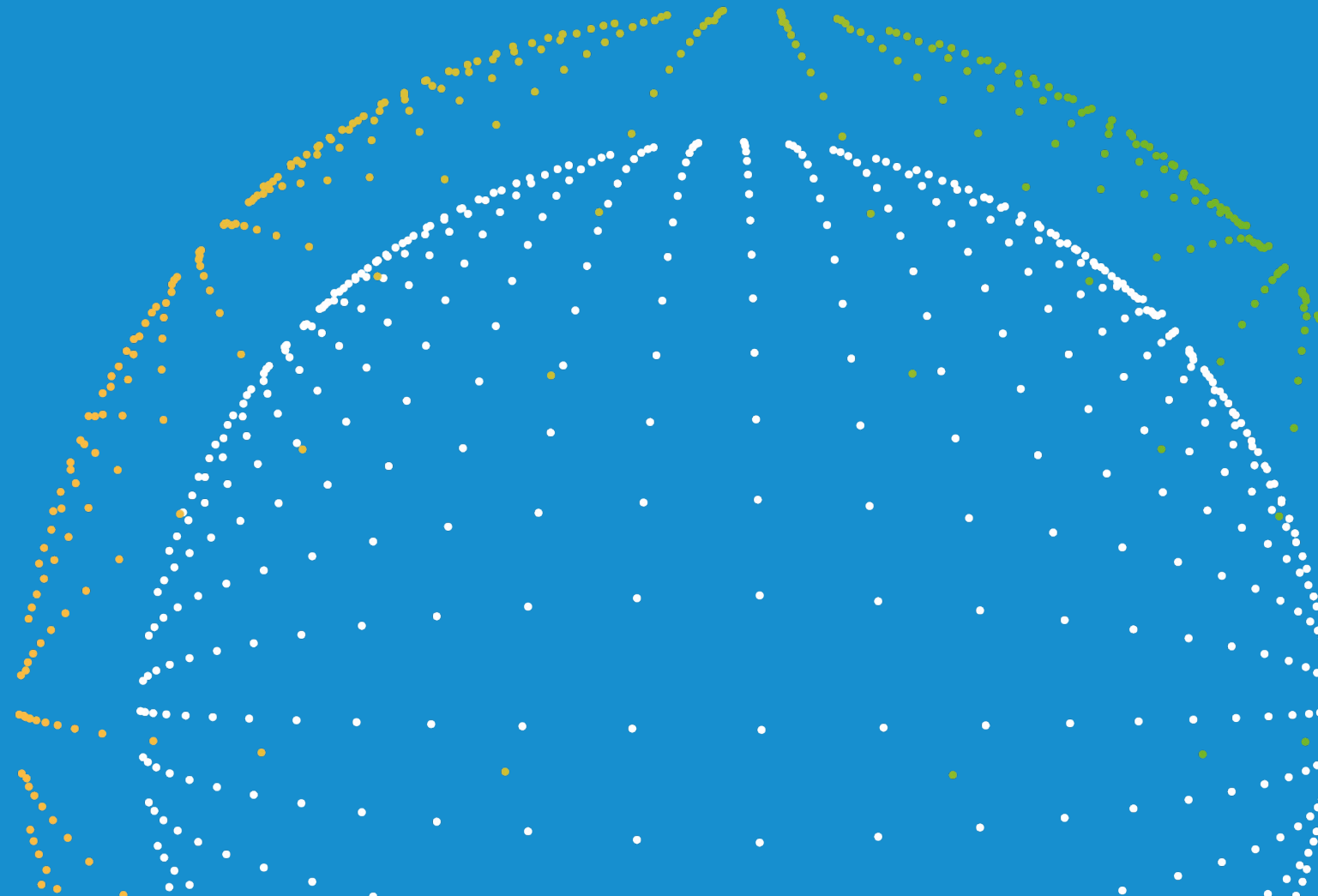# Data Spaces Symposium
Marketplaces in Data Spaces

