Disclaimer

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Risk and Compliance
How we are evolving

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Fircosoft **Bankers** ALMANAC

The risk and compliance landscape is changing rapidly, and our solution is evolving to fit the needs of our customers

We continue to build out our product roadmap to deliver features and functionality that help our clients stay ahead of industry changes. These include improvements that:

1. Allow users to screen (and prove that a record has been screened) any type of record (**payment transactions**, **accounts** and **trade**) for any defined period of time to support compliance and regulatory policies.

2. Provide a seamless experience for new and existing customers to utilize one application and no longer differentiate between Firco Compliance Link Classic and the Automated Screening Manager (ASM).

3. Facilitate a path for existing customers to use the new unified Firco Compliance Link experience.

4. Update the application architecture to support the existing features, new features and the user experience.

Customer facing products in this suite include:

Firco Compliance Link Classic
Acts as the main solution with all functionality of screening, workflow, case management and admin functions.

Firco Compliance Link Web Service
Single API for screening records on a one-off basis.

The Automated Screening Manager (ASM)
Ensures that all phases of client to client relationships can remain compliant by aligning customer data with the Accuity Global WatchList data. ASM knows when and what to screen, reducing overall processing times and manual intervention providing a holistic case view.

ASM Web Service
Single API for importing and screening records in ASM. We also support case management services for pulling case and match information or for activating and deactivating cases.

Private List Manager (PLM)
Create and update private list data to load into Firco Compliance Link.

Trade Compliance Manager (TCM)
Replacing CLM, Manage dual use goods screening and vessel tracking settings.

Firco Compliance Link - overall project summary 2018 -2019

2018

Q1	Q	Q	Q
3.4 (Feb 2018) • ASM sub-case customization • ASM notification API • File upload restrictions • ASM screening enhancements • Security and BAU	**3.5** (July 2018) • ASM ship enforcement alerts • ASM screening recurrence • ASM passed by rules enhancement • Security and BAU		**3.6** (Oct 31, 2018) • ASM SFTP case deactivation • ASM automated case deactivation through Web services • ASM passed by rules enhancement • Security and BAU

2019

Q1	Q	Q	Q
3.6.1 (Q1 2019) • Security and BAU	**3.7** (April 2019) • ASM user assignment enhancements • User Interface and user experience changes • ASM read-only users • ASM storage of match meta data • Child IDs available for goods screening • Airport code Identification for trade screening • Security and BAU		**4.0** (Nov 2019) • Firco Compliance Link A&E • A new version of the ASM Web Service

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Version 3.4 (custom sub-case types and integration APIs)

Provides additional workflow flexibility and opportunities to integrate with other systems

Workflow improvements –

"increased control and flexibility"

- Create custom sub-case types
- Changes to case review screen and case search to accommodate new sub-case types
- Sub-case priority
- Re-assign cases after changes to workflow

ASM integration options –

"connecting compliance to other systems"

- ASM notification suite
- Case and Match detail services
- Firco Compliance Link/ASM Web Services v2.0
- Security posture improvements

Configurable sub-case types allow specialized review processes

Previously, there were four default sub-case types (GWL, PEP/EDD, commodity and private) for every dataset that are used to organize case level matches.

Allowing users to segregate matches by watch list and match type provides users with more flexibility

- Prioritize key lists (e.g. OFAC, EU, UN)

