**Use Case UC-009**

Version 1.00

**Revision History**

| Date | Author | Description of change |
| --- | --- | --- |
| 11/04/2023 | Jacob, Vanessa | Initial version of Use Case |
| 01/17/2024 | Ben, Dominic | Revised Use Case |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Use Case:** Modify Database Schema

**Id**: UC - 009

**Description**

The database may be modified to accommodate additional data, depending on the needs of the users and the output of various data sources. The new data may range from fields in existing tables to the creation of entirely new tables.

**Level:** Sub-function

**Primary Actor**  
Database Administrator

**Supporting Actors**

Data Administrator

**Stakeholders and Interests**

Data Analyst: Interested in the collection of data identified to be valuable to business objectives, which may require the addition of data fields or tables over time.

Data Administrator: Interested in maintaining system consistency with respect to the Data Collection and Database components. Facilitating Data Analyst change requests and making change requests to the Database Administrator(s), as required.

Database Administrator: Interested in maintaining system consistency with respect to database operations, and preserving existing fields of information being captured inside the database.

**Pre-Conditions**

1. A change has been made to the configuration files of the system by the Data Administrator and a Change Request has been submitted to the Database Administrator.
2. The Database Administrator is logged into the IONOS hosting environment by either:
   1. The command-line interface (CLI)
   2. The browser-based graphical user interface (GUI)
3. The Database Administrator is logged into and ready to manage the database in either:
   1. The CLI of MySQL
   2. The browser-based GUI for phpMyAdmin

**Post Conditions**

Success end condition

1. The database table or tables have been modified to include the requested field(s) or tables.
2. The Database Administrator validates that existing data is not modified with the addition of the new field(s) and/or table(s).
3. The Database Administrator tests the database to ensure the additional field(s) or table(s) is/are performing as expected.

Failure end condition:

1. The database cannot be modified in a safe and/or secure manner to include the requested field(s) or table(s).
   1. If there were significant errors or unexpected performance present during testing once the changes were made
      1. The Database Administrator restores the database to a working state using the most recent working backup (UC-007)
   2. If the changes were assessed and deemed to not be feasible, then no additional measures are necessary
2. Configuration changes in the Data Collection component may need to be revised and/or rolled back.

Minimal Guarantee

1. The database will continue operating in a stable state.
2. The outcome will be logged for further analysis to determine if development work is required.

**Trigger**

1. Data Administrator has submitted a Change Request to the Database Administrator as a result of a change enhancement or request approved by the change control board.

**Main Success Scenario**

1. The Database Administrator receives the Change Request from the Data Administrator.
2. The current state of the database is analyzed according to the type of Change Request.
   1. If the Change Request is for adding fields:
      1. Impacts to the existing table(s) are assessed
      2. Relationship dependencies are assessed with the addition of the new field to ensure it does not violate normalization
   2. If the Change Request is for adding tables:
      1. Impacts to relationships between existing tables are assessed
3. The Database Administrator schedules a time to disconnect all users and perform the database changes.
4. The Database Administrator performs a backup of the database prior to the changes (UC-003).
5. The Database Administrator performs the changes at the scheduled time.
6. The Database Administrator tests the database to ensure the changes are performing as expected and no errors are present.
7. The Database Administrator allows connections to the database to be made.
8. The Database Administrator notifies the Data Administrator the work is complete.
9. The Database Administrator logs the work, the outcome, and files it according to procedure.

**Extensions**

2c. The Change Request is not approved.

1. The Database Administrator documents reason for rejection.
   1. The Database Administrator provides constructive feedback while proposing improvements.
2. The Data Administrator chooses to:
   1. Resubmit the revised Change Request to Database Administrator.

*Return to Step 2 in Main Success Scenario.*

* 1. Assess a rollback of configuration changes and notify the Data Analysts.
  2. The change request is approved.

4b. The scheduled time needs to change.

1. A new time is selected in accordance with business needs and availability of the Database Administrator.
2. Users are notified of the time change.

*Return to Step 5 in Main Success Scenario.*

6b. The database is not performing as expected, or errors are present.

1. The Database Administrator determines the cause of the errors or performance issue(s) and determines:
   1. If a restoration of the database is required (UC-007)
      1. In the event of this scenario, the case is deemed to terminate in a Failed State
   2. If the errors/performance issues may be remediated without a restoration of the database
      1. In this scenario, the case may still terminate in a Failed State if remediation efforts fail
2. The Database Administrator contacts the Data Administrator and notifies them of the outcome.
3. The Database Administrator logs the work, the outcome, and files it according to procedure.

**Frequency:**

On Demand

*Note:* This action is not scheduled to regularly occur, but will potentially occur as a result of UC-004.

**Assumptions**

1. The database is not available to Data Analysts while change and testing activities occur.
2. The Database Administrator is familiar with the activities outlined in UC-003 and UC-007.
3. The Database Administrator has the correct credentials for the IONOS and database environments.

**Special Requirements**

**Security**

1. Access to IONOS with valid credentials
2. Access phpMyAdmin with admin credentials

**Performance**

1. Database Administrators are to action changes within standard hours, unless an emergency arises.

**Change Logs**

1. Changes to the database must be logged in regards to:
   1. What field(s) or table(s) were added
   2. When these changes occurred
   3. Reason for these additional data.
2. Updates to system modeling and diagrams must be made to reflect the changes made to the database.
3. Database documentation must be revised to include the changes.

**Issues**

1. How long are change testing activities expected to last?
2. In the event of change failure, how long is the database expected to be unavailable or inaccessible while remediation activities occur?
3. In the event of change failure, what is the notification process for affected users?
4. What is the timeframe a Data Administrator can expect their Change Request to be actioned in?