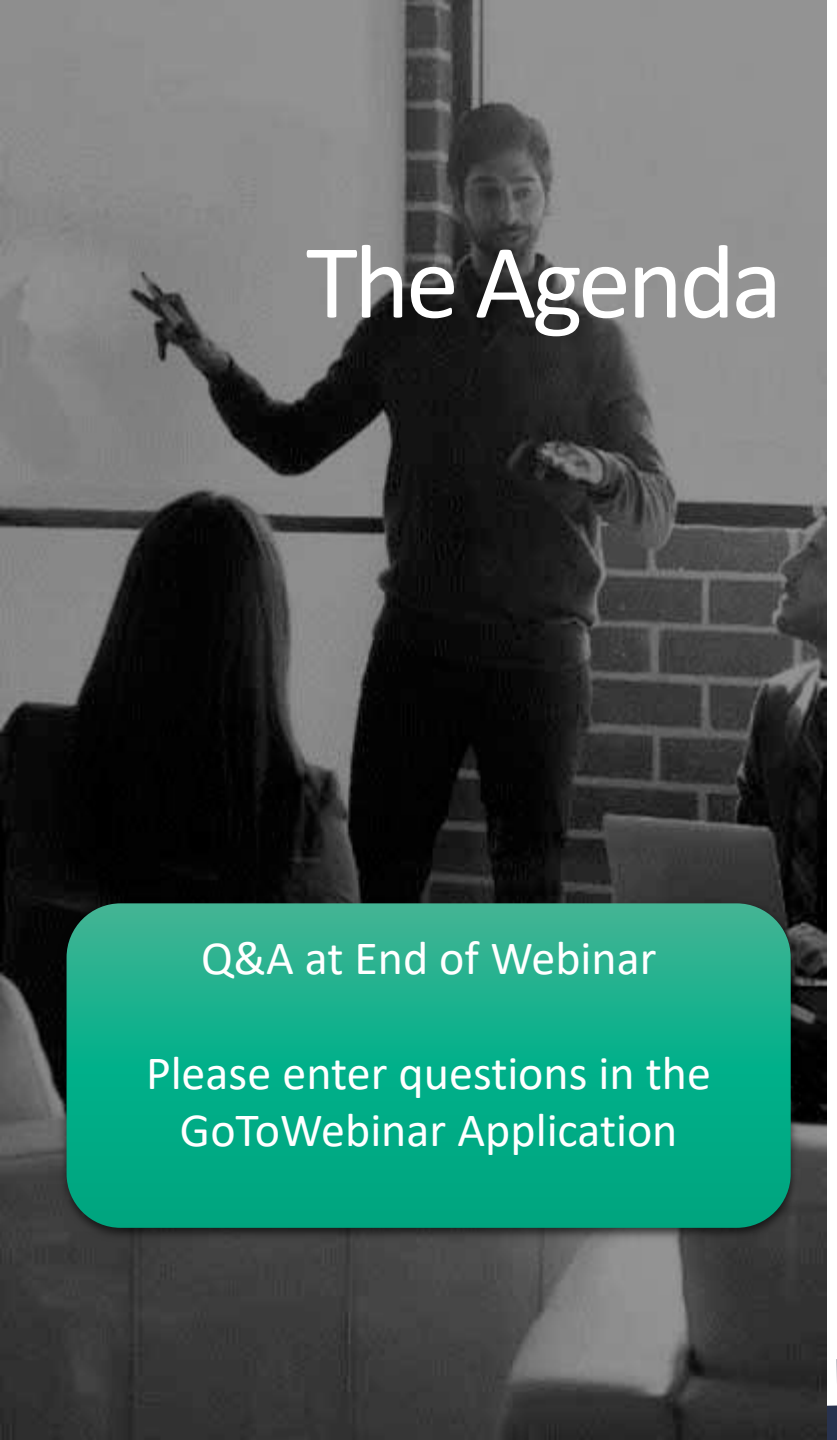
April 1, 2020

Community, Conference, Tips

POLL #1 – Top of Mind IT Topics

Today’s Moderator
Mark O’Brien



The Agenda

Q&A at End of Webinar

Please enter questions in the GoToWebinar Application

Introductions / Community Update

Mark O'Brien

Lighting Talks

- **Web Services Change Management**
  - Christoph Heinrich
- **CA Plex performance – SQL vs. DDS**
  - Kiyoshi Terasawa
- **CA Plex/2E/RPG Analysis (CM evolveIT), Open Access Analysis for CA 2E**
  - John Rhodes

Fall Conference Planning, Q&A

Mark O'Brien

CA 2E and CA Plex Community

Mark O'Brien

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CA Broadcom Product Management Team

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Pravesh Jha

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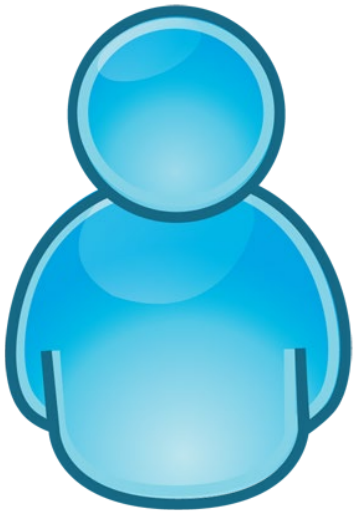


State of the CA 2E/Plex Nation

- Broadcom continues to support the product under “Enterprise Software”
  - Community needs to take lead on user groups
- Resellers are providing solutions for small customers
- CM First and other partners are here to help

Roadmaps

- "Making good progress on 2E upgrade. No change to timeline." -Prahesh Jha, 4/1/2020
- A lot is on hold everywhere due to the crisis.
- Questions can be posted on the Broadcom forum, or go through your reseller

Upcoming 11th Worldwide Dev Conference

- Planning is in Process...
- To be held in Austin, Texas
- Dates: Thursday & Friday, Oct 22-23 (before F1 Race)
- Discovery & Hands-On, Remote component
- More info later today on webcast

Supporting the Smaller Customer

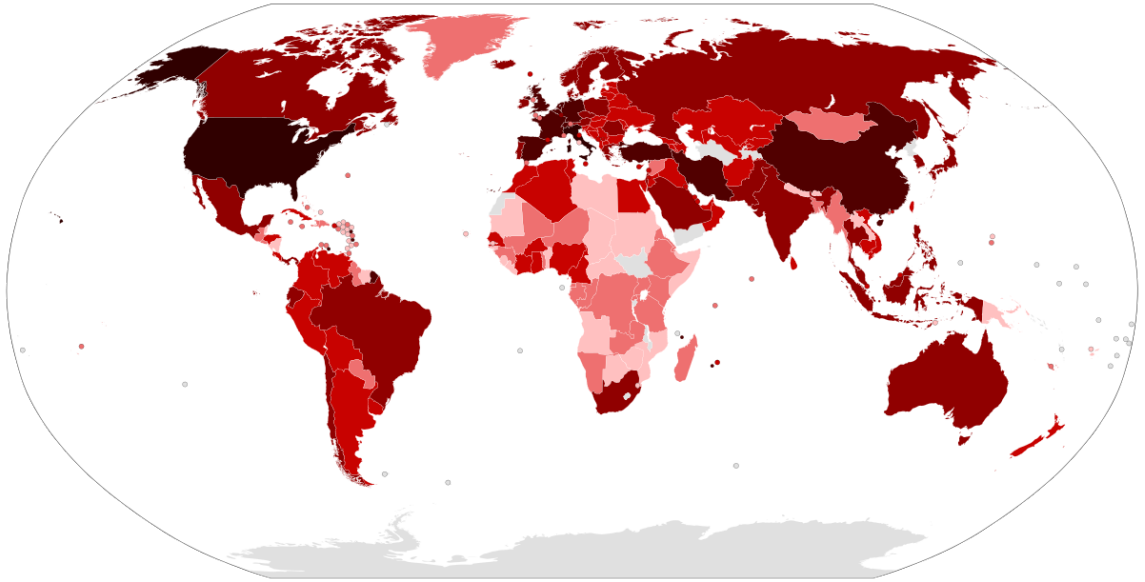
- Broadcom has a minimum revenue policy of 25K/year
- CM First is offering an affordable cloud bundle, in discussions w/ CA Broadcom

Concept is: Azure Cloud Instance

-CA Plex
-Compiler of Choice
-CM Matchpoint
-CM WebClient
-CM EvolveIT

CA 2E TBD

COVID-19 affects everyone of us.



- We understand it is difficult, and sometimes Broadcom is hard to reach
- We are here for the 2E & Plex community, if you need it –
- Our engineers can help at no cost to diagnose issues and make recommendations

POLL #2 – Conference: Remote vs In Person

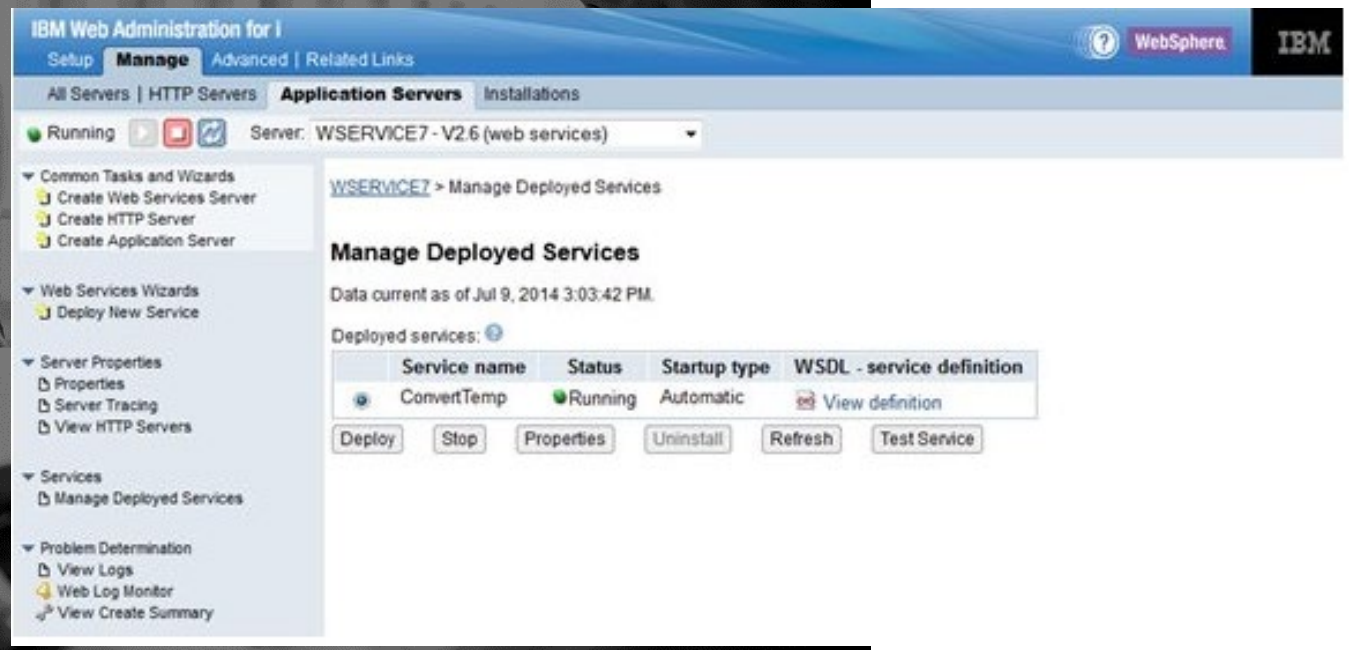
Lightning Talk #1 - Web Services on IBM i