- Separate multiple private lists based on branch or business line
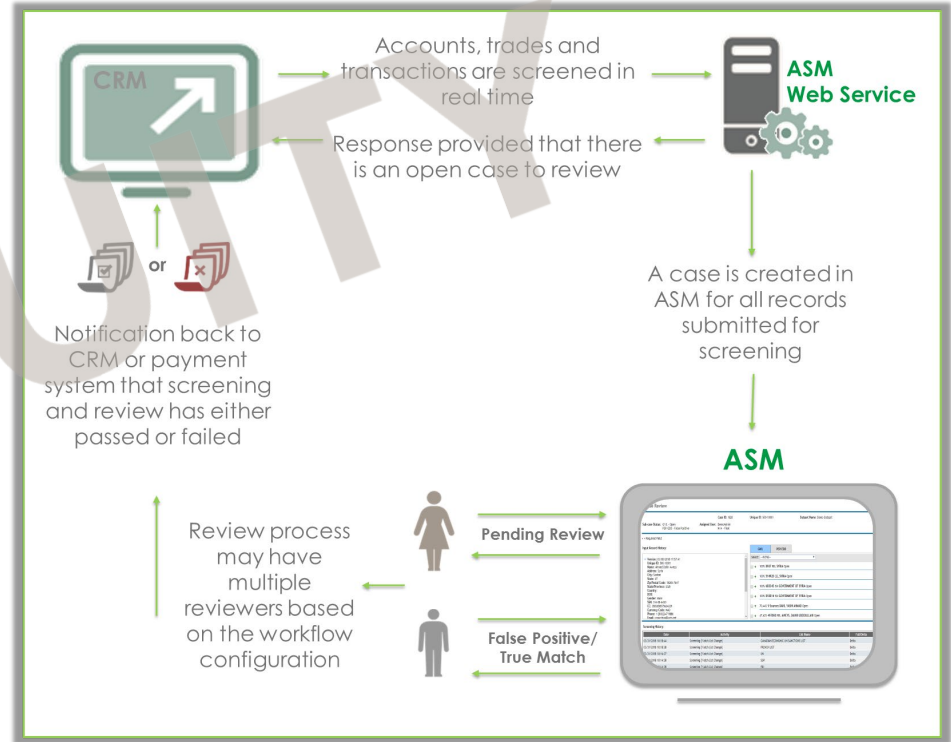
- Build workflow for users to review only the matches you would like

A Dataset reassignment mechanism has also been included in 3.4

What do notifications mean to your business?

Types of integrations/ processes that ASM custom notifications could support

1. Integration with source systems (e.g. CRM, payment processing application, core banking system)

2. Custom email notifications (e.g. real-time alerts for escalations) to alert reviewers that that a case has been assigned to them or a decision has been made

CRM

Accounts, trades and transactions are screened in real time

Response provided that there is an open case to review

ASM Web Service

A case is created in ASM for all records submitted for screening

Notification back to CRM or payment system that screening and review has either passed or failed

ASM

Review process may have multiple reviewers based on the workflow configuration

Pending Review

False Positive/ True Match

Request Case and Match details through an API

Case Detail service to allow clients to pull extra details on a case

- Current status

- Active input record version

- The sub-case status information:

    Assigned users

    Status

    Created date

    Count of matches in the sub-case

- High level match information

Match Detail service to allow users to pull further information on Matches.
This will include the high-level information above, but will also include:

- Disposition history

- Entity information

- Stop descriptor / synonym match information

Version 3.5 (Ship Enforcement Alerts and ASM Screening Duration)

Provides major security enhancements and additional screening mechanisms to configure records to be screened for a defined period of time along with improving our trade proposition.

ASM Screening Improvements–

"increased control and flexibility"

- Define the duration of screening in ASM for ach record
- Search for the correct vessel IMO, see the history and get alerts when a vessel enters a sanctioned port.

Security Enhancements–

"Be confident that your data is safe"

- Removal of Struts from all modules
- New JWT token authentication

All Struts framework removed from all of Firco Compliance Link and support modules

We have completely rewritten Firco Compliance Link and have removed the STRUTS Framework opting for Spring MVC

- **Current 3.4 version of Struts is 1.2.4**
  - Many vulnerabilities tied to this version (cross site scripting, bypass input validation routines, etc.)
  - This version of Struts was completely unsupported

- **Spring version in 3.5 is Spring 4.3.15**

- **We have also updated more libraries in all applications and modules.**

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New JWT token validation between Firco Compliance Link and our modules to improve security

Communications from Firco Compliance Link to our modules now utilize JWT token authentication (improved from our previous authentication using asymmetric keys)

- This affects navigation between Firco Compliance Link, ASM, PLM and CLM.

