Defragmenting European cloud/edge services

DOME is a marketplace that aims to provide a seamless experience by offering a single aggregated catalogue of products delivered by pre-validated European providers. The key objectives of DOME include:

- ??? Defragment/Consolidate EU-Compliant Product Offerings: DOME addresses the challenge of fragmented product offerings by consolidating a wide range of EU-compliant products into a single marketplace. This ensures that all listed products adhere to the EU Cloud Rulebook and EU Cyber Security Act, promoting compliance and standardization across the marketplace.
- ??? Improved Vendor Selection Process: DOME streamlines the vendor selection process by implementing an embedded pre-verification process. This process ensures that vendors meet specific criteria and undergo a rigorous evaluation to verify their capabilities, compliance, and reliability. By pre-validating vendors, DOME enhances the quality and trustworthiness of the available products, simplifying the decision-making process for buyers.
- ??? Reduced Time for Search and Evaluation: DOME aims to save time for buyers by providing a centralized platform where they can efficiently search, browse, and evaluate new products and services. By offering a comprehensive and user-friendly portal, buyers can access detailed service information, specifications, pricing, and other relevant data in one place. This eliminates the need for extensive research and evaluation efforts, enabling quicker and more informed decision-making.
- ??? Simplified Product Comparison: DOME facilitates product comparison by presenting a range of services in a single portal. Buyers can easily compare various products based on their features, functionalities, pricing models, and other parameters. This eliminates the need for complex Request for Quotation (RFQ) or Request for Proposal (RFP) processes, as buyers can access all the necessary information from the marketplace, streamlining the evaluation and selection stages.
- ??? Accelerated Purchase Processes: DOME expedites the purchase processes by providing standard contract templates. These templates establish a common framework for agreements, reducing negotiation time and complexity. Buyers can leverage these pre-defined contract templates, making it easier to finalize transactions and expedite the deployment of new products and services.
- ??? Simplified Spending Analysis: DOME offers reporting panels that simplify spending analysis for buyers. Through these panels, buyers can gain insights into their purchasing activities, expenditure patterns, and other relevant data. This simplifies financial tracking and analysis, enabling buyers to monitor their spending efficiently and make data-driven decisions.

Overall, DOME aims to streamline the procurement journey, improve vendor selection, reduce search and evaluation time, facilitate product comparison, accelerate purchase processes, and simplify spending analysis. By achieving these objectives, DOME enhances the efficiency, transparency, and effectiveness of the marketplace, benefiting both buyers and providers within the European ecosystem.

A federation of European marketplaces

DOME aims to create a network of European marketplaces that work together to streamline service provisioning and increase the visibility of available services. Here's how the federated marketplace concept works:

- ??? Integration of Services: Each marketplace within the DOME network can integrate DOME catalogue services into their own offerings. This means they can select and include services from the DOME catalogue to enhance their service portfolio.
- ??? Procurement of DOME Verified Services: Through DOME, marketplaces can handle the procurement process for DOME verified services offered by other marketplaces within the network. This allows for seamless access to a wider range of trusted services across the ecosystem.

- ??? Publishing DOME Verified Services: Marketplaces can also publish their own DOME verified services through the DOME ecosystem. This ensures that their services meet the verification criteria set by DOME, enhancing their credibility and visibility within the network.
- ??? Billing and Provisioning Responsibility: Each marketplace retains the responsibility for billing and provisioning of their own DOME verified services. However, they share the transaction visibility with DOME, which facilitates the economic aspects of the transactions.
- ??? Independent Publishing: Marketplaces also have the freedom to publish non-DOME verified services independently. This allows them to maintain their existing offerings and expand their service portfolio beyond the DOME verification process.
- ??? Amplified Catalogue Visibility: By participating in the DOME federated marketplaces, each marketplace can amplify the visibility of their catalog by selling their validated services through the network. This provides increased exposure and potential customer reach.