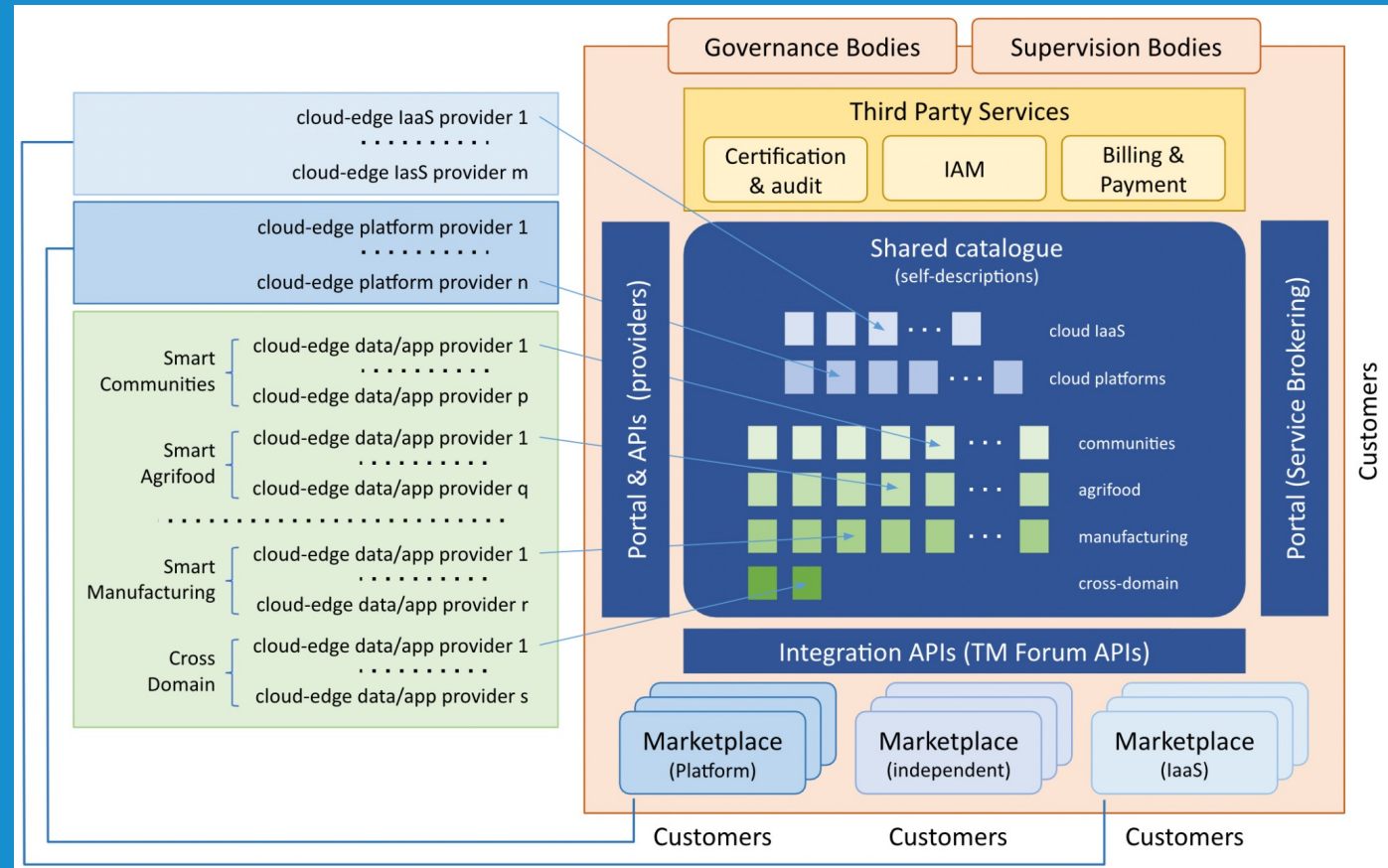Francisco de la Vega
CTO - FICODES
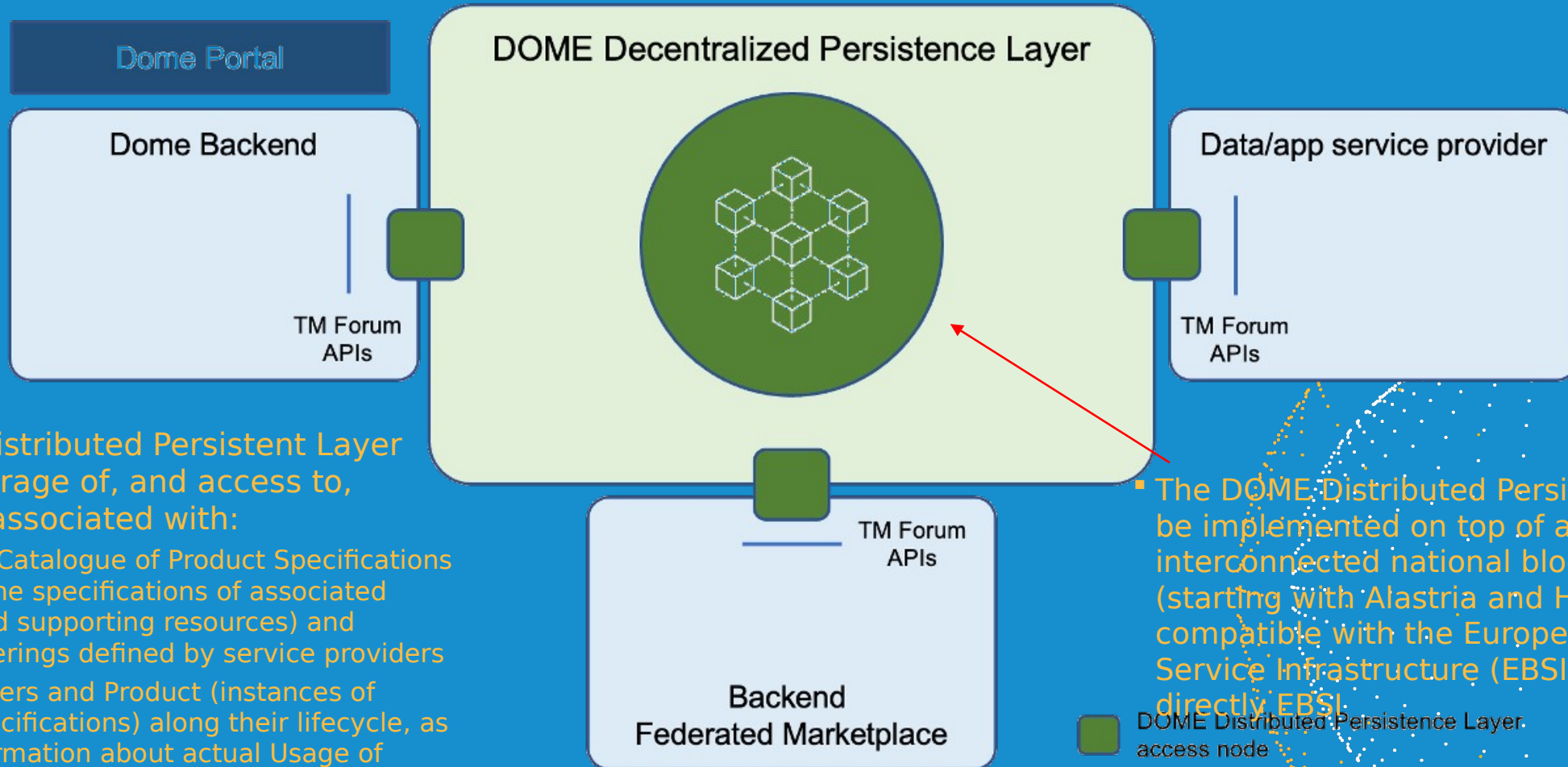
Dome Architecture Overview

Overview

- DOME will take the form of a **federated marketplace of curated cloud and edge services** made available through:
  - the **global DOME portal**; and
  - **federated marketplaces**

- A federated marketplace can be:
  - **Independent Marketplace**, which comprises a catalogue of cloud and edge data/app services not tied to an IaaS or Platform provider
  - **Marketplace connected to an IaaS provider**, which comprises a catalogue of cloud and edge data/app services which customers can pick and then easily deploy on top of the provided infrastructure
  - **Marketplace connected to a Platform provider** which comprises a catalogue of cloud and edge data/app services which customers can pick, easily activate and run integrated with the rest of data/app services already running, integrated with the provided Platform.

