Organizational Network Analysis

UCF/GUTT™ Analysis Report

Report ID: ONA-2026-0129-B8E4
Generated: January 29, 2026
Framework: v2.2.0 (Enhanced Demo)

Executive Summary: This small engineering team shows strong connectivity (85%) and effective task collaboration, but is held back by three key interpersonal frictions—primarily a trust deficit between Bob and Carol. Addressing these conflicts could raise overall team health from 62% to above 80%. *See network visualization on page 2.*

Team Overview

Team: Product Engineering Alpha • **Members:** 5 • **Analysis Period:** Q4 2025 • **Dataset:** Engineering Team (Default)

Health Metrics

Metric	Value	Status
Overall Team Health	62%	■ Needs Attention
Connectivity Index	85%	■ Good
Harmony Ratio	47%	■ Mixed
Conflict Density	33%	■ Moderate
Sentiment Balance	+45%	■ Healthy
Seriality	Satisfied	■ All Connected

* Overall Team Health = weighted composite of connectivity (25%), harmony ratio (30%), inverse conflict density (30%), and sentiment balance (15%).

Relationship Summary

Category	Count	Percentage
Total Pairs Analyzed	10 pairs × 6 channels = 60	—
Harmonious Relationships	4	40%
Conflicted Relationships	3	30%
Neutral/Weak Relationships	3	30%

■ Detected Conflicts

R_conflict(A, B) = TRUE when ∃ positive channel ∧ ∃ negative channel

Severity thresholds: High = max|negative| ≥ 0.50 | Medium = max|negative| 0.30–0.49 | Low = max|negative| < 0.30

Bob ↔ Carol [High Severity]

⊕ **Collaboration:** +0.72 **Communication:** +0.45

■ **Trust:** -0.58 **Social:** -0.31

> **Insight:** Strong task performance masks interpersonal friction. Trust deficit likely impacts knowledge sharing and candid feedback. Collaboration works well but personal rapport is strained.

Alice ↔ David [Medium Severity]

⊕ **Reporting:** +0.85 **Influence:** +0.80

■ **Communication:** -0.42

> **Insight:** Formal hierarchy functioning well but communication channel shows friction. May indicate information bottleneck or unclear expectations in day-to-day interactions.

Carol ↔ Eve [Low Severity]

⊕ **Social:** +0.65 **Trust:** +0.55

■ **Collaboration:** -0.22

> **Insight:** Good personal rapport not fully translating to work output. Minor collaboration friction easily addressable. Consider structured pairing on next project to strengthen working relationship.

✓ Harmonious Relationships

R_harmony(A, B) = TRUE when all non-zero channels have the same sign

Relationship	Channels	Avg Weight	Type
Alice → Bob	Collaboration, Trust, Communication, Influence	+0.75	Strong Partnership
Bob → David	Influence, Collaboration, Social	+0.50	Mentorship
Carol → David	Social, Collaboration, Communication	+0.60	Peer Support
Eve → Alice	Communication, Collaboration, Trust	+0.70	Cross-functional

■ Recommendations

1. Address Bob ↔ Carol Trust Deficit: High-priority intervention. Consider facilitated conversation or team-building focused on trust.

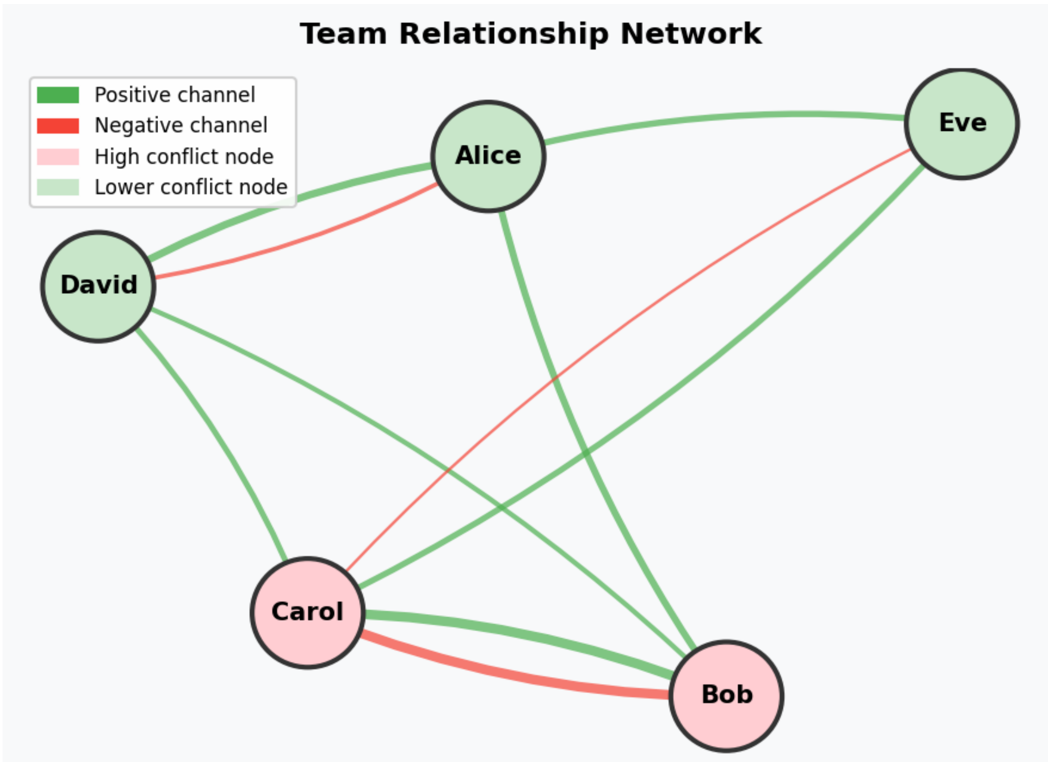
2. Improve Alice ↔ David Communication: Clarify communication expectations. Consider regular 1:1s or clearer async protocols.

3. Leverage Carol ↔ Eve Social Bond: Assign to collaborative project to convert personal rapport into productive working relationship.

4. Monitor Overall Sentiment: Team sentiment at +45% is healthy but could improve. Address conflicts to raise alignment ratio above 50%.

Network Visualization

The network graph below shows team relationships. Green edges indicate positive channels, red edges indicate negative channels. Node color reflects conflict involvement (red-tinted = high-severity conflict participant).



Key Observation: The Bob ↔ Carol relationship shows the thickest red edge, indicating the highest-severity conflict. Both nodes are highlighted as primary intervention targets. The remaining relationships show predominantly green (positive) connections, confirming strong overall team connectivity.

✓ *Verification Status*

This analysis was performed using predicates conforming to formally verified specifications from **18,153 lines of Coq proofs**. The conflict and harmony detection algorithms follow mathematically proven definitions.

Coq Library: 18,153 lines • **Axioms:** 0 • **Admits:** 0 • **Unit Tests:** 42 passed • **Predicates:** R_conflict, R_harmony, Seriality

Note: Demo mode uses Python implementations. Licensed version includes extracted OCaml with full proof chain.