- There will be two keystores required moving forward
  - one for Firco Compliance Link itself
  - one for Firco Compliance Link's modules

- Our web services are unaffected by these changes
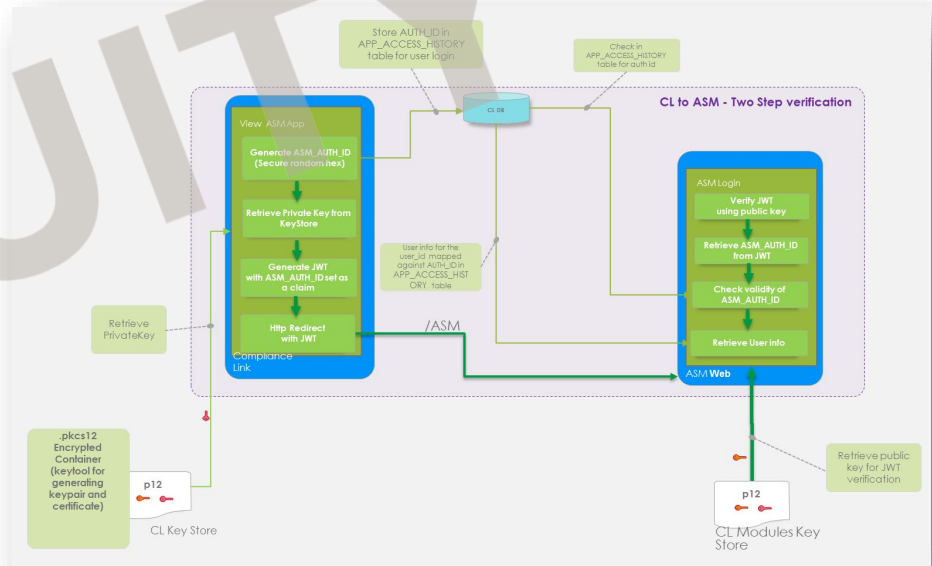
Further Security Improvements

Here is a short list of issues remediated by moving to off struts framework.

Security Enhancement
XML External Entity allowed
Update Symmetric Key for Token Generation
Stored XSS
SQL Injection
Second Order SQL Injection
Reflected XSS All Clients
LDAP Injection
JWT authentication on Login
Cross-site Scripting
Complete Struts Removal

ASM Ship Enforcement Alerts (SEA)

Currently, users can screen vessel names and other commodities against Accuity Global Watch Lists and Commodities Lists. We will now allow users to track vessel (ship) movements and receive alerts when vessels enter sanctioned ports. Tracking is done by matching International Maritime Organization (IMO) numbers with a users vessel. The following features have been added:

- New trade compliance screening for a vessel's journey

- Vessel IMO search functionality in the ASM Lookup

- New data type to indicate which field in a dataset is the vessel IMO number

- Case review will display a new Sub-case type for vessel alerts

- Alerts for when a vessel wither enters a sanctioned port or is in the proximity of a sanctioned port

- Vessel history allows users to see a vessel's holistic journey for the past twelve months

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ASM Screening Recurrence

Administrators can now choose the screening duration for each screening instruction. This determines how long input records are screened against selected sanctions lists. The following features have been added:

- New screening duration options (continuous delta screening, custom screening end date and one-time screening only) at the dataset screening instruction level

- A screening expiration date can be set for a specific input record through the ASM Web Service and/or ASM Lookup

- Case review will now indicate the date of the screening expiration (when applicable)

- Case search results will now detail the screening expiration date (when applicable)

- The full audit trail has been enhanced to advise when screening has occurred

ASM Screening Expiration

Allowing customers to set a screening expiration date via the ASM import and screening service will provide even more flexibility.

