Based on the provided security case pattern predicates and the domain information for Instant Messaging (IM) software, I will create a security case replacing the placeholders with concrete information from the domain context. Below is the hierarchical tree representation of the GSN for the security case of IM software:

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- Goal (G1, Instant Messaging software is acceptably secure in operational environment)

- Context (C1, Definition and description of Instant Messaging software)

- Context (C2, Definition and description of operational environment)

- Context (C3, Definition of what 'acceptably secure' means for IM software)

- Strategy (S1, Argument that IM software assets are under protection)

- Justification (J1, Protection of IM software assets supports that software is acceptably secure)

- Goal (G2, All identified IM software critical assets are protected)

- Context (C4, List of IM software critical assets: Registration information, Registration process, User account information, Authentication information, Login process, Chat logs)

- Justification (J2, Relationship between assets is clear and can be argued separately)

- Strategy (S2, Respective arguments of IM software critical assets)

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

- Strategy (S3, Argument based on the type which the IM software critical asset belongs to)

- Context (C5, List of software critical asset types in PEDD: Process, Environment Entity, Data Exchange, Data Storage)

- Justification (J3, Types of software assets are according to PEDD)

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

(repeat Goal G4 for each critical asset identified in C4 with specific types from C5)

```

Each level of the tree above represents the structure according to the GSN format, where goals represent the claims, strategies explain how the goals are supported, contexts give background or define terms, and justifications provide the rationale. The `SupportedBy` predicates show the hierarchical connections (parent-child relationships) within the GSN.

For MultiGoal (Based on G4 and multiple occurrences):

- Goal instances of G4 can be made distinct for each critical asset within the IM software, assuming a category type from PEDD (Process, Environment Entity, Data Exchange, Data Storage) as specified in each use case.

Fill placeholders:

- Concrete names and specific determinants have been added (e.g., 'operational environment', 'IM software assets', precise critical asset names, and PEDD categories).

This structure is a simplified visualization and should be further detailed with actual security evidence and deeper reasoning for every critical asset and its relation to the software as a whole.