TRADETRUST

Tech Seminar

Jul 2020

Infocomm Media Development Authority, Singapore

GOVTECH SINGAPORE

SG:D EMPOWERING POSSIBILITIES

IMDA INFOCOMM MEDIA DEVELOPMENT AUTHORITY

Verifiable documents

- Slides
  - https://bit.ly/tt-webinar-2-slides
- Workshop materials
  - https://bit.ly/tt-webinar-2-workshop

Prerequisites

- Nodejs
- GitHub account
- Basic cli usage knowledge
- Optional
  - Metamask account (wallet)
  - Domain name (issuer identity)
  - Netlify account (custom document renderer)

Ether (gas) = cryptocurrency = digital currency.

GitHub

METAMASK

netlify

Some of the platforms referenced in this workshop.

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Verifiable document + Open Attestation CLI (oa-cli)

- Do read these:
  - https://www.openattestation.com/docs/integrator-section/verifiable-document/overview
  - https://github.com/Open-Attestation/open-attestation-cli

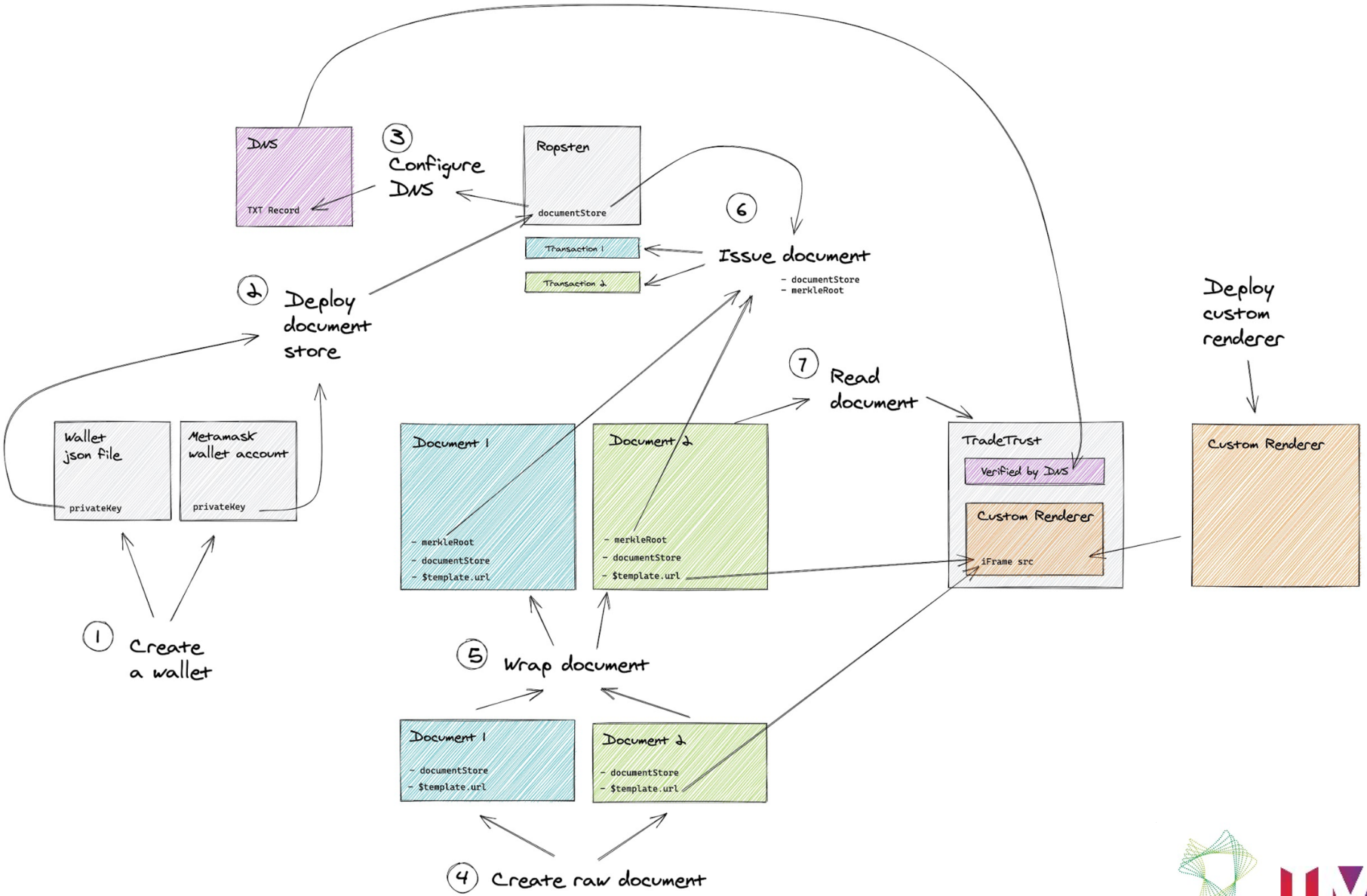
What you will learn

1. Create a wallet
2. Deploy document store
3. Configure DNS
4. Create raw document
5. Wrap document
6. Issue document
7. Read document

Additional topic

1. Deploy custom renderer
    - Deploy a custom document renderer on Github, with Netlify
    - Make edits to custom document renderer

Overview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Ropsten
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Create raw document

Introduction

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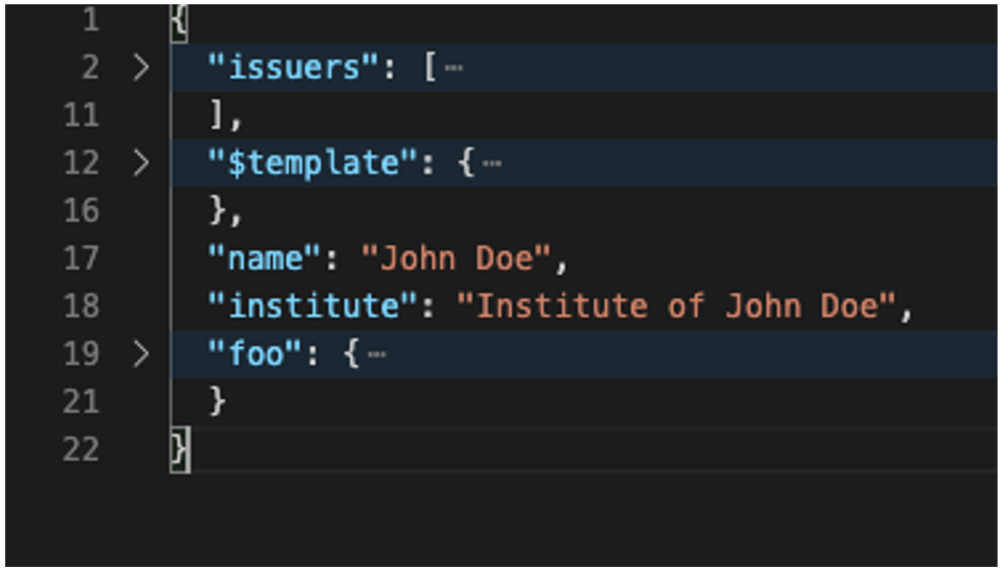
What can be considered a verifiable document?

- Examples can be:
  - E-invoice
  - Certificates
  - Packing List
  - Purchase Order



A basic json file example with minimal key value pairs.

