Pegasystems Alignment to DTA Digital Service Standards

Build for Change®

PEGA®

Contents

Introduction

This paper has been compiled to help Government Departments understand how Pega can be used to support them in meeting the Digital Service standards. These standards have been set out by the Australian Government through the Digital Transformation Office as best-practice principles for designing and delivering government services, helping digital teams to build services that are simple, clear and fast.

The following standards have been referenced in this document: Digital Service Standard: Updated April 2016 https://www.dta.gov.au/help-and-advice/about-digital-service-standard

Digital Service Standards

1. Understand User Needs

Understand user needs. Research to develop a deep knowledge of the users and their context for using the service.

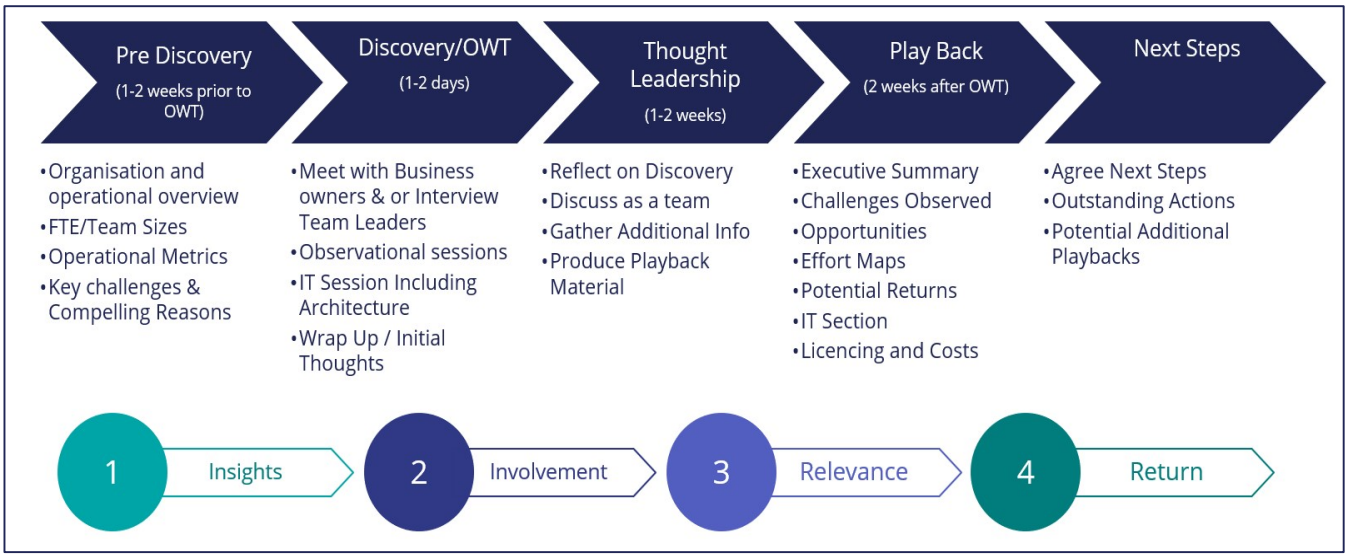
Pega are fully committed to enabling and driving a culture of strong user research that help us to learn about users and create services that are aligned to their needs. Our approach and methodology drive digital teams to build services that are simple, clear and fast. We leverage our global leading agile technology, "centre-out" approach as well as our deep and highly experienced Pega ecosystem to shape comprehensive research and service design. This promotes a deep knowledge of the users and their context for using the service to reimagine and optimize experiences. Our solutions promote a holistic approach to user research and comprehensive service design principles across the entire lifecycle of development and delivery.

Pega uses three core approaches to help customers understand their user needs and when it comes to building the solution, **Pega's Direct Capture of Objectives** allows everything from requirements, use case and the journeys to be captured directly in the tool.

Each of these approaches feature a significant involvement of end users, subject matter experts and product owners, so the needs are firmly defined. Initially an **Operational Walk-Through** (OWT) establishes a baseline of understanding of user needs, strains on the departments and stakeholder requirements. A design thinking workshop, using our **Pega Catalyst** approach, directs business involvement to establish a baseline for the initial delivery of features to solve immediate challenges and promote a quick return. Finally, **Pega Express** provides a framework for iterative build and delivery.

The Operational Walkthrough

The start of the journey for engaging with Pega, is normally an operational walkthrough. The operational walkthrough typically highlights end user challenges and needs and results in a solution recommendation and business case.



Operational Walkthroughs are discovery exercises that are conducted collaboratively with the client and Pega. The goals of the operational walkthrough include:

- Identify potential areas and metrics for improvements in productivity, cost savings, and quality
- Establish a potential Uplift or Operational Impact Percentage for long range benefit
- Establish a potential road map for future impact to include projected Costs and Benefits
- Provide Pegasystems with an understanding of the targeted project scope, issues, and challenges

Operational Walkthroughs generally include the following:

- An area manager who can explain the operation from end to end
- An IT person who can explain the existing systems that support the operation
- The time spent observing and questioning the operations people
- A review of the differences (virtually always true) between what management thinks is happening and what was observed

The review session is used by Pega to present their understanding:

- Understand the “As-Is”
- Develop Operational Impact Model
- Develop Business Benefit and Recommend Additional Areas of Impact

Pega Catalyst

Pega's Catalyst approach helps companies understand not only what the design problems are that they need to solve, but also how to solve them. It helps you look at your journeys in a vastly different way than the more traditional requirements gathering or employee/customer interviews. It's a way to help organisations understand the transformations they want to make in a more holistic fashion. Organisations struggle with innovation – some by structure, some by design. Our job is to jump start that innovation process. The Pega Catalyst™ team helps you understand the players and pick a journey that you want to map out. The goal of all Pega Catalyst™ engagements is to deliver value and deliver it quickly. We also capture business requirements that are fed into a case backlog, so when it comes time to fully implement, you are well on your way.

We help clients design and deliver far-reaching change efforts through our Catalyst methodology. This approach helps leaders shape a change vision and set targets that; are tightly linked to business outcomes, diagnose the organisation's ability to meet those targets, and deliver improvement initiatives that strengthen performance, build capabilities, and change organisational mind-sets and behaviours.

More specifically, we see that key capabilities for implementing major change efforts include:

- Clear, organisation-wide ownership and commitment to change across all levels of the organisation
- Continuous improvements during implementation and rapid action to devise alternate plans, if needed
- Ability to focus organisation on a prioritised set of changes
- Sufficient resources and capabilities to execute changes
- Planning from day 1 for the long-term sustainability of changes
- Effective program management and use of standard change processes
- Clear accountability for specific actions during implementation

More information on Pega Catalyst can be found here.

Pega Express

Pega Express provides a fusion of Industry and Pega Best Practice to enable our clients to get the most out of Pega as quickly as possible. Building for change, leveraging the OOTB capabilities, maximising re-use and driving simplicity.

- Focus on what's important
- Common approach
- Iterate and learn
- High success rate
- Get the best out of Pega delivery

1. **Discover** – agree a set of business outcomes to achieve, customer journeys identified, project scope, delivery team & necessary infrastructure in place.
2. **Prepare** – agree more detailed understanding of what is to be built, testing strategy, and establish project processes to track and measure success.
3. **Build** – configure working software that meets defined outcomes and is validated via the business and users of the application.
4. **Adopt** – Deliver business outcomes planned for the project, refine the plan and outcomes for next release.

Further information on Pega Express can be found here.

The Direct Capture of Objectives

While most organisations create voluminous requirements documents to build software applications, a direct capture of objectives (DCO) is integrated into the software to facilitate build-for-change development while satisfying both IT and business priorities. The DCO principle is a key Pega Platform capability for capturing requirements and process models directly in the Pega application. Pega directly captures the business policies and procedures that define how work gets done—rules, data models, UI, integrations, reports, and organisational structures—as part of your automated process, eliminating errors of omission and misinterpretation that can occur when programmers manually translate requirements into code.

With Pega, businesspeople and IT collaborate, using a shared visual modelling environment that automatically generates a working application as well as the application documentation. DCO dramatically increases both the speed and accuracy with which business requirements are captured. Moreover, the modelled process is "live" upon save to the rules base, meaning that developers can execute and view the working process in real time, even if the process is not yet complete. The process can be rolled back, revised, and rerun as many times as necessary by the development team, with the coding and documentation captured every time directly in the software.

By directly capturing the application requirements in this unique model-driven environment, the business can easily collaborate to implement projects more rapidly with fewer change requests and with an end product that meets the needs of the enterprise and the end user. Pega uniquely supports the entire lifecycle of a business process, from design and development through deployment and production, in an automated, always accurate, and continuously documented manner.

Our approach to developing and delivering business applications is 100% model-driven and collaborative. The Pega Platform manages all aspects of the software needed for the desired business process/application, including:

- Goals and declarative instructions
- Workflow and business process
- Business logic and policies
- User interface and multi-channel client presentation
- Decision strategies and analytics
- Integration with other systems and sources of data
- Specific situational requirements

Most Pega projects start with business groups defining and designing requirements in our Application Studio environment, which allows web-based capture of business objectives, basic flows, use cases, measurable goals, and process participants. Unlike competitor offerings, Pega does not treat requirements gathering as an isolated input, where business requirements are handed off to developers to translate word-based requirements and diagrams into code. Instead, all elements of the application are created in web forms and visual models, and executable code is automatically generated from these models by the software.

As the requirements link to the models, and the models drive the application functionality, Pega-built applications will actually generate their own comprehensive documentation (including application screenshots, data models, business rules, and business process diagrams), providing a direct link between requirement and application component.

