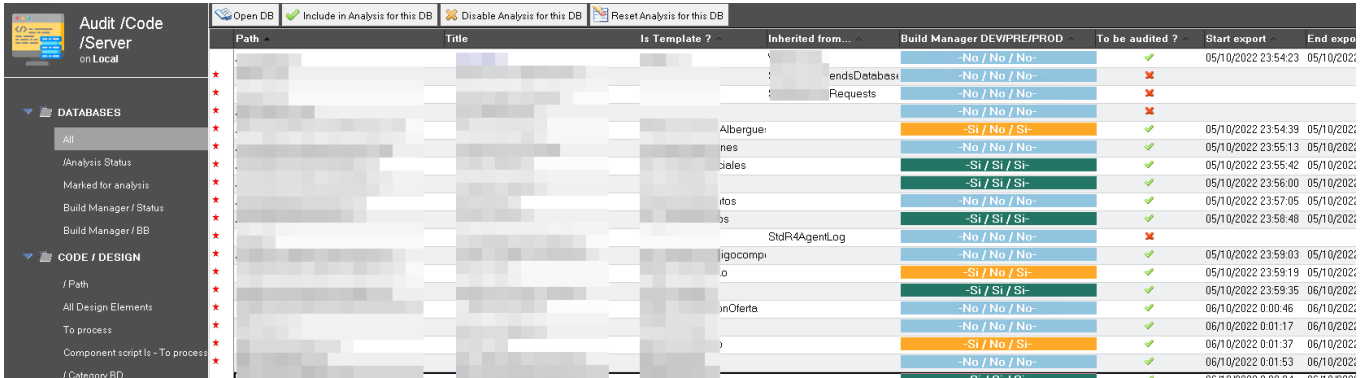
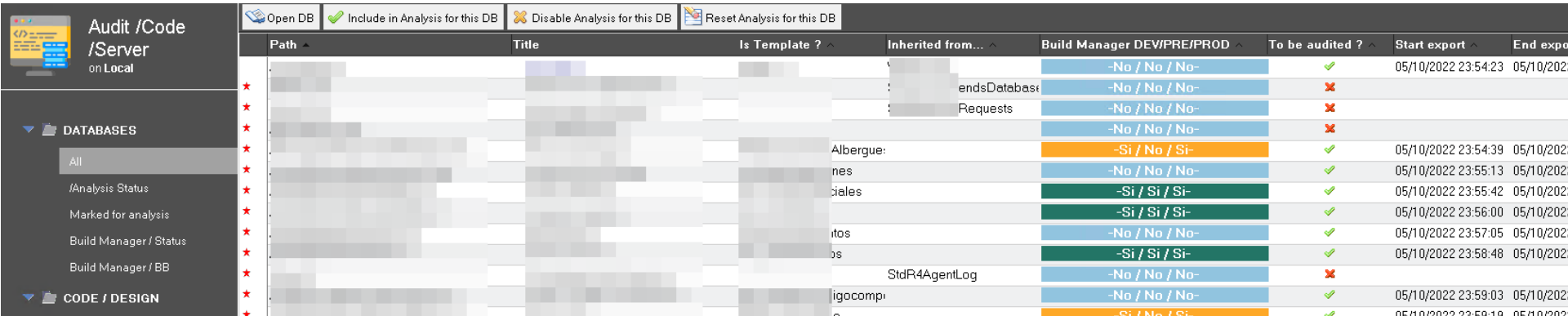
Audit your existing code in Domino (simply with Lotuscript)



Audit your existing code in Domino (just with Lotuscript)

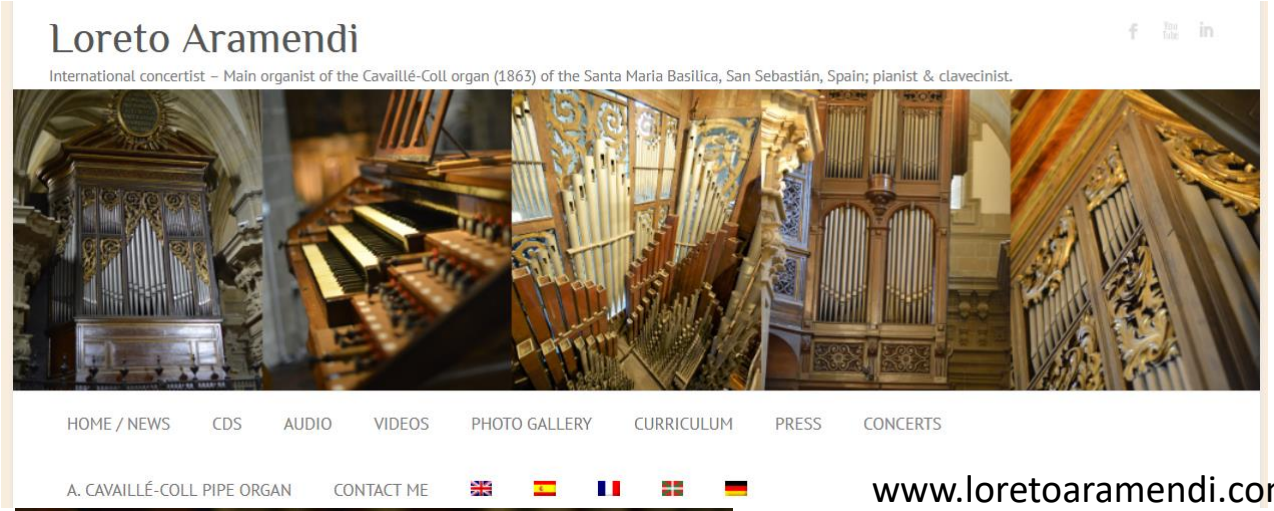
Dominique Perarnaud – Data 101



- Introduction
- The customer
- The problem to solve > know your code, answer questions
- The guidelines
- How to do it
- Next steps / possible iterations
- Questions.

- Citizen developer / Domino Administrator / In the Yellow bubble since 2001
- Partner at DATA101
- HCL Ambassador 2021-2022-2023
- French in the Basque country, North of Spain, for 20 years
- I like to build things ….

Side business: Anyone interested in World class pipe organ concert ?



www.loretoaramendi.com

Javier Sánchez Oliva

javiersanchezoliva.com

@javdev84

DATA 101

HCL SOFTWARE Business Partner

Domino/Notes Lead Developer

HCL Ambassador

- We are Data 101, HCL Business Partner based in San Sebastian, Spain

Donostia / San Sebastian: The Bay and the fine food…

2nd region of Spain by Gross Domestic Product (GDP)
Biggest concentration of 3* Michelin Restaurants in Europe

Audit your existing code in Domino

(simply with Lotuscript)
(I don’t do “API C calls”)

Dominique Perarnaud – Data 101

THE CONTEXT

Disclaimer:
This is a “Work in Progress” application, we want to show the potential.

Third party products are mentionned here, only to add value to the context of this real use case. In any moment, it is a promotion/ads of these tools.

The Audit tool in itself could be used without them, but mentionning how it integrate them, add value to the Audit and to this presentation.

- City Council > all the data of the citizens must remain on-Premises
- Mantra: “Our citizens are our customers”
- Must respect the “Spanish National Framework for Security” (Real Decreto 311/2022)
- Domino shop already using third party products

HCL Domino

NotesTracker
for HCL / IBM® / Lotus Notes® and Domino®

panagenda

MarvelClient™

teamstudio BUILD MANAGER

Jira Software

Ytria ez suite

HCL Domino

- HCL Domino 12.0.1 FP1
- Installation based on separated Dev / Pre production / Production server
- 1 unique server for development (mainly…)
- Build Manager partially implemented for pushing changes to pre/production
- All type of code: @formula, Lotuscript, Java, Web services, call to external API
- Traditional Notes applications co-existing with pure Java applications/server

THE PROBLEM TO SOLVE

You are blind when you do not know what you have in your <code>

- Accurate and update overview of all database designs / server.
- Document the database design.
- Know dependencies between applications (getview/getdatabase)
- Know use of generic Script Library components throughtout all applications
- Know dependencies between applications for Web Services
- Document funcionalities on a per database basis (complexity)
- Answer questions when the developer may be gone…
- Improve security

➢ This will allow you to evaluate cost changes, make right decisions for maintenance.

