Executive Summary

Enterprises are not entirely happy with their ERP applications. Most of the applications are targeted towards automation of transaction processing or departmental automation. While these applications help to automate processes and increase efficiency, they fail to offer any strategic benefits - such as increasing market share or offering a unique solution to the clients. In addition, enterprises still have the age-old issue of specific business software products being inadequate in features or too expensive to implement, forcing them into more custom application development.

With expanding business and increasing competition, clients expect these applications and products to facilitate effective decision making. With already huge investments made in ERP applications and customized applications, enterprises are not ready to hand out more money for add-on applications or customization. Alternatively, with rapid technological changes, enterprises are required to add software or switch/change software more frequently than before.

In this scenario, enterprises are looking for fast deployment and effective solutions to meet their business needs. Service providers with an ability to build core applications delivering key business processes, experienced in all parts of product design lifecycle, and having an understanding of the context of service plus product - what we call "Product Development DNA" are better suited to address the client requirements. For "product like" work, enterprises should look for resources & partners with a combination of product building experience and domain capability.
Once Effective Enterprise Applications Now Fall Short of Changing Client Requirements

A majority of enterprises are unhappy with their enterprise applications. Why? Most applications are targeted towards automation of transaction processing or departmental automation. According to Offshore Insights, an independent advisory and research firm, enterprise applications help to automate processes and increase efficiency. However, most of their clients feel that these applications are unable to offer any strategic benefits or unique solutions. With expanding business and increasing competition, clients expect these applications to facilitate effective decision making. Several ERP satisfaction surveys reveal low client satisfaction levels with regards to the application functionality. As highlighted in our interactions with buyers, they are not entirely happy with their ERP applications because these applications:

- **Fail to offer strategic benefits.** The critical issue for an ERP application's success is the benefits that arise from its implementation and use. With the implementation of these large scale applications, enterprises have managed to achieve automation and departmental computerization. Several of them have also experienced increased efficiency and reduced cost of functions such as accounting or human resources. "Interviews with over two dozen global firms seldom highlighted their achieving strategic benefits or bringing in agility required to survive rapidly changing business situations. It rather grew frustration as they continued to invest heavily in these deployments," according to a study conducted by Offshore Insights.

- **Become more commoditized.** The study by Offshore Insights also compared 20 installations of leading ERP software in pharmaceutical companies. It was found that these implementations handled business process automation and workflows in similar ways and could not give unique experience to any of these leading companies. After spending huge amounts of money and several years why did they get look-alike solutions? Service providers have primarily focused on automating the processes and workflow by deploying their standard and proven frameworks and methodologies - often labeled as "best practices." These vendors typically redesigned the process to suit an ERP application workflow. They got rapid deployment because of best practices and industrialized support, but this standard implementation approach has made ERP more commoditized and all installations looked similar.

- **Offer limited value in spite of huge customization.** Some of the IT services companies have built customized ERP solutions for enterprises. However, many clients have confirmed that customization is a huge investment and a time-consuming exercise. At the same time, in spite of heavy customization, the incremental value over and above the product is limited. Also, when the underlying ERP software is upgraded, this customization layer often proves to be incompatible.

- **Unable to deliver newer functionality required to cope with rapidly changing and growing client requirements.** Most of the large enterprises have invested heavily in enterprise applications. Despite huge investments in technology, enterprises are still finding business process holes in their ERP suites. A leading global hotel chain we spoke to made significant investments in an Identity Management Suite, however, they couldn't extract any real strategic benefits from the product.

“We invested more than $600 million in global roll-out of an ERP system but now our management is not ready to invest another $200 million to upgrade the system because we could neither achieve revenue growth or any competitive advantage.”
- IT Leader at a Fortune 100 Beverage Company

“Customization poses one more problem - post implementations these applications become highly rigid and when business requirements change, they fail to offer quick flexibility.”
- CIO of a Leading Retailer
Gap between Business Software Products and Enterprise Needs Continues to Plague Enterprises

In addition to ERP issues, gaps in specific business software products continues to cause increased customization in enterprises. Most business software products on the market lag behind enterprises’ current needs. New products are developed only when many enterprises establish a common need. By that time many enterprises have already met their IT needs by developing their own customized software.