Marketplaces federation + Shared Catalogue

Dome Portal

Dome Backend
TM Forum APIs

DOME Decentralized Persistence Layer

Data/app service provider
TM Forum APIs

Backend Federated Marketplace
TM Forum APIs

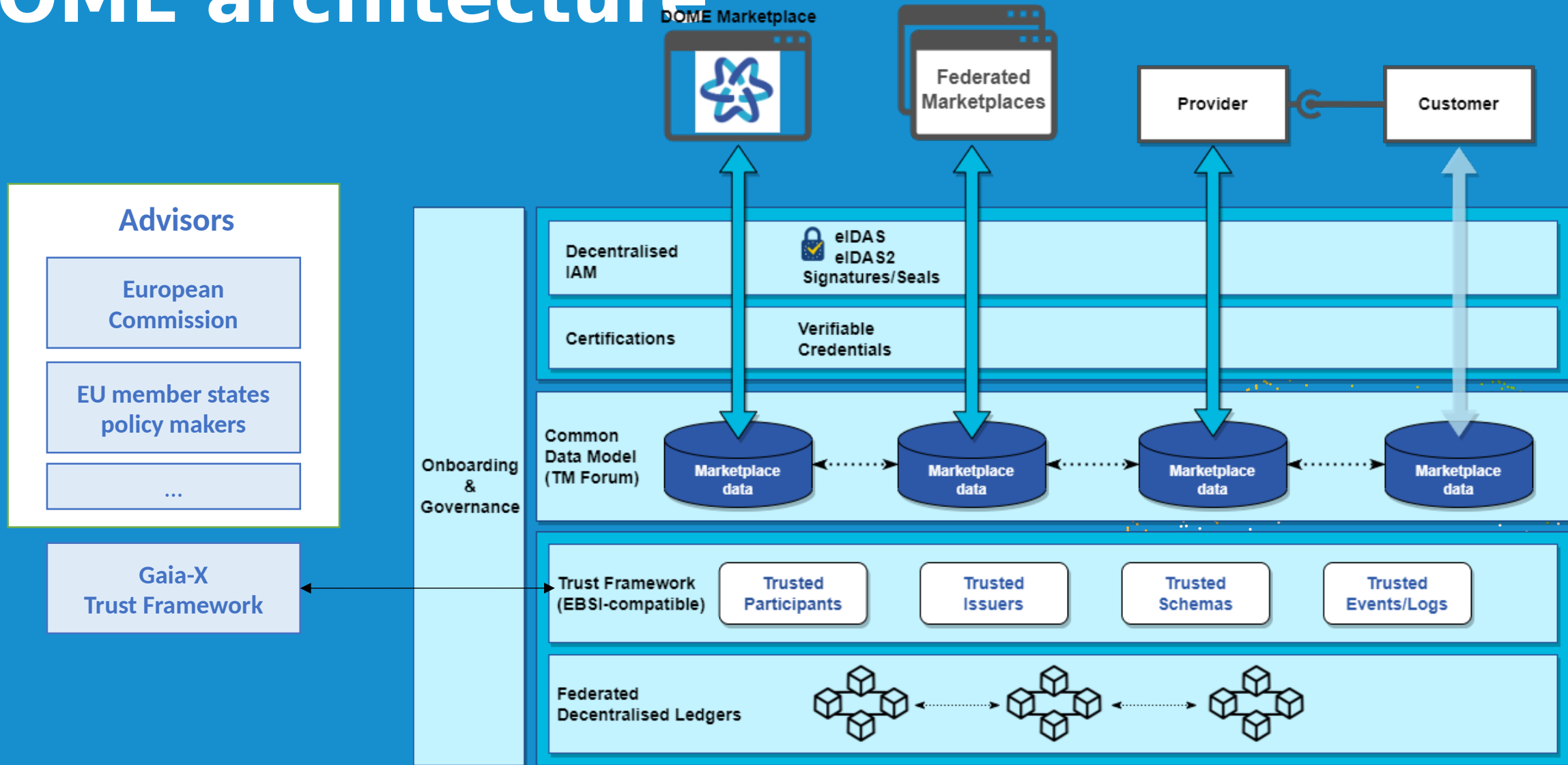DOME Distributed Persistence Layer access node

- The DOME Distributed Persistent Layer manages storage of, and access to, information associated with:
  - the Shared Catalogue of Product Specifications (including the specifications of associated services and supporting resources) and Product Offerings defined by service providers
  - Product Orders and Product (instances of Product Specifications) along their lifecycle, as well as information about actual Usage of Products
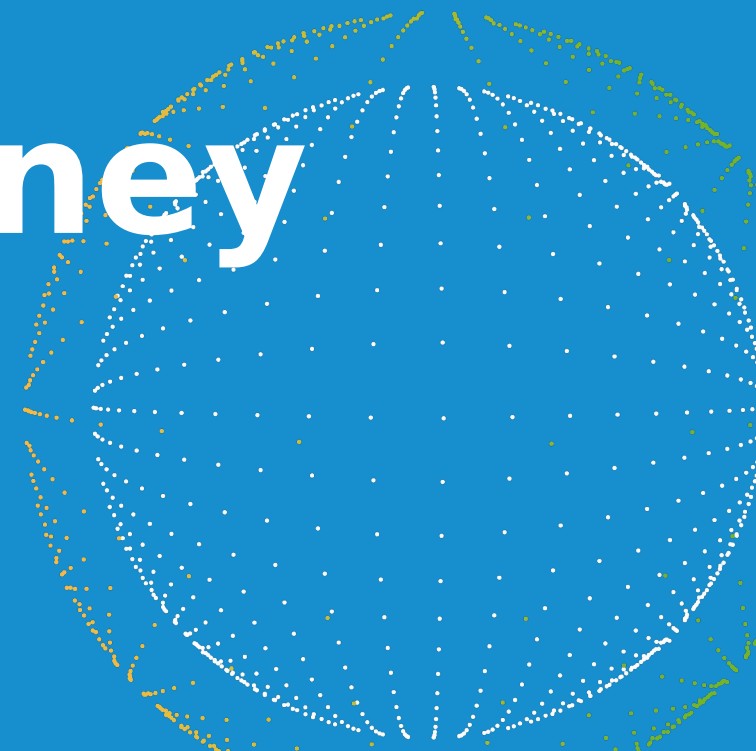
- The DOME Distributed Persistent Layer will be implemented on top of a number of interconnected national blockchains (starting with Alastria and HashNet) compatible with the European Blockchain Service Infrastructure (EBSI) when not directly EBSI

