



PERSISTENT

PersisTrends

Technology Trends and Recommendations

From the

CTO Office at Persistent Systems

January 2014

Introduction

Technology transforms the way organizations work and do business. Persistent Systems, for over two decades has been observing the variations in technology trends to provide guidance to our customers on the technologies that should be adopted, sunset, and trialed, or explored with an eye towards the future. Most recently, we have observed a significant variation in technology use and adoption. Some technologies have peaked; others are starting to deliver on promises made, while still others are in their nascent phases. Organizations need to understand the effect of both emerging technologies and those that should no longer be relied upon to effectively compete in their markets.

Persistent's Office of the CTO is a team of senior technology thought leaders and trusted advisors in their domains, which include Persistent's core focus technology areas of Cloud Computing, Mobility, Analytics and Social. They address business problems and suggest appropriate technology solutions to over 300 of Persistent's global customers, helping them drive effective product roadmaps and enable technology transformations.

The PersisTrends Model

The Persistent CTO office, through its understanding of global technology trends and its experience with customers, has categorized today's technologies – both those most commonly used, as well as newer technologies – based on where they are on the technology adoption curve. We have categorized these technologies by Persistent's four focus areas: Cloud Computing, Mobility, Analytics and Social. We strongly believe that these four technology areas will form the backbone of next-generation products and enterprise applications. In addition to these key areas, we also include trends in the telecom and media, banking and healthcare verticals.

The following table gives the details of the trends model we follow and the rationale behind the classification of technologies. The focus of the classification is to help ISVs and enterprises make sound business and investment decisions in their technology adoption.

Trend Classification	Definition
Emerging	These technologies are untested, but are of interest. They are in flux and still need proving, but if proven viable with adequate support systems and rising technology maturity, they can typically reach the early adoption stage in 1-4 years.

Early Adoption	Select organizations are using these technologies in trials. The ROI on these technologies is still to be validated. If the supporting and complementing systems, real-life use-cases, developer interest and consumer utility justify their progress, these technologies could reach mainstream adoption in 1-3 years.
Mainstream	The ROI on these technologies is proven and on-going investments are recommended. There is no set time limit for a technology to remain in the mainstream stage.
Sunset	These technologies are on the decline. They may have been in any of the three stages earlier, and have been disrupted by other technologies or rendered obsolete due to changes in the technology environment. There might still be niche use cases or small markets available for them for a limited period, but widespread or long-term investment in these technologies is no longer advised.

The data for these trends has been derived from various sources, including our experience with hands-on projects, and also from numerous roadmap discussions we regularly conduct with our customers, prospects and industry leaders. We then utilize the PersisTrends model to make concrete recommendations to both ISVs and enterprises on the technologies they should evaluate for future use; ones they should adopt and those they should retire over the next six months to two year's timeframe.

Overarching Emerging Technologies

2013 saw the rise of a few disruptive technologies that are game-changers for many businesses. Machine to Machine (M2M) networking, also termed the Internet of Things (IOT), is a key technology in the mobility space paving the way for connected vehicles, homes and medical devices. Data analytics around M2M is naturally going to be of enormous value and we expect this area to grow significantly in the next year. We classify the M2M space into three areas: 1) connected servers, which we see today as mainstream, 2) connected devices, and finally, 3) connected things. Another interesting set of technologies is emerging around 3D printing and 3D scanning. 3D printing will definitely be a game changer for manufacturing, electronics, consumables and even shipping and cargo. This is primarily because 3D printing has the potential to generate materials needed in these industries in just-in-time fashion bringing in a lot of efficiencies.

With the extremely strong growth in mobile devices and the corresponding explosion in the need for applications on the move, API management is going mainstream. Making data available through APIs in a scalable way has become a cornerstone for all technologies and in particular for Software As a Service (SaaS) based businesses.

As an anecdotal reference, we are seeing a confluence of the four focus technologies mentioned above inside of Persistent Systems itself. Unified Communications including a collaboration platform helped our own IT team to provide a seamless user experience at a global level. It has also increased business productivity as the unified collaboration experience includes mobility and cloud based services. Our TCO came down by 33% and capital expenditure has been reduced by 80% in the course of three years by moving to this platform.

