Impact Analysis Tool Dev Documentation

Content

1. Purpose

This document describes how the impact analysis tool (short: IA tool) has been developed and how it can be changed or extended. It also shows the architecture of the IA tool.

2. Indented audience

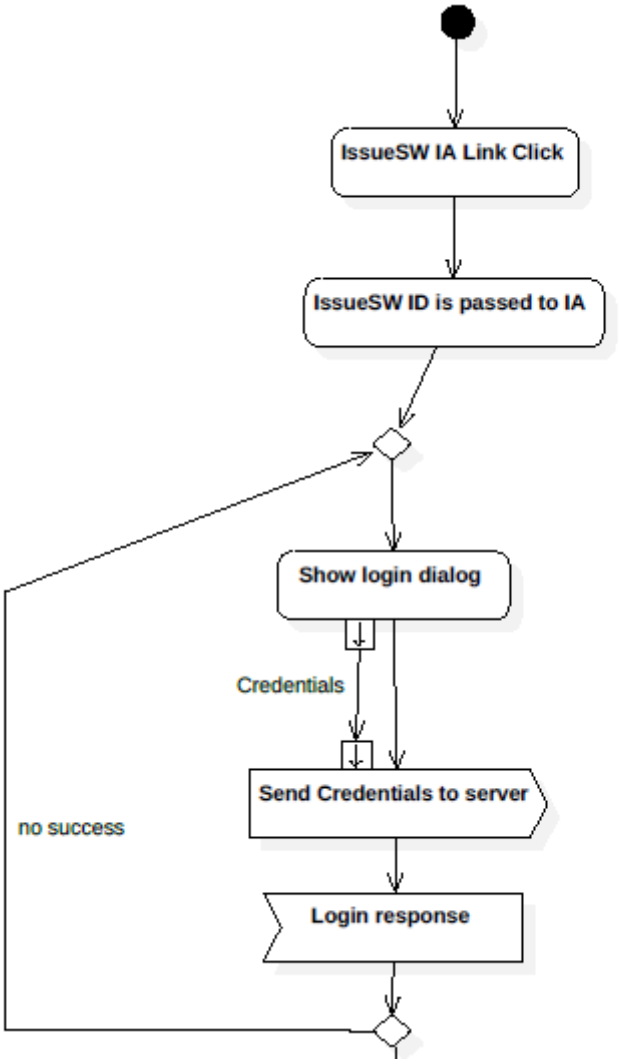
Knowledge of the tools architecture is particularly necessary for people who want to set up, extend or customize the impact analysis tool.