- No license fees. (context: IT Cost per user is rising steadily)
- Low cost (only with Lotuscript) & homemade > Rapid Application Developement
- UX : Easy to use and understand > Search the data and find
- Deliver an accurate and updated Audit

  > Audit must always contain up-to-date information

  > Answering urgent requests from Management

  > Enabling IT for improving/cleaning/decommissioning Notes applications

- Know your code – relationship – dependencies between applications
- Security Audit mandate > clean the code

  > C: references, misuses of tmp folder, hard coding
- Detect Bad practices: cartography of inheritance of design elements

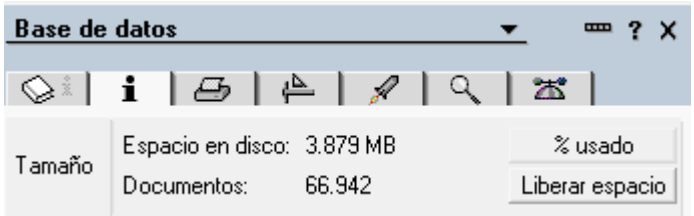
  > Orphans or not – Do not refresh tags
- Maintenance & improvements

  > Migration from Word.application to LibreOffice, Identify / evaluate OLE Calls
- Find niddles in my code:

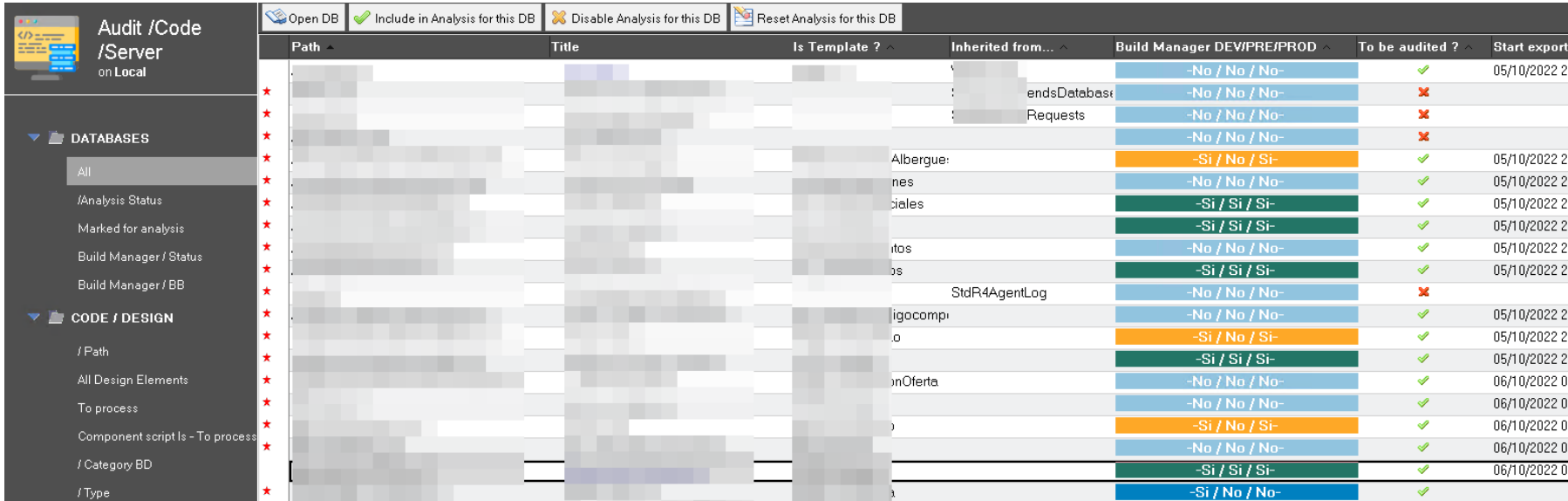
  > Use case: “errors after v12.0.1 upgrade“

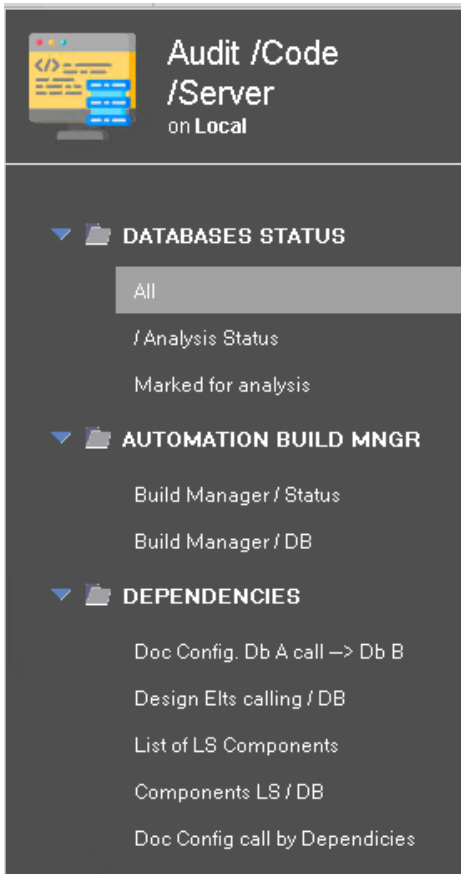
  > Where are the calls to specific (deprecated) JAR in my server

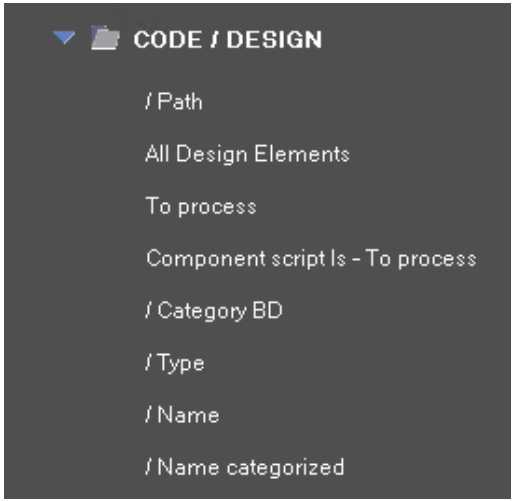
- Scheduled updated (only update design since last scan)
- Integration with Teamstudio > continous updates for DBs on Build Manager
- Trigger manual update (available with one button)
- Update start from last point of failure of the scan if the process ended with error
- Size should not be a problem



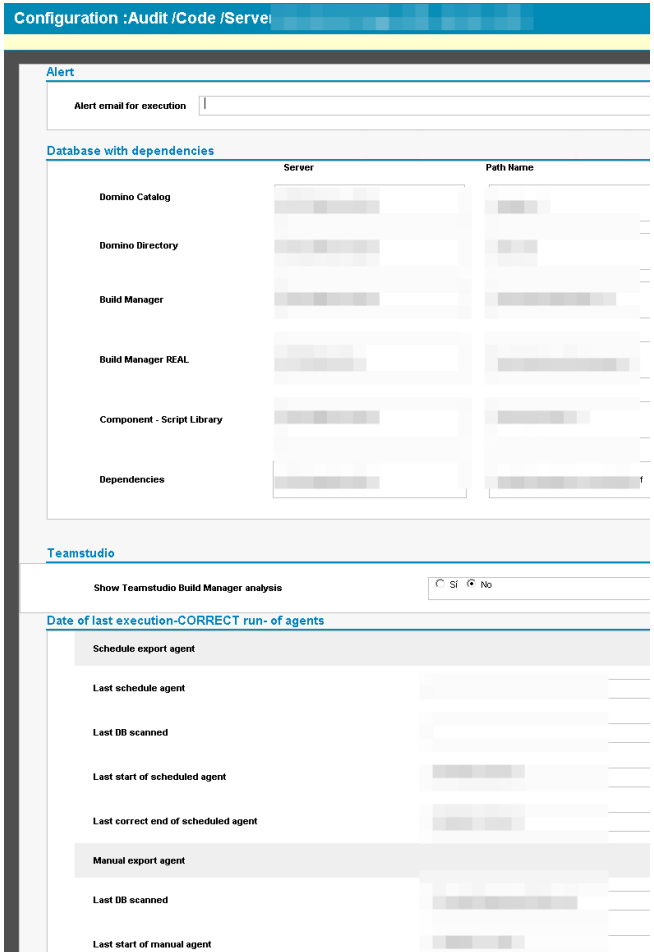
- We use the design from the v12 system database
- We add some color-specific columns
- We think in usability first (one view = one answer)

