

Software Requirements Specification: Project Scope, objectives, users, functional requirements, and non-functional requirements.

Project Scope

The project consists of the development of a Software as a Service (SaaS) platform designed to obtain and manage public information on energy distribution projects

The system will provide a web-based interface for authorized users to access the platform, manage data, perform operations and interact with the system through secure APIs.

The scope includes user management, data management, reporting features and system administration tools. Mobile applications and third-party integrations outside the defined APIs are considered out of scope unless specified in future phases.

Objectives

- Provide a centralized platform for managing business processes.
- Improve operational efficiency by automating repetitive tasks.
- Provide secure access to system data through role-based authentication.
- Enable scalability to support increasing numbers of users and data.
- Provide reliable APIs for integration with external systems.

Users

User Type	Description
-----------	-------------

Administrator	Data query and report visualization
---------------	-------------------------------------

Non-Functional Requirements

Performance

- API response time < 2 seconds
- System supports concurrent users

Security

- All communication via HTTPS
- Authentication via JWT
- Role-based access control

Availability

- System availability target: 99.9% uptime

Data Protection

- Daily backups
- Encryption at rest (personal data as Password)

Compliance

- Compliance with applicable data protection regulations (ISO 27001)

System Architecture Diagram: Outline the high-level infrastructure, backend services, database structures and cloud service provider choices and cloud resources.

System Architecture Overview

High-Level Architecture

The system follows a **client-server architecture** based on a REST API, where the web application communicates with a backend developed in **.NET 8**, which manages business logic and access to a **Microsoft SQL Server** database.

Authentication and authorization are handled via **JSON Web Tokens (JWT)** issued by the backend upon successful user credential verification.

Authentication Architecture

The system uses **JSON Web Token** for secure authentication and authorization.

Authentication Flow:

1. The user enters credentials in the web login form.
2. The frontend sends the credentials to the API authentication endpoint.
3. The backend validates the credentials against the database.
4. Passwords are stored in the database in **hashed/encrypted form**.
5. If credentials are valid:
 - the backend generates a **JWT token**
 - the token is returned to the frontend.
6. The frontend includes the token in subsequent API requests.
7. The backend validates the token on each request before processing.

Backend Services

The backend is implemented as a **REST API** built with **.NET 8**.

Responsibilities:

- User authentication and token generation
- Request validation
- Business logic execution
- Database access

The API is **not publicly exposed** and is only accessible from the web frontend.

Database Layer

The system uses **Microsoft SQL Server** as its relational database.

Responsibilities:

- Storing user accounts and credentials
- Persisting system data and transactions
- Maintaining relational integrity via primary and foreign keys

Passwords and personal data are securely **hashed** for storage.

Security Considerations

Key security measures implemented:

- Authentication via **JWT tokens**
- Secure password storage with **hashing**
- API inaccessible from external networks
- Token validation for every request
- Frontend-controlled access
- Secure communication over **HTTPS**