In the request header tag we will add a new optional attribute "ScreeningExpirationDate" with a MM/DD/YYYY format.

```
<Request ClientID="e0fd7adb-c9bb-4f4e-803c-89f496b8dc1c" Id="1004 ScreeningExpirationDate="12/31/2018" >
    <Field Name="Id" UniqueField="Y">999887656</Field>
    <Field Name="Name" NameField="Y" Category="NAME">Fidel Castro</Field>
    <Field Name="Address">2402 W Main Street</Field>
    <Field Name="City">Nashville</Field>
    <Field Name="State">TN</Field>
    <Field Name="Country">US</Field>
</Request>
```

Automated Screening Lookup

• = Required Field

Dataset: Demo Dataset ▾ Go

Unique ID: [_____] Search

- • Unique ID: 01232018
- Name: Thomas Kestler
- Address: 123 RELX Street
- City: Cityville
- State: Illinois
- Zip/Postal Code: 60102
- State/Province: Cook County
- Country: USA
- DOB: 08/15/1985
- Gender: Male
- SSN: XXXXX1234
- CC: XXXXXXXXXXXX4321
- Currency Code: USD
- Phone: 847-AWE-SOME
- Email: tom.kestler@accuity.com
- Website: Accuity.com

Screening Expiration: 1/23/2018

	January 2018				TODAY	
Sep	Su	Mo	Tu	We	Th	Fr Sa
Oct		1	2	3	4	5 6
Nov	7	8	9	10	11	12 13
Dec	14	15	16	17	18	19 20
2018						
Feb	21	22	23	24	25	26 27
Mar	28	29	30	31		
Apr						
May	February 2018					

Import & Screen   Reset

Response

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Version 3.6 (Case deactivation and passed by rules display in ASM)

More features to avoid unnecessary screening in ASM

Security Enhancements–

"Be confident that your data is safe"

- Framework and library version

- Removed Insecure Direct Object References on various

- Fixed issues on various screens in Compliance Link and supported modules
  to prevent possible Cross-site scripting (XSS) and SQL injections.

- Updated XML parsers in Compliance Link and supported to prevent XML external Entity injection (XXE) and CSV injection.

- Plain text passwords used for Database connectivity will now be encrypted in the property files

ASM Screening Improvements–

"Increased control and flexibility"

- Deactivate cases through SFTP

- Deactivate cases through an API

- Display records that are passed by rules correctly on the review screens.

More options to deactivate cases

Customers would like the ability to inactivate cases in Bulk or manually through an API.

- We will allow customer to drop a file that will bulk inactivate cases

- We will build a new API or enhance our current API to allow customers to inactivate cases through Web Service calls

Fircosoft
// integrated with Accuity
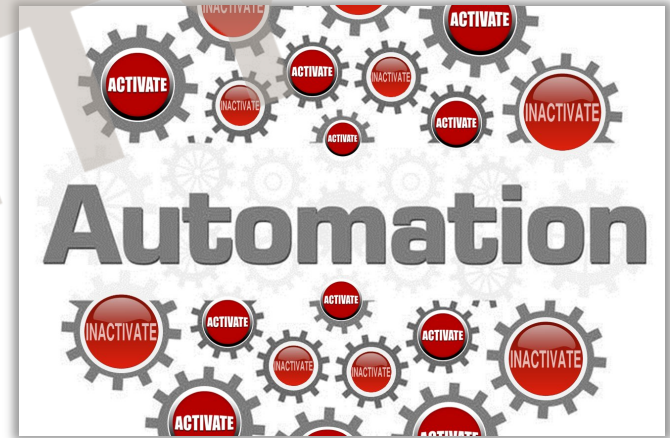
ASM Passed by Rules Enhancements

The following scenario in ASM is causing customer confusion. A match is considered passed by rules in ASM when any SD passes any rule, even if there are more matches (for the same entity) from different input record fields.

Version 3.6.1 – Small feature and security release

Version 3.6.1 was released in February 2019 delivering security updates to Firco Compliance Link and new features in ASM

3.6.1 Delivers:

- High availability LDAP (for our intranet customers) allowing for multiple LDAP URLs

- Performance enhancements to ASM and the ASM Web Service

- Password encryption on plain text passwords in the Firco Compliance Link Key Store

- Better logging and presentation on the UI for ASM Import failures

- Security enhancements on compressed file uploads in Private List Manager

- Fixed a UI issue regarding ASM screening and representation of full and delta loads.