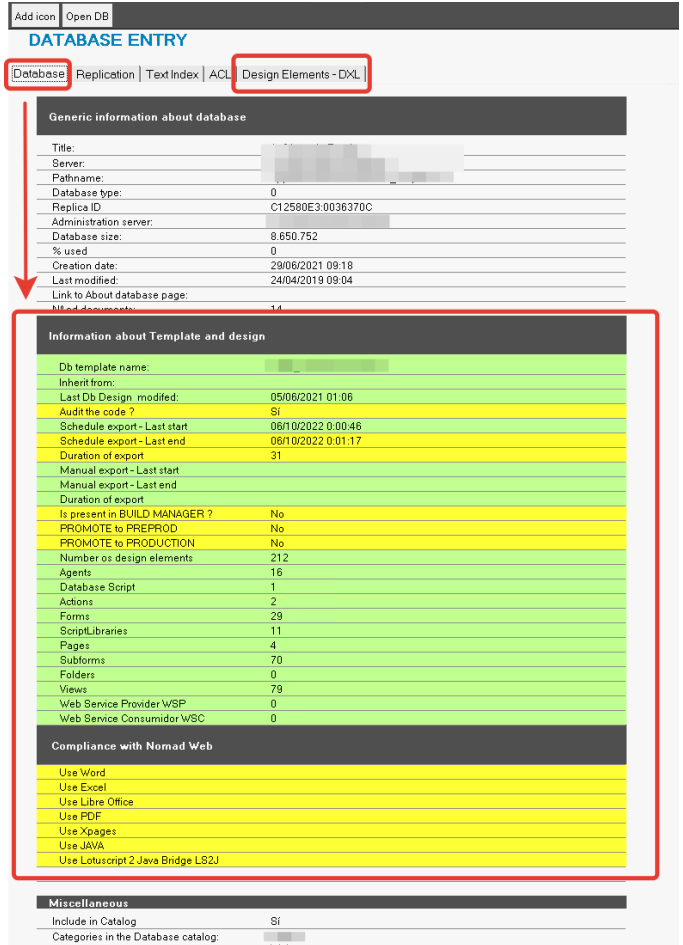


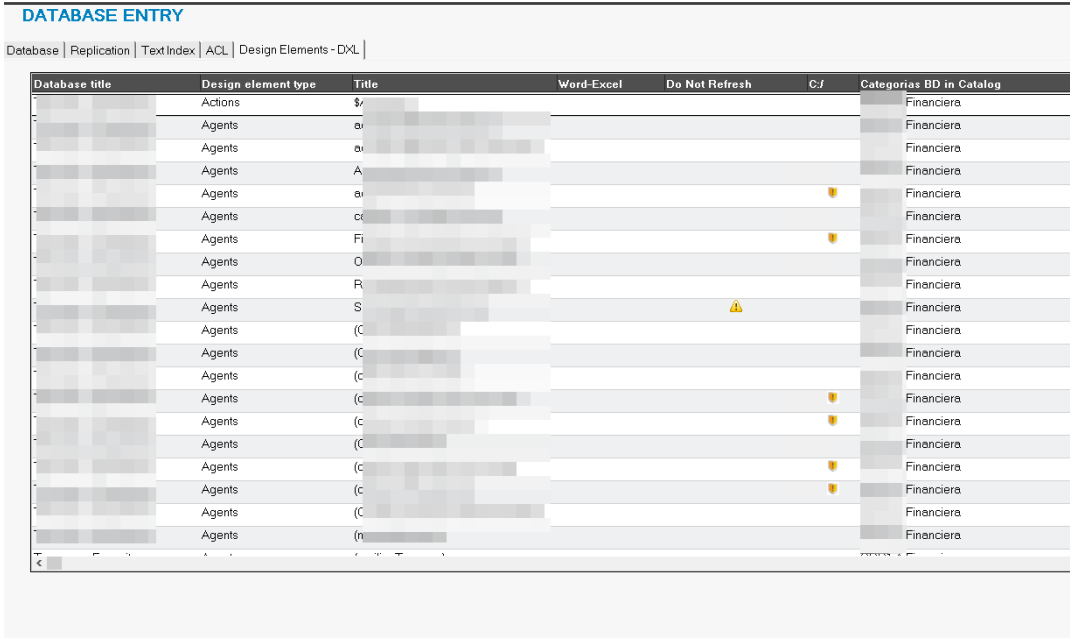

Audit /Code /Server
on Local
DATABASES STATUS
All
/ Analysis Status
Marked for analysis
AUTOMATION BUILD MNGR
Build Manager / Status
Build Manager / DB
DEPENDENCIES
Doc Config. Db A call –> Db B
Design Elts calling / DB
List of LS Components
Components LS / DB
Doc Config call by Dependicies


CODE / DESIGN
/ Path
All Design Elements
To process
Component script ls - To process
/ Category BD
/ Type
/ Name
/ Name categorized

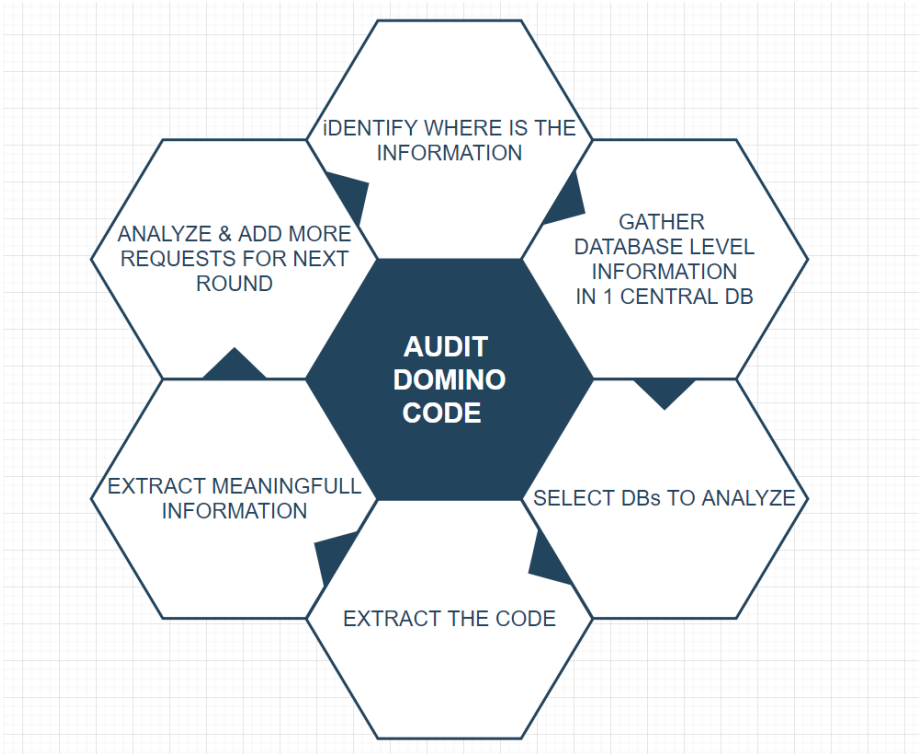
SHORT ANSWERS
Email in code
Server Name in code
Username in code
DENY ACCESS Users
.NSF in code
C:\TMP
External interfaces
Do Not Resfresh
Unused script libraries
Unused values /Doc Config
Word
Excel
Libre Office
pdf
Compliant for Nomad Web ?


Configuration :Audit /Code /Serve
Alert
Alert email for execution
Database with dependencies
Server
Path Name
Domino Catalog
Domino Directory
Build Manager
Build Manager REAL
Component - Script Library
Dependencies
Teamstudio
Show Teamstudio Build Manager analysis
Sí
No
Date of last execution-CORRECT run- of agents
Schedule export agent
Last schedule agent
Last DB scanned
Last start of scheduled agent
Last correct end of scheduled agent
Manual export agent
Last DB scanned
Last start of manual agent

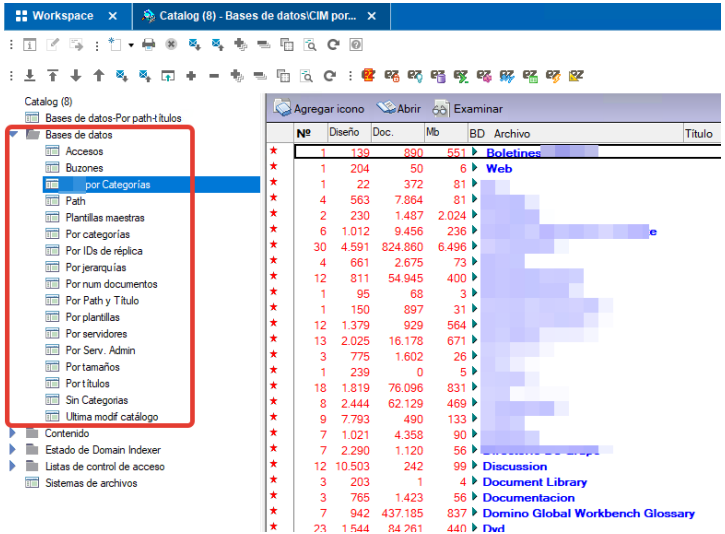

Add icon
Open DB
DATABASE ENTRY
Database
Replication
Text Index
ACL
Design Elements - DXL
Generic information about database
Title:
Server:
Pathname:
Database type: 0
Replica ID: C12580E3:0036370C
Administration server:
Database size: 8.650.752
% used: 0
Creation date: 29/06/2021 09:18
Last modified: 24/04/2019 09:04
Link to About database page:
Information about Template and design
Db template name:
Inherit from:
Last Db Design modifed: 05/06/2021 01:06
Audit the code ? Si
Schedule export - Last start: 06/10/2022 0:00:46
Schedule export - Last end: 06/10/2022 0:01:17
Duration of export: 31
Manual export - Last start
Manual export - Last end
Duration of export
Is present in BUILD MANAGER ? No
PROMOTE to PREPROD: No
PROMOTE to PRODUCTION: No
Number os design elements: 212
Agents: 16
Database Script: 1
Actions: 2
Forms: 29
ScriptLibraries: 11
Pages: 4
Subforms: 70
Folders: 0
Views: 79
Web Service Provider WSP: 0
Web Service Consumidor WSC: 0
Compliance with Nomad Web
Use Word
Use Excel
Use Libre Office
Use PDF
Use Xpages
Use JAVA
Use Lotuscript 2 Java Bridge LS2J
Miscellaneous
Include in Catalog: Si
Categories in the Database catalog:


