AADL Packages & Components

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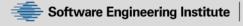
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Packages for Property and Type Definitions

Request for property sets with nested identifiers

Allow property definitions and type definitions in packages

Decision: Yes

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Nested Packages

Package definitions have nested name paths

- Allow syntactic nesting of package declarations
- Qualified name of package is the combination of outer package names and defining package name

Decision: Yes

- Use <dot> as separator instead of ::
- Decision: Deferred

Imported Namespaces

Import declaration

- Make other package namespace content visible in a given package
 - All content: Import packA.*;
 - Specific definition: import packB.TypeX [as mine];
- Declare within a package
- Reference by defining name only
 - Qualify if local definition with same name
 - Qualify if multiple imported definitions with same name

Decision: Yes

 Qualified name references are not required to be in listed in import declaration

Decision: Yes (Alexey, Jerome)

Replaces with clause and renames declarations

Public and Private Sections in Packages

Public/private sections lead to complex rules about portions of implementation definitions residing in public and portions in private section

Proposal

Eliminate public and private sections in packages

Proposal

Allow classifier definitions to be marked as private

Decision: Yes

Make AADL Case Sensitive

Identifiers: yes for all identifiers

Keywords:

- case insensitive (would not allow an identifier same as keyword other than case)
- Case sensitive all upper and all lower; allows for identifiers with mixed case
- Case sensitive all upper xor all lower; allows for identifiers with mixed case (Yes)

Decision: Yes

Section keywords in Classifiers

Proposal

- Sections in arbitrary order: yes
- Eliminate sections with keywords
 - Revisit after nested components and **connection** keyword on connections

```
interface control is
insignal: in port;
outaction: out port;
processflow: flow path insignal -> outaction;
end;
process control.impl is
    dofilter: thread filter;
    docompute: thread compute;
    extin: map insignal -> dofilter.insignal;
    ftoc: port dofilter.outsignal -> docompute.insignal;
    extout: map outaction -> docompute.outsignal;
    processflow => flow dofilter.filterpath -> ftoc -> docompute.computepath;
end:
thread interface filter is
insignal : in port;
outsignal : out port;
filterpath: flow path insignal -> outsignal;
#Period => 20 ;
end;
```

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End keyword without Matching Name

Proposal

- Eliminate matching name after end keyword
 - For packages
 - For classifier definitions

Recommendation: all but Brian

```
package PackC2
    type tt;
    interface mine is
        sig : in feature tt;
    end ;

bus interface canbus end;
end;
```

Classifier Naming

As in AADL V2

Component interface name

Single identifier

Component implementation name

<component interface identifier> <dot> <impl identifier>

Configuration name

<component interface identifier> <dot> <config identifier>

Property Association

As before but with new syntax instead of applies to

General form used in classifier

```
Thread interface T is
  Inp: in port;
  #Period => 50 ms;
  Inp#Data Size => 6 Bytes;
End;
```

In context of local declaration

```
Thread interface T is
  Inp: in port { #Data Size => 5 Bytes; };
End:
System s.impl is
  P1: process ComputeProcess.impl {
      #Code Size => 3.5 Kbytes;
      t1#Period => 20 ms:
      t2\#Period => 10ms;
      };
End;
```

Component Categories

Category

- Once specified cannot be refined into another category
 - Binding better for mapping fucntions to implementation architecture
 - May be useful for providing "implemented as"
- Change abstract to component (Generic component)
 - undecided
- Usage: interface, implementation, subcomponent
- Category must match

Component interface

- <category> and interface keyword
- Composable interface without category
 - Usage in interface composition
 - Content consistent with target category

```
interface sub
features
    name : in feature person ;
    surname : in feature person ;
end :
process interface subsub
features
    p1 : port date ;
    p2 : port date ;
end ;
```

Nested Subcomponent Declarations

Nested components without explicit classifier

- Single instance of an unnamed classifier
- No interface enforcement at given level
- Reach down for connection declarations

Recommendation: proceed. Section labels inside nested declarations?

implicit interfaces for intermediate nested component declarations

```
system ControlSystem {
    sensing: device { sensedata: out port;};
    processing: {
        filter: thread {
            inp: in port;
            outp: out port;
        };
        control: thread {
            inp: in port;
            outp: out port;
        };
        filtercontrolconn: filter.outp -> control.inp;
    };
    actuating: device { inp: in port; };
    sensefilterconn: sensing.sensedata -> processing.filter.inp;
    controlactuateconn: processing.control.outp -> actuating.inp;
```