Version 3.7 (Visual changes and user experience enhancements)

Along with a new and modern look, updates to the ASM workflow and feature roles have been made to ease the user experience while providing more functionality

Enhancements–

"Increased the user experience and flexibility"

- New and modern interface

- More assignment flexibility in the ASM Workflow

- New read-only user role for ASM

- Storage of more match information in the ASM DB

Fircosoft rebranding

April 2019 brought new changes to Firco Compliance Link and the Fircosoft product suite:

- "Cousins" to Firco Live Services etc.
- "Sibling" modules ASM, ILS, WS, PLM, CLM, Firco Trade Compliance

Design of Firco Live Services

Current Compliance Link

Rebranding goals

Help users stay oriented within our product using visual hierarchy

- Where am I?
- Where did I come from?

- What am I looking at?
- What do I do next?

Current Compliance Link

Rebrand Design

Rebranding actions

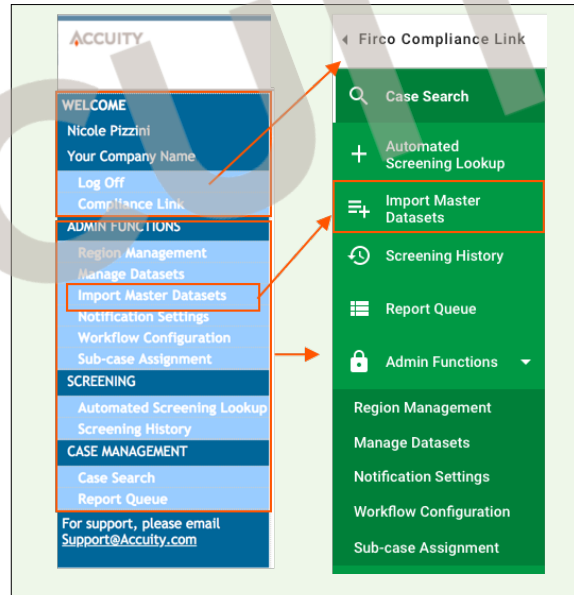| Update	Firco Family	Visual Hierarchy
Top Header Bar	• Adds Firco name • Adds Firco triangle pattern • Parallels white header in other Firco products • Adds identical element to all CL modules	• Keeps Compliance Link name consistent throughout modules. • Adds module name to explain current location.
Left Navigation Bar	• Adds Firco green • Parallels green left nav in other Firco products	• Highlights top level navigation as breadcrumbs so users know where they are and how to return. • Adds icons to teach terms and aid memorization.
Fonts	Roboto matches other Firco Products	Roboto has a wide variety of font weights which we used to emphasize labels and titles.
Buttons	Adds Firco green to replace Accuity blue	• Emphasizes primary vs. supporting actions on the page. • Users don't have to read each option and aim carefully.
Tables (ASM only)	A lighter striping and larger clickable area is consistent with other Firco products	• Tables headers now have white backgrounds to shift emphasis to table content. They remain bold like labels. • Text has been left aligned and numbers right-aligned for easier skimming. • Simple lists that are not data tables are no longer displayed like data tables.
Footer	• Logos from each company level are integrated • Footers are consistent in each module.	• Grey background pushes the white content area forward. • We've given the content area a minimum height so the footer never appears in the middle of the screen.