DATABASE ENTRY
Database
Replication
Text Index
ACL
Design Elements - DXL
Database title
Design element type
Title
Word-Excel
Do Not Refresh
C:/
Categorias BD in Catalog
Actions
Agents
Financiera

HOW TO AUDIT THE CODE

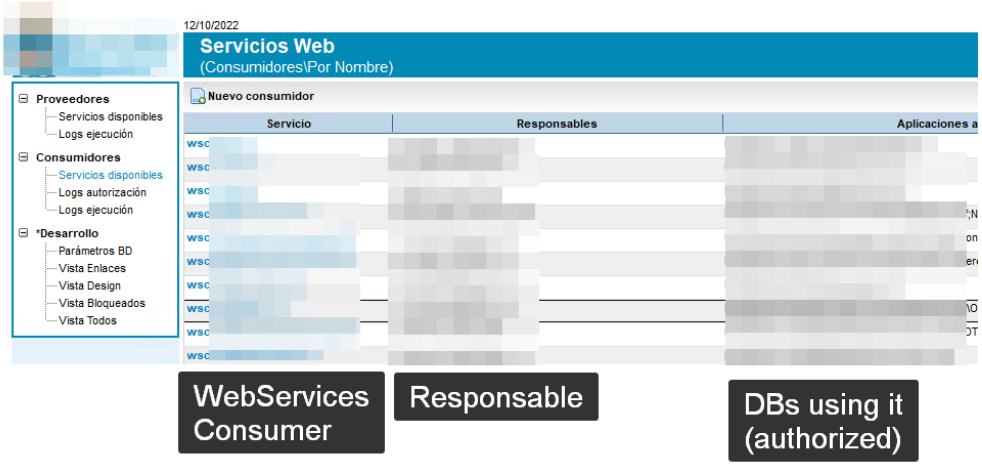


1.Catalog.nsf



- Maps all databases in server
- Gather useful information
- With customized views

2. WebServices.nsf

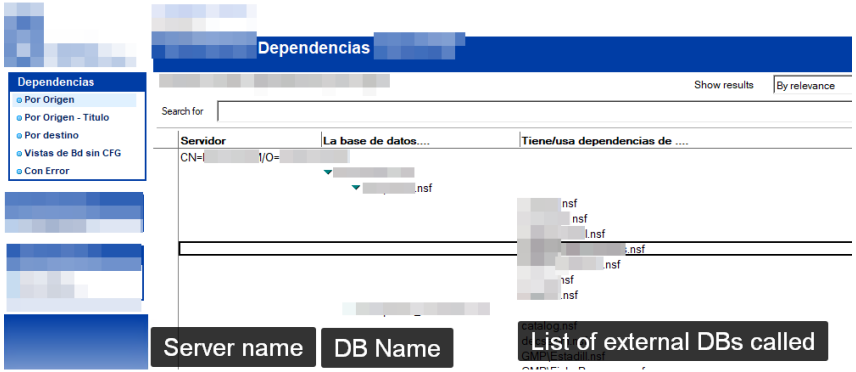


- Authorize ejecution, and gather database using it (Database path, Project owner)
- Clear relation of dependencies: who can call who

3. Central dependencies DB

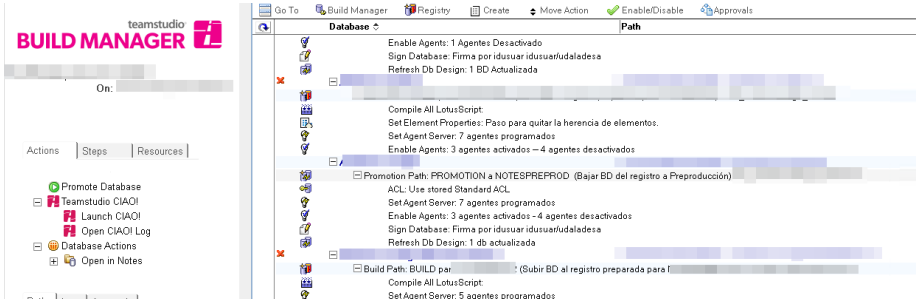
Each Application DB store one “Configuration document”

> Dependencies by configuration



5. Script library Component DB

4. Build Manager: Who is automated ?



6. Each application with his code

- First Part: Gather information from external databases into “Central Audit database”
  - Database document from Catalog.nsf -> Audit Db
  - Doc Configuration from Dependencies DB -> Audit Db
  - Web Services Dependencies -> Audit Db
  - Build Manager -> Analysis + update -> Audit Db
  - Cartography of the central “Script Library Component” DB ressource-> Audit Db

➢ At this point, we have a clear view of dependencies between database, and which one is automated.

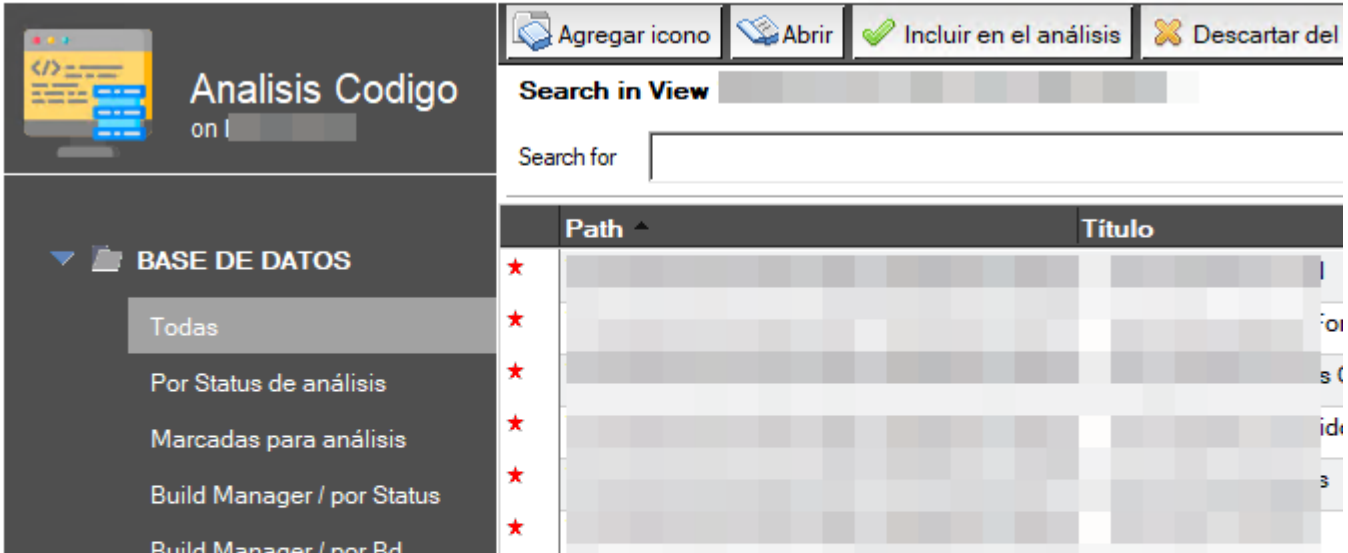
➢ No NTF Dbs, No System Dbs in the list

- User enable/ disabled analysis on a per database basis

Initial configuration
Set the values depending on the server you want to analyze
Teamstudio, Components library, Web Services Db, Dependencies Db
Import listing of DBs from Catalog.nsf
Select/Deselct DBs to Analyze, Check ACL access
Import Component Library, Web Services Db, Dependencies Db (optional)
Listiing of Components, Web Services, Dependencies at Db level
Extract DXL
Start extraction on enabled DBS, checks errors (ACL...)
Analyze data
Check for patterns and valuable information
(hard coded values, use of Word Excel etc)
Search full text for extra requests

