5G IoT Registry DEMO

https://cira.ca/IoT
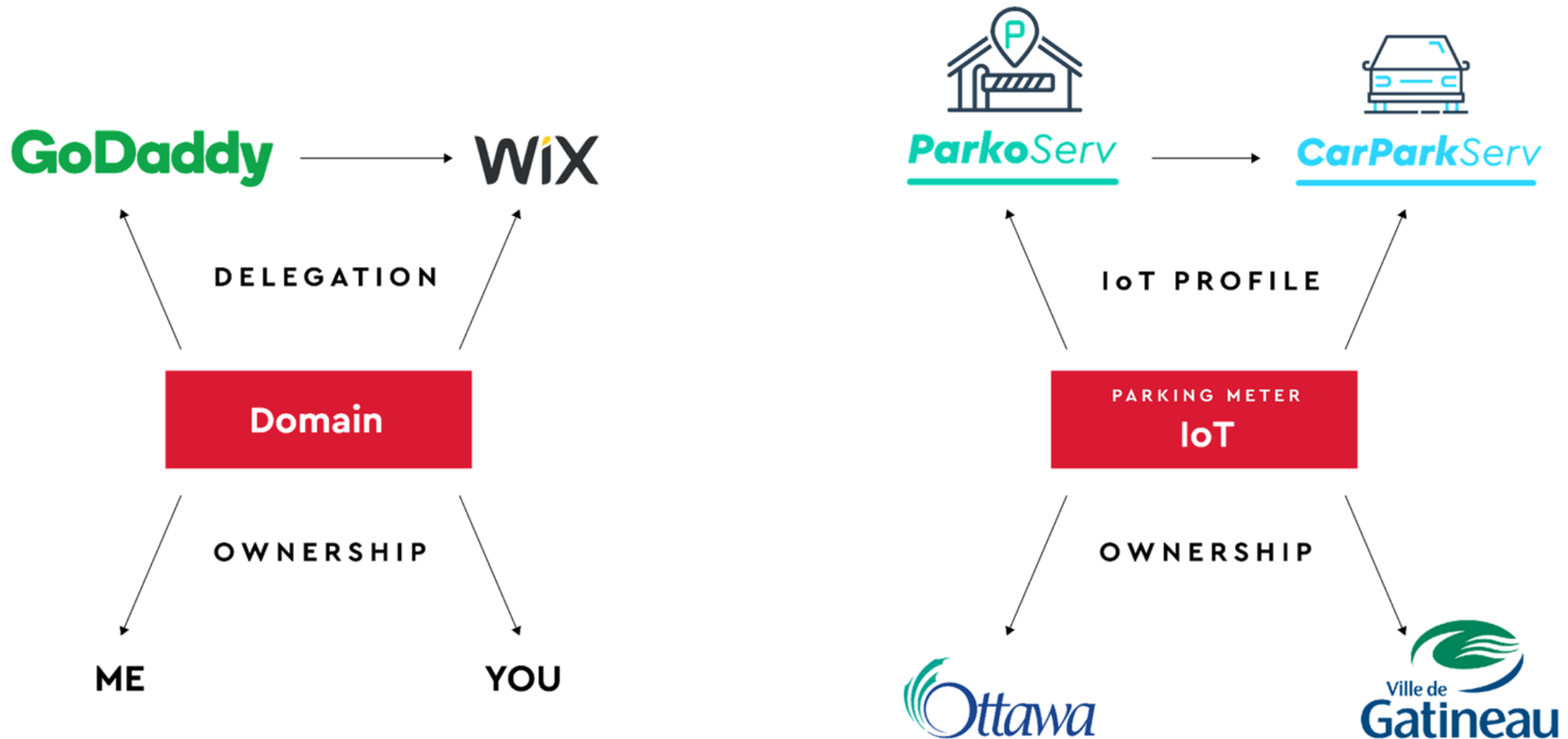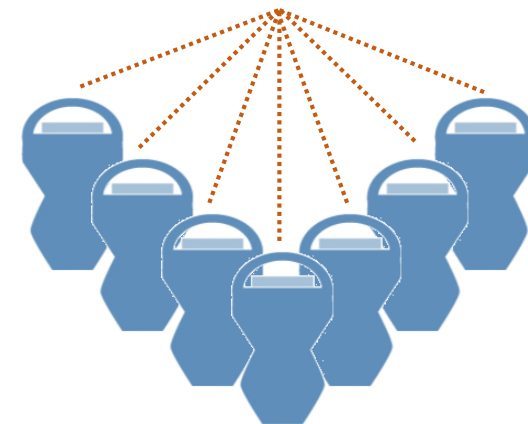
Similarity between Domain Names and 5G IoT Devices