2. Have a multidisciplinary Team

Establish a sustainable multidisciplinary team to design, build, operate and iterate the service, led by an experienced product manager with decision-making responsibility.

Pega advocates a multi-disciplinary team, this is necessary for success and particularly for the agility of continuous deliveries. The DCO, and Pega Catalyst engagements, described earlier, are made up from a multi-disciplinary team from both Pega, our alliance partners and the customer. A key output for Pega of this teaming is one of self-sufficiency, which promotes internal innovation, independent actions, and enhanced productivity. We leverage the strength, depth and experience of our vast resource ecosystem to support optimal outcomes.

Typically, a project team for a Pega project is comprised of 5-8 people depending on project size/complexity. Typical roles on the Pegasystems side are as follows:

- Project/Program Manager
- Lead Business Architect
- Lead System Architect
- Senior System Architect

Additional part-time resources, as required, provide UX, Design Review, Technical Architecture/Volume and Performance Support, and Phase Readiness Preparation. A Practice Director role (Delivery Leadership and Accountability) is appointed on a part time basis.

A specific project team structure will be proposed on completion of an initial Project Inception Phase where scope, approach, and roles are determined.

Typical customer roles would be:

- Product Manager: own the business strategy behind a product, specify its functional requirements, and generally manage the launch of features. They coordinate work done by many other functions and are ultimately responsible for the business success of the product.
- Business Architect: Create/calibrate use cases; participate in DCO design sessions
- Subject Matter Experts: Provide insight into business process flows; respond to questions from project team; work closely with Business Architect and Pegasystems project teams; participate in DCO design sessions
- Executive Business Sponsor: Attend governance meetings for rapid and effective decision making

Typical IT roles would be:

- Project management
- Infrastructure Team: Create and maintain infrastructure when on-premise; liaise with Pegasystems team
- Solution Architect: Define application architecture and ensure system architecture conforms to group-wide standards and overall enterprise architecture
- Test Manager: Liaise with project team to implement the testing strategy, organise and execute testing where appropriate; create and maintain test cases and test scripts; execute Smoke tests, SIT, UAT and performance tests against defined strategy
- Rollout/Change Management: will focus on the people side of change, including changes to business processes, systems and technology, job roles and organization structures to support transition.

3. Agile and User-Centred process

Design and build the service using the service design and delivery process, taking an agile and user-centred approach.

Agile development is at the core of our delivery approach. During the implementation phase we believe that Scrum/Agile is the right approach because it gives our client full transparency into the health of the project. It also provides the business with the ability to manage the prioritisation of the work that will be worked on by the Scrum team. This along with the best practices of scrum helps teams deliver incremental, high quality deliverables on a regular basis.

Being able to innovate quickly and release more frequently is a competitive advantage. With Pega, by using an agile delivery methodology that emphasises short, frequent releases, focusing on the Minimum Loveable Product instead of building for the end state, clients can target a first production release in under 90 days, then iterate continuously based on user feedback. Since Pega supports a configuration- and model-based approach to application development, changes to applications can be implemented much quicker than traditional code-based development platforms. The Pega Platform is designed to enable business users to extend and configure the application to meet specific needs and to adjust to changes in business or market conditions. Thus, it is not necessary to initiate change requests to modify the functionality of the application or depend on internal IT resources to configure and optimise the application. Our "Build for Change" approach enables our clients to extend the platform, modify as needed, and take ownership of the application.

According to the Forrester Total Economic Impact Study, with Pega:

- ROI was 321% with a payback period of less than 12 months
- Development cost savings of 75%. With the adoption of Pega, all the interviewed organisations transitioned to a model-driven approach with agile methodologies
- Reduced time-to-market by 50%. The analysis commissioned showed that organisation can launch new business applications up to 90 days earlier
- End-user productivity gains up to 75%. Interviewees reported that their end-users had typically achieved 20% to 50% of productivity gains
- Furthermore, according to a productivity comparison of Pega vs. Java, by Capgemini, which investigated how Pega stacks up against Java EE for developing global, feature-rich, and mobile-enabled enterprise applications, Pega was faster:
- 40% faster mobile development
- 8x faster analysis and design
- 8x faster introducing change

Pega Agile Studio

The Pega Agile project management system enables your application development teams and your stakeholders to execute your projects using the industry best practice Scrum methodology. Agile Studio integrates with Dev Studio in Pega Platform for traceability between your developer environment and your project management system.

Pega Agile Workbench picks up where standard agile approaches fall short by providing an intuitive, no-code feedback environment using a common language that anyone in the organization can understand.

Pega Agile Workbench enables business users to give feedback or report a bug simply by pinning a digital note – as text, voice, video, or screenshot – directly in the application they are building. Directions can be as simple as "Move this search box to the top of the screen," or "Present next best offer at this stage of the process." Pega automatically translates the feedback notes into a project task or agile artifact within a preferred agile project management tool (including Pega Agile Studio, CA Agile Central, or Atlassian's JIRA). This creates continuous and seamless hand-offs between business users and IT as they quickly iterate throughout the development process.

This unique real-time agile approach puts business users and IT on the same page – literally and figuratively – resulting in:

- More effective collaboration: Organizations break down communications barriers with a visual, code-free interface using a common language that leaves little room for misinterpretation about what businesspeople want.

- Faster go-to-market: Streamlined workflows take agile development out of tedious email chains and deskside conversations and into a centralized feedback loop. This reduces the number of iterations needed, speeds development processes, and gets products to market faster at lower development costs.

- Better software: By adding new value to existing agile development investments, the real-time agile approach helps developers turbocharge their agile processes to create better applications with fewer errors to meet rising customer expectations.

Pega DevOps

Pega DevOps integrates with your existing ecosystem of DevOps tools, affording your development teams the best of both worlds. With a complete toolkit to support you – from development to deployment – Pega DevOps empowers teams to develop applications continuously and deliver faster and with higher quality.

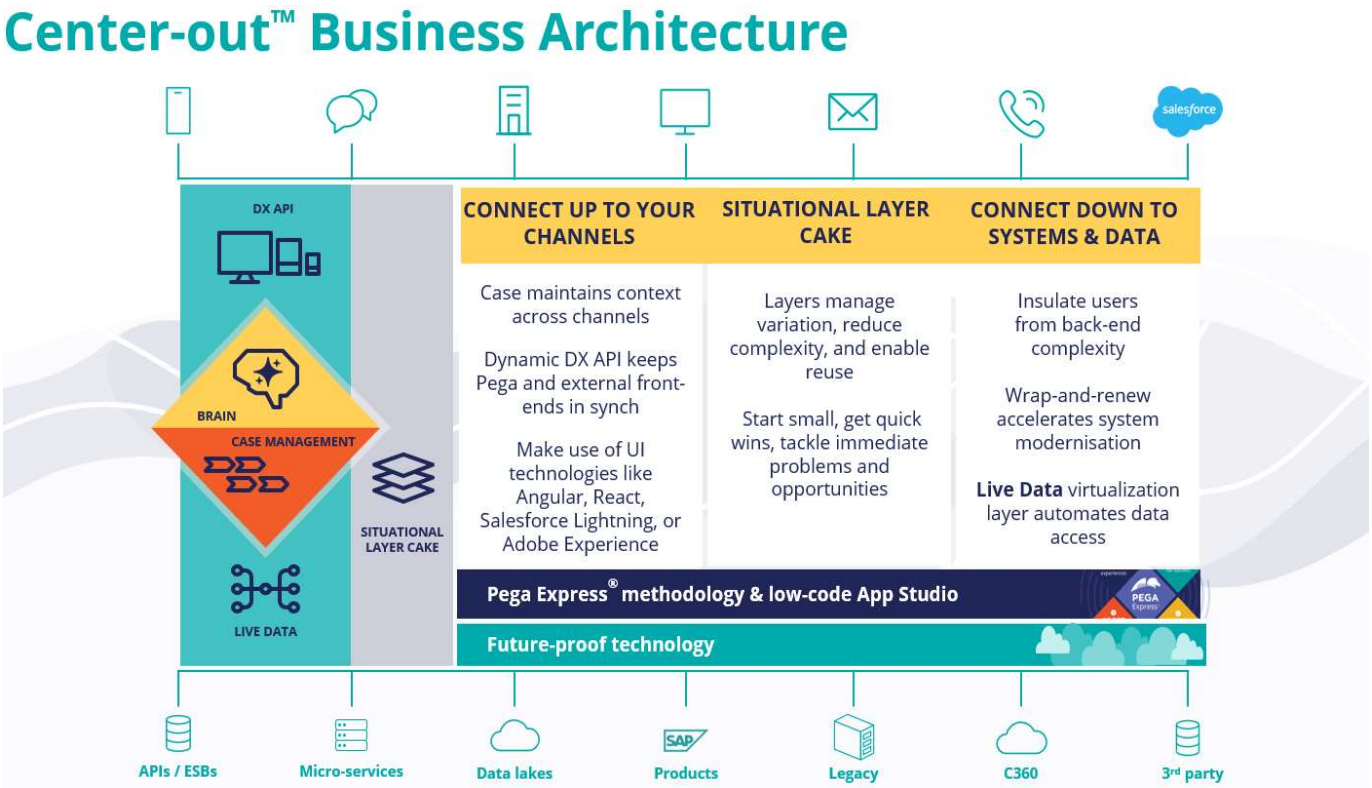
Executing a DevOps strategy across your enterprise architecture takes discipline and the right tools. There are many excellent choices to manage your DevOps pipelines, but only one is built for Pega and integrates with your existing continuous delivery and integration ecosystem. Pega empowers your team to employ continuous delivery and integration best practices across all your

Pega applications. Our suite of DevOps tools is designed to help you drive a culture of collaboration and deliver high-quality applications. Through each stage of the development cycle, Pega provides the tools and integrations to help drive your success:

- Pega DevOps release pipeline allows application changes to quickly move from development, through testing to deployment. Pega's release pipeline is designed to work seamlessly with Pega Platform tools and leading third-party tools.
- Pega Deployment Manager enables you to configure and run continuous integration and delivery (CI/CD) workflows across all your Pega applications. Standardize deployment processes to ensure predictable, high-quality releases.
- PegaUnit testing provides teams a platform to create test cases quickly and easily to be incorporated into automated testing plans. Group tests into a test suite to run multiple cases in your defined order and ensure high-quality releases.
- Integrations with DevOps toolchains like Jenkins, XLDeploy, Docker, Gradle, Maven, JFrog, Puppet, and more

Pega Business Architecture

The Pega Business Architecture's Centre-Out approach resolves problems by transcending organisational boundaries and IT silos. Manual work is eliminated, and outcomes delivery time is significantly reduced using the low-code environment to design and deploy automated streamlined intelligent microjourneys.