DOME architecture

The Customer Journey

Product offering discovery

DOME Decentralized Persistence Layer

Dome Backend

TM Forum APIs

Dome Portal

data/app service provider X

X1 spec

TM Forum APIs

TM Forum APIs

Backend Federated Marketplace M1

discover

discover

Marketplace M1 Portal
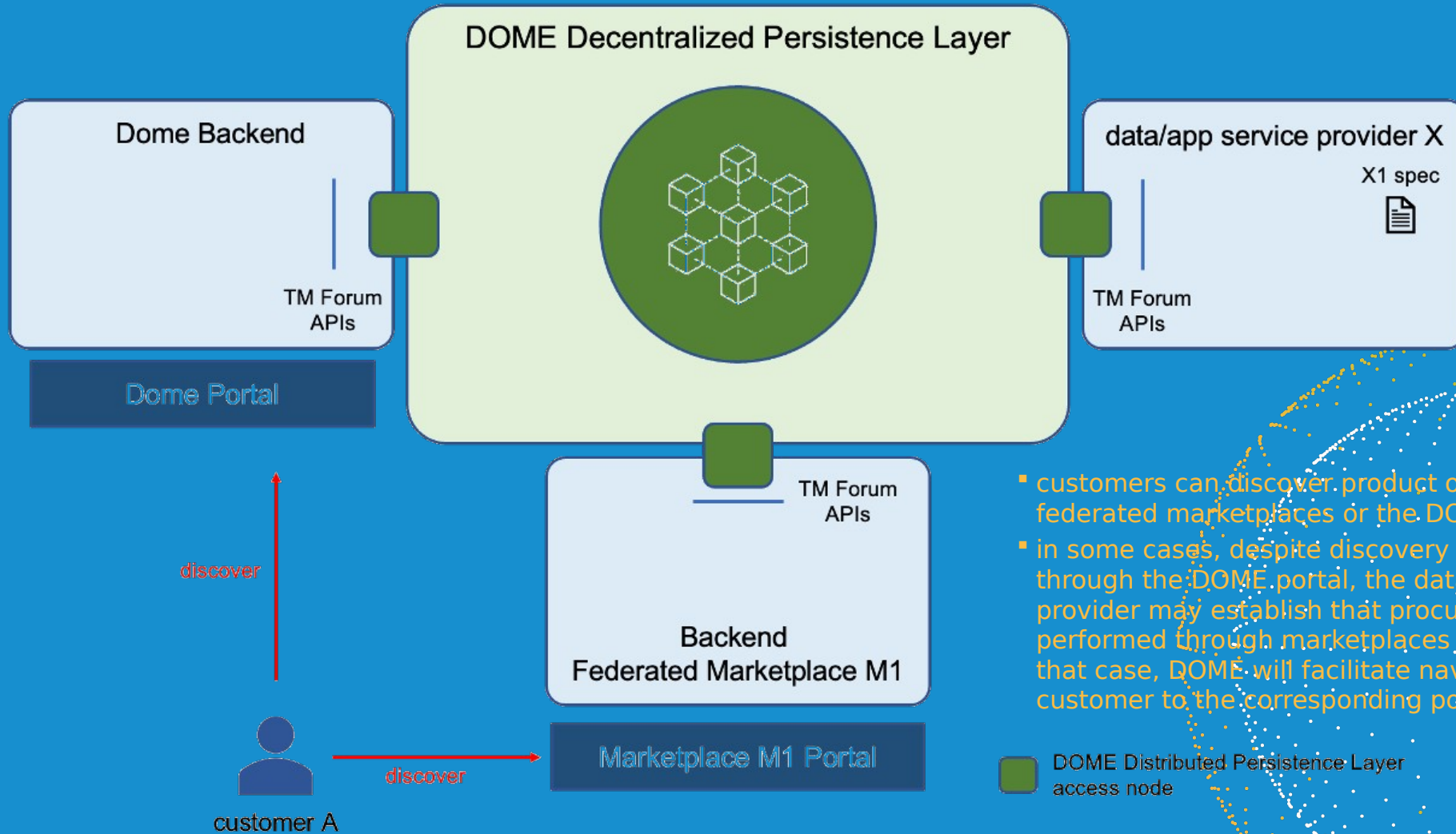
customer A

- customers can discover product offerings through a federated marketplaces or the DOME portal
- in some cases, despite discovery can take place through the DOME portal, the data/app service provider may establish that procurement has to be performed through marketplaces of its choice - in that case, DOME will facilitate navigation of the customer to the corresponding portal

DOME Distributed Persistence Layer access node

Product acquisition (through federated marketplace)
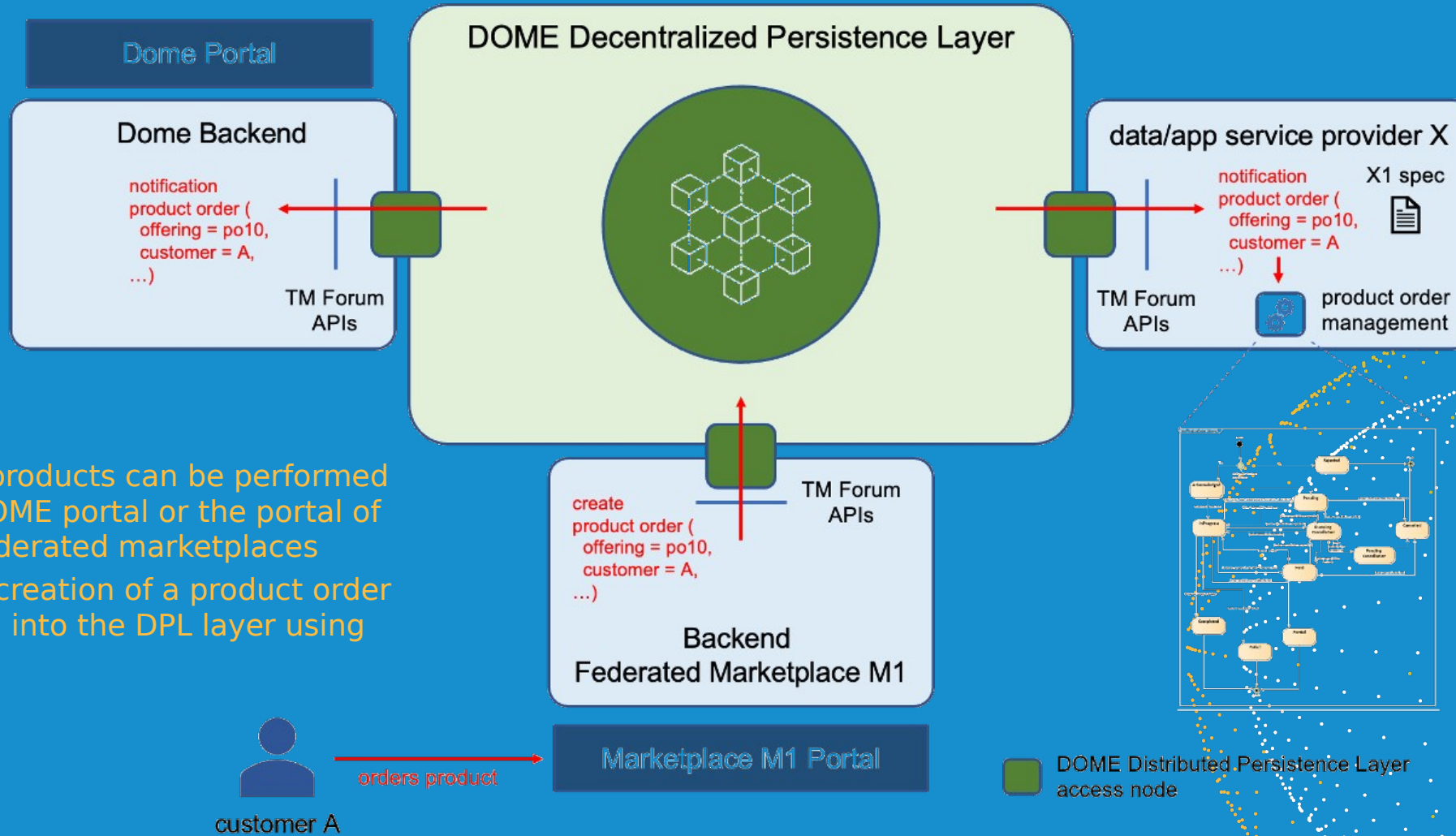
- acquisition of products can be performed through the DOME portal or the portal of some of the federated marketplaces
- in both cases, creation of a product order entity is issued into the DPL layer using TMForum APIs

Dome Portal

Dome Backend

notification
product order (
   offering = po10,
   customer = A,
...)

TM Forum APIs

DOME Decentralized Persistence Layer

data/app service provider X

notification
product order (
   offering = po10,
   customer = A
...)

X1 spec

TM Forum APIs

product order management

create
product order (
   offering = po10,
   customer = A,
...)