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New header format

Update	Firco Family	Visual Hierarchy
Top Header Bar	• Adds Firco name • Adds Firco triangle pattern • Parallels white header in other Firco products • Adds identical element to all CL modules	• Keeps Firco Compliance Link name consistent throughout modules. • Adds module name to explain current location.
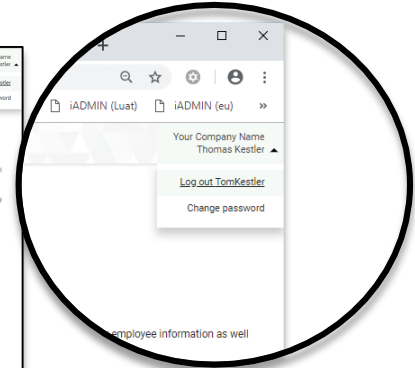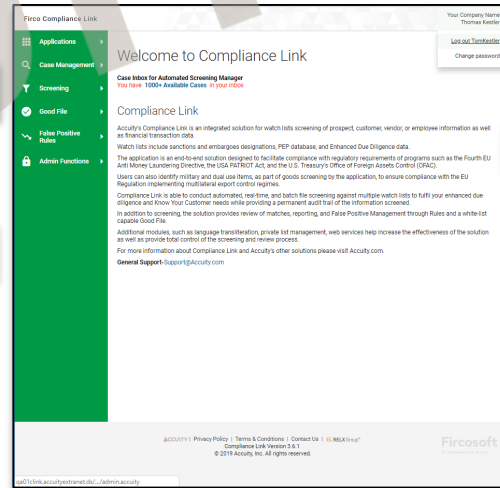
Navigation enhancements

Update	Firco Family	Visual Hierarchy
Left Navigation Bar	• Adds Firco green • Parallels green left nav in other Firco products	• Highlights top level navigation as breadcrumbs so users know where they are and how to return. • Adds icons to teach terms and aid memorization.

Font and button changes

Update	Firco Family	Visual Hierarchy
Fonts	Roboto matches other Firco Products	Roboto has a wide variety of font weights which we used to emphasize labels and titles.
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TYPEFACE	H1	H2	H3
Roboto	AaBbCc	AaBbCc	AaBbCc
Backup Typefaces: Arial sans-serif	font-weight: Light (300); font-size: 32px; color: #212121; Use for page title	font-weight: Light (300); font-size: 24px; color: #212121; Use for section headers	font-weight: Light (300); font-size: 20px; color: #212121; Use for modal title

WEIGHTS	H4	P1
Medium Regular Light	AaBbCc font-weight: Light (300); font-size: 13px; color: #212121;	This is an example of the text used throughout the application, such as instructions or error messages. font-weight: Regular (400); font-size: 13px; color: #212121;

Search Cancel Reset   SEARCH CANCEL RESET

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New table structures and footer

Update	Firco Family	Visual Hierarchy
Tables (ASM only)	A lighter striping and larger clickable area is consistent with other Firco products	• Tables headers now have white backgrounds to shift emphasis to table content. They remain bold like labels. • Text has been left aligned and numbers right-aligned for easier skimming. • Simple lists that are not data tables are no longer displayed like data tables.
Footer	• Logos from each company level are integrated • Footers are consistent in each module.	• Grey background pushes the white content area forward. • We've given the content area a minimum height so the footer never appears in the middle of the screen.

Current Compliance Link

Magna Design

View automated screening cases (read access) for 3.7

Providing a way for customers to view all cases in ASM has been on our roadmap for sometime. We plan to provide this in version 3.7

- We have added a new feature "view automated screening cases"

- This feature will act like an ASM case admin (without the ability to change match statuses)

- This feature can also be coupled (by creating a custom role) with other features to allow reviewers to see other cases (old cases that they have worked on) and add case attachments, see case information and review the audit trail.

Add Custom User Role

• = Required Field

Name: _____ •   Status: Active

User Role Features •

Application Features	Application Configuration	Workflow Management
Automated Screening Lookup	Automated Screening Case Admin	Automated Screening Workflow
Batch Maintenance	Commodity List Manager	Case Management Configuration
Good File Preload	ILS Configuration	False Positive Reduction Rules Management
ILS Activity History	Institution Management	Manage Review Notes
ILS Custom Lookup	Manage Dictionaries and Char. Map	Match Status Management
ILS Lookup	Manage GWL Subscriptions	Risk Scorecard Management
Manage File Specifications	Manage Private Lists	Screening Profile Management
Review & Update Match Status	Private List Manager	View Dashboard
Screen a File	Trade Compliance Manager Admin	
Search Good File	User Activity Audit Trail	
View Automated Screening Cases	User Management	
View Compliance Link Matches		

SAVE   CANCEL   RESET

Workflow enhancements for 3.7

Providing more options in the workflow configuration will allow administrators to assign cases to a multitude of groups and individual users. This work will help:

- Current classic customers to migrate to ASM and simulate their folder structure.