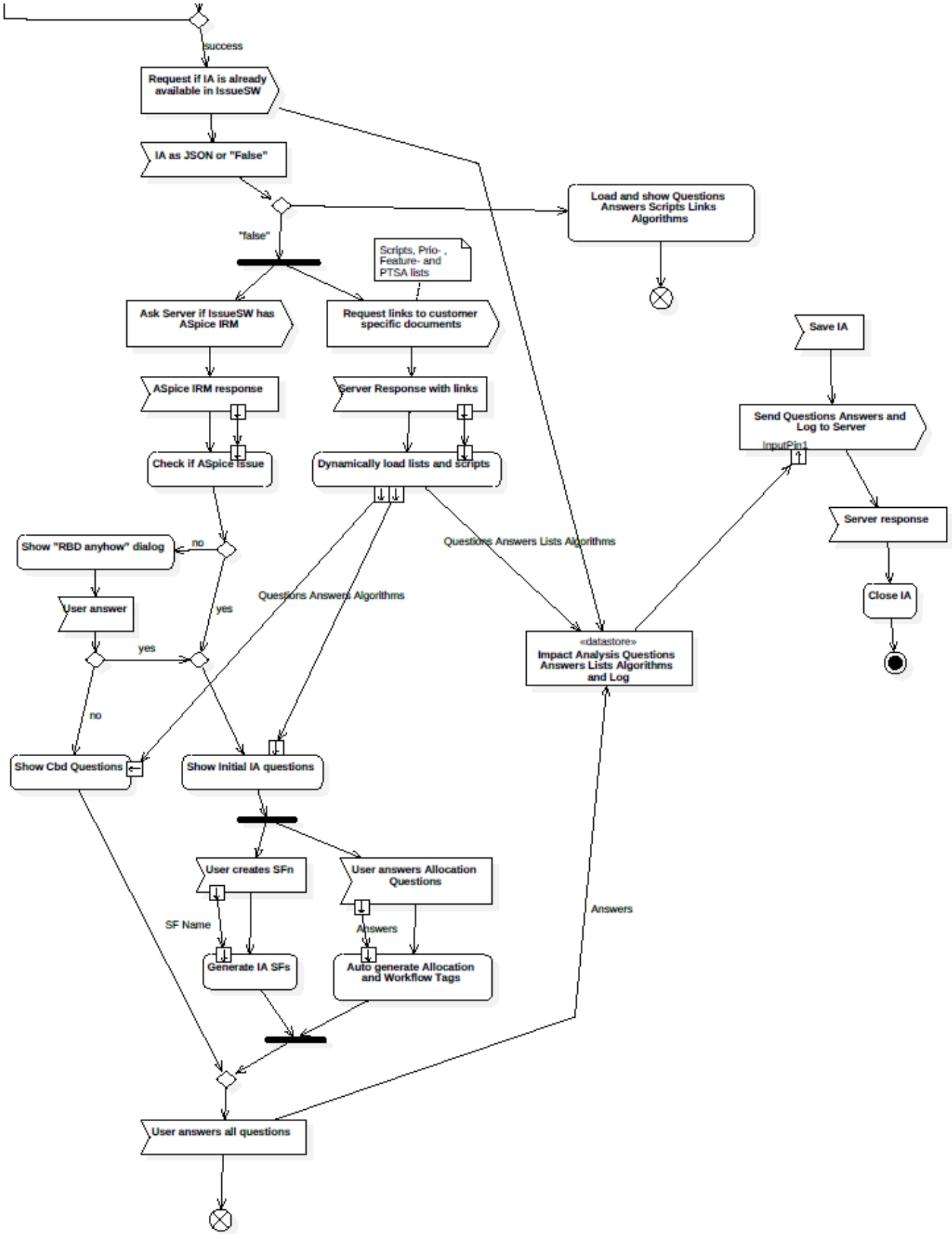
3. Prerequisites

Before you read the how to or the documentation chapter please make sure that you are familiar with the tool, its requirements and features.

4. Architecture

Program flow (Activity diagram)




success
Request if IA is already available in IssueSW
IA as JSON or "False"
Load and show Questions Answers Scripts Links Algorithms
"false"
Scripts, Prio- , Feature- and PTSA lists
Ask Server if IssueSW has ASpice IRM
Request links to customer specific documents
Save IA
ASpice IRM response
Server Response with links
Send Questions Answers and Log to Server
InputPin1
Check if ASpice Issue
Dynamically load lists and scripts
Server response
Show "RBD anyhow" dialog
no
Questions Answers Lists Algorithms
Close IA
User answer
yes
Questions Answers Algorithms
yes
«datastore»
Impact Analysis Questions Answers Lists Algorithms and Log
no
Show Cbd Questions
Show Initial IA questions
User creates SFn
User answers Allocation Questions
Answers
SF Name
Answers
Generate IA SFs
Auto generate Allocation and Workflow Tags
User answers all questions

Client - Server Architecture

The application consists of two parts: The server (backend) and the client (frontend).

- IA-Tool Server
  Currently implemented in C# on the IP-Tool Server by Dominik Reiter. The IP-Tool offers two servers: One for development and one for production.
  Dev-URL: https://wi0www02.emea.bosch.com/BuggyLockedTest/IAToolService/
  Production-URL: https://wi0www02.emea.bosch.com/BuggyLocked/IAToolService/

- RQ1-Server
  The IA-Tool Server communicates with the RQ1 Server via OSLC to retrieve and store data. The basic operations can be extracted from the chapter “Client-Server Communication”.

- Client
  The client program is executed within the browser and is implemented in HTML, CSS and JavaScript. The exact dependencies and architecture is described in the chapter “The frontend”. The files are served and the tool is accessible from the following URL: https://wi0www02.emea.bosch.com/ImpactAnalysis

While most of the IA tools functionality is directly implemented in JavaScript and executed on client side from the Browser, the basic operations for communication with RQ1 are implemented on server side. Communication between the client and the server is done 100% with AJAX at the moment to decouple the basic IA functionality from the storage of the data. The format for exchanging data between the server and client is JSON. In this way it is easily possible to completely replace and test the backend without changing the frontend (just change the variable ia.server_url). This has been done because in future we do not want to store the Impact Analysis in RQ1 as attachment, but want to use a long-term achievable database.

Client - Server Communication

Request	ImpactAnalysis_Login
Input	User Credentials
Server action	Check if credentials are valid
Output	true/false (in future it would be good if a cookie is returned, so that there is no need to store the credentials as local JavaScript variables)

Request	ImpactAnalysis_IssueInAspiceProject
Input	IssueSW-ID as URL-Param
Server action	Server checks if there is an IRM connected to the Issue, which belongs to a project which has the tag ***<ReqBasedDev>true</ ReqBasedDev>*** set
Output	true / false

Request	ImpactAnalysis_IssuePoolProject
Input	IssueSW-ID as URL-Param
Server action	Server extracts the Pool Project ID of the Issue SW from RQ1
Output	Pool Project ID

Request ImpactAnalysis_GetImpactAnalysis
Input IssueSW-ID as URL parameter
Server action The server checks if the issue has an attachment with the name „ImpactAnalysis_[Issue SW ID]_[number].json“. If yes it downloads and parses it.
Output null – if the issue has no „ImpactAnalysis_[Issue SW ID]_[number].json“ attachment
The content of the file as JSON.

