$$S = \{s = \langle i, \mathcal{K}, SQN, \kappa, p, p' \rangle | \forall i \in I\}$$

UE — FUE — SN — HN

$PMSI, P_{new}$ ---- Pseudonyms are in synch ---- $i, \mathcal{K}, SQN, \kappa, p, p' \leftarrow s \in S$ where $s_p = PMSI, s_{p'} = P_{new}$

IMSI Inquiry

identity response (q_1) — q_1

if $q_1 = s_{p'}$ then
  update $s_p \leftarrow s_{p'}$
  update $s_{p'} \leftarrow \{0,1\}^{34} \notin \{s_p, s_{p'} | \forall s \in S\}$

$PMSI, P_{new}$ ---- Pseudonyms are partially in synch ---- $s_p = P_{new}$ $s_{p'} \neq P_{new}, PMSI$

IMSI Inquiry

identity response (q_2) — q_2

if $q_2 = s_{p'}$ then
  update $s_p \leftarrow s_{p'}$
  update $s_{p'} \leftarrow \{0,1\}^{34} \notin \{s_p, s_{p'} | \forall s \in S\}$

$PMSI, P_{new}$ ---- Pseudonyms have lost synchronization ---- $s_p \neq PMSI, P_{new}$ $s_{p'} \neq PMSI, P_{new}$