Even when there is a product on the market, companies will usually have to customize it to fit their specific business requirements. Enterprises will either use their own in-house IT department, an IT services partner or the product companies professional services arm to implement. All of these options tend to be sub-par for the following reasons:

- **Internal IT Department**
  - Lack of experience in product development
  - Processes are tuned to focus on management rather than custom application development and innovation
  - Tendency is to wait for new technologies to be mature before adopting

- **IT Services**
  - Focus on enterprise app implementation, customization and maintenance; lack of product development skills
  - Focus on building practices around implementing packages after they are a mature

- **Product Professional Services Arm**
  - Focus only on their product and not the complete solution
  - Cannot scale and are typically pricey

The Rising Power of Technology Creates a New Wave of IT

Technology is changing faster than ever. Emerging technologies, especially a combination of SOA based application architecture, Cloud and SaaS delivery models, the rising power of social networks, and new access devices like tablets and smart phones - are changing the role of IT in enterprises. The role of computing over time has evolved significantly from mainframes to client server computing and web applications, and from tech centricity to business value focus. The new wave of IT focuses on competitive strategy, business ROI and social selling. Cloud, SOA and mobility are enabling bigger changes in IT (see Figure 1).
The business world and the role of IT are shifting towards managing services. Technology is no longer a tool that enables business; it is embedded inside the business function itself. The following figure depicts the changes in the role of IT and - a new wave of IT in the business world.

**Figure 1: Changing Role of IT**

![Diagram of changing role of IT](image)

**Mainframes for pure computing**

Computing to Client-server, EDP type work

ERP to Networking, MIS

Cloud Computing, SOA, Mobility, Analytics, Social Networking

As a result, enterprises are looking for fast deployment and quick return on investment with effective solutions that will help them to improve or streamline their business processes. Enterprises have started embracing emerging technologies as they extend their value to provide help on a particular business challenge. Several enterprises have started using Cloud or SaaS initiatives for areas such as selling, marketing, and linking to suppliers or customer management. These new technologies are changing the way enterprises view technology and are fostering business innovation. With the changing role of IT and rapid pace of technological developments, enterprises will need to add software, switch or remove the software altogether. These changes in technology call for service providers with an ability to offer quick and effective solutions. Further, enterprises will move towards newer software buying models of “transaction, no investment, month to month pricing.” Emerging technology trends coupled with newer models of buying is getting IT much closer to business processes than ever before.

"Apart from automation, we expected an ERP application to add more business value in our decision making."

- A U.S. Manufacturing company

Source: Offshore Insights
Clients Want IT to Deliver Strategic Benefits and Differentiation

Enterprise applications and point business software products need to offer more than just automation and on-going operational improvement for the company. With heavy investments in technology, clients look for new-gen IT functionality that will address the overall efficiency and the company's financial performance. As businesses are expanding, they are looking to achieve actionable insights by using applications that will enable them to make strategic decisions. A manufacturing company told us that apart from automation, they expected their ERP application to add more business value in their decision making. Several other clients also echoed similar views and expectations. Our interactions with buyers reveal that they are looking at renewed role of IT primarily because:

- **Business process sophistication is becoming key for a firm's success.** A company’s expansion plans and long term future depend on its seamless business processes and workflow integration. Entry into new markets will mean shift in consumer needs and product specification. This would demand that enterprises invest in robust systems and technologies that meet their changing business needs. Further, evolving trends in technology such as SaaS/Cloud will force businesses to migrate to new applications and platforms as companies cut costs and make it variable. At the same time, the current applications will demand new age functionality. Clearly, business process sophistication will enable smooth functioning of businesses and will brighten their long term prospects.

- **Need for industry leading, not industry standard processes.** In today’s competitive marketplace, enterprises are looking for ways to keep costs low, while at the same time deploying cutting edge technology and practices. This need to deploy industry leading solutions was echoed by enterprises across industry verticals such as banking, financial services, high-tech, and manufacturing. Enterprises are looking at moving ahead of the pack, and they believe technology will provide the necessary competitive edge and differentiation.

- **Clients want enterprise application functionality holes to be filled and get unique IT/App instance and deployment.** More and more enterprises are realizing that their ERP and actual work processes do not align or their applications are lagging behind. Several enterprises are trying to assemble a coherent framework from various disconnected processes. Clients want service providers to plug application functionality holes, while at the same time extend the benefit by deploying a unique IT application that takes care of workflow integration.

