Micro-Migration Example

February 28, 2008

Figure 1 shows part of a mesh, before migration, including showing which parts have a stake in which entities. (The four subcolumns in the table are for parts A, B, C, and D respectively.) Figure 2 shows the situation after triangle T14 has been migrated from Part B to Part A.

Now, here's how I see the messages and updates working.

Communication Round 1. Part A requests migration of upward adjacencies of edge E11. (That is, triangle T14, though part A may not know its ID up front.)

Communication Round 2. Part B sends T14 (migration), E25 (shared with B), E26 (shared with C), and V14 (shared with B, C, D) to A. All this information is needed for A to actually have T14 available locally. Happily, Part B has copies of all of this stuff anyway. Note that no change of ownership for E25, E26, and V14 is necessarily implied here, although if B owns E26 its ownership has to transfer somewhere. Also, B should inform A that E26 and V4 will be orphans if the migration succeeds.

Local Computation, Part A. Part A adds V14, E25, E26, and T14 to its local database. V14 (B, C, D), E25 (B), and E26 (C) are marked as having copies elsewhere, and the remote ID's are noted.

Communication, Round 3. Part A sends its local ID's of E25 (B), E26 (C), and V14 (B, C, D) to remote parts. This requires three messages. Whether the request to C to eliminate V4(B) as a remote copy comes as a separate message is a good question; this would raise the total to four messages.

Local Computation, Parts B, C, D. Parts B, C, D update their remote copy information for E25, E26, V4, and V14.