THE CITY OF OTTAWA BUYS 1000 GENERIC SMART PARKING METERS AND SELECTS PARKOSERV AS CLOUD SERVICE PROVIDER

1 - Procurement:
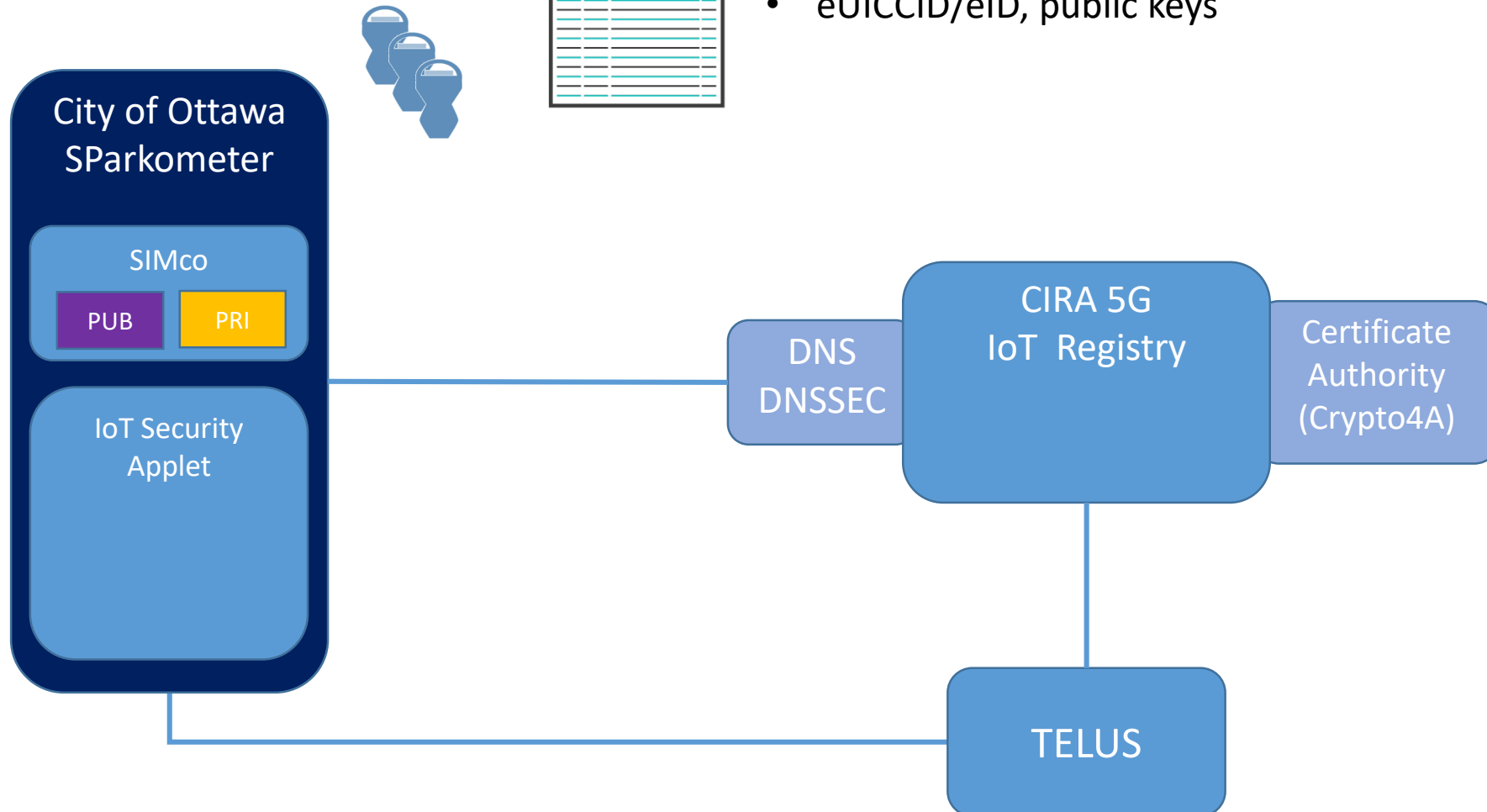City of Ottawa buys 1000 SParkometers (**generic** smart parking meters)
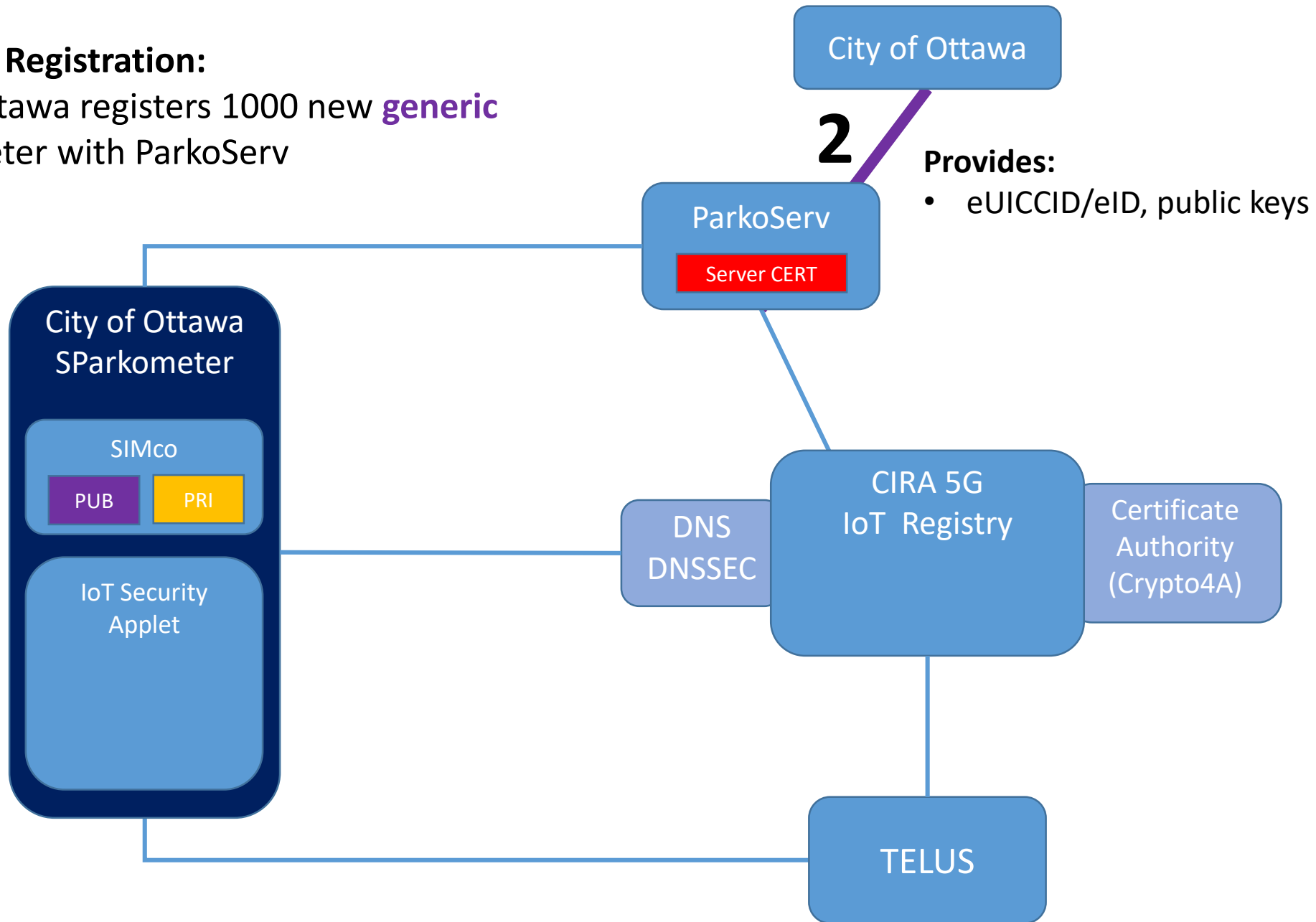
1

