

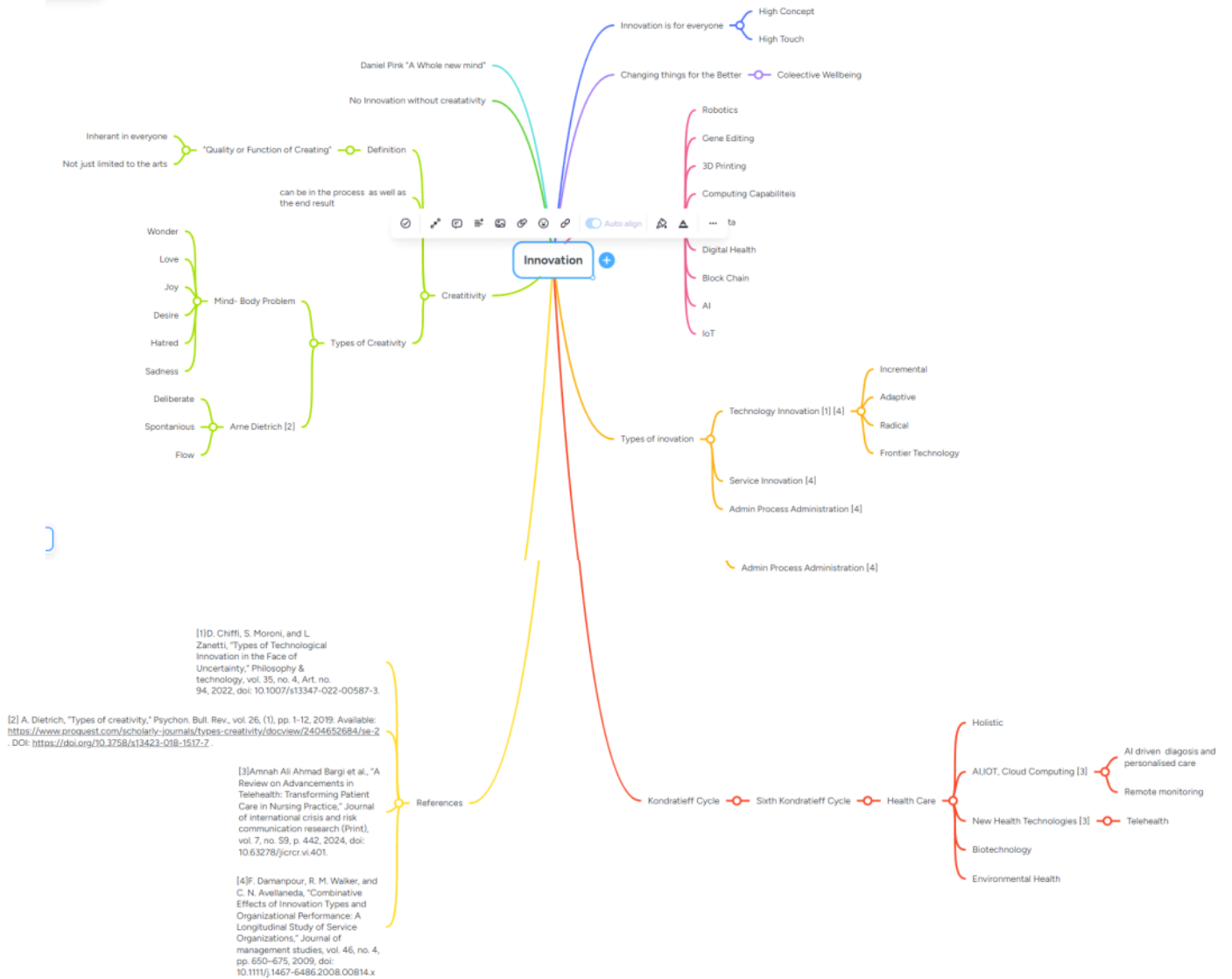
ACCA5033 – Assignment 1

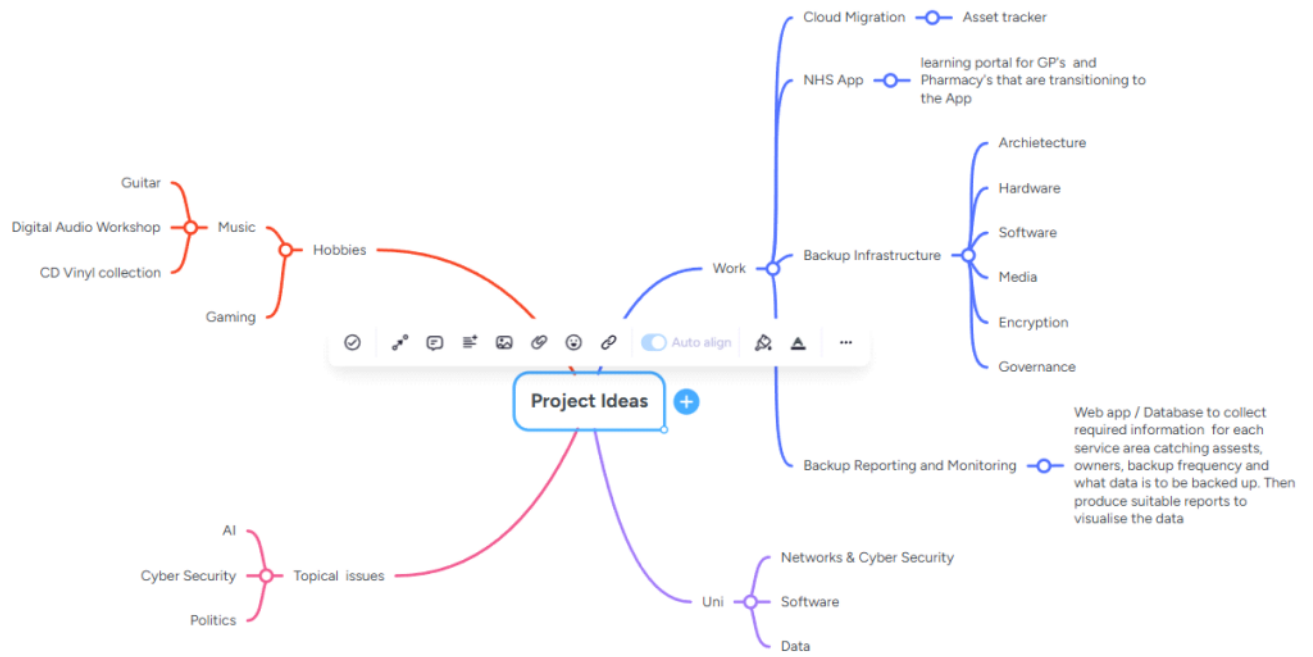
## CHANGEMAKERS: CREATIVITY AND VALUE CREATION

Jonathan Jones (2310528)

# Q1 Mind Map

Tuesday, July 15, 2025 5:18 PM





## Q2 Selected Project area

Tuesday, July 15, 2025 5:19 PM

I have decided to investigate how technology and new ways of working can be used to improve the backup system used in work.

Digital Health and Care Wales (DHCW) is a National organisation that designs and delivers digital services to support health and support services across Wales. It was established as a special Health authority, evolving from the former NHS Wales Informatics Service (NWIS).

DHCW inherited the infrastructure from NWIS, including the current backup systems. Whilst there have been ongoing improvements to this system, its underlying architecture is dated.

In March 2025 concerns were raised by the Welsh Government about DHCW's ability to deliver major programs and were placed under enhanced monitoring to improve performance and outcomes.

