PEGA Agent Desktop - High Level Architecture

Version History

Version	Date	Author	Description
1.0	27 Mar 2020	Mallik Vaskari/Neha Wali	Initial HLA submitted to PMO
2.0	22 Apr 2020	Mallik Vaskari/Neha Wali	Added central and local costs per initiative
3.0	07 May 2020	Mallik Vaskari / Neha Wali	Split IVR Platform into Two Components 'CISCO Finesse' and 'Avaya'. Apollo Admin Service is a service of IE MSP, hence removed that component.
4.0	15 Jun 2020	Mallik Vaskari / Neha Wali	AWS OpEx costs updated

Stakeholder Map

Department	Name	Role	Role in Project
Transformation and change	Anthony Dodson	Senior Manager	Product Lead
Transformation and change	Stewart Jameson	Business Improvement Manager	Product Manager
Transformation and change	Ronan Kelly	Product Owner	Product Owner
Central Solution Architecture	John Gordijn	Senior Manager	Governance
Central Solution Architecture	Mallik Vaskari	Solutions Architect	Solutions Architect - Central
IT T&I	John Walsh	Director of IT	Governance
Architecture & Transformation	John Farkas	Senior Manager	Governance
Architecture & Transformation	Neha Wali	Solutions Architect	Solutions Architect - Local
Delivery Assurance	Cormac Lane	Senior Manager	Digital Delivery Lead IE
Delivery Assurance	Declan Tormey	Development Manager	IE Dev Lead
Delivery Assurance	Jobin John	QA Manager	UAT/SIT Test Lead
PMO	Eilis Muimneach	Program Manager	Program Manager
PMO	Fiona Gilsenan	Program Office Manager	Governance
Pega COE	Swapnil Bachhav	Sr Manager IT PE BSS B2B& Pega Development	Pega Delivery Manager
Integration & Middleware	Lucia Calado	Director Digital Integration and M&A Support	Central Lead - Middleware
IT	Adina Cojocea	Director IT PE Digital, BSS and Pega Development	Governance
Central Solution Architecture	Martina Herzog	Director IT Solution Architecture	Governance
IT	Shilpa Khot	Senior Delivery Manager CRM	Clarify Lead

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1. Executive Summary

Initiative Goal

- The Pega 8.X platform will be introduced as part of the Digital First transformation initiative. Pega platform is envisioned as the single agent desktop which comprises of a customer 360° view, integrated knowledge base, account health check ,and centralized customer case management system for agents and technicians.
- The customer 360° View will help agents to have an aggregated, consistent and holistic representation of the customer data, remove the current complexity of navigating multiple systems to gather snippets of information, consolidate Comet, ACC, Clarify, Cassio, FOM Data into a Single Desktop for use across all customer touch point including Contact center, Back office and Field mobile support.
- Pega Case Management will enable agents to create a visual representation of our business cases and group related tasks into stages, which can be easily monitored how and when the tasks are completed.
- Knowledge base/ Guided Assists aims to build an integrated knowledge sharing platform for agents and technicians for efficient issue resolution and assisted diagnostics.
- Account Health Check will use APIs contextualized to meaningful information for both product and account information and present the next best action for the agent. It will also allows agents to identify issues on accounts when customers intent is not related.

Solution Architecture Summary and Scope

The Minimum Viable Product (MVP) will comprise of Customer 360° View, Case Management, Knowledgebase with Guided Assist, Account health check and CTI integration. This HLA is the initial version and includes the scope items which will comprise the MVP for phase 1 only. The next biggest drop would be next best offer/action.

Benefit, Cost and Timeline

Benefit, Cost and Timeline				
	Customer 360° View	*Case Management*	*Knowledgebase/Guided Assist*	*Account Health Check*
Business Benefit	AHT reduction across Messaging and Voice. 40 second reduction Annually equating to €34,500 saving.	AHT reduction across Messaging and Voice. 40 second reduction Annually equating to €34,500 saving.	• €30,000 savings annually with the removal of oracle hosted Knowledge base. • 4188 classroom hours saved annually.	• 2% reduction in Technical repeat call, Equating to €22,000 savings annually or 1 FTE • 2% reduction in General Service repeat call, Equating to €22,000 savings annually or 1 FTE
Estimated Team Size	22 Local Development Team : 7 (5 Developers, 1 Scrum Master and 1 Lead) Central Team : 9 (6 Developers, 1 Scrum Master, 1 Product Owner and 1 Business Analyst) Local QA Team : 6 (1 Online, 4 Offshore, 1 Offshore Lead)			
Estimated Elapsed Time to Deliver	13 weeks (Local development + UAT) Central timelines unknown	4 weeks (Local Development + UAT) Central timelines unknown	1.5 weeks (Local Development + UAT) Central timelines unknown	2.5 weeks (Local Development + UAT) Central timelines unknown
Estimated Total Cost per Initiative +/- 30%	€1,828,950 *€1,314,500 (Central development) + €19,450 (Local development) + €385,000 (Local QA + Production Implementation Testing + Warranty Support) + €90,000 (Performance Testing)*	€725,250 *€605,250 (Central development) + €120,000 (Local QA)*	€234,500 *€189,500 (Central development) + €45,000 (Local QA)*	€389,250 *€329,250 (Central development) + €60,000 (Local QA)*
Estimated Total Cost +/- 30%	€3,177,950			
Ongoing OpEx Cost	Pega License Fee : €80,000 approx			

(Yearly)

AWS Opex Costs :

	AWS Costs USD	LG Discounted	USD conversion
Total costs Yr1	$86,102.63	$77,492.37	€72,067.90
Total costs Yr2	$149,302.34	$134,372.11	€124,966.06
Total costs Yr3	$149,302.34	$134,372.11	€124,966.06
<u>**Sum Total Costs**</u>	$384,707.31	$346,236.58	€322,000.02

2. Project Context

2.1 Key Scope Items

ID	Scope Item	Description
SC_01	Pega Platform Implementation	Implementation of Pega platform in Virgin media. Initial set up and configurations
SC_02	Integration from back end to Pega	Implementation of the integration points between Pega and different back-end. (Data Lake, BSS and OSS)
SC_03	Customer 360 view	Delivery of a summary of the customer current situation (to support the customer's request) and to provide a context to the interaction
SC_04	Dynamic Case Management	Handling of the Admin/General assisted Care cases
SC_05	Infrastructure set up	New Infrastructure and environments will be setup to cater the environmental needs of the project with view towards the potential growth of the solution when additional features are introduced in future.
SC_06	Application development	Implementation and configuration of the Pega Customer Service for Communications
SC_07	Platform Reports	Implementation of Pega's Customer Service for communication out of the box reports

2.2 Detailed scope per Initiative

> **Note**
>
> This HLA is the initial version and includes the scope items (i.e. customer 360° view - Knowledge Base with guided assist, Case Management, Account Health Check and CTI Integration) which will comprise the MVP for phase 1 only. The next biggest drop would be next best offer/action.

2.2.1 Customer 360° View - VMIEDF-86

Scope ID	Scope Item	Scope Description	Related JIRA Epics
VMIEDFD-36	Pay by link/Messaging	- Payments over the Phone - Link to pay via SMS	VMIEDF-123
VMIEDFD-72	Customer Profile TAB	In Pega desktop the following is required under customer profile tab: **View customer Details (Clarify Integration - Customer microservice available):** - Account Number - Name - Phone Number - Customer Type - Email - Active Services - Available Services - FTTH Availibility - Self Install Availibility - Address - Eircode - Location ID - Password - Installation address including location ID - Billing address **View customer Details (ACC Integration - Customer microservice available for some):** Personal: Status Type Profile Status Name General Account Number Name Authorised Contact Date Of Birth Identification Type Identification No Secret Question Answer Pin Code External System External ID Communication Phone Number(Mobile & Home) Email Personal Address Marketing Preferences	VMIEDF-141 VMIEDF-142
VMIEDF-141	Edit Customer Details	In Pega desktop the following is required under customer profile TAB Edit customer details where a user can change the following information and this data is then updated in the CRM, The user has the ability to preview the change and option to cancel or save. **Edit customer profile and customer permissions (Clarify Integration):** - Customer first and last name - Date of birth - Phone Number - Email Address - Billing Address Once a change is made and confirmed an interaction is posted to the CRM confirming the change	VMIEDF-116 VMIEDF-142

		made and the user who initiated the change. **Edit customer details and customer permissions (ACC Integration):** **General** Name Authorized contact Date of birth Identification Type Identification Number Secret Question Secret answer Pin Code External ID **Communication** Phone Number(Mobile&Home) Email Address Personal Address	
VMIEDF-142	Edit Marketing preferences	In Pega desktop the following is required under Customer Profile Tab (For marketing preferences, clarify is the master when a customer has both a clarify and an ACC account. Where a customer only has an ACC account only then ACC is the master) **Edit Marketing Preference. Clarify Only or Dual Customer Clarify /ACC** 1. This should display the customer list of available marketing preferences from Clarify with the opted in preferences showing with a Tick. 2. The user should have the ability to edit the existing preferences or opt the customer into new preferences. 3. The user should have the ability to preview the change and option to cancel or save. 4. Once a change is made and confirmed an interaction should be posted to Clarify confirming the change made and the user who initiated the change **Edit Marketing Preference. Mobile only customer** • This should display the customer list of available marketing preferences from ACC with the opted in preferences showing with a Tick. • The user should have the ability to edit the existing preferences or opt the customer into new preferences. • The user should have the ability to preview the change and option to cancel or save. • Once a change is made and confirmed an interaction should be posted to ACC confirming the change made and the user who initiated the change.	VMIEDF-116 VMIEDF-141
VMIEDF-117	History TAB	In Pega desktop the following is required under customer History TAB:	

