HCL Pathbreaker Hackathon

AI For Wealth Management Advisor

Business Issue

Wealth Management is a complex world. Even though financial institutions went omni-channel, the Relationship Manager continues to be critical to the delivery of enhanced capabilities and solutions to the client.

Complexity in solving the client's needs does not solely arise from the client's requirements. It is also deeply embedded in the way the Financial Institutions and regulatory landscape function.

For example, Financial Institutions store their information (like research papers, client transactions etc...) in different silo systems, teams, and processes. While regulatory bodies usually keep creating new regulations that the FI needs to abide by.

This makes it exceedingly difficult for the RM to collect this data to be able to respond in time and with high quality to the client's expectations.

As soon as the RM (Relationship Manager) picks up a call, a chat, or a mail from the Client, it is a chain reaction of underlying tasks that are initiated:

- Understanding client's requirements
- Collecting relevant information from silo systems
- Gathering documentation
- Following up on proper due diligence and regulatory requirements, where relevant
- Always maintaining clear communication with the client

This list of non-exhaustive and mostly manually processed tasks needs to be completed in time and tailored to the client's needs. The Client should get exactly what was requested while at the same time, making sure that the FI's risk from client's exposure stays as small as possible.

How can Pega support Relationship Managers streamline their work and allow them to be highly efficient with their response to the client?

Business Objectives

The RM has a critical role in supporting the Client and the Financial Institution they are working for. Some of the most important things they need to accomplish are:

- Building healthy and professional relations with your customers and prospects.
- Notifying the sales team if there is an opportunity for upsell and cross-sell.
- Developing strategies that favor Client and Financial Institution.
- Communicating and aligning the business priorities of both parties.
- Addressing and resolving issues of the clients.

Achieving those goals is critical for the RM and the Financial Institution. This would increase business due to client satisfaction, while at the same time reducing the cost of retaining existing customers and acquiring new ones.

To achieve those goals, we want to take advantage of the PEGA platform capabilities to link Front-to-Back processes in the Financial Institution, providing real-time decision-making, automating majority of the tasks in the process, and initiating the KYC (Know Your Customer) process and risk assessment.

Story Overview

James Sullivan is an important new client that recently joined the bank UPLUS Private Wealth Bank and built an investment portfolio with the help of Tayna, the Relationship Manager.

Recently, James has been eyeing rising inflation and wanted to understand the impact on his portfolio.

James calls Tayna. As the client is new, Tayna has a limited understanding of the client. But with Pega, she will be able to be very proactive in responding to the client's needs.

When James call Tayna, **Pega Voice AI** starts analyzing the conversation real time and guides Tayna by suggesting releavant Knowledge Management articles, cases and assisting in form-filling, there-by acting as a co-pilot.

James first shares his worry about inflation and requests some perspective of the bank on the best way to deal with it. Tayna looks at her screen, where the full portfolio of the client is automatically displayed and sees the **Inflation Paper** created by the bank's research department popping up on her screen suggested by **Pega Voice AI**. Tayna can open the paper and discuss the position of the bank on inflation and the assessed impact. She also proposes to send this document to the client.

James agrees, and based on the discussion, he wants to increase his position in the energy sector as he believes he can better hedge his investment against inflation. He asks Tayna to buy for USD 500K Shell company stock. **Pega Voice AI** picks up the client's request, sends it to **Pega CrDH (Credit Risk Decision Hub)** which pulls in real-time the Shells stock details (including price etc..) while also displaying an **ESG score** impact of that stock on the Portfolio. If the client chose Shell, their ESG score would be lowered, and it would also impact the bank's ESG score negatively.

So, **Pega CrDH** proposes simultaneously an alternative to Shell, the TSLA stock which is displayed with all its market details and the ESG score value. If the client chooses this TSLA, they will still get Energy stock as per client's request, but their ESG is improved and so is the bank's ESG Score.

Tayna proposes immediately both options to the client. James decides to go with TSLA and requests Tayna to buy USD 500K of TSLA at Market Price.

In order to execute this Order, Tanya asks James about the source of Fund. James tells her that he will send money from an external account to his existing account at UPLUS. Tanya informs him that she will need to ask some questions and send the relevant documents for the Source of Funds to be signed, and James agrees. A KYC questionnaire linked to **Pega CLM/KYC** for Source of Fund is automatically displayed. Tayna can ask the questions, and James' responses are automatically filled by **Pega Voice AI** and sent to the KYC team for review.