CLOUD COMPUTING

- MOBILITY
- ANALYTICS
- SOCIAL

Cloud Computing PersisTrends

- Cloud computing is already a key strategy for most organizations, and our customer base perfectly depicts this scenario, having already shown a lot of enthusiasm to take cloud implementations forward.
- From being seen as a technology enabler earlier on, cloud computing is now garnering more interest for bringing reach, speed and flexibility to businesses.
- Gartner predicts that from 2013 through 2016, \$677 billion will be spent on cloud services worldwide [4], including cloud-based advertising, business process services, applications (SaaS), infrastructure (IaaS), management and security services, and application platform services (PaaS).
- Hybrid clouds are becoming increasingly important as enterprises express their comfort level with a hybrid model in general, in order to provide a balance between ownership, and the flexibility for scale and agility.
- While some ISVs prefer to re-architect existing applications for the cloud, other groups are focusing on building new, cloud-only offerings to achieve faster time to market. Applications such as Internet apps, user/content centric apps, web services, and collaboration, communication and management apps are the major beneficiaries.



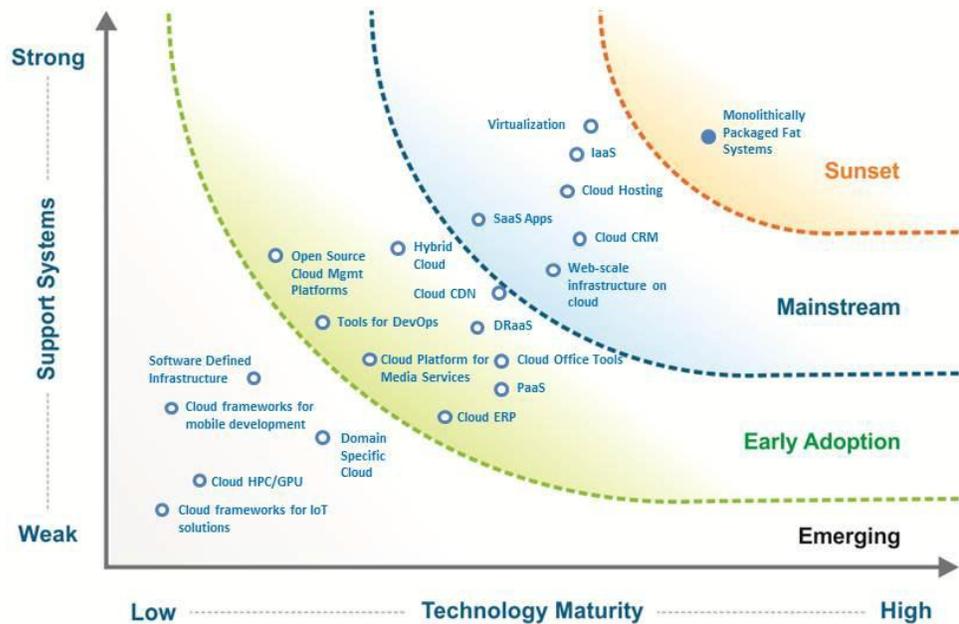
Cloud, Mobility and NoSQL technologies have become key to the business of CMed. The adoption trend for these technologies has now become mainstream in the healthcare industry which has typically been conservative.

- **Timothy Corbett-Clark,**
CTO, CMed Technology Ltd



- As we predicted earlier, cloud technology-provider customers are increasingly looking at building solutions that would help manage multi-cloud scenarios seamlessly. Also, from being closed (very focused) cloud technology providers, many of them are contemplating solutions that are more open and flexible, without having to lock-in the customer to a specific technology in the future.
- Cloud technologies such as SDN, cloud services for mobile development and cloud frameworks IoT solutions are emerging on the horizon; while DRaaS, DevOps tools, Platform for media services, cloud office tools and platform as a service are in the early stages of adoption. At the same time, infrastructure service, software as a service, data center consolidation through virtualization, cloud based CRM and hosting services have almost become the mainstream now. The traditional ways of building packaged software products that are monolithic and tightly integrated with vendor technology (terms as Monolithically Packaged Fat Systems) are giving way to more loosely-coupled cloud-oriented scalable and modular on-demand services.

Technology Adoption Graph: Cloud Computing, Jan 2014



CLOUD COMPUTING
MOBILITY
 ANALYTICS
 SOCIAL

Mobility PersisTrends

- The total Bring Your Own Device (BYOD) and enterprise mobility market is expected to grow at a CAGR of around 15% over the next few years. When asked which digital technologies would be most disruptive, 70% of the CIOs cited mobile technologies, and put mobility strategy, consulting and packaged application customization on mobile platforms as areas that will see phenomenal growth.
- At Persistent, we are witnessing a surge in enterprises evaluating projects in Mobile Application Management (MAM), private app stores and mobile-enablement of backend systems using APIs and libraries. These initiatives encompass mobility for stakeholders such as business partners and resellers, in addition to those only for employees.
- While bring-your-own-device (BYOD) is gaining ground, as more sensitive enterprise workflows and processes come into the ambit of mobile delivery, its next phase of adoption will be driven by standards and best practices for device and application management, containerization, private enterprise app stores and HR policy management.
- Some of the most cutting-edge emerging technologies in our graph include Flexible Displays, Gesture Computing and Connected Vehicles. The Flexible Displays market is slated to cross \$40 billion by 2020. Gesture Computing is in early stages of research and engineering prototypes, while 'Connected Vehicles' is emerging as one of the early use cases of Internet of Things (IoT), especially in electric vehicles.

