Ada Issue 00394 Redundant Restriction Identifiers and completing Ravenscar definition

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!standard D.07(10)
!standard D.07(15)
!standard D.13.1(01)
!standard H.4(2)
!standard H.4(9)
!standard H.4(16)
!standard J.13(1)
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!subject Redundant Restriction Identifiers and completing Ravenscar definition

!summary

This AI moves existing restriction identifiers to Annex J, and modifies the definition of the Ravenscar profile. It also completes the definition of the Ravenscar profile by including new restrictions that concern new features of the language.

!problem

The new restriction identifier, No_Dependence, has made existing identifiers redundant and allows the Ravenscar profile to be defined without the need to introduce further new identifiers. It also makes AI-353 redundant, and a number of new restriction identifiers in AI-305.

To complete the definition of Ravenscar it is necessary to restrict the use of the following new features:

1. CPU Timers
2. Group Timers
3. Specific handlers for task termination.

The first two are restricted due to their incompatibility with Ravenscar; the events they define identify dynamic actions that Ravenscar cannot easily utilize. The required restrictions are obtained by the use of restriction identifier No_Dependence.

As tasks in Ravenscar are not intended to terminate (and are all at the library level) it is deemed adequate for there to be only a fall-back handler. The run-time will be simpler if specific handlers are not supported. To define this restriction a new restrictions identifier is defined: No_Specific_Termination_Handlers.

Finally, to make it clear that if a Ravenscar task does terminate the fall-back handler (if there is one) will be executed; the definition of No_Task_Termination is modified.

!proposal

(See wording.)

!wording

Delete (the original) D.7(10), H.4(9), and H.4(16).

Delete No_Calendar and No_Task_Attributes_Package from the wording changes of AI-305.

AI-353 should be dropped from the Amendment.

Add new Section in Annex J:

J.13 Dependence Restrictions Identifiers

The following restrictions involve dependence on specific language-defined units. The more general No_Dependence restriction should be used for this purpose.

Static Semantics

The following restrictions_identifiers exist:

No_Asynchronous_Control
  There are no semantic dependences on package Asynchronous_Task_Control.

No_Unchecked_Conversion
  Semantic dependence on the predefined generic Unchecked_Conversion is not allowed.

No_Unchecked_Deallocation
  Semantic dependence on Unchecked_Deallocation is not allowed.

Add the following to the end of H.4(2):

The following uses of restriction identifier No_Dependence apply in this
Annex: No_Dependence => Ada.Unchecked_Deallocation and No_Dependence =>
Ada.Unchecked_Conversion.

Add the following new static restriction_identifier after D.7(10):

No_Specific_Termination_Handlers
        There are no calls to the following subprograms in Task_Termination:
        Set_Specific_Handler and Specific_Handler.

Modify the definition of restriction_identifier in AI-305 to the following:

No_Task_Termination