City of Ottawa

Provides:
- eUICCID/eID, public keys

City of Ottawa SParkometer

SIMco

PUB PRI

IoT Security Applet

DNS DNSSEC

CIRA 5G IoT Registry

Certificate Authority (Crypto4A)

TELUS

cira
CIRA'S IOT REGISTRY

2 – Cloud Registration:
City of Ottawa registers 1000 new **generic** SParkometer with ParkoServ

City of Ottawa

2

Provides:
- eUICCID/eID, public keys

ParkoServ

Server CERT

City of Ottawa SParkometer

SIMco

PUB   PRI

IoT Security Applet

DNS DNSSEC

CIRA 5G IoT Registry

Certificate Authority (Crypto4A)

TELUS

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CIRA'S IOT REGISTRY

3 – IoT Registry Registration:
ParkoServ registers 1000 SParkometer
with the CIRA 5G IoT Registry

City of Ottawa

ParkoServ

Server CERT

City of Ottawa
SParkometer

SIMco

PUB   PRI

IoT Security
Applet

Provides:
- eUICCID/eID, public keys

3

DNS
DNSSEC

CIRA 5G
IoT Registry

1000 IoT

Certificate
Authority
(Crypto4A)

Client CERT

PUB   PRI

Creates:
- Encrypted IoT Profile with unique IoT device certificate and ParkoServ connection information (URL, PORT)
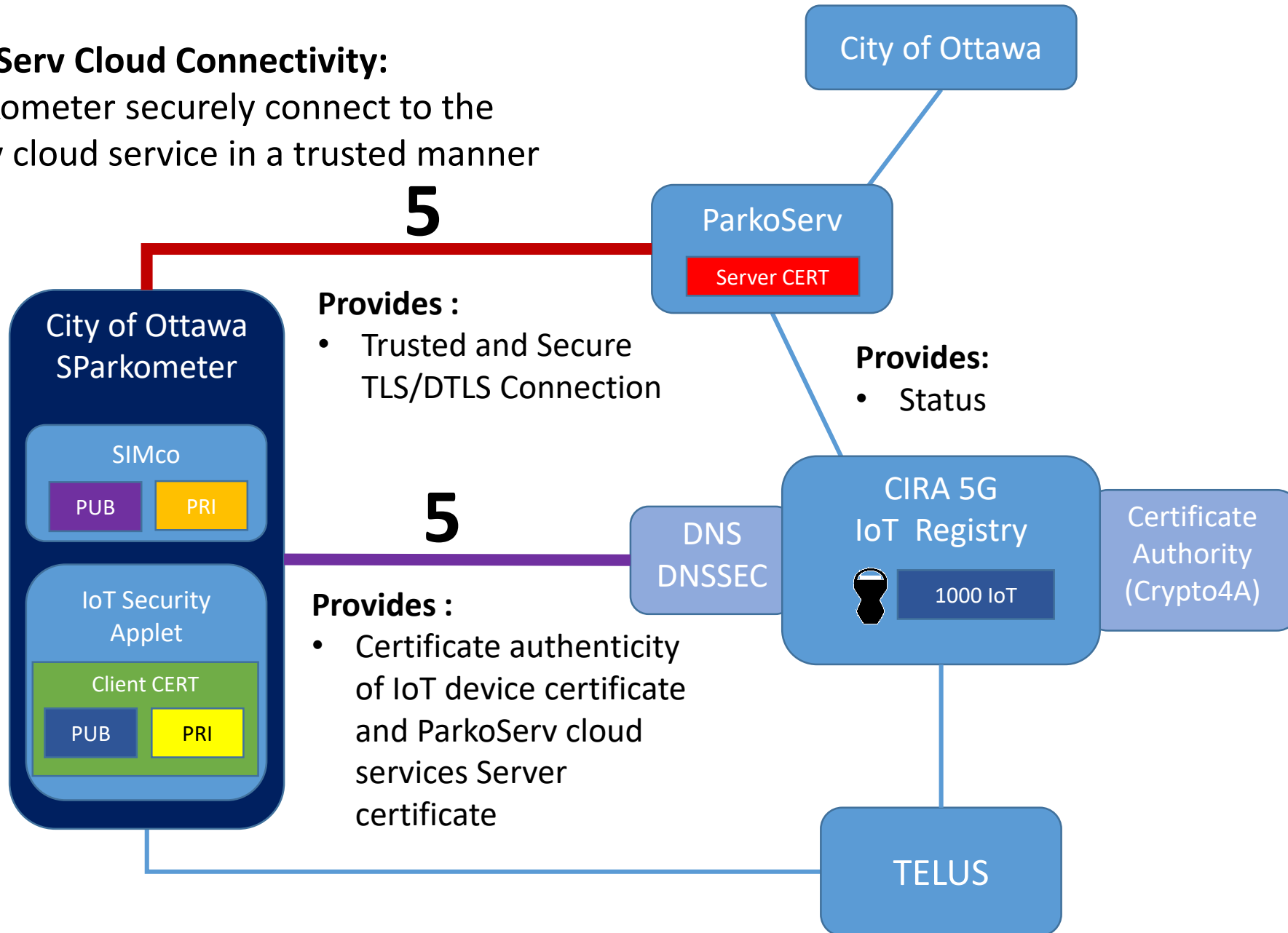- Destruction of keys

TELUS

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CIRA'S IOT REGISTRY

4 – IoT Device Provisioning:

IoT Registry provides TELUS with the encrypted
IoT Profile to each of the ParkoServ registered
1000 SParkometer

