

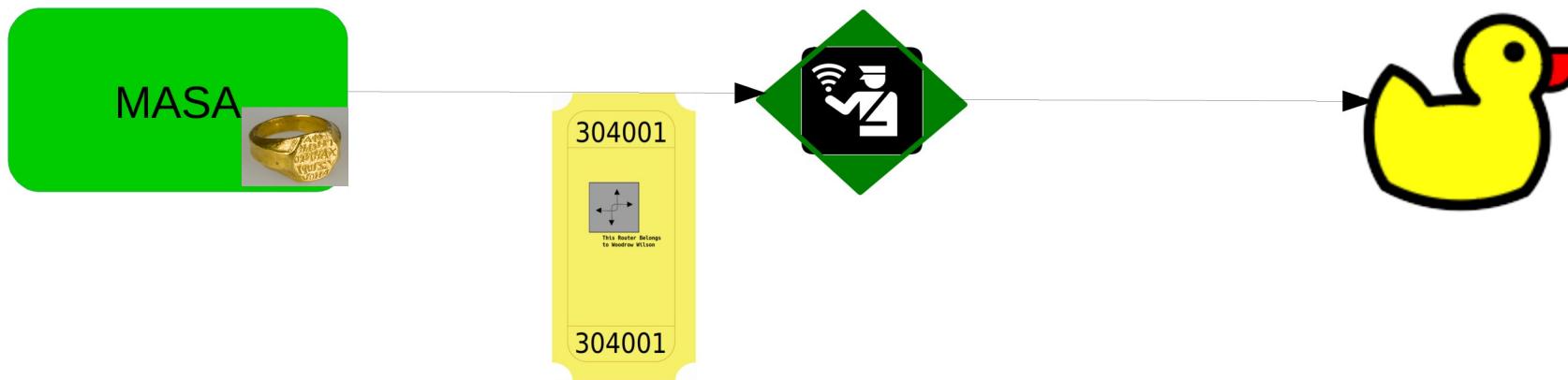
# Delegated Authority for Bootstrap Voucher Artifacts

draft-richardson-anima-voucher-delegation

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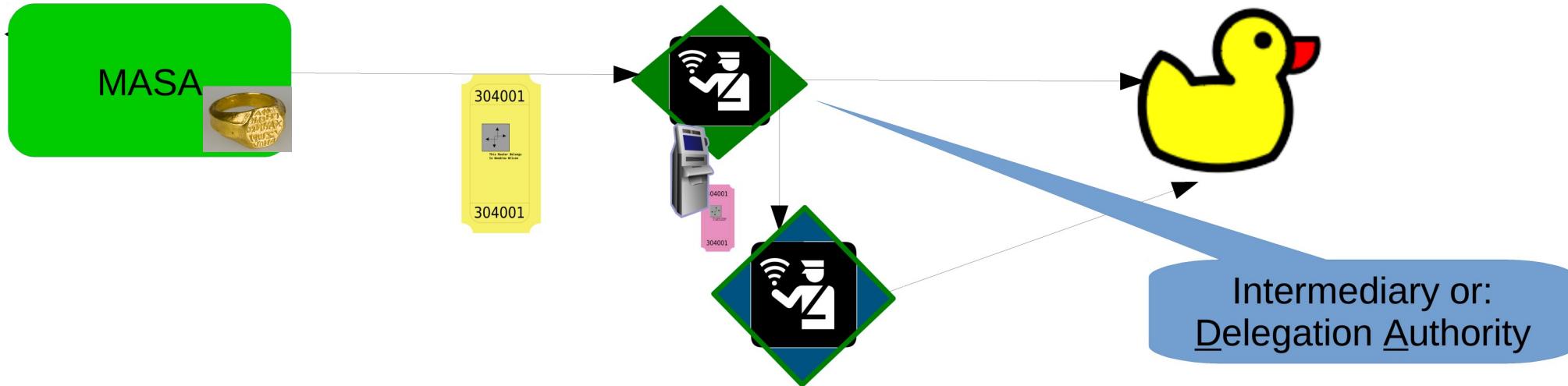
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# The problem with Manufacturer Issued (RFC8366) Vouchers