Tanya checks with James if he needs anything else, James thanks Tanya and the call ends.

Also, here the order to the traders for execution is sent real time and at the same time, the new product is sent to KYC team to perform due diligence and update the risk score of the client.

The Scenario uses the following Pega technology Front-to-Back:

- Voice AI
- Customer Service
- CrDH (Credit Risk Decision Hub)
- CLM/KYC
- Pega Connectors

Actors

- Wealth Advisor (Tanya) tayna.phillips@uplusfs.com
- Client (James Sullivan) jamessullivan22@pegatsdemo.com
- KM Author (to add news article in Pega Knowledge)

List of processes

Display portfolio and risk: Once the data is loaded for the client in the interaction, we want to display the portfolio with pie chart on allocations and risk profile in Account tab > Portfolio for Brokerage account. Risk profile is loaded from a Master Profile data page of the client. Portfolio is loaded from existing data pages on investment positions.
Request for Information: The request for information is automatically triggered by the VoiceAI when the client is asking for more information on inflation impact. It searches automatically on Pega Knowledge to find recent articles on inflation related to Investment Options category.

Distribution Request Service case: When client wants to increase portfolio in energy, VoiceAI suggest a task for Rebalancing the Portfolio and Transfer Funds with some predefined information

- Buy Stock
- Industry sector Energy

On first step, because ProductType is Brokerage, Advisor collects how much money will be invested and see automatically

- Suggested investment stocks on Energy to propose Shell,
- Recommended investment stocks to reduce volatility and ESG to propose Tesla
- Risk impacts for each investment

On second step, Advisor collect wire transfer details and external account to pick money.

On third step, display due diligence information because transfer is coming from external account.

On fourth step, email is sent automatically with eSignature required.

Display Best Stocks from an Industry sector: Based on customer wealth invest details (investment experience, trading style, risk tolerance), use a proposition strategy to display best stocks from a specific industry sector.

Display Best stock to reduce volatility and ESG: Use a proposition strategy to determine best stock to reduce volatility and ESG to keep risk as low as possible.

Calculate and display risk evolution for each new investment position: Interact with CLM Master Profile Risk engine to recalculate risk if the investment was made to assess potential impacts.

Display Stock market data details: Show in popup latest market data of the investment security.

Display Due Diligence questionnaire on Source of Income: because the transfer is from external account, a CLM event case is automatically trigger and it asks in KYC Due diligence stage additional questions about the source of the wealth. This list of questions is displayed in the Balance Transfer service case using API

Automatic fill in of Due Diligence questionnaire: VoiceAI automatically detects answers to questions of the DD questionnaire and fill in answers.

Documentation and eSignature: once everything is filled in, ask for eSignature and send documentation to the client by chosen communication channel.

Case Design

Case Hierarchy

In CS Wealth Management application, the new service case RebalancePortfolio is defined to match the exact purpose of the service. At the same time, in CLM/KYC, the customer review case is created to take care of the associated due diligence.

Approach	Pros	Cons
Use of independent case types in different applications: PegaFS-SCM-Work-RebalancePortfolio PegaCLMFS-Work-CLM-CustomerReview	• Reuse of existing case types • Clear separation between CS and CLM • Micro services approach	• Increased complexity with REST calls and sync

Case types

Case Type 1	Primary Stage 1	Primary Stage 2	Primary Stage 3

Rebalance portfolio	• Collect Information • Collect case data screenflow with steps • Request Investment Details • Create CLM case to prepare DD • Request Transfer Details	• Due Diligence • Retrieve KYC DD questionnaire • Complete DD • Update CLM Case	• Complete Request • Process request

Case Type 2	Capture	Enrich	DD	Fulfillment
Customer Review / Customer Amendment	• Initiate Journey • Resolve duplicates • Approve and prioritize • Notify Stakeholders	• Incorporate 3rd party provider • Produce Welcome pack • Customer investigation • Enrich data for due diligence • Monitor document collection • Create business approvals • Customer synchronization	• **Create KYC due diligence** • Create regulatory due diligence • Create tax due diligence • Create credit due diligence • Create legal due diligence • Due diligence exit criteria	• Create fulfillment task • Wrap up • Notify completion