4. Understand tools and systems

Understand the tools and systems required to build, host, operate and measure the service and how to adopt, adapt or procure them.

Pega concepts lend themselves to choosing the right tools and technology.

Build for Change & Agility

Pega is proven to be faster to configure and deploy. As mentioned earlier, data tells us that Pega provides deployments that go live 6.4x faster than traditional applications. The benefit to our customers is a rapid ROI of months vs. years. As mentioned, best practice to build an application is to leverage the agile SCRUM methodology, along with co-production with customer resources, who are expected to complete Pega training courses prior to working with the team. We find with this approach, we can significantly reduce total cost of ownership. Additionally, we've changed the way we gather requirements for applications, with business and IT collaborating in synchronicity, making it 8x faster to create applications. We've also eliminated voluminous requirement documents by capturing them in the models, then executing those models in real-time, without code.

Our Build for Change approach and **Pega Low Code/No Code** platform provides you with software that is designed to be configured and modified by your business users. Feature-rich applications easily connect to your existing data sources and eliminate upfront development costs. Pega maximises your existing investments by easily wrapping around legacy apps and then extending their functionality to rapidly evolve your business. Pega enables customers to extend and configure an application tailored to the specific operational needs and resolution goals of the enterprise. Therefore, it is not necessary to initiate change requests with Pegasystems to modify application functionality.

Maximising specialisation and reuse save time and money as you scale your solution or extend Pega to other parts of the business. It is 8X Faster to introduce a new change and reuse layers for new lines of business. In contrast to traditional code-based development methods, this approach greatly accelerates application development speed and
efficiency via reuse; solidifies standardisation across the enterprise; and results in significant measurable Total Cost of Ownership (TCO) payoffs in management of the system (e.g., if a global change is needed you change it in one place and all the layers above the global level inherit this change automatically). This foundation is the underpinning for Pega's strategic application capabilities and allows you to easily roll out processes of increasing complexity across the entire enterprise.

Focusing on the minimum lovable product and/or Quick Win packages produce a faster ROI. By focusing your implementation on packages proven to deliver functionality quickly, within 90 days or less, to begin your transformational journey, you open the doors to immediate victories and future add-ons. Additionally, should you choose to focus on creating the minimum viable product (MVP), your result will be rapid delivery of scoped phases, with releases planned at a cadence that makes sense for you.

With Pega, you spend less and get more, and develop your applications more quickly, resulting in systems that are built for change.

Re-Use Architecture

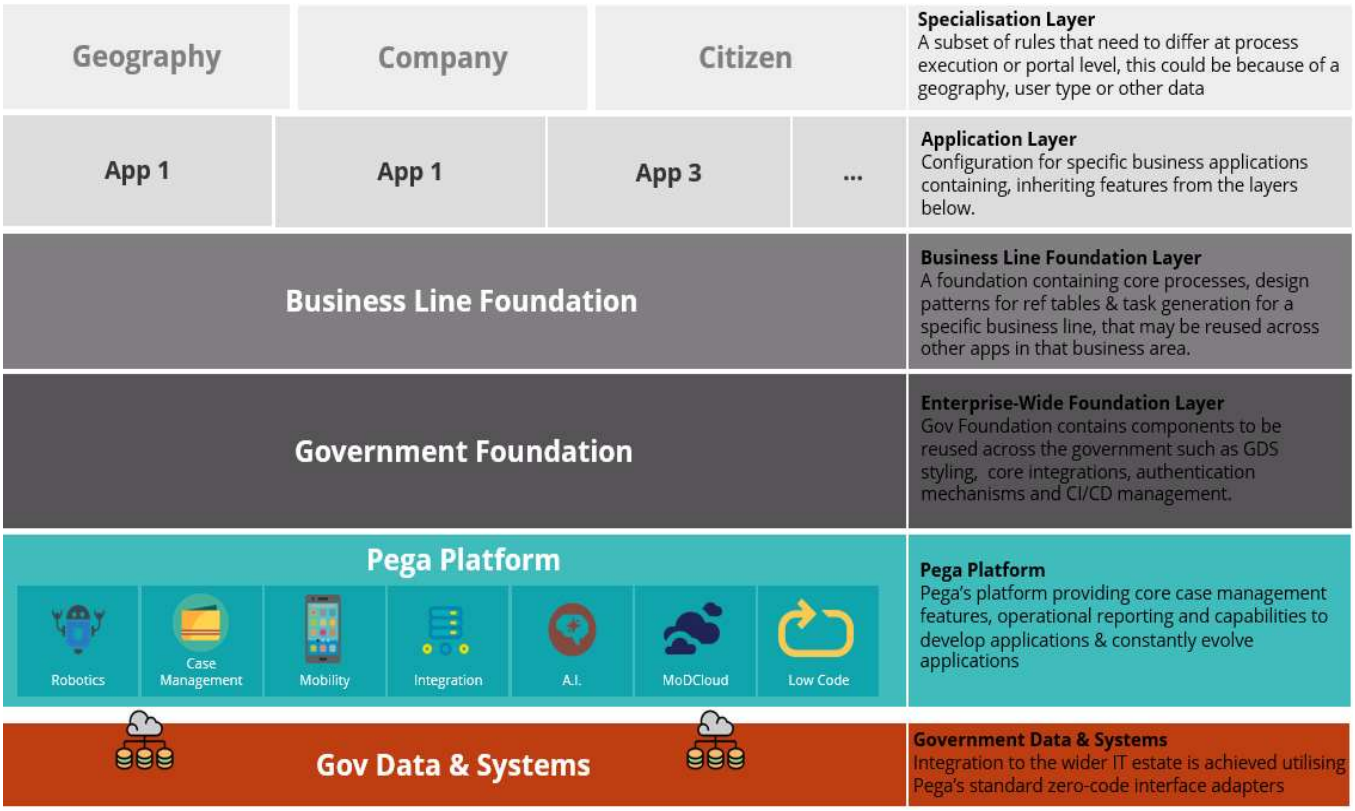
Our technology is designed from the ground up to manage the complexities of a multi-dimensional business. We capture the variations for each dimension in a patented architecture called Situational Layer Cake. Everything built in Pega – processes, rules, AI, data models, UI – is organised into layers. You can roll out new products, regions or channels without copying or recoding the application, maximising reuse while giving business owners control.

Pega models, organised into the Situational Layer Cake, are small and atomic, designed to be assembled into larger processes and full applications. You can easily visualise the application layers for case processes and sections, including work areas and views. Models with common functionality such as the Pega product itself, Enterprise-wide integrations, and your core application are layered at the bottom. Additional layers are built up to add new capability or to supersede models in the lower layers. This approach allows common assets to be easily reused without copying, but also allows each business area to build the specialisations they need to differentiate themselves. When a user accesses a Pega application, they are given—based on their access rights and the type of work they are doing. — a particular slice of the cake. Within that slice, Pega dynamically assembles exactly the right rules, processes, screens, etc. for that request, starting with more specialised versions and dropping to more general options if a specialisation isn't found.

Since everything within Pega—the rules, the process models, the UI's, even the definitions of external interfaces—is stored in this layer cake, it's possible to both reuse and specialise all aspects of a business application.

Layers of the "cake" are independently versioned, and the version is considered when the slice through the Layer Cake is taken. Unlike traditional approaches, where applications are bound to a version at build time, Pega's approach makes versioning a runtime consideration. This means that multiple applications and application versions can run out of the same environment: older versions of a process can be "grandfathered" in to support already running processes, new versions of rules and processes can be pilot tested without the configuration of a separate pilot infrastructure, unwanted changes can be easily rolled-back without taking the system down.

It's dramatically easier to build a system this way than it is to try to pre-define every possible combination and program it in advance. It's also much easier to change! The Situational Layer Cake results in a system architecture, making it easy to document and even run the versions of processes and rules that may have been active months, even years prior, simplifying compliance and audit requests, and eliminating the need for expensive and error-prone manual documentation of code.



5. Make it Secure

Identify the data and information the service will use or create. Put appropriate legal, privacy and security measures in place.

Our security, privacy and compliance programs adhere to industry best practices. We regularly validate Pega Cloud against rigorous global security and privacy standards, so you can rest assured your customer data is safe and, further information on our compliance certifications can be found here.

