AADL V3 Property Language

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Property Definitions

Define in packages

Utilize unified type system

- No more **aadlinteger**, …
- Record, list, set, map
- Union of types:
- Integration of proposed Units system (ISO, SysML)

Identify assignment targets (V2 **applies to**)

- No need to list enclosing categories for **inherit**
- Component categories
- Specific classifiers
- Other model elements

Property Profile

Constraints between properties in profile
Literal value specific sub-profile

Definition of property profile

- List of property references that are part of a profile
- Other profiles can be listed in a profile
- Same property reference can be in multiple profiles

```
Periodic : properties {
  Dispatch_Protocol => constant Periodic,
  Period, Deadline, Execution_time
};
```

```
GPSProperties :  properties {
  Period, GPSPropertyset::Sensitivity,
GPSPropertyset::Hardening
};
```

Usage

- Classifier specific property profile
- Profile assignment to classifier
  - Multiple configuration assignments
  - Unnamed profile
- Analysis specific property profile

```
device GPS
 use properties GPSProperties;
End GPS;
```

```
MyPackage::GPS => properties
#SecurityLevel, #SafetyLevel;
```

Property Profiles for Model Elements

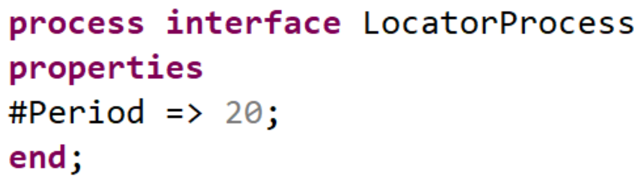
- Identification of model element “type”
  - By key word
  - By Meta model element name
  - By enumeration type for core and each annex
    - Union of enumeration subtypes
- Granularity of model elements
  - Component categories
  - Feature categories
  - Association categories
  - Flow specifications
- Usage
  - Property definition
  - Profile assignment

```
property Period : applies to Thread;
```

```
Thread => properties #Period, #Deadline;
```

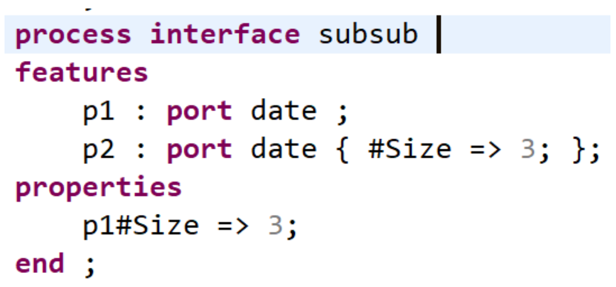
Property Association

- Property reference always with #



```
process interface LocatorProcess
properties
#Period => 20;
end;
```

- Properties on classifier elements
  - Directly attached
  - Via model element reference (aka contained property association)



```
process interface subsub
features
    p1 : port date ;
    p2 : port date { #Size => 3; };
properties
    p1#Size => 3;
end ;
```

Property Association in Annexes

Syntax in context of an annex

- FailStop#Ocurence => 2.3e-4;
- ^Process[1].thread2@Failstop#Occurrence => 2.3e-5;
  - ^ escape to core model as context
  - @ enter same annex type as original
  - @(BA) enter specified annex: if we have annex specific properties in the annex rather than core we may not need this
  - [x] array index

Mode specific property value assignment #8

- Currently: => 2.3e-5 **in modes (**m1), 2.4e-4 in modes (m2);
- => { m1 => 2.3 , m2 => 2.4 };
- Event#Occurrence.m1 =>
- See also error type specific property value and binding specific value
  - Use map type: mode, error type, binding target as key
  - Syntax for identifying map key in path (.)
  - One value multiple modes?

Property Values

Property value can be overridden many times in V2

- As part of definition
- Inherited from enclosing component
- Inherited from interface (ancestor)
- Inherited from implementation (ancestor)
- Inherited from subcomponent definition
- Multiple layers of contained property associations

Property Values in V3

Property value assignment in design space

- Assignment in interface or implementation
- Value override
  - in interface extension
  - Implementation, implementation extension

Property value assignment in configuration

- Assign only if not previously assigned
- At most once via configuration

Property Values in V3

V3: Scoped value assignment

- #Period *=> 20ms;
- Scope of configuration, implementation, or interface with assignment
- Used if no value assigned explicitly for contained model element
- Replaces **inherit** in V2