Christoph Heinrich and Mark Schroeder

What we're going to talk about

- Creating Web Services from CA 2E
- Deploying Web Services on the IBM I using the Integrated Web Services Server IWS
- Automating Management and Deployment of IBM I Web Services

The Challenge



- The deployment of Web Services on the IBM I requires many manual steps.
- All steps need to be repeated every time a web service is deployed into a new environment.
- The manual steps are time consuming and error prone.
- There is no information stored about when a web service has been deployed.
- Parameter Names not meaningful

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IBM Web Services Wizard

Manual steps to deploy a SOAP or REST Web Service in the IBM I

1. Select IBM I Web Server
2. Select Deploy or Redeploy
3. Enter Service Name and Service Descri n
4. Set Parameters to Input or Output
5. Select User ID
6. Enter Library List
7. Specify Transport Metadata
8. Specify WSDL Options
9. Finish

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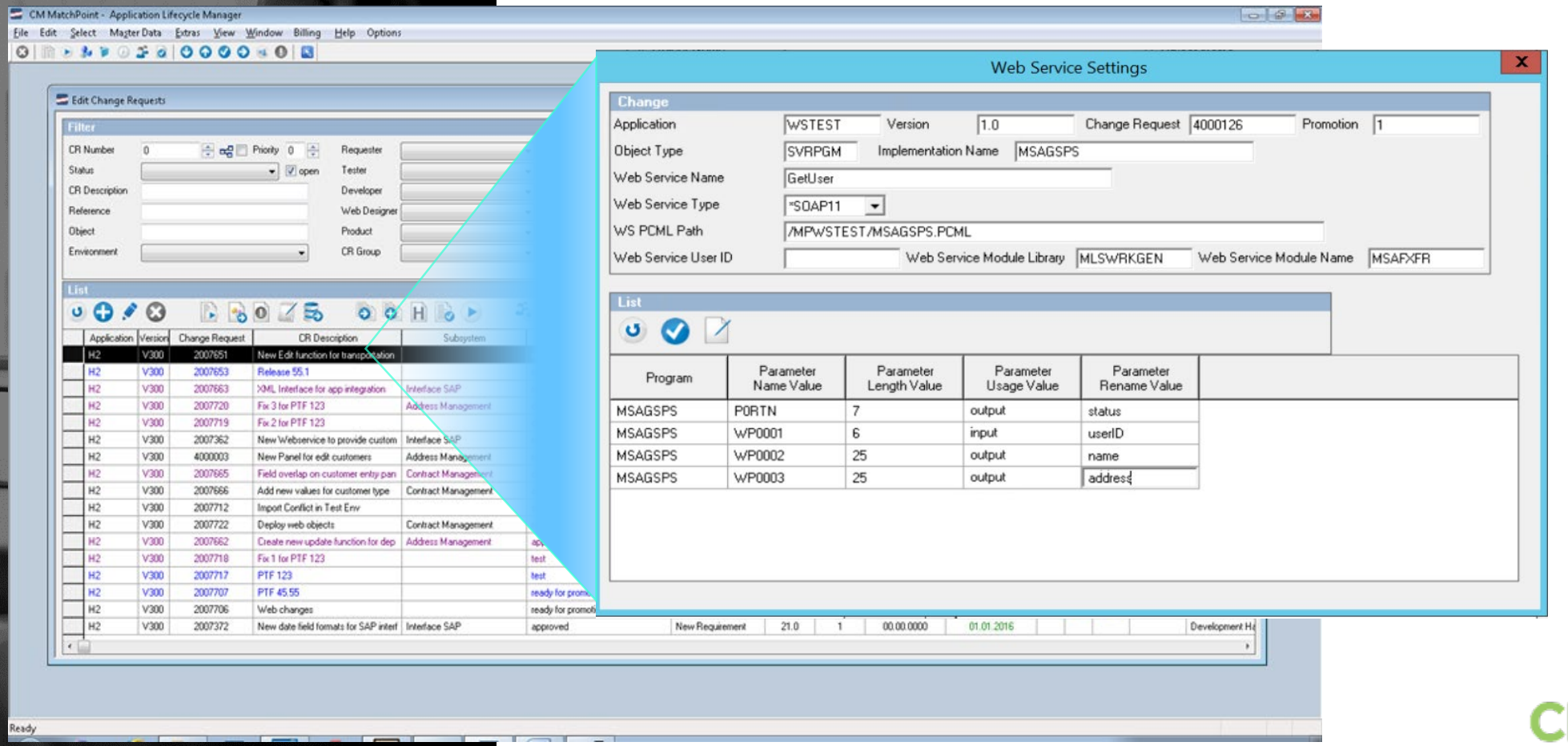
The Solution

CM MatchPoint ALM

IBM I Web Services Deployment



IBM Web Service Deployment

A CM MatchPoint ALM Module

1. Add the web service in CM MatchPoint (manually or through import)
2. Give it a name and define input/out parameters and meaningful parameter names
3. Press Deploy Button

Steps 1 and 2 only need to be done once. For all following deployments (to QA or Production) only need step 3.

Main Benefits of CM MatchPoint WS Deployment

- **Automated Deployment**
- Once a Web Service is defined in CM MatchPoint, the deployment process is fully automated across all environments
- **Deployment History**
- Every deployment is logged into the Deployment History and makes any change traceable in order to meet audit requirements.
- **Remote Deployment**
- IBM I Web Services can be deployed across multiple IBM I Servers
- **Deploy with other changes**
- The deployment of IBM I Web Services is fully integrated into the change management of the complete application. It can be deployed with any other object associated with the change.
- **Meaningful Parameter Names**
- The Web Service Parameters can be overridden with meaningful names. These meaningful names are used every time the Web Service is deployed
- **Integrated into DevOps process**
- The deployment of web services is fully integrated into the defined DevOps process and all rules of the process are enforced when deploying IBM I web services
- **REST and SOAP services**
- Option for XML and JSON

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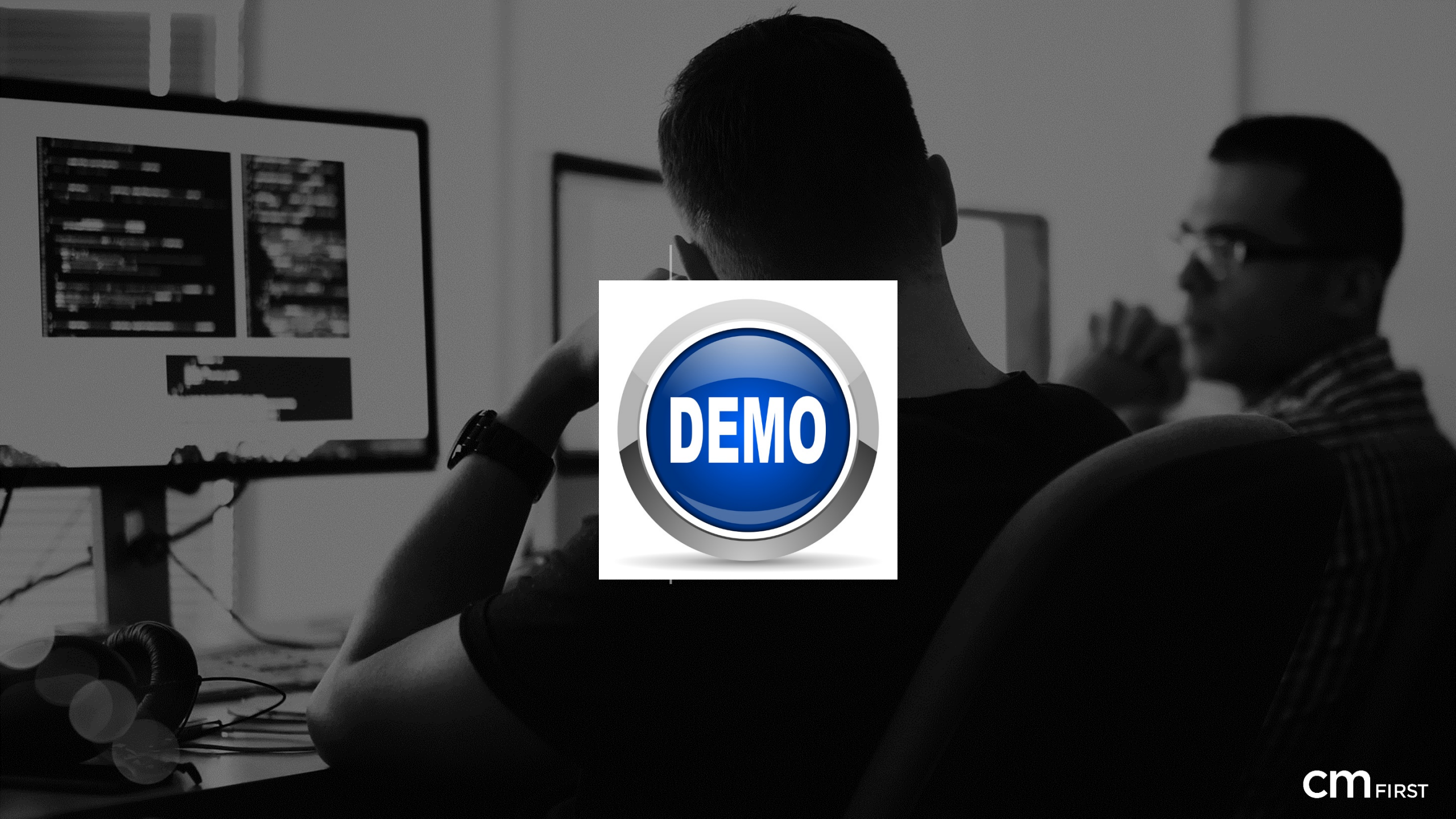
DEMO
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Lightning #2 – SQL Performance

Kiyoshi Terasawa

1. SQL Server performance is poor...
2. Plex generated SQL problems
3. CM Filter Pattern
4. Demo
5. Summary

initiation

- converted application from RPG to Java wasn’t usable
- poor performance
- in some cases it doesn't return any data

- number of record in a Table is a lot but that cannot be an excuse!