TM Forum APIs

Backend Federated Marketplace M1

Marketplace M1 Portal

orders product

customer A

DOME Distributed Persistence Layer access node

# Product activation (product becomes available for use)
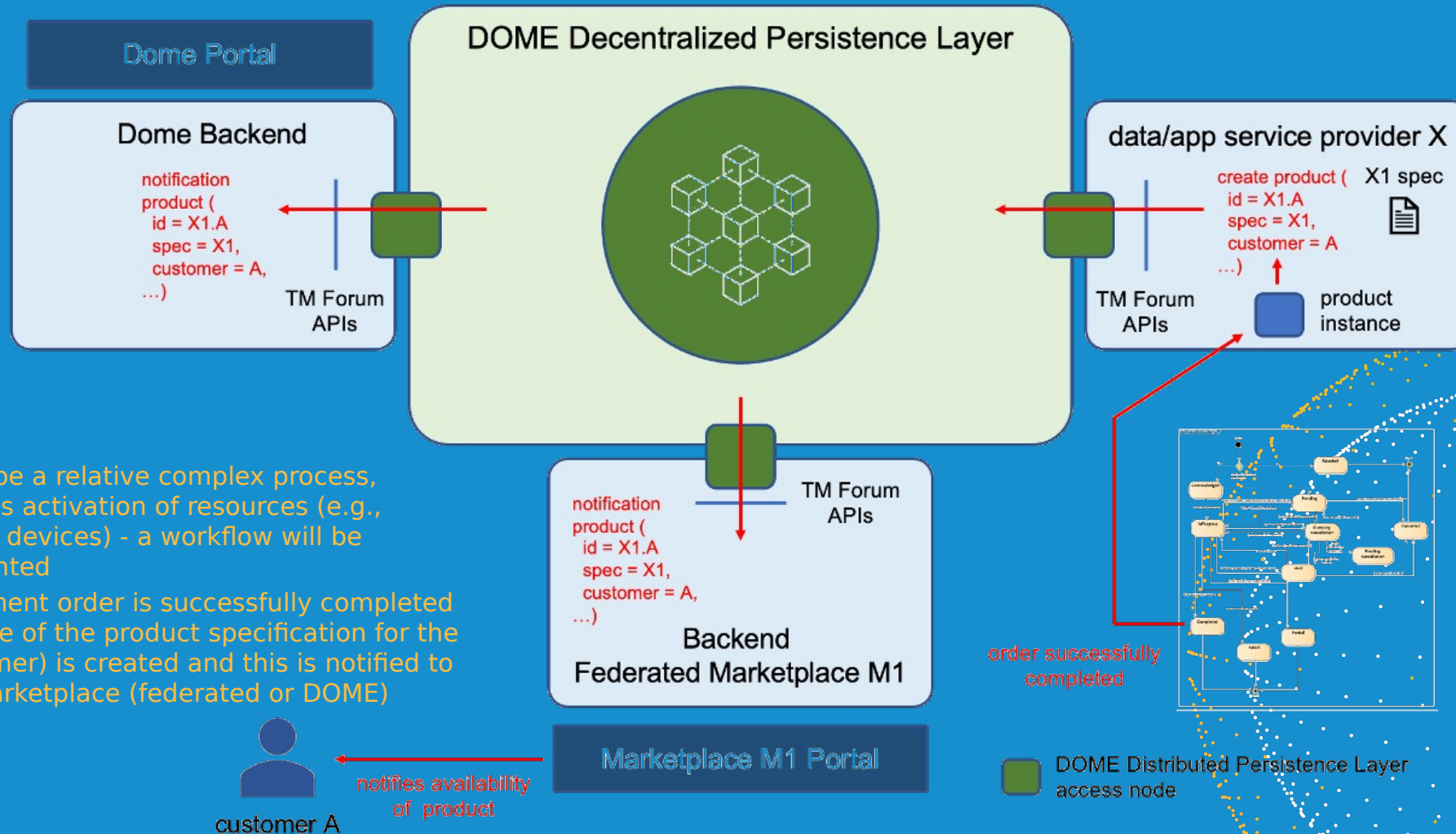
- procurement can be a relative complex process, overall if it requires activation of resources (e.g., deployment of IoT devices) - a workflow will be typically implemented
- once the procurement order is successfully completed a product (instance of the product specification for the demanding customer) is created and this is notified to the generating marketplace (federated or DOME)

Product usage
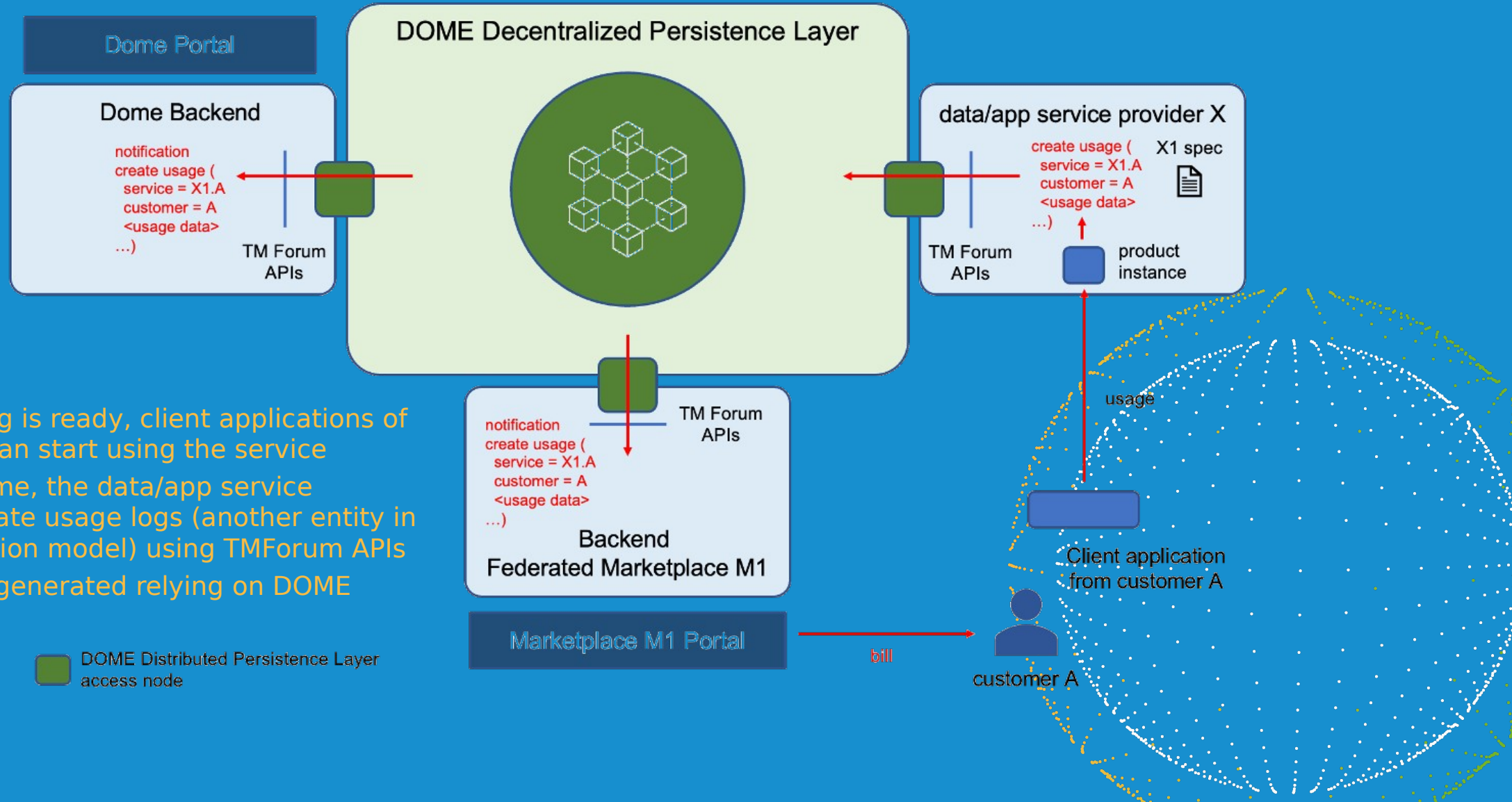
- once everything is ready, client applications of the customer can start using the service
- from time to time, the data/app service provider generate usage logs (another entity in DOME information model) using TMForum APIs
- billing may be generated relying on DOME