Install open-attestation (oa-cli)

1. Make sure you have nodejs installed
2. Install open-attestation-cli globally
    - npm install -g @govtechsg/open-attestation-cli
        - https://openattestation.com/docs/component/open-attestation-cli
        - https://github.com/Open-Attestation/open-attestation-cli#setup
    - ~~npx -p @govtechsg/open-attestation-cli open-attestation <arguments>~~
3. Check if successfully installed
    - open-attestation --version
    - open-attestation --help

Create wallet

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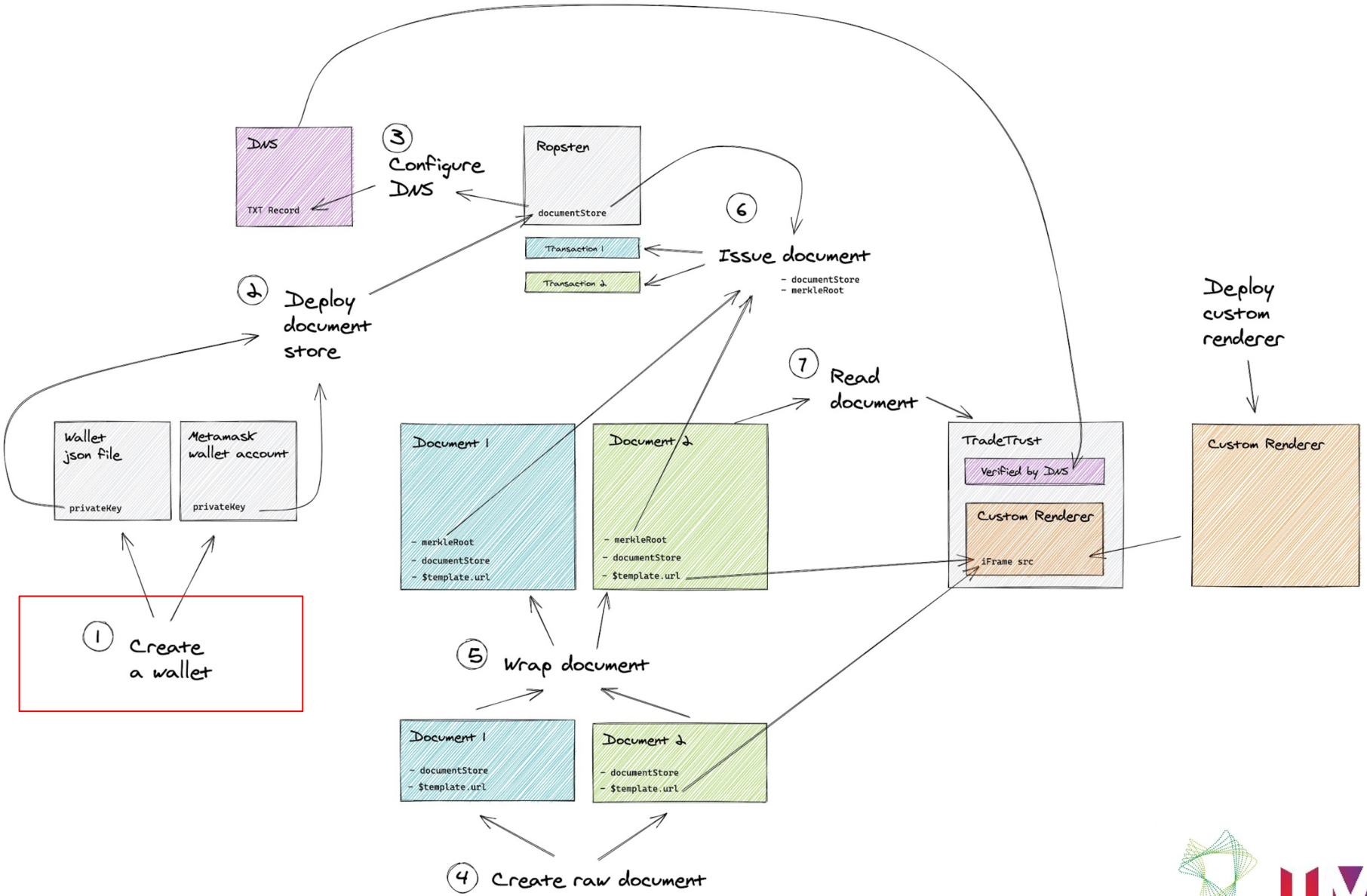
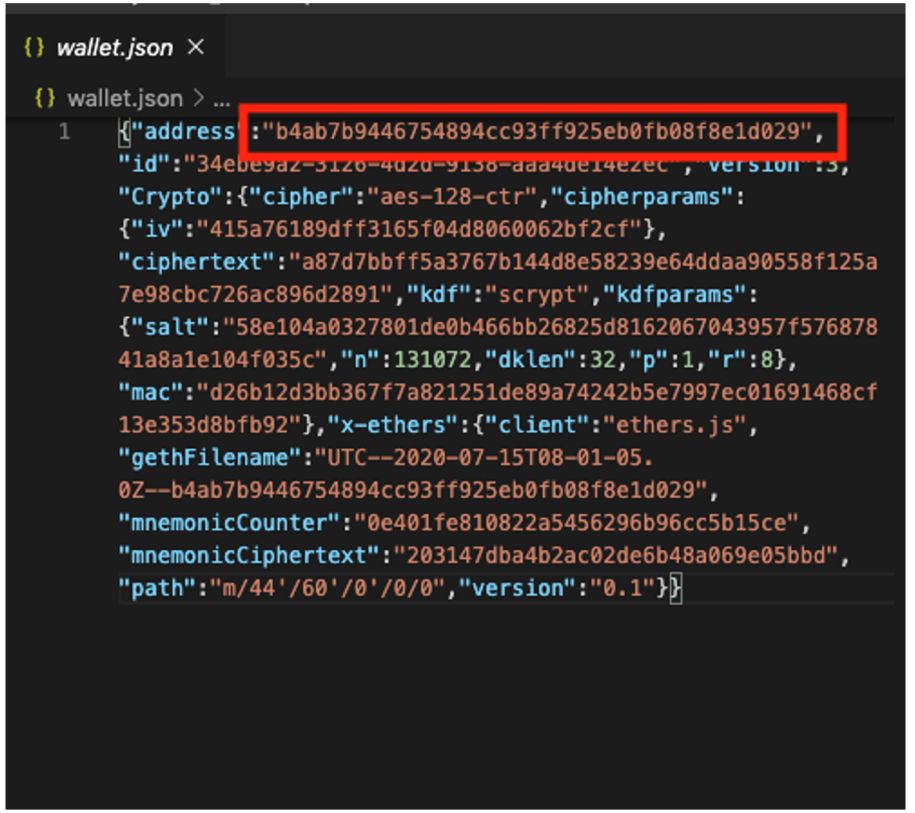
Create wallet



Create wallet (oa-cli)

1. Generate a wallet json file
    - open-attestation wallet create --output-file wallet.json --fund ropsten
2. Create a password for your wallet
3. Save your wallet public address somewhere in case you forget :)
4. Never lose your wallet file, keep it safe



https://ropsten.etherscan.io/address/0xb4ab7b9446754894cc93ff925eb0fb08f8e1d029

Create wallet (metamask)

1. Install Metamask extension
    - https://metamask.io/
1. Create some wallet accounts
2. Request for some ethers
    - https://faucet.ropsten.be/
    - https://faucet.metamask.io/