For Pega applications, all transactional data is stored within an RDBMS, and data can be protected by storing it as an encrypted BLOB or individually encrypted columns. Data is also protected by Pega authentication and authorisation processes, through which system administrators can define and configure user roles and access permissions to the database as well as the data itself. Access to the database still does not allow viewing of encrypted data. Data can also be protected in-flight by use of SSL encryption, both for the Web session and for any incoming/outgoing E-mail.

Pega supports encryption in motion using industry-grade 256-bit SSL/TLS encryption. This applies to data traveling to and from both the viewer and presenter browser environments.

Further information regarding our privacy services & compliance can be found here. This includes standards such as ISO27001 and Cyber Essentials.

Specific to Pega Cloud Deployments:

Pega Cloud provides a secure and robust infrastructure environment for Pega Platform and Strategic Applications that achieves high levels of security and data integrity. The Pega Cloud provides host-based virus protection, continuous security monitoring, vulnerability and security management of Pega Cloud-delivered environments, customer-specific encryption of data at rest, and sandbox environments that can be hibernated to block threats and conserve energy. Pega Cloud's dedicated security team manages compliance, security monitoring, and security event response.

Pega Cloud uses data-at-rest encryption (DARE) in all Pega Cloud customer instances to help you secure your application data, as well as to help you comply with industry-standard security requirements. "Data at rest" refers to any content that is saved on a hard drive.

Encryption of data at rest is implemented for all sandbox and production environments. All customer data stored in volumes within a customer cloud environment is encrypted with 256-bit AES encryption, and we include customer data, logs, data files and database files. We also encrypt data in motion, over IPSEC VPN tunnel or HTTPS (128-bit minimum TLS encrypted browser session)

The key pairs used to encrypt the disk are created and managed by Pega Cloud Security Operations for each unique customer. These keys are rotated on a regular basis and are securely stored in an encrypted key store facility within Pega Cloud Operations.

6. Consistent and responsive design

Build the service with responsive design methods using common design patterns and the style guide for digital content.

Pega Infinity is an application development platform intended for enterprises seeking to build, deploy, and evolve strategic business applications. By providing these capabilities in a unified, model-based, and cloud-enabled environment, Pega Infinity helps enterprises build and change strategic applications much faster than conventional programming.

That's why Pega is also talking about a Build for Change Platform® and our key principle is "Our world is constantly changing, only Pega lets you Build for Change."

Maximise Capabilities: In selecting Pega as your application, you're acquiring a continuously evolving, future-proof, leading case management and customer service solution. We encourage customers to take advantage of our mature and proven technology to enable rapid deployment using out-of-the-box application features, automated requirements-gathering and application documentation capabilities, and code-free development and re-usability features for rapid deployment and scalability.

Iterate to Success: Pega's approach to implementation is flexible and is designed to adjust to meet the specific needs of a client or a given project. Our standard approach is Agile Scrum, which enables us to:

- Break large programs into smaller, more manageable components, each with defined and deliverable business value, and the ability to go live and provide value on a phased basis
- Monitoring and analysing the "live" process/application frequently during the project to gain user feedback
- Begin testing early in the project lifecycle to drive higher levels of product quality and to gain user feedback
- Practice multi-level governance, including project management and reporting; technical governance; consistent alignment with the business vision; and active executive-level engagement
- Proactively manage risk, which includes risk assessment prior to project commencement, as well as a range of interventions during implementation, including triage and situation management that engages the global Pega community for risk and issue management when needed

Practice Co-Production: It is widely recognised that successful projects are results of transparency and collaboration between delivery teams, end users and other stakeholders. Pega actively encourages co-production through business and IT collaboration throughout the project including Direct Capture of Objectives (DCO), frequent testing, and joint governance. We encourage business users to get hands-on experience to drive their empowerment and to enhance organisational buy-in and adoption of the delivered application. This will include enabling team members through role based Pega training, and active participation in project delivery (e.g., allocation of appropriate Pega configuration tasks as part of the development effort, and other activities such as application testing). Every customer's journey to self-sufficiency is different, depending on business complexity, resource availability, and many other factors. Pega provides a range of delivery, advisory, and expert services to ensure our customers are supported with cost-effective tools and assistance throughout their organisational development.

Implement with Best Practices: Through our extensive experience of implementing case management and digital transformation projects with hundreds of customers, Pega has developed a set of proven best practices that support effective delivery of Pega projects. Application Development Guardrails represent the best practices for configuring Pega solutions, by which development team members can track compliance of the application configuration with best practices while meeting defined business requirements. We recommend that teams monitor compliance with the Guardrails on a regularly scheduled basis and share the compliance scores with management on a regular basis as part of a detailed project governance plan. Compliance with the Guardrails will result in more maintainable, upgradeable applications with significantly fewer defects than non-compliant applications.

Pega is designed to be channel agnostic. By this, we mean that a process is built once and deployed across all channels as required. Therefore, it is possible to truly switch channels in real time, and have different people take over the process from a support channel as needed. Pega supports integrated, multi-channel support capabilities for managing telephone, e-mail, fax, and Web-based service interactions including chat, Web self-service, mobile (including mobile apps) and social media interactions, enabling a seamless, cross-channel service delivery to support contacts and foster contact relationships. A customer can initiate an interaction in the channel most convenient to them at that moment and seamlessly transition to any other channel without any loss of context.

Pega maintains context by storing all past actions and data along with future actions in the form of a case. Once created, every interaction and every task are tracked within a case which can span multiple channels and indeed multiple business processes. This helps Pega to maintain context when moving the interaction from one channel to the next. In addition, if the system needs a piece of data that is not present, it can declaratively seek out that data to maintain the flow between channels. In this way, the case has persistent and transparent context across channels. Pega also enables users to work multiple simultaneous service requests across multiple channels where desired.

Pega's omni-channel capabilities offer a "design-once, access anywhere" user experience that opens applications to mobile and social channels, delivering consistent and intuitive user experiences across all channels of interaction. You create the UI once, then deploy on any device, in any locale, and in any

browser; no coding is required. Pega automatically generates the semantics specific to browser and device environments using current web standards, mark-up (HTML5), CSS and JavaScript, allowing the application to be viewed on mobile devices. Pega applications operate consistently regardless of channel entry point. In fact, Pega can begin a process on one channel, for example, a tablet, and continue the process interaction on any other device that supports a browser or over the phone. No data is lost or needs to be re-entered. Transaction logging and auditing in Pega operate the same across all channels. Standard and ad hoc reports are the same across all channels.

The Pega Digital Experience API enables organizations to create stunning front-end interfaces at every digital point of engagement while directly connecting them to the end-to-end processes that drive work across the enterprise. Pega gives developers the flexibility to leverage popular UI frameworks such as React and Angular together with Pega's powerful UX design system to create connected customer experiences with their preferred tools.

The Pega Digital Experience API provides powerful design capabilities that enable developers to:

- Unify with leading design technologies: Developers that prefer to use other UI frameworks such as React and Angular can leverage open APIs to dynamically use Pega design capabilities as a REST-enabled service to power their front-end UI framework of choice. The Pega Digital Experience API delivers a rich set of UX metadata so they can dynamically assemble an experience that seamlessly embeds business logic such as required fields, data types, validation rules, and more. UI elements changed using Pega's no-code UX design system will be immediately reflected in the developer's custom JavaScript framework without additional coding. It also includes starter packs and sample code to quickly integrate Angular and React into their workflows.
- Enhance and extend existing interfaces with micro front ends: Pega makes it easy to embed responsive UI components directly into existing web pages or mobile apps leveraging Pega Mashup technology. Developers can add new functionality that seamlessly interacts with legacy interfaces, enabling them to adapt quickly to changing customer needs without recoding the entire UI.
- Design effective and elegant interfaces jumpstarted with pre-built templates: Pega's UX design system enables users to create responsive web and app designs that both grab the customer's eye and allow for fast, accurate service. Reusable digital components plug seamlessly into existing digital ecosystems, while the drag-and-drop interface enables complete UI customization with no coding required. It provides 12 out-of-the-box templates for commonly used experiences with the ability to create additional templates to match any design.
- Build seamless mobile apps: Pega's open, responsive, and adaptive UI technology makes multi-channel deployment fast to build and easy to change. Users can build mobile applications completely in Pega, embed Pega into existing apps leveraging mashup, or seamlessly connect native mobile apps to Pega APIs by using the Pega Connect SDK. Pega handles all mobile OS updates automatically on the backend to ensure apps are compatible with the latest features and capabilities.

Pega Responsive UI

Responsive behaviour provides an optimal user experience of the elements in a view regardless of screen size — minimizing horizontal scrolling and maximizing data presentation in the available display space. For example, when a user switches from landscape to portrait on a tablet, the UI responds and the screen dynamically becomes narrower.

7. Use Open standards and Common platforms

Build using open standards and common government platforms where appropriate.

Pega is committed to creating optimal technology to deliver the outcomes our client's demand. This commitment includes the use of a wide and growing range of open source tooling. Some highlights include:

Integration

- OpenAPI: A widely adopted standard from the Linux Foundation for creating, consuming, documenting, and mocking RESTful APIs
- Swagger UI: Interactive API documentation that supports discovery and testing
- Kafka: High throughput messaging for consumption of big data in support of Pega's decisioning and analytics

Database technology

- Casandra: NoSQL database used for Pega decisioning and analytics
- PostgreSQL: Default database used on Pega Cloud
- Elasticsearch: Powers Pega's search capabilities and is becoming the foundation for our reporting capabilities.
- Hazelcast/Ignite: In-memory data grid for distributed computing. This is one example where Pega is moving from proprietary software to open-source technology (Pega Pulse) to another in a way that is seamless to customers.