The Provider Journey
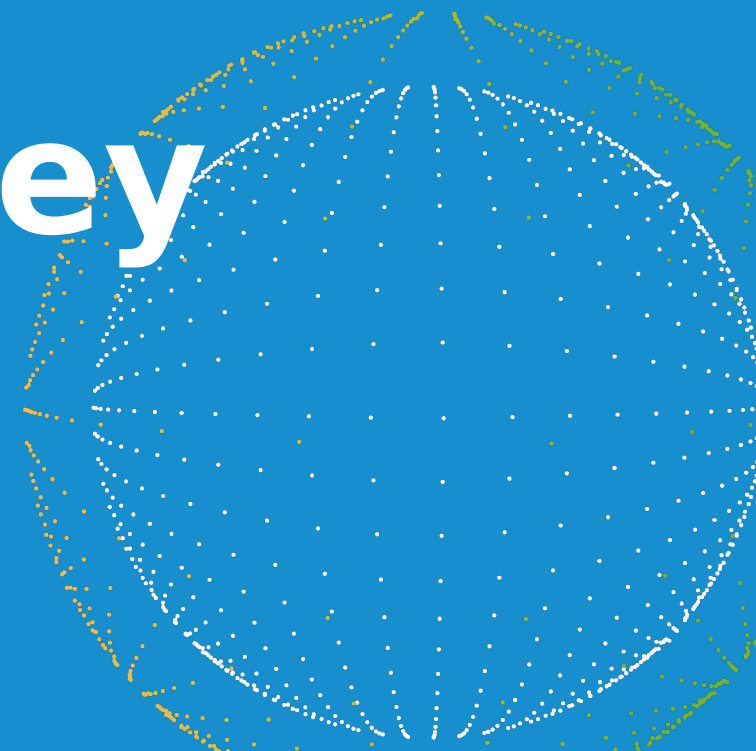
Registration of product specification
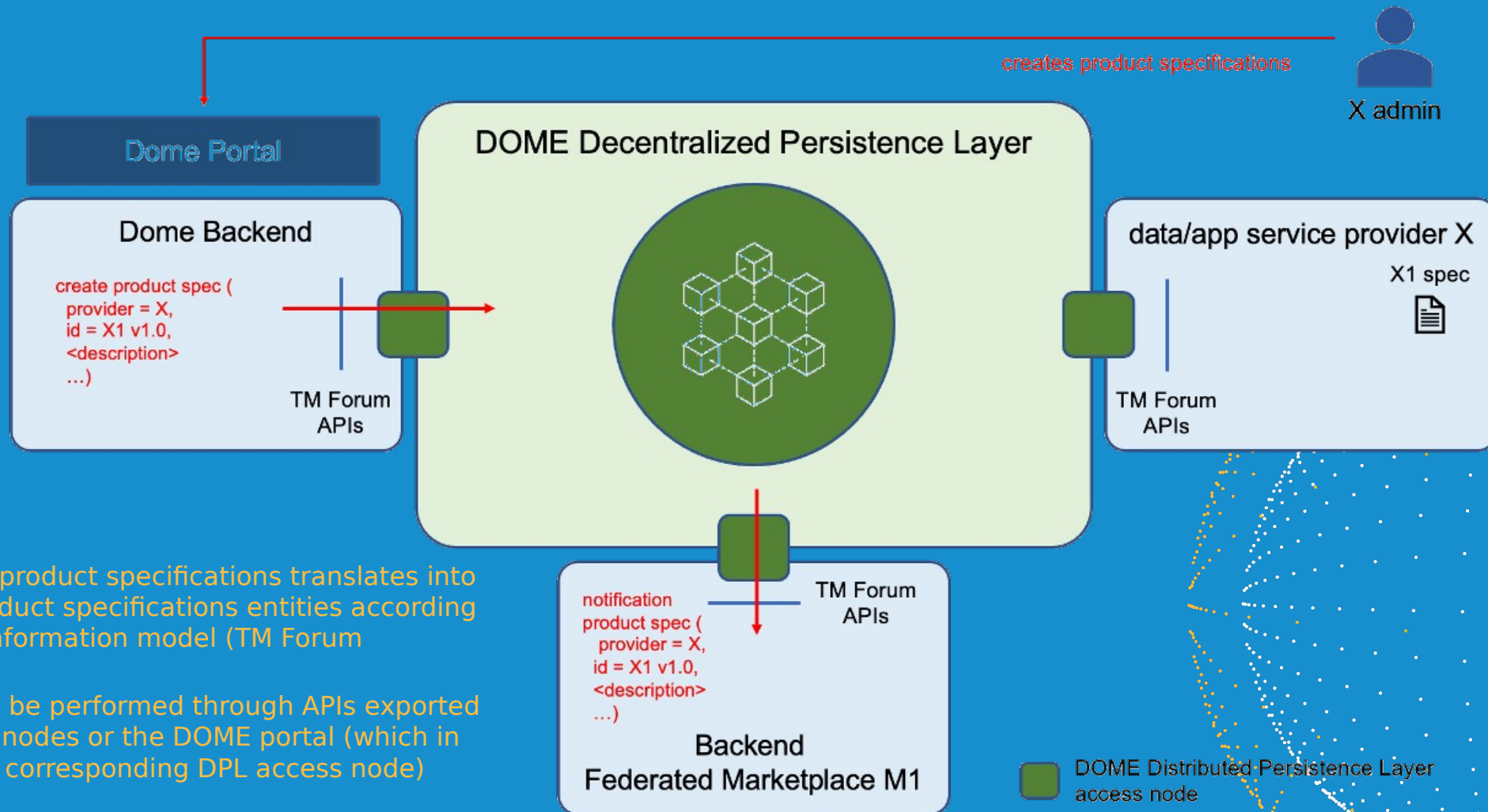
- registration of product specifications translates into creation of product specifications entities according to the DOME information model (TM Forum compliant)
- operations can be performed through APIs exported by DPL access nodes or the DOME portal (which in turn rely on its corresponding DPL access node)