City of Ottawa

ParkoServ

Server CERT

Provides:
- Status

City of Ottawa
SParkometer

SIMco

PUB   PRI

IoT Security
Applet

Client CERT

PUB   PRI

DNS
DNSSEC

CIRA 5G
IoT Registry

1000 IoT

Certificate
Authority
(Crypto4A)

Provides :
- eUICC status
- Encrypted IoT Security Applet

Provides:
- eUICC Profile

4

- Secure transmission of IoT
  Profile (IoT Security Applet
  containing Client Cert + info)

4

TELUS

cira
CIRA'S IOT REGISTRY

5 – ParkoServ Cloud Connectivity:
The SParkometer securely connect to the ParkoServ cloud service in a trusted manner

City of Ottawa
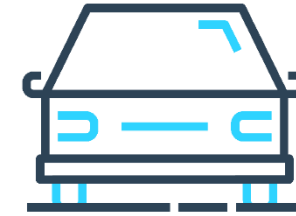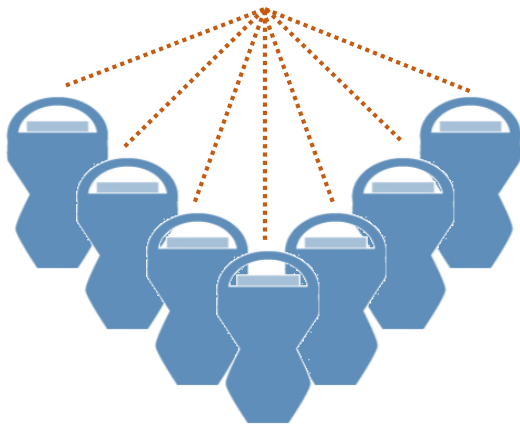
5

ParkoServ

Server CERT

5

City of Ottawa SParkometer

SIMco

PUB | PRI

IoT Security Applet

Client CERT

PUB | PRI

Provides :
• Trusted and Secure TLS/DTLS Connection

Provides:
• Status

Provides :
• Certificate authenticity of IoT device certificate and ParkoServ cloud services Server certificate

DNS DNSSEC

CIRA 5G IoT Registry

1000 IoT

Certificate Authority (Crypto4A)

TELUS

THE CITY OF OTTAWA CHANGES THEIR PARKING CLOUD PROVIDER
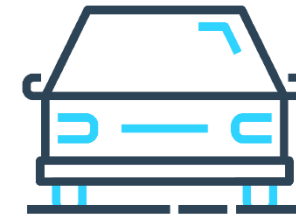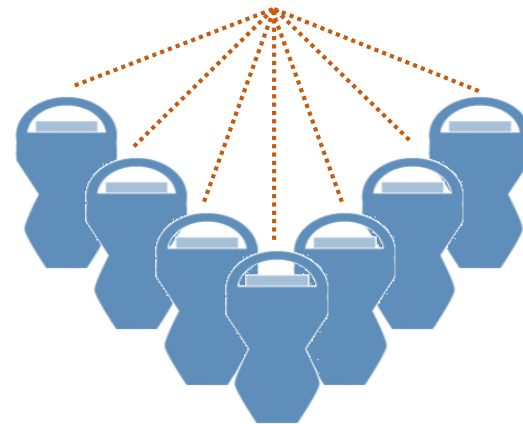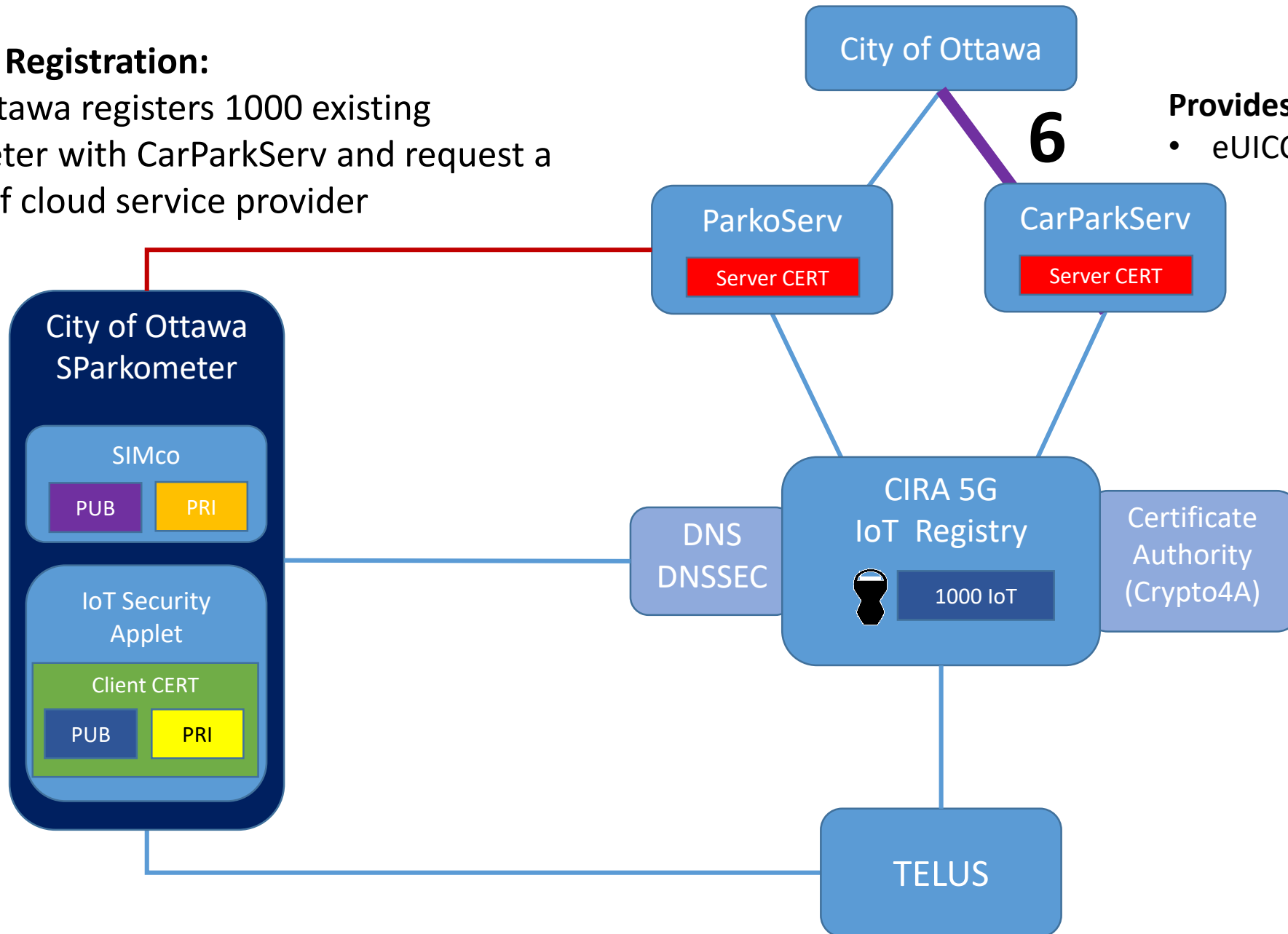
6 – Cloud Registration:
City of Ottawa registers 1000 existing SParkometer with CarParkServ and request a transfer of cloud service provider