DHCW's intention is to move to a cloud-based model to modernise its infrastructure and help provide improved services to its stakeholders. As a result a new system for the backups will need to be devised.

# References

Tuesday, July 15, 2025 5:41 PM

[[1]D. Chiffi, S. Moroni, and L. Zanetti, "Types of Technological Innovation in the Face of Uncertainty," Philosophy & technology, vol. 35, no. 4, Art. no. 94, 2022, doi: 10.1007/s13347-022-00587-3.]

(<https://www.mindmeister.com/app/map/3774087032?t=Pa1YlqXPaY>)

[[2] A. Dietrich, "Types of creativity," Psychon. Bull. Rev., vol. 26, (1), pp. 1-12, 2019. Available: <https://www.proquest.com/scholarly-journals/types-creativity/docview/2404652684/se-2> . DOI:

<https://doi.org/10.3758/s13423-018-1517-7> .]

(<https://www.mindmeister.com/app/map/3774144323?t=Pa1YlqXPaY>)

[[3]Amnah Ali Ahmad Bargi et al., "A Review on Advancements in Telehealth: Transforming Patient Care in Nursing Practice," Journal of international crisis and risk communication research (Print), vol. 7, no. S9, p. 442, 2024, doi: 10.63278/jicrcr.vi.401.]