		1. Open and closed Clarify cases 2. Open and closed ACC tickets 3. Open and closed Comet orders 4. Historical Comms set to customers such as SMS/Email - Experience DB stores SMS/email comms (Historical comms) shared with the customer 5. Historical Journal Comments 6. View History (Clarify Integration - Functionality Exists): Case Contract 7. Historical Journal ACC Memos and notifications for agents (We currently have this but day old data, MCM-151 will cover this)	
VMIEDF-118	Customer Billing TAB	In Pega desktop the following is required under billing tab for Clarify and ACC accounts: 1. Get customer bill overview (API available): -Suffix no/Ledger -Suspension -Total Balance -Total Overdue -Collection Status 2. Get customer bills 3. Get itemized bills 4. Get PDF bills 5. Get Payment history 6. Get Load Details 7. Get payment method 8. Edit Payment method 9. Contract information (offer configuration) including elements & child parts 10. Contract start and end dates	VMIEDF-139
VMIEDF-139	Edit Payment Details (Clarify Integration)	In Pega desktop the following is required Under Billing Tab **Edit Payment INFO Clarify** • Change to/From e-billing • Change to/from itemized billing • Change payment Method To/from Direct Debit, To/From accept giro **Edit Payment INFO ACC** • Change to/From e-billing • Change to/from itemized billing • Change payment Method To/from Direct Debit, To/From accept giro The user has the ability to preview the change and option to cancel or save. Once a change is made and confirmed an interaction is posted to the CRM confirming the change made and the user who initiated the change. The guided assist flows - Visio (Change DD Flow V3.0 final viso, CSI Flow- Set Up DD V 2.0) are attached in the Related Documents section.	VMIEDF-118

VMIEDF-119	Customer Usage TAB	In Pega desktop the following is required under usage tab clarify and acc accounts: • Get customer Usage	
VMIEDF-120	Customer Products TAB	In Pega desktop the following is required under products tab for Clarify and ACC accounts: • Get customer products Clarify and ACC • Get house hold Devices	VMIEDF-138
VMIEDF-121	Customer Order TAB	In Pega desktop the following is required under Orders tab for Clarify and ACC accounts: • Get open orders on account with link to order summary, reuse comet order summary. • Get ACC orders for sim/Devices	
VMIEDF-122	Customer Timeline View	In Pega desktop the following is required as a default view once a customers account is loaded and Account Health Check is completed: 1. Time line view similar to current Swiss solution containing a view of all information contained in VMIEDF-117 2. Default View shows last 7 days with 3. Ability to change to 30 days /90/days/1 Year and all 4. Clicking on event on timeline will display a summary of event with the option to view more details which will link to the customer history tab and display the full event, 5. Items to be displayed on Time Line • Case • Ticket(ACC) - Transactions (We currently have this but day old data, MCM-151 will cover this) • Bills • Comms such as SMS or Emails sent • Customer contacts e.g. when a customer contacts the contact center we have two methods of contact : voice and messaging, we need to have this displayed in the timeline view, IE voice contact shown as a phone symbol and messaging contact shown as a different symbol. • Service call	
VMIEDF-123	Customer panel	In Pega desktop the following is required for the main display of customer information similar to the Swiss solution: 1. Customer First and Last Name 2. Account number or both if clarify and ACC 3. Phone number 4. Current customer holdings 5. Available services 6. Service Type-FTTH (fibre to the home) and Self Install	VMIEDF-136

		7. Customer type(Residential /Business/Employee /Complimentary/ 8. Password/passphrase if relevant. Widgets- Placeholder to launch external/internal apps such as Send SMS (Apollo Feature) Totalview Schedules- Shopping basket- and so on - Needs to be configurable. Ability to close account and leave interactions for Clarify or Memos for ACC.	
VMIEDF-124	Pega desktop Admin	For Pega desktop we need an admin portal similar to Apollo admin for user admin and access. Currently, IT have access to the Admin portal, They add new users to Apollo and give access to certain apps like Comet/Cassio and access to links .	
VMIEDF-125	CTI integration	In Pega desktop, CTI integration is required for Cisco Finesse, 1. Cisco Finess to Pega 2. Customer details are populated into desktop 3. Agent can accept/hold /transfer call from desktop 4. Agent can view wait times /call queues/team 5. Agent can select states such as break/lunch/off queue 6. Agent can select wrap up reason for call-predefined list set out by the business by each team	
VMIEDF-126	Training Environment	For Pega desktop we require a training environment: 1. Contains real-time features as prod desktop 2. Contains randomized Data 3. Easy option to switch to training environment controlled by training department The EDU environment which is a non-production environment can be used for training of the new users of the system. It should be functionally equivalent to production though not necessarily providing the same levels of capacity/performance.	
VMIEDF-128	Comet Integration	As part of Pega we need to integrate the existing comet functionality and rule to the desktop with the exception of the front search screen: 1. Customer account loaded in Pega desktop needs to link directly to comet shopping basket within the same desktop 2. Pega Customer search needs to include existing comet search options to retrieve orders and referrals 3. Comet front end will be mashed within Pega 4. Future release will integrate comet back end	

VMIEDF-136	Wrap up Reasons (Clarify Integration)	In Pega desktop the following is required once an agent has completed a contact in the desktop. • Wrap up button on Desktop. • List of drop downs similar to how this is done in Apollo, List of interactions are pulled from Clarify. • Agent has a free text box to write additional solution. • Same functionality as Swiss solution but we would just use the existing clarify and ACC interaction codes for now. • Future releases will automate wrap up.	VMIEDF-123
VMIEDF-137	CDM Single Sign On	In Pega desktop under the Product TAB the following is required for release 1. CDM Application to be launched as single sign on with the customer account number pre populated.	
VMIEDF-138	Reset Master Pincode (Clarify Integration)	The Reset Master Pincode option is required in the product tab, similar to how it is completed in MY VM (Reset pin code for DTV), Agent should click the button and a confirmation should be displayed on success.	
VMIEDF-140	Sepa Calculator	For Epic VMIEDF-139 when changing to Direct Debit we would need the ability to convert sort code and account number to IBAN and the ability to validate IBAN. Currently we use this Sepa tool. https://intranet.upc.ie/Applications/Sepa/Menu.aspx?ID=5183 Below are the API's currently available to convert sort code and account number to IBAN and to validate IBAN. • Validate IBAN • Convert To IBAN	
VMIEDF-143	Desktop Optimization	Pega desktop and customer 360° view will be used by both our contact center agents and also our field agent technicians. We require for our field technicians that they can access Pega desktop from their mobile devices and they can use the features when in the field.	
VMIEDF-144	Clarify Swaps	In Pega desktop, in the product tab under DTV and Broadband the Clarify Swap option is required similar to how it is completed in Apollo for Same Day Swaps https://globe.upc.biz/confluence/pages/viewpage.action?spaceKey=IESD&title=Apollo#Apollo-SameDaySwap • Each CPE type will have a swap button displayed • Currently there are 2 swap types Swap And Swap LSP	

Scope ID	Scope Item	Scope Description	Comments
		• Swap is a same day swap where the agent is presented with a list of available CPE in parcel motel and reserve the CPE, Details above in confluence link. • Swap LSP is a commercial swap with our delivery company	
VMIEDF-145	Refresh Entitlements (Clarify Integration)	In Pega desktop under Products tab for each DTV product, the ability for a user to send a refresh entitlement to each smart card is required.	
VMIEDF-146	Unsuspend fixed account (Clarify Integration)	In Pega desktop under Billing Tab we need the ability to unsuspend a customer if the customers account is suspended and payment is taken, We would need a confirmation once unsuspended. There would be future use of this API to Bulk suspend/unsuspend accounts by account numbers etc but future release.	

