AADL Packages & Components

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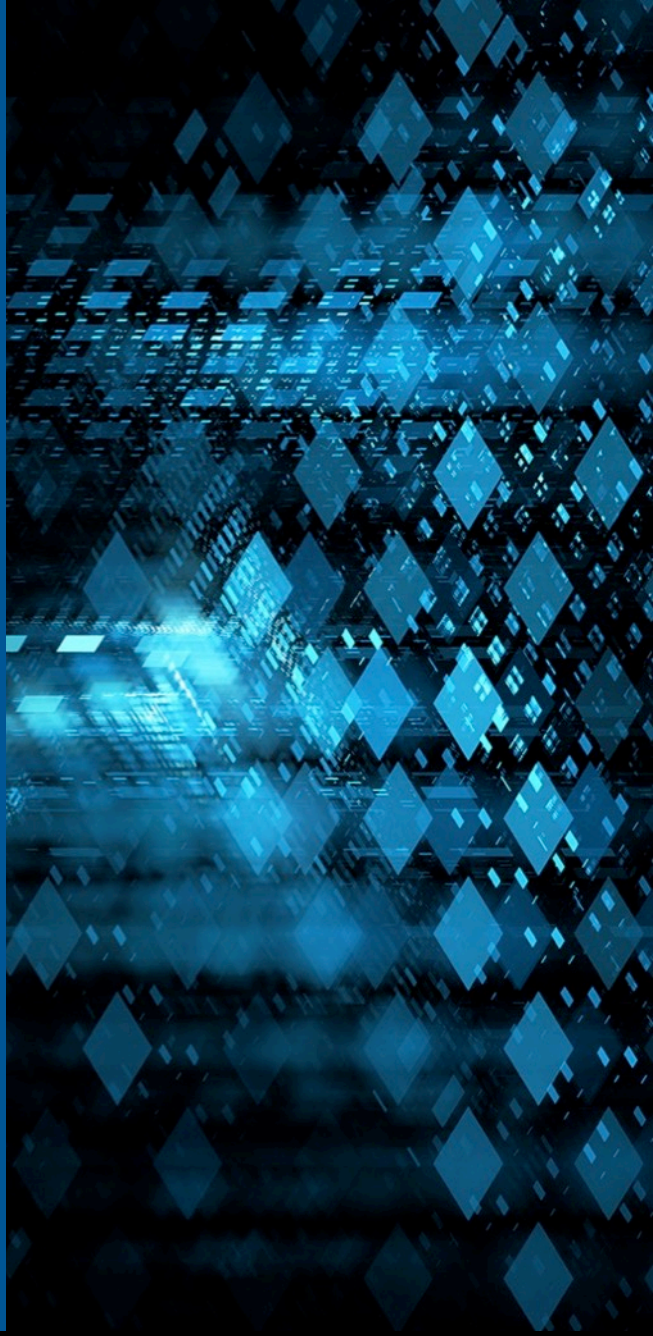

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Packages for Property and Type Definitions

Request for property sets with nested identifiers

- Allow property definitions and type definitions in packages

- Decision: Yes

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;
```

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*

[ModelElementPath] #<propertyname> => <property value>;

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;
}
```