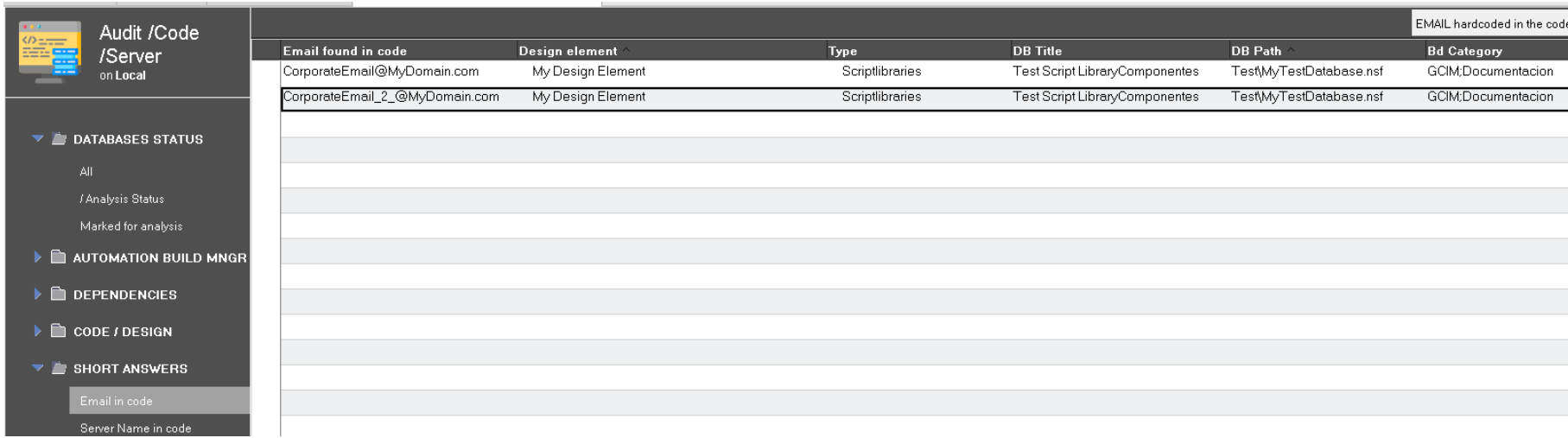
deny
lock-unlock
createobject
version
lclsx
javascript
bootstrap
dll
method
hardcoded
notessession.platform,3))="win
notessession.platform="windows/32
group
elements
ole
jar
lei
getactivewindow
members
decs
usernames
values
email
calls
java
access

WHEN THE CODE TALK



1. Hardcoded > bad practices like email, server names, usernames, databases names, old employees, Local Temp Folder
2. Dependencies on external interfaces like DLLs/pdf/Word, ODBC, Fax, Outdated third party applications
3. Inheritance - Do Not refresh
4. Dependencies between Dbs
5. Unused Script library
6. Unused values from Configuration document
7. Compliance with for Nomad web

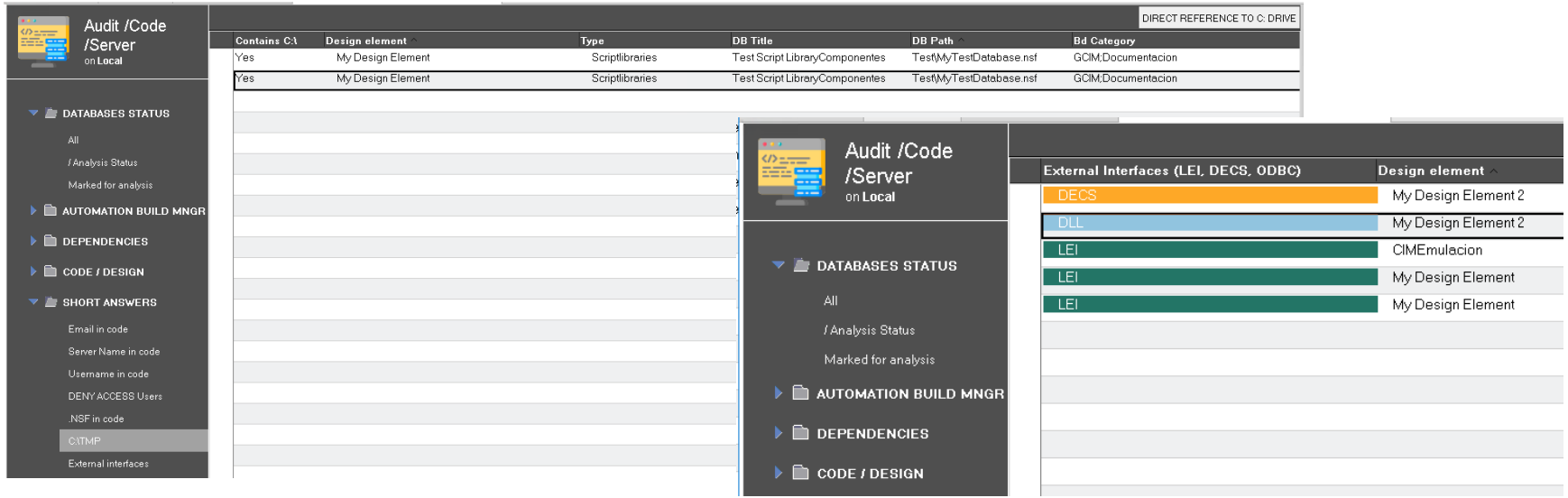
1. Hardcoded > email, server names, usernames, databases names, old employees (DENY ACCESS GROUP)



Search Formula of the agent: NAB give us the emails : search and marks them accordingly