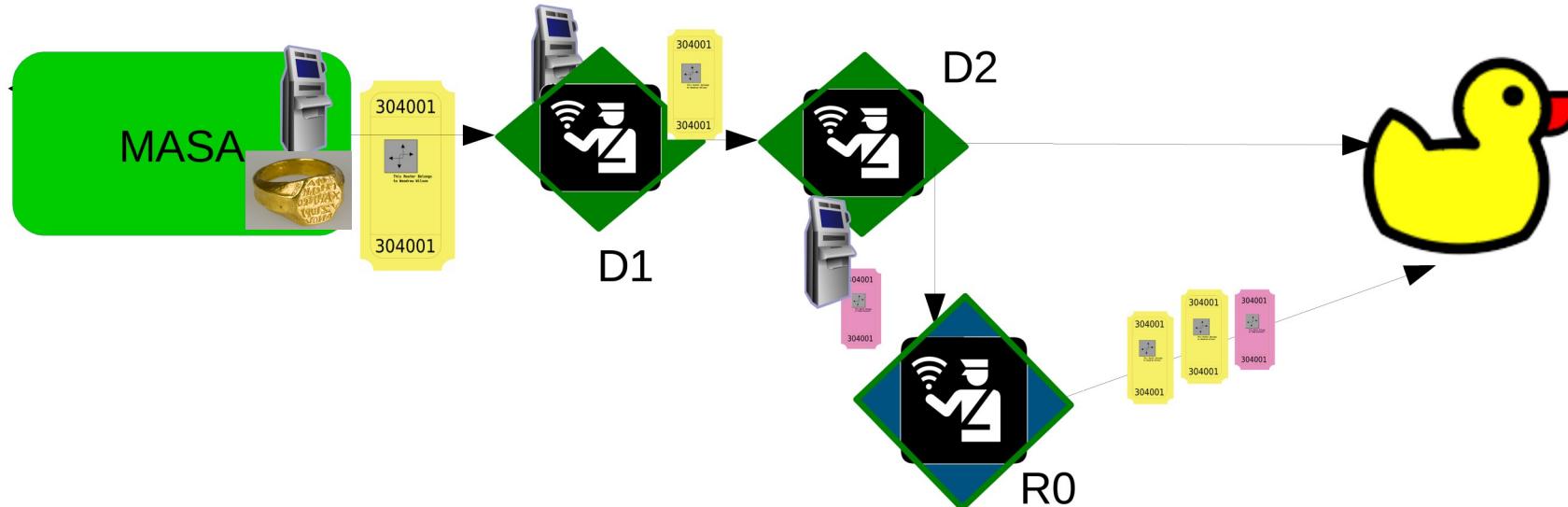
- RFC8366 vouchers require a MASA (manufacturer) to provide a voucher for each device
  - the manufacturer can block secondary sales
  - a failed manufacturer's device may become landfill
- BRSKI (mostly) requires this to be an online service.
  - MASA must be reachable to the Registrar during on-boarding
  - Device owner is always strongly dependent on the MASA service
- SZTP (RFC8572) works better for some offline uses, but has same resale issue