Deploy document store

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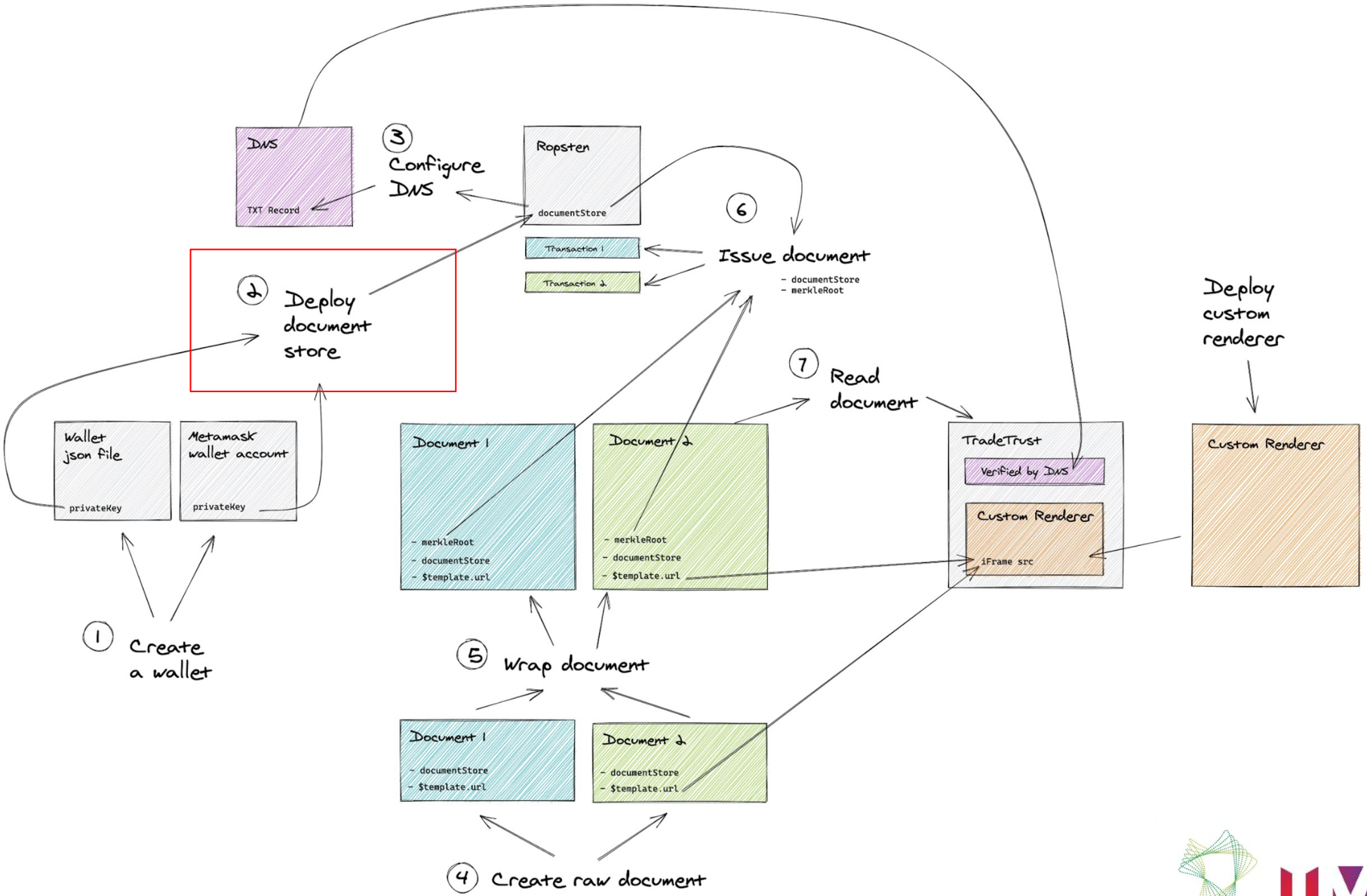
Deploy document store



Deploy document store (oa-cli)

1. Deploy document store with wallet.json
    - Command
        - open-attestation deploy document-store "<storeName>" --network <mainnet || ropsten> --encrypted-wallet-path <pathToWalletJson>
    - Example
        - open-attestation deploy document-store "My first document store" --network ropsten --encrypted-wallet-path wallet.json
1. Save your document store address somewhere in case you forget :)

Deploy document store (metamask)

1. Get private key from metamask wallet account
2. Deploy document store with privateKey
    - Command
        - export OA_PRIVATE_KEY=<privateKey>
        - open-attestation deploy document-store "<storeName>" --network <mainnet || ropsten>
    - Example
        - export OA_PRIVATE_KEY=2F12345678
        - open-attestation deploy document-store "My first document store" --network ropsten
3. Save your document store address somewhere in case you forget :)

Configure DNS

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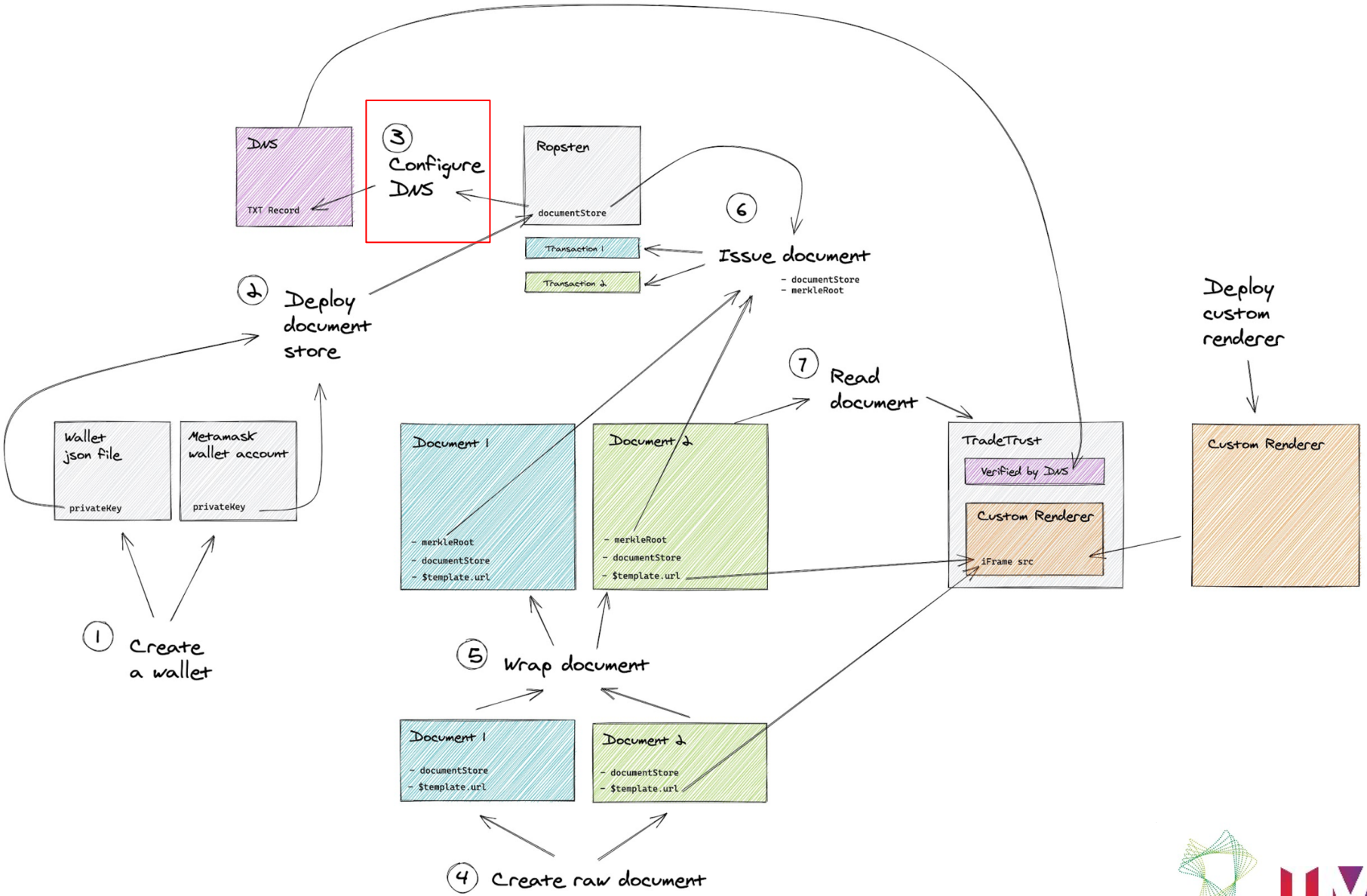
Configure DNS



Configure DNS (oa-cli)

1. Create temporary DNS record
    - Command
        - open-attestation dns txt-record create --address <documentStore> --network-id 3
    - Example
        - open-attestation dns txt-record create --address 0x4B563cAE8F6D4E1a31B1e9217C9DD7DC371c0C1D --network-id 3
2. Verify TXT record
    - Command
        - open-attestation dns txt-record get --location <domainName> --networkId 3
    - Example
        - open-attestation dns txt-record get --location impressive-salmon-egret.sandbox.openattestation.com --networkId 3

```
SimsMBPgovtech:workshop simboonlong$ open-attestation dns txt-record get --location brew.tk --networkId 3
```

(index)	type	net	netId	addr	dnssec
0	'openatts'	'ethereum'	'3'	'0xF78a7713591517288A950874658728910b1c98dA'	false
1	'openatts'	'ethereum'	'3'	'0x6D31C978c08e929e458AE9F276C875c9919214C9'	false

CLI: Pinging TXT record value to see if added successfully.