UI

- jQuery: Feature-rich JavaScript library used throughout Pega's UI and event model
- Moment.js: Used for date conversions and internationalisation
- Handlebars.js: Serves as the bedrock for Pega's new client-side based templating
- D3: A visualisation library used in Pega visualisations
- Digital Experience API (DXAPI). This ground-breaking API allows other applications using other UI technologies such as Angular or React, to present Case User Interfaces created and managed in Pega, but rendered using that UI technology

DevOps

- Git: Provides a repository for distributing and deploying Pega configuration changes
- Gradle: A build automation tool that uses the concepts of Apache Maven and Apache Ant
- Coming soon with Project fnx, Pega will be looking to bake docker images to support ephemeral infrastructure better using self-contained docker images without the need for application servers for better auto-scaling and being able to align closer with DevOps best practices.

Internal Reuse

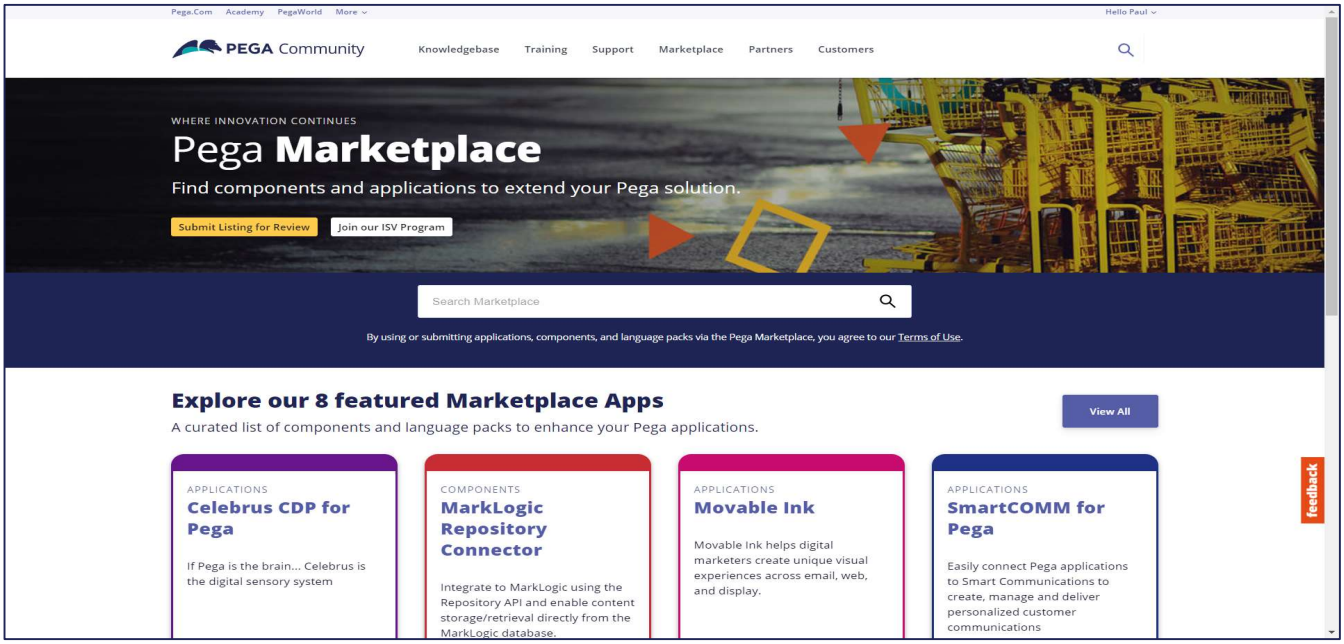
Pega was designed from the ground up to solve the problems of reuse and specialisation required for getting work done across lines of businesses, regions, and customer segments. Pega provides a patented architecture called the Situational Layer Cake that lets you capture the common parts of your organisation, while seeing where specialisation must occur. Our customers get the speed to market and consistency that comes with massive reuse, while ensuring that they can meet the needs of different markets, differentiate their products, and treat each customer as an individual.

Pega uniquely enables reuse and specialisation across multi-dimensional circumstances that typically include the type of customer, the location, the product, the channel, and the version, among others. In short, rather than expensive copy/paste/edit for changes, you simply reuse assets and specialise the application just by describing the differences for the particular dimension. This capability underpins Pega's strategic application capabilities and allows organisations to easily roll out sophisticated processes across entire organisations.

Once you have your process or customer journey captured and specialised, Pega can automatically generate and deploy the software needed to run and execute that process. Crucially, the model created through directly capturing objectives is the one that is generated and deployed, speeding up the time-to-delivery of your application, and ensuring your customers experience truly individualised service. To view a short video about this capability, please visit this link

The Pega Exchange saves organisations time and resources by providing downloadable building blocks that enable users to quickly build new applications or add and deploy robust features to existing applications. Pega supports all third-party components to improve overall productivity, application quality, and time to market while adding advanced functionality.

External Reuse



The Pega marketplace includes add-on components and connectors from Pega partners such as DocuSign, a global leader in Digital Transaction Management (DTM) and e-Signature technology, and Box, a leading content management platform. It also enables third-party developers to upload their own finished applications and add-ons and gain recognition for their contributions to the greater Pega community. The website is closely monitored to ensure users have access to the highest quality building blocks for their own applications, as well as corresponding documentation on compatibility and installation.

The Pega Exchange also houses Pega Innovation Labs products – applications and components in beta that will be available for users to tinker with and test. For example, new components will allow users to create their own applications by drawing directly on tablets and other touch-enabled devices.

Pega Platform Tools

- **Pega Pulse**: An important part of Pega's core product is Pega Pulse, a set of out-of-the-box social collaboration components. Pega Pulse provides capabilities for collaboration and conversation among application developers, business analysts, and end users. During development, team members connect to create new applications, capture requirements, build process models, share documents, request assistance, or contribute information. For end users, Pega Pulse adds social activity stream capabilities to your Case Management and progressing work.
- **Pega Spaces:** Spaces are used to group similar topics and information in an organised area for effective collaboration on topics and internal continuous improvement initiatives. By restricting the discussion of certain topics to the users of a space, you can avoid broadcasting irrelevant messages to all users in your application. After joining a space, you can communicate with the members of the space by using Pulse. Spaces can capture external content, generate tasks, and contain subspaces for collaboration on spin-off topics under a central theme.
- **Agile Studio**: The Pega Agile Studio accelerates delivery of Pega applications by efficiently managing development projects. Pega Agile Studio is designed with built-in best practices for agile and scrum methodologies with powerful tools for eliminating manual tasks, increasing transparency, and enabling collaboration across multiple teams and locations. It guides teams through sprint/iteration planning, capturing objectives and capacity so that teams can more accurately predict the amount of work they can manage in a sprint. Product owners and project managers can easily plan multiple releases for different applications and closely monitor progress. The collaborative environment integrated into Pega Agile Studio facilitates discussion of progress and issues even for teams that are not co-located.

Pega Hosted Collaboration Initiatives

- **Collaboration Centre**: The Pega Collaboration Centre, is a public facing site to promote the building of relationships, asking of questions and the sharing of experiences and ideas. The centre also promotes and provides access to topical webinars,
- **Pega Community**: The Community site provides access to customers and prospects to search for knowledge base articles, How-To information, white papers, support notes, key product documentation and access to hotfixes.
- **Pega Marketplace**: The marketplace is part of our community site and provides a well curated selection of solution to enhance Pega applications. The marketplace can be accessed here.

In addition to online resources, Pega hosts several events annually, from local industry focused Special Interest Groups and Customer Advisory Boards to our flagship annual user conference

Pega World iNspire. These forums provide industry insight, hands on demonstrations and many keynote speakers from the company and our customers. They also represent a fantastic opportunity for customers to network, share experiences and collaborate to optimise their outcomes. For more information on PegaWorld iNspire click here.

8. Make source code open

Make all new source code open by default

Throughout its evolution, Pega has focused on evolving software to drive ease of use, by allowing open access through defined API's and leveraging open source wherever possible. As a part of these efforts, we have made the Pega Platform increasingly accessible through the cloud, including via free trials, and have continued to incorporate open-source technologies. Examples include OpenAPI, Swagger, Kafka, Cassandra, Hazelcast, Ignite, Lucene, jQuery, Handlebars.js, Moment.js, D3, and OpenCSV.

We have engaged organisations across industries and geographies to better understand how customer engagement and digital process automation solutions are used, and which technologies, including open source, are viewed as strategic. We have also deployed expertise and best practices around concepts such as DevOps and design thinking, because digital transformation is not just about the type of technology – it's how you make the technology work. Providing a future-proof architecture to our clients means we take every effort to be an open system. We have designed our architecture to allow enterprises to use preferred open source technologies to complement the powerful customer engagement and digital process automation capabilities of Pega. Organisations like PayPal, Google, Amazon, and others use Pega technology, integrated with their own custom-built applications and open-source technology, in a truly hybrid approach.

Pega technology combines more than three decades of proven business process automation and decisioning expertise with a powerful and open architecture. This has enabled us to optimise the use of open-source technology to strengthen and improve our customers' experiences in strategic areas such as DevOps, OCR, UI, blockchain, APIs, and containerisation. In these and other areas of the architecture, Pega has not only used open source, but has also opened collaboration on projects via Pega Exchange and GitHub.