CA Plex generated SQL problems for Block Fetch

- position GE
- fetch Next
- set Row Usage in the Function Logic
- fill 64 records

position GE is not for SQL

- Plex original concept was simulating RPG SETLL and READ
- RPG SETLL doesn’t load any record to ‘ResultSet’ but SQL SELECT does
- how many records ‘ResultSet’ will have?
- All records matched unless you tell a limit
- no concept Fetch Next Restrict in SQL

position GE, problem…

- restrict only, (Position EQ)
- RST MyKey1

  WHERE MyKey1 = ?

  This is OK
- restrict with Position
- RST MyKey1
- POS MyKey2

  WHERE ((**MyKey1 > ?**) **OR** (MyKey1 = ? AND MyKey2 >= ?))

  This SQL return more records than you wish

  Fetch Next Restrict filtering extra records

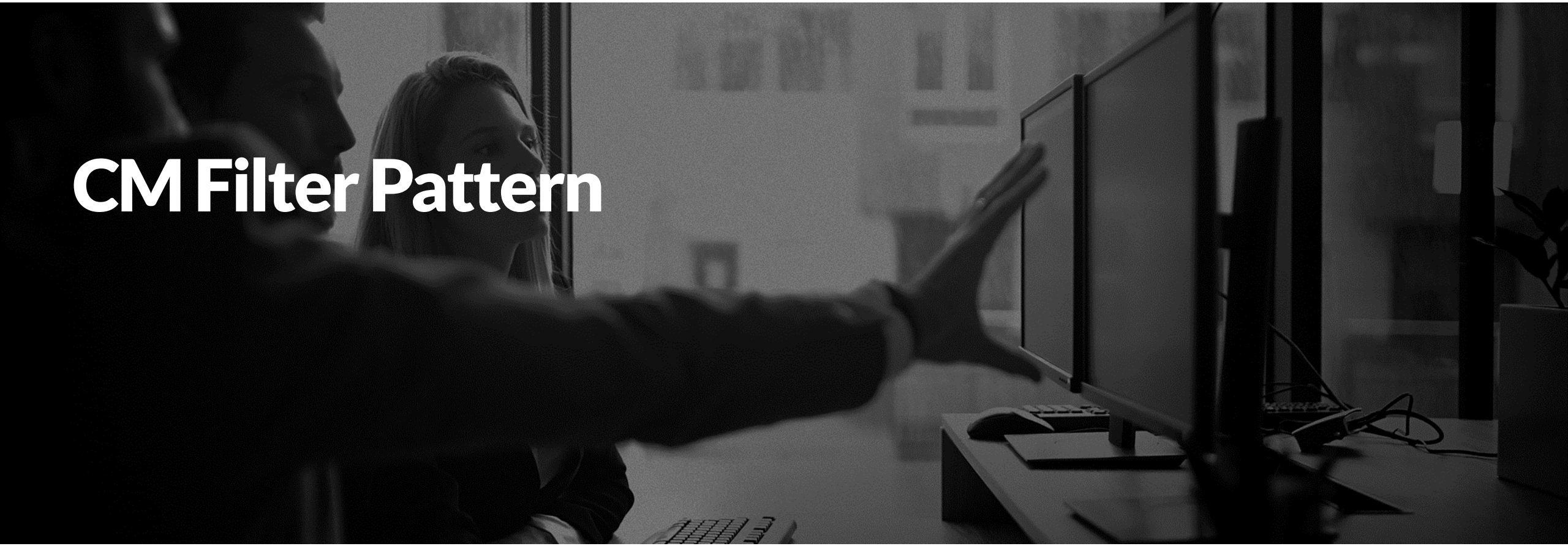
set Row Usage in the Function Logic

- read a record and check if you like it or not in Function (application) layer
- to fill 64 records to return, how many record you need to read?
- if you are lucky : 64
- if not, it could be ∞ (all records in the table)

increase machine power

- you try
- increasing CPU power
- adding memory

- hardware acceleration helps your software runs comfortably
- it won't make your code better



CM Filter Pattern

CM Filter Pattern

- very light BlockFetch and ProcessGroup base pattern
- provided as Plex exported XML and small runtime
- construct SQL at runtime and executed with EXECSQL statement

CM Filter Pattern : goals

- custom filter
- convert AD code block to set ‘UseRow = *No’ to SQL WHERE condition

- use pagination
- skip n rows read next m rows

CM Filter Pattern : filter

- custom where condition injection
- column and data comparison
- WHERE A = ‘M’
- WHERE A like ‘K%’

- column and column comparison
- WHERE A = B

- nested and/or comparison
- WHERE (A = ‘M’ or A = ‘X’) and (B > 100)

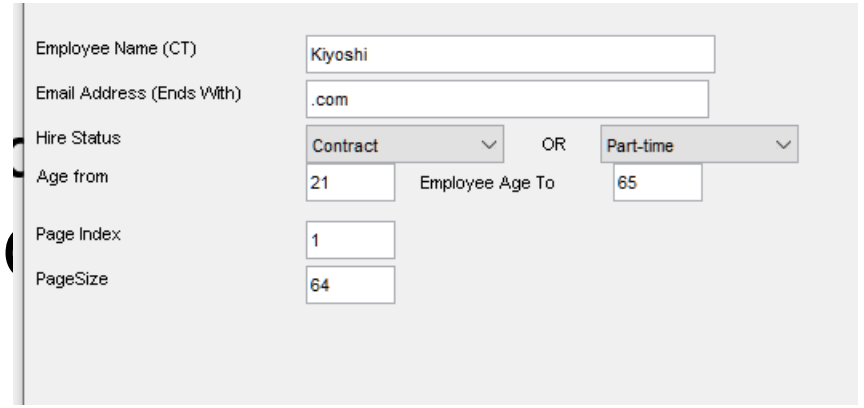
CM Filter Pattern : pagination

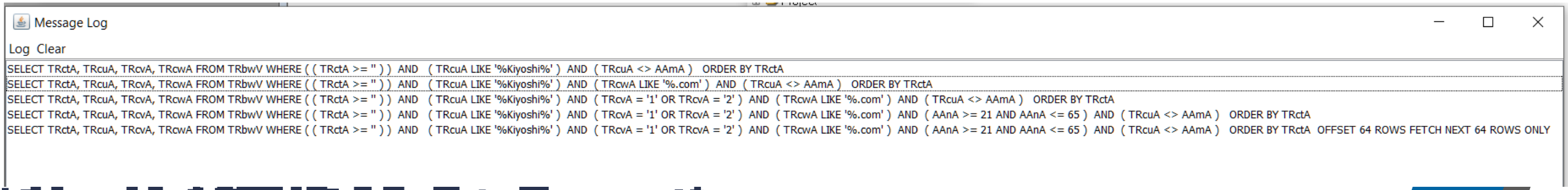
- true pagination SQL injection (skip n row read only next m row)
- page 1: Skip 0 rows reads next 64 rows
- page 2: Skip 64 rows reads next 64 rows
- page 3: Skip 128 rows reads next 64 rows

- if you can move all Filtering to SQL, this is the most efficient and what people are doing outside of Plex world

What you can achieve?

- ‘name’ Contains as Like ‘%data%’
- ‘Email’ Ends with as Like ‘%data’
- ‘hire status’ as two combined nested (
- ‘age’ (number) from data1 to data 2
- column comparison as column A <> Column B
- pagination





Demo

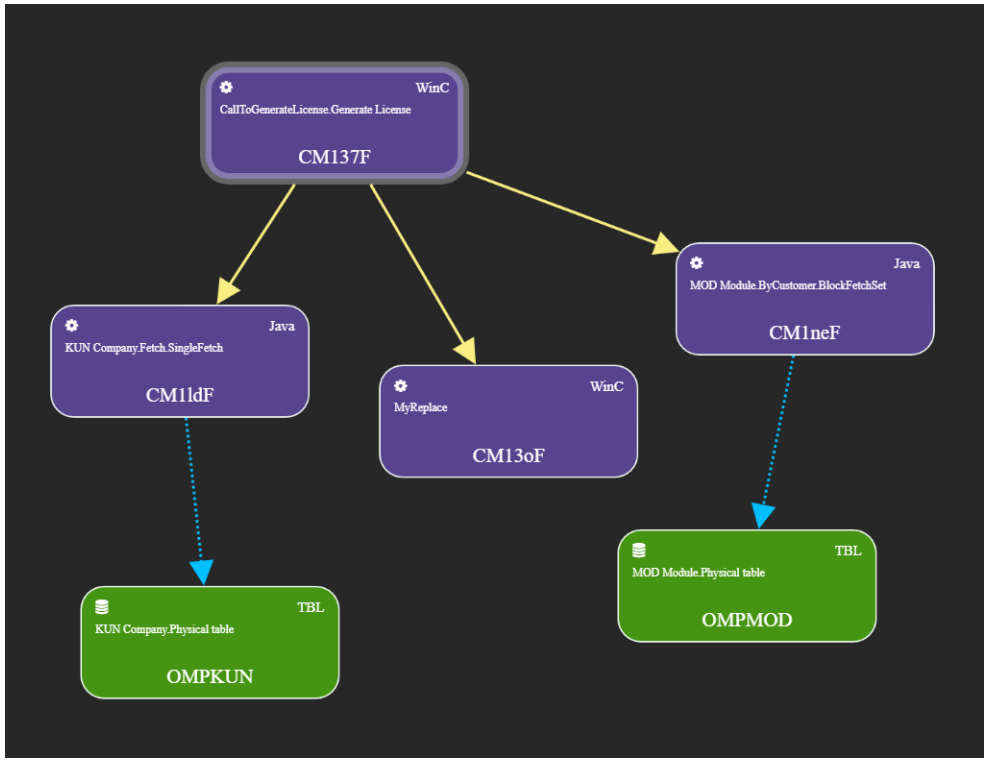
how to use?

