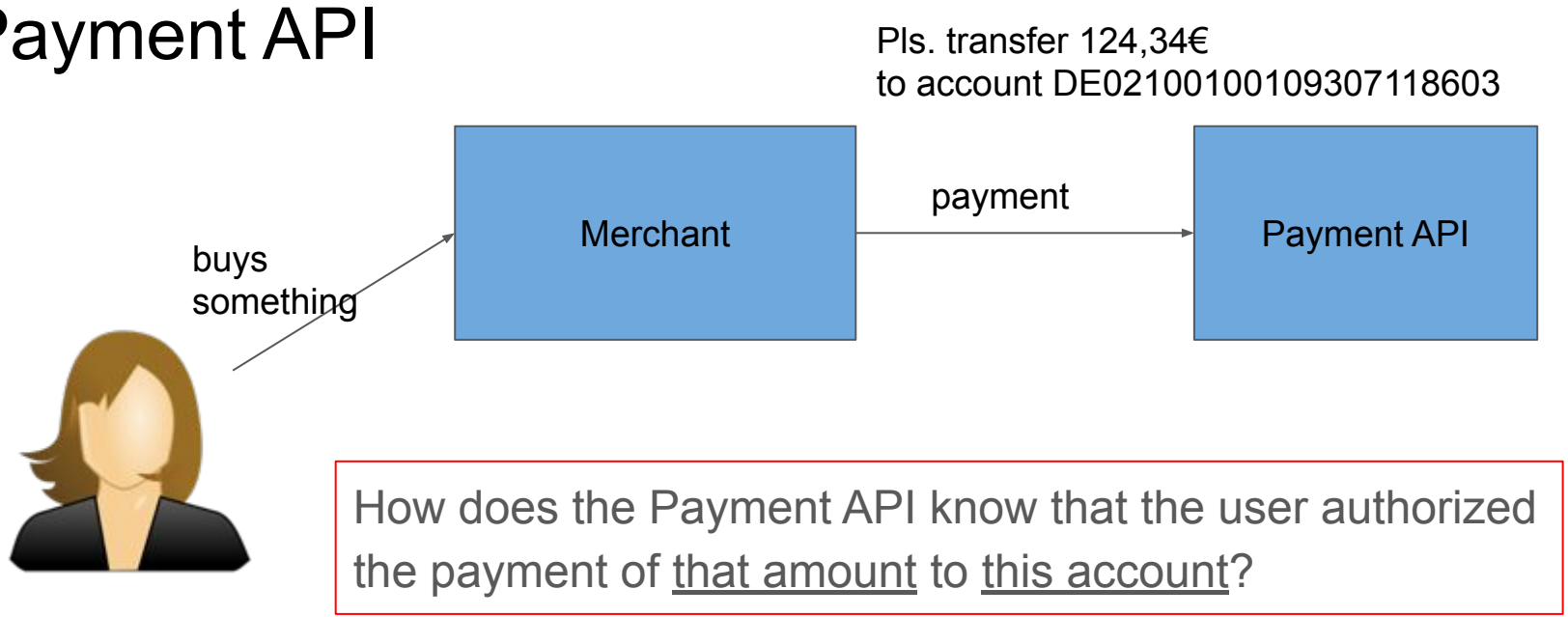
Rich Authorization Requests

https://tools.ietf.org/html/draft-lodderstedt-oauth-rar

IETF-106, 21.11.2019, Singapore

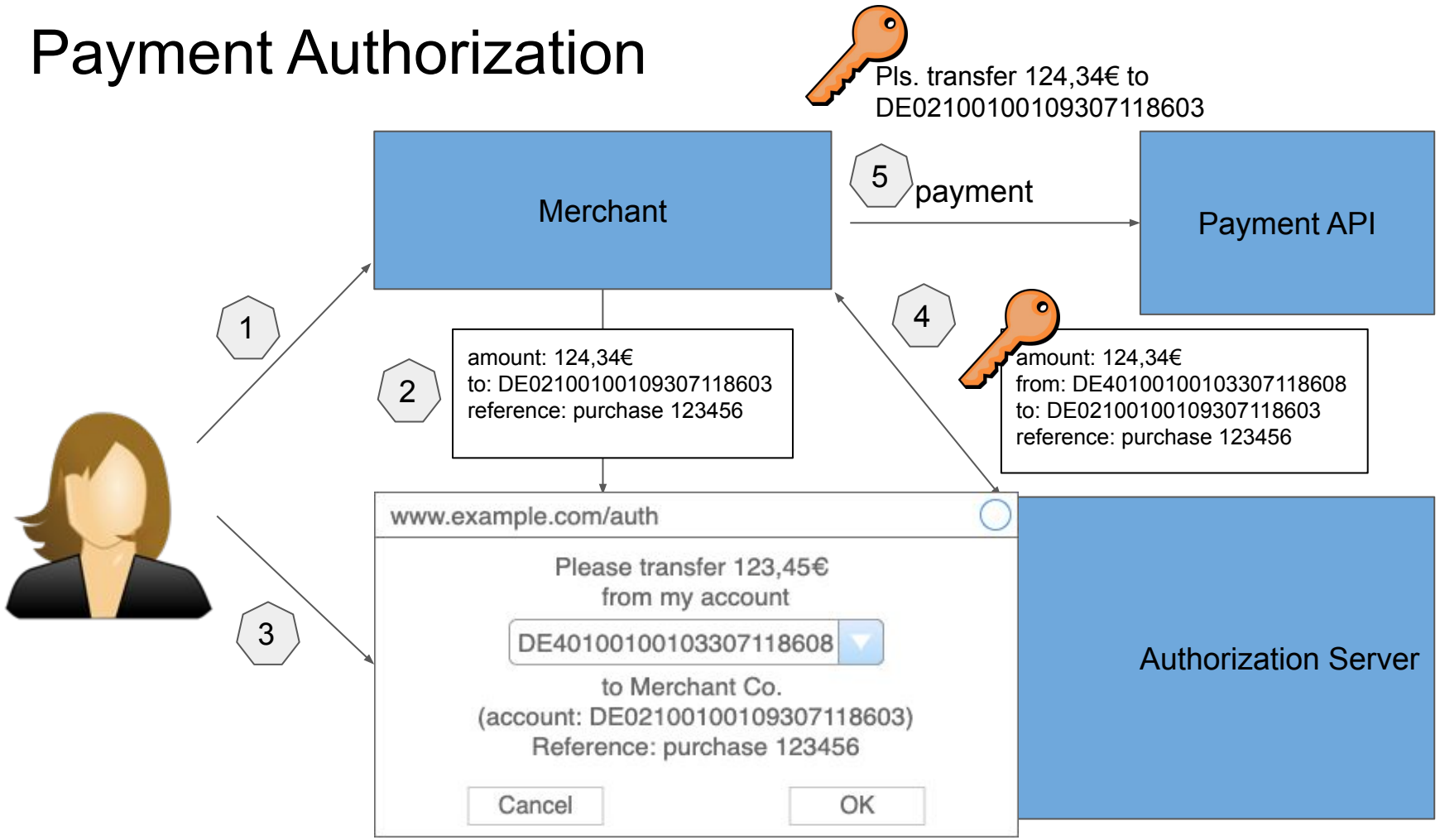
Brian Campbell, Justin Richer, Torsten Lodderstedt