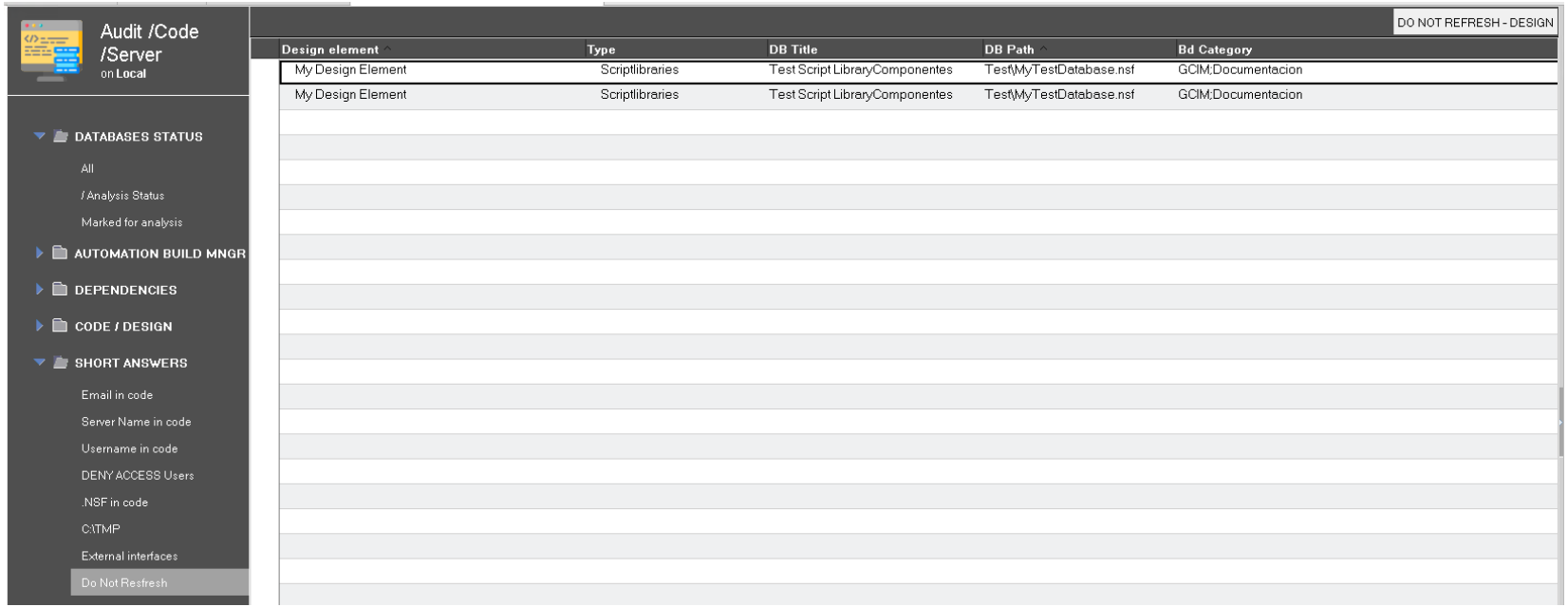
Dependencies on external interfaces

DLLs (pdf Word), ODBC, Fax, Outdated third party applications

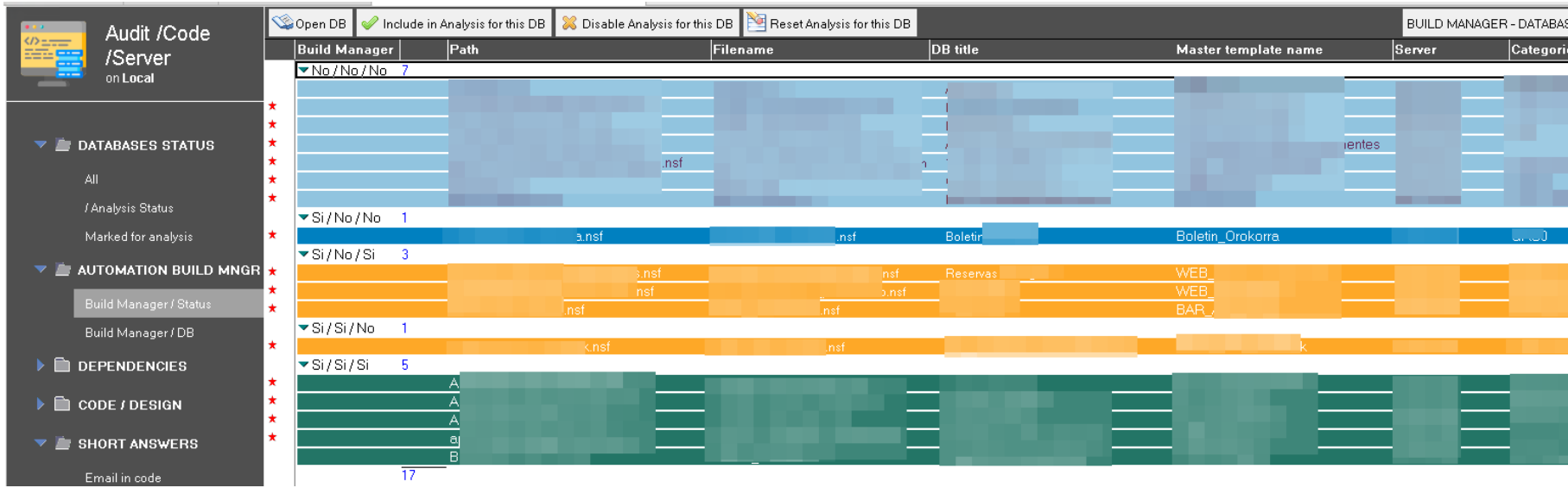


Search formula include specific keywords

Bad management of inheritance – Do not refresh tags

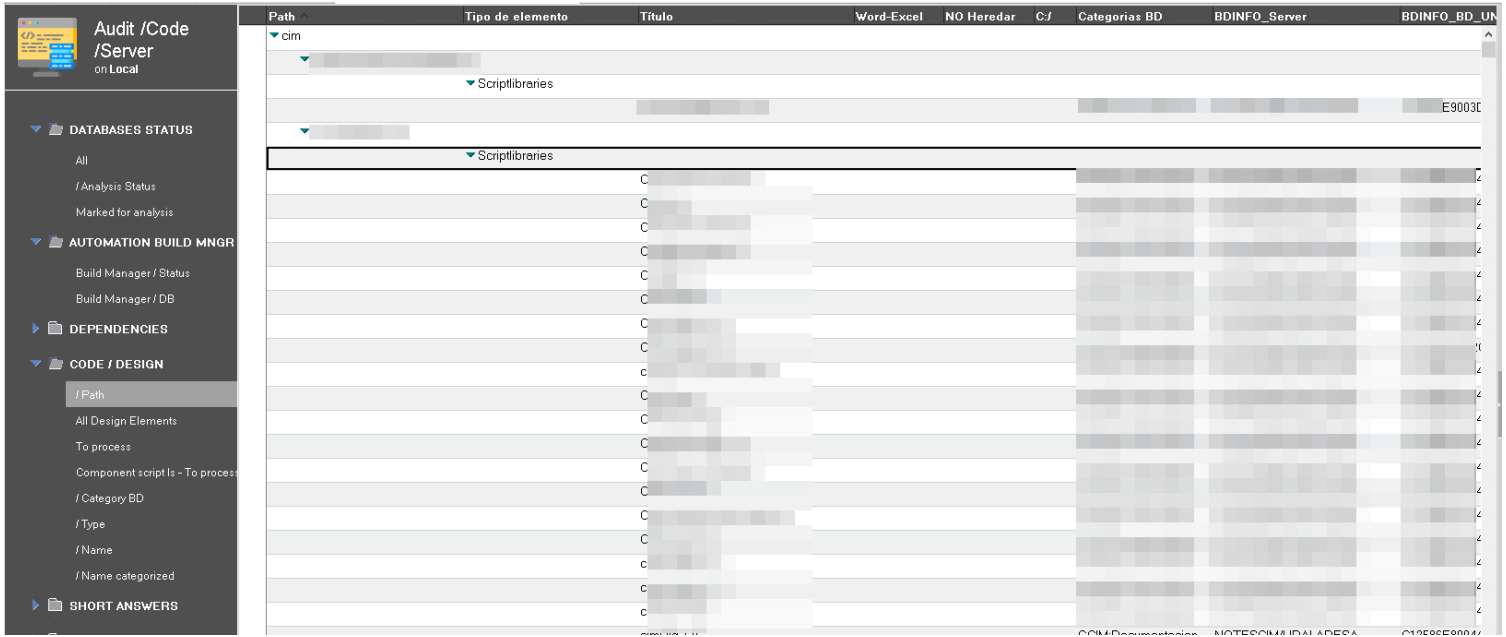


PROMOTE to production server



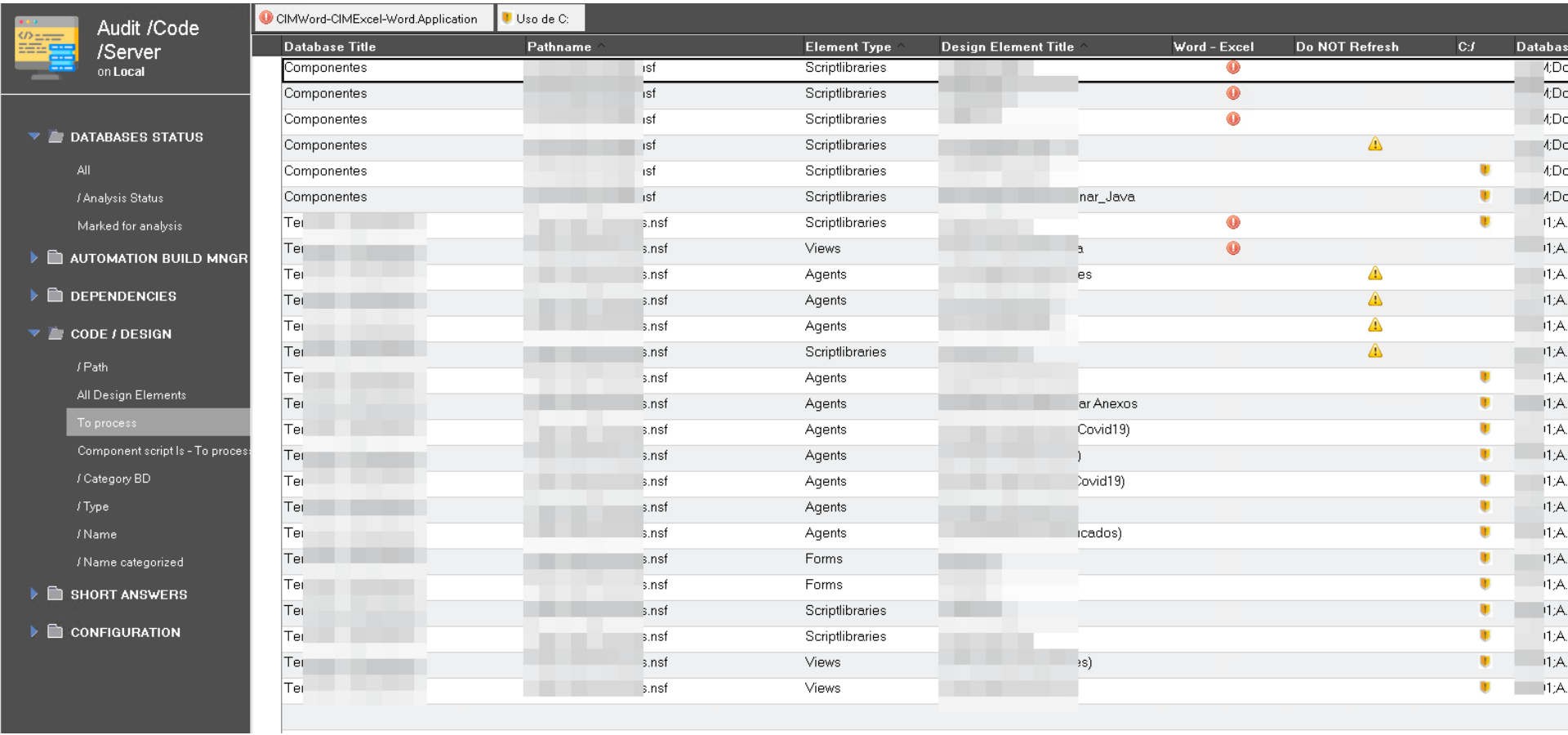
Agent identifies key fields inside Build Manager and mark them accordingly