# Applicability of Delegated Voucher



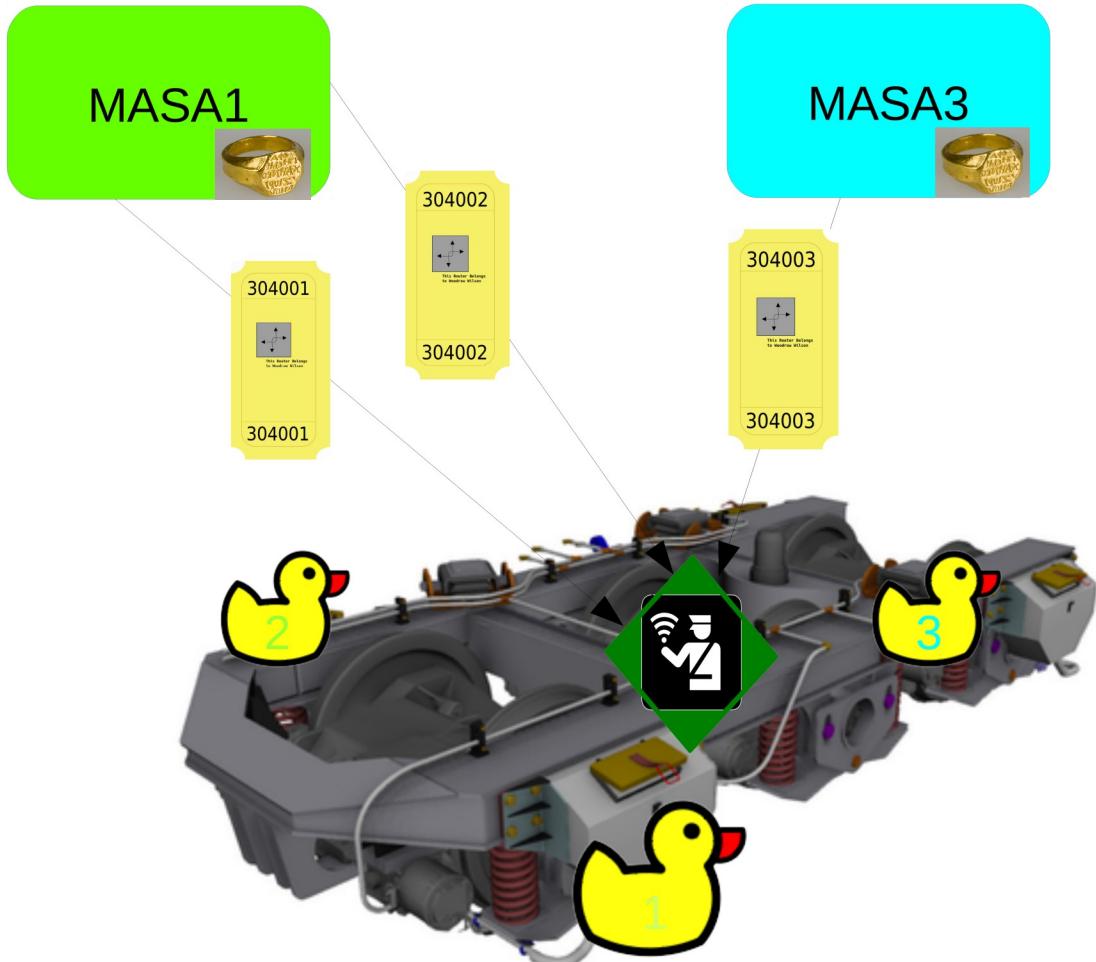
- **Second sale**
  - From willing seller
  - Via creditor/bankruptcy, etc.
- With a cloud/public PKI, if the Registrar wishes to change its CA, then it is effectively a “resale”
- Blue Registrar must override MASA URL, contacting Green Registrar for voucher

# Applicability of Delegated Voucher



- Multiple layers of resale supported
- May limit number of resales
- Pledge receives all three vouchers in order to form signed voucher chain: MASA->D1->D2->R0

# Applicability of Delegated Voucher: Assembly



- First sale is from component manufacturer
  - owner is assembly controller
  - voucher includes delegation options















# Shape of proposed solution

```
{  
    "ietf-voucher:voucher": {  
        "created-on": "2016-10-07T19:31:42Z",  
        "assertion": "logged",  
        "serial-number": "JADA123456789",  
        "idevid-issuer": "base64encodedvalue==",  
        "pinned-domain-cert": "base64encodedvalue==",  
    }  
}  
  
{  
    "ietf-delegated-voucher:voucher": {  
        "created-on": "2020-03-14T06:28:31Z",  
        "expire-on": "2039-12-31T01:61:80Z",  
        "assertion": "logged",  
        "serial-number": "JADA123456789",  
        "pinned-delegation-certificate-authority": ["DASAbase64cert=="],  
        "delegation-voucher": true,  
        "intermediate-identities": ["IntermediateId1", "IntermediateId2", "IntermediateId3"],  
        "delegation-countdown": 3,  
    }  
}
```

# Issues to think about ...

## ❑ delegated voucher extension

### I. pinned-certificate-authority:

- Could this be omitted to use some DNS TLSA certification?

### II. pinned-certificate-name:

- Is it enough to pin an rfc822NAME, or do we need to be able to pin other D

### III. delegation-voucher:

- This is a flag, like CA= True. Do we need it?

### IV. intermediate-identities:

- This is voucher identity being consistent with delegation voucher. Do we need it?

### V. delegation-countdown:

- Do we need a way to limit how many times a delegation voucher can be created?
- Would be decremented on each “*sale*”, must be > 0

## ❑ Do we do any of this for JSON format vouchers, or do it only for COSE signed CBOR vouchers?

- I won't feel that this even close to complete until code is written

## ❑ Registrar may need enhancing...

```
module: ietf-delegated-voucher

grouping voucher-delegated-grouping
  +-+ voucher
    +-+ created-on
    +-+ expires-on?
    +-+ assertion
    +-+ serial-number
    +-+ idevid-issuer?
    +-+ pinned-domain-cert?
    +-+ domain-cert-revocation-checks?
    +-+ nonce?
    +-+ last-renewal-date?
    +-+ pinned-certificate-authority? binary
    +-+ pinned-certificate-name? binary
    +-+ delegation-voucher? binary
    +-+ intermediate-identities? binary
    +-+ delegation-countdown? int16
```

# Thank You!