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Proposal of a hosting agreement including consideration according to the GDPR

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CEDR TRANSNATIONAL RESEARCH PROGRAMME
Call 2020: Resource Efficiency and the Circular Economy



**D5.3 - Proposal of a hosting agreement
including consideration according to
the GDPR**

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1 Introduction

As part of this project, a crucial task involves developing a comprehensive exploitation plan for the online software created by Chalmers, with the collaboration of project partners. The exploitation plan will include proposals for a hosting agreement, necessitating discussions and agreement with CEDR as a post-project initiative, given that the project currently lacks provisions for maintenance obligations and resources.

PROCEEDR, an online web application tool developed using the Django framework, stands as a high-level Python web framework, emphasizing swift development and organized, practical design principles. Django hosting services are broadly categorized into Shared Hosting, Dedicated Hosting, VPS Hosting, and Cloud Hosting.

Cloud hosting, a contemporary hosting approach, has experienced increasing popularity in recent years. This approach facilitates hosting applications on a cloud platform, providing enhanced scalability and reliability. Particularly well-suited for resource-intensive applications and those requiring rapid scalability, cloud hosting also proves beneficial for deploying applications across multiple regions.

The optimal means of exploiting the software lies in the utilization of a cloud platform. Given the various types of cloud platforms available, it is imperative to determine the most suitable platform for migrating the online software. This entails thorough consideration of the testing and ongoing monitoring processes necessary to ensure secure and optimal workloads in the cloud over time. Furthermore, aspects such as maintenance, development, and support must be taken into account. This report seeks to analyse the advantages and disadvantages of each type of cloud platform.

2 Cloud Platform

A cloud platform serves as the host for server hardware and operating systems within a web-based data center. This platform facilitates the harmonious coexistence of hardware and software, providing remote connectivity to scalable computing services. While cloud platforms come in various forms, the following models are the most prevalent.

Public Cloud Platforms: Offered by third-party cloud service providers, public cloud platforms deliver scalable computing resources over the Internet. Examples include IBM Bluemix, Microsoft Azure, Google Cloud Platform, and AWS (Amazon Web Services).

Private Cloud Platform: Managed internally by an organization's IT department, private cloud platforms utilize existing infrastructure and resources within the company's on-premises data centre. They are known for providing the highest level of cybersecurity.

Hybrid Cloud Platforms: Combining elements of both private and public cloud platforms, hybrid clouds offer a blend of scalability and security. This model enables enterprises to seamlessly move applications and data between private and public clouds, providing increased flexibility and optimizing infrastructure, compliance, and security.

2.1 Public Cloud Platforms

The selection of a public cloud platform is a fitting choice for this purpose. In particular, Microsoft Azure, Amazon Web Services (AWS), Google Cloud Platform (GCP), and Digital Ocean, four widely used platforms, have been chosen for in-depth research. Each platform's evaluation begins with its compliance with the General Data Protection Regulation (GDPR), followed by a review of the most commonly cited advantages and disadvantages by users.

2.1.1 Microsoft Azure

All services offered by Azure are designed to align with GDPR regulations. If customers utilizing Azure services decide to transfer data containing personal information across international borders, it is imperative for them to consider the legal obligations associated with such transfers. Microsoft offers customers a range of services and resources aimed at assisting them in meeting GDPR compliance requirements relevant to their operations¹.

Azure simplifies scalability and load balancing, ensuring your application adapts to fluctuating traffic. With an extensive global network of data centres, Azure enables the deployment of applications across multiple regions for enhanced performance and redundancy. It also offers strong security features, compliance certifications, and encryption tools, ensuring adherence to regulatory requirements.

Azure's pricing structure is intricate, incorporating numerous variables and potential challenges, making it difficult to determine precise prices and costs² (and it is relatively expensive). However, it employs a pay-as-you-go approach, preventing you from overpaying for features and add-ons that you may not use. Sophisticated configurations and setups, particularly those related to complex networking or scenarios, might demand a more profound comprehension of Azure. Users may perceive these aspects more challenging than similar platforms.

¹ <https://azure.microsoft.com/en-us/explore/global-infrastructure/data-residency/#overview>

² <https://azure.microsoft.com/en-us/pricing/calculator/>

2.1.2 Amazon Web Services (AWS)

AWS transparently communicate their dedication to protecting the EU customers data. Their AWS GDPR Data Processing Addendum (AWS GPDR DPA), which includes Standard Contractual Clauses, is automatically applicable to customers subject to the General Data Protection Regulation (GDPR). User can choose to store customer data in one or more of AWS's European Regions, such as EU Regions in France, Germany, Ireland, Italy, Spain, and Sweden or UK. By applying AWS services, you can trust that your customer data remains within the chosen AWS Region¹.

AWS has a vast and well-established global infrastructure with data centres in multiple regions around the world. It ensures strong security and compliance, safeguarding client data with redundant backups and server cloning. AWS's scalability feature allows users to easily adjust storage needs as required. It also offers excellent support, providing various support plans tailored to meet different client needs.