Dependencies between Dbs at a design level

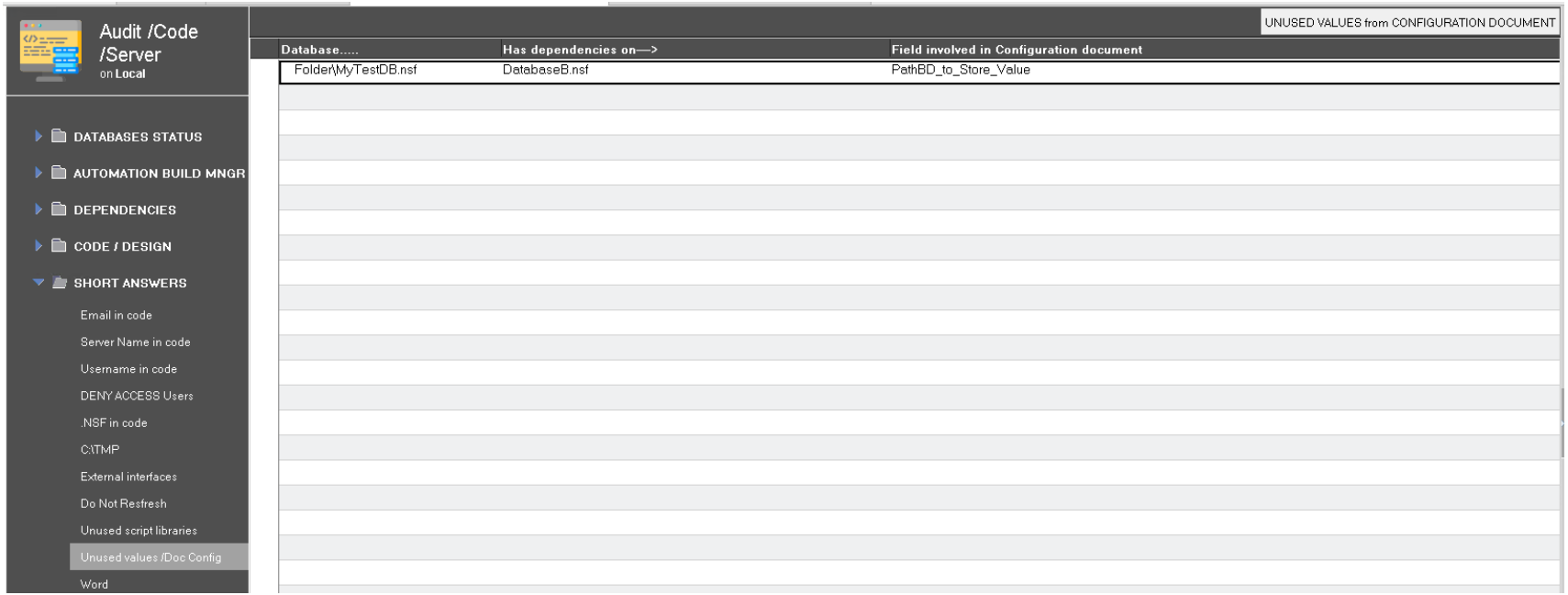


Search by specific fields extracted from the DXL

Search and mark then accordingly

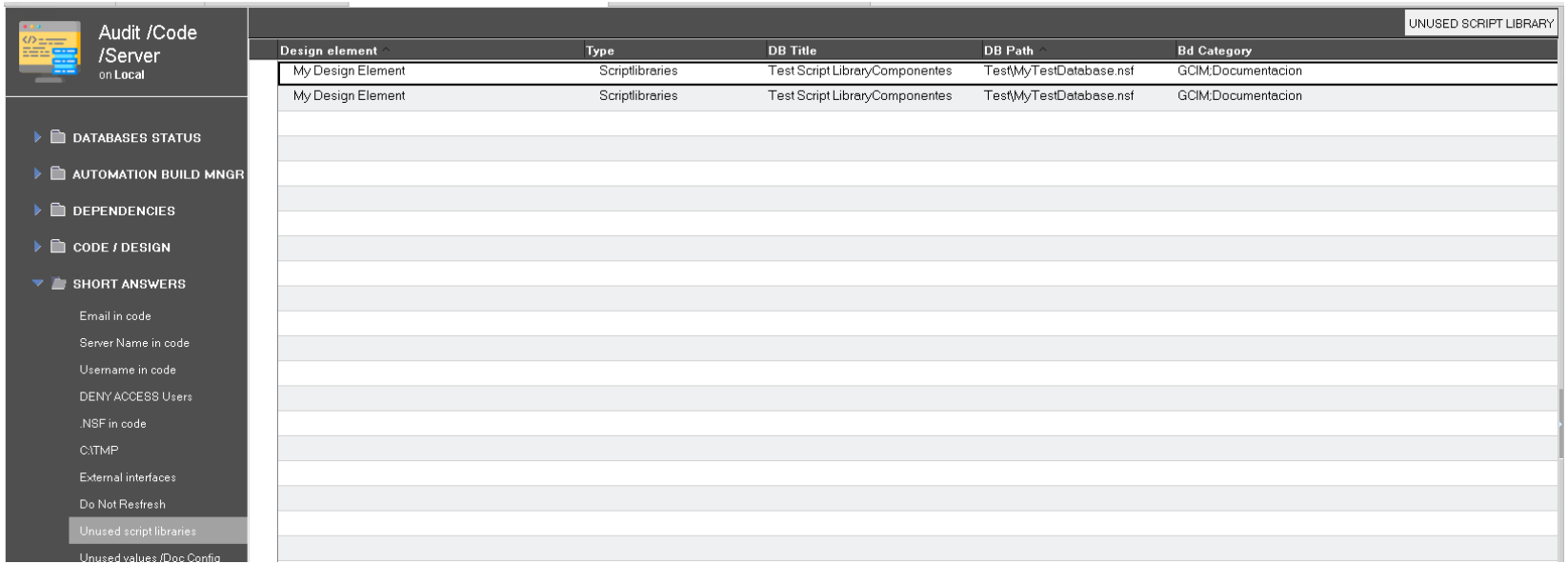

Audit /Code /Server
on Local
DATABASES STATUS
All
/ Analysis Status
Marked for analysis
AUTOMATION BUILD MNGR
DEPENDENCIES
CODE / DESIGN
/ Path
All Design Elements
To process
Component script Is - To proces
/ Category BD
/ Type
/ Name
/ Name categorized
SHORT ANSWERS
CONFIGURATION
CIMWord-CIMExcel-Word.Application
Uso de C:
Database Title
Pathname
Element Type
Design Element Title
Word - Excel
Do NOT Refresh
C:/
Componentes
Componentes
Componentes
Componentes
Componentes
Componentes
Scriptlibraries
Scriptlibraries
Scriptlibraries
Scriptlibraries
Scriptlibraries
Scriptlibraries
nar_Java
Views
Agents
Agents
Agents
Scriptlibraries
Agents
Agents
ar Anexos
Agents
Covid19)
Agents
Agents
ovid19)
Agents
Agents
icados)
Forms
Forms
Scriptlibraries
Scriptlibraries
Views
Views

