# 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

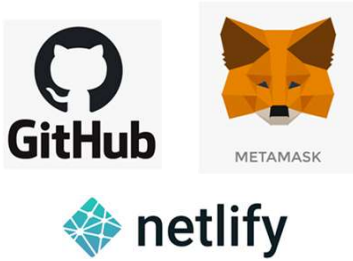
GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# 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.*




*Some of the platforms referenced in this workshop.*

GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# Verifiable document + Open Attestation CLI (oa-cli)

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

GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# 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

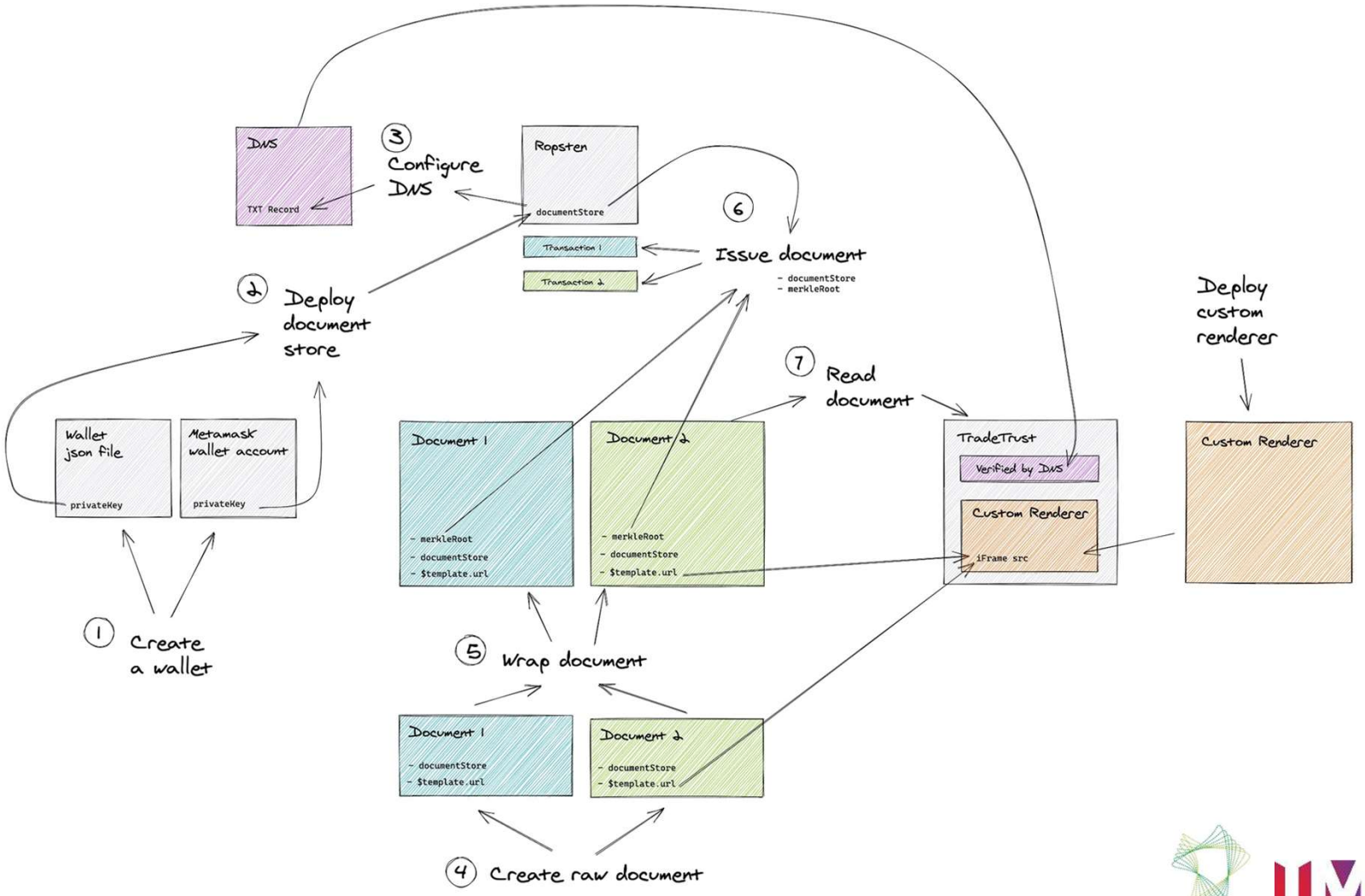
GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# Additional topic

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

# Overview




GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# Introduction

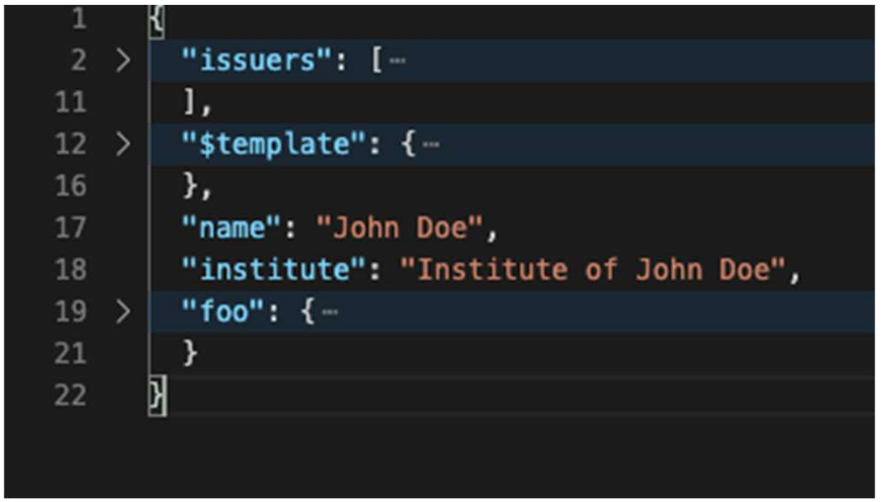
GOVTECH SINGAPORE

SG:D EMPOWERING POSSIBILITIES

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# 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.*

GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# 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

GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

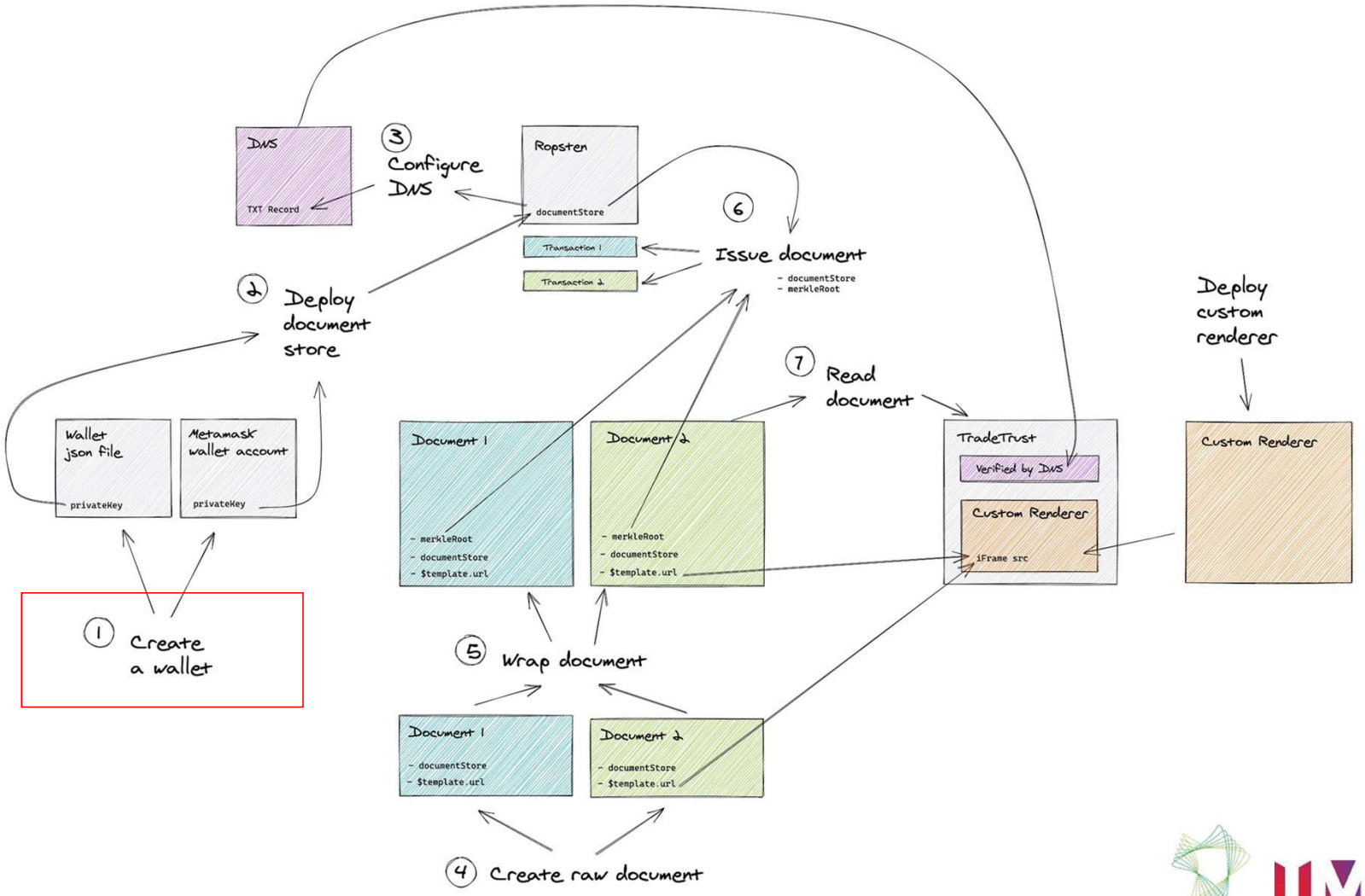
# Create wallet

GOVTECH SINGAPORE

SG:D EMPOWERING POSSIBILITIES

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# Create wallet

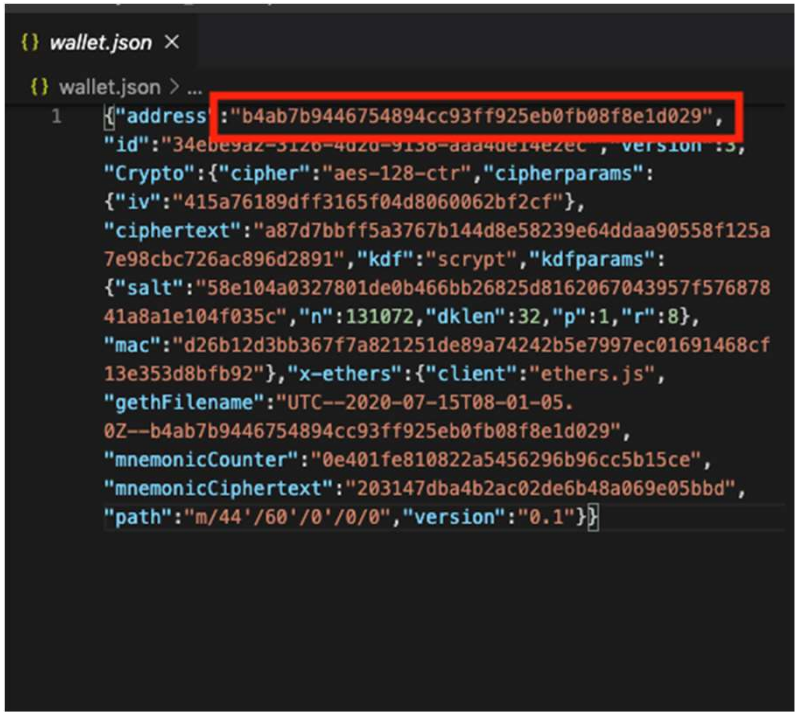



GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# 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

GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# 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/

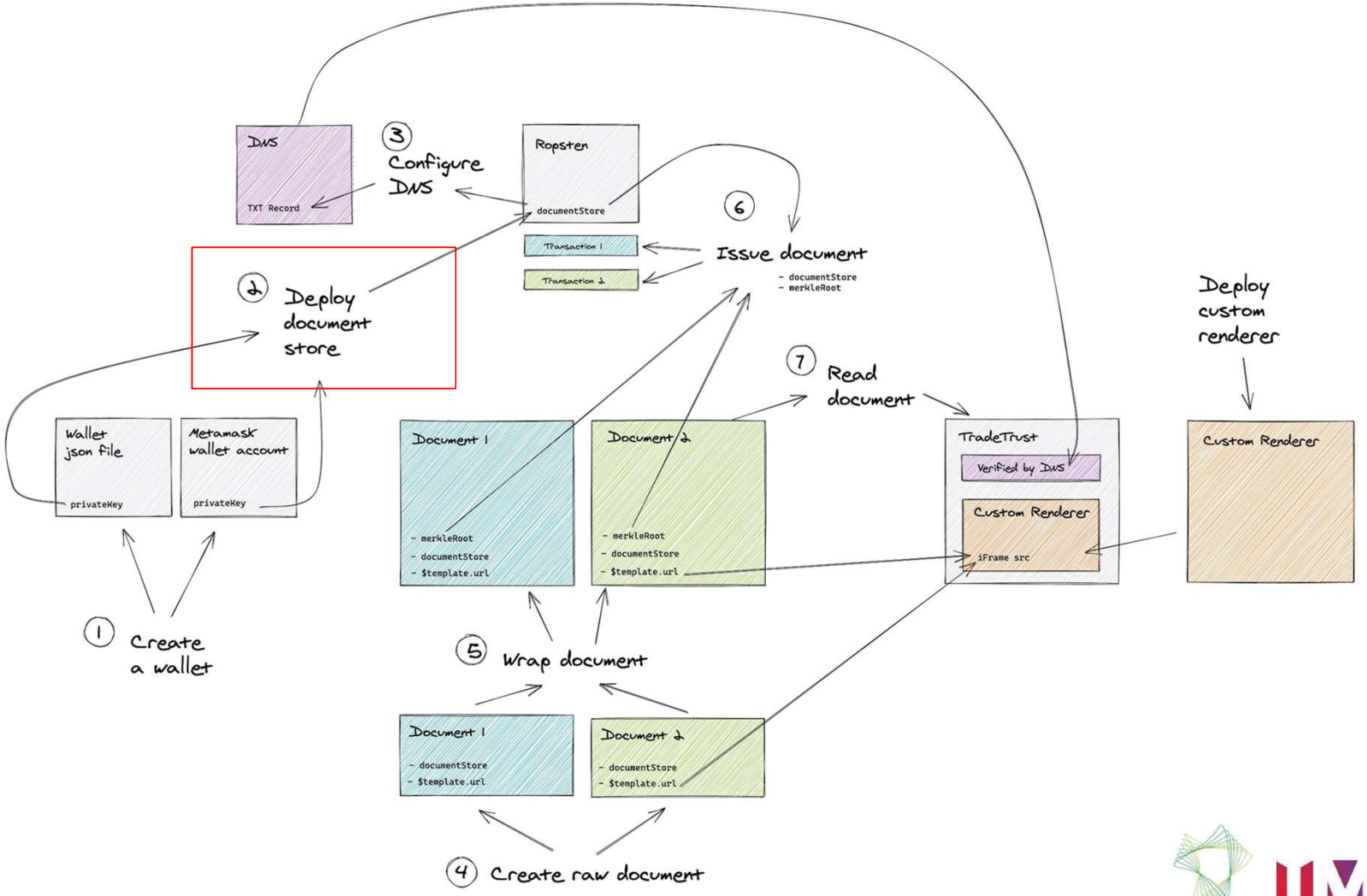
# Deploy document store

GOVTECH SINGAPORE

SG:D EMPOWERING POSSIBILITIES

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# 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 : )

GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

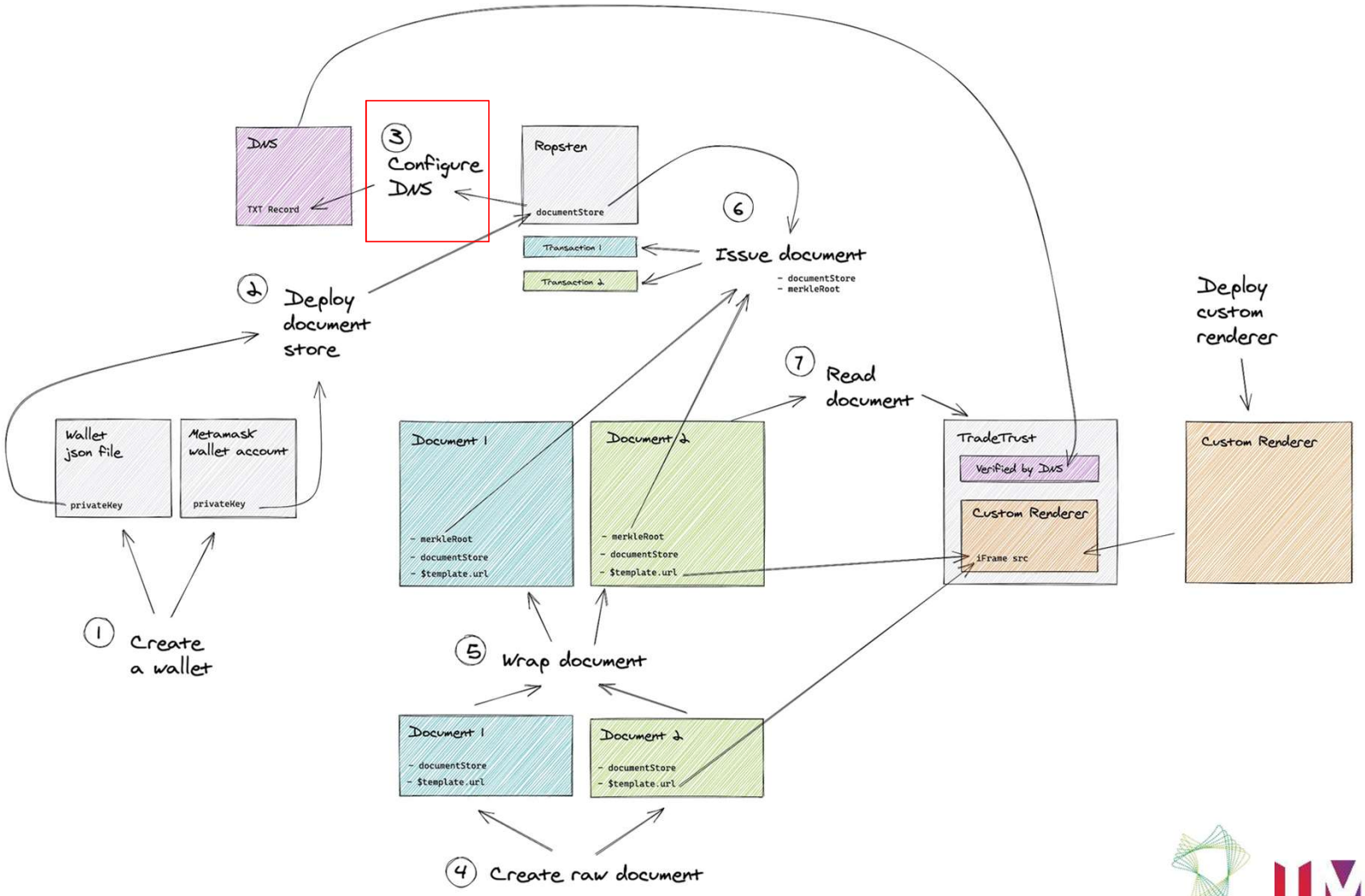
# Configure DNS

GOVTECH SINGAPORE

SG:D EMPOWERING POSSIBILITIES

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# 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' | '0xF78a77135915172888950874658728910b1c98dA' | 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.*

GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

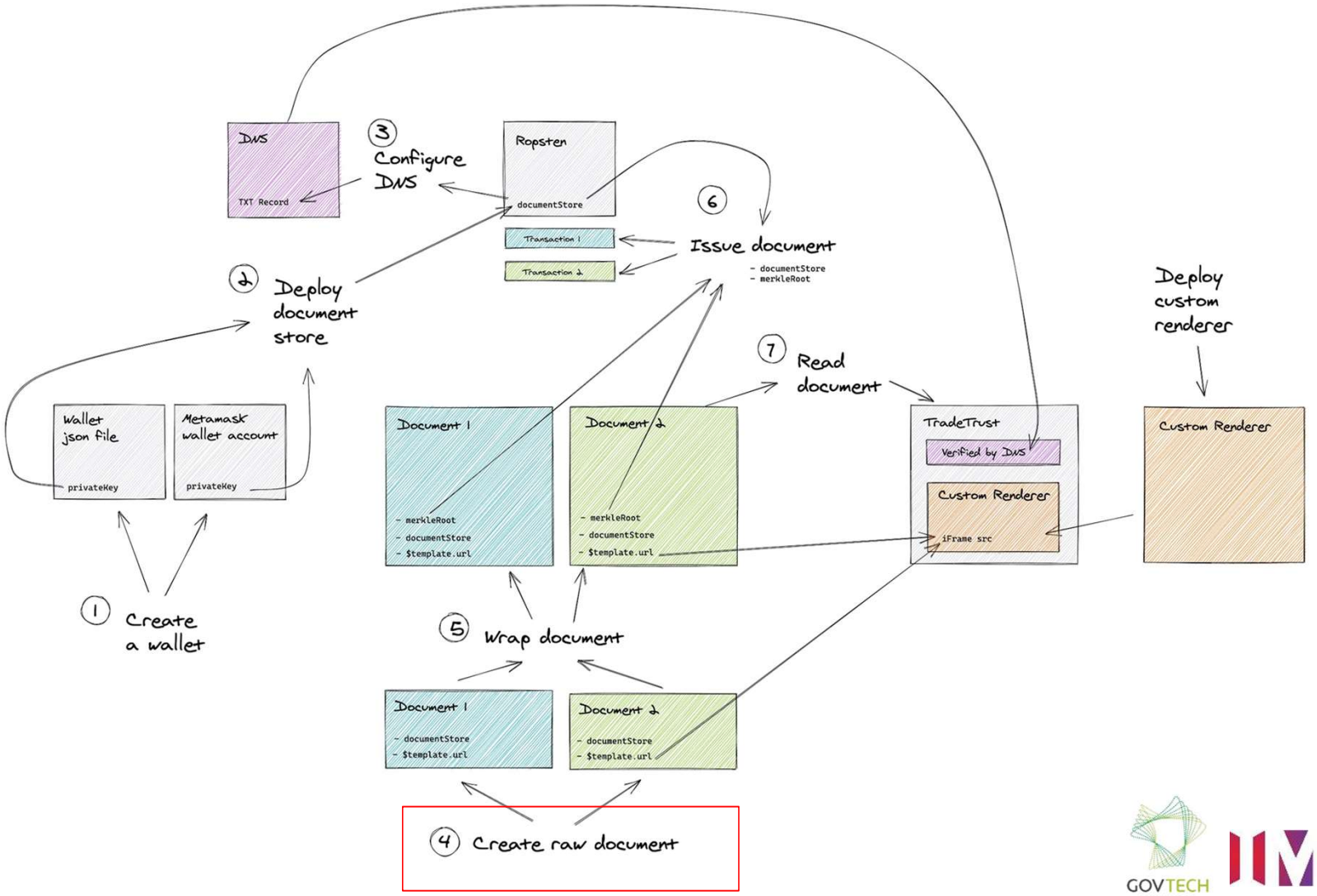
# Create raw document

GOVTECH SINGAPORE

SG:D EMPOWERING POSSIBILITIES

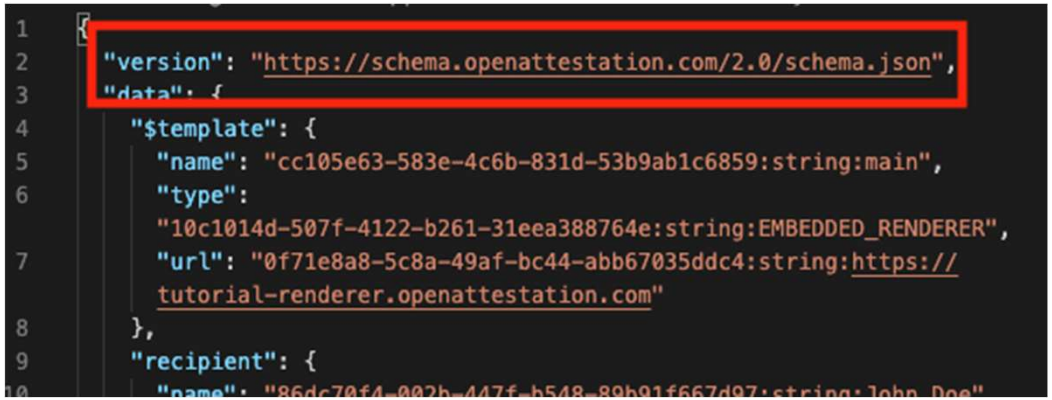
INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# 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.*

GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

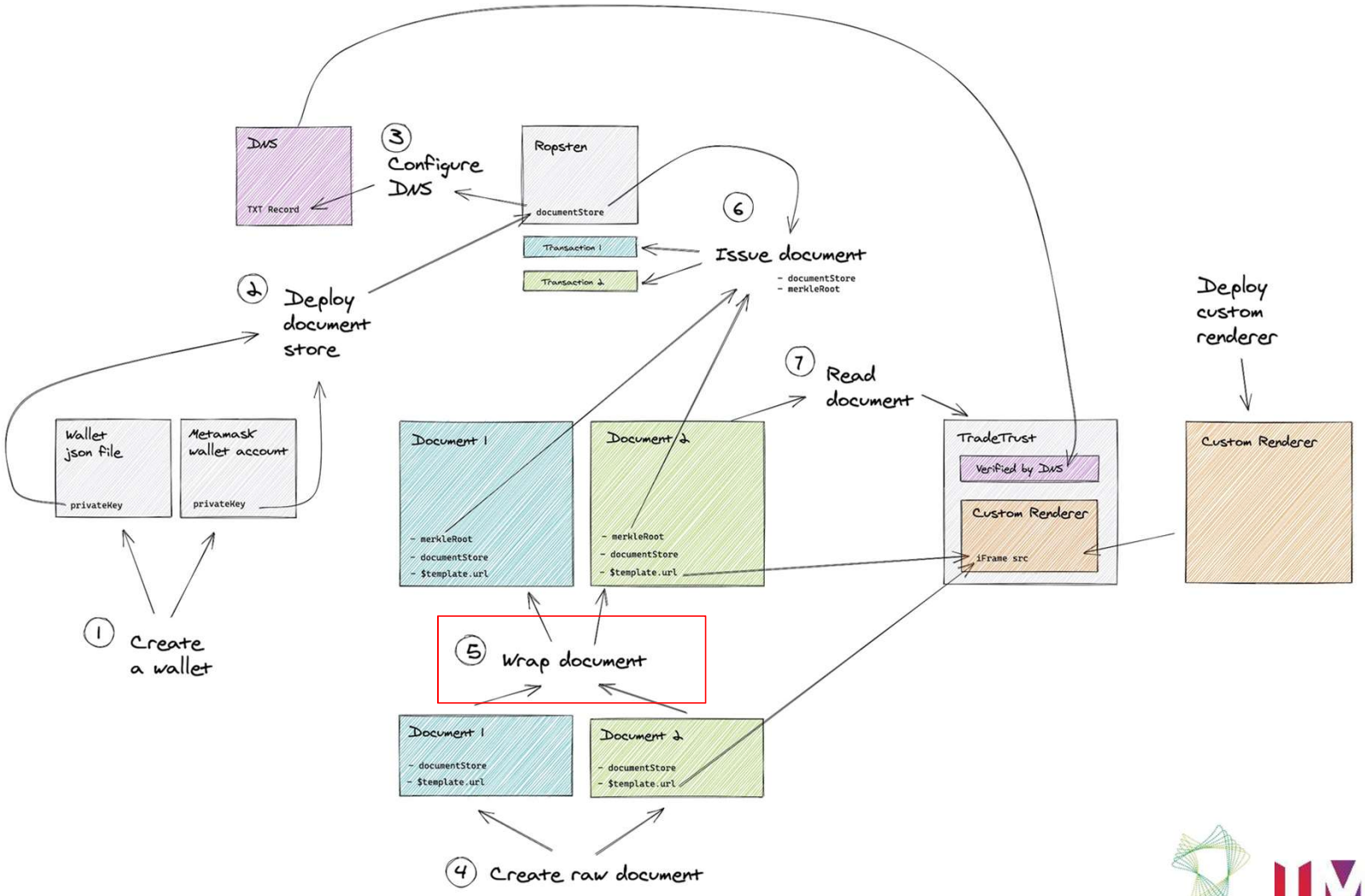
# Wrap document

GOVTECH SINGAPORE

SG:D EMPOWERING POSSIBILITIES

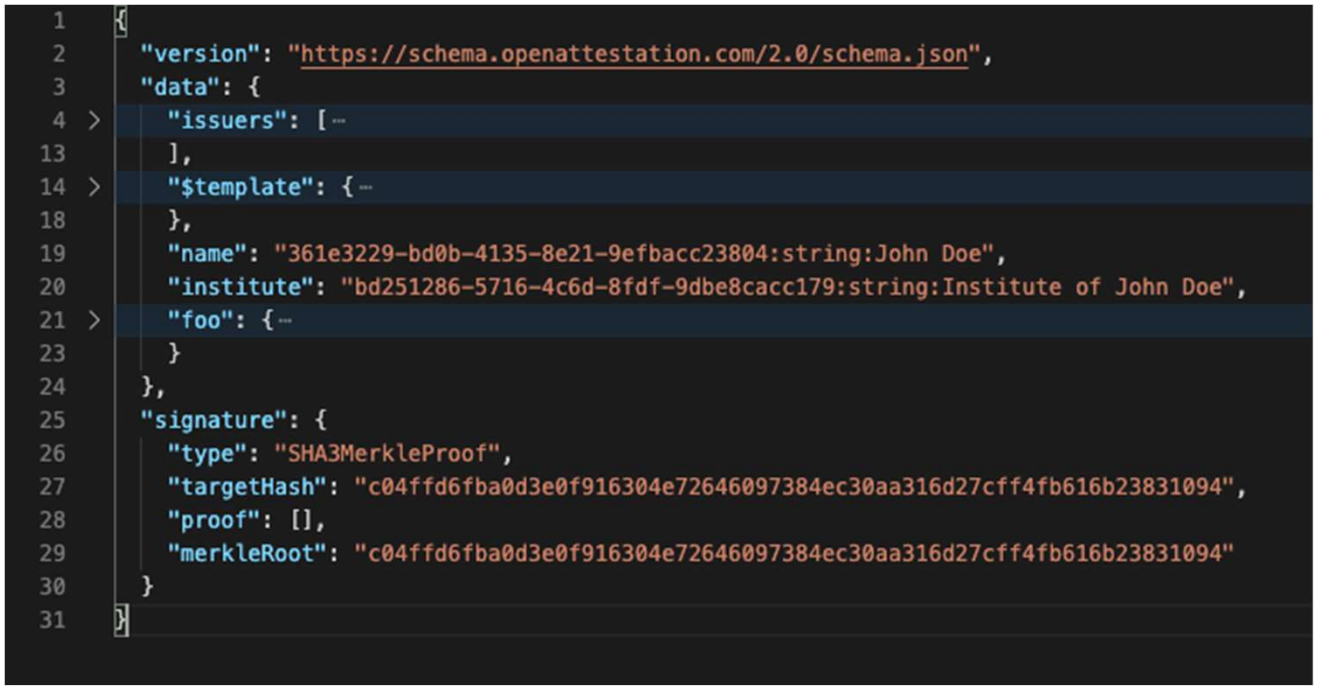
INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# Wrap document



# Wrap document


*Before file is wrapped.*




*After file is wrapped.*

GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# 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

GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

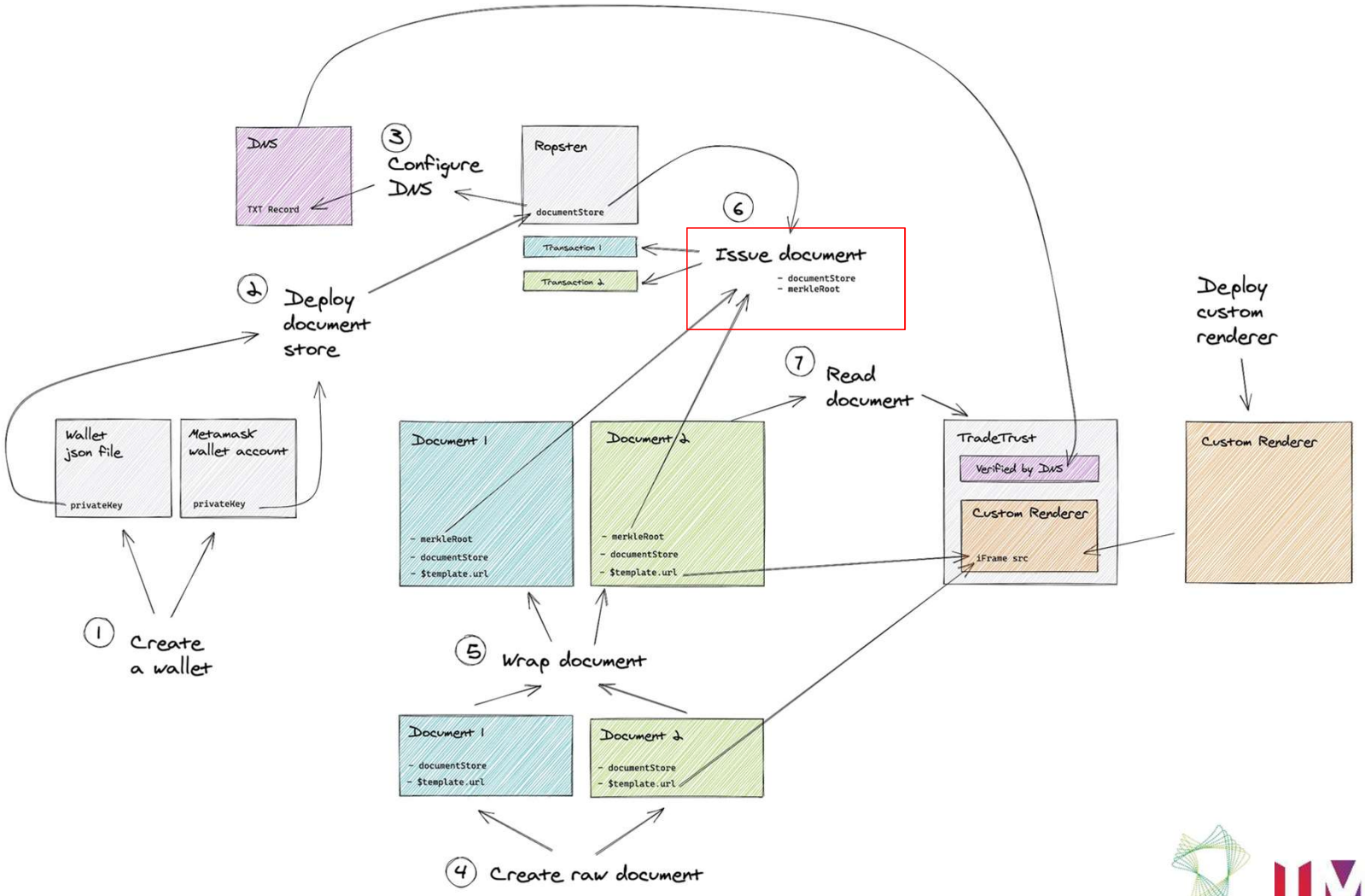
# Issue document

GOVTECH SINGAPORE

SG:D EMPOWERING POSSIBILITIES

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# Issue document




GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# 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

GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# 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 [redacted]
( [redacted] --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.*

GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

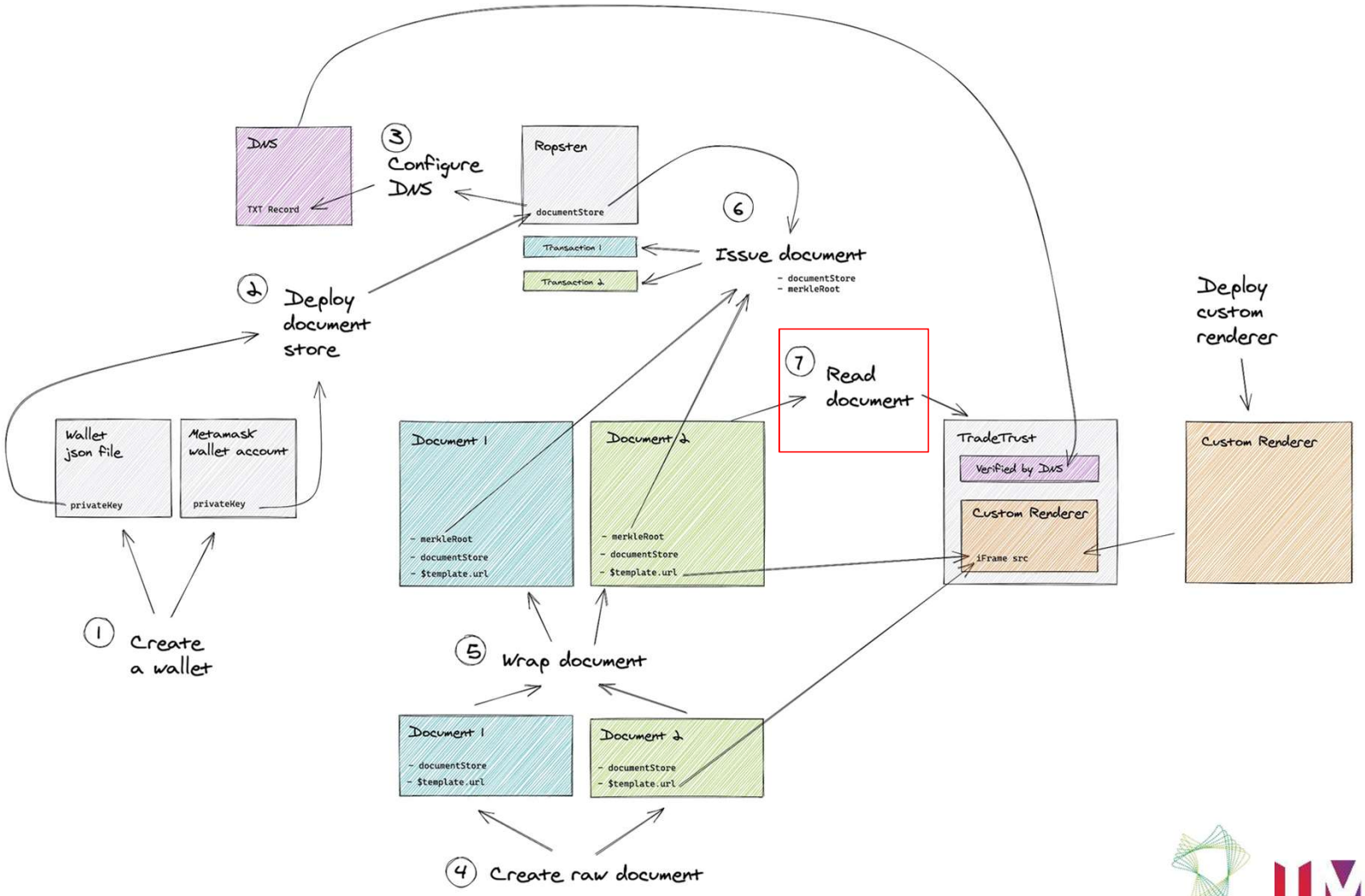
# Read document

GOVTECH SINGAPORE

SG:D EMPOWERING POSSIBILITIES

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# Read document

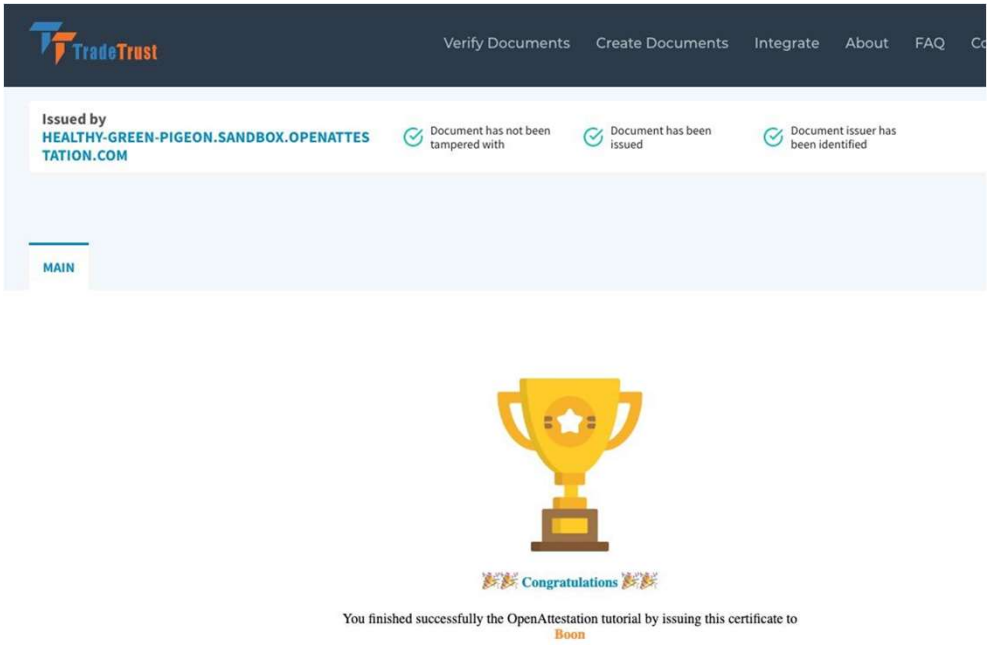



GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# 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.*

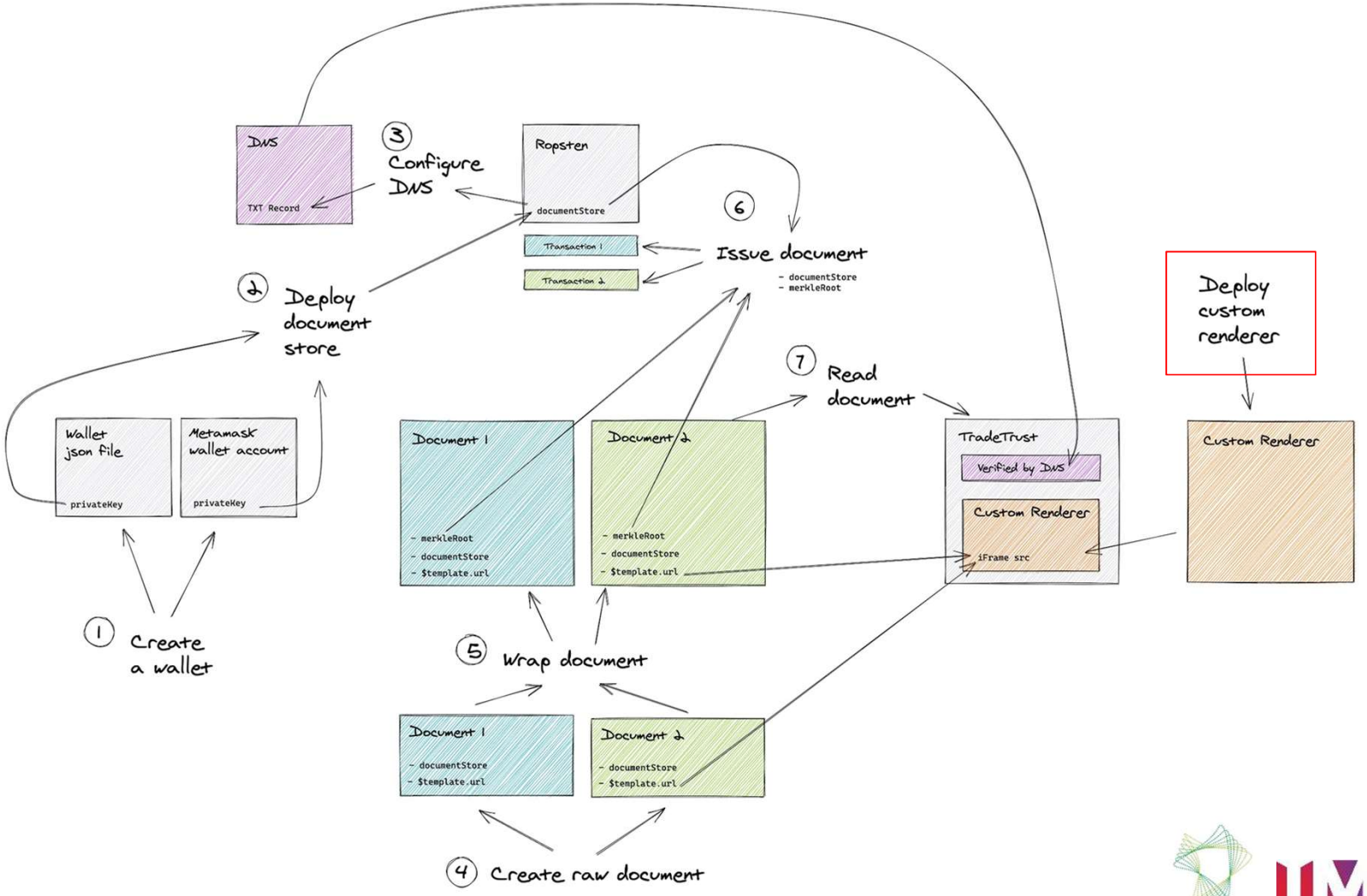
# Additional topic:
# Deploy custom renderer

