Here is the instantiated security case for Instant Messaging (IM) software, using the given assurance case pattern and demonstrating it in the hierarchical tree format.

### Hierarchical Tree Structure

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G1: IM software is acceptably secure in the communication system

|-- C1: Definition and description of IM software

|-- C2: Definition and description of communication system

|-- C3: Definition of acceptably secure

|-- S1: Argument of that software assets are under protection

|-- J1: Protection of software assets supports that software is acceptably secure

|-- G2: All identified IM software critical assets are protected

|-- S2: Respective arguments of IM software critical assets

|-- C4: List of IM software critical assets

|-- J2: Relationship between assets is clear and can be argued separately

|-- G3: IM software critical asset is protected

|-- S3: Argument of the type which the software critical asset belongs to

|-- C5: List of IM software critical asset types in PEDD

|-- J3: Types of software assets are according to PEDD

|-- G4: IM software critical asset 1 which belongs to type 1 is protected

|-- G4: IM software critical asset 2 which belongs to type 2 is protected

|-- G4: IM software critical asset 3 which belongs to type 3 is protected

|-- G4: IM software critical asset 4 which belongs to type 4 is protected

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### Rationalization of Changes and Selection

- \*\*G1 Instantiated\*\*:

- Original: Goal(G1, {software} is (acceptably secure) in {system})

- Instantiated: Goal(G1, IM software is acceptably secure in the communication system)

- \*\*C1, C2, C3 Instantiated\*\*:

- Original: Context(C1, Definition and description of {software})

- Instantiated: Context(C1, Definition and description of IM software)

- Original: Context(C2, Definition and description of {system})

- Instantiated: Context(C2, Definition and description of communication system)

- Original: Context(C3, Definition of {acceptably secure})

- Instantiated: Context(C3, Definition of acceptably secure)

- \*\*G2\*\*, \*\*S1\*\*, and \*\*G3 Intact\*\*:

- These elements do not have placeholders and remain unchanged.

- \*\*C4 and S2 Instantiated\*\*:

- Original: Context(C4, List of {software} critical assets)

- Instantiated: Context(C4, List of IM software critical assets)

- \*\*G3 and Multiplicity of G4 Instantiated\*\*:

- Original: Goal(G3, {software critical asset} is protected)

- Instantiated: Goal(G3, IM software critical asset is protected)

- Multiplicity applied to G4 to reflect multiple IM software critical assets

- \*\*G4 Placeholder and Multiplicity Instantiated\*\*:

- Original: Goal(G4, {software critical asset} which belongs to {type} is protected)

- Instantiated:

- Goal(G4, IM software critical asset 1 which belongs to type 1 is protected)

- Goal(G4, IM software critical asset 2 which belongs to type 2 is protected)

- Goal(G4, IM software critical asset 3 which belongs to type 3 is protected)

- Goal(G4, IM software critical asset 4 which belongs to type 4 is protected)

- Reflects the protection of 4 specific critical assets, as indicated by the multiplicity.

- \*\*Contexts and Justifications Intact\*\*:

- These elements do not have placeholders or require instantiation beyond providing context and rationale as per pattern rules.

This structure reflects all instantiated placeholders with specific details relating to the IM software and maintains compliance with the assurance case pattern's pre-defined format.