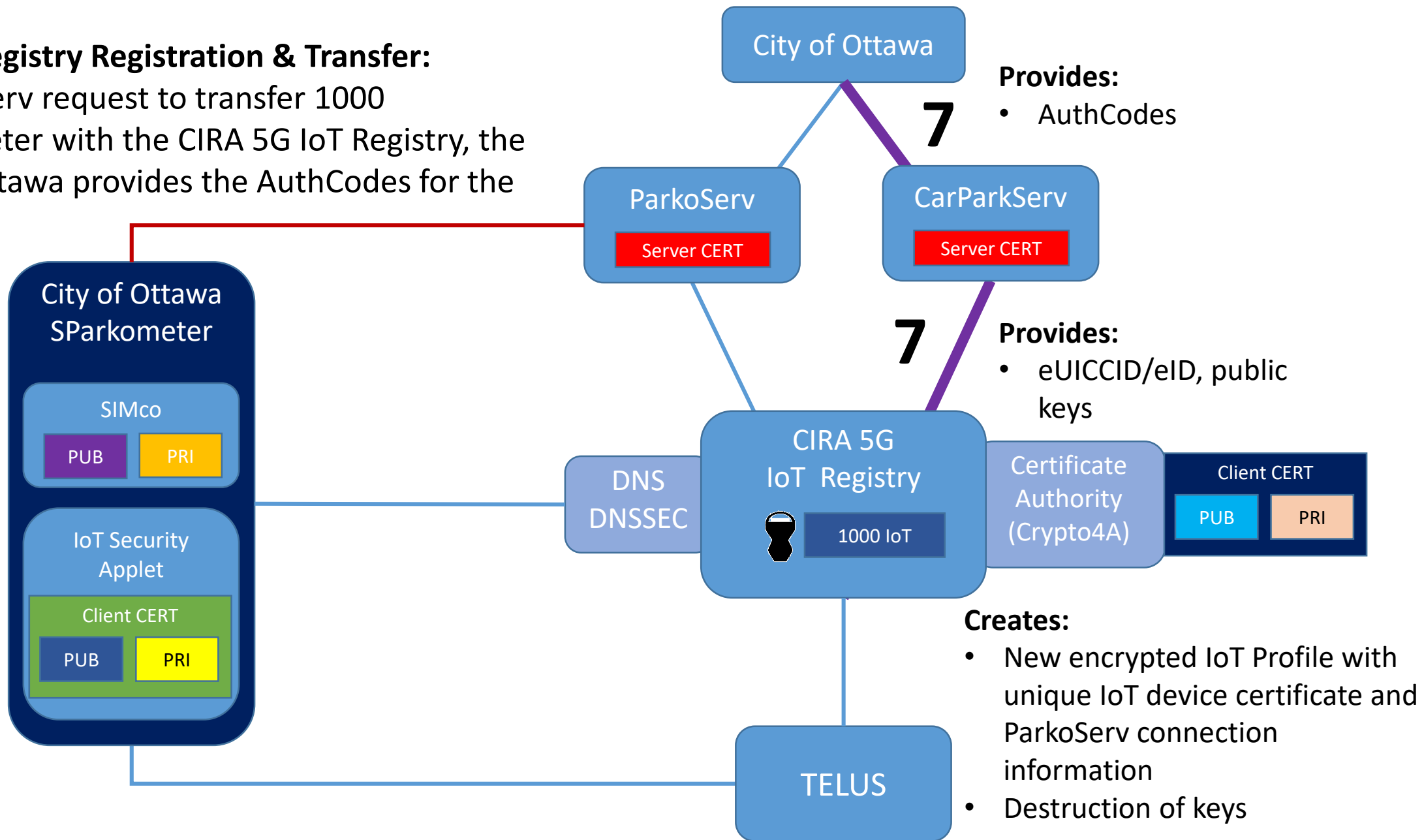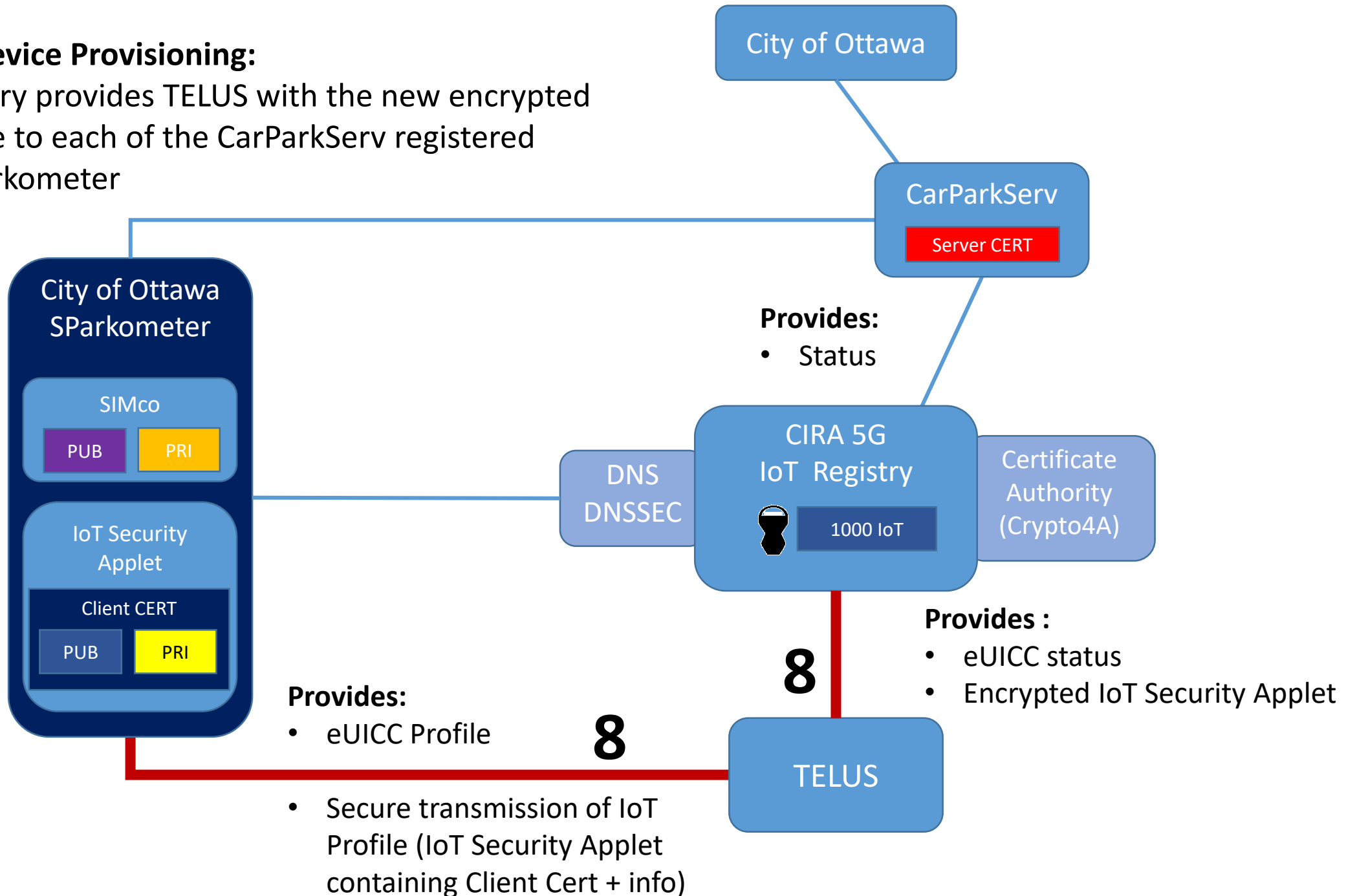**Provides:**
- eUICCID/eID, public keys