Pega Infinity, our latest software release, marks a new milestone in providing a more open and advanced platform. It's a massive step forward in our product capabilities, specifically around our use of AI, embedded robotics, ease of use, speed to value, and ability to deliver in a SaaS model.

Highlights include:

- Support of container-based deployment: Docker support enabling unified container deployment using Kubernetes and OpenShift. This solution offers well known, open standards-based cloud deployments that are easy to adapt and automate, and offers extensible deployment of customer-focused configurations, such as security modules.

- Digital experience API (DXAPI): Gives developers the flexibility to leverage popular UI frameworks, such as React and Angular, together with Pega's powerful UX design approach to create connected customer experiences with their preferred tools.
- End-to-end automated testing: Pega has extended its automated testing suite by adding UI testing to its capabilities. Clients can now automate testing from the logic level through to the UI level natively within Pega apps, as well as through third-party testing suites such as Selenium.
- Blockchain kit for Ethereum: Pega's Blockchain Innovation Kit provides downloadable proof of concept (POC) templates, enabling customers to demonstrate how blockchain – based on Ethereum's open-source project – integrates with Pega Know Your Customer™ (KYC) and Pega Client Lifecycle Management™ applications.
- Expanded bot library accessible to all Pega clients: Pega clients can access a growing library of pre-built bots that save time on common business tasks, such as: "start my day"- a bot that boots up applications, signs into them, and re-arranges the agent desktop; "call wrap-up" – a bot that performs the call wrap tasks for an agent; and intelligent virtual assistants that can optimise the email channel and initiate cases.
- OpenAPI support: Pega's adoption of the OpenAPI standard for RESTful APIs makes it easier to integrate with other systems. We leverage popular open-source tools, such as Swagger, to document, edit, consume, mock, and rapidly gain value from integrations. As we continue to evolve the Pega Infinity™ generation of our technology, we will invest and leverage open source in two dimensions: 1. Use of well-established and actively developed open-source technology. This ensures we are providing the best core technology to our customers while freeing our engineers to focus on value-added capabilities. 2. An open architecture, able to evolve with the industry and customer requirements. This ensures our clients can extend and integrate their Pega applications seamlessly with other technologies. It is important to note that for software to be considered a sound choice, it is not necessary for it to be open source. Examples of this are the Amazon AWS (S3, Kinesis, etc.) suite of technologies that serve as the backbone of Pega Cloud. Open source is an enabling, but not a required factor, in building and selecting a robust and compelling software suite.

Further information can be found by clicking here.

Note: Our customers may create tangible assets in the form of rules using our software. When these assets are created by our customer or created by Pegasystems solely on our customer's behalf through consulting services based on confidential information that is specific to the customer's business, those assets are exclusively owned by our customer. In this situation, these assets can be retained by customer even after termination of its Pegasystems license. However, the customer will require a valid license in place if they intend to continue to use the assets in connection with Pegasystems' software.

9. Make it Accessible

Ensure the service is accessible and inclusive of all users regardless of their ability and environment.

Accessibility is a crucial part of designing a user experience. Enterprise applications must be accessible for users that require assistive technologies. The Pega Platform user interface includes features and capabilities that enable everyone to use the applications you create. Dynamic layouts can be assigned a role that clearly communicates its functionality to a screen reader. Containers can have heading levels that allow an assistive technology to recognise its position in the document.

As a configurable platform, all Pega Products can be designed to conform to WCAG 2.1 Level AAA through both inherent accessibility within the product as well as choosing the right components in the UI design. W3C's Web Accessibility Initiative (WAI) provides accessibility guidelines that are widely regarded as the international standard for web accessibility. The Pega Platform uses WAI-ARIA (Web Accessibility Initiative – Accessible Rich Internet Applications) roles to communicate information about on-screen application elements to an assistive technology. WAI-ARIA roles display in the HTML code of your application, this is in addition to the many accessibility guidelines that are built into the core UI generation engine. Combined, these components, along with proper accessibility aware design and development methods, provide a configurable foundation for the design of applications that meet the WCAG AA standard.

Our capabilities include and are not limited to:

- Semantic html tags and roles on generated mark-up that allow assistive technologies to announce the correct information to users
- Natural tab key navigation throughout the application
- Ability for developers to specify ARIA roles/landmarks on any layout for additional accessibility support
- Ability for users of assistive technologies to skip to specific areas of the UI such as navigation, search and main area for more efficient navigation around the application
- Ability to configure heading levels that provide users of assistive technology the ability to understand the structure of the application UI
- Ability to conditionally turn on accessibility for users that require assistive technologies through specialised access group. This includes the ability to serve separate CSS that is more suited for high contrast displays used by users with low vision.

The Pega Platform is accessibility capable. Applications built using the Pega Platform must be designed with accessibility in mind and must be configured to use these capabilities. Additionally, to help drive us towards an inclusive solution, we utilize the following measures:

- Leverage a third party to audit our applications and components, and conduct both automated and manual assessments
- Provide an up-to-date Voluntary Product Application Template (VPAT) of our current state of conformance

- Test our applications with assistive technology such as JAWS, ZoomText and Dragon Naturally Speaking
- Pega currently uses the WCAG 2.1 AAA standards to evaluate our platform and out-of-the-box applications. These standards are being used to comply with requirements of Section 508, EN 301 549 and BITV.

Pega provides an intuitive user interface based on latest web technologies, optimised by UX experts to reduce the number of clicks required to accomplish routine tasks. Also, it is very easy and fast to configure and change or add UI elements to address custom requirements without programming or code changes.

With Pega's Intent-Driven User Experience, users are guided through the processes with specific instructions, scripting, and fields based on the context of the interaction. This is configurable and driven by business rules and processes.

Because of Pega's build-once-deploy-everywhere approach to responsive design, the same process can easily be deployed across every channel (live care, self-service, mobile, retail, etc.) without any special consideration. The platform UI is easily altered and allows inheritance of created logic without having to re-generate, for rapid and cost-effective deployment.

The user screens of the Pega Strategic applications (Customer Service, Marketing & Sales Automation) are created by taking into account best practices of real projects and trends in compelling UI design. Pega intends to provide end users with just the information needed to get work done. We do not believe in throwing data on end user screens and having them discover what is required to execute the work. An intelligent guided sequence of screens is provided to allow end-users to perform their day-to-day work. Through automating every step that can be automated not all intelligent work is eliminated. Leaving the user with the tasks that matter.

The Pega Platform provides the capability to easily enhance and create end user screens and portals. Advanced 'drag-and-drop' capabilities provide business users with the option to design user-friendly screens that are meant to meet your requirements. These screens can be tailored to meet style guide principles and 'pixel perfect' blend in third web portals.

The ease of use of the Pega applications ensures that they are quickly adopted by the business.

10. Test the service

Test the service from end to end, in an environment that replicates the live version.

Testing is an important part of any project, and Pega's goal is to be sure we have a high-quality working system in the simplest, most rapid way possible.

To do that, we have tools and processes that will improve and streamline your normal test approach, so it doesn't just work, but it works faster, better and with less effort.

We make testing better in six main areas:

Test early, often & always – Testing is not an afterthought and should not be left for the end. Testing should happen within each sprint concurrently with development. Development isn't done until the code is tested and passes. This ensures that we don't repeat issues in the future, helps us create and maintain regression scripts, etc.

Business Involvement - And all underpinned by the rapid development of working software, that lets us involve businesspeople as part of the development team and check early if what is built will actually help the business and not just meet the requirements.

Test what has changed- And all supported by a model driven approach that allows us to reuse software that has been extensively tested and used elsewhere, so we can focus testing on what is new.

Journeys - Implement very clear guidance on the order of testing and development, so we can go live sooner with a fully tested set of customer journeys that let us realise the business benefits.

Built-in Tools - Automatically generated guardrails and Application Quality Dashboard that examine what has been customised to spot potential problems before they become real problems.

Automation - The built-in ability to automate working tests that keep working even when the screens change and let us regression test with little effort. Allows us to focus on testing the application**, not heavy test script documentation.**

The testing strategy does this through:

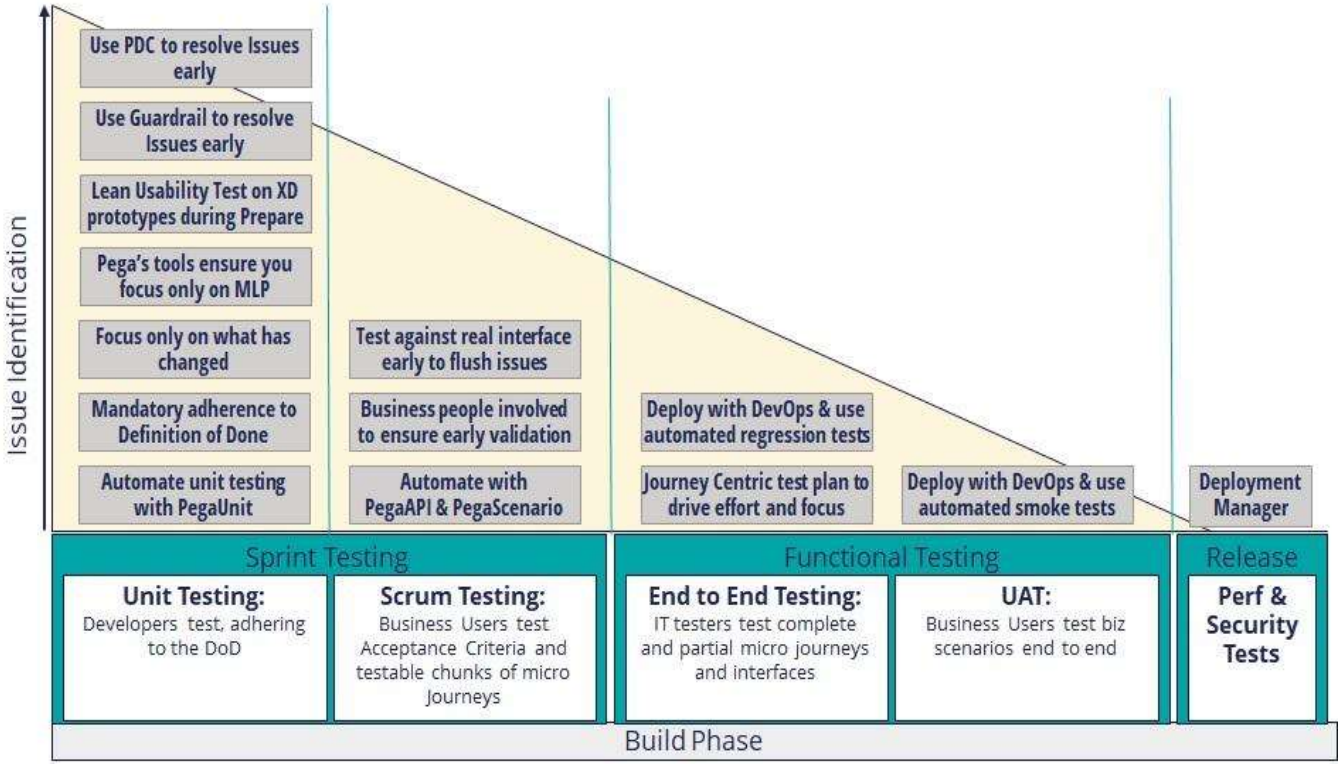
- **Shifting left** – Start testing earlier in the project and make it a component of each sprint
- **User testing** – Include business users earlier in the project to provide feedback, as well as professional testers; user testing is different from UAT (user acceptance testing)
- **Planning** – Create a test plan to ensure that the application meets business outcomes, not just functional requirements
- **Consistency** – Agree and adhere to a definition of done (DoD)
- **Tools** – Use built-in validation tools such as the Application Quality Dashboard or Pega Predictive Diagnostic Cloud
- **Automation** – Build an automated test suite with Pega Platform or third-party tools

Note: Testing is integral to project success, ensuring that the Pega solution is both lovable and high quality. Unlike traditional IT projects that only do testing at the end, the Pega strategy is to start testing activities during the Prepare (or even Discover) phase and continue for the duration of the project.

Testing Strategies

Shifting left means that you begin testing activities earlier in the project life cycle. DevOps uses this practice in software development to help teams focus on quality, work on problem prevention instead of detection, and begin testing earlier in the project timeline. It plans for and validates your application quality from the first day.

As shown in the following image, the Pega Express methodology front-loads the project with various testing and validation activities. This concept of testing **early**, **often**, **and continuously** is central to Pega Express and supported by a formal process and set of built-in tools to promote quality checks within each sprint and throughout the entire project life cycle.



Defects are easier and cheaper to fix the earlier they are found. The cheapest place to correct an issue is during the Discover or Prepare phase. The most expensive place to find and fix defects is during a post-build QA phase or Acceptance Testing as was traditionally done in waterfall projects. Therefore, Pega Express encourages validating and testing the solution as early as possible.

Testing activities in Prepare

Your test strategy begins to take shape during the Prepare phase. Before any code is written, business architects (BAs) and testers validate the business outcomes, scope, and design with the client. As BAs create the user stories, testers validate that each user story is clear, concise, actionable, and contains **acceptance criteria**.

All user stories must have acceptance criteria

Acceptance criteria complement the user story narrative. They describe the conditions that must be fulfilled before the story is done. The acceptance criteria enrich the story, make it testable, and ensure that the story can be validated, demonstrated, or released to the users and other stakeholders.

Well-written acceptance criteria have the following characteristics:

- Testable with clearly defined expected results
- Clear and concise, not ambiguous

Tip: A Pega Express best practice is to create three to five acceptance criteria for detailed stories.

1. Creation and adherence to a Definition of Done

In addition to creating individual acceptance criteria for each user story, the Scrum team creates a formal **Definition of Done (DoD)**, which identifies consistent acceptance criteria required across all user stories. A DoD ensures the quality of work. It is a checklist of what must be done for user story development work to be considered complete.

The Definition of Done ensures everyone on the team knows exactly what is expected of every component the team delivers. DoD ensures transparency and quality fit for the purpose of the product and organization.

The DoD typically includes items such as:

- A feature that is developed, unit tested, and meets the acceptance criteria
- Unit test scripts that are created in the PegaUnit application and are available for future regression testing
- An item is ready for acceptance testing
- Any code that goes through code review
- A releasable item
- No increased technical debt

You can download a Definition of Done template from the Pega Express Delivery Resource page.

2. Microjourneys and business outcome focus

One question that always comes up is, "How do you organize testing so that it is effective, efficient, and validates that we are delivering the client's business outcomes with a product they will love?"

Pega has designed a simple test plan that achieves these goals while providing a microjourney™-centric approach. The plan ensures comprehensive test coverage and enables reporting on the testing status in terms of business outcomes rather than disparate functional elements and generic test coverage stats.

The test plan gives the client assurance that their desired microjourneys work as intended and that the resulting product is both lovable and fulfils their business outcomes.

3. Test plan creation

Creating a Pega Express plan is very simple based for each microjourney. **Validation tools and automated testing.**

Automation is about driving to quality and repeatability. The System Architect's work is not complete until they have unit tested their work and created a PegaUnit test script.

4. Built-in validation tools

Pega Platform includes several built-in validation tools and dashboards that provide a holistic view of the health of the application, such as the **Application Quality dashboard**, which focuses on application health and the **Pega Predictive Diagnostic Cloud (PDC)**, which provides a view into the health of the cloud service.

Pega gives you tools and processes that will support and streamline your normal test approach to make sure it doesn't just work, but it works faster, better and with less effort.

Crucial testing approaches

5. Testing with Pega Express

The Pega Express™ methodology is designed to ensure that your team delivers an application that works. There are multiple kinds of testing to verify that your MVP delivers on the expected business outcomes and works fast enough not to frustrate end users. There are four kinds of testing to determine to use each during the **Build** phase:

- Unit testing
- Scenario testing
- Security testing
- Performance testing

In the image below, you see what each kind of testing accomplishes.

6. Unit testing

A System Architect or developer performs unit testing on their work or a peer's work. It is the least expensive form of testing. Unit testing lets you verify that the application is configured correctly by testing the smallest units of functionality. In a Pega Platform™ application, the smallest unit is an individual rule. The purpose of unit testing is to verify that each element of the application, such as a decision table or a report definition, works as expected.

Unit testing reduces the risk of a configuration error in one rule affecting others and delaying case processing. Use unit testing to find and eliminate configuration errors. By unit testing the individual rules when you configure them, you know that each rule works as expected.

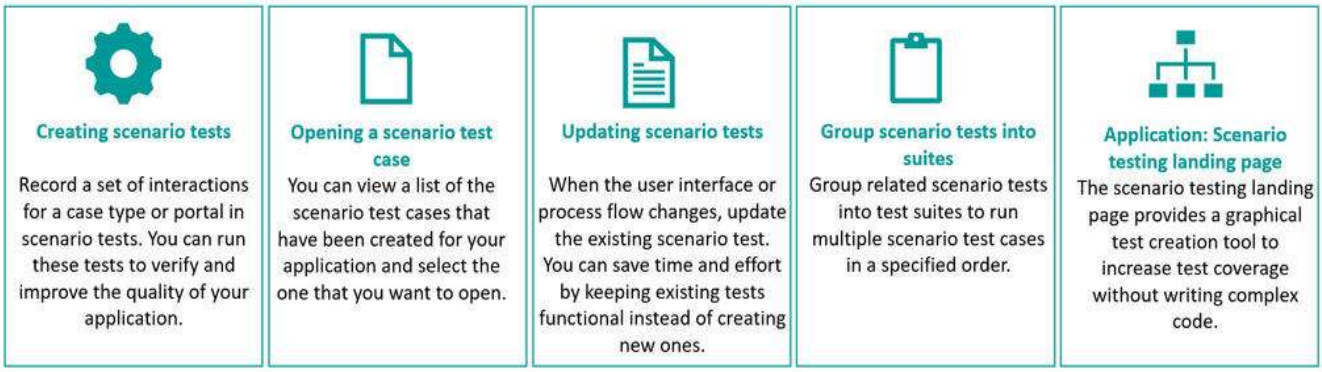
You can avoid common testing mistakes by reviewing documentation on the Pega Express Delivery Resources page, and you can find detailed instructions within the Pega Academy module Unit Testing rules.

7. Scenario testing

Pega Platform provides user-interface (UI) based scenario testing to confirm that the end-to-end cases work as expected. As part of the Pega Express methodology, it is vital to validate that your target end users can use the application features as designed and that the application behaves as expected.

