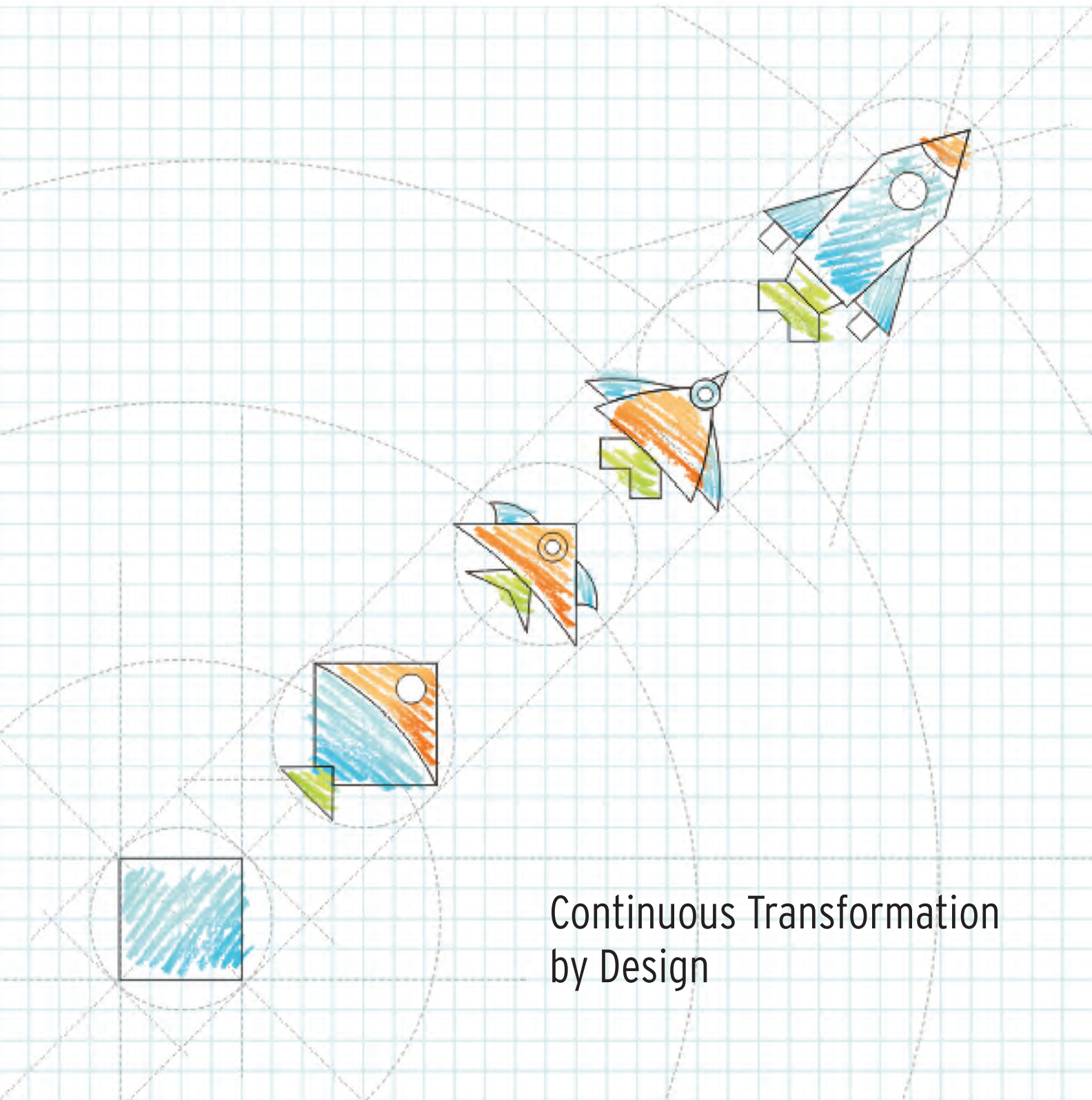
Persistent Systems Limited

Twenty-Sixth Annual Report 2015-16

PERSISTENT



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26th Annual General Meeting

Friday, July 22, 2016

1100 Hours (IST)

Venue:
Persistent Systems Limited
Dewang Mehta Auditorium,
Bhageerath,
402 Senapati Bapat Road, Pune 411 016, India