7 – IoT Registry Registration & Transfer:
CarParkServ request to transfer 1000 SParkometer with the CIRA 5G IoT Registry, the City of Ottawa provides the AuthCodes for the transfer

City of Ottawa

7

Provides:
- AuthCodes

ParkoServ

Server CERT

CarParkServ

Server CERT

7

Provides:
- eUICCID/eID, public keys

City of Ottawa SParkometer

SIMco

PUB   PRI

IoT Security Applet

Client CERT

PUB   PRI

DNS DNSSEC

CIRA 5G IoT Registry

1000 IoT

Certificate Authority (Crypto4A)

Client CERT

PUB   PRI

Creates:
- New encrypted IoT Profile with unique IoT device certificate and ParkoServ connection information
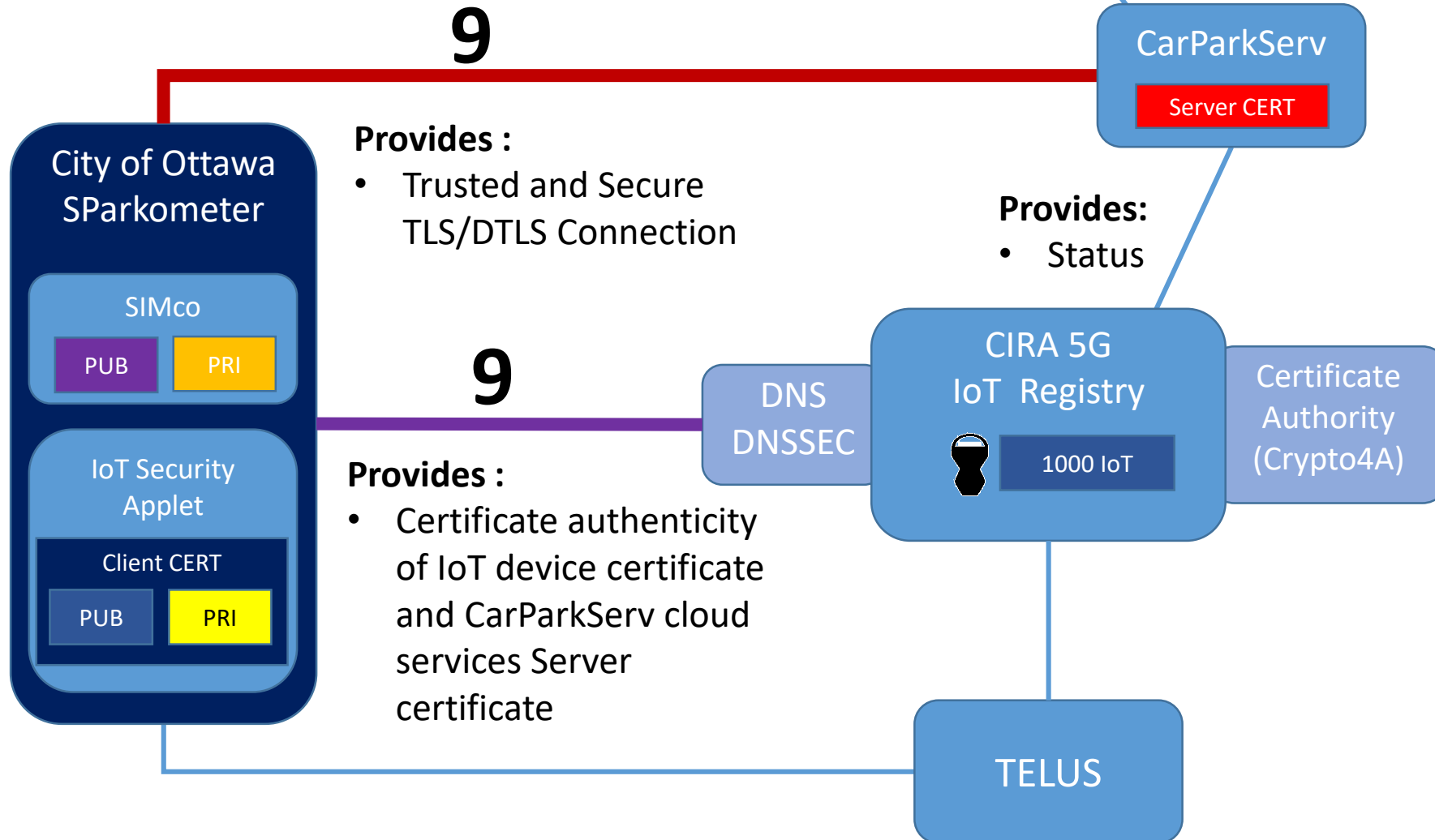- Destruction of keys