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[[4]F. Damanpour, R. M. Walker, and C. N. Avellaneda, "Combinative Effects of Innovation Types and Organizational Performance: A Longitudinal Study of Service Organizations," Journal of management studies, vol. 46, no. 4, pp. 650–675, 2009, doi: 10.1111/j.1467-6486.2008.00814.x]

(<https://www.mindmeister.com/app/map/3774152976?t=Pa1YlqXPaY>)

# Q1 Create & Document Aim and several Objectives of project

Tuesday, July 15, 2025

5:21 PM

## **Research Aim :**

To investigate how cloud technologies and modern workplace practices can enhance the effectiveness , resilience and compliance of backup systems within Digital Health and Care Wales (DHCW)

## **Objectives :**

- Evaluate the limitations of current backup architecture inherited from NWIS and assess its impact on performance and risk
- Analyse modern cloud based backup solutions with a focus on healthcare requirements including data sensitivity, uptime and regulatory compliance
- Explore opportunities for automation and intelligent monitoring to improve backup reliability, reduce downtime and support disaster recovery.
- Evaluate the role of artificial intelligence in enhancing backup system efficiency, resilience and predicative risk management with DHCW's infrastructure
- Recommend an optimal backup strategy that balances technical feasibility, cost-effectiveness and long-term scalability

## Q2 Identify an appropriate research philosophy for the project

Tuesday, July 15, 2025 5:23 PM

### **Research Methodology**

This study adopts a pragmatic research philosophy to explore backup system improvements within the Digital Health and Care Wales (DHCW) infrastructure. The pragmatic approach supports flexibility in methods[1], encourages stakeholder engagement[2], and prioritises operational relevance over theoretical idealism.

To address the central research question—How can cloud-based and remote backup strategies enhance resilience, compliance, and efficiency at DHCW? a mixed methods approach is employed:

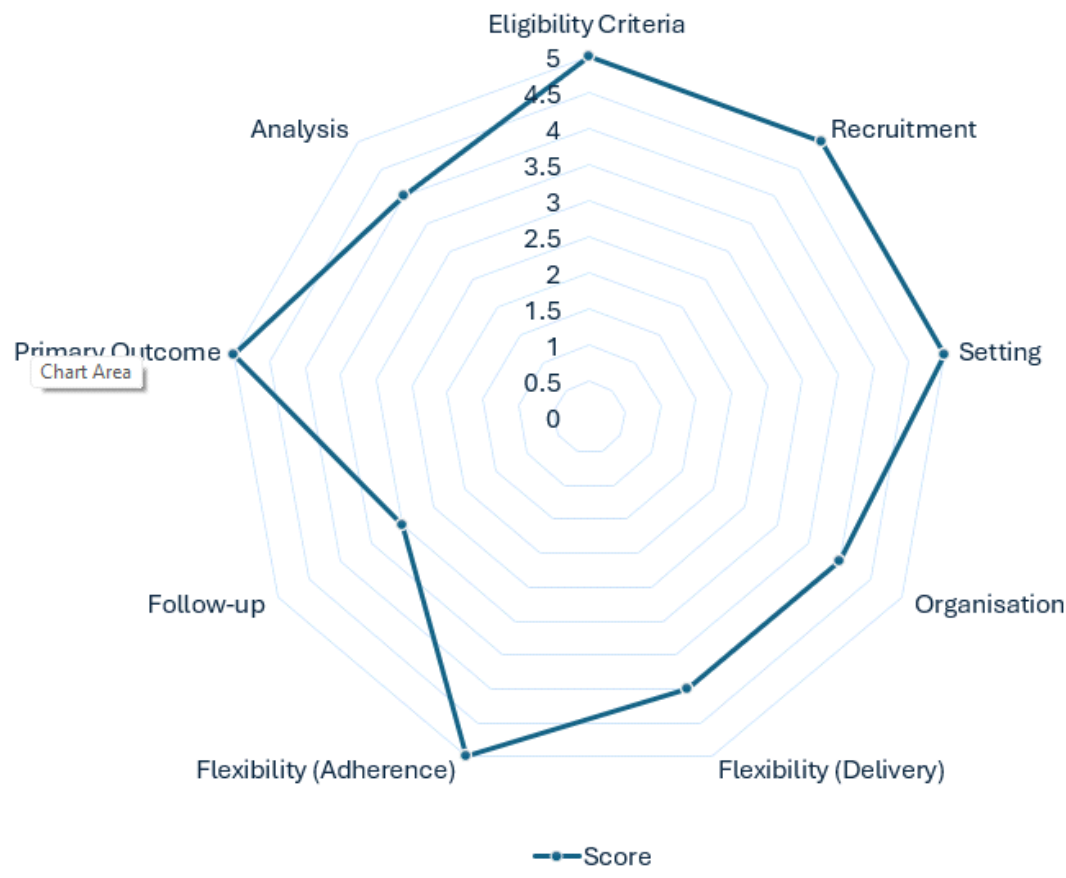
Quantitative methods are used to measure system performance, cost-efficiency, and risk mitigation using historical uptime data and cloud provider SLAs.

Qualitative methods, including stakeholder interviews and staff surveys, assess perceptions of usability, barriers to implementation, and workflow integration.

Stakeholders from IT operations, policy leadership, and clinical services are actively engaged throughout[3]. The study is iterative, allowing methodological refinement as insights emerge. The research setting mirrors real-world conditions to ensure findings are actionable, and implementation pathways are supported by schematic diagrams, risk matrices and decision models.

