Strategic Challenges in Cloud Systems & Data Architecture Evolution

This survey is part of a Computer Engineering undergraduate thesis research project conducted at the "Università degli Studi di Bergamo". The objective is to analyze the evolution of Cloud Systems and validate critical challenges in Security, FinOps, and Interoperability.
Privacy: Participation is anonymous. All responses will be aggregated and used strictly for academic research purposes. No personal or sensitive company data is requested.
Time: This questionnaire consists of approximately 15 questions and takes 3-5 minutes to complete.

* Indicates required question

Demographics & Organizational Profile

1. What is your primary role within the organization? *

Mark only one oval.

- ◯ CTO / CIO / CDO / CEO
- ◯ VP of Engineering / Infrastructure
- ◯ Lead Data Architect / Principal Engineer
- ◯ Head of Data Governance / Security
- ◯ Other: _____

2. What is the approximate headcount of your organization? *

Mark only one oval.

- ◯ Less than 5,000
- ◯ 5,000 - 9,999
- ◯ 10,000 – 49,999
- ◯ 50,000 – 99,999
- ◯ 100,000+

Architectural Maturity & Usage Untitled Title

3. Which description best matches your current data architecture? *

Mark only one oval.

- ◯ Legacy/Monolithic: On-premise Enterprise Data Warehouses (EDW) with rigid schemas
- ◯ Data Lake: Centralized storage of raw data (Schema-on-Read), separate from compute
- ◯ Lakehouse: Unified architecture supporting ACID transactions and combined BI/ML workloads
- ◯ Data Mesh: Decentralized architecture with domain-oriented data ownership and federated governance
- ◯ Other: _____

4. What is your primary cloud strategy? *

Mark only one oval.

- ◯ Single Cloud (100% on AWS, Azure, or Google Cloud)
- ◯ Hybrid Cloud (On-premise + Cloud)
- ◯ Multi-Cloud (Strategic use of multiple providers)
- ◯ Other: _____

Validating Friction Points

5. How would you rate the difficulty of enforcing consistent security policies across your data estate ? *

Mark only one oval.

	1	2	3	4	5	
Effo	◯	◯	◯	◯	◯	Extremely difficult

6. In a decentralized or self-service environment, what is your biggest governance challenge? *

Mark only one oval.

- ◯ Inconsistent access control (IAM) across different domains
- ◯ Lack of visibility into who is accessing what data
- ◯ Ensuring regulatory compliance (GDPR/HIPAA) across independent teams
- ◯ We utilize a centralized model, so this does not apply

7. How does your organization currently manage Cloud/Data Platform costs? *

Mark only one oval.

- ◯ Reactive: We analyze bills at the end of the month and investigate spikes ("Bill Shock")
- ◯ Proactive: We use quotas and budget alerts, but optimization is manual
- ◯ Cultural (FinOps): Engineering teams are responsible for the unit cost of their workloads
- ◯ Automated: Costs are optimized in real-time by the platform
- ◯ Other: _____

8. To what extent do "orphaned resources" (e.g., idle clusters, unreferenced storage) contribute to your cloud waste? *

Mark only one oval.

	1	2	3	4	5	
Neg	◯	◯	◯	◯	◯	Significant

9. Which factor most hinders your ability to move workloads between cloud providers? *

Mark only one oval.

- ◯ Egress fees (cost of moving data)
- ◯ Data Gravity (the volume of data is too massive to move)
- ◯ Proprietary formats (reliance on specific engines like Redshift/BigQuery)
- ◯ We are happy with a single vendor and do not wish to move
- ◯ Other: _____

10. Are you currently adopting "Open Table Formats" (e.g., Apache Iceberg, Delta Lake) specifically to avoid vendor lock-in? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ We are currently evaluating them

Prototype Discovery & Future Outlook Untitled Title

11. Which of the following "missing tools" would provide the highest value to your organization today? *

Mark only one oval.

- ◯ Automated Policy Propagation: A tool that automatically translates high-level governance rules into technical policies across distributed data products
- ◯ Proactive Cost Anomaly Prevention: A tool that simulates query costs before execution rather than reporting them after
- ◯ Cross-Cloud Abstraction Layer: A unified interface to query data residing in different clouds without manual movement
- ◯ Data Product Marketplace: A user-friendly interface for discovering and requesting access to domain data

12. If a functional prototype was developed to address the challenge selected above, would you be interested in seeing a case study on it? *

Mark only one oval.

- Yes
- No
- Maybe

13. (Optional) Is there any other critical friction point in your Cloud Data Platform that was not mentioned above?