- inherit ~FilterBlockFetch function
- analyze function and generated SQL
- modify action diagram as needed

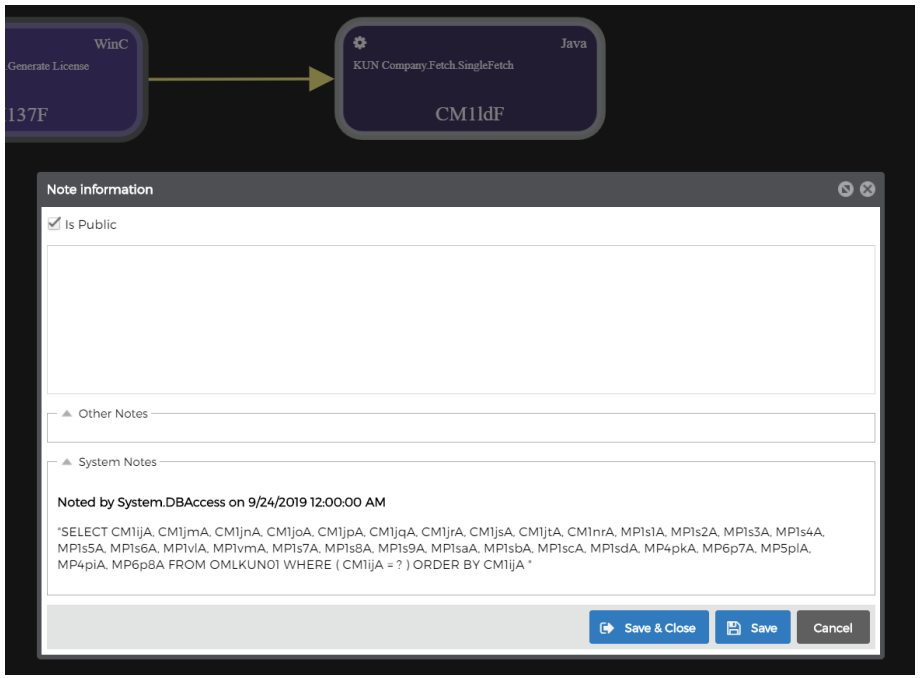
analyze with

cm EVOLVE IT®

- Detect Call Graph



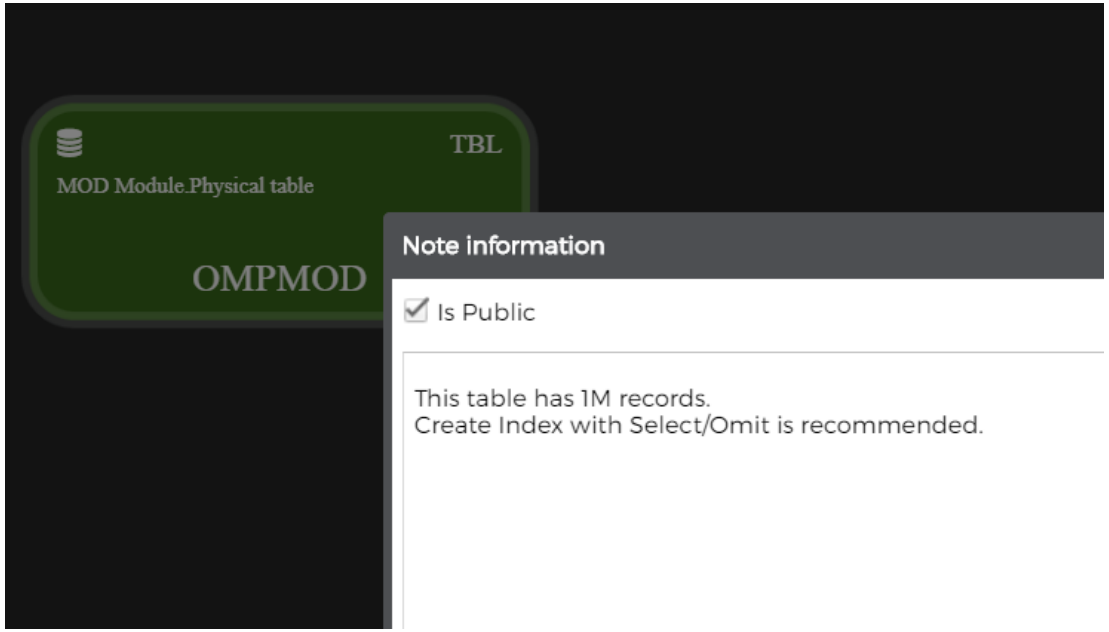
- Find SQL statement



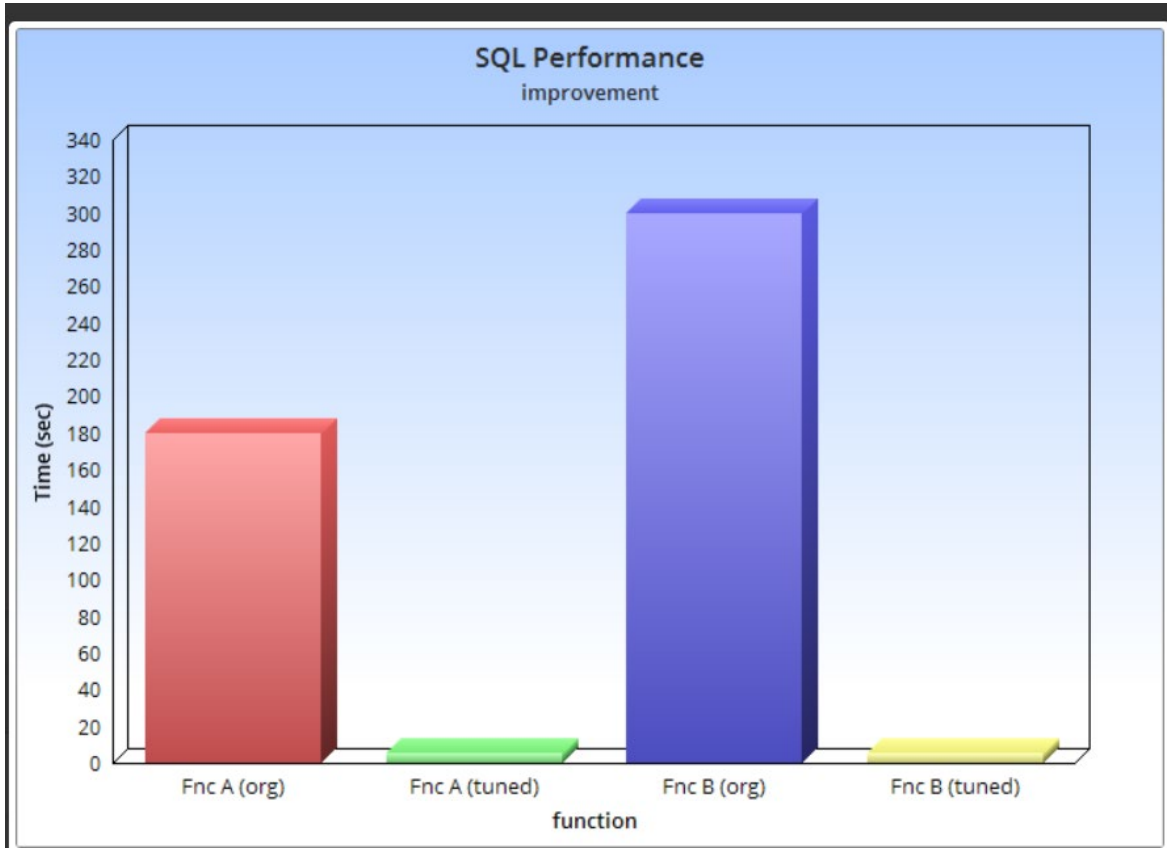
analyze with

cm EVOLVE IT®

- share information



improvement?



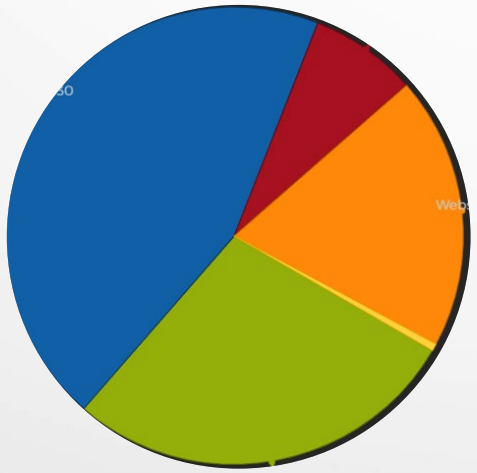
Summary

- implemented
  - for Java
  - for Microsoft SQL Server
- expandable
  - for .NET
  - for other database, Oracle, DB2…

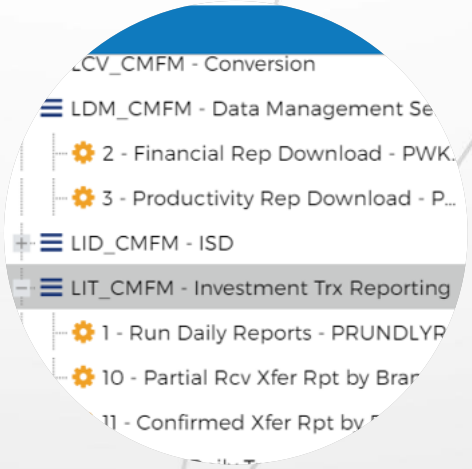
Lightning #3 – EvolveIT for CA Plex, 2E, and RPG + Open Access for CA 2E