To illustrate the practical design of this study, a PRECIS-2 wheel is included.

# Precis-2 Wheel



## Q3 Document Appropriate search tools

Tuesday, July 15, 2025 5:25 PM

To assist in the collection of relevant research I adopted the CRAAP approach,

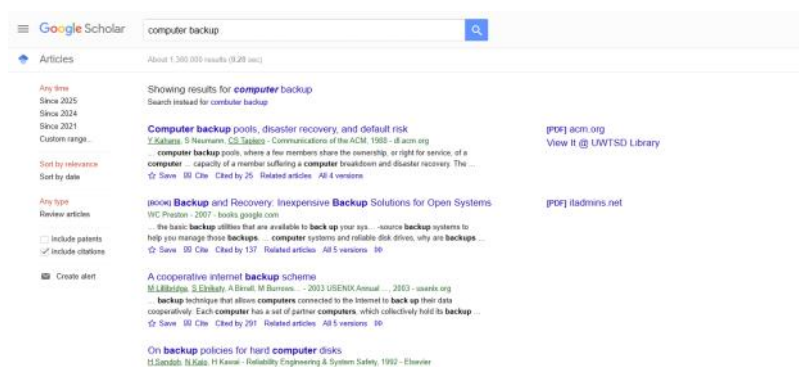
Ensuring that the research would be current, relevant, have authority, accuracy and has relevant purpose.

To help me obtain that research I used Google Scholar linked to my university account. This helped ensure the validity of the research and also helped avoid any paywalls. The other benefit of this was that it prompted other research questions which helped find further research.

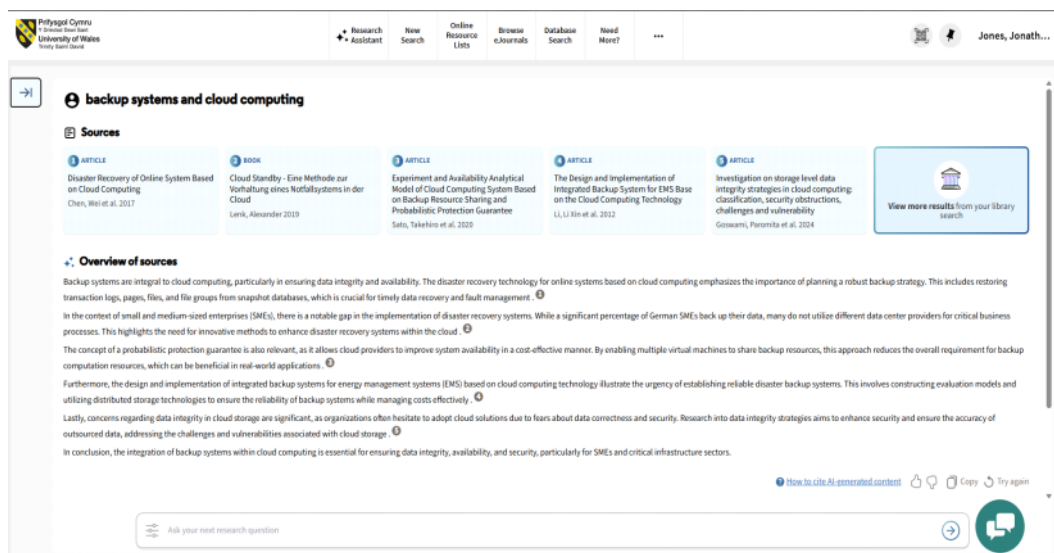
I also used the library's Primo Research assistant which helped me find credible sources of information.

Whilst there are many different databases, I used ProQuest, IEEE Xplore, ACM Digital library, JSTOR and Directory of Open Access Journals (DOAJ).

Once a few keywords were established a Boolean search was used to refine the results. I mainly used the "AND" Boolean.



Using Google Scholar linked to the UWTSD account



Using UWTSD Library Primo Research assistant

### Related research questions

- What are the cost-effective strategies for implementing computer backups?
- How do different backup solutions compare in terms of cost and efficiency?
- What is the financial impact of data loss on businesses without proper computer backups?
- What are the long-term cost benefits of regular computer backups for small businesses?

Ask your next research question

Primo Research Assistant suggesting other searches

Access provided by Prifysgol Cymru, Y Ddindod Dewi Sant

Register Log in

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Search

Back to results Software-Defined Warfare / 2 Lessons from Data Center Architecture

RESEARCH REPORT OPEN ACCESS

### 2 Lessons from Data Center Architecture

Software-Defined Warfare: Architecting the DOD's Transition to the Digital Age, Sep. 1, 2022, pp. 6-15 (10 pages)

<https://www.jstor.org/stable/teexp43413.5>

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of a carrier strike group (CSG), with many ships and submarines tasked to protect it. The protection offered by the CSG makes it extremely hard to sink a U.S. aircraft carrier. However, taking out an aircraft carrier destroys the entire CSG architecture, making it nearly useless for the purpose for which it was designed: to project force around the world.