Configure DNS (domain registrar)

1. Add a TXT record
   - Value
     - openatts net=ethereum netId=<networkNumber> addr=<documentStoreAddress>
   - Example
     - openatts net=ethereum netId=3 addr=0x4B563cAE8F6D4E1a31B1e9217C9DD7DC371c0C1D
2. Wait awhile for DNS to propagate
   - Example used in this workshop is from https://www.freenom.com/
3. Verify if TXT record successfully added
   - https://dns.google.com/

Adding TXT record, the example used here is freenom.


```
  },
  {
    "name": "brew.tk.",
    "type": 16,
    "TTL": 1199,
    "data": "\"openatts net=ethereum netId=3 addr=0x6D31C978c08e929e458AE9F276C875c9919214C9\""
  },
  {
    "name": "brew.tk.",
```


Verified TXT record at dns.google.

Create raw document

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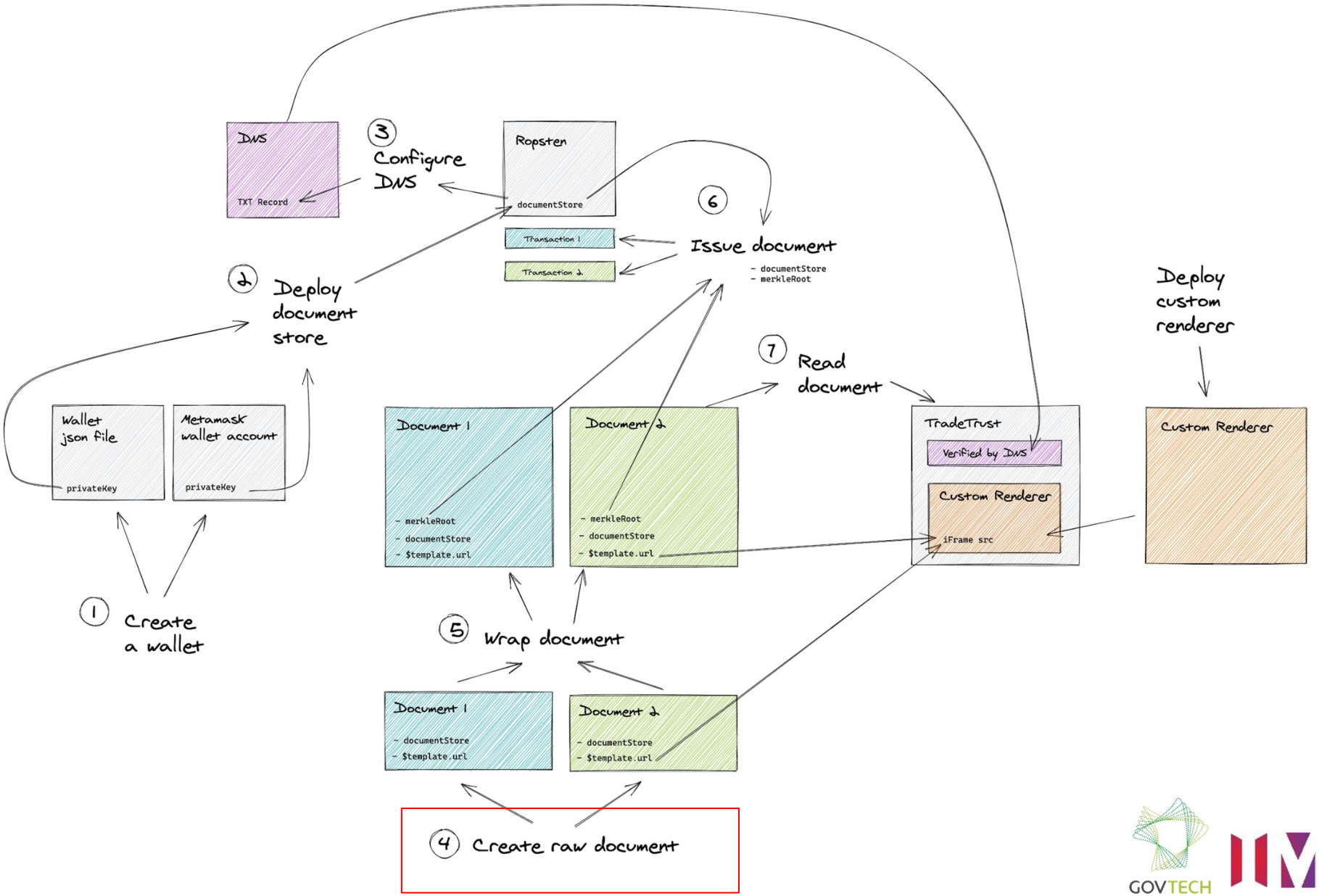
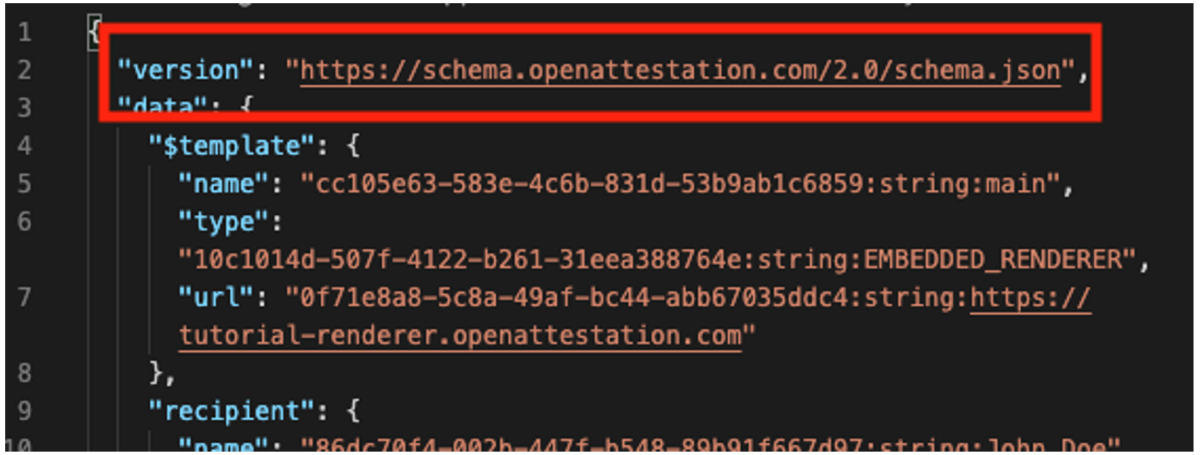
Create raw document



Create raw document

- Open attestation document schema at:
  - https://schema.openattestation.com/2.0/schema.json
- Test your raw document against full schema at:
  - https://www.jsonschemavalidator.net/



OA schema version defined in a wrapped document.

Create raw document

- Issuers (Required)
  - Domain name (location)
  - Document store address (documentStore)
- $template
  - Custom renderer location (url)

Issuers key is required.

$template is needed for rendering document.