John Rhodes

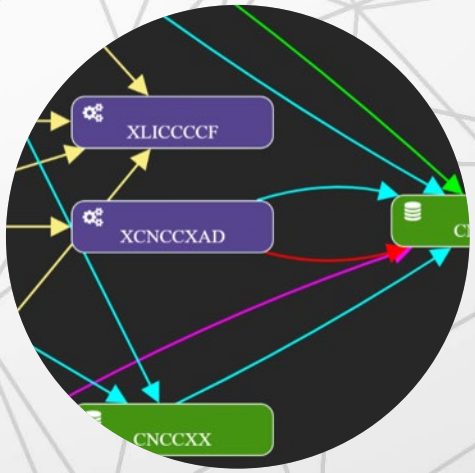
CM Evolve IT Overview



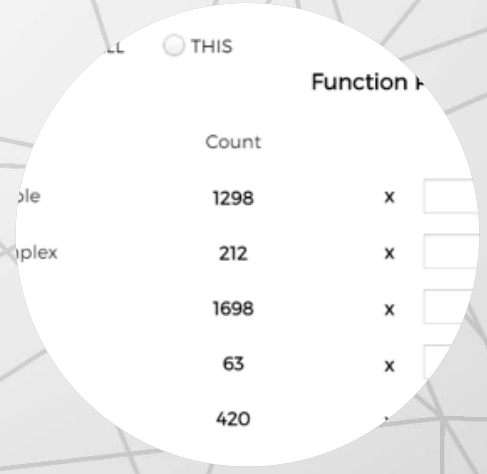
statistics



browse

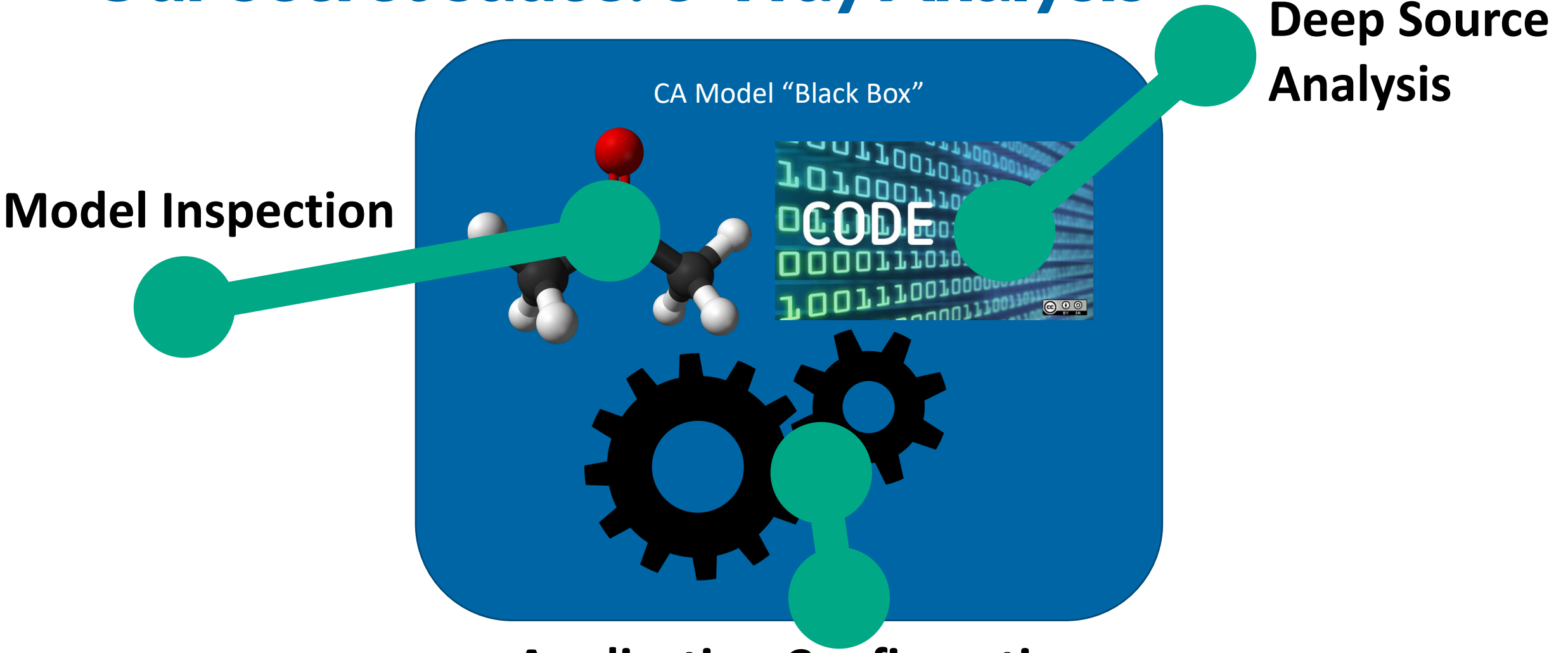


call graph



estimate

Our Secret Sauce: 3-Way Analysis



CM EvolveIT for 2E , Plex, RPG new features

- CLP, RPG, DDS parsing
- Dynamic Properties within Call Graph
- Call Graph Diagram UX