Marketplace taxonomy

DOME can manage different types of marketplaces:

- ??? Pure Independent Marketplaces: These are marketplaces that primarily focus on selling services offered by others. Examples of pure independent marketplaces include DAWEX and Engineering's Cloudesire. They provide a platform where various service providers can showcase and sell their offerings to customers.
- ??? Marketplaces Based on Cloud Infrastructure Providers: Some marketplaces are built upon specific cloud infrastructure providers. These marketplaces offer services that rely on the underlying infrastructure of a particular cloud provider. Examples of such marketplaces include IONOS and OutScale, which sell services that utilize the infrastructure provided by their respective cloud platforms.
- ??? Platform-Based Marketplaces: These marketplaces are connected to integration platform providers and are designed to accelerate the delivery of applications in specific vertical domains. They serve as a hub for integrating and delivering solutions developed by third parties within a particular industry or domain. Examples include marketplaces catering to smart cities, energy, smart farming, industry 4.0, and more. Through these marketplaces, users can select and integrate various smart solutions developed by third-party providers.
- ??? In summary, within the DOME ecosystem, federated marketplaces can be categorized as pure independent marketplaces, marketplaces based on cloud infrastructure providers, or platform-based marketplaces. Each type of marketplace offers unique services and focuses on different aspects of the cloud service market.

Catalogue composition

At the core of the DOME marketplace is the DOME catalogue The DOME catalogue has been designed to:

- ??? Standardize the product description: The DOME catalogue aims to establish a standardized format for describing products. This ensures consistency and clarity in product information across the platform, making it easier for customers to compare and understand different offerings.
- ??? Allow different selling plans for each product: The catalogue provides flexibility for sellers to offer various selling plans for each product. This means that sellers can define different pricing models, subscription options, or service tiers to cater to different customer needs and preferences.
- ??? Allow the capability to flexibly define and sell products by bundling resources: The DOME catalogue allows sellers to create product bundles by combining different resources. For example, sellers can bundle edge computing and cloud services or package different types of computational resources together. This flexibility enables sellers to create customized offerings that meet specific customer requirements.
- ??? Handle different payment models: The catalogue supports various payment models, including pay-per-use, flat rates, one-time payments, and more. This allows sellers to offer pricing options that align with their business models and customer preferences.

??? Be shared between federated marketplaces: The DOME catalogue is designed to be shared among the federated marketplaces within the ecosystem. This means that product information and offerings can be accessed and utilized by multiple marketplaces, providing a unified experience for customers across different platforms.

??? Allow the description of different types of offerings: The catalogue supports the description of various types of cloud services, including SaaS (Software-as-a-Service), PaaS (Platform-as-a-Service), IaaS (Infrastructure-as-a-Service), and DaaS (Data-as-a-Service). Additionally, it allows for the inclusion of "off the shelf" products or components, providing a comprehensive range of offerings to customers.

In summary, the DOME catalogue plays a crucial role in standardising product descriptions, enabling flexible selling plans and resource bundling, handling diverse payment models, facilitating sharing between federated marketplaces, and accommodating different types of cloud offerings. These features contribute to a more efficient and comprehensive marketplace experience for both sellers and customers.

Open and easy to integrate

DOME will be provided as open source and will be based on open standards. The main distinctive features are:

??? Description of Cloud and Edge Services: The DOME marketplace adheres to Gaia-X specifications for describing cloud and edge services and their offerings. Gaia-X is an initiative aimed at establishing a federated and secure data infrastructure for Europe. By aligning with Gaia-X standards, the DOME marketplace ensures interoperability and compatibility with other Gaia-X services and platforms.

??? Marketplace Functions: The marketplace functions within DOME are based on TM Forum standards. TM Forum is a global industry association that develops standards for the digital business ecosystem. By leveraging TM Forum standards, the DOME marketplace is designed to be seamlessly integrated with Gaia-X Federated Services, following the technical convergence model proposed by the Data Space Business Alliance.

