A dihydrophosphinosilylene iron complex \([\text{LSi}\{\text{Fe(CO)4}\}2\text{PH2}]\) has been prepared and utilized in the synthesis of novel heterobimetallic complexes. The phosphine moiety in this phosphinosilylene complex allows coordination towards tungsten leading to the iron-tungsten heterobimetallic complex \([\text{LSi}\{\text{Fe(CO)4}\}2\text{PH2}\{\text{W(CO)5}\}]\). In contrast, the reaction of \([\text{LSi}\{\text{Fe(CO)4}\}2\text{PH2}]\) with ethylenebis(triphenylphosphine)platinum(0) results in the formation of the iron-platinum heterobimetallic complex \([\text{LSi}\{\text{Fe(CO)4}\}2\text{PH}\{\text{PtH(PPh3)2}\}]\) via oxidative addition.