATOMIC-SOFTWARE-COMPONENT-TYPE">/swc_root/swc1</COMPONENT-REF>
          <EVENTS>
            <TIMING-EVENT>
              <SHORT-NAME>Time100ms</SHORT-NAME>
              <START-ON-EVENT-REF DEST="RUNNABLE-ENTITY">/swc_root/intBehSwc1/run11</START-ON-EVENT-REF>
              <PERIOD>0.1</PERIOD>
            </TIMING-EVENT>
            <TIMING-EVENT>
              <SHORT-NAME>Time50ms</SHORT-NAME>
              <START-ON-EVENT-REF DEST="RUNNABLE-ENTITY">/swc_root/intBehSwc1/run12</START-ON-EVENT-REF>
              <PERIOD>0.05</PERIOD>
            </TIMING-EVENT>
          </EVENTS>
          <RUNNABLES>
            <RUNNABLE-ENTITY>
              <SHORT-NAME>run11</SHORT-NAME>
              <CAN-BE-INVOKED-CONCURRENTLY>false</CAN-BE-INVOKED-CONCURRENTLY>
              <DATA-SEND-POINTS>
                <DATA-SEND-POINT>
                  <SHORT-NAME>dwa1</SHORT-NAME>
                  <DATA-ELEMENT-IREF>
                    <P-PORT-PROTOTYPE-REF DEST="P-PORT-PROTOTYPE">/swc_root/swc1/pport1</P-PORT-PROTOTYPE-REF>
                    <DATA-ELEMENT-PROTOTYPE-REF DEST="DATA-ELEMENT-PROTOTYPE">
                      /interfaces/SR_Int16/intValue1
                    </DATA-ELEMENT-PROTOTYPE-REF>
                  </DATA-ELEMENT-IREF>
                </DATA-SEND-POINT>
                <DATA-SEND-POINT>
                  <SHORT-NAME>dwa2</SHORT-NAME>
                  <DATA-ELEMENT-IREF>
                    <P-PORT-PROTOTYPE-REF DEST="P-PORT-PROTOTYPE">/swc_root/swc1/pport1</P-PORT-PROTOTYPE-REF>
                    <DATA-ELEMENT-PROTOTYPE-REF DEST="DATA-ELEMENT-PROTOTYPE">
                      /interfaces/SR_Int16/intValue2
                    </DATA-ELEMENT-PROTOTYPE-REF>
                  </DATA-ELEMENT-IREF>
                </DATA-SEND-POINT>
              </DATA-SEND-POINTS>
              <SYMBOL>run11</SYMBOL>
            </RUNNABLE-ENTITY>
            <RUNNABLE-ENTITY>
              <SHORT-NAME>run12</SHORT-NAME>
              <CAN-BE-INVOKED-CONCURRENTLY>false</CAN-BE-INVOKED-CONCURRENTLY>
```

```
            <DATA-SEND-POINTS>
              <DATA-SEND-POINT>
                <SHORT-NAME>dwa2</SHORT-NAME>
                <DATA-ELEMENT-IREF>
                  <P-PORT-PROTOTYPE-REF DEST="P-PORT-PROTOTYPE">/swc_root/swc1/pport1</P-PORT-PROTOTYPE-REF>
                  <DATA-ELEMENT-PROTOTYPE-REF DEST="DATA-ELEMENT-PROTOTYPE">
                    /interfaces/SR_Int16/intValue1
                  </DATA-ELEMENT-PROTOTYPE-REF>
                </DATA-ELEMENT-IREF>
              </DATA-SEND-POINT>
            </DATA-SEND-POINTS>
            <SERVER-CALL-POINTS>
              <SYNCHRONOUS-SERVER-CALL-POINT>
                <SHORT-NAME>sscp</SHORT-NAME>
                <OPERATION-IREFS>
                  <OPERATION-IREF>
                    <R-PORT-PROTOTYPE-REF DEST="R-PORT-PROTOTYPE">
                      /swc_root/swc1/rport1
                    </R-PORT-PROTOTYPE-REF>
                    <OPERATION-PROTOTYPE-REF DEST="OPERATION-PROTOTYPE">
                      /interfaces/CS_string_to_int/parse
                    </OPERATION-PROTOTYPE-REF>
                  </OPERATION-IREF>
                </OPERATION-IREFS>
              </SYNCHRONOUS-SERVER-CALL-POINT>
            </SERVER-CALL-POINTS>
            <SYMBOL>run12</SYMBOL>
          </RUNNABLE-ENTITY>
        </RUNNABLES>
        <SUPPORTS-MULTIPLE-INSTANTIATION>false</SUPPORTS-MULTIPLE-INSTANTIATION>
      </INTERNAL-BEHAVIOR>
    </ELEMENTS>
  </AR-PACKAGE>
 </TOP-LEVEL-PACKAGES>
</AUTOSAR>
```

Example description of internal behavior of SWC1

How to design a sample SWC, what are the necessary elements need to be configured are mentioned clearly in this video,

How to Design a Autosar SWC using ARTEXT:

ARText in Action!

from **ARText Team**