TELUS

8 – IoT Device Provisioning:
IoT Registry provides TELUS with the new encrypted
IoT Profile to each of the CarParkServ registered
1000 SParkometer

City of Ottawa

CarParkServ

Server CERT

Provides:
- Status

City of Ottawa
SParkometer

SIMco

PUB   PRI

IoT Security
Applet

Client CERT

PUB   PRI

DNS
DNSSEC

CIRA 5G
IoT Registry

1000 IoT

Certificate
Authority
(Crypto4A)

Provides :
- eUICC status
- Encrypted IoT Security Applet

Provides:
- eUICC Profile

8

8

TELUS

- Secure transmission of IoT
  Profile (IoT Security Applet
  containing Client Cert + info)

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CIRA'S IOT REGISTRY

9 – CarParkServ Cloud Connectivity:

The SParkometer reboot and securely connect to the CarParkServ cloud service in a trusted manner

9

**City of Ottawa**

CarParkServ

Server CERT

City of Ottawa SParkometer

SIMco

PUB | PRI

IoT Security Applet

Client CERT

PUB | PRI

Provides :
- Trusted and Secure TLS/DTLS Connection

Provides:
- Status

9

Provides :
- Certificate authenticity of IoT device certificate and CarParkServ cloud services Server certificate

DNS DNSSEC

CIRA 5G IoT Registry

1000 IoT

Certificate Authority (Crypto4A)