Wrap document

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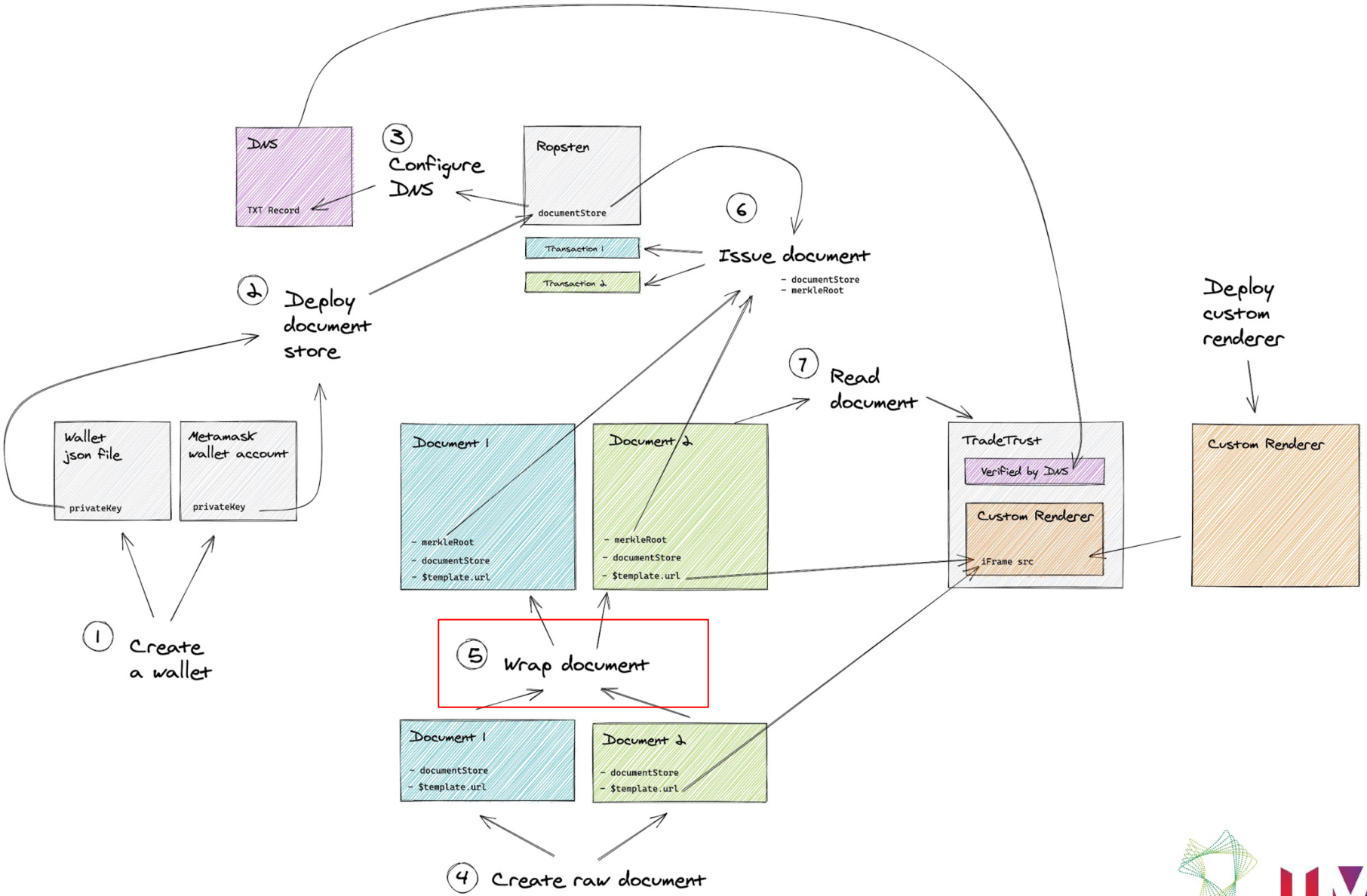
Wrap document



Wrap document

```
{
  "issuers": [ ...
  ],
  "$template": { ...
  },
  "name": "John Doe",
  "institute": "Institute of John Doe",
  "foo": { ...
  }
}
```

Before file is wrapped.

```
{
  "version": "https://schema.openattestation.com/2.0/schema.json",
  "data": {
    "issuers": [ ...
    ],
    "$template": { ...
    },
    "name": "361e3229-bd0b-4135-8e21-9efbacc23804:string:John Doe",
    "institute": "bd251286-5716-4c6d-8fdf-9dbe8cacc179:string:Institute of John Doe",
    "foo": { ...
    }
  },
  "signature": {
    "type": "SHA3MerkleProof",
    "targetHash": "c04ffd6fba0d3e0f916304e72646097384ec30aa316d27cff4fb616b23831094",
    "proof": [],
    "merkleRoot": "c04ffd6fba0d3e0f916304e72646097384ec30aa316d27cff4fb616b23831094"
  }
}
```

After file is wrapped.

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Wrap document

1. Batch wrap documents
    - Command
        - open-attestation wrap <inputDocumentPath> --output-dir <outputDocumentPath>
    - Example
        - open-attestation wrap ./raw-documents --output-dir ./wrapped-documents
2. Single wrap document
    - Command
        - open-attestation wrap <inputDocumentPath> --output-file <outputDocumentPath>
    - Example
        - open-attestation wrap ./raw-document.json --output-file ./wrapped-document.json

Issue document

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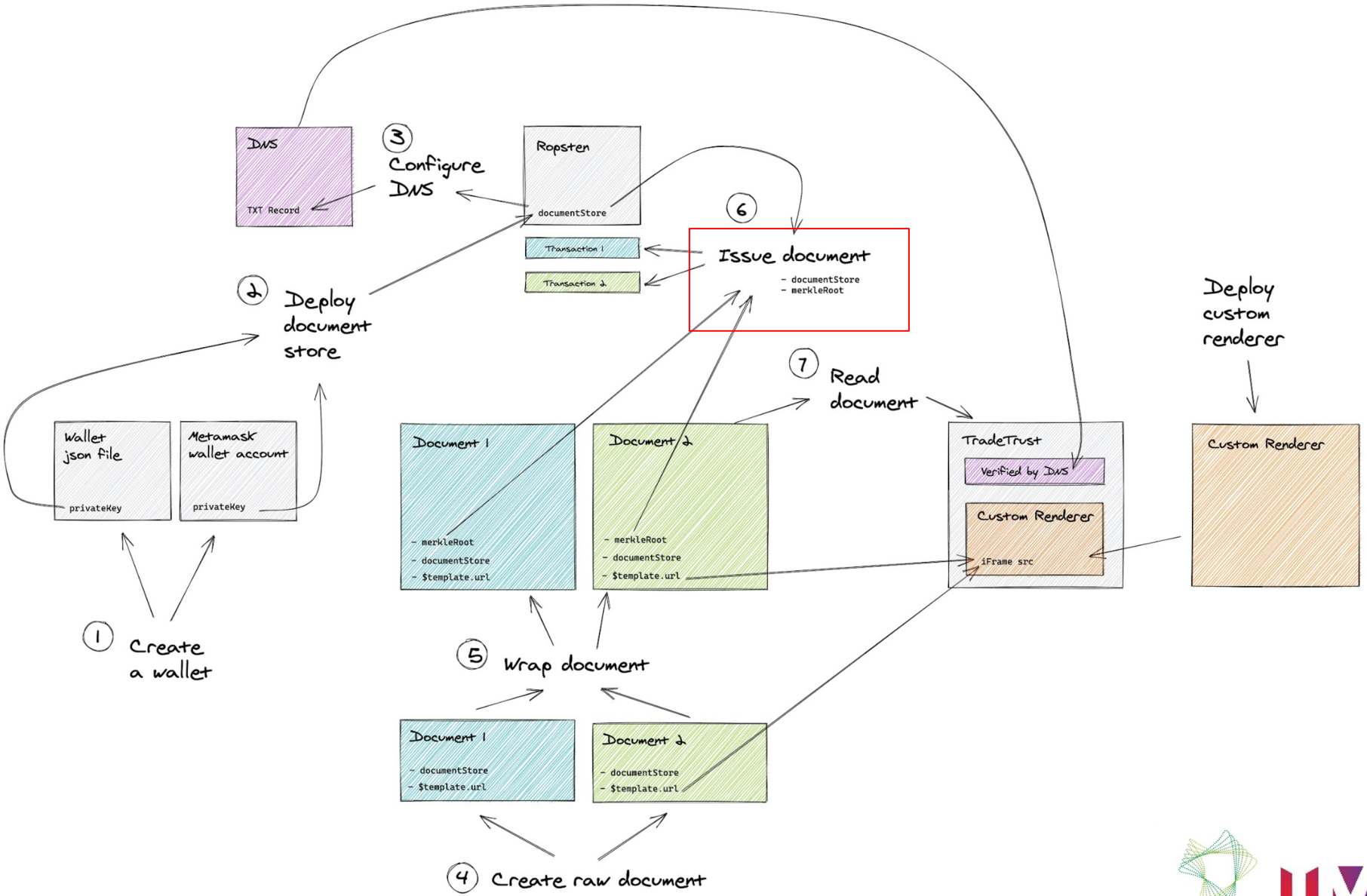
Issue document



Issue document (oa-cli)