GOVTECH SINGAPORE

SG:D EMPOWERING POSSIBILITIES

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# Deploy custom renderer

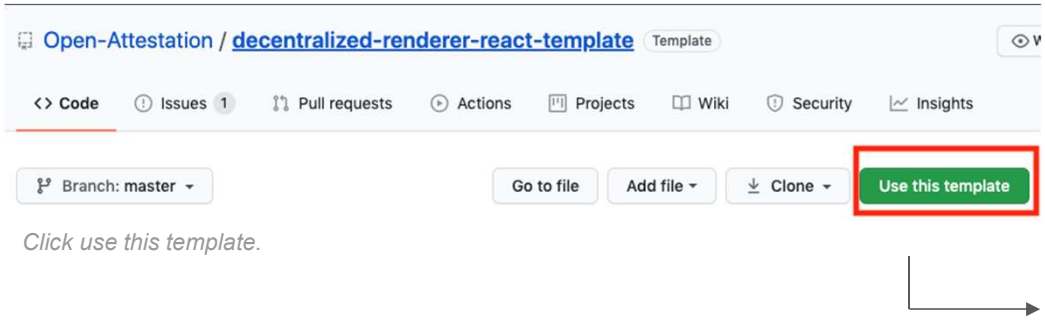



GOVTECH SINGAPORE

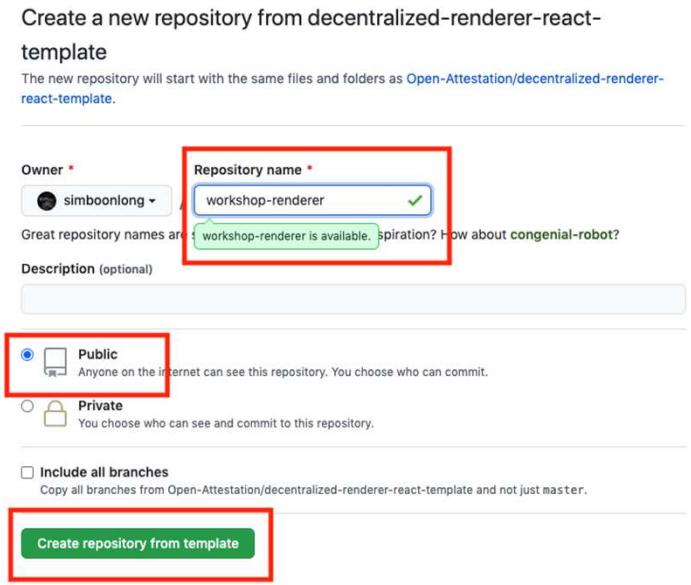
INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# Deploy custom renderer