TELUS

cira.
CIRA'S IOT REGISTRY

AND VOILA, WITH ZERO TOUCH, THE CITY OF OTTAWA HAS CHANGED CLOUD SERVICE PROVIDER SEAMLESSLY FOR A 1000 SMART PARKING METERS
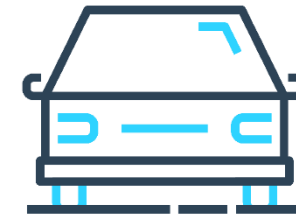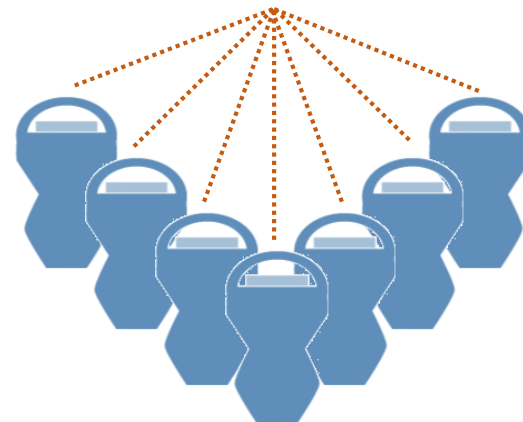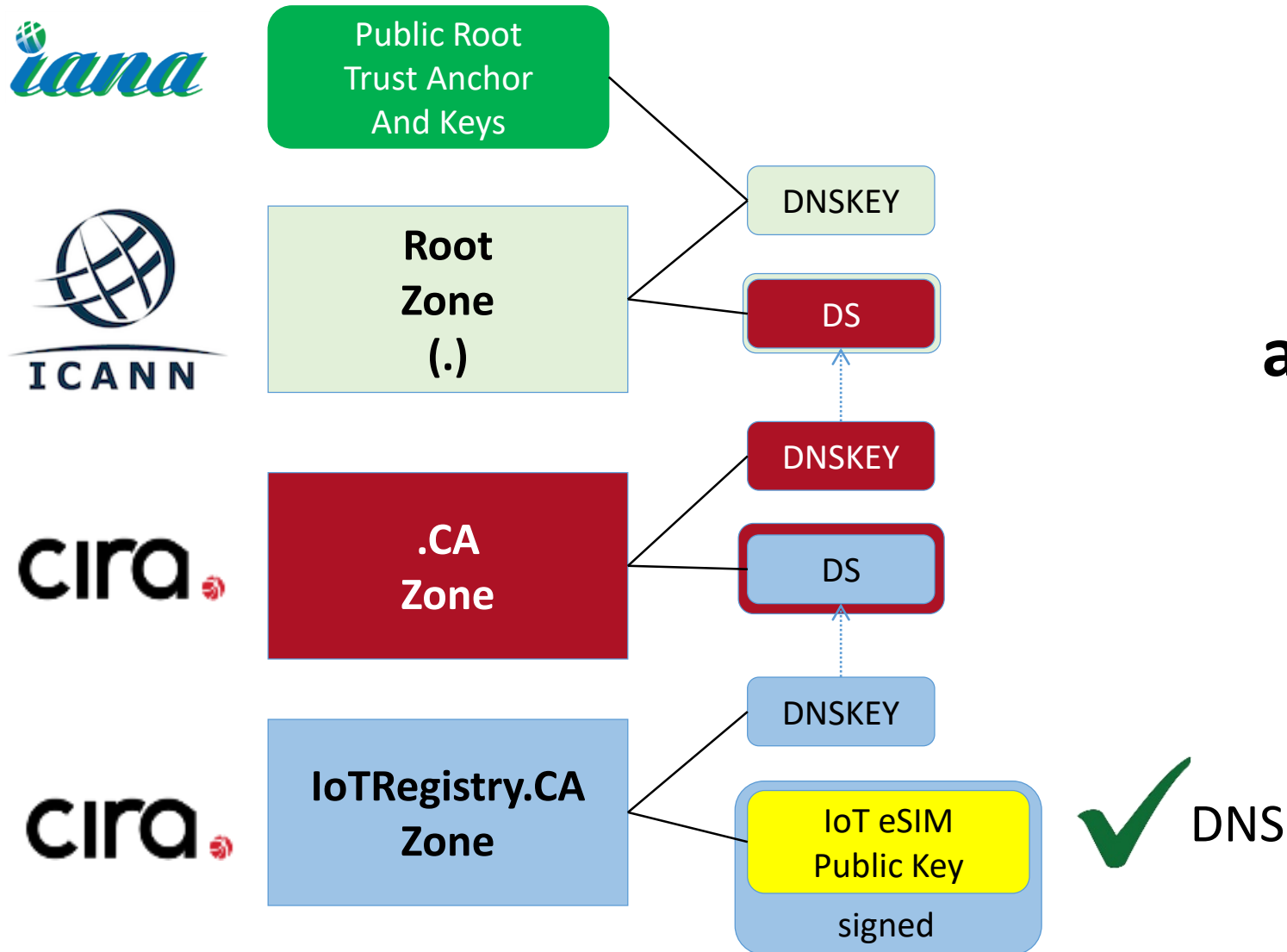
CIRA'S IoT REGISTRY SOLUTION ARCHITECTURE
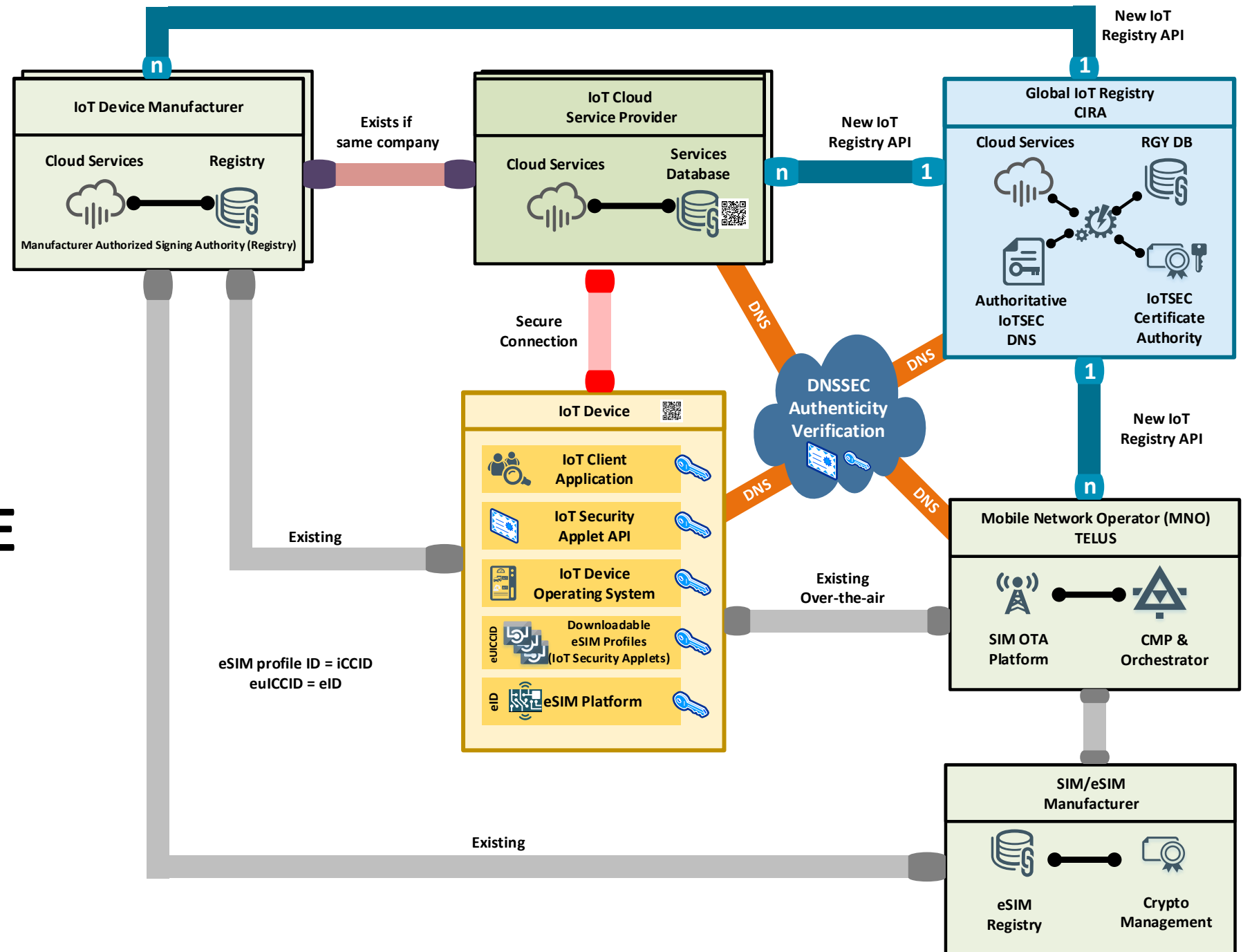
A NEW ROOT OF TRUST - DNSSEC

Leveraging the public DNS to validate the authenticity of eSIM and IoT security applets and cloud service providers public keys