An aircraft carrier, given its size and footprint, is like a very large mainframe or a large database system. An aircraft carrier is vertically scaled, as the unit of scaling for the system is yet another aircraft carrier. Many of these vertically scaled systems are also single points of failure. Since these

8 | Nand Mulchandani and John N.T. Shanahan

Research found using JSTOR

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JITECS (JOURNAL OF INFORMATION TECHNOLOGY AND COMPUTER SCIENCE) (DEC 2024)

## Village Data Backup and Disaster Recovery: A Comparative Study of Cloud Solutions with Traditional Methods

Barlian Henryramu Prasetyo, Edita Rosana Widazari, Adi Setiawan,  
Hanifa Maulani Ramadhan

AFFILIATIONS +

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### Abstract

READ ONLINE

This study presents a comparative analysis of traditional disk-based and cloud-based Backup and Disaster Recovery (DR) approaches, focusing on the challenges inherent in existing solutions, such as high infrastructure costs, extended recovery times, and operational disruptions during software updates. Conventional disk-based systems often require periodic reboots and manual interventions, which can interrupt ongoing operations. In contrast, cloud-based solutions, particularly Asigra, offer a streamlined

Research found using DOAJ

# References

29 July 2025 14:27

- [1]M. Yvonne Feilzer, “Doing Mixed Methods Research Pragmatically: Implications for the Rediscovery of Pragmatism as a Research Paradigm,” *Journal of mixed methods research*, vol. 4, no. 1, pp. 6–16, 2010, doi: 10.1177/1558689809349691.
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# Q1 Validity Reliability, generalisability & ethical considerations

Tuesday, July 15, 2025 5:30 PM

## Q1. Strategies to Enhance Validity, Reliability, Generalisability, and Ethical Considerations

This study employed a rigorous and ethical mixed-methods approach to investigate how emerging technologies—namely cloud computing, AI, encryption, and disaster recovery practices—can enhance organisational backup systems.

To promote validity, triangulation[1] was used across three data sources: stakeholder interviews, survey feedback, and secondary infrastructure performance logs. Technology-specific constructs (e.g. *predictive anomaly detection*[2], *zero-trust architecture*{4}[5], *multi-region failover*) were clearly defined using insights from peer-reviewed literature (IEEE, ACM), vendor white papers (Azure, AWS, Google Cloud), and recognised frameworks from NIST[5] and OWASP. This ensured that terminology reflected current and accurate industry usage.

Reliability was supported through consistent phrasing across instruments. Pilot tests of the survey and interview tools highlighted areas requiring simplification (e.g. "zero-knowledge encryption") and led to the inclusion of a glossary and visual prompts. To ensure procedural consistency, responses were anonymised, time-stamped, and version-controlled. Additionally, hands-on testing of technologies (e.g. open-source backup schedulers and failover simulations) helped validate technical feasibility and reinforce measurement consistency.

Generalisability was promoted by engaging a diverse stakeholder group—including IT engineers, security analysts, and operations leads—and by selecting technology themes aligned with mid-sized organisations exploring cloud and AI services. Selection of case technologies was informed by scanning industry reports (Gartner[7], IDC, TechTarget) and open-source documentation,

Ethical safeguards were embedded throughout. Participants received detailed briefings and gave informed consent. All data—quantitative, qualitative, and technical—was stored securely, anonymised, and used solely for research purposes. Sensitive infrastructure details and personal identifiers were redacted during thematic coding and trend analysis.

## Q2 Data Collection methods

Tuesday, July 15, 2025 5:33 PM

### Q2. Research Strategies and Pilot Design

A mixed-methods strategy was adopted to examine both quantitative infrastructure metrics and qualitative perceptions of emerging technologies. Key components included:

- **Qualitative Instruments:** Stakeholder interviews and surveys explored expectations around disaster recovery, trust in AI systems, cloud adoption, and data protection concerns. Interview prompts and survey items were derived from technical documentation and refined through pilot testing. Literature from ScienceDirect and technical blogs (Cloudflare, Microsoft Learn) helped frame question wording to match current usage.
- **Quantitative Data:** Secondary data from infrastructure logs captured metrics such as backup success rates, RTO/RPO compliance, and encryption latency. These metrics were selected based on performance benchmarking guidelines found in vendor white papers and DR frameworks.
- **Pilot Design:** A test version of the survey was trailed with technical stakeholders. Initial feedback suggested confusion around emerging terms. Based on this:
  - A glossary of terms was added (drawn from NIST, OWASP, and EFF sources).
  - Confidence scales were introduced to gauge trust in AI-enabled scheduling.
  - Visual prompts illustrated proposed cloud and DR architectures.