2.2.2 Knowledgebase/Guided Assist - VMIEDF-35

Scope ID	Scope Item	Scope Description	Comments
VMIEDF-225	Import	1. Allow easy import of current work documents into Pega KB, Including JPG's ,drop downs and formatting, be able to import from AEM CQ5. 2. There are 100 articles that we want to have transferred over to Pega for testing. Roughly 750 MB for 100 articles. 3. With respect to design, structure, content – Knowledgebase currently has requirements for HTML5 based article content, we currently have ability to link to URLs, embedding of videos, uploading of images (via AEM / CQ5 hosting site). Currently there are 2 versions of Knowledge base, 1. Oracle standalone hosted here: https://upc-ireland-internal.custhelp.com/app/home 2. Integrated knowledge base in Apollo hosted here: https://apps.virginmedia.ie/apollo	
VMIEDF-226	Publishing	Create new content such as articles and guided assist flows in one space with the ability to preview without making content live	
VMIEDF-227	Reporting	Articles viewed by user, Date/Time. Guided Assist Started/Finished by user date Time Record User feedback on Articles Record feedback on Abandoned Guided assist Voice and Messaging agent	

Scope ID	Scope Item	Scope Description
		Allow Messaging agent only to Close a live flow for continuation later
VMIEDF-228	Search	Contains search bar in Pega desktop, displays article- Users selects article to View- Limited articles for release 1.
VMIEDF-229	Follow on Actions	When designing a guided assist flow as part of the resolution we need to tag a clarify case or ACC ticket to the flow. We need a pre populated drop down list to choose from Similar to how CSI working in Apollo. See screen shot on next page.
VMIEDF-230	Resume Guided Assist Flow	When completing a guided assist, IF the flow is abandoned in the scenario of a Messaging agent, The next agent can continue on the Flow.
VMIEDF-231	Alerts	L&D department would have the ability to send messages to uses where new articles/Flow are available.
VMIEDF-232	Notification Panel	Users would have a notification area in Pega where they can view /acknowledge the alert. Each alert would contain a link to the content
VMIEDF-233	Library	Area where user can view previous system previews and articles they have bookmarked.
VMIEDF-234	Manager Alerts	If L&D send a notification and this is dismissed an alert is sent to the users manager
VMIEDF-235	System Preview	When new Pega future release are available we need to ability for a user to preview these changes is either video format and or practical format before the use the system for the first time.

2.2.3 Account Health Check - VMIEDF-41

Scope ID	Scope Item	Scope Description
VMIEDFD-70	CPE checks Serve Assure/CDM	1. Account health check will check the following for Fixed accounts only 2. Alarm Central API- Detects if the customer is effected by an outage 3. Serveassure NXT- Pulls CPE Status for each CPE on Account Online/Offline Displays as DTV offline Broadband Online ETC 4. Serveassure NXT- Pulls signal Levels- If levels are out of threshold flag 5. CDM Head ends (Tuner levels issues)
VMIEDFD-82	CRM Checks	Account health check will check the following for Fixed accounts only 1. Checks suspension status 2. Checks Open Cases 3. Checks Open Orders/part Requests
VMIEDFD-78	Apollo	Present Account Health Check in Apollo

Note: Additional scope added as amendment (as a sub-page - Apollo - Account Health Check- High Level Architecture) to this HLA detailing the Apollo scope.

2.2.4 Case Management - VMIEDF-38

Scope ID	Scope Item	Scope Description	Comments
VMIEDF-237	Load Case	For case management we need the ability for an agent to load a clarify case Case can be loaded off the back of a guided assist or as per the Swiss solution with a drop down list of cases-however for launch we will only display in this list any cases that are not covered in guided assist.	
VMIEDF-238	Close Case	For case management we need the ability for an agent to close a clarify case. Where an account is shows an active case, agent will need the ability to close the case with the current clarify predefined case closure reason codes.	
VMIEDF-239	Update Case	For case management we need the ability for an agent to update a clarify case Where an account has an open case an agent needs the ability to update the case title and or case body and or appointment date and time, Agent will also need the ability to update the work order type.	
VMIEDF-240	Load Ticket	For case management we need the ability for an agent to load an ACC ticket Tickets can be loaded off the back of a guided assist or a per the Swiss solution with a drop down list of Tickets-however for launch we will only display in this list any Tickets that are not covered in guided assist.	
VMIEDF-241	Close Ticket	For case management we need the ability for an agent to close an ACC Ticket. Where an account is shows an active Ticket, agent will need the ability to close the Ticket with the current ACC predefined Ticket closure reason codes.	
VMIEDF-242	Update Ticket	For case management we need the ability for an agent to update an ACC Ticket Where an account has an open Ticket an agent needs the ability to update the Ticket title and or Ticket body and or assigned department.	
VMIEDF-243	Allow Cases/Tickets to be open by Guided assist	As part of case management a number of guided assist flows will end in a case of ticket being loaded,	

		As part of design of a guided assist flow we require a predefined list of existing clarify cases and ACC tickets to choose from At design Phase we require the ability to have free text answers included in the case/ticket title/Body At design Phase we require the ability to add certain account information to the case/ticket such as payment date/modem status etc At design Phase we require the ability to add multiple cases/tickets to one flow When an agent finishes a guided assist flow, they will have the ability to add additional comments to the case.	
VMIEDF-281	Click integration service cases	For any cases that relate to service we need the ability to attach an appointment from Click, We need the ability to cancel an appointment We need the ability to view an appointment.	
VMIEDF-282	Apply Credit	For fixed account we need the ability under the Billing TAB to apply credits to the customer account. We need to integrate the current credit calculator We need to view previous credit history.	
VMIEDF-283	Payment Plan	Under Billing Tab we need the ability to load a payment plan for a customer similar to the current Apollo Functionality.	

Below are the Case Types and Case Sub Types with priority 1-4 which will be considered for MVP. Complexity to be checked in later.

Case Type	Case Subtype	# of Cases	Agent Action	Priority
PICK UP EQUIPMENT	COLLECT CPE - VOL	80185	Loaded by guided assist /Next best action	1
SERVICE CALL - BROADBAND	NO CONNECTION FROM CABLE MODEM	29033	Loaded by guided assist /Next best action	1
SERVICE CALL -DIGITAL	MISSING CHANNELS	12296	Loaded by guided assist /Next best action	1
SERVICE CALL -DIGITAL	INTERMITTENT PICTURES	9850	Loaded by guided assist /Next best action	1
SERVICE CALL - BROADBAND	CONNECTION SLOW/ INTERMITTENT WIRED	6911	Loaded by guided assist /Next best action	1
SERVICE CALL -DIGITAL	NO RECEPTION	5571	Loaded by guided assist /Next best action	1
SERVICE CALL - BROADBAND	WIFI ISSUE	5413	Loaded by guided assist /Next best action	1
SERVICE CALL -DIGITAL	HARD DRIVE ISSUE	3314	Loaded by guided assist /Next best action	1
SERVICE CALL -DIGITAL	DIY BOX SWAP	2508	Loaded by guided assist /Next best action	1
SERVICE CALL - BROADBAND	DIY SWAP	2166	Loaded by guided assist /Next best action	1

SERVICE CALL - VOIP	NO CONNECTION -VOIP	1822	Loaded by guided assist /Next best action	1
SERVICE CALL -DIGITAL	NO RETURN PATH	1172	Loaded by guided assist /Next best action	1
SERVICE CALL -DIGITAL	ON DEMAND ISSUE	887	Loaded by guided assist /Next best action	1
SERVICE CALL - GENERAL	SECURE AND TIDY CABLES	493	Loaded by guided assist /Next best action	1
SERVICE CALL - VOIP	LINE QUALITY	469	Loaded by guided assist /Next best action	1
SERVICE CALL - VOIP	NO INCOMING CALLS	194	Loaded by guided assist /Next best action	1
SERVICE CALL - GENERAL	LOST/STOLEN EQUIPMENT	154	Loaded by guided assist /Next best action	1
SERVICE CALL - GENERAL	TOTAL LOSS OF SERVICE	130	Loaded by guided assist /Next best action	1
SERVICE CALL - VOIP	NO OUTGOING CALLS	109	Loaded by guided assist /Next best action	1
SERVICE CALL - GENERAL	OUTLET BOX DAMAGED	43	Loaded by guided assist /Next best action	1
BILLING	CHANGE BILL TO ADDRESS	4038	Loaded by guided assist /Next best action	2
BILLING		1576	Loaded by guided assist /Next best action	2
BILLING	BILLING FAILURE	715	Loaded by guided assist /Next best action	2
BILLING	COMPLIMENTARY MART FILE REMOVAL REQUIRED	410	Loaded by guided assist /Next best action	2
BILLING	CHANGE BILL FREQUENCY	149	Loaded by guided assist /Next best action	2
COLLECTIONS	PAYMENT PLAN REQUEST	20678	Loaded by guided assist /Next best action	3
COLLECTIONS	LIFT SUSPENSION ORDER	13515	Loaded by guided assist /Next best action	3
COLLECTIONS	PAYMENT EXTENSION	11911	Loaded by guided assist /Next best action	3
COLLECTIONS	PAYZONE CARD REQUEST	8487	Loaded by guided assist /Next best action	3
COLLECTIONS	DD DETAILS RECORDED	7923	Loaded by guided assist /Next best action	3
COLLECTIONS	BUSINESS SUSPENSION QUERY	884	Loaded by guided assist /Next best action	3
COLLECTIONS	BUSINESS ACCOUNT ARREARS	652	Loaded by guided assist /Next best action	3
COLLECTIONS		163	Loaded by guided assist /Next best action	3
SELF INSTALL - NEW CONNECT	SELF INSTALL - NEW CONNECT	20285	Loaded by guided assist /Next best action	4
SELF INSTALL ASSISTANCE	SELF INSTALL ASSISTANCE	8462	Loaded by guided assist /Next best action	4
SELF INSTALL ASSISTANCE	NO OB INSTALLED	3533	Loaded by guided assist /Next best action	4
SELF INSTALL	PROVISIONING ISSUES - SI: TSD USE ONLY	3013	Loaded by guided assist /Next best action	4
SELF INSTALL ASSISTANCE	NO SIGNAL FROM OB	2291	Loaded by guided assist /Next best action	4
SELF INSTALL INSTRUCT	SEND SPLITTER AND COAX CABLE	1620	Loaded by guided assist /Next best action	4