Note *– Depending on the customer data and journey type, the case will skip stages/step that are not relevant as well as execute some of them in STP. For this specific use case we are implementing, once all the customer data has been prepared, the case should go straight into Create due diligence and await there for the completion of the GKYC case created for the contracting party. In blue, steps that have been modified from the OOTB to implement the functionality.*

Case Type 3	Related Party KYC	Customer investigation	Global due diligence	KYC Review	Local due diligence
Global KYC	• Create related cases	• Customer investigation	• Apply KYC Types • **Collect due diligence data**	• **Global review** • Propagate data	• Create local review case • Propagate data

Note – *Depending on the customer data, some stages/steps will be skipped and other will be executed in STP. For this specific use case we are implementing, it is expected that the case will go directly to Collect due diligence data and then stop at Global review before it finishes. In blue, steps that have been modified from the OOTB to implement the functionality.*

Application Structure

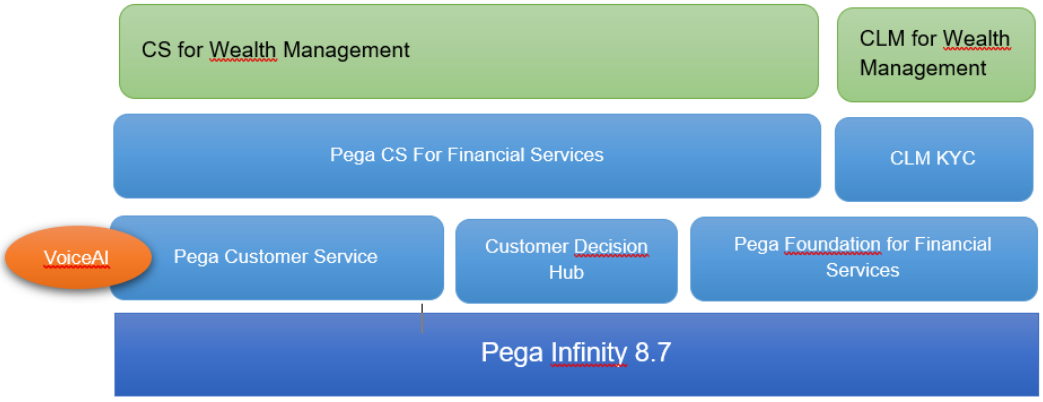
A new application CS for Wealth Management is setup to leverage Pega Customer Service for Financial Services, Pega Customer Decision Hub and VoiceAI.

VoiceAI is by default installed part of CS 8.7. A desktop application, Pega Voice AI for Desktop, is needed to send audio stream from desktop to Voice AI server.

A sibling application CLM For Wealth Management is built to leverage the CLM As-a-service to provide targeted due diligence and targeted document requirements for Wealth Management, as well as ESG risk profile as-a-service.

CLM for WM and CS for WM are interacting using REST API.

CS for WM interacts with VoiceAI Cloud Server using standard REST API.



Data Model Design

Sample Data:

- account number 1350661651
- Customer number 1350412940

Sl. No.	Data Type class / Abstract or Concrete / Schema if persisted	Keys	Important properties	Inheritance & data pages
	PegaFS-Data-Order *PegaFS-Int-FSF_SAMPLE_ORDER*	OrderID O_ORDERID	Account Number (O_ACCTNBR) OrderID (1230987) OrderDate OrderPrice OrderQuantity OrderType (Market, Stop Loss) SecurityID Ticker (NOK, GE, ...) Type (Buy, Short Sell, Sell, Buy To Cover)	D_GetCapitalMarketOpenOrders
	PegaFS-Data-InvestmentPosition *PegaFS-Int-FSF_SAMPLE_CMPOSITION*	CMP_ID	.AccountNumber Quantity MarketValue TodaysChange	D_GetHoldingsSummary D_InvestmentPositions

