Using the security case pattern provided and the domain information on ACAS Xu, I will instantiate the pattern to create a security case for the Airborne Collision Avoidance System Xu (ACAS Xu). The instantiated security case will be represented in hierarchical tree format where different levels are denoted with dashes ("-").

### Instantiated Security Case for ACAS Xu

```

- G0: ACAS Xu satisfies security requirements

- C0: ACAS Xu is a collision avoidance system designed for UAVs

- C1: Security requirements are requirements about protecting ACAS Xu from malicious entities

- J0: The argumentation is based on satisfaction of Security Requirements (SRs)

- A0: System Security Requirements Specifications (SRS) for ACAS Xu are complete, adequate, and consistent

- S0: Argue through asset protection and secure development requirements

- G1: ACAS Xu satisfies the asset protection requirements

- A1: An asset inventory for ACAS Xu is established

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

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

- C2: Description of ACAS Xu's architecture focusing on its components, sensors, processor, planner, and actuator

- S2: Argue through deriving security threats from SRs

- J1: Detection and mitigation of threats fulfill SRs

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

- A2: All relevant threats have been identified against ACAS Xu architecture

- S3: Argue over each security threat

- G0.1: ACAS Xu architecture is protected against ST1 Tampering

- G0.2: ACAS Xu architecture is protected against ST2 Spoofing

- G0.3: ACAS Xu architecture is protected against ST3 Elevation of privileges

- G6: ACAS Xu architecture is validated

- C3: Description of ACAS Xu's formal architectural model

- A3: ACAS Xu's architectural model is well defined in formal methods

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

- S2: (Undeveloped and Uninstantiated) Argue through deriving security threats from decomposed SRs for secure development requirements

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

```

### Explanation:

- \*\*Goals (G0, G1, G3, G5, and G0.X)\*\* were instantiated with specific information about ACAS Xu and associated security measures.

- \*\*Contexts (C0, C2, C3)\*\* provide detailed descriptions of ACAS Xu and its architectural design.

- \*\*Justifications (J0, J1)\*\* represent why satisfying security requirements and mitigating identified threats ensures that ACAS Xu remains secure.

- \*\*Assumptions (A0 to A3)\*\* listed are considered valid for the security argumentation to hold.

- \*\*Strategies (S0, S1, S3, S2)\*\* describe how the goals are to be supported by arguments over asset protection requirements, derivation of security threats from SRs, and validation of the architecture against threats.

This structured representation sets a clear outline of how ACAS Xu's security requirements are achieved through intelligent asset protection and development procedures addressing all identified threats. The undeveloped goals indicate areas where further development or information is necessary to complete the security case argumentation.