SELF INSTALL INSTRUCT	HZN REMOTE CONTROL	1042	Loaded by guided assist /Next best action	4
SELF INSTALL INSTRUCT	SEND HDMI	439	Loaded by guided assist /Next best action	4
SELF INSTALL INSTRUCT	D4A REMOTE CONTROL	386	Loaded by guided assist /Next best action	4
SELF INSTALL INSTRUCT	SEND TV COAX	376	Loaded by guided assist /Next best action	4
SELF INSTALL INSTRUCT	SEND BB COAX	309	Loaded by guided assist /Next best action	4
SELF INSTALL ASSISTANCE	LEVELS ISSUE	172	Loaded by guided assist /Next best action	4
SELF INSTALL INSTRUCT	SEND SCART	162	Loaded by guided assist /Next best action	4

2.3 Assessment Boundaries

2.3.1 Assumptions

ID	Description	Comments
AS_01	Agent Roles are maintained in the Apollo. Apollo is used for accessing the roles of the Agent	
AS_02		

2.3.2 Risks

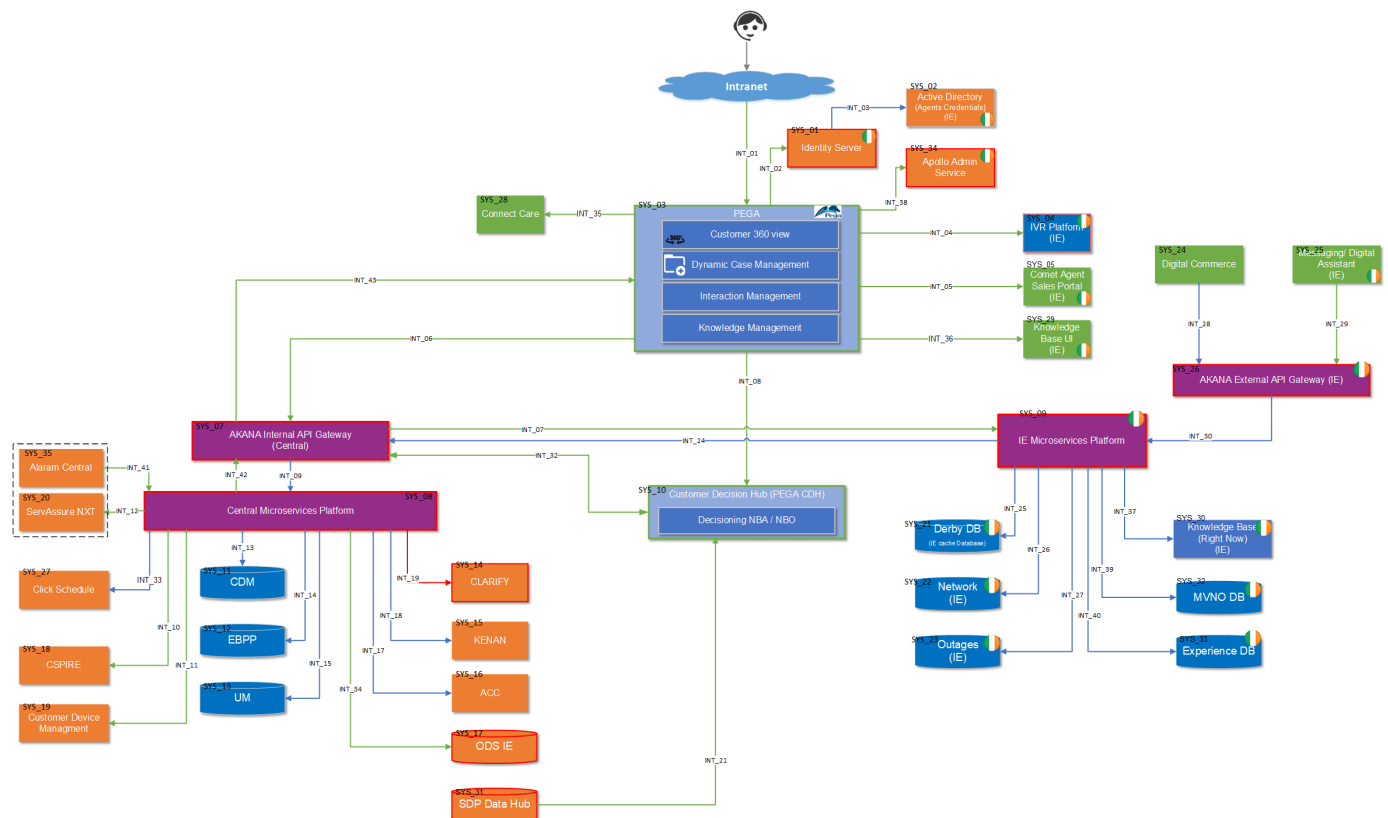| ID	Description	Impact	Likelihood	Mitigation Strategy
RI_01	ACC API are non performant some times. Real time data fetch will may cause performance issues.	Performance Issues	Very Likely	
RI_02	Clarify is on older version of Oracle. The version upgrade is planned. Current version of Oracle might have performance problems to support the additional load from Pega	Performance Issues.	Very Likely.	Version Upgrade

2.3.3 Dependencies

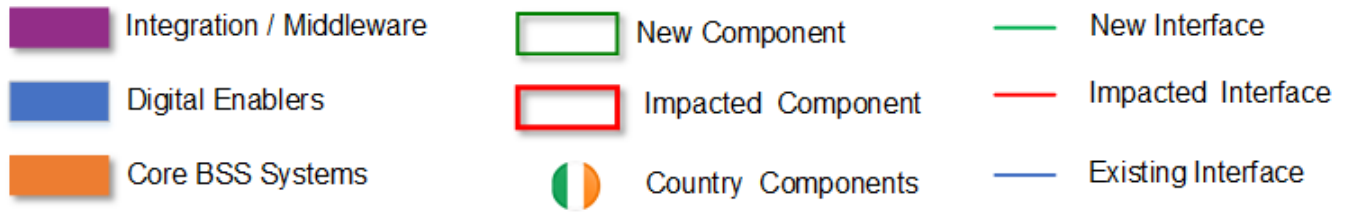| ID	Description	Comments
DE_01	UI / UX Wire frames	These are required to proceed with development of the features.
DE_02		

3. Solution Approach

Pega is one of the main components of the Digital First Transformation Program in Virgin Media Ireland. Pega is envisioned as the centralized customer case management systems for agents.

- A new system (Pega) will be implemented to enable contact centre agents to support Ireland customers on solving their service requests or technical questions. Pega system will connect to Central and Locally delivered APIs to fetch all necessary data needed to support the Generic Admin flows & technical trouble shooting flows.
- Pega will interface with AKANA Internal (Central) to fetch the required information from the various backend systems.
- Where ever possible the process defined in the Pega for particular customer journey should be exposed as an API, so that channels other than Pega can consume these process. This will ensure that the process are defined once and reused across the channels.
- Where ever possible the information fetched from the backend systems should be cached by the Pega for the subsequent use in the case /process follow with the given customer context.
- Implement the APIs/stored procedures on existing Clarify and Kenan or SDP Platforms. Read operations are performed on SDP / Clarify Replica, write operations are performed in the Clarify Database. Read operation for the billing data is performed on Kenan Replica / EBPP / SDP.
- Central Microservices Platform exposes the API's to fetch the data from the Clarify / Kenan / SDP by consuming the stored procedures exposed by the respective systems.
- Possible new APIs will be identified during the refinement of the project scope and user stories.
- Implementation of Akana (Local and Central) to expose all impacted APIs for consumption by clients (Pega).
- Pega integrates with Customer Decision Hub (CDH) to fetch the next best action and next best offers.
- Pega CDH is fed with the data from various systems such as SDP, outages, network etc.. Details of various systems which feed data into CDH will be elaborated once business defines the use cases.