			TodaysChangePercent UnrealizedBaseGainLoss UnrealizedBaseGainLossPercent InstrumentType (Stocks, Options, Mutual Fund) AssetClass SecurityDetails - Ref PegaFS-Data-InvestmentSecurity	
	PegaFS-Data-InvestmentSecurity *PegaFS-Int-FSF_SAMPLE_SECURITY*	SecurityID	AssetClass Name Ticker CurrentPrice - Ref PegaFS-Data-InvestmentMarketData	
	PegaFS-Data-InvestmentMarketData *PegaFS-Int-FSF_SAMPLE_INVESTMENTMKTDATA*		TickerID TodaysPrice SecurityMarketIndicator GainLosPercentage GainLossValue	
	PegaFS-Data-Transaction-Investment *PegaFS-Int-FSF_SAMPLE_CMTRAN*		AccountNumber TransactionSeq Appl (2) TotalTrxAmount TranQuantity TransactionAmount TransactionAmountCurr TransactionPostDate SecurityID	
	PegaFS-Data-RiskProfile		ESGReport ESGRiskScore ESGRiskScoreValue	
	PegaFS-Data-ESG-Score *PegaFS-Int-FSF_SAMPLE_SECURTY_ESG*	SecurityID Type Subtype	Security ID Type Subtype Score Weight	D_InvestmentSecurityESGScores
	PegaFS-Data-ESG-Asset *Abstract*		AssetID AssetType AssetName AssetAccount TotalScore PartialScores	D_InvestmentSecurityESG
	PegaFS-Data-ESG-Report *Abstract*		TotalScore Assets	D_CustomerESG
	PegaFS-Data-CustWealthInvestDetails		CifNbr InvestmentExperience (Extensive) InvestmentStyle (Advice Seeking) RiskTolerance (Moderate) TradingStyle (Frequent Trader)	.InvestorProfileInfo

ESG Calculation

ESG calculation is based on attributes that are different for each data provider. There is no real standard yet to calculate ESG. The method for ESG calculation we are using in this demo, is generating a score for each Subtypes of ESG (Environment, Social and Governance) and aggregating the results based on an end user configurable Weighting system.

Subtypes of ESG are usually generic but how these numbers are calculated is based on the data provider. In PEGA we do not need to focus on how those numbers are calculated. We need to be able to provide a place holder for those subtypes and their scoring (which includes Weight).

Below is a list of subtypes and a sample calculation.

- The **Score** data comes from the provider.
- The **Weight** can come from the provider or could be set as a client configuration, allowing client to have a better grip on the data itself, especially if there are political decisions impacting certain aspects of ESG (for example, Gaz in Europe today is considered green, this could change in the future, the weighting can help solve this).
- The **Total** is an aggregation of the data based on the formulas defined in **blue** (for the Type) and orange (for the ESG score).

The ESG Score can then be compared to a Quartile (0 to 24 / 25 to 49 / 50 to 74 / 75 to 100) bar where the lower the score is, the more it moves towards lower Quartile (red zone) and the higher the score is, the more it moves to the upper Quartile (green zone)

Type	Type_Cd	Subtype	Subtype_Cd	Weight
Environment	E	Emmisions	E_E	1.1
Environment	E	Resource_Use	E_RU	1.1
Environment	E	Innovation	E_I	1
Social	S	Human_Rights	S_HR	1.3
Social	S	Product_Responsabilty	S_PR	1
Social	S	Workforce	S_W	1.3
Social	S	Community	S_C	1
Governance	G	Management	G_M	1.3
Governance	G	Shareholders	G_S	1.2
Governance	G	CSR_Strategy	G_CSR	1

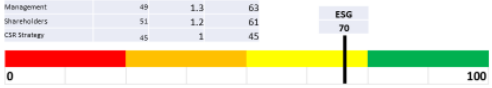
The score of each segment is the rounded down average score of the Subtypes of that section

E = Σ(Subtype * Weight)/ Count(Subtype)

	Score	Weight	Total
Environment	**70**		
Emissions	56	1.1	61
Resource Use	60	1.1	66
Innovation	85	1	85
Social	**86**		
Human Rights	55	1.3	71
Product Responsibility	52	1	52
Workforce	63	1.3	81
Community	54	1	54
Governance	**56**		
Management	49	1.3	63
Shareholders	51	1.2	61
CSR Strategy	45	1	45

ESG Score is the rounded down average score of the Total scores in each segment

ESG = Σ(Segment)/ 3



Extensibility and Specialization

All the capabilities used are existing features/products of PEGA. All of it can be extended to support different use cases and scenarios.

