**Figure 8-1**

**C1** Dependability allocation of system $S$ for each architecture is adequate: Claim

**C2** Allocation of $D_1$ to $S_1$, allocation of $D_2$ to $S_2$ are adequate: Claim

**C3** Dependability allocation of system $S_1$ for each architecture is adequate: Claim

**C4** Dependability allocation of system $S_2$ for each architecture is adequate: Claim

**IE1** $T=$ Threat and Environment List for $S$: InformationElement

**IE2** Architecture of System $S = \{S_1, S_2\}$: InformationElement

**IE3** $D=$ Dependability Requirement of $S$: InformationElement

**IE4** $T_1=$ Threat and Environment List for $S_1$: InformationElement

**IE5** Architecture of System $S_1$: InformationElement

**IE6** $D_1=$ Dependability Requirement of $S_1$: InformationElement

**IE7** $T_2=$ Threat and Environment List for $S_2$: InformationElement

**IE8** Architecture of System $S_2$: InformationElement

**IE9** $D_2=$ Dependability Requirement of $S_2$: InformationElement
Figure 8-2

Top Structure

- Proven in Use Argument
- Modification Argument
- Integration Argument
Figure 8-3

DAC for Vehicle

Top

Pro

Mod

Int

DAC for Engine

DAC for Body
Figure 8-4
Evolutionary Development Argument Structure
Prove-in Use Argument Figure 8-5

C2 Carry over part of {Architecture} satisfies allocated : Claim

: AssertedInference

AR2 Argument over Adequacy of proven in use criteria and previous development and operation : ArgumentReasoning

IE3 Proven-in use criteria : InformationElement

C3 {Architecture} satisfied proven-in use criteria as a proven-in use : Claim

: AssertedEvidence

C4 Previous carry parts of {Architecture} satisfies allocated : Claim

: AssertedInference

AR3 Argument over previous development and operating condition : ArgumentReasoning

C5 Carry over part of {Architecture} satisfies allocated Dependability Attribute in development : Claim

IE4 Confirmation of proven-in use candidate : InformationElement

: AssertedEvidence

C6 Carry-over {Architecture} satisfies allocated Dependability Attribute in operation : Claim

: AssertedEvidence

IE5 Artifacts of Development Record of previous {Architecture} : InformationElement

: AssertedContext

IE6 Development Record of Carry-Over parts of {Architecture} : InformationElement

: AssertedContext

IE7 Artifacts of Field Record of Previous {Architecture} : InformationElement

: AssertedEvidence

IE8 Field Record of Carry over parts of {Architecture} : InformationElement

: AssertedContext
Evolutionary Development Argument Structure Modification Argument Argument

Figure 8-6

C7 Modified and impacted parts of {Architecture} satisfies each allocated part of {Dependability Attribute} : Claim

: AssertedInference

: AssertedContext

IE9 List of modified and impacted parts of {Architecture} : InformationElement

AR4 Argument over each modified and impacted parts of {Architecture} : ArgumentReasoning
Integration Argument
Top Structure Figure 8-7

C8 Integrated {Architecture} satisfies {Dependability Attribute} : Claim

: AssertedInference

AR6 Argument over static {Dependability Attribute} analysis and dynamic {Dependability Attribute} : ArgumentReasoning
Integration Argument
Static Dependability Analysis Argument
Figure 8-8
Dynamic Dependability Analysis Argument

Figure 8-9

- **C18** Dynamic (Dependability Attribute) analysis is sufficiently done : Claim
- ** AssertedContext**
- **IE19** Expected operating condition (use cases) : InformationElement

  - **AR10** Argument over sufficiency of use cases and physical/simulation V&V : ArgumentReasoning

- **C19** Use cases are sufficient : Claim
  - ** AssertedEvidence**
  - **IE19** Confirmation of Use Cases : InformationElement

- **C20** Use cases are adequately tested in simulation physical settings : Claim
  - ** AssertedInference**
  - **AR11** Argument over simulation and physical testing : ArgumentReasoning

- **C21** Use cases are adequately simulated : Claim
  - ** AssertedEvidence**
  - **IE20** Simulation results : InformationElement

- **C22** Use cases are adequately simulated : Claim
  - ** AssertedEvidence**
  - **IE21** Physical testing results : InformationElement
Standard Compliance
Figure 8-10

C23 System S adequately satisfies other standards : Claim

: AssertedInference

AR12 Argument over each standard : ArgumentReasoning

C24 System S adequately satisfies standard st1 : Claim

C25 System S adequately satisfies standard stN : Claim

IE22 List of other standards st1, ..., stN : InformationElement