Remote e-Voting Period:
From 0001 Hours (IST) on Tuesday, July 19, 2016
till 1700 Hours (IST) on Thursday, July 21, 2016

Continuous Transformation by Design

Over the last few years, we have seen an exponential growth in the proliferation of devices and sensors which are generating large volume of data, our ability to exploit cloud computing for storage and compute at scale at affordable prices, and the speed and wide reach of high-bandwidth communication channels.

The wide availability of mobile devices has ensured that each one of us has our own personal window to contribute, interact and respond to all that is happening around us on the internet. We live in a culture where we want access to information and want to respond instantaneously.

Advances in technology to manage large volume of data, coupled with advances in automation and machine-learning, has made it possible for us to monitor, observe and respond to changes in the world around us.

Running a business in this fast-changing and demanding world is both a stimulating and formidable challenge. This overwhelming and relentless pace of change is causing continuous disruption.

The process is continuous and we must respond – by design!

Digital Transformation thrives on Continuous Innovation

We live in a world where digital technology is being used to deliver transformational experiences that have made our daily lives more enriching. Services such as Airbnb, Uber, Flipkart and Amazon have become mainstream and we see new innovative applications on an everyday basis.

Innovations in business models, user experience and the ability to deliver these innovations to customers rapidly and at scale, are the hallmark of successful digital disruptors.

The evolution of the programmable web has made it possible for systems to integrate data across the internet to provide experiences that are immediate in real-time, integrated and intelligent.

The growth of connected devices and the phenomenal rise of cell phones has made every aspect of our existence connected to the internet. Homes, cars, factories, wearables, and consumer electronics are being managed and monitored remotely.

This journey of continuous disruption will thrive on a constant endeavor to reinvent and innovate services.

Bringing Digital Transformation to the Enterprise

In this new connected world, disruptive forces are coming from all directions and enterprises must be prepared for competition, not just from known peers but also from next-generation born-digital companies. These fresh start-ups are not encumbered by physical legacy constraints or a mindset that limits how they see the world. They do things differently. They listen to customer requirements, experiment and are set-up for continuous delivery, seamless integration and are able to respond rapidly with actionable intelligence.

Innovative transformational solutions, commonly available on the internet, are hard to replicate within the enterprise. It may appear seemingly trivial to integrate systems and data that are primarily in enterprise control. However, the complexity and inflexibility of deeply-entrenched legacy systems make this task hard. Responding with alacrity, on a continuous basis, requires a culture that is agile and encourages innovation and experimentation at speed.

Users today have an insatiable appetite for compelling experiences. They expect and get them in their personal lives on the Internet, and they expect the same from their enterprise applications.

Users expect experiences which make their job easier. Experiences that are task-centric, actionable and personalized for individual use. User demands will continue to evolve and the business must test, experiment and respond continuously and by design.

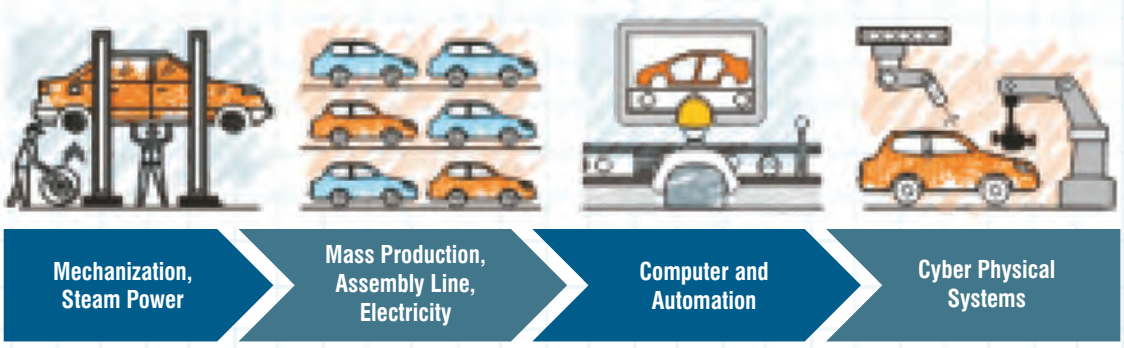
Yes, enterprises want Digital Transformation. Persistent shows HOW.