What we built extra is a the ESG Scoring mechanism and its underlying structure. We were able to do this thanks to the flexibility of the PEGA Foundation for Financial Services.

It is possible to extend the following:

- Voice AI: to support multi language
- CrDH: to incorporate a complex decisioning mechanism
- Customer Service: to connect and load data from multiple systems at financial institutions, having a centralized view of the client, client's risk, and strategies.
- Pega CS Foundation for Financial Services: can be extended with more features like ESG

Appendix I - Terminology

ESG: Environmental, Social and Corporate Governance: Environmental, Social, and Corporate Governance is an evaluation of a firm's collective conscientiousness for social and environmental factors

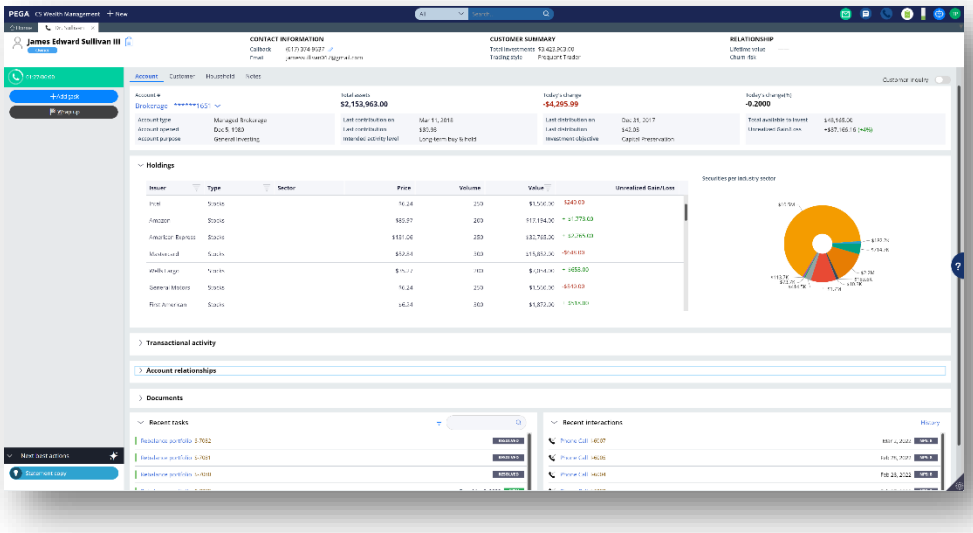
ESG Score: company score graded on different attributes related to ESG

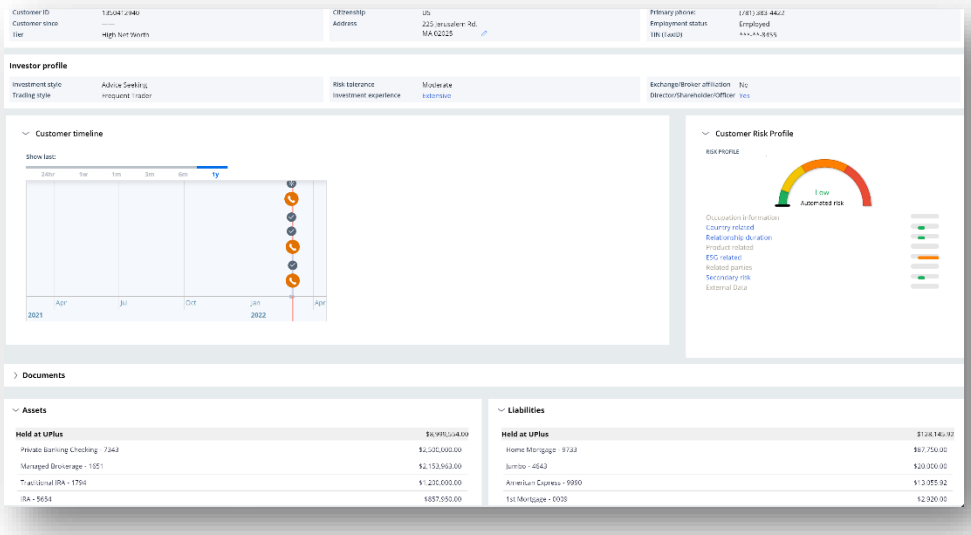
CLM: Customer Lifecycle Management is a Pega product that allows to have a 360°view of the client and their interaction with the financial institution.