API Documentation

```
{
  "openapi": "3.0.1",
  "info": {
    "title": "SSEBOE",
    "version": "1.0"
  },
  "paths": {
    "/api/Boe/resoluciones": {
      "get": {
        "tags": [
          "Boe"
        ],
        "responses": {
          "200": {
            "description": "Success",
            "content": {
              "text/plain": {
                "schema": {
                  "type": "array",
                  "items": {
                    "$ref": "#/components/schemas/BoeRecord"
                  }
                }
              }
            },
            "application/json": {
              "schema": {
                "type": "array",
                "items": {
                  "$ref": "#/components/schemas/BoeRecord"
                }
              }
            }
          }
        }
      }
    }
  }
}
```

```
    }
  },
  "text/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  }
}

}

}

}

}

},
"/api/Boe/resoluciones/{id}": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "id",
        "in": "path",
        "required": true,
        "style": "simple",
        "schema": {
          "type": "integer",
          "format": "int32"
        }
      }
    ]
  }
}
```

```
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "$ref": "#/components/schemas/BoeRecord"
        }
      },
      "application/json": {
        "schema": {
          "$ref": "#/components/schemas/BoeRecord"
        }
      },
      "text/json": {
        "schema": {
          "$ref": "#/components/schemas/BoeRecord"
        }
      }
    }
  },
  "404": {
    "description": "Not Found",
    "content": {
      "text/plain": {
        "schema": {
          "$ref": "#/components/schemas/ProblemDetails"
        }
      },
      "application/json": {
```

```
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  },
  "text/json": {
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  }
}
},
"/api/Boe/resoluciones/boe/{identificador}": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "identificador",
        "in": "path",
        "required": true,
        "style": "simple",
        "schema": {
          "type": "string"
        }
      }
    ],
    "responses": {
```

```
"200": {
  "description": "Success",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    },
    "text/json": {
      "schema": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  },
  "404": {
    "description": "Not Found",
    "content": {
      "text/plain": {
        "schema": {
          "$ref": "#/components/schemas/ProblemDetails"
        }
      },
      "application/json": {
        "schema": {
          "$ref": "#/components/schemas/ProblemDetails"
        }
      }
    }
  }
}
```

```
    }
  },
  "text/json": {
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  }
}
},
"/api/Boe/resoluciones/buscar": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "q",
        "in": "query",
        "style": "form",
        "schema": {
          "type": "string"
        }
      }
    ],
    "responses": {
      "200": {
        "description": "Success",
        "content": {
```

```
"text/plain": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
},
"application/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
},
"text/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
}
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
```

```
        "$ref": "#/components/schemas/ProblemDetails"
    }
},
"application/json": {
    "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
    }
},
"text/json": {
    "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
    }
}
}
}
}
}
}
},
"/api/Boe/resoluciones/buscar/proyecto": {
    "get": {
        "tags": [
            "Boe"
        ],
        "parameters": [
            {
                "name": "nombre",
                "in": "query",
                "style": "form",
                "schema": {
                    "type": "string"
                }
            }
        ]
    }
}
```

```
    }
  ],
  "responses": {
    "200": {
      "description": "Success",
      "content": {
        "text/plain": {
          "schema": {
            "type": "array",
            "items": {
              "$ref": "#/components/schemas/BoeRecord"
            }
          }
        }
      },
      "application/json": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      },
      "text/json": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      }
    }
  }
}
```

```
,
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "text/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
},
"/api/Boe/resoluciones/buscar/solicitante": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
```

```
"name": "nombre",
"in": "query",
"style": "form",
"schema": {
  "type": "string"
}
},
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      }
    },
    "application/json": {
      "schema": {
        "type": "array",
        "items": {
          "$ref": "#/components/schemas/BoeRecord"
        }
      }
    }
  },
  "text/json": {
    "schema": {
      "type": "array",
```

```
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
}
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "text/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
}
},
"/api/Boe/resoluciones/buscar/provincia": {
```

```
"get": {
  "tags": [
    "Boe"
  ],
  "parameters": [
    {
      "name": "provincia",
      "in": "query",
      "style": "form",
      "schema": {
        "type": "string"
      }
    }
  ],
  "responses": {
    "200": {
      "description": "Success",
      "content": {
        "text/plain": {
          "schema": {
            "type": "array",
            "items": {
              "$ref": "#/components/schemas/BoeRecord"
            }
          }
        }
      },
      "application/json": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      }
    }
  }
}
```

```
    }
  }
},
"text/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
}
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "text/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
}
```

```
    }
  }
}
},
"/api/Boe/resoluciones/buscar/caa": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "caa",
        "in": "query",
        "style": "form",
        "schema": {
          "type": "string"
        }
      }
    ],
    "responses": {
      "200": {
        "description": "Success",
        "content": {
          "text/plain": {
            "schema": {
              "type": "array",
              "items": {
                "$ref": "#/components/schemas/BoeRecord"
              }
            }
          }
        }
      }
    }
  }
}
```

```
    },
    "application/json": {
      "schema": {
        "type": "array",
        "items": {
          "$ref": "#/components/schemas/BoeRecord"
        }
      }
    },
    "text/json": {
      "schema": {
        "type": "array",
        "items": {
          "$ref": "#/components/schemas/BoeRecord"
        }
      }
    }
  },
  "400": {
    "description": "Bad Request",
    "content": {
      "text/plain": {
        "schema": {
          "$ref": "#/components/schemas/ProblemDetails"
        }
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
}
```

```
    },
    "text/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
}
},
"/api/Boe/resoluciones/buscar/municipio": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "municipio",
        "in": "query",
        "style": "form",
        "schema": {
          "type": "string"
        }
      }
    ],
    "responses": {
      "200": {
        "description": "Success",
        "content": {
          "text/plain": {
```

```
"schema": {
  "type": "array",
  "items": {
    "$ref": "#/components/schemas/BoeRecord"
  }
},
"application/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
},
"text/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
}
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
}
```

```
    }  
  },  
  "application/json": {  
    "schema": {  
      "$ref": "#/components/schemas/ProblemDetails"  
    }  
  },  
  "text/json": {  
    "schema": {  
      "$ref": "#/components/schemas/ProblemDetails"  
    }  
  }  
}  
}  
}  
}  
}  
}  
},  
"/api/Boe/resoluciones/fase/{codFase}": {  
  "get": {  
    "tags": [  
      "Boe"  
    ],  
    "parameters": [  
      {  
        "name": "codFase",  
        "in": "path",  
        "required": true,  
        "style": "simple",  
        "schema": {  
          "type": "integer",  
          "format": "int32"
```

```
    }
  }
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      },
    },
  },
  "application/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  },
  "text/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  }
}
```

```
    }
  },
  "400": {
    "description": "Bad Request",
    "content": {
      "text/plain": {
        "schema": {
          "$ref": "#/components/schemas/ProblemDetails"
        }
      },
      "application/json": {
        "schema": {
          "$ref": "#/components/schemas/ProblemDetails"
        }
      },
      "text/json": {
        "schema": {
          "$ref": "#/components/schemas/ProblemDetails"
        }
      }
    }
  },
  "/api/Boe/resoluciones/tipo-instalacion/{tipo}": {
    "get": {
      "tags": [
        "Boe"
      ],
      "parameters": [
```

```
{
  "name": "tipo",
  "in": "path",
  "required": true,
  "style": "simple",
  "schema": {
    "type": "string"
  }
}
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      }
    },
    "application/json": {
      "schema": {
        "type": "array",
        "items": {
          "$ref": "#/components/schemas/BoeRecord"
        }
      }
    },
    "text/json": {
```

```
"schema": {
  "type": "array",
  "items": {
    "$ref": "#/components/schemas/BoeRecord"
  }
}
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "text/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
}
```

```
},
"/api/Boe/resoluciones/empresa/{codEmpresa}": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "codEmpresa",
        "in": "path",
        "required": true,
        "style": "simple",
        "schema": {
          "type": "integer",
          "format": "int32"
        }
      }
    ],
    "responses": {
      "200": {
        "description": "Success",
        "content": {
          "text/plain": {
            "schema": {
              "type": "array",
              "items": {
                "$ref": "#/components/schemas/BoeRecord"
              }
            }
          }
        },
        "application/json": {
```

```
"schema": {
  "type": "array",
  "items": {
    "$ref": "#/components/schemas/BoeRecord"
  }
},
"text/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  },
  "text/json": {
```

```
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  }
}
}
}
}
},
"/api/Boe/resoluciones/promotor/{codPromotor}": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "codPromotor",
        "in": "path",
        "required": true,
        "style": "simple",
        "schema": {
          "type": "integer",
          "format": "int32"
        }
      }
    ],
    "responses": {
      "200": {
        "description": "Success",
        "content": {
          "text/plain": {
```

```
"schema": {
  "type": "array",
  "items": {
    "$ref": "#/components/schemas/BoeRecord"
  }
},
"application/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
},
"text/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
}
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
}
```

```
    }
  },
  "application/json": {
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  },
  "text/json": {
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  }
}
}
}
}
}
},
"/api/Boe/resoluciones/nudo/{codNudo}": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "codNudo",
        "in": "path",
        "required": true,
        "style": "simple",
        "schema": {
          "type": "integer",
          "format": "int32"
```

```
    }
  }
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      },
    },
  },
  "application/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  },
  "text/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  }
}
```

```

    }
  },
  "400": {
    "description": "Bad Request",
    "content": {
      "text/plain": {
        "schema": {
          "$ref": "#/components/schemas/ProblemDetails"
        }
      },
      "application/json": {
        "schema": {
          "$ref": "#/components/schemas/ProblemDetails"
        }
      },
      "text/json": {
        "schema": {
          "$ref": "#/components/schemas/ProblemDetails"
        }
      }
    }
  },
  "/api/Boe/resoluciones/fecha-publicacion": {
    "get": {
      "tags": [
        "Boe"
      ],
      "parameters": [

```

```
{
  "name": "desde",
  "in": "query",
  "style": "form",
  "schema": {
    "type": "string",
    "format": "date"
  }
},
{
  "name": "hasta",
  "in": "query",
  "style": "form",
  "schema": {
    "type": "string",
    "format": "date"
  }
}
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      }
    }
  },
}
```

```
"application/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
},
"text/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
}
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  },
  "application/json": {
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  }
},
```

```
"text/json": {  
  "schema": {  
    "$ref": "#/components/schemas/ProblemDetails"  
  }  
}  
}  
}  
}  
}  
},  
}
```

```
"/api/Boe/resoluciones/fecha-resolucion": {
```

```
  "get": {
```

```
    "tags": [
```

```
      "Boe"
```

```
    ],
```

```
    "parameters": [
```

```
      {
```

```
        "name": "desde",
```

```
        "in": "query",
```

```
        "style": "form",
```

```
        "schema": {
```

```
          "type": "string",
```

```
          "format": "date"
```

```
        }  
      },
```

```
    ],
```

```
    {
```

```
      "name": "hasta",
```

```
      "in": "query",
```

```
      "style": "form",
```

```
      "schema": {
```

```
        "type": "string",
```

```
    "format": "date"
  }
}
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      },
    },
  },
  "application/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  },
  "text/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  }
}
```

```

    }
  }
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "text/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
}
},
"/api/Boe/resoluciones/potencia": {
  "get": {
    "tags": [
      "Boe"
    ],