Registration of product specification

creates product specifications

X admin

Dome Portal

DOME Decentralized Persistence Layer

Dome Backend

create product spec (
  provider = X,
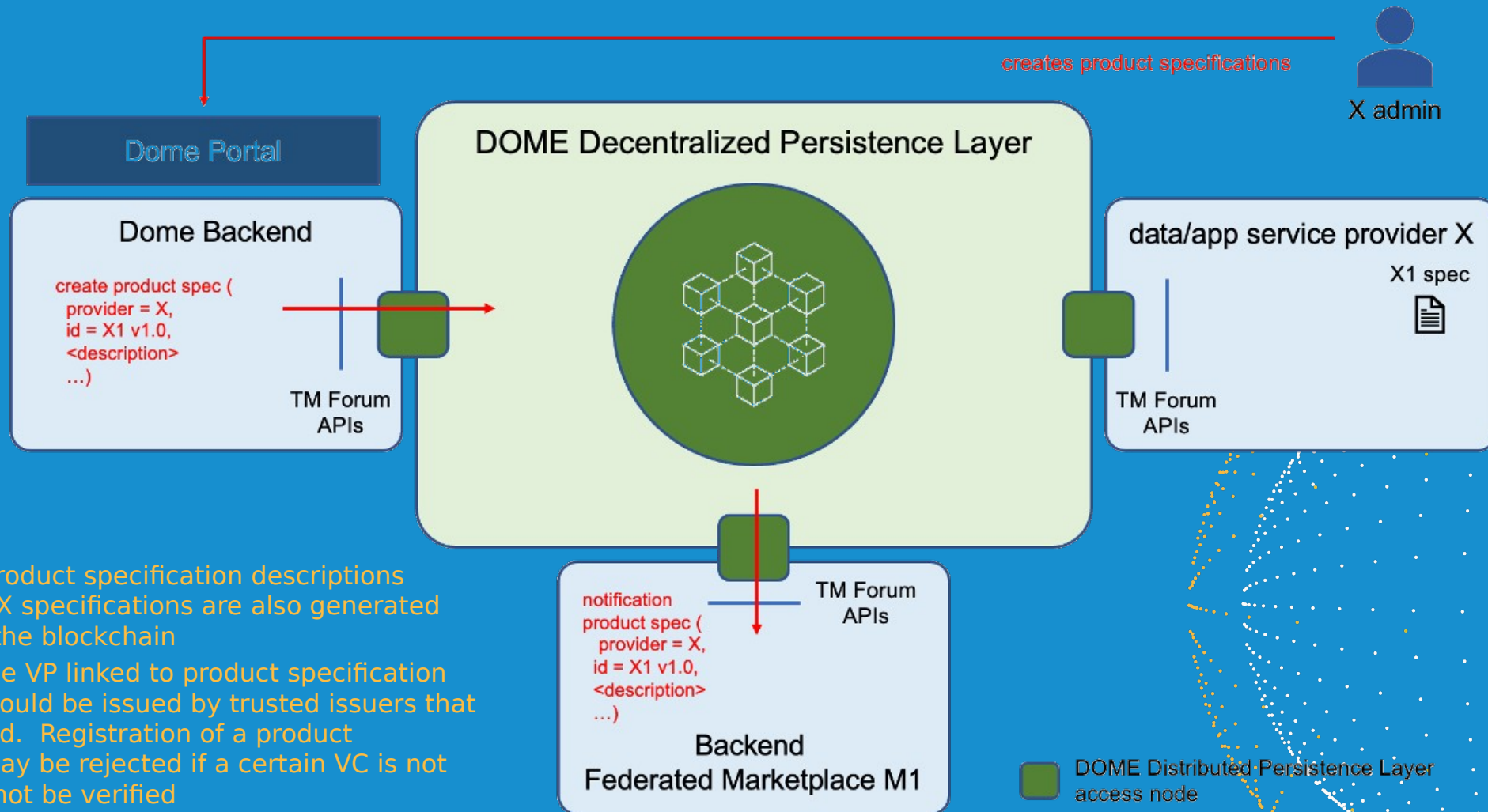 id = X1 v1.0,
  <description>
  …)

TM Forum APIs

data/app service provider X

X1 spec

TM Forum APIs

notification
product spec (
  provider = X,
  id = X1 v1.0,
  <description>
  …)

TM Forum APIs

Backend Federated Marketplace M1

DOME Distributed Persistence Layer access node

- VPs linked to product specification descriptions following Gaia-X specifications are also generated and stored on the blockchain
- Some VCs in the VP linked to product specification descriptions should be issued by trusted issuers that DOME has listed. Registration of a product specification may be rejected if a certain VC is not present or cannot be verified

Creation of Product Offering

creates product offering

X admin

Dome Portal

Dome Backend

create product offering (
   offering = po10,
   provider = X,
   channels = M1, ...
   specs = X1 v1.0,
   pricing = P1
   ...)