4. Solution Architecture Landscape

Legend

▇ Integration / Middleware	▭ New Component	── New Interface
▇ Digital Enablers	▭ Impacted Component	── Impacted Interface
▇ Core BSS Systems	🏴 Country Components	── Existing Interface

5 Applications and Components

5.1 Applications and Components Overview

ID	Application	Delivered By	Application Type	Description	Impacted
SYS_01	Identity Server	IE	Identity Provider	Identity application providing authentication services.	Yes
SYS_02	Active Directory (Agent Credentials)	IE	Authentication	Directory server holding agent credentials.	No
SYS_03	Pega	LG IT	Agent Desktop	Platform for assisted customer care	Yes
SYS_04	CISCO Finesse	IE	Telephony	Interactive Voice Response	Yes
SYS_05	Comet	IE T&I	Portal	Agent Sales Portal	No
SYS_07	Akana Internal API Gateway (Central)	LG IT	API Gateway	API Gateway securing the access to back end API's	Yes
SYS_08	Central Microservices Platform	LG IT	IT Middleware	Liberty Global Micro service platform enabling access to the data from the various business systems.	Yes
SYS_09	IE Microservices Platform	LG IT	IT Middleware	IE's middleware platform exposing services to drive product discovery and check-out journey.	Yes
SYS_10	Pega Customer Decision Hub (CDH)	LG IT	Application	Decisioning engine used for evaluating the next best action and offer.	Yes
SYS_11	CDM (Order/Install base)	LG IT	Database	Cache Database holding the customer profile, product, online o rders, shopping basket etc.	No
SYS_12	EBPP	LG IT	Database	Holds the customer billing and invoice information.	No
SYS_13	Usage Monitoring Database (UMDB)	LG IT	Database	Database holding the product usage details.	No

SYS_14	Clarify	LG IT	CRM Application	CRM for fixed-line customers	Yes
SYS_15	KENAN	LG IT	Billing	Billing System for fixed-line customers	No
SYS_16	ACC	LG IT	CRM Application	CRM for Mobile customers	No
SYS_17	ODS IE	LG IT	Database	real-time replica of CLARIFY database.	Yes
SYS_18	cSPIRE	LG IT	OSS - Derby	Automated resource provisioning system for CM, HUB, Horizon STBs, VSCs	No
SYS_19	Customer Device Management (CDM)	LG IT	Web Application	Device Management Tool	No
SYS_20	ServAssure NXT	LG IT	Diagnostics Tool	Diagnostics Tool	No
SYS_21	Derby DB	IE	Database	IE local cache db holding customer data	No
SYS_22	Network	IE			No
SYS_23	Active Outages	IE	Application	Outage notifications	No
SYS_24	Digital Commerce	LG IT	Web Application	Customer Sales Portal	No
SYS_25	LiveEngage Platform	IE	Messaging platform	The messaging platform hosted in cloud used to enable continuous messaging solution	No
SYS_26	AKANA External API Gateway (IE)	LG IT	API Gateway	API External Gateway Local	Yes
SYS_27	Click Schedule	LG IT	Application	Work-force management services for appointment management	No
SYS_28	Connect Care	LG Technology	Web Application	Application enabling the agents to manager the customer premise broadband equipment.	No
SYS_29	Knowledge Base Portal	IE	Web Application	Displays the knowledge articles.	No
SYS_30	Knowledge Base (Right Now)	IE	Application	Knowledge base application where the articles are stored and retrieved.	No
SYS_31	SDP Data Hub	LG IT	Database	Data lake containing customer information	Yes
SYS_32	MVNO DB	IE	Database	ACC Local Cache DB	No
SYS_33	Experience DB	IE	Database	Stores customer communication details (SMS / Email) along with templates and historical data	No
~~SYS_34~~	~~Apollo Identity Service~~	~~IE~~	~~Authorization Service~~	~~Provides the roles of the logged in agent~~	~~Yes~~
SYS_35	Alarm Central	LG IT	Application	Provides outage information and the customers affected by the outages.	No
SYS_36	Avaya	IE	Telephony	Interactive Voice Response	Yes

5.1.1 Identity Server (SYS_01)

IE local identity application authenticating the agents against the active directory and issues the tokens.

Pega application should be on- boarded as one of the application using the identity services.

5.1.2 Active Directory (SYS_02)

Active Directory is a centralized and standardized system that automates network management of user data, security, and distributed resources, and enables inter operation with other directories.

No Impacts on this system.

5.1.3 Pega (SYS_03)

Pega is the primary application for this project. **Customer Service for Communications** will be deployed in order to enable the Customer Care to efficiently handle the general admin case flows.

This application will be deployed on top of Pega 8.x platform and will enable us to :

- Implement **Communications & Customer Service** solution, including the building of customer 360° view.
- Create and maintain the general admin flows, referring to the implemented points of integration
- Create and maintain the needed business rules to support the general admin flows
- Consume the provided APIs and combine/transform/enrich data based on the running workflow and influenced by the decisioning engine
- Centralize BPM engine for creating the business processes required to support various customer journeys.
- Automate appropriate forms generation to capture the details of the cases and interactions based on the customer case type and interaction types.

Following capabilities needs to be implemented in the Pega to support the front line agent functionalities.

- Integrate with Identity Provider for authenticating the agents accessing the Pega using OAUTH.
- Integrate with Apollo to fetch the roles of the logged in agent.
- Enabling defining the user roles.
- Integrate with CISCO IVR Platform to support full telephony integration.
- Mashup / route to various in-house portals such as COMET / CASIO / Knowledge Management
- Implement the process flow for the knowledge base articles creation, approval and release.
- Implementing the customer 360 view.
- Display the time line view based on the customer cases, interaction, account status, bills, etc.
- Implementing the approximately around 50 case flows as part of MVP.
- Pega application should be accessible using the desktop, tabs and mobile devices
- Expose API to capture and store the outage information.

5.1.4 CISCO Finesse (SYS_04)

Interactive Voice Response (IVR) connects to the telephony system to be the first point of contact to customer calls. It presents the customer with different options in order to route the call to the general contact center agent or technical help desk queue.

Pega will be one of consumer for the calls originating at IVR.

5.1.5 Comet (SYS_05)

Portal for the agents enabling them to order the products on behalf of the customers.

This portal will be embedded into Pega UI.

5.1.7 Akana Internal API Gateway (Central) (SYS_07)

Corporate API management and security gateway used to front all internal APIs towards IE backend systems. It also enables the control and management of API's life cycle. All API's involved in this project which are accessed from the intranet will be fronted by this system.

All the API's exposed by the Central Micro service platform and IE Micro Services Platform and consumed by the Pega are protected by the AKANA Internal API Gateway.

The application to application authentication based on OAUTH will be implemented to enable the Pega to access API's exposed by the Local and Central Microservice Platform.

Approximately around 60 API's needs to be protected by the AKANA Internal API Gateway.

5.1.8 Central Microservices Platform (SYS_08)

Middleware platform exposes the API to fetch the information from the central systems or to modify the information in the central systems. The data from the following back end systems are provided by this middleware platform.

- CLARIFY - Customer data, install base, cases, interactions etc..
- KENAN - Billing account information
- SDP Data HUB
- Click Schedule - Appointment related information
- CDM - Customer install base in commercial format
- UM - Usage information
- EBPP - customer bills and invoices
- ACC - Customer mobile subscription related information.

The following microservices developed as part of the MyVM IE (Calypso) & Back Office Automation project will be reused.

- Get Customer Profile (Cable and Mobile)
- Get Customer Products (Cable and Mobile)
- Get Customer Bills (Cable and Mobile)
- Get Customer Usage (Cable and Mobile)
- Get Customer Bill Overview (Cable and Mobile)
- Get PDF Bill (Cable and Mobile)
- Get Payment History (Cable)
- Reset Pin
- Get Mobile Devices
- Get Loan Details
- Get Customer Permissions (Cable and Mobile)
- Get Product Settings
- Update Customer Profile (Cable and Mobile)
- Update Customer Permissions (Cable and Mobile)
- Update Product settings
- Update Payment Method
- Get Available Time Slots
- Create Appointment
- Cancel Appointment

The following new microservices will be implemented.

- Get Cases
- Get Interactions
- Create Case
- Update Case
- Close Case
- Create Interaction
- Get Appointments
- Get Comments
- Get CPE Status
- Get Outages
- Refresh Entitlements

5.1.9 IE Microservices Platform (SYS_09)

Integration /Middleware Platform which will expose the API's to fetch the data from the IE Local systems. The data from the following back end systems are provided by this middleware platform.

- Derby DB - merged customer install base (Cable and mobile)
- Outage - Outage information based on the customer address.
- Network
- Knowledge Management System (RightNow)

- Customer Search (Customer address, phone number, CRM ID)
- API's for retrieving knowledge base articles based category, top articles, keywords.
- APIs to retrieve the E-mail and SMS communications from the Experience DB.
- API's to send the SMS and E-mails, which are consumed by the Pega.
- API to support the same day swap flows (Data from the CPE Motel)
- API to fetch the Warranty information of Mobile devices / Subscriptions from Local data store.
- API to Fetch the Case Type, Sub Type and Reason Codes.
- API to fetch the Memos and Tickets of the ACC which are cached locally in MVNO DB.
- API to fetch the Credit Card Payments.

5.1.10 Pega Customer Decision Hub (CDH) (SYS_10)

PEA Customer Decision Hub (CDH) is new system introduce to support the next best offer and next best action capabilities. This system integrates with various back end systems to fetch the data required to build the next best

action and offer capabilities. The integration with back end systems will be batch feed for not frequently changing data and API based integration for the real-time data.