```

```
"parameters": [  
  {  
    "name": "mwMin",  
    "in": "query",  
    "style": "form",  
    "schema": {  
      "type": "number",  
      "format": "double"  
    }  
  },  
  {  
    "name": "mwMax",  
    "in": "query",  
    "style": "form",  
    "schema": {  
      "type": "number",  
      "format": "double"  
    }  
  }  
],  
"responses": {  
  "200": {  
    "description": "Success",  
    "content": {  
      "text/plain": {  
        "schema": {  
          "type": "array",  
          "items": {  
            "$ref": "#/components/schemas/BoeRecord"  
          }  
        }  
      }  
    }  
  }  
}
```

```
    },
    "application/json": {
      "schema": {
        "type": "array",
        "items": {
          "$ref": "#/components/schemas/BoeRecord"
        }
      }
    },
    "text/json": {
      "schema": {
        "type": "array",
        "items": {
          "$ref": "#/components/schemas/BoeRecord"
        }
      }
    }
  },
  "400": {
    "description": "Bad Request",
    "content": {
      "text/plain": {
        "schema": {
          "$ref": "#/components/schemas/ProblemDetails"
        }
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
}
```

```
    },
    "text/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
}
},
"/api/Boe/resoluciones/dia/{estado}": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "estado",
        "in": "path",
        "required": true,
        "style": "simple",
        "schema": {
          "type": "integer",
          "format": "int32"
        }
      }
    ],
    "responses": {
      "200": {
        "description": "Success",
```

```
"content": {
  "text/plain": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  },
  "application/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  },
  "text/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  }
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
```

```
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  },
  "application/json": {
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  },
  "text/json": {
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  }
}

"/api/Boe/resoluciones/aap/{estado}": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "estado",
        "in": "path",
        "required": true,
        "style": "simple",
        "schema": {
```

```
    "type": "integer",
    "format": "int32"
  }
}
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      }
    },
    "application/json": {
      "schema": {
        "type": "array",
        "items": {
          "$ref": "#/components/schemas/BoeRecord"
        }
      }
    },
    "text/json": {
      "schema": {
        "type": "array",
        "items": {
          "$ref": "#/components/schemas/BoeRecord"
        }
      }
    }
  }
}
```

```

    }
  }
}
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "text/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
}
},
"/api/Boe/resoluciones/aac/{estado}": {
  "get": {
    "tags": [
      "Boe"
    ]
  }
}