Interview protocols were also piloted. Sequencing and thematic groupings were adjusted to allow participants to reflect on technologies in context, aided by concepts extracted from GitHub repositories and Azure implementation guides. Appendix A includes pilot tools and lessons learned.

### Q3 Outline some different types of quantitative and qualitative analysis

Tuesday, July 15, 2025 5:35 PM

Quantitative analysis focused on infrastructure metrics such as:

- Backup success rates (%) across regions
- Mean recovery time (RTO) and restore points (RPO)
- Encryption latency and failure frequency

These were evaluated using descriptive statistics [8] and trend analysis, identifying recurring patterns or performance gaps.

Qualitative analysis involved thematic coding [9] of interviews and open-ended survey responses. Key themes included stakeholder concerns about automation reliability, benefits of cloud scalability, and organisational readiness for encrypted DR solutions. These insights were grouped under three meta-categories:

- **Trust & Transparency**
- **Scalability & Resilience**
- **Risk & Control**

The integration of both data types provided a rich, multidimensional picture of how technological advancements can improve backup infrastructure, inform smarter recovery strategies, and shape enterprise-level risk mitigation.

# Appendicies

05 August 2025 16:55

# Glossary of technical terms

05 August 2025 16:55

This glossary defines key technical concepts used in the study, ensuring clarity and accessibility during survey and interview phases. Terms were selected based on stakeholder feedback, pilot testing, and references from peer-reviewed literature, vendor documentation, and standards organisations (IEEE, OWASP, NIST, EFF, Microsoft Learn).

| Term                           | Definition                                                                                                                                     | Reference Source(s)                                                |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| AI-enabled Backup Scheduling   | Automation of backup timing and method using machine learning algorithms to optimise performance and resource allocation.                      | Microsoft Learn; IEEE Xplore; AWS Backup Documentation             |
| Zero-Knowledge Encryption      | Security model ensuring that service providers cannot access user data or keys, maintaining total privacy even from infrastructure hosts.      | [3]                                                                |
| Zero-Trust Architecture        | A cybersecurity approach that rejects implicit trust; access is validated through identity, behaviour, and device authentication continuously. | [4], [5]                                                           |
| Multi-Region Failover          | Strategy where services automatically switch to a secondary cloud region to maintain availability during outages.                              | Azure Resilience Patterns; Google Cloud DR Reference Architecture  |
| Recovery Time Objective (RTO)  | The maximum time allowed to restore a system after a disruption before unacceptable impact occurs.                                             | Veeam DR Planning Guide; Gartner Infrastructure Glossary           |
| Recovery Point Objective (RPO) | The maximum tolerable duration of data loss measured from the last successful backup.                                                          | IBM Security DR Glossary; AWS Well-Architected Backup Lens         |
| Encryption Latency             | Delay introduced during data encryption and decryption processes, affecting throughput and user experience.                                    | Cloudflare Blog; ACM Digital Library                               |
| Predictive Anomaly Detection   | Use of AI models to proactively identify irregular behaviours that may signal system failure or security threats.                              | IEEE on AI Risk Modelling; GitHub - OpenAI Schedulers              |
| Hybrid Cloud Backup            | Backup architecture combining local (on-premises) and cloud-based storage to provide redundancy and flexibility.                               | TechTarget DR Best Practices; AWS Hybrid Backup Strategies         |
| Sandbox Testing                | Isolated testing environment used to validate backup tools or failure simulations without risk to live infrastructure.                         | Azure DevTest Labs; ScienceDirect; GitHub - Backup Simulator Tools |

Stakeholder Survey:  
Emerging Technologies  
in Backup and Disaster

Aug 5, 2025

This survey explores stakeholder views on cloud computing, AI automation, encryption protocols, and disaster recovery readiness. Estimated completion time: 6–8 minutes.

Start now

# Stakeholder Survey: Emerging Technologies in Backup and Disaster Recovery

When you submit this form, it will not automatically collect your details like name and email address unless you provide it yourself.