??? Identity and Access Management: The DOME marketplace employs Identity and Access Management (IAM) based on W3C (World Wide Web Consortium) DID (Decentralised Identifier) and VC (Verifiable Credential) standards. This IAM system is compliant with the architecture of the EU Digital ID wallet and aligns with Gaia-X Trust Anchor Services. This ensures secure and trusted access to the marketplace and its services.

??? Logs and Persistence Layers: Logs generated throughout the entire lifecycle of cloud application service offerings within the DOME marketplace are stored on distributed and trustworthy persistence layers. This ensures data integrity and transparency. Furthermore, aligning the satellites marketplaces with DOME allows for consistent logging practices across the ecosystem.

??? Data Services and Publication Platforms: Data services within the DOME marketplace are made visible through existing Data Publication Platforms that support Data Catalogue vocabularies compliant with W3C DCAT (Data Catalog Vocabulary) and DCAT-AP (Data Catalog Application Profile). This enables effective data discovery and integration with other compatible platforms and services.

In summary, the DOME marketplace embraces open-source principles and is built on FIWARE BAE. It follows open standards such as Gaia-X specifications, TM Forum standards, W3C DID/VC for IAM, and W3C DCAT/DCAT-AP for data publication. These choices ensure compatibility, interoperability, and security within the marketplace ecosystem and enable seamless integration with other European initiatives and services.

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A cloud/edge ecosystem

DOME's ambition is to create collaborative ecosystems that will support the market by achieving the following objectives:

Continuously Verify Service Compliancy: DOME aims to establish a system where service compliancy is continuously verified. This ensures that the services offered within the marketplace meet the required standards, regulations, and quality criteria. By maintaining a high level of service compliancy, DOME ensures trust and reliability for both vendors and customers.

Simplify Vendor Onboarding: DOME strives to simplify the onboarding process for vendors. By providing a standardised framework and guidelines, the platform allows vendors to easily join the marketplace. This streamlines the procurement process for public and private customers as they can reduce the time and effort spent on selecting new software vendors. With simplified vendor onboarding, customers can quickly and efficiently expand its pool of available services.

Simplify Procurement Practices: DOME aims to simplify procurement practices by providing a single space where they can access comprehensive information about various services. This includes detailed descriptions, pricing models, and other relevant information. Additionally, DOME offers intelligent comparison and selection features, allowing customers to make informed decisions based on their specific needs and requirements. This simplification of procurement practices saves time, reduces complexity, and enhances the efficiency of the procurement process.

Support System Integrators: DOME aims to support system integrators in composing new products and services, particularly in the edge-to-cloud continuum. By providing a collaborative environment and access to a wide range of services, DOME enables system integrators to leverage existing offerings and combine them in innovative ways. This encourages the creation of new value-added services and solutions, fostering innovation and driving the growth of the ecosystem.



Figure 1- The DOME ecosystem

In summary, DOME's ambition is to create collaborative ecosystems that streamline service compliancy verification, simplify vendor onboarding, simplify procurement practices, and support system integrators in composing new products and services. By achieving these objectives, DOME aims to foster a vibrant marketplace that benefits both vendors and customers (Private or Public), ultimately driving innovation and delivering value to customers.

Benefits

End users will benefit from a diversified offering of services. Providers will compete to offer more personalised and high-quality experience through each of the federated marketplaces. They may complement services with more sophisticated user interfaces, incorporating discovery services, or complementing content with focused training material, better support services, integrated services etc. They will also benefit from an integrated billing comprising IaaS/platform services.

Cloud data/application providers, particularly SMEs, can publish their solutions in the common DOME catalogue only once and make them available through all those federated marketplace services they choose, thus reducing their costs while maximising their exposure through multiple channels in the market. This as opposed to the current situation where they must adhere to the rules of specific marketplaces, typically run by

individual cloud IaaS/platform providers.

Cloud IaaS and cloud platform providers, especially those from the EU can more easily enrich the portfolio of cloud applications they can integrate, since the common catalogue of the European Cloud Marketplace they will integrate with will more easily reach a critical mass with regards to the number of cloud application services offered.

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