Actin–microtubule interactions have been postulated to play an essential role in the formation of the preprophase band (PPB) of microtubules, which defines the future plane of cell wall deposition in plants. However, little is known about how actin controls microtubule organization during morphogenesis. Electron tomography data presented by Takeuchi et al. on p. 1809 of this issue of MBoC demonstrate that single microfilaments form bridge-like connections between microtubules during the early stages of PPB formation, thereby initiating and subsequently mediating the narrowing of the PPB microtubule bands. The upper images show an electron tomography slice image (left) and a related tomography model (right) of microtubules (thick magenta lines) and microfilaments (thin yellow lines) of a PPB in an onion cotyledon epidermal cell. The lower images illustrate a microfilament that forms a bridge between two microtubules. The flared end of the upper microtubule indicates that it is in a depolymerizing mode. (Image: Miyuki Takeuchi, University of Tokyo; L. Andrew Staehelin, University of Colorado; Yoshinobu Mineyuki, University of Hyogo)