- Issue documents with wallet.json
  - Command
    - open-attestation document-store issue --network ropsten --encrypted-wallet-path wallet.json --address <documentStore> --hash <merkleRoot>
  - Example
    - open-attestation document-store issue --network ropsten --encrypted-wallet-path wallet.json --address 0x4B563cAE8F6D4E1a31B1e9217C9DD7DC371c0C1D --hash fd8be91d97c41ecCommand6da8579739af43e9a3113759ef39f494c12b8cdf5cad6e123

Issue document (metamask)

- Issue documents with metamask wallet account's privateKey
  - Command
    - export OA_PRIVATE_KEY=<privateKey>
    - open-attestation document-store issue --network ropsten --address <documentStore> --hash <merkleRoot>
  - Example
    - export OA_PRIVATE_KEY=2F1234567
    - open-attestation document-store issue --network ropsten --address 0x4B563cAE8F6D4E1a31B1e9217C9DD7DC371c0C1D --hash fd8be91d97c41ec6da8579739af43e9a3113759ef39f494c12b8cdf5cad6e123

```
SimsMBPgovtech:workshop simboonlong$ open-attestation document-store issue --network ropsten --address
 0xF78a7713591517288A950874658728910b1c98dA --key
(                --hash c04ffd6fba0d3e0f916304e72646097384ec30aa316d27cff4fb616b23831094
ℹ  info      Issuing c04ffd6fba0d3e0f916304e72646097384ec30aa316d27cff4fb616b23831094 to document stor
e 0xF78a7713591517288A950874658728910b1c98dA
⚠ warning   Be aware that by using the `key` parameter, the private key may be stored in your machine
's sh history
⚠ warning   Other options are available: using a file with `key-file` option or using `OA_PRIVATE_KEY
` environment variable
…  awaiting  Sending transaction to pool
…  awaiting  Waiting for transaction 0xb62a6d9ebad66092b8dfa776d6dbe410ad760d029bd2fd8e7dc9a5cc6b9bc6e
6 to be mined
✔  success   Document/Document Batch with hash c04ffd6fba0d3e0f916304e72646097384ec30aa316d27cff4fb616
b23831094 has been issued on 0xF78a7713591517288A950874658728910b1c98dA
ℹ  info      Find more details at https://ropsten.etherscan.io/tx/0xb62a6d9ebad66092b8dfa776d6dbe410ad
760d029bd2fd8e7dc9a5cc6b9bc6e6
SimsMBPgovtech:workshop simboonlong$
```

CLI: Document successfully issued to document store.

Read document

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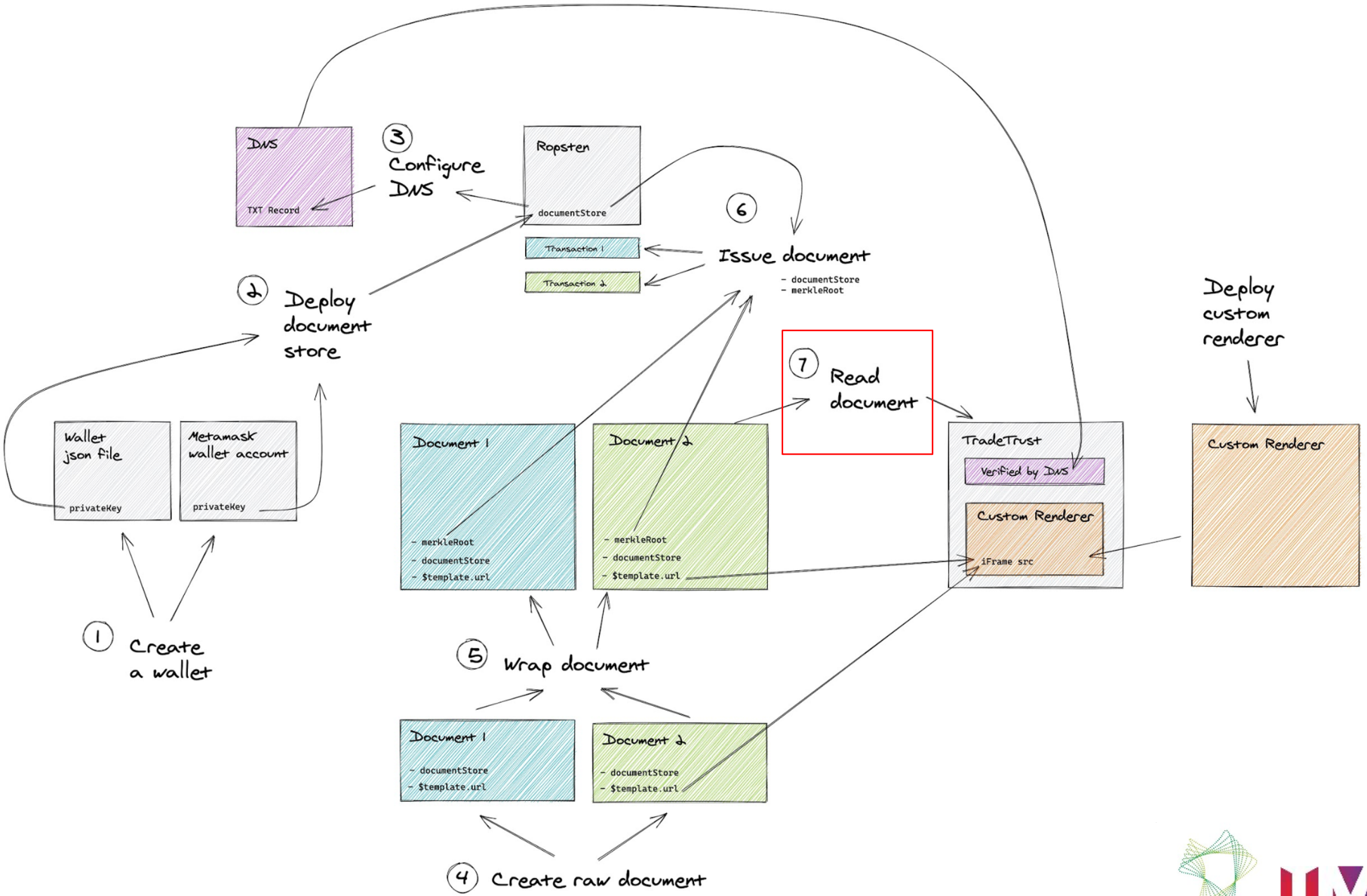
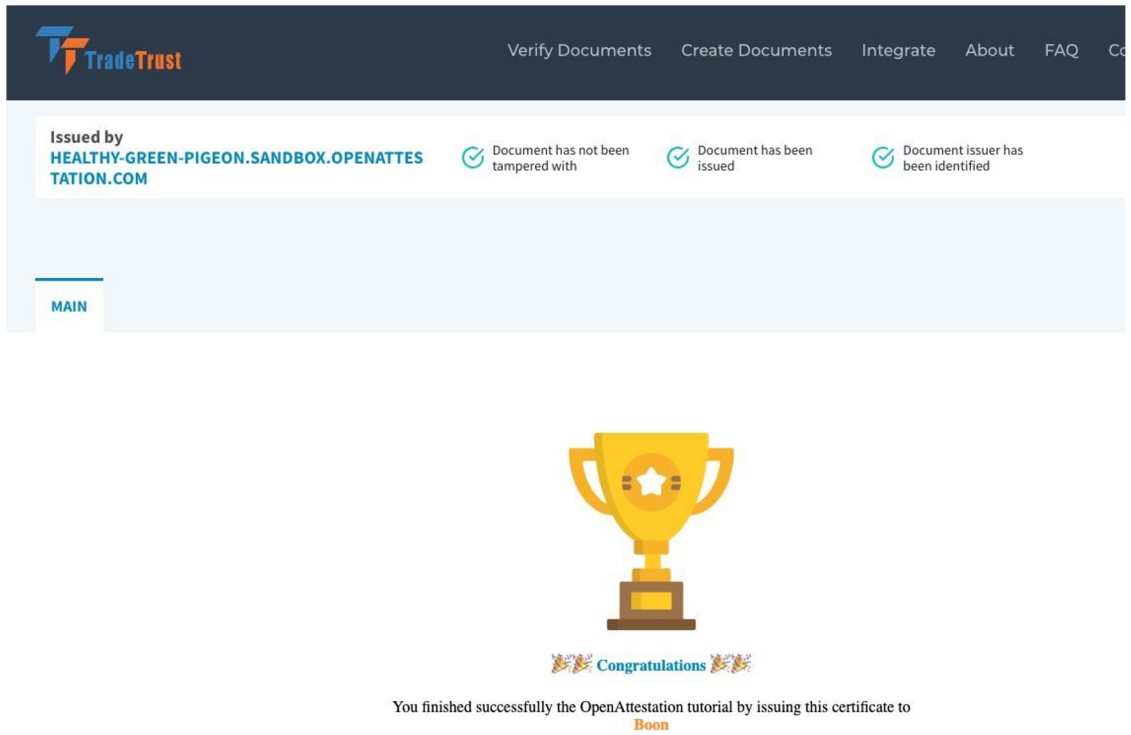
Read document



Read document

- Drag and drop your issued wrapped document now, to see the tutorial document renderer in action



UI: Reading your documents on TradeTrust website.