- Provide flexibility to customers that need to remove users from automatic assignment temporarily.

Selection options at any stage:
- A single group
- Multiple groups
- A single user
- Multiple users
- A combination of groups and users

Storage of match metadata in ASM for 3.7

To facilitate two future use cases, we will bring in more data into the ASM database. This match metadata will provide more direction to where a match was triggered. We will implement this feature carefully and complete performance testing and screening fit testing to ensure that performance does not degrade.

Use Case: Highlighting
All customers need better highlighting in our UI. Being able to highlight the right information and identify the field that was matched will help speed up review and help accurately identify potential risks.

Use Case: Volume Analysis
Our largest intranet customers are performing back-end reporting and volume spike analysis in ASM. They need to know what SDs will cause the biggest impact to their system when a watch list is updated. Understanding the spikes in matches will allow them to write rules and rescreen records to avoid unnecessary review and time.

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New Database Additions

Two New Tables have been added to the ASM DB

CDM_MATCHES
- ID
- ACCOUNT_SEQ
- DATASET_ID
- MASTER_ID
- FOLDER_ID
- MATCH_STATUS
- RISK_SCORE
- ENTITY_ID
- INPUT_VERSION_ID
- FP_RULE_ID
- MATCH_TYPE
- FIRST_MATCHED_DATE
- LAST_MATCHED_DATE
- LAST_REVIEW_DATE
- LAST_REVIEW_BY
- UNIQUE_CUST_ID
- HIGHLIGHT_INFO
- SUB_CASE_ID
- PFC_LIST_ID
- SOURCE_CODE
- ENTITY_TYPE
- HAS_SD
- SCREEN_QUEUE_ID
- SCREENING_TYPE

CDM_MATCH_SD
- ID
- MATCH_ID
- SD_TEXT
- FIELD_NAME
- ACCOUNT_SEQ
- DATASET_ID
- SD_SCORE
- FP_RULE_ID
- FPR_APPLIED

CDM_MATCH_SD_TOKEN
- ID
- MATCH_ID
- MATCH_SD_ID
- INPUT_TOKEN
- SD_TOKEN
- SD_TOKEN_SYN
- SD_TOKEN_SCORE

This field will detail if the record has an entry in the CDM MATCH SD table

This field will specify the Screening Queue or screening job that caused this match

This field will differentiate between matches that were generated from Batch and Web Service Activity

Full Stop Descriptor

Field of the input record that caused the match

Total Match Score

Rule ID applicable to the match

Yes if rules are used ion the instruction

Actual Input Value that hit the Stop Descriptor Token

Actual Value of the Stop Descriptor Token (can be broken down if SD is concatenated)

The Synonym if applicable

The individual SD Token Score

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Our next focus after the 3.7 release

- A new ASM Web Service that is more flexible with improved performance

- A new Firco Compliance Link Authentication mechanism

- Improvements on overall performance

Why do customers want more flexibility with the file specification?

Payment screening is a little more complex as not all fields are required to include data. SWIFT messages exist in a number of different formats and we should allow for customers to submit records and handle gracefully.

We would like to fit right into our customers processes and work with the data and output that they have

Payment transactions are ever changing and can have certain aspects included or not included based on the payment type and payment message

Allow one, allow some, allow all

ASM WS will include new functionality to allow customers to successfully screen payment transactions to Improve our all-in-one screening proposition.