```

```
],
"parameters": [
  {
    "name": "estado",
    "in": "path",
    "required": true,
    "style": "simple",
    "schema": {
      "type": "integer",
      "format": "int32"
    }
  }
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      }
    },
    "application/json": {
      "schema": {
        "type": "array",
        "items": {
          "$ref": "#/components/schemas/BoeRecord"
        }
      }
    }
  }
}
```

```
    }
  },
  "text/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  }
}
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  },
  "text/json": {
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  }
}
```

```
    }
  }
}
},
"/api/Boe/resoluciones/dup/{estado}": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "estado",
        "in": "path",
        "required": true,
        "style": "simple",
        "schema": {
          "type": "integer",
          "format": "int32"
        }
      }
    ],
    "responses": {
      "200": {
        "description": "Success",
        "content": {
          "text/plain": {
            "schema": {
              "type": "array",
              "items": {
                "$ref": "#/components/schemas/BoeRecord"
              }
            }
          }
        }
      }
    }
  }
}
```

```
    }
  },
  "application/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  },
  "text/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  }
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  },
  "application/json": {
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
```

```
    }
  },
  "text/json": {
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  }
}
},
"/api/Boe/fases": {
  "get": {
    "tags": [
      "Boe"
    ],
    "responses": {
      "200": {
        "description": "Success",
        "content": {
          "text/plain": {
            "schema": {
              "type": "array",
              "items": {
                "$ref": "#/components/schemas/BoeFase"
              }
            }
          }
        }
      },
      "application/json": {
        "schema": {
```

```
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeFase"
    }
  },
  "text/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeFase"
      }
    }
  }
}

},
"/api/Boe/autorizaciones": {
  "get": {
    "tags": [
      "Boe"
    ],
    "responses": {
      "200": {
        "description": "Success",
        "content": {
          "text/plain": {
            "schema": {
              "type": "array",
```

```
    "items": {
      "$ref": "#/components/schemas/BoeAutorizacion"
    }
  }
},
"application/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeAutorizacion"
    }
  }
},
"text/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeAutorizacion"
    }
  }
}
}
}
}
}
}
},
"/api/Boe/tipos-tecnologia": {
  "get": {
    "tags": [
      "Boe"
    ],
```

```
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeTipoTecnologia"
          }
        }
      },
      "application/json": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeTipoTecnologia"
          }
        }
      },
      "text/json": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeTipoTecnologia"
          }
        }
      }
    }
  }
}
```

```
}  
},  
"/api/Boe/promotores": {  
  "get": {  
    "tags": [  
      "Boe"  
    ],  
    "responses": {  
      "200": {  
        "description": "Success",  
        "content": {  
          "text/plain": {  
            "schema": {  
              "type": "array",  
              "items": {  
                "$ref": "#/components/schemas/BoePromotor"  
              }  
            }  
          }  
        },  
        "application/json": {  
          "schema": {  
            "type": "array",  
            "items": {  
              "$ref": "#/components/schemas/BoePromotor"  
            }  
          }  
        },  
        "text/json": {  
          "schema": {  
            "type": "array",  
            "items": {
```

```
        "$ref": "#/components/schemas/BoePromotor"
      }
    }
  }
}
}
}
},
"/api/Boe/empresas": {
  "get": {
    "tags": [
      "Boe"
    ],
    "responses": {
      "200": {
        "description": "Success",
        "content": {
          "text/plain": {
            "schema": {
              "type": "array",
              "items": {
                "$ref": "#/components/schemas/BoeEmpresa"
              }
            }
          }
        },
        "application/json": {
          "schema": {
            "type": "array",
            "items": {
              "$ref": "#/components/schemas/BoeEmpresa"
            }
          }
        }
      }
    }
  }
}
```

```
    }
  }
},
"text/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeEmpresa"
    }
  }
}
}
}
}
}
}
}
},
"/api/Boe/nudos": {
  "get": {
    "tags": [
      "Boe"
    ],
    "responses": {
      "200": {
        "description": "Success",
        "content": {
          "text/plain": {
            "schema": {
              "type": "array",
              "items": {
                "$ref": "#/components/schemas/NudosItem"
              }
            }
          }
        }
      }
    }
  }
}
```

```
    }
  },
  "application/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/NudosItem"
      }
    }
  },
  "text/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/NudosItem"
      }
    }
  }
}

}

}

}

}

},
"/api/Boe/summary": {
  "get": {
    "tags": [
      "Boe"
    ],
    "summary": "Obtiene el resumen del BOE para una fecha concreta.\r\nPermite solicitar versión útil/filtrada mediante el parámetro `util` .",
    "parameters": [
```

```
{
  "name": "fecha",
  "in": "query",
  "description": "Fecha de publicación del BOE.",
  "style": "form",
  "schema": {
    "type": "string",
    "format": "date"
  }
},
{
  "name": "util",
  "in": "query",
  "description": "Si es true, devuelve el resumen útil/filtrado. Si es false, devuelve el resumen completo.",
  "style": "form",
  "schema": {
    "type": "boolean",
    "default": false
  }
},
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeSummaryItem"
```

```
    }
  }
},
"application/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeSummaryItem"
    }
  }
},
"text/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeSummaryItem"
    }
  }
}
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  },
  "application/json": {
    "schema": {
```

```
    "$ref": "#/components/schemas/ProblemDetails"
  }
},
"text/json": {
  "schema": {
    "$ref": "#/components/schemas/ProblemDetails"
  }
}
}
}
}
}
}
},
"/api/Boe/info": {
  "get": {
    "tags": [
      "Boe"
    ],
    "summary": "Obtiene la información detallada del BOE en una fecha o en un rango.\nSi `hasta` no se indica, se interpreta como consulta de un solo día (`desde` ).",
    "parameters": [
      {
        "name": "desde",
        "in": "query",
        "description": "Fecha de inicio (obligatoria).",
        "style": "form",
        "schema": {
          "type": "string",
          "format": "date"
        }
      }
    ],
  },
}
```

```
{
  "name": "hasta",
  "in": "query",
  "description": "Fecha de fin (opcional). Si se omite, se asume igual a `desde`.",
  "style": "form",
  "schema": {
    "type": "string",
    "format": "date"
  }
}
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      }
    },
  },
  "application/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  },
},
```

```
"text/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  },
  "text/json": {
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  }
}
```

```
},  
"post": {  
  "tags": [  
    "Boe"  
  ],  
  "parameters": [  
    {  
      "name": "desde",  
      "in": "query",  
      "style": "form",  
      "schema": {  
        "type": "string",  
        "format": "date"  
      }  
    },  
    {  
      "name": "hasta",  
      "in": "query",  
      "style": "form",  
      "schema": {  
        "type": "string",  
        "format": "date"  
      }  
    },  
    {  
      "name": "overwrite",  
      "in": "query",  
      "style": "form",  
      "schema": {  
        "type": "boolean",  
        "default": false
```

```
    }
  }
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": { }
      },
      "application/json": {
        "schema": { }
      },
      "text/json": {
        "schema": { }
      }
    }
  },
  "400": {
    "description": "Bad Request",
    "content": {
      "text/plain": {
        "schema": {
          "$ref": "#/components/schemas/ProblemDetails"
        }
      },
      "application/json": {
        "schema": {
          "$ref": "#/components/schemas/ProblemDetails"
        }
      }
    }
  },
}
```

```
"text/json": {
  "schema": {
    "$ref": "#/components/schemas/ProblemDetails"
  }
}
},
"/api/Boe/info/ia": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "desde",
        "in": "query",
        "style": "form",
        "schema": {
          "type": "string",
          "format": "date"
        }
      },
      {
        "name": "hasta",
        "in": "query",
        "style": "form",
        "schema": {
          "type": "string",
```

```
    "format": "date"
  }
}
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      },
    },
  },
  "application/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    },
  },
  "text/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    },
  }
}
```

```
    }
  }
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "text/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
},
"post": {
  "tags": [
    "Boe"
  ],
  "parameters": [
    {
```

```
"name": "desde",
"in": "query",
"style": "form",
"schema": {
  "type": "string",
  "format": "date"
},
{
  "name": "hasta",
  "in": "query",
  "style": "form",
  "schema": {
    "type": "string",
    "format": "date"
  },
{
  "name": "overwrite",
  "in": "query",
  "style": "form",
  "schema": {
    "type": "boolean",
    "default": false
  }
},
"responses": {
  "200": {
    "description": "Success",
    "content": {
```

```
"text/plain": {
  "schema": { }
},
"application/json": {
  "schema": { }
},
"text/json": {
  "schema": { }
}
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "text/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
}
```

```
    }
  }
},
"/api/Boe/promotores/buscar-similar": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "nombre",
        "in": "query",
        "style": "form",
        "schema": {
          "type": "string"
        }
      },
      {
        "name": "threshold",
        "in": "query",
        "style": "form",
        "schema": {
          "type": "number",
          "format": "double",
          "default": 70
        }
      },
      {
        "name": "topN",
        "in": "query",
        "style": "form",
```

```
"schema": {
  "type": "integer",
  "format": "int32",
  "default": 10
}
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "type": "array",
          "items": {}
        }
      },
      "application/json": {
        "schema": {
          "type": "array",
          "items": {}
        }
      },
      "text/json": {
        "schema": {
          "type": "array",
          "items": {}
        }
      }
    }
  },
}
```

```
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "text/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
},
"/api/Boe/empresas/buscar-similar": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "nombre",
```

```
"in": "query",
"style": "form",
"schema": {
  "type": "string"
}
},
{
  "name": "threshold",
  "in": "query",
  "style": "form",
  "schema": {
    "type": "number",
    "format": "double",
    "default": 70
  }
},
{
  "name": "topN",
  "in": "query",
  "style": "form",
  "schema": {
    "type": "integer",
    "format": "int32",
    "default": 10
  }
}
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
```

```
"text/plain": {
  "schema": {
    "type": "array",
    "items": { }
  }
},
"application/json": {
  "schema": {
    "type": "array",
    "items": { }
  }
},
"text/json": {
  "schema": {
    "type": "array",
    "items": { }
  }
}
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
}
```

```
    }
  },
  "text/json": {
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  }
}
}
},
"/api/Boe/promotores/find-similar": {
  "get": {
    "tags": [
      "Boe"
    ],
    "parameters": [
      {
        "name": "nombre",
        "in": "query",
        "style": "form",
        "schema": {
          "type": "string"
        }
      },
      {
        "name": "threshold",
        "in": "query",
        "style": "form",
        "schema": {
```

```
    "type": "number",
    "format": "double",
    "default": 75
  }
}
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": { }
      },
      "application/json": {
        "schema": { }
      },
      "text/json": {
        "schema": { }
      }
    }
  },
  "404": {
    "description": "Not Found",
    "content": {
      "text/plain": {
        "schema": {
          "$ref": "#/components/schemas/ProblemDetails"
        }
      },
      "application/json": {
        "schema": {
```

```
    "$ref": "#/components/schemas/ProblemDetails"
  }
},
"text/json": {
  "schema": {
    "$ref": "#/components/schemas/ProblemDetails"
  }
}
},
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  },
  "text/json": {
    "schema": {
      "$ref": "#/components/schemas/ProblemDetails"
    }
  }
}
}
```

```
}  
},  
"/api/Boe/empresas/find-similar": {  
  "get": {  
    "tags": [  
      "Boe"  
    ],  
    "parameters": [  
      {  
        "name": "nombre",  
        "in": "query",  
        "style": "form",  
        "schema": {  
          "type": "string"  
        }  
      },  
      {  
        "name": "threshold",  
        "in": "query",  
        "style": "form",  
        "schema": {  
          "type": "number",  
          "format": "double",  
          "default": 75  
        }  
      }  
    ],  
    "responses": {  
      "200": {  
        "description": "Success",  
        "content": {
```

```
"text/plain": {
  "schema": { }
},
"application/json": {
  "schema": { }
},
"text/json": {
  "schema": { }
}
},
"404": {
  "description": "Not Found",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "text/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
},
}
```

```
"400": {
  "description": "Bad Request",
  "content": {
    "text/plain": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "application/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    },
    "text/json": {
      "schema": {
        "$ref": "#/components/schemas/ProblemDetails"
      }
    }
  }
},
"/boe/addBoeByFecha": {
  "post": {
    "tags": [
      "BoeController2"
    ],
    "summary": "Añade registros del BOE de una fecha específica",
    "parameters": [
      {
```

```
    "name": "date",
    "in": "query",
    "description": "Fecha (yyyy-MM-dd)",
    "style": "form",
    "schema": {
      "type": "string"
    }
  },
  "responses": {
    "200": {
      "description": "Success"
    }
  }
},
"/boe/addBoeByRango": {
  "post": {
    "tags": [
      "BoeController2"
    ],
    "summary": "Añade registros del BOE de un rango de fechas",
    "parameters": [
      {
        "name": "fechaInicio",
        "in": "query",
        "description": "Fecha de inicio (yyyy-MM-dd)",
        "style": "form",
        "schema": {
          "type": "string"
        }
      }
    ]
  }
}
```

```
    },  
    {  
      "name": "fechaFin",  
      "in": "query",  
      "description": "Fecha de fin (yyyy-MM-dd)",  
      "style": "form",  
      "schema": {  
        "type": "string"  
      }  
    }  
  ],  
  "responses": {  
    "200": {  
      "description": "Success"  
    }  
  }  
},  
"/boe/db/query": {  
  "post": {  
    "tags": [  
      "BoeController2"  
    ],  
    "requestBody": {  
      "content": {  
        "application/json": {  
          "schema": {  
            "type": "string"  
          }  
        }  
      },  
    },  
    "text/json": {
```

```
    "schema": {
      "type": "string"
    }
  },
  "application/*+json": {
    "schema": {
      "type": "string"
    }
  }
},
"responses": {
  "200": {
    "description": "Success"
  }
}
},
"/boe/scan": {
  "get": {
    "tags": [
      "BoeController2"
    ],
    "summary": "Escanea el sumario del BOE para la fecha dada (yyyy-MM-dd)",
    "parameters": [
      {
        "name": "date",
        "in": "query",
        "description": "Fecha (yyyy-MM-dd)",
        "style": "form",
        "schema": {
```

```
    "type": "string"
  }
}
],
"responses": {
  "200": {
    "description": "Success",
    "content": {
      "text/plain": {
        "schema": {
          "type": "array",
          "items": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      },
    },
  },
  "application/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  },
  "text/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeRecord"
      }
    }
  }
}
```

```

    }
  }
}
}
},
"/boe/summary": {
  "get": {
    "tags": [
      "BoeController2"
    ],
    "summary": "Devuelve los ítems filtrados del sumario",
    "parameters": [
      {
        "name": "date",
        "in": "query",
        "description": "Fecha (yyyy-MM-dd)",
        "style": "form",
        "schema": {
          "type": "string"
        }
      }
    ],
    "responses": {
      "200": {
        "description": "Success",
        "content": {
          "text/plain": {
            "schema": {
              "type": "array",
              "items": {