5.1.11 CDM (SYS_11)

CDM is a canonical cache data base which stores the customer profile information and customer owned products in the commercial format. There are no changes introduced as part of this project.

5.1.12 EBPP (SYS_12)

Database holding the customer invoices and bills. There are no changes introduced as part of this project. Central MSP API's will consume the data from this system.

No impact on this system.

5.1.13 UM (SYS_13)

Database holding the customer usages details. There are no changes introduced as part of this project. Central MSP API's will consume the data from this system.

No impact on this system.

5.1.14 CLARIFY (SYS_14)

CRM for cable accounts that contains all customer information like profile data, installed base, interactions, cases and other customer relevant data entities.

Following existing Stored Procedures will be reused

1. Edit Customer Details
2. Edit Marketing Preference
3. Edit Billing Details.
4. Edit Payment Method.

New stored procedures will need to be created as part of this project to support the following functionalities.

- Create Case
- Update Case
- Close Case
- Retrieve Cases
- Create Interaction
- Retrieve Interactions
- Retrieve Comments
- Create Comments
- Un-Suspension of Customer

Wherever possible the stored procedures created to support the Pega ADT in Switzerland will be enhanced and reused.

5.1.15 KENAN (SYS_15)

Kenan is the billing and revenue management system. There are no changes introduced as part of this program. No impact on this system.

5.1.16 ACC (SYS_16)

ACC is existing application handling the mobile subscriptions and handsets. It contains the customer's subscription details and other details. Existing APIs reused wherever possible. There are no changes introduced as part of this program. No impact on this system.

5.1.17 ODS IE (SYS_17)

Replica Database of CLARIFY. Used for fetching the read-only data.

5.1.18 CSPIRE (SYS_18)

There are no changes introduced as part of this program. No impact on this system.

5.1.19 Customer Device Management (SYS_19)

Customer Device Management provides the details of the CPE and helps in troubleshooting the device. As of part of MVP we will use the API to fetch the EOS & HZN tuner levels.

5.1.20 ServAssure NXT (SYS_20)

This application provides the basic CPE information. Existing API to fetch the CPE status and Signal level thresholds will be enhanced and reused.

5.1.21 Derby DB (IE) (SYS_21)

There are no changes introduced as part of this program.

5.1.22 Network (SYS_22)

There are no changes introduced as part of this program to this database.

5.1.23 Outages (SYS_23)

There are no changes introduced as part of this program to this database.

RMC Active Outage Daily Queue on Apollo is the source of outage information for customer residential area.

The outage flag is currently set at account level based off outages configured on the IVR. These outages are sent to the website every 30 mins. The IVR outages are currently feeding IVR, online and Apollo.

Apollo flag is set by local microservices (cases and interactions MS) – this could be used to feed Pega if that source was to remain the best source for confirmed outages at account level.

5.1.24 Digital Commerce (SYS_24)

There are no changes introduced as part of this program. Changes to this application is handled by the other program.

5.1.25 LiveEngage Platform (Messaging / Digital Assistant) (SYS_25)

There are no changes introduced as part of this program. Changes to this application is handled by the other program.

5.1.26 IE AKANA External API Gateway (SYS_26)

API's exposed by the IE Microservices Platform will exposed to the Intranet application and third-party applications through this API Gateway.

5.1.28 Click Schedule (SYS_27)

There are no changes introduced as part of this program.

5.1.28 Connect Care (SYS_28)

There are no changes introduced as part of this program. Pega will mash up or direct the agent to this portal.

5.1.29 Knowledge Base UI (SYS_29)

There are no changes introduced as part of this program. Pega will mash up or direct the agent to this portal.

5.1.30 Knowledge Base (RightNow) (SYS_30)

RightNow is the Knowledge base application where the articles are stored and retrieved. RightNow KB uses ADFS for users.

Currently there are 2 versions of Knowledge base,

1. Oracle standalone hosted here:
   https://upc-ireland-internal.custhelp.com/app/home
2. Integrated knowledge base in Apollo hosted here: https://apps.virginmedia.ie/apollo

The integration leverages 2 service references:

- https://upc-ireland-internal.custhelp.com/cgi-bin/upc_ireland_internal.cfg/services/kf_soap?wsdl
- https://upc-ireland-internal.custhelp.com/cgi-bin/upc_ireland_internal.cfg/services/soap?wsdl

Below are the RightNow methods invoked by our KB Microservice (6 distinct endpoints).

- GetPopularContent
- GetContent
- SearchContent
- RateContent
- GetValuesForNamedID
- GetValuesForNamedIDHierarchy

Knowledge Base content exists under headings such as category or product and it is in this context data is retrieved or filtered from RightNow Knowledge Base. There are 100 articles which VM wants to have transferred over to Pega for testing. Roughly 750 MB for 100 articles. With respect to design, structure, content – Knowledgebase currently has requirements for HTML5 based article content, we currently have ability to link to URLs, embedding of videos, uploading of images (via AEM / CQ5 hosting site).

5.1.31 SDP Data Hub (SYS_31)

The data from this system will be fed to the Pega CDH to drive the analytics for next best action and offer. Details of the entities that need to fed is not know at this stage of the project.

5.1.32 MVNO DB (SYS_32)

MVNO DB is the local cached Database for ACC. There are no changes introduced as part of this program.

5.1.33 Experience DB (SYS-33)

Experience DB stores SMS/email comms (Historical comms) shared with the customer. There are no changes introduced as part of this program.

Current comms configured in Experience DB:

Cassio originated:

- Complaints (multiple SMS & email - Comreg regulatory)
- Complex Bill Exceptions (multiple SMS and Email)

Apollo originated:

SMS

- Roaming Mobile
- Porting Mobile
- Virgin Mix Listings
- Full House Listings
- Freedom TV Listings
- TV Anywhere App

- HZN Pair Remote
- Call Rates Home Phone
- Register MyVM
- Reset MyVM
- Ways To Pay
- Best From Wifi
- WhatsApp
- Sky Sports Premiums

Email

- Payment Plan Email
- Mobile Warranty

5.1.34 Apollo Identity Service (SYS_34)

Apollo Identity service is used for fetching the roles of the agent. Pega will consume the service exposed by this component to retrieve the roles of the agent after the login.

Based on the role of the agent Pega will allow the agent to perform appropriate actions.

5.1.35 Alarm Central (SYS_35)

This application provides the outage information. Existing API's to push the outage information will be enhanced to push to the new destination. The following information is required as part of this push.

1. Current Outage information along with details about when the outage has started and expected resolution time.
2. Customers or devices impacted by the outage.

5.1.36 Avaya (SYS_36)

Interactive Voice Response (IVR) connects to the telephony system to be the first point of contact to customer calls. It presents the customer with different options in order to route the call to the general contact center agent or technical help desk queue.

Pega will be one of consumer for the calls originating at IVR.

6 Interfaces

6.1 Interfaces Overview

ID	Type	From	To	Comments	Impact
INT_01	HTTPS / REST	Intranet (from Browser)	Pega	Agent portal used by the agents to address the customer queries.	Yes. New Connectivity
INT_02	TBC	Pega	Identity Sever	User Access management	Yes. New Connectivity
INT_03	TBC	Identity Sever	Active Directory	Agent credential store	No Connectivity Exists
INT_04	TBC	Pega	CISCO FInesse	IVR Integration to fetch the calls from IVR.	Yes. New Connectivity
INT_05	Mashup	Pega	Comet Agent Sales Portal	Agent Sales Portal is Embedded into the Pega UI.	No. New Connectivity

INT_06	HTTPS/REST	Pega	AKANA API Gateway Internal (Central)	Accessing API's exposed by the Central Microservices Platform.	Yes. New Connectivity
INT_07	HTTPS/REST	AKANA API Gateway Internal (Central)	IE Microservices Platform	Accessing API's exposed by the Local Microservices Platform.	Yes. New Connectivity
INT_08	TBC	Pega	Pega Customer Decision Hub	Accessing the capabilities by the provided by Pega Customer Decision Hub.	Yes. New Connectivity
INT_09	HTTPS/REST	AKANA Internal API Gateway (Central)	MSP Platform (Central)	All back-end data is exposed by MSP platform to Pega through AKANA	Yes. New Connectivity for additional nodes
INT_10	HTTPS / REST / SOAP	MSP Platform (Central)	C-SPIRE	For broadband device details	No. New Connectivity
INT_11	HTTPS / REST / SOAP	MSP Platform (Central)	Customer Device Management	Customer device details and management	No. New Connectivity
INT_12	HTTPS / REST	MSP Platform (Central)	ServAssure NXT	HFC network monitoring details	No. New Connectivity
INT_13	JDBC	MSP Platform (Central)	CDM (Cache Database)	Cache database for customer details and customer install base.	No. New Connectivity for additional nodes
INT_14	JDBC	MSP Platform (Central)	EBPP	Database for invoices and bills	No. New Connectivity for additional nodes
INT_15	JDBC	MSP Platform (Central)	UM	Database for usage data.	No. New Connectivity for additional nodes
INT_17	HTTPS / SOAP	MSP Platform (Central)	ACC	To fetch mobile subscription details of customers.	No. New Connectivity for additional nodes
INT_18	JDBC	MSP Platform (Central)	Kenan	To fetch customer billing account details.	No. New Connectivity for additional nodes
INT_19	JDBC	MSP Platform (Central)	CLARIFY	To fetch customer details and to update customer details.	Yes. New Connectivity for additional nodes (In case of Oracle upgrade of Clarify)
INT_21	TBC	SDP Data Hub	Pega CDH	Customer data feed	Yes. New Connectivity.
INT_24	HTTPS / REST	IE Microservices Platform	AKANA API Gateway Internal Central	To fetch the data from the Central sources.	Yes. New Connectivity.
INT_25	JDBC	IE Microservices Platform	Derby DB Local	To fetch the locally store customer offer information	No. Connectivity Exists
INT_26	JDBC	IE Microservices Platform	Outages	To fetch outage information	No. Connectivity Exists
INT_27	JDBC	IE Microservices Platform	Network	To fetch network related information	No. Connectivity Exists
INT_28	HTTPS / REST (over Internet)	Digital Commerce (from Browser)	AKANA API Gateway External IE	To Fetch data next best offer and action information	Yes.