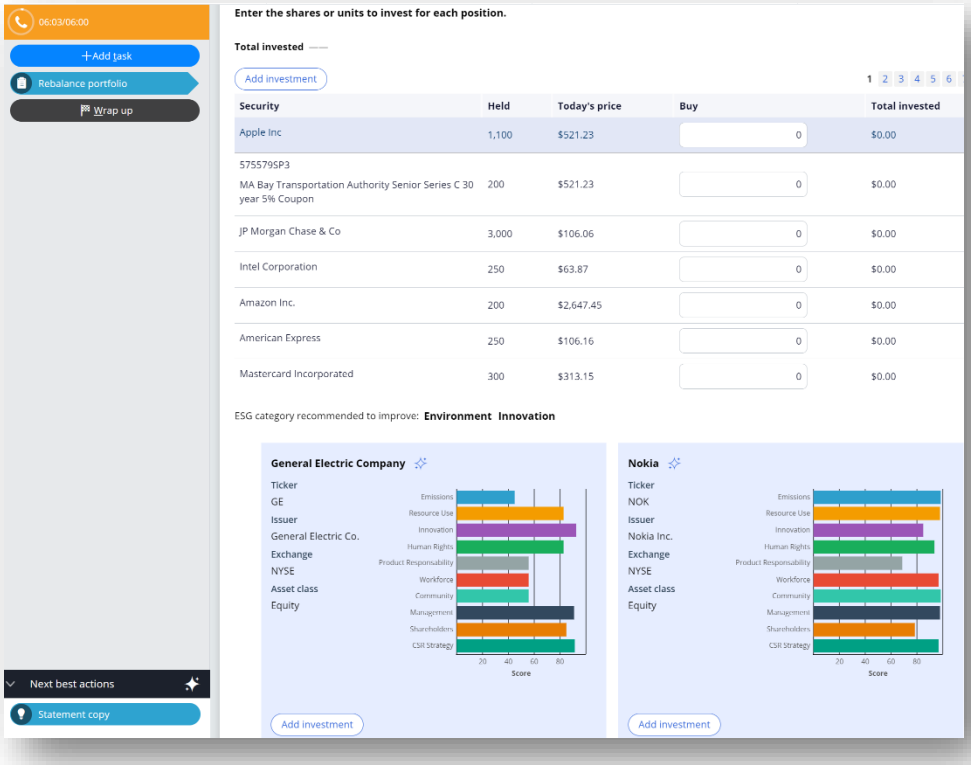
KYC: The know your customer or know your client guidelines in financial services require that professionals make an effort to verify the identity, suitability, and risks involved with maintaining a business relationship

Source of Funds: refers to the funds that are being used to fund the specific transaction in hand. This is a critical part of KYC

Appendix II - Screen Shots




Investor profile
Customer timeline
Customer Risk Profile
Documents
Assets
Liabilities


06:03/06:00
Add task
Rebalance portfolio
Wrap up
Next best actions
Statement copy
Enter the shares or units to invest for each position.
Total invested
Add investment
Security
Held
Today's price
Buy
Total invested
Apple Inc
1,100
$521.23
$0.00
575579SP3
MA Bay Transportation Authority Senior Series C 30 year 5% Coupon
200
$521.23
$0.00
JP Morgan Chase & Co
3,000
$106.06
$0.00
Intel Corporation
250
$63.87
$0.00
Amazon Inc.
200
$2,647.45
$0.00
American Express
250
$106.16
$0.00
Mastercard Incorporated
300
$313.15
$0.00
ESG category recommended to improve: Environment Innovation
General Electric Company
Ticker
GE
Issuer
General Electric Co.
Exchange
NYSE
Asset class
Equity
Nokia
Ticker
NOK
Issuer
Nokia Inc.
Exchange
NYSE
Asset class
Equity
Emissions
Resource Use
Innovation
Human Rights
Product Responsibility
Workforce
Community
Management
Shareholders
CSR Strategy
Score
Add investment
Add investment