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/* A Secure End-to-End Micropayment Protocol for Wearable Devices  */
/*SPDL Specfication*/
usertype IDwd,Nwd,TSwd,IDc,TSc,Nc,Amtc,PI,POIc,TIDwd,TIDc,TIDm;
usertype POIwd,Amtwd,IDm,Nib,TSib,Amtm;
const puk:Function;
secret prk:Function;
inversekeys (puk,prk);
usertype TimeStamp,Success,failure,SMS;
hashfunction H1,H2,H3;
protocol
Wearable(WearbaleDevice,Cust,IssuingBank,AcquiringBank,PaymentGateway,Merc
hant)
{       role WearbaleDevice
        {fresh nwd: Nonce;
send_1(WearbaleDevice,Cust,{{IDwd,Nwd,TSwd}prk(WearbaleDevice)}puk(Cust));
read_2(Cust,WearbaleDevice,
{{IDwd,IDc,Nc,TSc,Nwd,TSwd}prk(Cust)}puk(WearbaleDevice));
send_3(WearbaleDevice,Cust,
{{ POIwd,Amtwd,IDwd,IDc,Nwd,TSwd,TIDwd}prk(WearbaleDevice)}puk(Cust));
read_11(Cust,WearbaleDevice,{{SMS,IDc,IDwd}prk(Cust)}puk(WearbaleDevice));
            claim_WearbaleDevice1 (WearbaleDevice,Secret, Nwd);
            claim_WearbaleDevice2 (WearbaleDevice,Secret, POIwd);
            claim_WearbaleDevice3 (WearbaleDevice,Secret, IDwd);
            claim_WearbaleDevice4 (WearbaleDevice,Secret, IDc);
         claim_WearbaleDevice5(WearbaleDevice,Secret, prk(WearbaleDevice));       }
        role Cust
        {   fresh nc: Nonce;
            const Kcib:SessionKey;
read_1(WearbaleDevice,Cust,{{IDwd,Nwd,TSwd}prk(WearbaleDevice)}puk(Cust));
send_2(Cust,WearbaleDevice,
{{IDwd,IDc,Nc,TSc,Nwd,TSwd}prk(Cust)}puk(WearbaleDevice));
read_3(WearbaleDevice,Cust,
{{ POIwd,Amtwd,IDwd,IDc,Nwd,TSwd,TIDwd}prk(WearbaleDevice)}puk(Cust));
send_4(Cust,IssuingBank,
{{( POIc,Amtc,IDc,TIDc,TSc,IDwd,Nwd,TIDwd,POIwd,TSwd,
{PI}Kcib)}prk(Cust)}puk(IssuingBank));
read_10(IssuingBank,Cust,
{{TIDc,Amtc,IDc,IDwd,IDm,SMS}prk(IssuingBank)}puk(Cust));
send_11(Cust,WearbaleDevice,{{SMS,IDc,IDwd}prk(Cust)}puk(WearbaleDevice));
            claim_Cust1(Cust,Secret,Kcib);
            claim_Cust2(Cust,Secret,Nc);
            claim_Cust3(Cust,Secret,PI);
            claim_Cust4(Cust,Secret,TIDc);
            claim_Cust5(Cust,Secret,POIc);
            claim_Cust6(Cust,Niagree);
            claim_Cust7(Cust,Nisynch);                                  }
```