\* Required

## Section 1 Cloud Computing & Disaster Recovery

1. Do you currently use any cloud based backup or disaster recovery solutions \* 

- ☐ Yes
- ☐ No
- ☐ Not Sure

2. How familiar are you with the following cloud DR Features ( 1=Not Familiar , 5- Very Familiar

\* 

|                                         | 1                     | 2                     | 3                     | 4                     | 5                     |
|-----------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Multi-region failover systems           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Automated cloud based restore processes | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| SLA guarantees from cloud vendors       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

3. What benefits do you believe cloud based disaster recovery could offer your organisation ( Multiple choice - select all that apply) \* 

- ☐ Faster recovery time
- ☐ Greater scalability
- ☐ Improved data availability
- ☐ Cost savings
- ☐ Better compliance
- ☐ I'm not sure

4. What concerns or barriers do you see in adopting cloud based disaster recovery (open ended) 

Enter your answer

Next

# Stakeholder Survey: Emerging Technologies in Backup and Disaster Recovery

\* Required

## Section 2 AI & Predictive Backup Scheduling

5. How Familiar are you with the concept of using AI to automate backup scheduling or detect system anomalies ( 1= Not Familiar, 5= Very Familiar) \* 

| Option 1              | Option 2              | Option 3              | Option 4              | Option 5              |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

6. In your opinion, what benefits might AI bring to backup and disaster recovery workflows (multiple choice select all that apply) \* 

- ☐ Improved reliability through predictive alerts
- ☐ Reduced manual workload for IT Teams
- ☐ Faster response times to unexpected failures
- ☐ Cost savings over time
- ☐ Not Sure/ Need more information

7. What concerns or risks do you associate with using AI in backup infrastructure (multiple choice select all that apply) \* 

- ☐ Lack of transparency in automated decisions
- ☐ Potential errors without human oversight
- ☐ Data privacy or compliance risks
- ☐ Dependence on vendor supplied algorithms
- ☐ Other ( please specify)

8. If AI were introduced into your organisations backup systems , what would you need (eg training , visibility safeguards) to feel confident using it effectively 

Enter your answer

Back

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# Stakeholder Survey: Emerging Technologies in Backup and Disaster Recovery

\* Required

## Section 3 Encryption Protocols

9. What encryption methods do you currently use ( Multiple choice - select all that apply) \*

- ☐ End-to-end encryption
- ☐ Zero-knowledge encryption
- ☐ Encryption during transit only
- ☐ None

10. Rate your level of concern for the following challenges in relation to encryption (1 = Not concerned , 5 = Extremely Concerned) \*

|                           | Option 1              | Option 2              | Option 3              | Option 4              | Option 5              |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Performance Degradation   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Key Management complexity | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Regulatory compliance     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

11. What limitations have you experienced with encrypted backup performance (open ended)

Enter your answer

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# Stakeholder Survey: Emerging Technologies in Backup and Disaster Recovery

\* Required

## Section 4 Integration and organisational readiness

12. What stage is your team at in adopting these technologies (Multiple choice) \*

- ☐ Not Ready
- ☐ Exploring Options
- ☐ Partially Implemented
- ☐ Fully implemented

13. Our organisation provides sufficient support and training for adopting new backup technologies \*

| Strongly agree        | Agree                 | Neither agree nor disagree | Disagree              | Strongly disagree     |
|-----------------------|-----------------------|----------------------------|-----------------------|-----------------------|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> |

14. What resources or support would help you adopt advanced backup systems more effectively \*

Enter your answer

Back

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# Stakeholder Survey: Emerging Technologies in Backup and Disaster Recovery

## Closing Message

Thank you for contributing to this survey. Your input will help shape future strategies for resilient and intelligent backup infrastructure

Back

Submit

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05 August 2025 17:33

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- [8] "Descriptive Statistics: Definition, Formulas, Types, Examples%%page%% %%sep%% %%sitename%%." <https://www.geeksforgeeks.org/maths/descriptive-statistics/> (accessed Aug 6)
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research", *Lumivero*, <https://lumivero.com/resources/blog/master-thematic-coding-for-qualitative-research/> (accessed Aug 6, 2025).

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# Team Collaboration

Tuesday, July 15, 2025 5:37 PM

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LEVEL 5 ASSESSMENT SPECIFICATION

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                              |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|
| Student name:        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Student ID number:                                   |                              |
| Programme:           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                              |
|                      | Changemakers: Creativity and Value Creation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                      |                              |
| Module code:         | ACCA5033                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Contribution to Overall Module Assessment (%):       | 50%                          |
| Lecturer:            | James MG Williams                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Internal Verifier:                                   | Divya Chidambaram            |
| Assignment Title:    | Assignment 1: Innovation & Research.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Word count (or equivalent):                          | 2500 equivalent.             |
| Submission deadline: | August 2025 (see moodle for exact date)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Return date of provisional marks & written feedback: | Aim: Within 4 working weeks. |
| Submission method:   | All written assessments, where practical and possible, must be submitted via Turnitin unless otherwise instructed by the Lecturer. (Please DO NOT put this assessment specification into Turnitin or it will match many similarities with other students' submissions.)<br><b>Alternative submission method (if applicable):</b><br><b>Late submission of the assessment will result in a late penalty mark.</b> Penalties for late submission: Up to one week late, maximum mark of 40%. Over one week late, 0%. Only the Extenuating Circumstances Panel may approve a change to submission dates. |                                                      |                              |
| Academic honesty /   | Academic honesty is required. In the main body of your submission you must give credit to authors on whose research and ideas your work is based. Append                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                      |                              |