-Vertical and Horizonal view

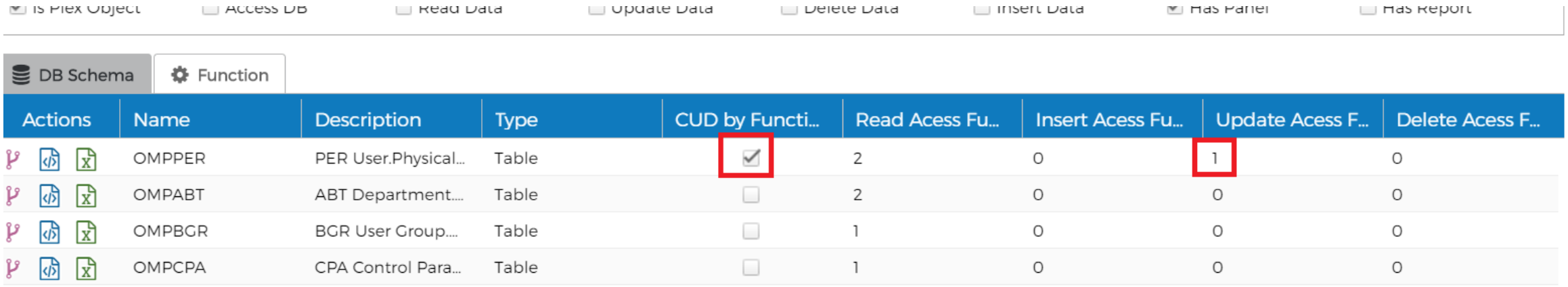
-Search

-Show/Hide Nodes and Edges

- Source code and Message Object Usage
- SQL statement extraction

Call Graph Analysis

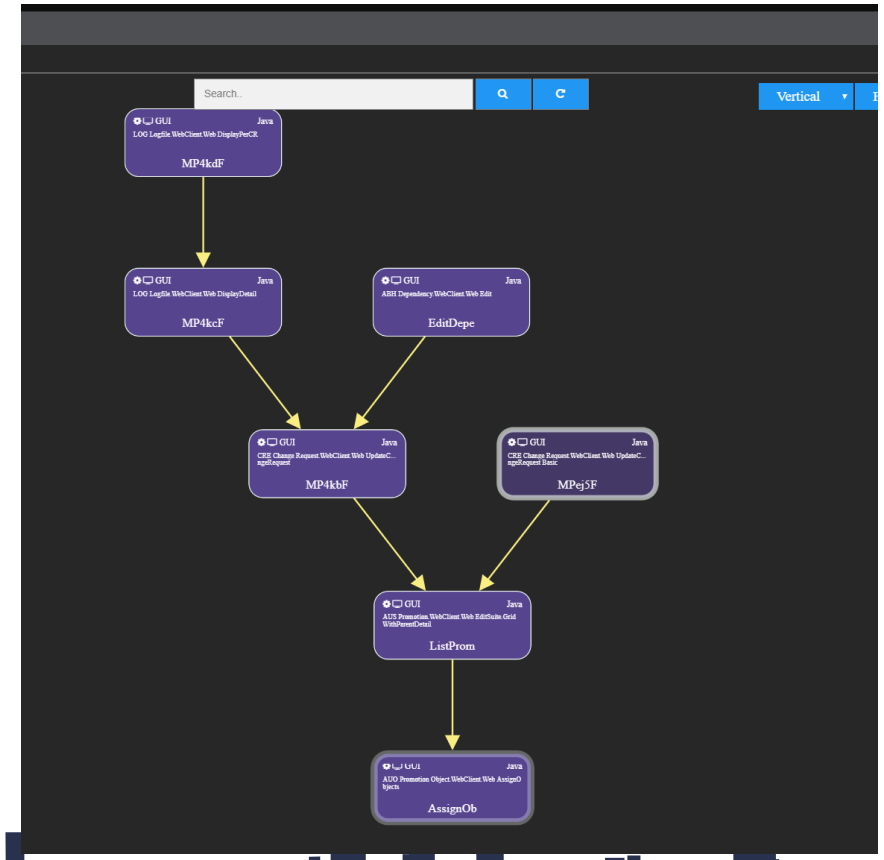
Analyzing DB Access within a call graph



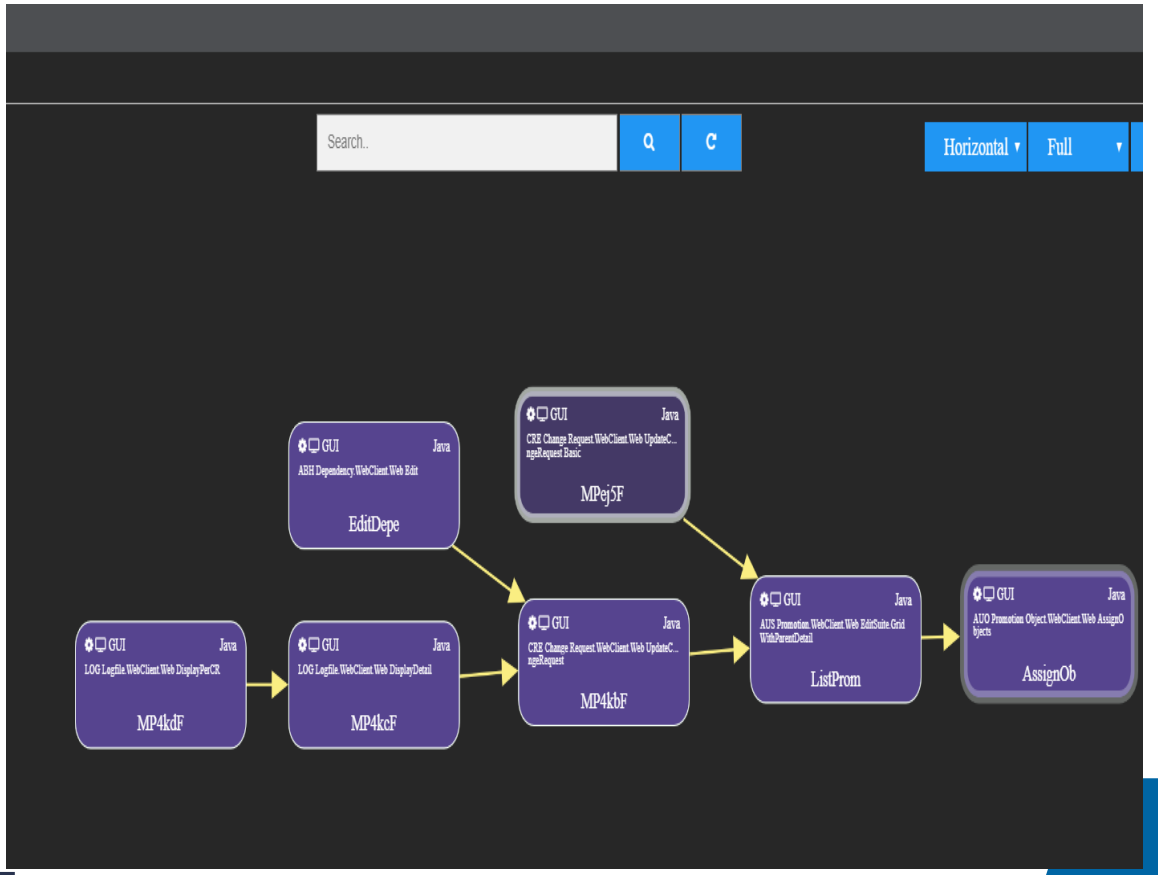
Actions	Name	Description	Type	CUD by Functi...	Read Acess Fu...	Insert Acess Fu...	Update Acess F...	Delete Acess F...
	OMPPER	PER User.Physical...	Table	☑	2	0	1	0
	OMPABT	ABT Department....	Table	☐	2	0	0	0
	OMPBGR	BGR User Group....	Table	☐	1	0	0	0
	OMPCPA	CPA Control Para...	Table	☐	1	0	0	0