TM Forum
APIs

DOME Decentralized Persistence Layer

data/app service provider X

X1 spec

TM Forum
APIs

notification
product offering (
   offering = po10,
   provider = X,
   specs = X1 v1.0,
   pricing = P1
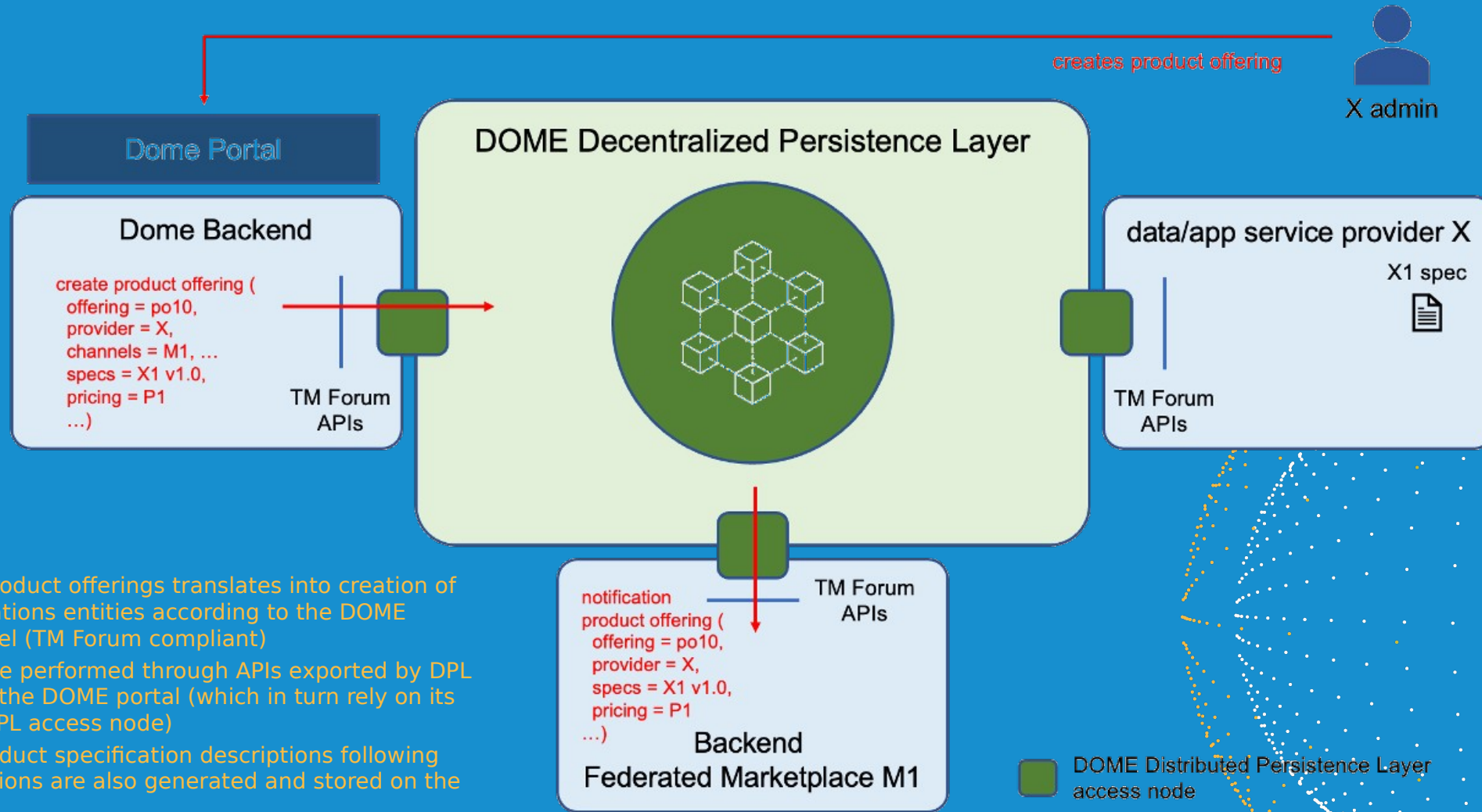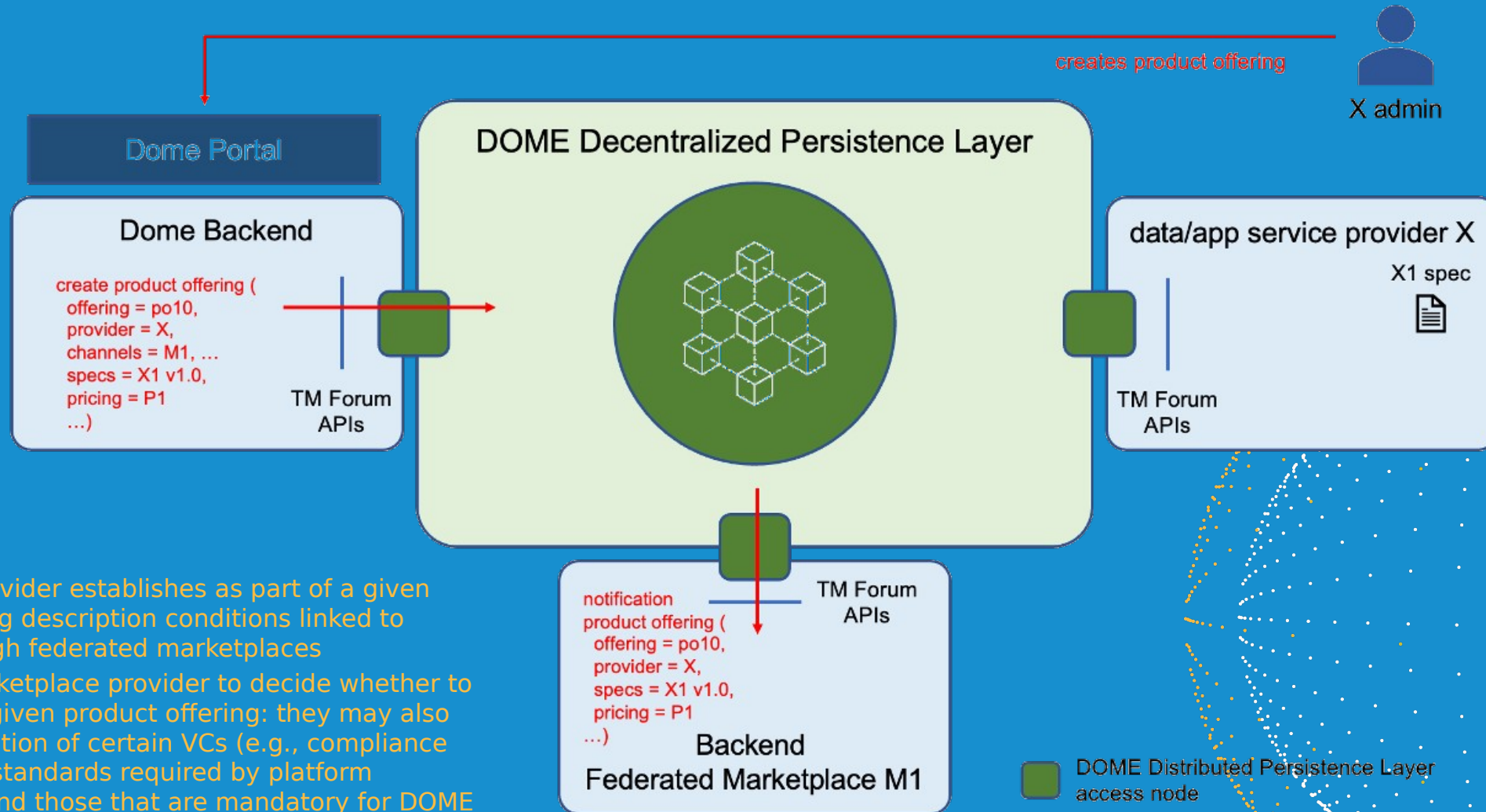...)

TM Forum
APIs

**Backend
Federated Marketplace M1**

- registration of product offerings translates into creation of product specifications entities according to the DOME information model (TM Forum compliant)
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- VPs linked to product specification descriptions following Gaia-X specifications are also generated and stored on the blockchain

DOME Distributed Persistence Layer access node

Creation of Product Offering

creates product offering

X admin

Dome Portal

Dome Backend

create product offering (
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TM Forum APIs

DOME Decentralized Persistence Layer

data/app service provider X

X1 spec

TM Forum APIs

notification
product offering (
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    provider = X,
    specs = X1 v1.0,
    pricing = P1
    ...)

TM Forum APIs

Backend Federated Marketplace M1

DOME Distributed Persistence Layer access node

- the service provider establishes as part of a given product offering description conditions linked to visibility through federated marketplaces
- its up to a marketplace provider to decide whether to incorporate a given product offering: they may also require verification of certain VCs (e.g., compliance with concrete standards required by platform provider) beyond those that are mandatory for DOME

Data Spaces Symposium

Marketplaces in Data Spaces

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