- Datasets will handle a varied set of ever changing fields

- Updates to the search screen to allow for varied set of input types

- Update to our screening instructions (to define what is being screened)

- Configure what constitutes a "change" to the input record and warrants screening

- This will also improve account and trade screening processes

Future Requests Only Require Subset of Data

```xml
<requestXML>
 <Request DatasetGUID="xxxx-xxxx-xxxx-xxxx" Id="1234">
   <Field Name="Unique ID">123456</Field>
   <Field Name="Customer Name">Tom Kestler</Field>
   <Field Name="City">Glenview</Field>
   <Field Name="DOB">08/15/1985</Field>
   <Field Name="Bank">Bank One</Field>
 </Request>
</requestXML>
```

Current Request Require All Fields (even if null)

```xml
<requestXML>
 <Request DatasetGUID="xxxx-xxxx-xxxx-xxxx" Id="1234">
  <Field Name="Unique ID">123456</Field>
  <Field Name="Customer Name">Tom Kestler</Field>
  <Field Name="City">Glenview</Field>
  <Field Name="DOB">08/15/1985</Field>
  <Field Name="Bank">Bank One</Field>
 </Request>
</requestXML>
```

Firco Compliance Link Secure A&E and Services

- Firco Compliance Link and related applications at the moment uses certain non-standard A&E techniques.

- Each application currently has its own logic for authenticating and authorizing users.

- Each application acts monolith and there are zero components that are getting shared.

- This will also act as a solution for modularizing and modernizing our application.

- The creation of a service layer which can be used for sharing code between applications via internal private APIs is essential.
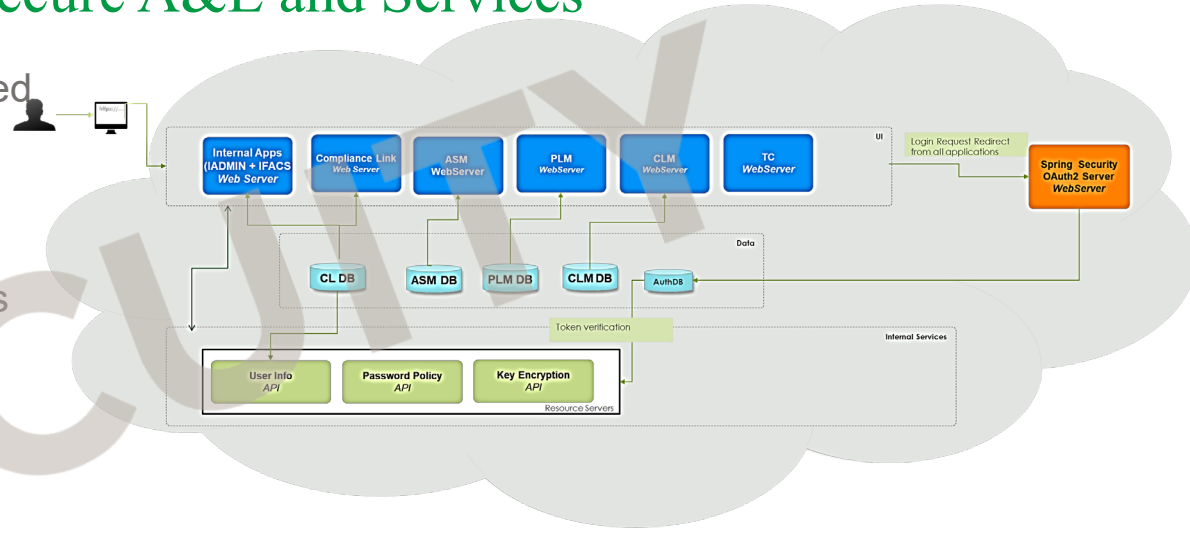
Benefits of a new service layer/ core services?

- Move away from a monolithic, tightly coupled design.

- Separate functionality that is now tightly tied to one single web/application tier.

- Begin to **modularize and decouple** functionality present in various applications.

- Reuse functionality and reduce maintenance overhead caused by the need to refactor similar code in multiple applications.

- Allow for a data service layer that can be created to abstract the DAO layer implementation from the rest of the application.

Questions?

Thank you for your attention