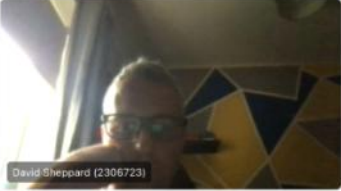
Adam Smith (2317631), David Sheppard (2306723), Jon Jones (2310528)

Your status is set to do not disturb. You'll only get notifications for urgent messages and from your priority contacts. Change settings

18:32 Chat People Raise React View More Camera Mic Stop sharing

BT

JJ



AS

Brad Tonner (2314152)

Jon Jones (2310528)

David Sheppard (2306723)

Adam Smith (2317631)

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# Interaction with course material

06 August 2025 21:17

**Make a list of 5 things that you have used or activities you have engaged in that would have not been around 10 years ago.**

Conference calls using Teams Zoom

Cooking with Air Fryers

Meal providers - Hello Fresh , Gusto

Food Delivery - Uber Eats, Deliveroo

TV on Demand - Amazon Prime, Disney Plus

Fitness trackers - Garmin, Fitbit

**Which innovation do you think has had the biggest impact**

I think the computer probably has had the biggest impact.

I still think that it has had the biggest impact on the development of society as we know it

today

It is ubiquitous in our daily lives. How we communicate, purchase things, how we work

and our entertainment

## Is innovation changing things for the better?

Answer the following three questions.

**Click next** once you have chosen.

Across the world, how did deaths per year from natural disasters change in the last century?

**A.** More than doubled

**B.** Remained about the same

**C.** Decreased to less than half

## Is innovation changing things for the better?

Answer the following three questions.

On average, women aged 30 have spent how many years in school? (Men of the same age have spent 8 years)

A. 7 years

B. 5 years

C. 3 years

## Is innovation changing things for the better?

Answer the following three questions.

In the last 20 years the percentage of people living in extreme poverty worldwide has...

A. Almost doubled

B. Remained about the same

C. Almost halved

Do you still agree that this innovation has had the biggest impact on the development of society?

Yes I still think computers have had the biggest impact on the development of society

It has lead to the development of the internet, allowed the boundries of scientce to be pushed to new areas, communcation around the world, artificail intelligence

### What is the fourth Industrial Revolution?

| Revolution                                                                          | Year | Information |                                                           |
|-------------------------------------------------------------------------------------|------|-------------|-----------------------------------------------------------|
|  | 1    | 1784        | Steam, water, mechanical production equipment             |
|  | 2    | 1870        | Division of labour, electricity, mass production          |
|  | 3    | 1969        | Electronics, information technology, automated production |
|  | 4    | ?           | Cyber-physical systems                                    |

#### Reflect

Drag the characteristics to the correct revolution.

Each characteristic will appear one at a time.

**Submit**



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The biggest technology listed by the World economic Forum to have an effect on my discipline area is Digital health

Working for the NHS, there are already plans in place to modernise the Health system with the data collected . The idea is to provide areas of concern, adapt processes that will be proactive rather than reactive. Some treatments will be tailored to the individual. Patients will also be able to access their records digitally and be given access to NHS apps to help the patients'.

<https://www.longtermplan.nhs.uk/areas-of-work/digital-transformation/>

### Check

Drag the revolution to the correct definition.

a. Steam, water and mechanical means of production

First Industrial Revolution

These are the correct definitions for the first and fourth industrial revolutions.

If you'd like to remind yourself of the definitions of each, let's [revisit that slide.](#)

d. Cyber physical systems

Fourth Industrial Revolution

**Check**

By 2025, what percentage of people are expected to be wearing clothes connected to the internet?

☐ 5% ☒ 10% ☐ 15%

Within the next decade, how many sensors are estimated to be connected in the Internet of Things?

☐ One billion ☐ One million ☒ One trillion

**Submit**

**Describe an experience from the past where you felt discouraged/encouraged to be creative and how this may have affected how you feel about your level of creativity**

In school I was in second set for English. The teacher bluntly told the class that as we weren't in top set there was no point in studying Literature. As a result I never really read much after that. It was only in my 20s that I started reading again and feel that I missed out, especially at an age where you were still developing.

**Why is creativity important in your subject area. ?**

As an infrastructure engineer, I feel it is important to be creative as the industry does not

stand still.

New technologies are being developed , new threats are emerging and the budgets are being stretched year on year.

It is important to provide a reliable working environment that can be rolled out/updated quickly whilst remaining resilient and flexible to adapt to new technologies.



✔ **You have completed Section 3!**

After completing this section, you should

- Think of yourself as someone capable of being creative (if you don't already)
- Identify personal passions as sources for idea generation.

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