Call Graph Diagram UX

- Vertical

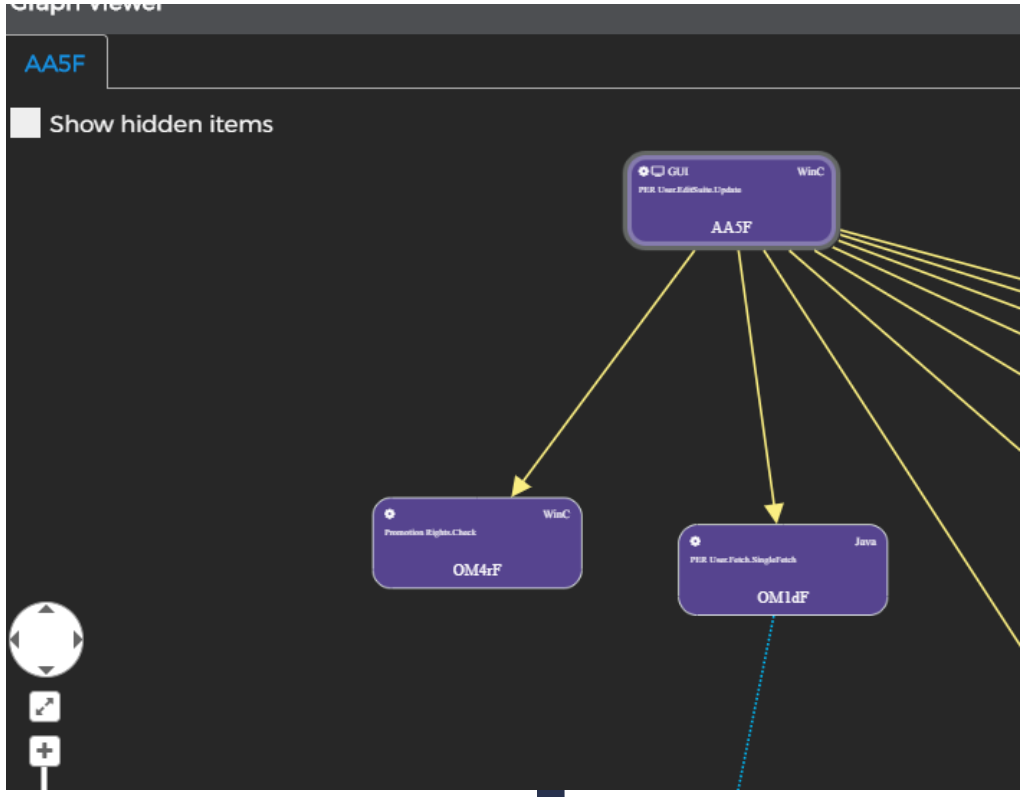


- Horizontal

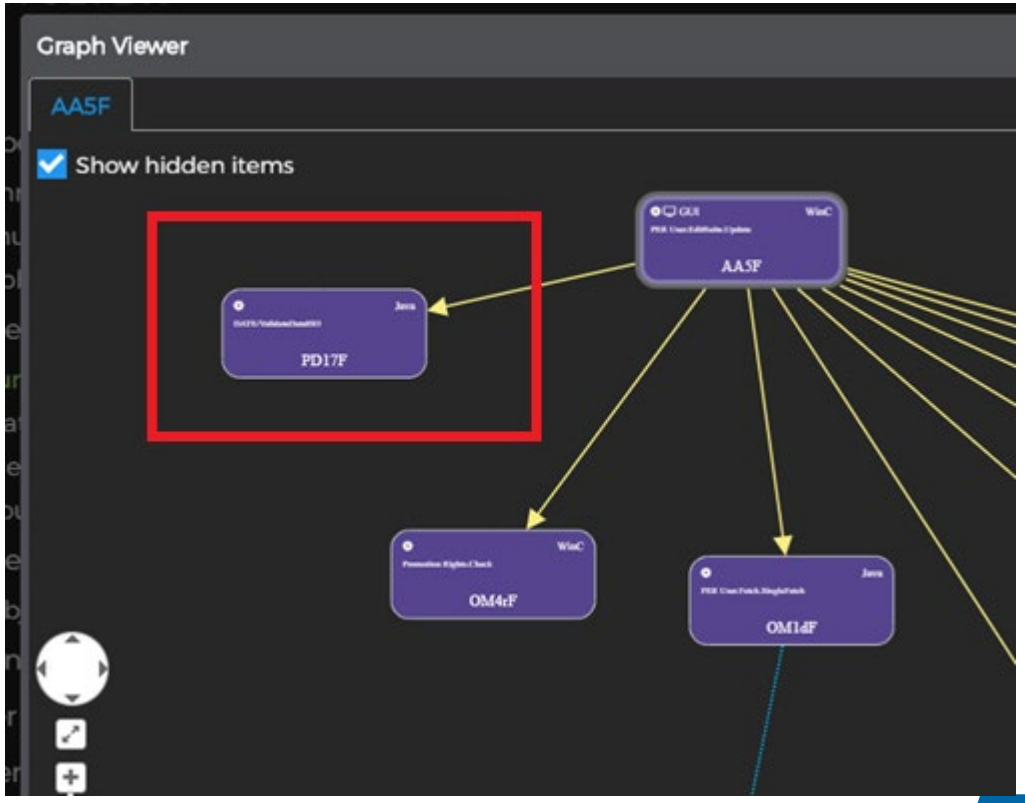


Call Graph Diagram UX

- Hide

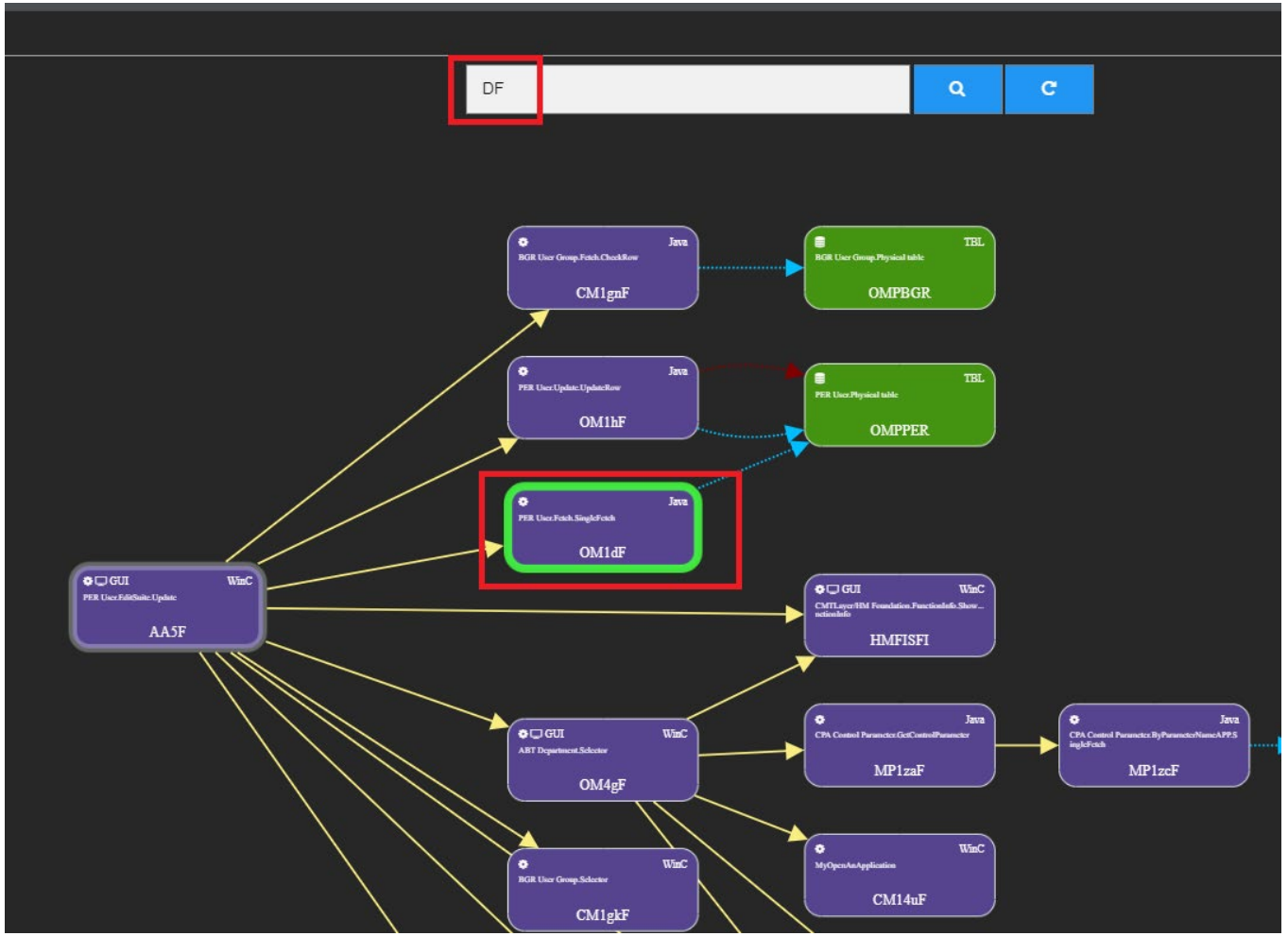


- Show

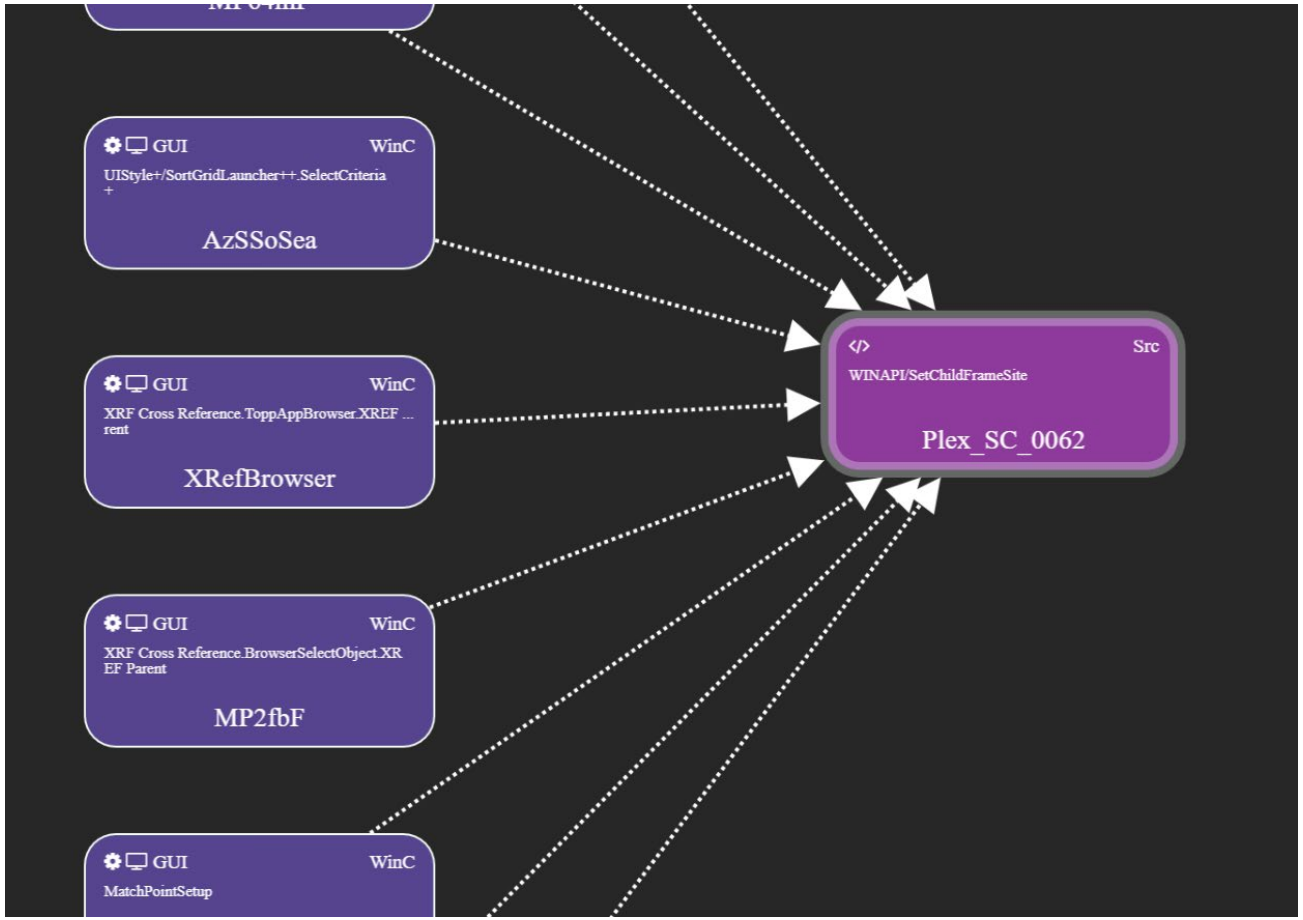


Call Graph Diagram UX

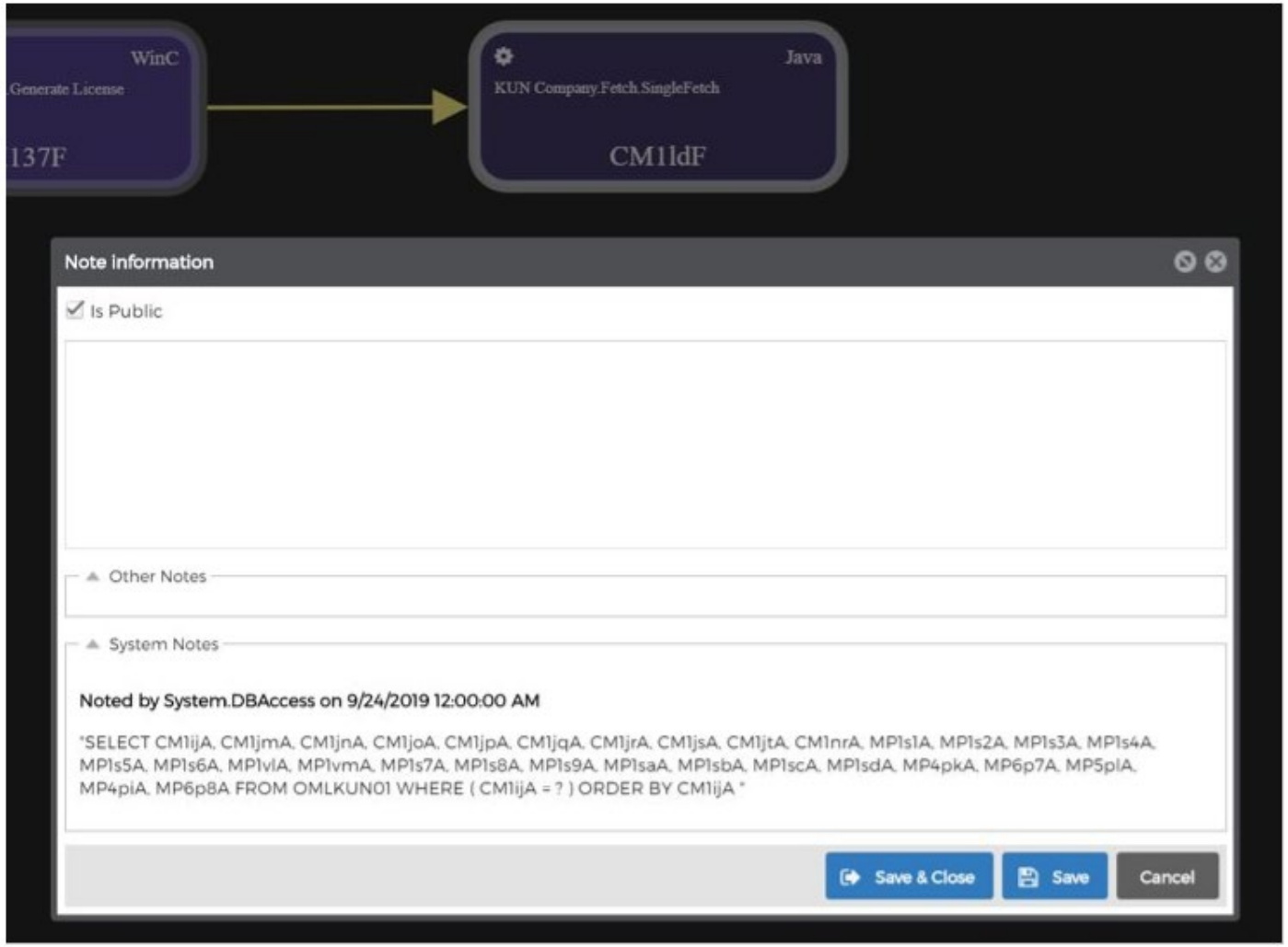
Search and highlight



Source code and Message Object Usage



Extract SQL statement



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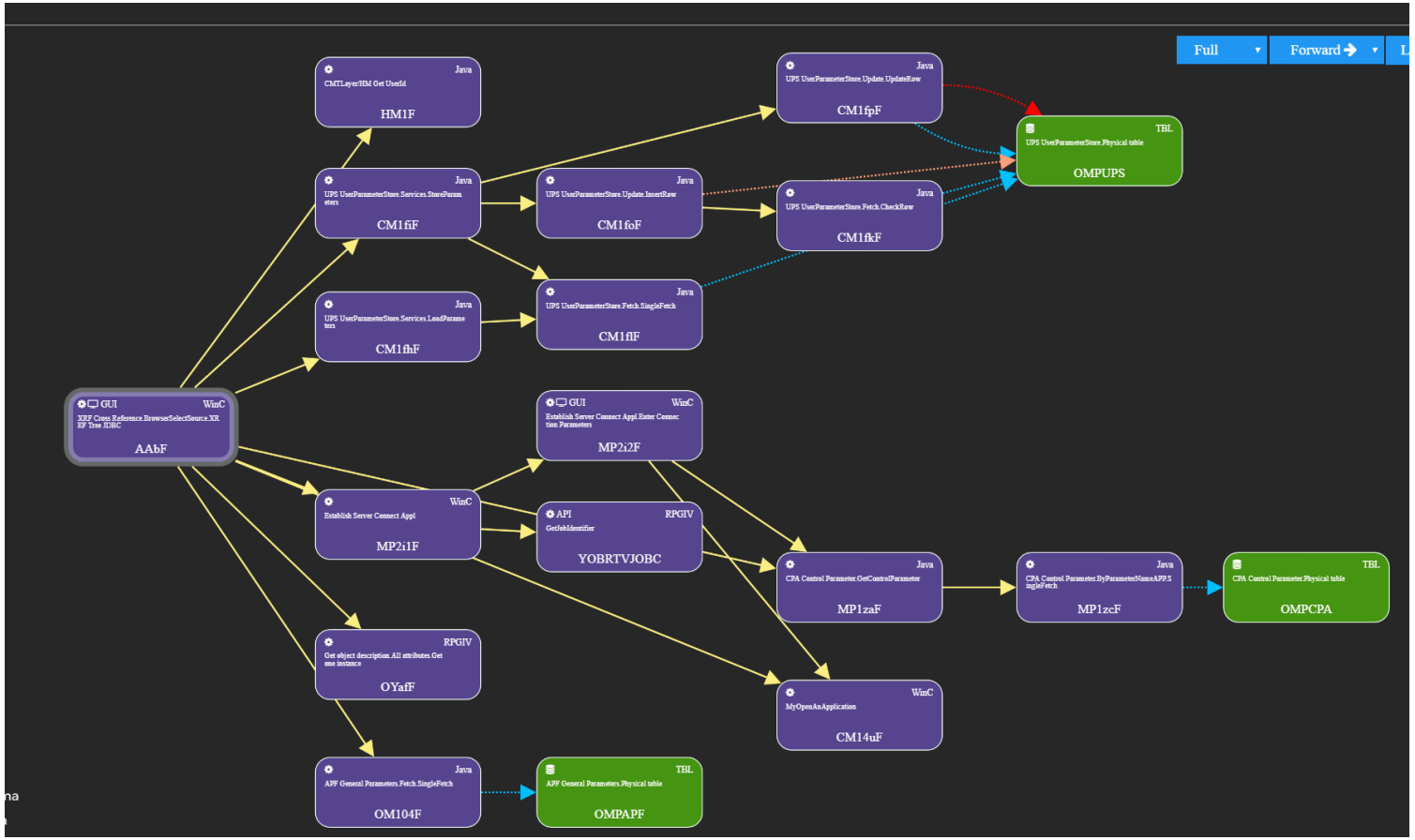
Rest API for CA 2E

Open Access for All

2E Data Model as ER Diagram?



Plex Has a Model API, but CA 2E has no API

- No officially supported access to 2E model – Must use internal files or reports
- Many (including CM First) have developed internal mechanisms to get at information.
- Sometimes it is easy (Files)
- Sometimes it is hard (Action Diagrams)

At CM First, we feel the time is right to **open access** for all

- Understanding
- Modernization

cm FIRST

Developing Rest API as Community Open Source

- Extensible
- Easy to use by anyone, with open source tools
- Can be used for any purpose (We will use for CM evolveIT and CM M3)
- Good for 2E Community

We are seeking collaborators in the CA 2E community to join us!

Initial Focus of Development

- Java Based REST API foundation (free tools)
- Object information by type, owner and name
- Data Model for Entity
- Screens and Action Diagram later

What is available now?

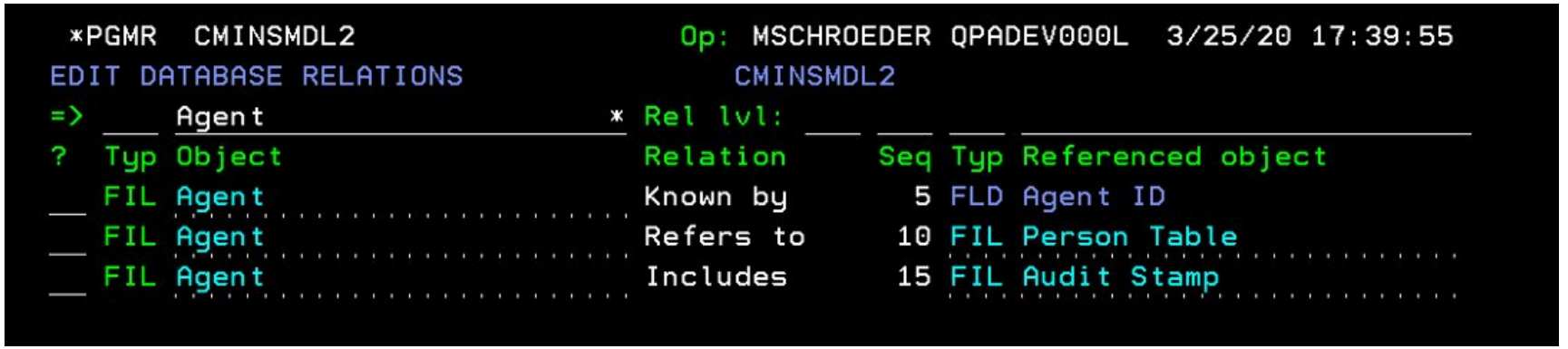
Object APIs
- GET Entity
- GET Field
- Get Function
- GET Accesspath

- Relation APIs
  - GET Entity Data Model

GET Entity 'Agent'


```
{
    "objectSurrogate": 1161,
    "object": "Agent",
    "objectType": "FIL",
    "objectAttribute": "REF",
    "implName": "AK",
    "creationTimestamp": "2015-02-24T01:02:23Z",
    "updateTimestamp": "2015-03-03T13:03:03Z",
}
```

GET Entity Data Model for Entity Agent 1161




```
{
  "relationSurrogate": 1164,