					New Connectivity (should be taken care by Digital Commerce Project)
INT_29	HTTPS / REST	Messaging Digital assistance (Live Person)	AKANA API Gateway External IE	To Fetch data next best offer and action information	Yes. New Connectivity
INT_30	HTTPS / REST	AKANA API Gateway External IE	IE Microservices Platform	To fetch data from local systems and Pega CDH	Yes. New Connectivity (This should be taken care by Technical Enablers project)
INT_32 a	HTTPS / REST	Pega CDH	AKANA API Gateway Internal Central	To fetch the data real time from back end systems. Expose API for consuming systems.	Yes. New Connectivity
INT_32 b	HTTPS / REST	AKANA API Gateway Internal Central	Pega CDH	To fetch the NBA and NBO.	Yes. New Connectivity
INT_33	HTTPS / SOAP	Central Microservices Platform	Click Schedule	To fetch technicians schedule information and book appointments.	No New Connectivity (As Additional nodes of Central MSP are introduced)
INT_34	JDBC	Central Microservices Platform	ODS IE	To retrieve customer information	Yes. New Connectivity
INT_35	Mashup	Pega	Connect Care	Agent portal for managing the customer modem and other WiFi devices.	No. New Connectivity
INT_36	Mashup	Pega	Knowledge Base Portal	Portal displaying the knowledge base articles.	No. New Connectivity
INT_37	HTTPS / REST	IE Microservices Platform	Knowledge Base	RIghtnow Knowledge base application	No Connectivity Exists
INT_38	HTTPS / REST	Pega	Apollo Identity Service	User roles management	Yes. New Connectivity
INT_39	JDBC	IE Microservice Platform	MVNO DB	To Fetch the cached ACC memos, tickets and merged customer profile	No Connectivity Exists
INT_40	JDBC	IE Mircoservice Platform	Experience DB	To Fetch & store the customer communications such as email and SMS along with their templates	No Connectivity Exists
INT_41	HTTPS / REST	Alaram Central	Central Microservice Platform	To push the outage information	No. New Connectivity
INT_42	HTTPS / REST	Central Microservice Platform	AKANA API Gateway Internal (Central)	To push information to other information	Yes. New Connectivity
INT_43	HTTPS / REST	AKANA API Gateway Internal (Central)	Pega	To invoke API's exposed by the Pega	Yes. New Connectivity
INT_44	TBC	Pega	Avaya	IVR Integration to fetch the calls from IVR.	Yes. New Connectivity

7. Cost & Effort Estimates

All costs are based on a ROM of +/- 20-30%

7.1 Costs Overview

Type	Cost
Central Development	€2,438,500
Local Development	€19,450
Pen Testing	€20,000
Local QA	€700,000
TOTAL PROJECT COST	€3,177,950

7.2 Costs, Effort, Resource Breakdown

Type/Resource	Local	Estimated Time	Estimated Cost	Estimated Resources
Development				
Central Development	N	TBP	€2,438,500	9 (6 Developers, 1 Scrum Master, 1 Product Owner and 1 Business Analyst)
Local Development	Y	4 Weeks	€19,450	12 (5 Developers, 1 Scrum Master, 1 Lead, 1 Onshore Tester, 4 Offshore Tester)
Pen Testing	Y	TBP	€20,450	NA
QA				
QA Testing	Y	17 weeks + 1 day	€610,000	5 (1 Online, 4 Offshore)
Performance Testing	Y	8 weeks	€90,000	3 (2 Offshore, 1 Offshore Lead)

7.2.1 Central Breakdown

Note: All these costs are +/- 30 % accurate. These costs are not committed by the delivery teams. The JIRA process has been raised in Central for the approval of these costs by the delivery teams.

7.2.1.1 Customer 360° View - VMIEDF-86

Team	Area	Effort(Days)	Cost
Pega	Refinement & Design, Development, Test Support, Go Live & Warranty Application Support covering • Customer Search • Customer 360 • Pega CTI • SSO	1795	€897,500

AKANA Internal Central	Development, Test Support, Go Live & Warranty Application Support	135	€67,500
Central MSP	Development, Test Support, Go Live & Warranty Application Support	155	€77,500
Clarify	Development, Test Support, Go Live & Warranty Application Support	70	€35,000
Testing	Testing SIT / UAT / ORT	85	€42,500
Infrastructure	Go Live & Warranty Infrastructure Support	25	€12,500
Release and Management	Environment Management & Release	40	€24,000
Environment Build	Environment Build (excluding Infrastructure)	80	€48,000
Network design and connectivity	DCT & Networks efforts costs.	150	€90,000
Security Review and Testing	Security Review and Testing costs.	25	€20,000
Total		2560	€1,314,500

7.2.1.2 Case Management - VMIEDF-38

Team	Area	Effort(Days)	Cost
Pega	Refinement & Design, Development, Test Support, Go Live & Warranty Application Support	897.5	€448,750
AKANA Internal Central	Development, Test Support, Go Live & Warranty Application Support	65	€32,500
Central MSP	Development, Test Support, Go Live & Warranty Application Support	105	€52,500
Clarify	Development, Test Support, Go Live & Warranty Application Support	78	€39,000
Testing	Testing SIT / UAT / ORT	55	€27,500
Infrastructure	Go Live & Warranty Infrastructure Support	10	€5,000
Total		1210.15	€605,250

7.2.1.3 Account Health Check - VMIEDF-41

Team	Area	Effort(Days)	Cost
Pega	Development, Test Support, Go Live & Warranty Application Support	538.5	€269,250
AKANA Internal Central	Development, Test Support, Go Live & Warranty Application Support	30	€15,000
Central MSP	Development, Test Support, Go Live & Warranty Application Support	65	€32,500
Testing	Testing SIT / UAT / ORT	15	€7,500
Infrastructure	Go Live & Warranty Infrastructure Support	10	€5,000
Total		658.5	€329,250

7.2.1.4 Knowledgebase/Guided Assist - VMIEDF-41

Team	Area	Effort(Days)	Cost
Pega	Development, Test Support, Go Live & Warranty Application Support	359	€179,500
AKANA Internal Central	Development, Test Support, Go Live & Warranty Application Support	20	€10,000
Total		379	€189,500

7.2.2 Local Breakdown

Note: All these costs are +/- 30 % accurate.

Local Development

Cost per day: Developer: €500, Planet 21 Integration/UAT Support: €1,200, Planet 21 Project Management: €1,050

7.2.2.1 Customer 360° View - VMIEDF-86

Team	Area	Effort(Days)	Cost
Local Dev	Development, Integration, Support • API Integration/Akana Onboarding • Pega Integration with Identity Server • Comet Integration : Integration of existing comet functionality and rule to the agent desktop with the exception of the front search screen: 1, Customer account loaded in Pega desktop to be linked directly to comet shopping basket within the same desktop 2, Include existing comet search options in Pega Customer search to retrieve orders and referrals. • IE MSP Enhancement	20	€10,000
IE IT Service Operations/Planet 21	**Cisco Finesse CTI integration with PEGA**		
	Pega Integration Support	2	€2,400
	UAT Support	5	€6,000
	Project Management	1	€1,050
Total		28 Days	€19,450

Local QA:

Cost per day: Onshore: €500, Offshore: €250

Initiative	Phase	Activity	Duration	Resources	Effort (days)	Cost
Customer 360° View - VMIEDF-86 • Customer Search • Pega CTI • SSO	**Test – Prep** **Test – Sprint** **Test – UAT**	Finalized Test approach Finalized Test strategy Test data preparation	16 Weeks	Onshore: 1 Offshore: 4	250	€375,000
Account Health Check - VMI EDF-41		Scrum Ceremonies Test scenario/Test Case preparation PEGA Access requests			40	€60,000
Knowledge base /Guided Assist - VM IEDF-41		Finalize dependencies and test plan Lab setup Sanity Test			30	€45,000
Case Management - VMIEDF-38		Test Execution UAT Test coordination with business users Demo to business users Test data support for business users Test Management Defect management			80	€120,000
Overall	**Production Implementation Testing**	Technical validation post production implementation	1 Day	Lab Resource (Onshore) : 1 Offshore : 3	4	€5,000
	Warranty Support	Test support (in UAT) – post-go-live fixes	1 Week	Offshore : 2	10	€5,000
Total					414	€610,000

Onshore resource need to work closely with the Business, Dev Team and Client SME's to get more insight on the QA process automation using PEGA so that QA can test more scenarios which are Real Time Business aligned.