Request ImpactAnalysis_UpdateImpactAnalysis
Input Issue ID as parameter and IA-Data as JSON
Server action

- Server creates “ImpactAnalysis[Issue SW ID].json” file and uploads it to the Issue SW. If file already exists the server attaches a “_[Consecutive number]”.
- Server stores/overwrites the created file on the IA Tool server. https://wi0www02.emea.bosch.com/ImpactAnalysis/files/
- Server writes the allocation and allocation-comment tags to the Issue SW based on the JSON content the client sends

Output success / error

Additional Requirements:

- For each new Issue SW the RQ1 server automatically attaches a link to the IA tool within the internal comment including also the Issue SW Id in the parameter.

5. The frontend

Folder structure

- css — contains the application specific css files
- customer_specific — contains the department specific files, structured by the Pool project ID. This includes department specific questions, code and csv files.
- default-files — contains the default files if no customer specific files have been found
- docs — contains all the IA tools documentation
- examples — contains impact analysis examples
- img — contains image files relevant for the IA tool frontend
- js — contains the application specific JavaScript files
- libs — contains the external JavaScript libraries
- tests — contains JavaScript unit tests
- index.html — contains the HTML and is the starting point for the application
- web.config — contains the IIS Server configuration
- gulpfile.js — used for automating tasks (like production deployment)

Dependencies

Due to the Bosch Firewall the dependencies have not been managed via npm, but instead been directly downloaded and stored in the /libs folder.

- **jQuery**
  Use for DOM manipulation and AJAX communication with the Server.

- **Bootstrap**
  Used for providing a responsive and elegant frontend design.

- **PapaParse**
  Used for parsing CSV files and turning them into JavaScript objects.

- **QUnit**
  Used for some simple unit tests.

The code structure

Currently refactoring…

6. Further development and production deployment

Installation requirements

For adding new features to the IA-Tool server please contact the ECB-Tool Team (Dominik Reiter), because this team handles the IA-Tool server implementation.

For further development of the IA-Tool features you need to install the following tools:

- Git
- NodeJS incl. the following configuration:
  npm config set https-proxy http://user:password@rb-proxy-unix-de01.bosch.com:8080

  Set the proxy configuration as system/user environment variables (uppercase is important!):
  HTTP_PROXY http://<user>:<pw>@rb-proxy-de.bosch.com:8080
  HTTPS_PROXY http://<user>:<pw>@rb-proxy-de.bosch.com:8080
- NPM modules
  ```
  npm install
  ```
- A local npm http server. You can install one globally by typing the following into the command line:
  ```
  npm install http-server -g
  ```
- The gulp taskrunner which is used for production deployment
  ```
  npm install gulp-cli -g
  ```
- A good editor for writing Code (preferable with JSLint support)
- A browser (Firefox)

How to develop locally

- Add the URL **`wi0www02.emea.bosch.com/ImpactAnalysis`** as network directory
- Update the constant **`server_location`** in the file **`gulpfile.js`**
- Go to the root directory of the application (locally, not on the server)
- Start the local http server
- Visit one of the displayed urls (e.g.: http://127.0.0.1:8080). You should be able to see the Impact Analysis tool.

Attention: Although you can develop locally and the tool communicates with the test server, the test server itself gets its data from the productive RQ1 database. This means that you can use real RQ1 issues.

How to deploy

1. **Extensively test the application (at the moment you have to do it manually)**
   Deploying a version with a major bug annoys the users. Test at least all the features you have changed/added.

2. **Create a new version**
   a. **Code**
      If you have changed the code update the member **`ia.TOOL_VERSION`** in the file initialize.js.

   b. **Questions**
      In changed all text.js files (default or customer specific) you need to update the member **`ia.QUESTION_VERSION`**.

   c. **Git**
      - **Commit**
        ```
        git add -A
        git commit -am "commit for version X"
        ```
      - **Create tag**
        ```
        git tag -a v1.4 -m "version 1.4"
        ```

3. **Deploy to production**
   You can deploy to the production server by simply executing the command:
   ```
   gulp deploy
   ```
   The deployment script will:
   - Zip the current production and development folders and store them into the files/old directory on the server
   - Overwrite all existing files on the server with the files in the development folder

   Attention: You will need to manually copy the customer specific files. See below!

4. **Update customer specific files**
   The customer specific files are not copied, because someone might have changed them directly on the server. Therefore you will need to copy them manually.

7. Help

In case you need further information, simply contact me: hermann.wagner2@bosch.com.