- **Clients want these process automations to help them to - grow, be more profitable, or offer better client service/experience.** Business intelligence and strategic benefits derived from using the applications are increasingly becoming very important to executives across verticals. Enterprises are looking at applications to drive business growth. At an end user level (both employees and customers), it is critical to ensure application performance while enhancing employee productivity and customer satisfaction. As more and more applications move to the cloud, bringing out services differentiation in applications will be the key to growth and becoming more profitable.
Fourth Wave will be driven by Business Centricity, Coupled with Ease of Usage and Flexibility

In today's business scenario, emerging technologies are creating a set of challenges for enterprises. Meanwhile, clients are looking for easy to use, flexible and quick to deploy solutions that will address specific enterprise needs. Each client requirement varies, and cannot be addressed by a “one size fits all” solution. Just like pure “out-of-box” applications are falling short, clients are also not looking for just application development or maintenance experience. The fourth wave of IT will be driven by business process centricity and will reflect a much more sophisticated approach to addressing client requirements. In addition, 1) ease of use - through iPad, PDAs, smart phones, 2) speed to market - ability to add software or adapt software, 3) flexibility - via a unique and agile product architecture, SaaS and Cloud based delivery, and 4) differentiation - a combination of custom built, but highly robust and pre-built solutions, will become compelling factors that drive business. And all this at a low price! Clients want customer-specific standards and processes that provide a more tailored solution than standard packages.

But clients want to deploy it quickly, and without throwing away existing setup

When companies implemented ERP in 90’s, they threw away their home grown legacy systems. Now having seen that their large scale ERP applications have not performed as per their expectations, clients have become wary of exploring other solutions. They are not ready to throw away an existing system and again experiment with another application. At the same time, they want a solution - fast, at low price, in incremental fashion, that leverages their existing IT infrastructure.

As a result, several companies are innovating and providing solutions to clients on top of the client's existing applications. On one hand, ERP players like SAP and Oracle are actively building an ecosystem to strengthen their applications and partnering with product development companies to provide client solutions. On the other hand, players like Google and Apple are revolutionizing the applications market. Google has built an all-in-one business suite that includes all the functions from CRM to accounting to supply chain management. iPad is Apple's new enterprise push. Apple has designed applications that come built-in with iPad and iPhone. Even IT service providers that helped build these products are competing in the enterprise marketplace.
Product Development DNA is Key to the Fourth Wave of IT

In order to deliver the next generation of IT products, a company needs the right set of skills and experience. “Product Development DNA” is 1) the ability to build core applications delivering key business processes; 2) expertise in all stages of the product lifecycle; 3) the understanding of “service + product” (productization) or productized service requirement. This specific set of skills and capabilities will ensure the development of meaningful and successful 4th Wave IT and includes the following:

- **Product development, not maintenance and support services skills.** Maintenance and support services skills are typically required for large scale application maintenance work. Product development is a specialized field that requires product design, documentation, and product upgrade skills.

- **Experience of multi-location, repeatable, and architecture capability.** Product services require a team with the experience of several release cycles. The team needs to be adept at future release requirements as well as product requirements that meet the needs of a broad range of clients.

- **Deep domain capability.** Product development requires deep domain knowledge. The depth of knowledge and experience in product development is indicative of the expertise/capability that the service provider has built in the field.

Product Building Experience is One Key Criterion

As enterprises look for a robust and revolutionary product that could propel significant growth, there is greater emphasis on product building experience. Product building experience is a driving factor for the next-gen process sophistication building. Following are three probable solutions to address IT functionality holes:

- **Unique process wrapper/IP led solution based on pre-fabricated code plus customization - more like product.** Customization requires substantial investment by enterprises. This could lower margins, require changes in cash flow and pricing models. There is a separate set of challenges if an enterprise decides to go with packaged software. A bridge between the two - a unique process wrapper based on pre-fabricated code coupled with customization could be a possible solution to address the functionality holes. For example, Persistent developed an innovative gamification platform built on engagement analytics and social gaming called eMee. eMee can be customized to gamify a wide variety of organizational functions such as certification management, performance management, CRM and customer loyalty management.

- **Strong architecture for multi-site deployment.** Our customer, a leading beverage manufacturer customer, leveraged packaged software for its compliance project as it standardized processes across its subsidiaries in various countries. For this engagement, Persistent Systems used a combination of prepackaged, custom development and pre-fabricated code for the multi-site deployment. Strong architecture is critical especially for rational and consistent performance across multiple sites or branches.
Product Design is a Specialized Field, Different from Typical Application Support & Maintenance

Product development is a specialized field different from traditional IT services. Traditional IT services primarily include application development and maintenance. The product piece is largely missing since most of their contracts are around large scale application maintenance work. The following figure provides a comparison between traditional IT services and product development services.