```

```
        "$ref": "#/components/schemas/BoeSummaryItem"
      }
    }
  },
  "application/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeSummaryItem"
      }
    }
  },
  "text/json": {
    "schema": {
      "type": "array",
      "items": {
        "$ref": "#/components/schemas/BoeSummaryItem"
      }
    }
  }
}

"/boe/item": {
  "get": {
    "tags": [
      "BoeController2"
    ],
    "parameters": [
```

```
{
  "name": "id",
  "in": "query",
  "style": "form",
  "schema": {
    "type": "string"
  }
},
{
  "name": "url",
  "in": "query",
  "style": "form",
  "schema": {
    "type": "string"
  }
},
{
  "name": "titulo",
  "in": "query",
  "style": "form",
  "schema": {
    "type": "string"
  }
},
{
  "name": "ministerio",
  "in": "query",
  "style": "form",
  "schema": {
    "type": "string"
  }
}
```

```
    }
  ],
  "responses": {
    "200": {
      "description": "Success",
      "content": {
        "text/plain": {
          "schema": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        },
        "application/json": {
          "schema": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        },
        "text/json": {
          "schema": {
            "$ref": "#/components/schemas/BoeRecord"
          }
        }
      }
    }
  },
  "/boe/summary/raw": {
    "get": {
      "tags": [
        "BoeController2"
      ],
    },
  },
}
```

```
"parameters": [  
  {  
    "name": "date",  
    "in": "query",  
    "style": "form",  
    "schema": {  
      "type": "string"  
    }  
  }  
],  
"responses": {  
  "200": {  
    "description": "Success",  
    "content": {  
      "text/plain": {  
        "schema": {  
          "type": "string"  
        }  
      },  
      "application/json": {  
        "schema": {  
          "type": "string"  
        }  
      },  
      "text/json": {  
        "schema": {  
          "type": "string"  
        }  
      }  
    }  
  }  
}
```

```
    }  
  }  
},  
"/boe/summary/all": {  
  "get": {  
    "tags": [  
      "BoeController2"  
    ],  
    "parameters": [  
      {  
        "name": "date",  
        "in": "query",  
        "style": "form",  
        "schema": {  
          "type": "string"  
        }  
      }  
    ],  
    "responses": {  
      "200": {  
        "description": "Success",  
        "content": {  
          "text/plain": {  
            "schema": {  
              "type": "string"  
            }  
          },  
          "application/json": {  
            "schema": {  
              "type": "string"  
            }  
          }  
        }  
      }  
    }  
  }  
}
```

```
    },
    "text/json": {
      "schema": {
        "type": "string"
      }
    }
  }
}
},
"/boe/xml/downloadByRango": {
  "get": {
    "tags": [
      "BoeXml"
    ],
    "summary": "Descarga los XMLs de los items del BOE para un rango de fechas y los devuelve en un archivo ZIP",
    "parameters": [
      {
        "name": "fechaInicio",
        "in": "query",
        "description": "Fecha de inicio (yyyy-MM-dd)",
        "style": "form",
        "schema": {
          "type": "string"
        }
      },
      {
        "name": "fechaFin",
        "in": "query",
```

```
    "description": "Fecha de fin (yyyy-MM-dd)",
    "style": "form",
    "schema": {
      "type": "string"
    }
  },
  "responses": {
    "200": {
      "description": "Success"
    }
  }
},
"/boe/xml/saveByRango": {
  "post": {
    "tags": [
      "BoeXml"
    ],
    "summary": "Guarda los XMLs de los items del BOE para un rango de fechas en el servidor",
    "parameters": [
      {
        "name": "fechaInicio",
        "in": "query",
        "description": "Fecha de inicio (yyyy-MM-dd)",
        "style": "form",
        "schema": {
          "type": "string"
        }
      }
    ]
  },
```

```
{
  "name": "fechaFin",
  "in": "query",
  "description": "Fecha de fin (yyyy-MM-dd)",
  "style": "form",
  "schema": {
    "type": "string"
  }
},
{
  "name": "rutaDestino",
  "in": "query",
  "description": "Ruta donde guardar los XMLs (opcional, por defecto: ./boe_xmls)",
  "style": "form",
  "schema": {
    "type": "string"
  }
}
],
"responses": {
  "200": {
    "description": "Success"
  }
}
},
"/boe/xml/download": {
  "get": {
    "tags": [
      "BoeXml"
    ],
  },
}
```