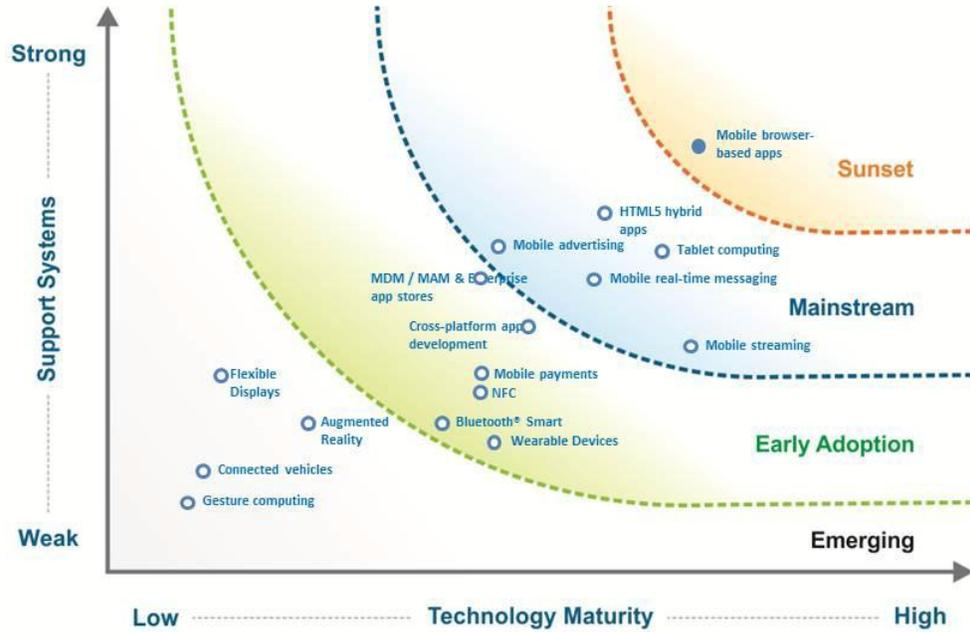


With the acceleration of technological innovation and adoption, we will be seeing over the next 5-7 years the move from one billion computing platforms (the PC) to 10 billion mobile computing platforms (smartphones) and then to the 100 billion computing devices (Internet of Things). Each rapid transition will disrupt the market in unforeseeable ways, presenting significant opportunities for players who are both attentive and agile.

- **Guy Levy-Yurista,**
 CTO, AirPatrol



Technology Adoption Graph: Mobility, Jan 2014



CLOUD COMPUTING
 MOBILITY
ANALYTICS
 SOCIAL

Analytics PersisTrends

- We began 2013 with Gartner reporting that Analytics and Business Intelligence (BI) was the number one technology priority for CIOs. True to form, the year saw increasing adoption and sustained momentum for Analytics and Big Data within both enterprises and ISVs. IDC now projects that the global Big Data technology and services market will grow at 31.7% CAGR to USD 23.8 billion by 2016.
- At Persistent we have witnessed this accelerated adoption through a 75% increase in Big Data engagements with customers, with a 60% to 40% - ISV to enterprise breakdown. Interestingly most customers or projects required an on-premise Big Data solution with only about 20% ending up with a Cloud based option. These decisions are typically driven by security concerns as well as logistical issues in connecting the data to the

Cloud. Further, in the case of our customers, large and historical data analysis dominated the engagements and only about 10% of the projects had real-time requirements.

- With the explosion in social apps and the amount of data available, well-known digital media companies have started monetizing data by providing analytics services. Gartner predicted that by 2016, 30% of the companies will monetize their information assets. We noticed telecom and financial companies are especially focused on getting analytics on their roadmap and some are even already implementing it.