Figure 2: IT Services & Product Development Differences

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Traditional IT Services</th>
<th>Product Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Release</td>
<td>Date of completion fluctuates</td>
<td>Fixed budget and fixed date of release</td>
</tr>
<tr>
<td>Release Cycles</td>
<td>Single release</td>
<td>Several release cycles</td>
</tr>
<tr>
<td>Architectural</td>
<td>Relatively less complex - Need to work at one client</td>
<td>Complex - need easy deployment, multiple platform support, open integration with other products that clients may have</td>
</tr>
<tr>
<td>Complexity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domain Expertise</td>
<td>Required, but often scope is to deliver a specific statement of work, and in many cases its old application support or maintenance</td>
<td>Deep domain expertise is required to participate in end to end product development cycle</td>
</tr>
<tr>
<td>Testing Rigor &amp; Quality</td>
<td>Limited as goal is to make it work at one client</td>
<td>Strong testing rigor required as product needs higher repeatability and predictability in different environments</td>
</tr>
<tr>
<td>Version Management</td>
<td>Relatively less complex</td>
<td>Complex</td>
</tr>
<tr>
<td>Documentation</td>
<td>Simple documentation required</td>
<td>Elaborate documentation required</td>
</tr>
<tr>
<td>Multi-platform</td>
<td>Not required in most cases and when required all details of platform are known</td>
<td>Required to build for wide range of known and unknown platforms and permutations</td>
</tr>
<tr>
<td>Portability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Development</td>
<td>Not required; greater focus on product maintenance aspect as opposed to product building</td>
<td>Most definitely required; product development is the key and crucial feature</td>
</tr>
<tr>
<td>Experience</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shift of paradigm from Product plus Customization to Productization. No two enterprises are the same. They work differently and hence have different processes. In the same way, one product cannot address the needs of two different companies. Enterprises are waking up to this realization and are asking for products specially designed for their needs. There is a shift in paradigm from product coupled with customization to productization (or capture) of client’s own IP.

Being a specialized field, product development requires a mix of skills and tools to manage complex version-specific issues, such as patches, bug fix lists, and cross application integration. Moreover, key capabilities and core competency revolve around testing areas like automated and functional testing. These are key to product building capabilities.
Components of a “Product Development DNA”

Growing and changing client needs require constant evolution in product features and functionality. At the same time, technology standards in terms of platforms and connectivity requirements continuously keep changing. Experience in product development is an essential capability which will provide a better position to understand functionality changes and enhancing alignment to end user’s needs. Components of a Product Development DNA include:

- **Focus and traction in this space.** Product building experience is critical in this space. In addition to IP and domain capability, focus and experience in building products is essential.

- **On-time/on-budget delivery track record to meet launch date and budget.** Budget and date of product release are important features of product development. The date of a product release is fixed and the product is released irrespective of whether or not all the features are added to the release version.

- **Experience in managing (hundreds of) product release cycles.** Managing multiple release cycles is a huge task in itself. This necessitates detailed documentation, meticulous version management and multiple platform portability. In order to manage all these intricacies, extensive experience of managing product release cycles is important.

- **Rigorous architecture and testing capability, specialized tool and infrastructure required.** With multiple release cycles, product development needs strong architectural sophistication. Testing capability is a core competency for product development. Further, design and development requires specialized tools and infrastructure like fixtures, assemblies, and test rigs.

- **Partnerships** - Product management also requires close collaboration and partnerships between tools vendors and specialist technology players to harness emerging technologies.

**Conclusion:**
**Prepare As If You Are A Product Company**

When implementing Fourth Generation IT solutions, enterprises should look for resources and partners with a combination of product building experience, IP and domain capability. Enterprises should:

- **Segregate application work which is more like product development.** In order to bridge functionality holes in enterprise applications, resources & providers need product building expertise along with customization experience.

- **Think beyond version 1.0.** Enterprises are typically accustomed to working with IT services companies, where they provide the statement of work to the IT services firm and expect services to be delivered. In a product building scenario, the situation will vary considerably. The product development roadmap - upgrade plan, version management, documentation and support - needs to be laid out.
About Persistent Systems

Persistent Systems (BSE & NSE: PERSISTENT) builds software that drives our customers’ business; enterprises and software product companies with software at the core of their digital transformation. For more information, please visit: www.persistent.com.