"summary": "Descarga el XML de un ítem específico del BOE por su identificador y fecha",

"parameters": [

{

"name": "identificador",

"in": "query",

"description": "Identificador del BOE (ej: BOE-B-2024-12345)",

"style": "form",

"schema": {

"type": "string"

}

},

{

"name": "fecha",

"in": "query",

"description": "Fecha (yyyy-MM-dd)",

"style": "form",

"schema": {

"type": "string"

}

}

],

"responses": {

"200": {

"description": "Success"

}

}

}

},

"/boe/xml/listByRango": {

"get": {

```
"tags": [  
  "BoeXml"  
],  
  "summary": "Obtiene la lista de items con sus URLs XML para un rango de fechas (sin  
descargar)",  
  "parameters": [  
    {  
      "name": "fechaInicio",  
      "in": "query",  
      "description": "Fecha de inicio (yyyy-MM-dd)",  
      "style": "form",  
      "schema": {  
        "type": "string"  
      }  
    },  
    {  
      "name": "fechaFin",  
      "in": "query",  
      "description": "Fecha de fin (yyyy-MM-dd)",  
      "style": "form",  
      "schema": {  
        "type": "string"  
      }  
    }  
  ],  
  "responses": {  
    "200": {  
      "description": "Success"  
    }  
  }  
}
```

```
},
```

```
"/ccaa/bopv/items": {
```

```
  "get": {
```

```
    "tags": [
```

```
      "CCAA"
```

```
    ],
```