Digital Transformation is not a one-time project but is a continuous activity. Users are expecting compelling and pervasive experiences that make their task easier and allow them to take advantage of digital and physical existence. Such experiences are built on interfaces that combine data from internal enterprise systems, external (web) sources and with data collected from sensors in real-time.

To succeed, enterprises must become software-driven. They must transform their processes and set-up infrastructure and systems which can be deployed at speed and scale. Persistent's Vega digital experience framework helps enterprises transform to become software-driven businesses. To deploy compelling experiences, Persistent's Vega framework helps enterprises establish the following:

- **APIs** - Establishing a robust API framework across various layers of the enterprise.
- **Software 4.0** - Processes and automation to deliver software rapidly and at scale.
- **Data Integration** - Building [connects] from enterprise systems, external data systems and sensors, so that the data is accessible to experiences in a secure and robust manner.
- **Intelligence** - Personalized experience is the key. Modern systems must learn continuously from user behavior and other available signals.
- **Rhythm** - Enterprises must establish a rhythm to build and deploy experiences that users need.

Industry 4.0 and the Internet of Things



A wide range of sensors and interconnected devices have taken the internet to the next generation. It is estimated that there will be more than 50 billion devices or things connected to the internet by 2020.

The impact of this is nothing short of the magnitude of the Industrial Revolution of the 1800s. That revolution improved the process of manufacturing which led to mass-production of goods at affordable costs. Looking ahead, "things" will reconfigure themselves in the field, and will monitor, measure and share their parameters to the global cloud in real-time. With sophisticated machine-learning algorithms being built in the platform, manufacturers and users will be able to optimize the performance of these things, in the context of millions of other objects (things) in the field.

The Industry 4.0 revolution will improve the way we manufacture, distribute and operate every system that is known to mankind.

Persistent's Vega digital experience frameworks integrate best-of-class IoT solutions and help manage and make sense of the data that is being generated by devices connected in the internet.

Application Programming Interfaces (APIs)

Today's internet is not just accessed by humans but is increasingly being accessed by systems, robots and devices. Over the last 10 years, the internet has evolved to allow systems to communicate and respond securely and programmatically. APIs or application programming interfaces are designed so that systems with validated credentials can query and access systems widely available on the internet. Systems are designed to respond to queries from programs with data that is machine-readable.

With the scale and reach of the internet, it is essential that these protocols must be built and managed efficiently in a distributed fashion, rather than being managed centrally.

The programmable web has made the internet not just a repository to view information but also made the internet responsive and actionable.

Machine Learning

Artificial Intelligence has always fascinated computer scientists ever since the mid-60s when computers started becoming commercially available. But achieving meaningful success has always been the Holy Grail.

The quest and the eventual success of computer programs in competing with humans in specific activities such as:

- Deep Blue beating Gary Kasparov at chess in 1996
- Watson winning the Jeopardy competition in 2011, and
- AlphaGo beating Lee Sadol at the ancient Chinese game,'Go' in 2016

have brought machine learning into the limelight.