  "relationLevel": "KEY",
  "relationSequence": 5,
  "relationType": "Known by",
  "referencedObjectSurrogate": 1163,
  "refencedObject": "Agent ID",
  "referencedObjectType": "FLD"
}
```

```
{
  "relationSurrogate": 1165,
  "relationLevel": "ATTRIBUTE",
  "relationSequence": 10,
  "relationType": "Refers to",
  "referencedObjectSurrogate": 1026,
  "refencedObject": "Person Table",
  "referencedObjectType": "FIL"
}
```

```
{
  "relationSurrogate": 1214,
  "relationLevel": "ATTRIBUTE",
  "relationSequence": 15,
  "relationType": "Includes",
  "referencedObjectSurrogate": 1200,
  "refencedObject": "Audit Stamp",
  "referencedObjectType": "FIL"
}
```

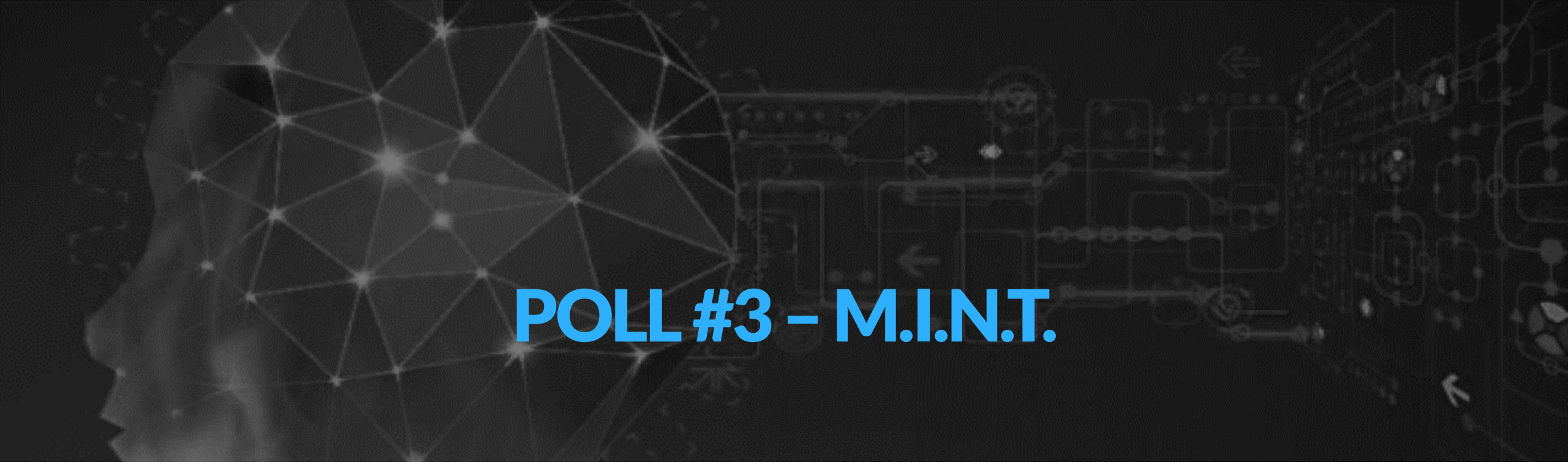
GET Function


```
{
    "objectSurrogate": 1104895,
    "object": "ABT PMT Agent",
    "objectType": "FUN",
    "objectAttribute": "RP4",
    "ownerSurrogate": 1161,
    "owner": "Agent",
    "implName": "INCIPVR",
    "creationTimestamp": "2015-06-01T19:06:01Z",
    "updateTimestamp": "2016-01-12T17:01:12Z",
    "functionType": "PMTRCD"
}
```

Demo

Possible Use Cases?

- Visualize 2E model in CM evolveIT (Under development)
- DevOps?
- Gen and build CA 2E Functions as Rest API?
- Use JT400.jar to execute commands?
- Enhance Screen Scraper Front Ends?
- Extract Action Diagram for analysis?



POLL #3 – M.I.N.T.

Fall Conference Planning

Mark O'Brien

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Upcoming Conference

- 2 days – In Person and Online mix
- 1 day lecture, 1 day lab
- Broader than just Plex/2E Developer/Devops - also featuring:

- RPA
- Security
- IBM i

Call For Speakers

- We all have an idea, story, tip to share ...
- Can be about 2E, Plex, SQL, Automation, Data Security, Test, etc.
- Get a FREE Conference Pass
- Also a special, unique Gift for participating

POLL #4 – SaaS Access to Plex/2E

Q&A

Please use the Question feature in Webinar

Thank You and Until Next Time

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