"summary": "Obtiene los ítems filtrados del BOPV (Boletín Oficial del País Vasco) para una fecha específica.\r\nSolo devuelve disposiciones relevantes según filtros de energía.",

```
  "parameters": [
```

```
    {
```

```
      "name": "fecha",
```

```
      "in": "query",
```

```
      "description": "Fecha en formato yyyy-MM-dd (ej. 2024-10-22)",
```

```
      "style": "form",
```

```
      "schema": {
```

```
        "type": "string"
```

```
      }
```

```
    }
```

```
  ],
```

```
  "responses": {
```

```
    "200": {
```

```
      "description": "Lista de ítems recuperados correctamente",
```

```
      "content": {
```

```
        "text/plain": {
```

```
          "schema": {
```

```
            "type": "array",
```

```
            "items": {
```

```
              "$ref": "#/components/schemas/BopvSummaryItem"
```

```
            }
```

```
          }
```

```
        },
```

```
"application/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BopvSummaryItem"
    }
  }
},
"text/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BopvSummaryItem"
    }
  }
}
},
"400": {
  "description": "Fecha inválida"
},
"500": {
  "description": "Error al consultar la API del BOPV"
}
}
},
"/ccaa/status": {
  "get": {
    "tags": [
      "CCAA"
```

```
    ],  
    "summary": "Endpoint de prueba para verificar que el controlador CCAA está  
funcionando.",  
    "responses": {  
      "200": {  
        "description": "Success"  
      }  
    }  
  },  
  "/ia/scan-ai": {  
    "get": {  
      "tags": [  
        "IA"  
      ],  
      "summary": "Analiza el sumario del BOE usando IA (ChatGPT) y devuelve BoeRecords  
completos",  
      "parameters": [  
        {  
          "name": "date",  
          "in": "query",  
          "style": "form",  
          "schema": {  
            "type": "string"  
          }  
        }  
      ],  
      "responses": {  
        "200": {  
          "description": "Success",  
          "content": {  
            "text/plain": {
```

```
"schema": {
  "type": "array",
  "items": {
    "$ref": "#/components/schemas/BoeRecord"
  }
},
"application/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
},
"text/json": {
  "schema": {
    "type": "array",
    "items": {
      "$ref": "#/components/schemas/BoeRecord"
    }
  }
}
},
"/ia/addBoeByFechalA": {
  "post": {
    "tags": [
```

```
    "IA"
  ],
  "summary": "Analiza y guarda en BD los registros del BOE usando IA",
  "parameters": [
    {
      "name": "date",
      "in": "query",
      "style": "form",
      "schema": {
        "type": "string"
      }
    }
  ],
  "responses": {
    "200": {
      "description": "Success"
    }
  }
},
"/ia/addBoeByRangoIA": {
  "post": {
    "tags": [
      "IA"
    ],
    "parameters": [
      {
        "name": "fechalnicio",
        "in": "query",
        "style": "form",
        "schema": {
```

```
      "type": "string"
    }
  },
  {
    "name": "fechaFin",
    "in": "query",
    "style": "form",
    "schema": {
      "type": "string"
    }
  }
],
"responses": {
  "200": {
    "description": "Success"
  }
}
},
"/api/ree-excel/import-nudos": {
  "post": {
    "tags": [
      "REEXcel"
    ],
    "parameters": [
      {
        "name": "mes",
        "in": "query",
        "style": "form",
        "schema": {
          "type": "integer",
```

```
    "format": "int32"
  }
},
{
  "name": "año",
  "in": "query",
  "style": "form",
  "schema": {
    "type": "integer",
    "format": "int32"
  }
}
],
"requestBody": {
  "content": {
    "multipart/form-data": {
      "schema": {
        "type": "object",
        "properties": {
          "file": {
            "type": "string",
            "format": "binary"
          }
        }
      }
    },
    "encoding": {
      "file": {
        "style": "form"
      }
    }
  }
}
```

```
    }  
  },  
  "responses": {  
    "200": {  
      "description": "Success"  
    }  
  }  
}  
},  
"/api/ree-excel/nudos": {  
  "get": {  
    "tags": [  
      "REEEExcel"  
    ],  
    "responses": {  
      "200": {  
        "description": "Success"  
      }  
    }  
  }  
},  
"/api/ree-excel/nudos-info": {  
  "get": {  
    "tags": [  
      "REEEExcel"  
    ],  
    "responses": {  
      "200": {  
        "description": "Success"  
      }  
    }  
  }  
}
```

```
}
},
"/api/ree-excel/nudos-info/{mes}/{año}": {
  "get": {
    "tags": [
      "REEEExcel"
    ],
    "parameters": [
      {
        "name": "mes",
        "in": "path",
        "required": true,
        "style": "simple",
        "schema": {
          "type": "integer",
          "format": "int32"
        }
      },
      {
        "name": "año",
        "in": "path",
        "required": true,
        "style": "simple",
        "schema": {
          "type": "integer",
          "format": "int32"
        }
      }
    ],
    "responses": {
      "200": {
```

```
        "description": "Success"
    }
}
},
"/api/ree-excel/nudos-info/{año}": {
    "get": {
        "tags": [
            "REEEExcel"
        ],
        "parameters": [
            {
                "name": "año",
                "in": "path",
                "required": true,
                "style": "simple",
                "schema": {
                    "type": "integer",
                    "format": "int32"
                }
            }
        ],
        "responses": {
            "200": {
                "description": "Success"
            }
        }
    }
},
"/api/ree-excel/GetHistoricoNudo": {
    "get": {
```

```
"tags": [  
  "REEEExcel"  
],  
"parameters": [  
  {  
    "name": "CodNudo",  
    "in": "query",  
    "style": "form",  
    "schema": {  
      "type": "integer",  
      "format": "int32"  
    }  
  }  
],  
"responses": {  
  "200": {  
    "description": "Success"  
  }  
}  
},  
"/api/ree-excel/nudos-  
info/GetNudosInfoChangeOnYearMonth/{mes}/{año}/{CodNudo}": {  
  "get": {  
    "tags": [  
      "REEEExcel"  
    ],  
    "parameters": [  
      {  
        "name": "año",  
        "in": "path",
```

```
"required": true,
"style": "simple",
"schema": {
  "type": "integer",
  "format": "int32"
}
},
{
  "name": "mes",
  "in": "path",
  "required": true,
  "style": "simple",
  "schema": {
    "type": "integer",
    "format": "int32"
  }
},
{
  "name": "CodNudo",
  "in": "path",
  "required": true,
  "style": "simple",
  "schema": {
    "type": "integer",
    "format": "int32"
  }
}
],
"responses": {
  "200": {
    "description": "Success"
```

```
    }
  }
}
},
"/api/ree-excel/GetDiffMesAnterior": {
  "get": {
    "tags": [
      "REEEExcel"
    ],
    "parameters": [
      {
        "name": "mes",
        "in": "query",
        "style": "form",
        "schema": {
          "type": "integer",
          "format": "int32"
        }
      },
      {
        "name": "anno",
        "in": "query",
        "style": "form",
        "schema": {
          "type": "integer",
          "format": "int32"
        }
      }
    ],
    "responses": {
      "200": {
```

```
      "description": "Success"
    }
  }
},
"/api/RegistrosBoe/all": {
  "get": {
    "tags": [
      "RegistrosBoe"
    ],
    "responses": {
      "200": {
        "description": "Success",
        "content": {
          "text/plain": {
            "schema": {
              "type": "array",
              "items": {
                "$ref": "#/components/schemas/BoeRecord"
              }
            }
          }
        },
        "application/json": {
          "schema": {
            "type": "array",
            "items": {
              "$ref": "#/components/schemas/BoeRecord"
            }
          }
        },
        "text/json": {
```



```
"properties": {
  "codEmpresa": {
    "type": "integer",
    "format": "int32"
  },
  "nombre": {
    "type": "string",
    "nullable": true
  }
},
"additionalProperties": false
},
"BoeFase": {
  "type": "object",
  "properties": {
    "codFase": {
      "type": "integer",
      "format": "int32"
    },
    "fase": {
      "type": "string",
      "nullable": true
    }
  },
  "additionalProperties": false
},
"BoePromotor": {
  "type": "object",
  "properties": {
    "codPromotor": {
      "type": "integer",
```

```
    "format": "int32"
  },
  "codEmpresa": {
    "type": "integer",
    "format": "int32",
    "nullable": true
  },
  "nombre": {
    "type": "string",
    "nullable": true
  }
},
"additionalProperties": false
},
"BoeRecord": {
  "type": "object",
  "properties": {
    "codResolucion": {
      "type": "integer",
      "format": "int32"
    },
    "codNudo": {
      "type": "integer",
      "format": "int32",
      "nullable": true
    },
    "identificadorBoe": {
      "type": "string",
      "nullable": true
    },
    "organismoEstado": {
```

```
"type": "string",
"nullable": true
},
"numeroBoe": {
"type": "string",
"nullable": true
},
"publicadoEl": {
"type": "string",
"format": "date-time"
},
"resueltoEl": {
"type": "string",
"format": "date-time",
"nullable": true
},
"codFase": {
"type": "integer",
"format": "int32"
},
"dia": {
"type": "integer",
"format": "int32"
},
"aap": {
"type": "integer",
"format": "int32"
},
"aac": {
"type": "integer",
"format": "int32"
```

```
,
"dup": {
  "type": "integer",
  "format": "int32"
},
"diaObservaciones": {
  "type": "string",
  "nullable": true
},
"motivoDesestimacion": {
  "type": "string",
  "nullable": true
},
"tipoResolucion": {
  "type": "string",
  "nullable": true
},
"proyectoHibridacion": {
  "type": "string",
  "nullable": true
},
"expedienteRelacionado": {
  "type": "string",
  "nullable": true
},
"tipoInstalacion": {
  "type": "string",
  "nullable": true
},
"comunidadAutonoma": {
  "type": "string",
```

```
"nullable": true
},
"provincia": {
  "type": "string",
  "nullable": true
},
"terminoMunicipal": {
  "type": "string",
  "nullable": true
},
"codPromotor": {
  "type": "integer",
  "format": "int32",
  "nullable": true
},
"solicitante": {
  "type": "string",
  "nullable": true
},
"codEmpresa": {
  "type": "integer",
  "format": "int32",
  "nullable": true
},
"grupoEmpresarial": {
  "type": "string",
  "nullable": true
},
"titulo": {
  "type": "string",
  "nullable": true
}
```

```
,
"nombreProyecto": {
  "type": "string",
  "nullable": true
},
"subestaciones": {
  "type": "string",
  "nullable": true
},
"transporteDistribucion": {
  "type": "string",
  "nullable": true
},
"mw": {
  "type": "number",
  "format": "double",
  "nullable": true
},
"potenciaNominal": {
  "type": "number",
  "format": "double",
  "nullable": true
},
"potenciaAlmacenamiento": {
  "type": "number",
  "format": "double",
  "nullable": true
},
"capacidadAlmacenamientoMWh": {
  "type": "number",
  "format": "double",
```

```
    "nullable": true
  },
  "enlace": {
    "type": "string",
    "nullable": true
  },
  "codigoProyecto": {
    "type": "string",
    "nullable": true
  }
},
"additionalProperties": false
},
"BoeSummaryItem": {
  "type": "object",
  "properties": {
    "identificador": {
      "type": "string",
      "nullable": true
    },
    "titulo": {
      "type": "string",
      "nullable": true
    },
    "urlHtml": {
      "type": "string",
      "nullable": true
    },
    "urlXml": {
      "type": "string",
      "nullable": true
    }
  }
}
```

```
,
"ministerio": {
  "type": "string",
  "nullable": true
},
"fecha": {
  "type": "string",
  "format": "date-time",
  "nullable": true
}
},
"additionalProperties": false
},
"BoeTipoTecnologia": {
  "type": "object",
  "properties": {
    "codTipoTecnologia": {
      "type": "integer",
      "format": "int32"
    },
    "tipoTecnologia": {
      "type": "string",
      "nullable": true
    }
  }
},
"additionalProperties": false
},
"BopvSummaryItem": {
  "type": "object",
  "properties": {
    "identificador": {
```

```
    "type": "string",
    "nullable": true
  },
  "titulo": {
    "type": "string",
    "nullable": true
  },
  "departamento": {
    "type": "string",
    "nullable": true
  },
  "seccion": {
    "type": "string",
    "nullable": true
  },
  "urlHtml": {
    "type": "string",
    "nullable": true
  },
  "urlPdf": {
    "type": "string",
    "nullable": true
  },
  "fecha": {
    "type": "string",
    "format": "date-time"
  },
  "fuente": {
    "type": "string",
    "nullable": true
  }
}
```

```
    },
    "additionalProperties": false,
    "description": "Item filtrado del sumario/listado del BOPV (u otro boletín autonómico).\r\nEquivalente a BoeSummaryItem pero para CCAA."
  },
  "NudosItem": {
    "type": "object",
    "properties": {
      "codNudo": {
        "type": "integer",
        "format": "int32"
      },
      "codComunidad": {
        "type": "integer",
        "format": "int32"
      },
      "nudo": {
        "type": "string",
        "nullable": true
      },
      "tension": {
        "type": "string",
        "nullable": true
      },
      "latitud": {
        "type": "number",
        "format": "double",
        "nullable": true
      },
      "longitud": {
        "type": "number",
```

```
    "format": "double",
    "nullable": true
  },
  "additionalProperties": false
},
"ProblemDetails": {
  "type": "object",
  "properties": {
    "type": {
      "type": "string",
      "nullable": true
    },
    "title": {
      "type": "string",
      "nullable": true
    },
    "status": {
      "type": "integer",
      "format": "int32",
      "nullable": true
    },
    "detail": {
      "type": "string",
      "nullable": true
    },
    "instance": {
      "type": "string",
      "nullable": true
    }
  },
}
```

```
"additionalProperties": { }  
}  
}  
}  
}
```