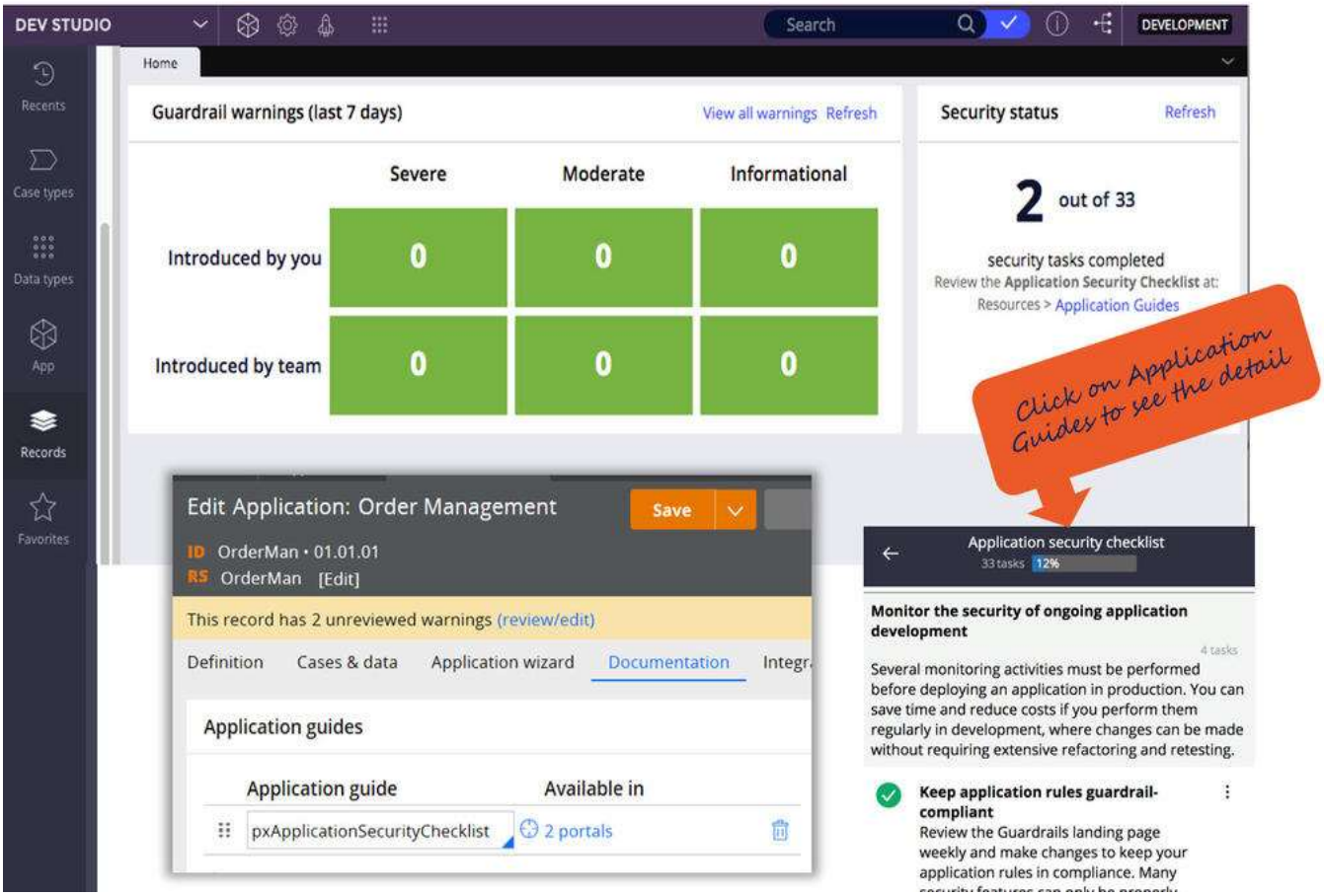
For detailed instructions on how to set up and structure scenario tests, see the Pega Academy topic, Scenario testing.

In the image below, you see how scenario testing works.



8. Security testing using a Security Checklist

Security is often set up by user role. Security testing validates that your application allows authorized users to access the system and keeps unauthorized users out. You can test the security configuration of your MLP before release by using the security checklist.



Pega Platform provides a Security Checklist directly in the application, as shown above. In addition, your client's IT support team might want to verify that the application meets their specific security compliance requirements.

9. Performance testing

Your team conducts performance testing to verify the speed of the application as perceived by end users. Pega Platform applications provide a full suite of tools to monitor and address performance issues. Your testing team uses these tools during the **Build** phase to ensure that the application configuration to support your MLP release performs as it should.

You can learn more about the performance tools in the help topic Understanding system resources. Use the performance tools to collect performance statistics. Performance statistics can help you distinguish between performance issues that arise in the Pega Platform server, the database, or external systems called. In all cases, the statistics can help you determine how to improve performance.

11. Measure performance

Measure performance against KPIs set out in the guides. Report on public dashboard.

All too frequently the business objectives or challenges a solution is trying to meet or solve are lost, not tracked and in almost all cases not actually defined in the solution.

In Pega, the business objectives, the requirements, and the user stories (specifications) are encapsulated in application definition rules which can be linked to the functional components themselves. This provides traceability on where in the solution a specific business objective is met and along with reporting data how the solution is performing.

With the ability to rate business objectives in terms of priority and complexity, the Application Analysis Dashboard can help drive the priority of the delivery.

In addition to business objective tracking, the Pega platform has extensive reporting features that support the tracking of work throughput.

The Pega Platform includes native reporting capabilities and out-of-the-box process management reports. These include reports that capture through-put quality that will allow Government departments to highlight areas for continuous improvement.

In addition to the standard reports, the native Pega Report tool allows users to build their own ad hoc/custom reports. A report wizard automatically takes you through the steps required to create these. Further, an ad hoc report, once created, can be added to a list of standard reports, and will not have to be re-created the next time it is called.

Many of the out of the box reports centre around the adherence to service levels, which provide a high value indication of processing performance

Pega reports on productivity and process metrics such as performance by individual, how successfully service requests were fulfilled, customer satisfaction, etc. The system has an extensible Key Performance Indicator (KPI) capability to allow dashboard representation of aggregate goals and specific strategic initiatives. KPIs can be reflected in reports that are available via the user portal, a dashboard, or scheduled to be sent out via email.

KPIs can be defined using business rules and stored within each case. They can be included in reports and dashboards and tracked and monitored as part of SLAs. KPIs can also be customised based on the type of case.

Out-of-the-box about 80 reports are provided that give insight on all major processing characteristics like: volume cases processed per user/department/business line, work queue volume, number of cases exceeding service levels, average task handing metrics, etc.

12. Don't forget the non-digital experience

Ensure that people who use the digital service can also use the other available channels if needed, without repetition or confusion.

Pega is designed to be channel agnostic. By this, we mean that a process is built once and deployed across all channels as required. Therefore, it is possible to truly switch channels in real time, and have different people take over the process from a support channel as needed. Pega supports integrated, multi-channel support capabilities for managing telephone, e-mail, fax, and Web-based service interactions including chat, Web self-service, mobile (including mobile apps) and social media interactions, enabling a seamless, cross-channel service delivery to support contacts and foster contact relationships. A customer can initiate an interaction in the channel most convenient to them at that moment and seamlessly transition to any other channel without any loss of context.

Pega maintains context by storing all past actions and data along with future actions in the form of a case. Once created, every interaction and every task are tracked within a case which can span multiple channels and indeed multiple business processes. This helps Pega to maintain context when moving the interaction from one channel to the next. In addition, if the system needs a piece of data that is not present, it can declaratively seek out that data to maintain the flow between channels. In this way, the case has persistent and transparent context across channels. Pega also enables users to work multiple simultaneous service requests across multiple channels where desired.

Pega's omni-channel capabilities offer a "design-once, access anywhere" user experience that opens applications to mobile and social channels, delivering consistent and intuitive user experiences across all channels of interaction. You create the UI once, then deploy on any device, in any locale, and in any browser; no coding is required. Pega automatically generates the semantics specific to browser and device environments using current web standards, mark-up (HTML5), CSS and JavaScript, allowing the application to be viewed on mobile devices. Pega applications operate consistently regardless of channel entry point. In fact, Pega can begin a process on one channel, for example, a tablet, and continue the process interaction on any other device that supports a browser or over the phone. No data is lost or needs to be re-entered. Transaction logging and auditing in Pega operate the same across all channels. Standard and ad hoc reports are the same across all channels.

13. Encourage everyone to use the digital service

Encourage users to choose the digital service and consolidate or phase out existing alternative channels where appropriate.

As previously discussed - Pega is designed to be channel agnostic. By this, we mean that a process is built once and deployed across all channels as required. Therefore, it is possible to truly switch channels in real time, and have different people take over the process from a support channel as needed. Pega supports integrated, multi-channel support capabilities for managing telephone, e-mail, fax, and Web-based service interactions including chat, Web self-service, mobile (including mobile apps) and social media interactions, enabling a seamless, cross-channel service delivery to support contacts and foster contact relationships. A customer can initiate an interaction in the channel most convenient to them at that moment and seamlessly transition to any other channel without any loss of context.

This empowers organisations to support a smooth transition to consolidated service arrangements on digital channels over time. The ability to add functionality fast and provide rich UI drives strong adoption of desired digital channels.

About Pegasystems

Pegasystems (NASDAQ: PEGA) develops strategic applications for sales, marketing, service, and operations. Pega applications streamline critical business operations, connect enterprises to their customers seamlessly in real-time across channels, and adapt to meet rapidly changing requirements. Our Global 500 customers include the world's largest and most sophisticated enterprises. Pega applications, available on-premises or in the cloud, are built on the unified Pega Infinity © platform, which uses visual tools to easily extend and change applications to meet clients' strategic business needs. Our clients report that Pega gives them the fastest time to value, extremely rapid deployment, efficient re-use, and global scale. For more information, please visit us at www.pega.com.