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



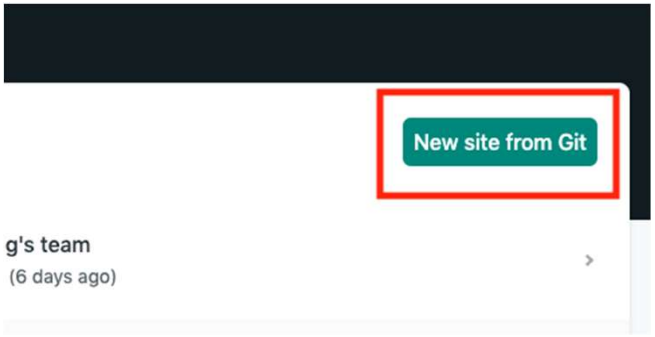

*Click use this template.*



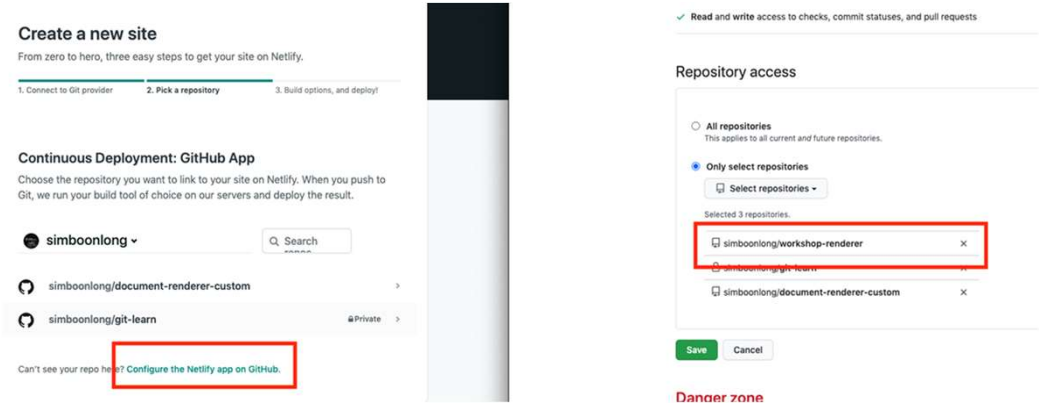

*Click create repo from template.*

# 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 Netlify.*

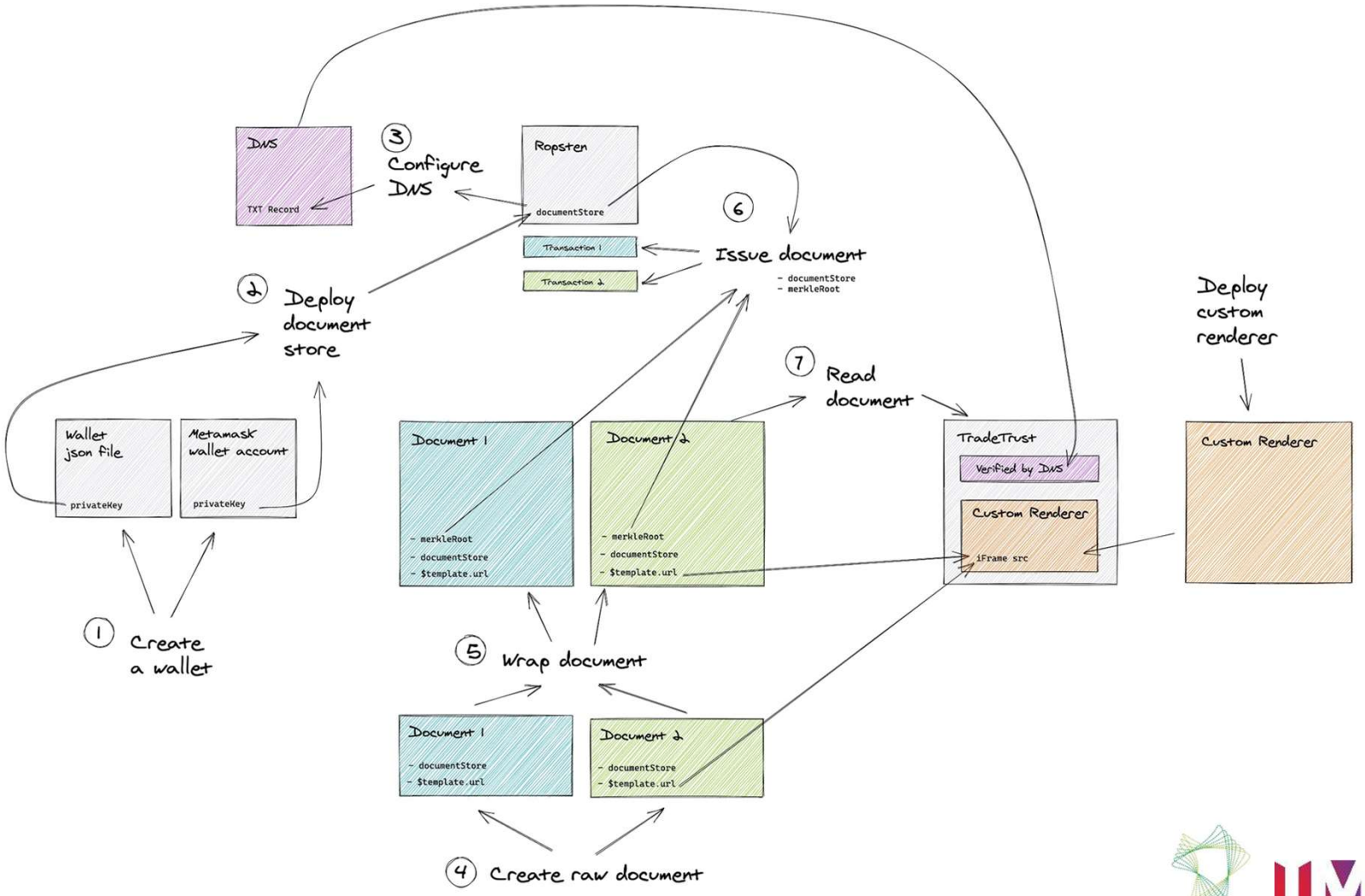
# Deploy custom renderer (let's see)

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

GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY

# Recap


DNS
TXT Record
3
Configure DNS
Ropsten
documentStore
Transaction 1
Transaction 2
6
Issue document
- documentStore
- merkleRoot
2
Deploy document store
Deploy custom renderer
7
Read document
Wallet json file
privateKey
Metamask wallet account
privateKey
Document 1
- merkleRoot
- documentStore
- $template.url
Document 2
- merkleRoot
- documentStore
- $template.url
TradeTrust
Verified by DNS
Custom Renderer
iFrame src
Custom Renderer
1
Create a wallet
5
Wrap document
Document 1
- documentStore
- $template.url
Document 2
- documentStore
- $template.url
4
Create raw document

# 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

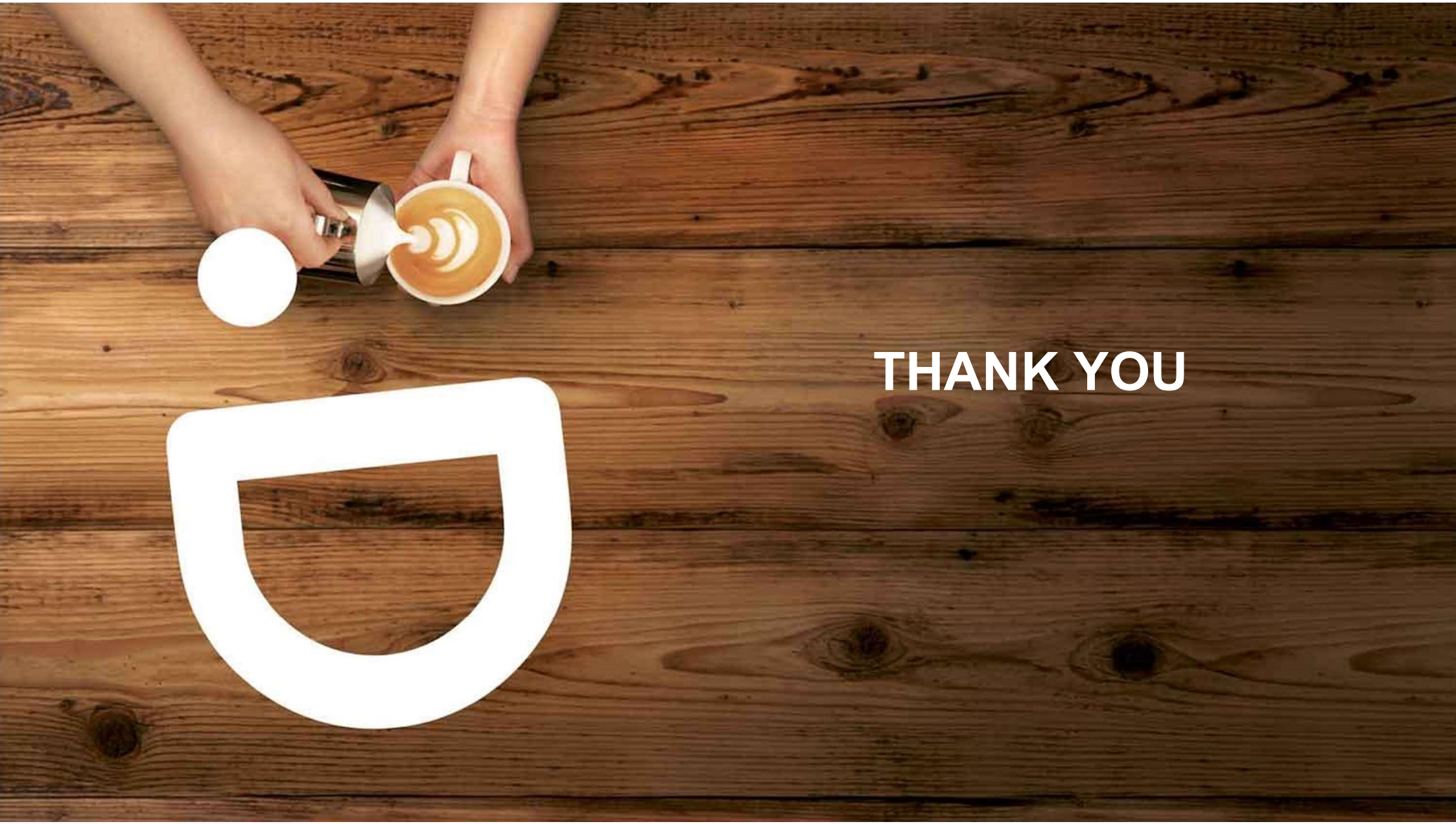
- https://github.com/Open-Attestation/decentralized-renderer-react-template

TL;DR

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

GOVTECH SINGAPORE

INFOCOMM MEDIA DEVELOPMENT AUTHORITY


THANK YOU