Additional topic:
Deploy custom renderer

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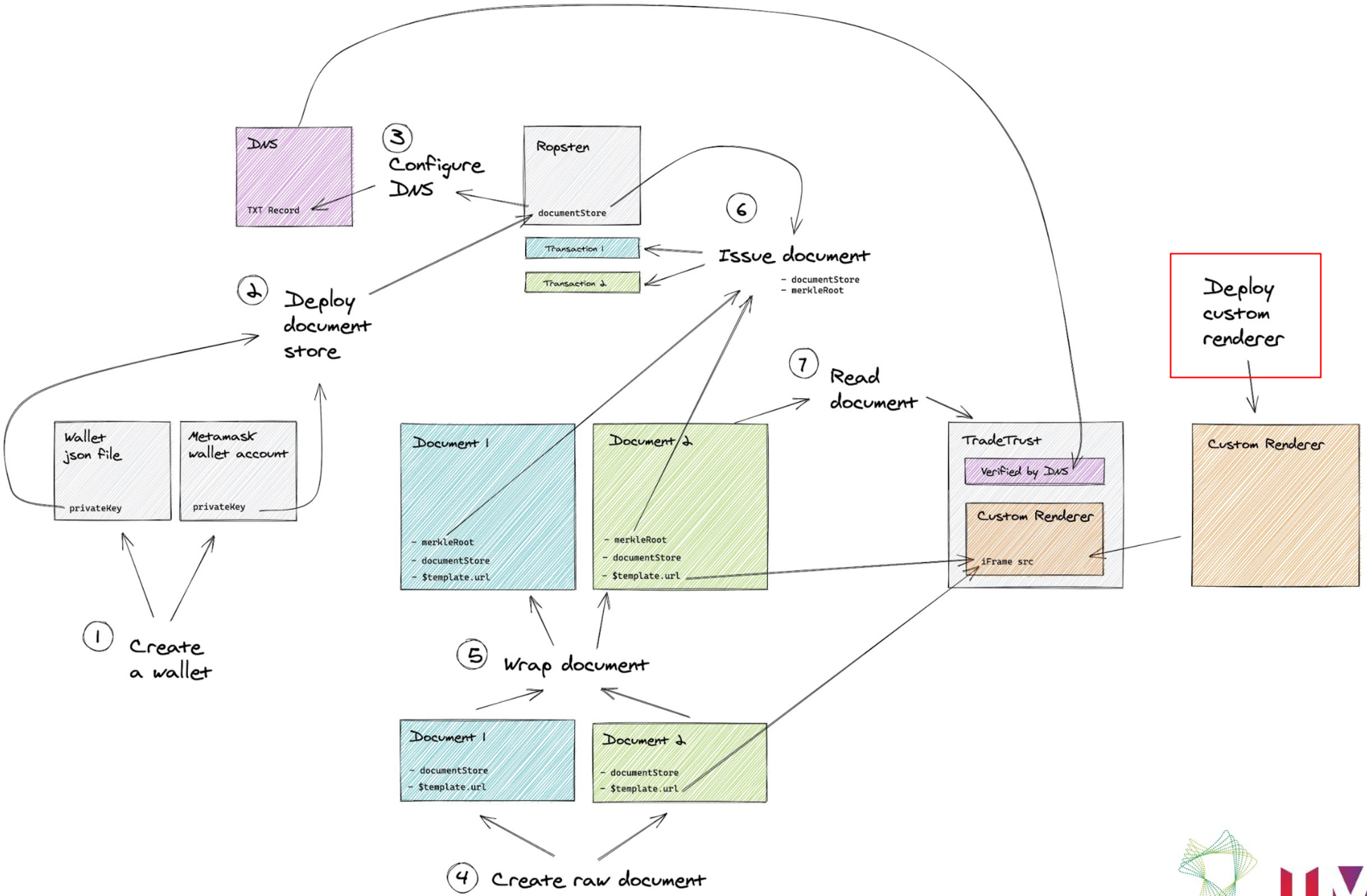
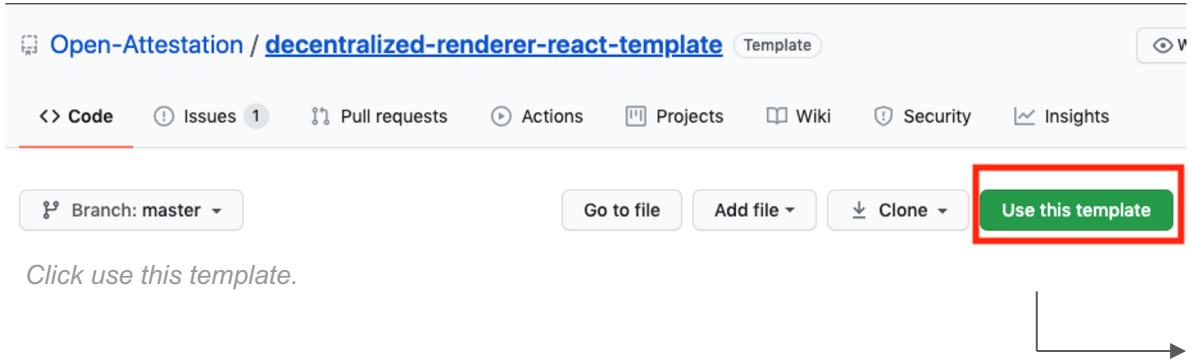
Deploy custom renderer

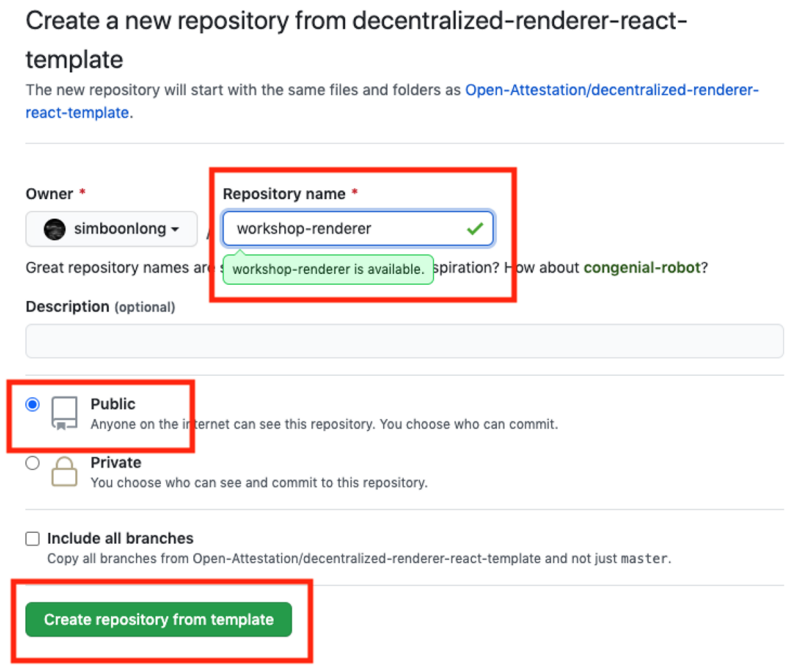


Deploy custom renderer

- Login to Github and use starter template from this repo:
  - https://github.com/Open-Attestation/decentralized-renderer-react-template



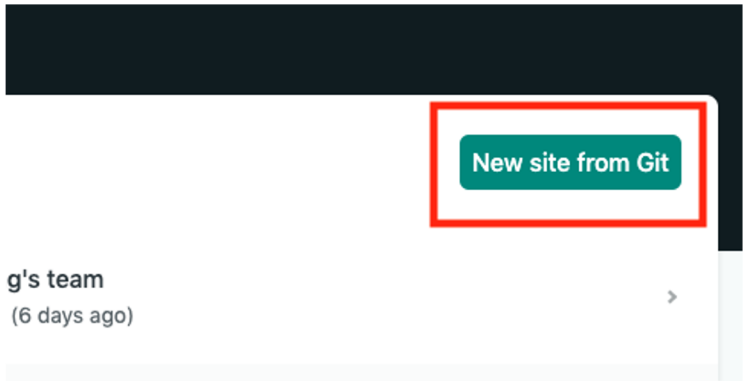
Click use this template.