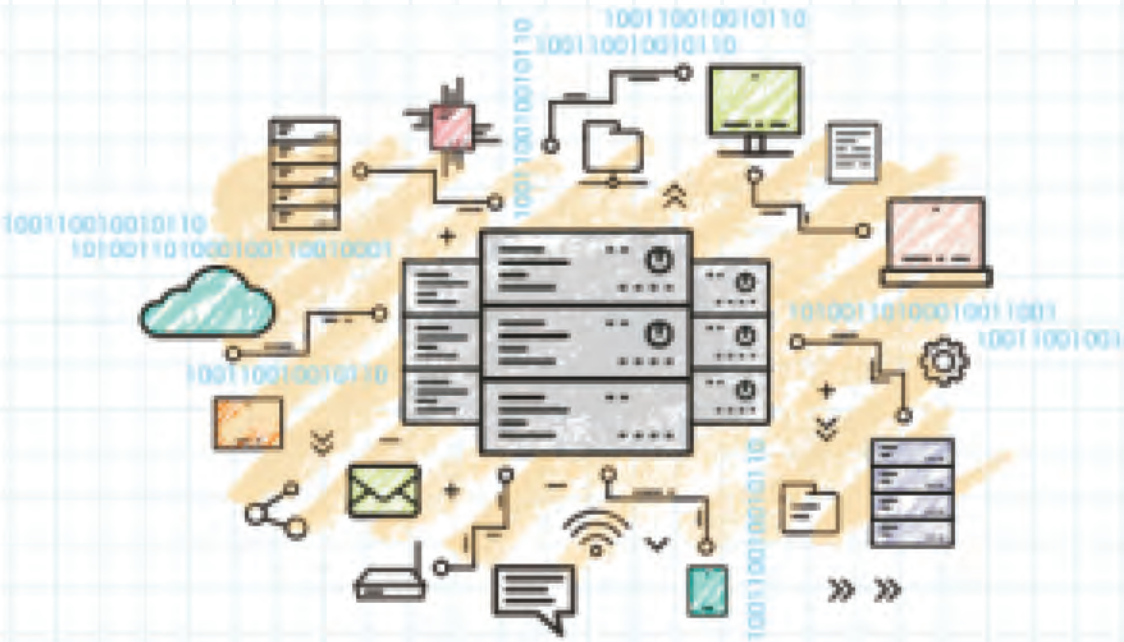
The increased availability of computing power, the ability to access and manipulate data across data sources on the internet and next-generation algorithms have made it possible to leverage artificial intelligence and machine-learning for commercial applications at reasonable cost.

Data Integration

Enterprises manage their business with a set of systems of records where all transactions of relevance are stored and managed. In addition to base transaction data, enterprises have warehoused this data in different ways to allow users to query and report on aggregates and summaries that combine data from different systems of records.

In today's world, decisions are being made not just on the basis of internal data, within the control of enterprise, but also on the basis of external data that is available and accessible on the internet. With the advent of the Internet of Things (IoT), the number of sources of data have significantly increased. Each device has multiple sensors which can be monitored, to provide users with actionable insights.

Integrating data across various sources so that the API call made by the user application gets the desired results is a tedious task. Persistent has evolved a methodology to build this integration for enterprises incrementally and iteratively.



Software 4.0

Building software for 4.0 requires different techniques and discipline. The “How” of building a software-driven business and managing software-driven things at speed is Software 4.0. It is a collective term that brings together different techniques that are necessary to build and deploy software in the new world of continuous integration, devops and agile development.

Traditionally, software development was a sequential process-design, followed by implementation, testing, deployment and operation. Each process had a separate team that operated in silos. The entire cycle would take months. In a changing world, there is always a risk that an innovative feature which was considered path-breaking when the project started, is no longer relevant or has already been provided by a competitor, at the time of deployment.

We are operating in a fast-moving world, and successful disruptors are following processes that allow them to deploy features in production, very rapidly, several times in a day. This is possible by breaking silos, following disciplined processes that are automated, leveraging tools and integrating teams to work across all aspects of software development. This also demands that the process of innovation is a collective team effort and there is a framework for collaborative ideation. In order to accomplish this at speed, institutionalized design thinking must be part of the work culture.

Persistent's Software 4.0 methodology helps enterprises adopt these disruptive techniques and transform themselves continuously.