Compartmentalization is a unifying principle of eukaryotic and prokaryotic cells and necessitates specific protein delivery systems that transport proteins from their site of synthesis in the cytosol to their sites of function. Bacteria use a large variety of protein delivery systems in parallel to transport proteins to the cell envelope and into the extracellular environment. For obtaining a detailed view on the dynamic interactions that drive protein transport in bacteria, we used in vivo and in vitro site-directed cross-linking in combination with biochemical assays. The presentation will focus on two aspects of bacterial protein transport: (1) the interaction between the ribosome and targeting factors and (2) the organization of protein transport channels.