Unused values from Configuration document

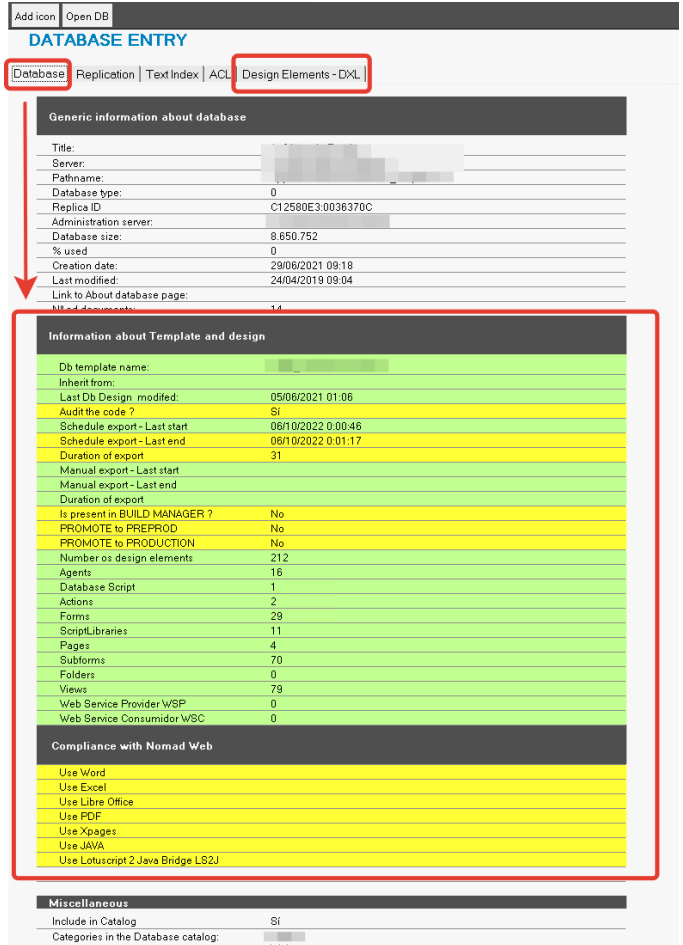


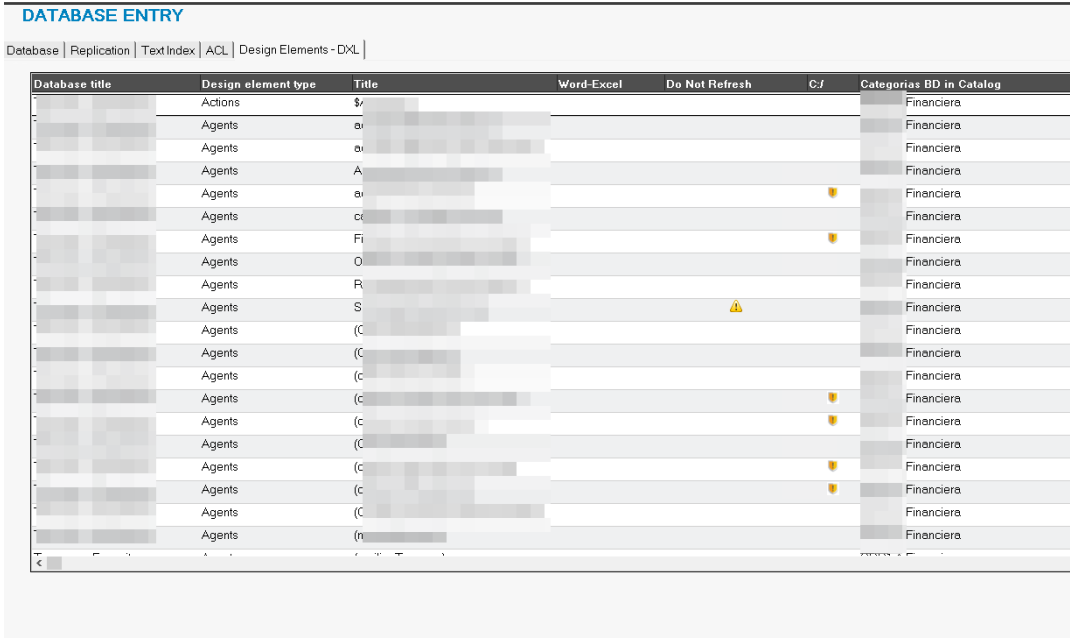
Search Field name from the Config Document inside the design of all the design element of the same database

Unused Script libraries



Search Script Library name present in the DB, in all the design elements of the same database


Add icon
Open DB
DATABASE ENTRY
Database
Replication
Text Index
ACL
Design Elements - DXL
Generic information about database
Title:
Server:
Pathname:
Database type: 0
Replica ID: C12580E3:0036370C
Administration server:
Database size: 8.650.752
% used: 0
Creation date: 29/06/2021 09:18
Last modified: 24/04/2019 09:04
Link to About database page:
Information about Template and design
Db template name:
Inherit from:
Last Db Design modifed: 05/06/2021 01:06
Audit the code ? Si
Schedule export - Last start: 06/10/2022 0:00:46
Schedule export - Last end: 06/10/2022 0:01:17
Duration of export: 31
Manual export - Last start
Manual export - Last end
Duration of export
Is present in BUILD MANAGER ? No
PROMOTE to PREPROD: No
PROMOTE to PRODUCTION: No
Number os design elements: 212
Agents: 16
Database Script: 1
Actions: 2
Forms: 29
ScriptLibraries: 11
Pages: 4
Subforms: 70
Folders: 0
Views: 79
Web Service Provider WSP: 0
Web Service Consumidor WSC: 0
Compliance with Nomad Web
Use Word
Use Excel
Use Libre Office
Use PDF
Use Xpages
Use JAVA
Use Lotuscript 2 Java Bridge LS2J
Miscellaneous
Include in Catalog: Si
Categories in the Database catalog:


DATABASE ENTRY
Database
Replication
Text Index
ACL
Design Elements - DXL
Database title
Design element type
Title
Word-Excel
Do Not Refresh
C:/
Categorias BD in Catalog
Actions
Agents
Financiera

HCL Nomad Web

https://help.hcltechsw.com/nomad/1.0_web/nomad_web_limitations.html

•Following Java™-based applications are not supported:
•JavaAgents
•XPages (.xsp)
•LotusScript 2 Java Bridge (LS2J – Uselsx “*javacon”)
•Web services design elements are not supported.
•Dynamic client extensions via native code are not supported.
This includes but is not limited to the following:
•The DXJ name picker implemented for Windows via a DLL.
•Some LotusScript and Formula commands associated are not supported.
•In particular, commands associated with Object Linking & Embedding (OLE) are not supported.
•The LotusScript LSXLC and LSXODBC extensions.

- Regular (and simple) Lotuscript has been used to search, and extract the data, Export DXL and then parse the code…

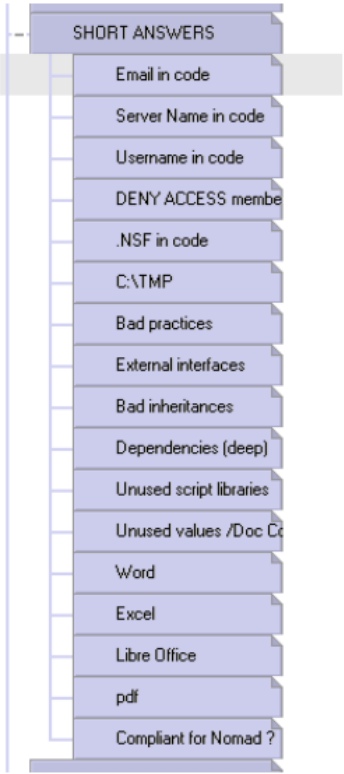
```
Dim exporter As NotesDXLExporter
Set exporter = session.CreateDXLExporter
Call exporter.SetInput(docDisenoOrigen)

Dim rtCodigo As New NotesRichTextItem(doc

Call exporter.SetOutput(rtCodigo)
Call exporter.Process
```

- Most of the work consist in finding how to gather and organize the information in order to present it in an explicit way.

- Update the Audit is also an important aspect (“<modified> <date>”)



Nombre: fObjTITLE - **Alias** <Valor calculado> - **Tipo:** Tipo

Email in code	Audit_Email
Server Name in code	Audit_Servername
Username in code	Audit_Username
DENY ACCESS GROUP Member in code	Audit_Denyaccessgroup
.NSF in code	Audit_NSF
Uso de C:	Audit_C_TMP
External Interface	Audit_External_Interface
Do not refresh tag	Audit_DoNotRefresh
Unused script library	Audit_Unused_LS
Use Word	Audit_Ms_Word
Use Excel	Audit_Ms_Excel
Use Libre Office	Audit_Libre_Office
Use PDF	Audit_Pdf

- Check the ACL of the user running the Audit, first. Must be Manager (LocalDomainAdmin)

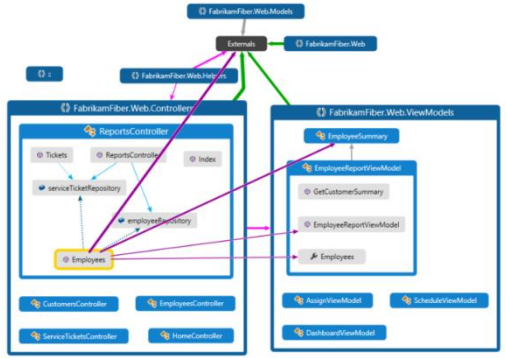
- Do not Audit if you have NO design change (already integrated)
- Do not Audit mail template (complex, slow)
- Do not Audit mail file
- Do not Audit System database (useless)

- Audit only NSF

- Check what database needs more time to be audited -> complex design

- Add black list “Do not audit” for Database

- Visualize data with Graph (xPages?)



- Local AI + LLM + Lotuscript code ?

- Extend with action in YTRIA Automation API

Ytria tools can be launched from the agent to generate more data to add to the Audit.

- Integrate with JIRA and homeade ticketing system
  create ticket to ask improvement, linked with some document of this Audit

- Update Audit after each automatic build process launch from Build Manager

ANSWER OUR QUESTIONS, ASK YOURS

- We want to know your opinion about our work
- Missing features ? Ideas ?
- Loophole you see that we missed ?
- Would you buy a copy of that work ? At which price ?

- Contact: info@data101.es

Visit our booth to learn about Digital eSignature into HCL Products

{ REST:API }

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Thank you !!