A Payment API



How does the Payment API know that the user authorized the payment of that amount to this account?

Payment Authorization



Use Cases with similar characteristics

- Access to Account Information
- Creation of Electronic Signatures
- Access to Health Data
- Access to Tax Data
- Strong Identity Attestation

Commonalities

- Privileges very narrowly defined (and must also be enforced)
- Authorization data fine grained & structured (voluminous)
- Sometimes transaction authorization (one time & transaction specific values)
- Integrity and authenticity of authorization request data needed
- Authorization data may contain PII - confidentiality might be important

Challenges

- Expressiveness of scopes is not sufficient for the scenarios just explained
  - No structure, no dynamic values - made for simple static access requests
  - Ambiguous (“openid email read”)
- Allocation of requested permissions to resource server specific access tokens is hard (despite resource indicators)

Rich Authorization Requests

- **draft-lodderstedt-oauth-rar** specifies new parameter "authorization_details"
- "authorization_details" contains, in JSON notation, an array of objects
- Each JSON object contains the data to specify the authorization requirements for a certain type of resource.
- The type of resource or access requirement is determined by the "type" field.
- Note: same structure is used in OAuth.xyz

```
[
   {
     "type": "payment_initiation",
     "locations": [
       "https://example.com/payments"
     ],
     "actions": ["initiate", "status","cancel"],
     "instructedAmount": {
       "currency": "EUR",
       "amount": "123.50"
     },
     "creditorName": "Merchant123",
     "creditorAccount": {
       "iban": "DE02100100109307118603"
     },
     "remittanceInformationUnstructured":
        "purchase 123456"
   }
 ]
```

Combination

- Authorization requirements for a multiple resources can be combined
- “locations” field allows assignment to particular resource (server)
- “resource” parameter used to select authorization details for RS-specific access tokens

```
[
  {
    "type":"payment_initiation",
    "locations":["https://example.com/payments"],
    "actions":["initiate","status","cancel"],
    "instructedAmount":{
       "currency":"EUR",
       "amount":"123.50"
    },
    "creditorName":"Merchant123",
    "creditorAccount":{
        "iban":"DE02100100109307118603"
    },
    "remittanceInformationUnstructured":"purchase 123456"
  },
  {
    "type":"account_information",
    "locations":["https://example.com/accounts"],
    "actions":["list_accounts","read_balances","read_transactions"]
  }
]
```

authorization_details can be used ...

- where “scope” can be used
- in combination with or instead of “scope”
- Example: pushed authorization request

```
POST /as/par HTTP/1.1
Host: as.example.com
Content-Type: application/x-www-form-urlencoded
Authorization: Basic czZCaGRSa3F0Mzo3RmpmcDBaQnIxS3REUmJuZ

response_type=code
&client_id=s6BhdRkqt3
&state=af0ifjsldkj
&redirect_uri=https%3A%2F%2Fclient.example.org%2Fcb
&code_challenge_method=S256
&code_challenge=K2-ltc83acc4h0c9w6ESC_rEMTJ3bww-uCHaoeK1t8U
&authorization_details=%5B%7B%22type%22%3A%22account%5Fin
formation%22%2C%22actions%22%3A%5B%22list%5Faccounts%22%
2C%22read%5Fbalances%22%2C%22read%5Ftransactions%22%5D%
2C%22locations%22%3A%5B%22https%3A%2F%2Fexample%2Ecom%
2Faccounts%22%5D%7D%5D
```

Advantages

- Flexible and type safe way to represent rich authorization data
- Allows definition of API-specific authorization data structures
  - no “one size fits all”
- Common data set elements to address common use cases
- Interoperable and easy way to issue RS-specific Access Tokens and Token Introspections Responses (Data Minimization and Disambiguation)

Status

- -03 revision (based on previous work at the FAPI WG)
- Positive feedback on the list, also from people new to our community

> Thanks for working on this! It's an interesting and timely read for me as we're starting to bump up against some limitations of the `scope` parameter. I have some initial feedback below, and will hopefully be able to send through more as I dig in in more detail.

- implementations/prototypes exist (authlete, yes.com)

Would the WG consider to adopt this draft?