AWS encounters challenges in user-friendliness, particularly for beginners, as the multitude of options can be overwhelming and challenging to comprehend. The platform's complexity is further compounded by its pricing structure, characterized by an array of options with varying prices, making it intricate for users to accurately anticipate and understand the total costs associated with their usage² and relatively expensive. However, user can also benefit from pay as you go method by paying based on their service usage.

2.1.3 Google Cloud Platform (GCP)

Google Cloud prioritizes the security and privacy of customer data under GDPR. When partnering with Google Cloud, users benefit from contractual commitments, additional security features, documentation support for privacy assessments, and ongoing evolution of capabilities to align with regulatory changes, all aimed at fostering confidence in GDPR compliance.³

Google Cloud Platform offers several advantages, excelling in analytics and data storage performance, providing scalability with diverse options for data storage, updates, and functionality. With a global outreach, users benefit from a wide geographical presence of data centres. Additionally, the platform extends a notable incentive with a \$300 free credit⁴, accessible over 12 months, facilitating cost-effective exploration and utilization of its services.

Google Cloud has a relatively high monthly support fee of around \$150, which can impact overall costs for users. The platform's complex pricing structure⁵ poses challenges in predicting expenses accurately. Furthermore, it is noted to have fewer features and productivity compared to the infrastructure provided by AWS.

2.1.4 DigitalOcean

Residents of EEA, Switzerland, and the UK using DigitalOcean have GDPR-related data protection rights. This includes access, correction, and deletion of personal information by emailing privacy@digitalocean.com. Account deletion occurs within 90 days. Additional rights cover objection, processing restriction, data portability, and opting out of marketing. Consent

¹ <https://aws.amazon.com/compliance/eu-data-protection/>

² <https://calculator.aws/#/>

³ <https://cloud.google.com/privacy/gdpr>

⁴ <https://cloud.google.com/pricing/>

⁵ <https://cloud.google.com/products/calculator-legacy?hl=en&direct=true>

withdrawal is allowed, and users can complain to a data protection authority. DigitalOcean commits to prompt responses in line with data protection laws¹.

DigitalOcean stands out for its user-friendly interface and easy setup, catering to both beginners and seasoned developers. Scalability is a notable feature, allowing users to effortlessly adjust resources based on their needs. The platform offers transparent and predictable pricing², ensuring easy cost management with competitive and affordable pricing plans, including options starting as low as \$4 per month. Additionally, users can get started for free with a \$200 credit.

DigitalOcean's focused service offering, while advantageous for simplicity, may pose limitations compared to larger cloud providers like AWS or Azure, restricting the array of available solutions. Additionally, the platform may lack certain enterprise-grade features present in larger providers, potentially limiting its suitability for organizations with intricate infrastructure demands.

2.2 Private Cloud Platform

A private hosting platform is an exclusive infrastructure dedicated solely to a single organization, managed internally by its IT department. Unlike public platforms, there is no resource sharing with external entities. The organization maintains ownership and control over physical servers, networking equipment, and hardware, ensuring a heightened level of security. This isolation is particularly advantageous for applications and data demanding stringent privacy and compliance measures.

Organizations benefit from extensive customization options, tailoring the hosting environment to meet specific requirements. Private hosting platforms are renowned for their robust cybersecurity, as the organization has direct control over the infrastructure. This makes private hosting an ideal choice for entities adhering to strict regulatory standards, allowing them to implement and enforce necessary measures. While private hosting offers these advantages, it does come with challenges, including higher upfront costs, ongoing maintenance requirements, and potentially slower scalability compared to cloud-based solutions. Deciding on private hosting is often based on an organization's unique needs, security considerations, and compliance obligations.

While public cloud platform seems like a fitting choice for the PROCEEDR tool, private cloud platforms can also be considered as alternative options which will be suggested in section 3.

¹ <https://www.digitalocean.com/legal/privacy-policy>

² <https://www.digitalocean.com/pricing>

3 Organisational hosting alternatives

- CEDR will act as the hosting organisation of the PROCEEDR tool. For maintenance and further development, they might either have in-house resources or reach out to external consultants or interested/qualified PROCEEDR project partners, e.g. Chalmers.
- One of the NRAs will express interest in hosting/maintaining/developing the tool further (they might either have in-house resources or reach out to external consultants or interested/qualified PROCEEDR project partners, e.g. Chalmers). Processes have to be found that other NRAs can benefit from this work.
- One of the PROCEEDR partners expresses an interest in hosting/maintaining/developing the tool further.
- An external organisation that is not involved in the project, e.g. a consultancy company will take over the PROCEEDR tool.
- The PROCEEDR tool will be made open source (make it publicly available with a statement that there will be no active maintenance, issues and bugs will not be dealt with, no further development) or open source (which is recorded by other partners e.g. Chalmers for maintenance and development)

Table 1 Organizational hosting alternatives

Alternative	Host	Maintenance/Development
1	CEDR	In-house resources
		External consultant or PROCEEDR partners e.g. Chalmers
2	One of NRAs	In-house resources
		External consultant or PROCEEDR partners e.g. Chalmers
3	One of PROCEEDR partners	
4	An external organisation e.g. consultancy company	
5	Open source	No maintenance/further development
		External consultant or PROCEEDR partners e.g. Chalmers