Also resource need to perform the IVR Testing from Onshore which is Critical to this process.

Performance Testing:

Cost per day: Offshore: €250, Offshore Lead: €250

Phase	Activity	Duration	Resources	Effort (days)	Cost
Test Prep	• Test scenario formulation • Test tool setup • Access Request • Pre-requisite fulfillment	3 Weeks	Offshore:2 Offshore Lead: 1	45	€33,750

|					
	- Test data setup - Environment Validation - Application Demo				
Test Cycle – UAT	- Sanity Test - Test coordination with business users - Demo to business users - Test data support for business users	4 Weeks	Offshore:2 Offshore Lead: 1	60	€45,000
Closure and Defect Retest	Defect management	1 Week	Offshore:2 Offshore Lead: 1	15	€11,250
Total			3	120	€90,000

8. Infrastructure & Hardware

8.1 Pega Platform

The Pega software is highly agnostic when it comes to infrastructure. It uses a JVM based application layer and is supported by a SQL database accessed via JDBC. Therefore, the approach will be to use the following components (NB. Not all components will necessarily feature in every environment).

- AWS Cloud based Platform
- Oracle WebLogic / Tomcat JVM application servers
- SQL RDS database layer
- SQL Grid database clustering.

 The fundamental infrastructure design is therefore very simplistic, as shown in the diagram below.
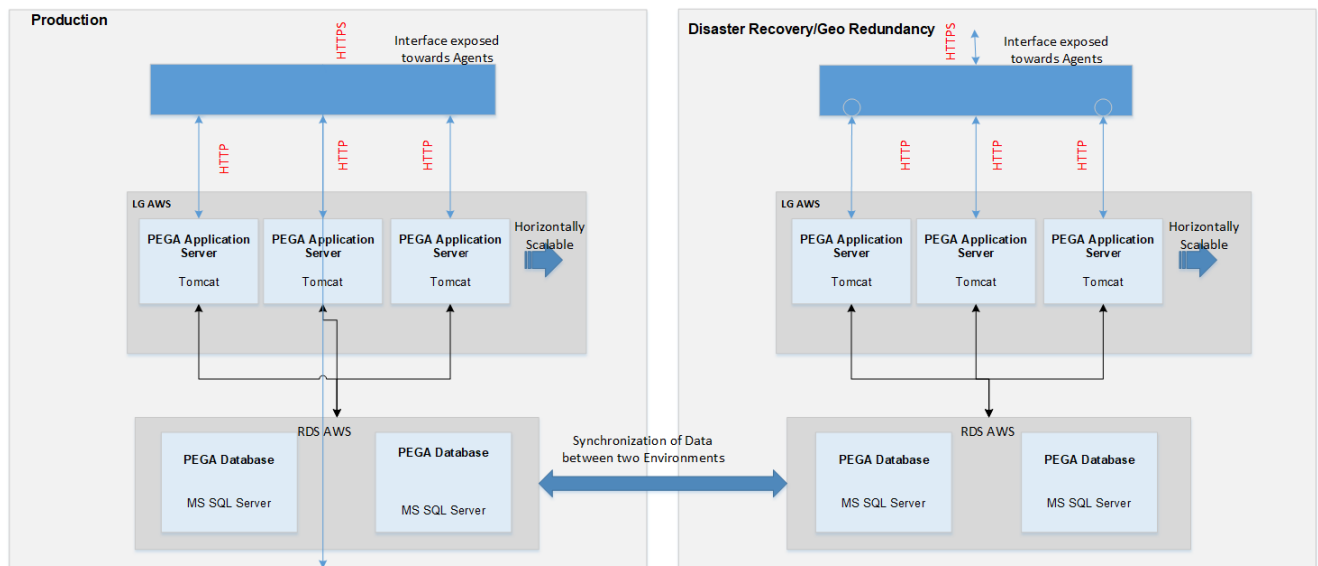
The following table defines all environments types and how many, if any are required by this design as part of the initial phase of the program.

Environment type	Description	Required?
Development	Used to develop functional changes. May be implemented with other development systems to form an integrated development platform.	Yes
Joint Integration Test	Used to test functional changes as part of the development process. May be implemented with other test systems to form an integrated test environment	Yes
User Acceptance Test	A non-production environment used for testing new functionality with users prior to roll out to production (either directly, or via pre-prod).	Yes
EDU	A non-production environment used for training of the new users of the system. Should be functionally equivalent to production though not necessarily providing the same levels of capacity /performance.	Yes
Production	The principal production environment.	Yes
Performance Test (ORT)	A non-production environment used for capacity and/or performance testing. May be functionally non-equivalent to prod (eg. may have resilience), but should provide a basis for accurate performance testing.	Yes
Disaster Recovery	A production level environment providing support for business continuity plans in the event of a major outage impacting the production environment	Yes

Please find attached the details of no of virtual machines, database and disk size in the attached PDF.

VMIESAD-PegaPl...-1017-2874.pdf

8.2 Central MSP Platform

As the NFR's are not yet finalized out initial assumptions is following additional MSP infrastructure will be required to support the introduced services and usage load.

Environment type	Description	Required?	Sizing
Production		Yes	3 VMS

	The principal production environment.		(Specification of each VM is 16CPU and 64 GB RAM)
User Acceptance Test	A non-production environment used for testing new functionality with users prior to roll out to production (either directly, or via pre-prod).	Yes	1 VM (Specification of each VM is 16CPU and 64 GB RAM)
Joint Integration Test	Used to test functional changes as part of the development process. May be implemented with other test systems to form an integrated test environment	Yes	1 VM (Specification of each VM is 16CPU and 64 GB RAM)

9. Security Assessment

9.1 Local Security Assessment

Local Security Impact Assessment Outstanding

9.2 Central Security Assessment

Central Security Impact Assessment Outstanding

10. Related Documents

File	Modified ▲
PDF File VMIESAD-PegaPlatformInfrastructure-300120-1017-2874.pdf	Feb 14, 2020 by Mallik Vaskari
File Change DD Flow V3.0 final viso.vsdx	Mar 13, 2020 by Neha Wali
File CSI Flow- Set Up DD V 2.0.vsd	Mar 13, 2020 by Neha Wali
File RE Data segregation - Local Cache Real time.msg	Mar 13, 2020 by Neha Wali
Microsoft Excel Spreadsheet DCT-10932 PEGA AWS cost projections.xlsx	Apr 22, 2020 by Neha Wali
PNG File Fundamental Infrastructure Design	Apr 22, 2020 by Neha Wali
PNG File Legend - Pega Architecture	Apr 22, 2020 by Neha Wali
PNG File Pega Architecture.png	Apr 22, 2020 by Neha Wali
PNG File image2020-5-18_14-19-0.png	May 18, 2020 by Mallik Vaskari
PNG File image2020-5-18_14-20-40.png	May 18, 2020 by Mallik Vaskari

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11. Glossary

Term	Description
MSP	Micro Services Platform
CRM	Customer Relationship Management
CDM	Canonical Data Model
ACC	Amdocs Compact Convergence for Mobile
CTI	Computer Telephony Integration

CDM	Customer Device Management
CDH	Customer Decision Hub
EBPP	Electronic Bill Payment and Presentation
NPS	Net Promoter Score
SDP	Service Data Platform
BSS	Business Support Systems
OSS	Operations Support Systems

12. Open Points

ID	Description	Owner	Status	Comments
OP_01	NFR's are not available. It has impact on the sizing of the AKANA and MSP Platforms.	Neha Wali	OPEN	NFR's pending with the Customer Support Team
OP_02	No Single Sign on Possible between Pega and CDM / Serve Assure as all these application uses different identity providers.		OPEN	
OP_03	External App Integration : Agents do not need to open external apps when servicing customers. External Apps to be integrated as part of a customer flow when needed such as Porty when porting a number, Sepa calculator when adding a direct debit, Health and safety app when working at heights etc.,	Ronan Kelly	OPEN	Ronan in talks with Swiss Team.
OP_04	Reporting: Reporting for agent activity, Usage, Adoption, User changes and so on	Ronan Kelly	OPEN	Ronan in talks with Swiss Team.
OP_05	Pega Integration Support with IE IVR Plarform - Effort and Cost Estimates	Neha Wali	CLOSED	Integration estimates provided by Planet 21 Team.
OP_06	If Pega can be integrated with multiple Telephony Systems. Pega Team working on the PoC.	Amar/Ranjith	OPEN	Amar and Ranjith working on PoC.