

$s?$ is for sender and $r?$ is for receiver.

<i>RequestFriend</i> $\Delta UserManager$ $s? : User$ $r? : User$
$r? \notin UserFriends\ s?$ $UserFriendStatus' = UserFriendStatus \cup \{s?, r?\} \mapsto RequestSent$ $UserFriendStatus' = UserFriendStatus \cup \{r?, s?\} \mapsto RequestReceived$ $UserFriends'\ s? = UserFriends\ s? \cup \{r?\}$ $UserFriends'\ r? = UserFriends\ s? \cup \{s?\}$

<i>FriendResponse</i> $\Delta UserManager$ $s? : User$ $r? : User$ $response? : Bool$
$UserFriendStatus\{r?, s?\} = RequestReceived$ $(response? = True \wedge$ $\quad UserFriendStatus'\{r?, s?\} \mapsto confirmed \wedge$ $\quad UserFriendStatus'\{r?, s?\} \mapsto confirmed)$ $\vee (UserFriendStatus'\{r?, s?\} \mapsto \emptyset \wedge$ $\quad UserFriendStatus'\{r?, s?\} \mapsto \emptyset \wedge$ $\quad UserFriends'\ s? = UserFriends\ s? \setminus \{r?\} \wedge$ $\quad UserFriends'\ r? = UserFriends\ r? \setminus \{s?\})$

<i>RequestRendezvous</i> $\Delta UserManager$ $\Delta ParcelManager$ $s? : User$ $r? : User$ $p? : Parcel$
$UserFriendStatus\{r?, s?\} \mapsto confirmed$ $p? \in UserParcels\ s?$ <i>NOTSUREWHATTODOHERE</i>

<i>RendezvousResponse</i> $\Delta UserManager$ $\Delta ParcelManager$ $s? : User$ $r? : User$ $p? : Parcel$
$UserFriendStatus\{r?, s?\} \mapsto confirmed$ $p? \in UserParcels\ s?$ <i>NOTSUREWHATTODOHERE</i>

<i>FinalizeExchange</i> $\Delta UserManager$ $\Delta ParcelManager$ $s? : User$ $r? : User$ $p? : Parcel$
$UserFriendStatus\{r?, s?\} \mapsto confirmed$ $p? \in UserParcels\ s?$ $UserParcels'\ s? = UserParcels\ s? \setminus \{p?\}$ $UserParcels'\ r? = UserParcels\ r? \cup \{p?\}$ $(ParcelDestination\ p? = r?$ $\quad \wedge ParcelStatus'\ p? \mapsto completed)$ $\vee ParcelStatus'\ p \mapsto WithCourier$

<i>InitiateCourier</i> $\Delta UserManager$ $\Delta ParcelManager$ $s? : User$ $r? : User$ $p? : Parcel$ $!courier : User$
$UserFriendStatus\{r?, s?\} \mapsto confirmed$ $\exists c : User \in (UserFriends\ s? \cap UserFriends\ r? \wedge UserFriendStatus\{r?, c?\} \mapsto confirmed \wedge UserFriendStatus\{r?, s?\} \mapsto confirmed)$ $p? \in UserParcels\ s?$ $ParcelStatus\ p? \mapsto uninitiated$ $UserParcels'\ r? = UserParcels'\ r? \cup \{p?\}$ $!courier = FINISHTHIS$

<i>IsFriendWith</i>
$\Delta UserManager$
$s? : User$
$r? : User$
$res! : Bool$
$res! = UserFriendStatus\{r?, s?\} \mapsto confirmed$

<i>IsRatable</i>
$\Delta UserManager$
$s? : User$
$r? : User$
$res! : Bool$
$res! = (UserFriendStatus\{r?, s?\} \mapsto confirmed \wedge r? \text{ in } UserRatable\ s?)$

<i>Rate</i>
$\Delta UserManager$
$s? : User$
$r? : User$
$up? : Bool$
$UserFriendStatus\{r?, s?\} \mapsto confirmed$
$r? \text{ in } UserRatable\ s?$
$(up? = True \wedge UserRating'\ r? = UserRating\ r? + 1) \vee$
$(UserRating'\ r? = UserRating\ r? - 1)$
$UserRatable'\ s? = UserRatable'\ s? \cup \llbracket r? \rrbracket$