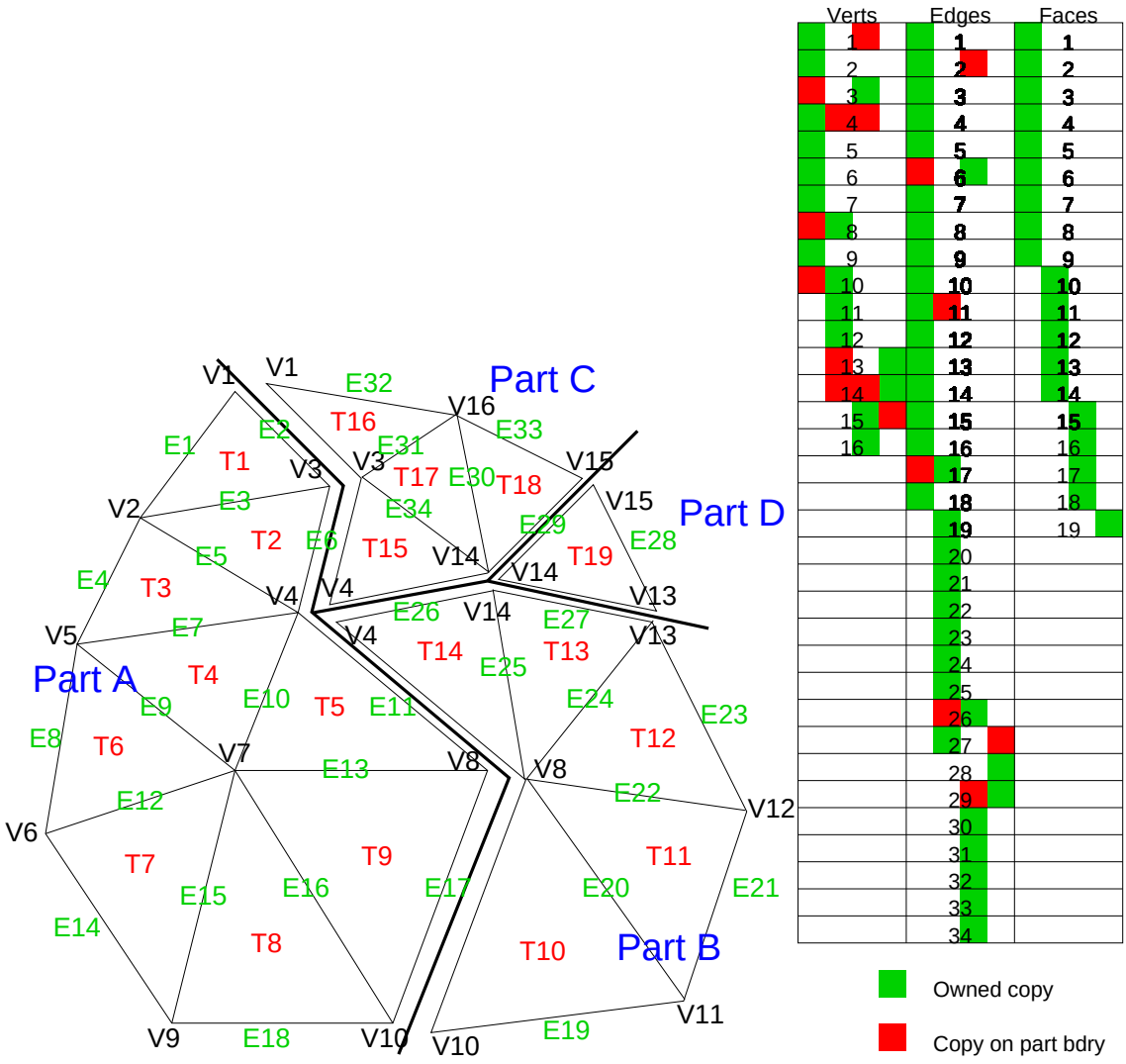

Figure 1: Mesh sketch and entity status before any migration.

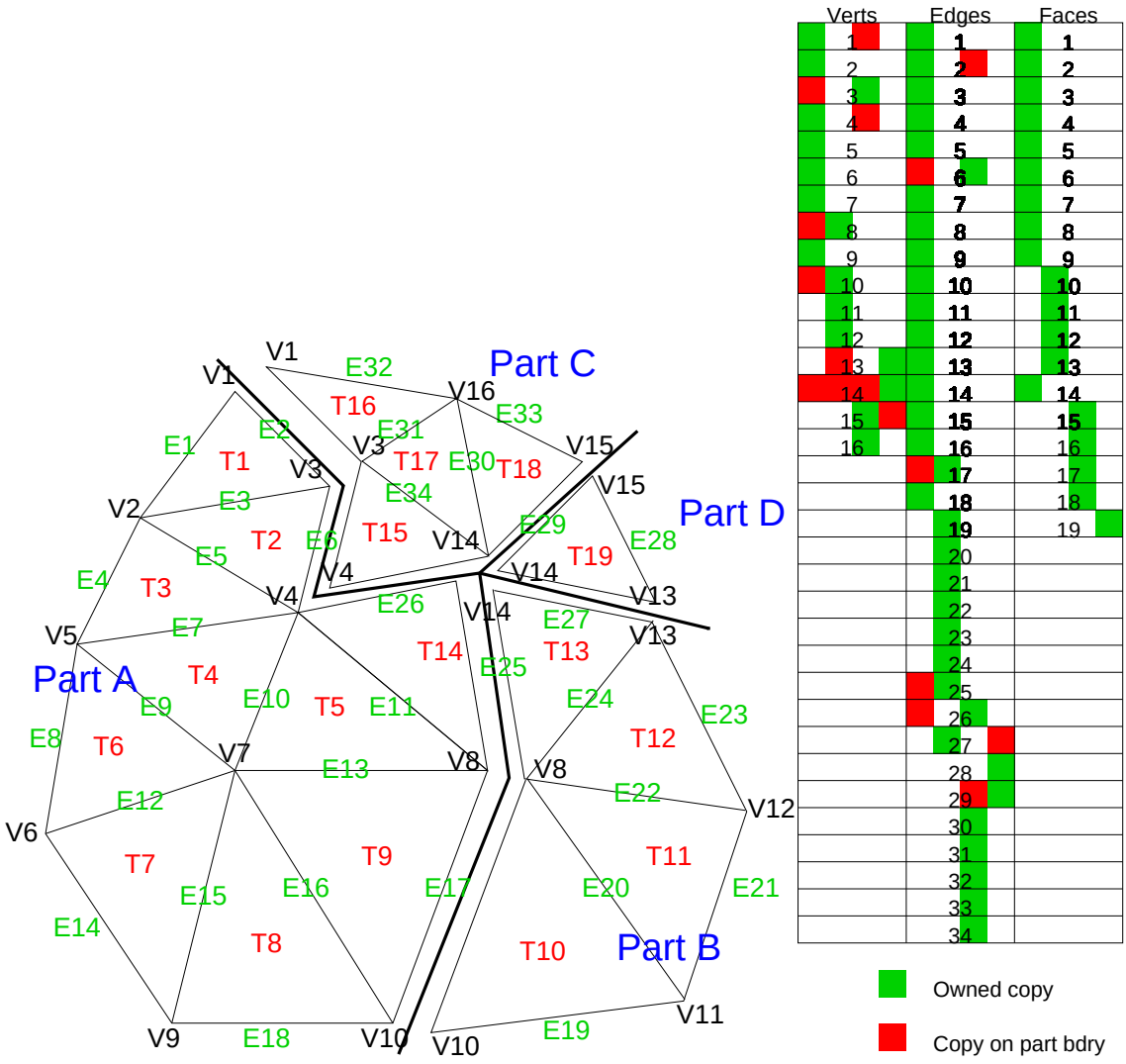

Figure 2: Mesh sketch and entity status after migrating T14 to part A.