Security and Compliance Documentation

1. Overview

This document outlines the **security measures and compliance considerations** implemented in the SaaS platform. The goal is to ensure **confidentiality, integrity, and availability** of data while complying with industry-standard regulations and best practices.

System Stack:

- Backend: **.NET 8 REST API**
- Authentication: **JSON Web Tokens (JWT)**
- Database: **SQL Server 2022**
- Frontend: Web Application (Browser-based)

2. Authentication and Access Control

- User authentication is handled via **secure login forms** on the frontend.
- Passwords are stored in **hashed/encrypted form** in the SQL Server database.
- Upon successful authentication, the backend issues a **JWT token** for session management.
- All API requests must include a valid JWT token; **unauthorized requests are rejected**.
- Role-based access control (RBAC) is enforced to restrict access to sensitive functionality.
- The API is **not exposed publicly** and can only be accessed from the frontend application.

3. Data Security

- All communication between frontend and backend is secured via **HTTPS/TLS**.

- **Passwords and sensitive information** (personal data) are encrypted or hashed at rest.
 - Database backups are daily performed and stored securely.
 - Access to the database is limited to authorized personnel and services only.
 - Audit logs record critical actions such as user authentication, failed login attempts, and administrative changes.
-

4. Infrastructure Security

- The backend and database are deployed in a **secure cloud environment** (at Hetzner Online GmbH data centers).
 - Network segmentation and firewalls prevent unauthorized access.
 - Monitoring and alerting systems track application errors, suspicious activity, and system health.
-

5. Compliance

- The system is designed to comply with **data protection regulations** ISO 27001.
 - User data retention policies are enforced, and personal data can be deleted upon request.
 - Only the minimum necessary personal data is stored.
 - Regular security assessments are conducted to ensure compliance and system integrity.
-

6. Incident Response

- Security incidents are detected and logged by monitoring tools.
 - A predefined **incident response plan** exists to address breaches or vulnerabilities, including:
 - Containment
 - Investigation
 - Notification to affected parties
 - Remediation and prevention
-

7. Summary

The platform implements **industry-standard security practices**, including:

- JWT authentication with secure password storage

- HTTPS communication
- API access restricted to frontend
- Role-based access control
- Secure cloud infrastructure
- Data encryption at rest and in transit
- Compliance with ISO 27001
- These measures ensure that **user data is protected** and that the system maintains high integrity, confidentiality, and availability.

Test Strategy

1. Overview

This document describes the **testing strategy for the SaaS platform** to ensure quality, reliability, security, and performance. It includes the integration of **Anthropic Code Review** to improve test coverage, quality, and maintainability.

System Stack:

- Backend: **.NET 8 REST API**
- Authentication: **JWT tokens**
- Database: **SQL Server 2022**
- Frontend: Web Application (Browser-based)

2. Objectives

- Ensure all functional requirements are implemented correctly.
- Validate non-functional requirements (performance, security, scalability).
- Maintain high-quality and maintainable test code.
- Identify and prevent defects before production deployment.

3. Testing Approach

3.1 Unit Testing

- **Purpose:** Verify individual functions and classes in isolation.
- **Scope:** Backend services (.NET 8), utility functions, data access layers.
- **Tools:** NUnit

- **Code Review:** All unit tests undergo **Anthropic Code Review** to check coverage, correctness, clarity, and adherence to best practices.

3.2 API Testing

- **Purpose:** Ensure API endpoints are reliable, secure, and correct.
- **Scope:** All REST API endpoints accessed by the frontend.
- **Tools:** Swagger tests
- **Code Review:** Anthropic verifies API tests for completeness, correct assertions, and error handling.

3.3 Security Testing

- **Purpose:** Identify vulnerabilities and ensure compliance.
- **Scope:** Authentication, authorization, data encryption, token validation.
- **Tools:** OWASP ZAP
- **Code Review:** Security test scripts are reviewed to confirm proper coverage of critical security flows.

3.4 Performance and Load Testing

- **Purpose:** Validate performance and scalability requirements.
- **Scope:** API response times, concurrency, database load.
- **Tools:** JMeter
- **Code Review:** Test scenarios and scripts reviewed to ensure realistic loads and meaningful performance metrics.

AI Model Provider Choice and Model Documentation

1. AI Model Provider Choice

Our SaaS platform integrates AI capabilities using models provided by OpenAI.

The selection of OpenAI as the AI provider is based on the following criteria:

- **Security and Compliance:** OpenAI adheres to industry-standard security practices, including data encryption in transit and at rest, and offers enterprise-grade privacy controls.
- **Data Handling Policies:** API data is not used to train models by default (for business/enterprise usage), ensuring that customer data remains confidential.
- **Model Performance and Reliability:** OpenAI models provide high accuracy in natural language understanding and generation, which is critical for querying structured data.
- **Scalability:** The API infrastructure supports high availability and scalable workloads suitable for SaaS environments.

- **Documentation and Transparency:** Comprehensive and regularly updated documentation is available for all models and endpoints.

2. Model Usage and Architecture

The platform uses OpenAI models to process natural language queries and translate them into structured queries against the internal database.

- **Model Type:** Large Language Model (LLM)
- **Primary Use Case:** Natural language interface for database querying and response generation
- **Interaction Flow:**
 1. User submits a question through the application interface
 2. The query is sent to the OpenAI API
 3. The model processes the input and generates a structured or semi-structured response
 4. The system validates and executes the query against the database
 5. Results are returned to the user

3. Data Handling and Security Controls

- **Data Minimization:** Only the necessary data required to process the query is sent to the AI model.
- **No Sensitive Data Exposure:** Personally identifiable or sensitive data is excluded or anonymized before being sent to the model.
- **Encryption:** All communications with the OpenAI API are encrypted using HTTPS.
- **Access Control:** API keys are securely stored and rotated periodically.
- **Logging and Monitoring:** Requests and responses are logged in a secure and controlled manner for auditing purposes.

4. Model Documentation and Versioning

- **Model Versioning:** GPT-5.2 Base
- **Change Management:** Any updates to model versions are tested before deployment.
- **Documentation Maintenance:** Internal documentation is updated regularly to reflect changes in model usage or architecture.