### Security Case for ACAS Xu

#### Level 1

- \*\*G0:\*\* ACAS Xu satisfies security requirements.

- \*\*C0:\*\* Description of ACAS Xu.

- \*\*C1:\*\* SR are requirements about protecting the system from malicious entities.

- \*\*J0:\*\* The argumentation is based on satisfaction of SRs.

- \*\*A0:\*\* System SRS are complete, adequate, and consistent.

- \*\*S0:\*\* Argue through asset protection and secure development requirements.

#### Level 2

- \*\*S0:\*\* Argue through asset protection and secure development requirements.

- \*\*G1:\*\* ACAS Xu satisfies the asset protection requirements.

- \*\*G2:\*\* ACAS Xu satisfies secure development requirements. (Uninstantiated and Undeveloped)

#### Level 3

- \*\*G1:\*\* ACAS Xu satisfies the asset protection requirements.

- \*\*A1:\*\* Asset inventory is established.

- \*\*S1:\*\* Argue through the different stages of the system development life cycle.

#### Level 4

- \*\*S1:\*\* Argue through the different stages of the system development life cycle.

- \*\*G3:\*\* Asset protection requirements are met during the architecture design phase.

- \*\*G4:\*\* Asset protection requirements are met during other phases. (Undeveloped)

#### Level 5

- \*\*G3:\*\* Asset protection requirements are met during the architecture design phase.

- \*\*C2:\*\* Description of ACAS Xu architecture.

- \*\*S2:\*\* Argue through derivating security threats from SRs.

#### Level 6

- \*\*S2:\*\* Argue through derivating security threats from SRs.

- \*\*G5:\*\* ACAS Xu architecture is protected against identified security threats (STs).

- \*\*G6:\*\* ACAS Xu architecture is validated. (Uninstantiated and Undeveloped)

- \*\*J1:\*\* Detection and mitigation of threats fulfill SRs.

#### Level 7

- \*\*G5:\*\* ACAS Xu architecture is protected against identified security threats (STs).

- \*\*A2:\*\* All relevant threats have been identified.

- \*\*S3:\*\* Argue over each security threat.

- \*\*G6:\*\* ACAS Xu architecture is validated. (Uninstantiated and Undeveloped)

- \*\*C3:\*\* Description of ACAS Xu architecture model.

- \*\*A3:\*\* ACAS Xu architecture model is well defined in a formal method.

#### Level 8

- \*\*S3:\*\* Argue over each security threat.

- \*\*G0.1:\*\* ACAS Xu architecture is protected against tampering threat (ST1). (Uninstantiated and Undeveloped)

- \*\*G0.2:\*\* ACAS Xu architecture is protected against spoofing threat (ST2). (Uninstantiated and Undeveloped)

- \*\*G0.3:\*\* ACAS Xu architecture is protected against elevation of privileges threat (ST3). (Uninstantiated and Undeveloped)

In this hierarchical tree format:

- The goals, strategies, contexts, justifications, and assumptions are clearly connected, and placeholder text from the pattern is replaced with concrete elements specific to the ACAS Xu system.

- Elements marked as uninstantiated and undeveloped indicate areas of the argument that require further development and tailored information.