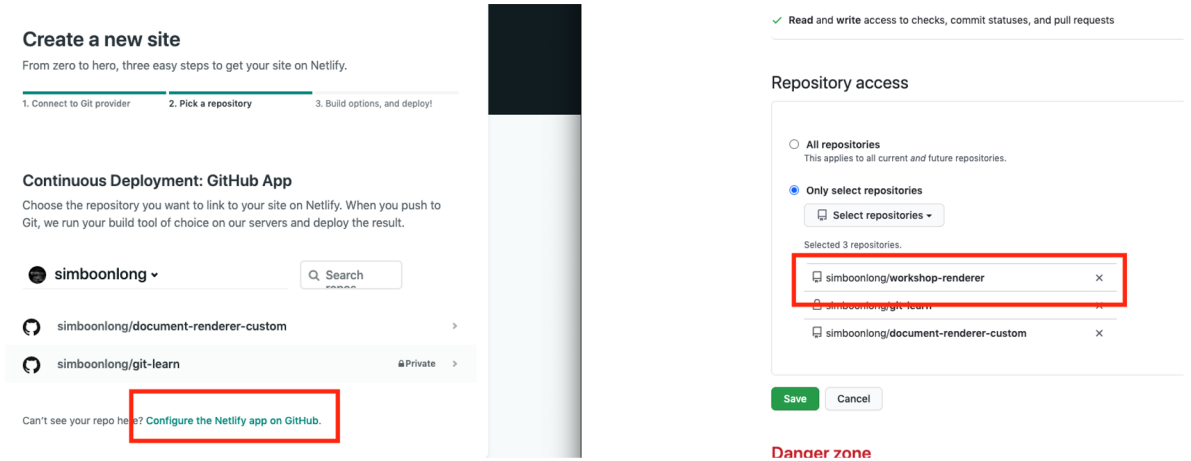
Click create repo from template.

Deploy custom renderer

- Login to Netlify and add new site
  - Configure netlify access rights to your renderer's repo
  - Add build command + publish directory
    - npm run build
    - dist
- Click deploy to get your public url
  - https://mystifying-swartz-b01fbb.netlify.app



Click New site from Git.

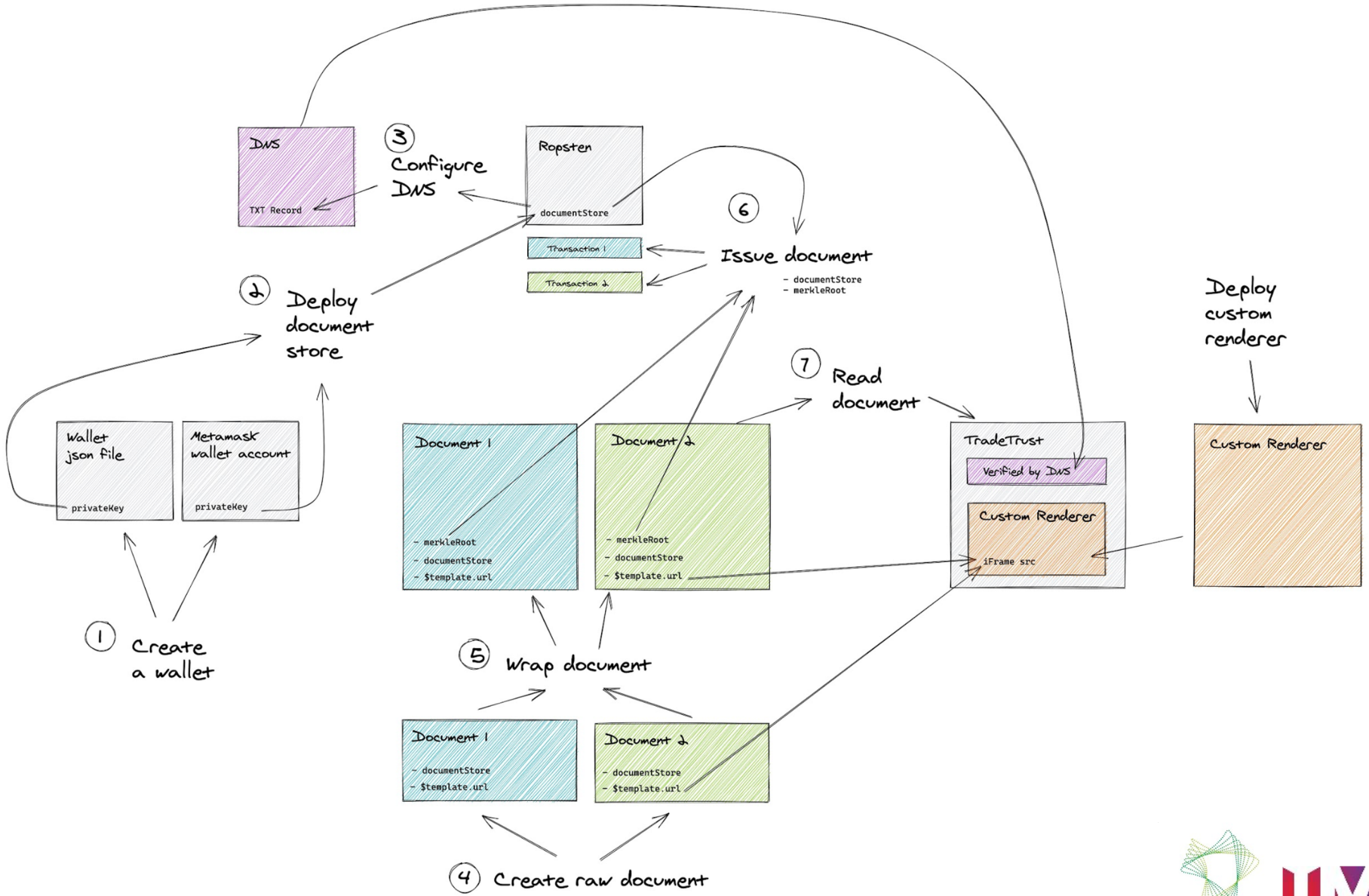


Add Github repo to Netilify.

Deploy custom renderer (let's see)

1. Update new values to raw documents
    - Remember to update $template.name if it's different :)
1. Run wrap again
2. Issue the documents to blockchain again
3. Drag drop again, you should now see your custom renderer :)
4. Make some edits to your custom renderer and push those up
5. Drag drop to see your reflected changes :)
6. Detailed steps at:
    - https://openattestation.com/docs/advanced/custom-renderer

Recap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Useful links

Documentation

- https://openattestation.com/docs/verifiable-document/overview

Open-Attestation CLI

- https://github.com/Open-Attestation/open-attestation-cli#setup
- https://github.com/Open-Attestation/open-attestation-cli#wallet
- https://github.com/Open-Attestation/open-attestation-cli#deploying-document-store
- https://github.com/Open-Attestation/open-attestation-cli#dns-txt-record
- https://github.com/Open-Attestation/open-attestation-cli#wrapping-documents
- https://github.com/Open-Attestation/open-attestation-cli#issue-1

Renderer Template

- https://github.com/Open-Attestation/decentralized-renderer-react-template

TL;DR

- https://drive.google.com/drive/folders/117TpQjP5SU0lVsB84A_HxUiOGDljJLW4


THANK YOU