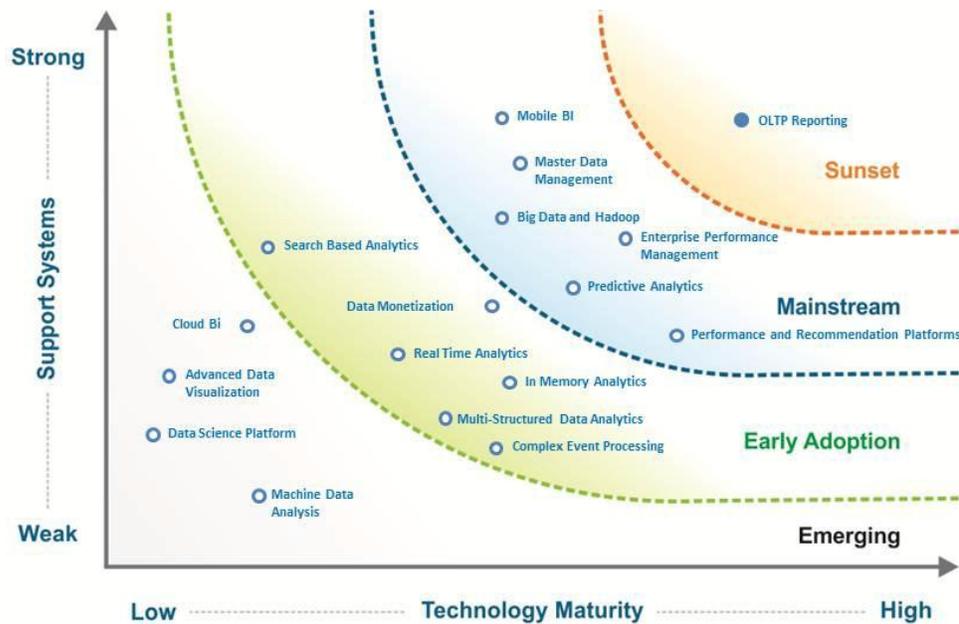


Big Data can be the solution to a variety of security challenges. But, unless we address the analysis and correlation of complex data from a variety of sources, in the network and security analytics space, its potential cannot be reached. Thanks to faster, more reliable and manageable distributed computing frameworks like Hadoop, we are making tremendous strides in solving these challenges.

- Antonio Nucci,
CTO, Narus Inc.



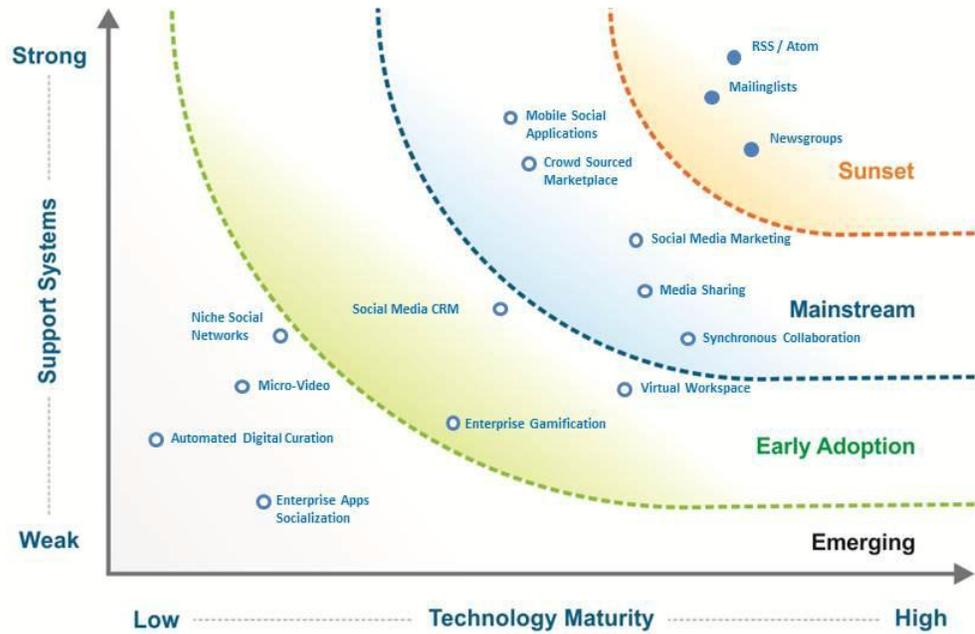
Technology Adoption Graph: Analytics, Jan 2014



Social PersisTrends

- The growth in Social Media continues to be robust. Facebook is still the leader – the fact that there are more than 1M websites that have integrated with it, speaks volumes. Twitter has handled 163 billion tweets so far. However, there are other social networks that are catching up with Facebook and Twitter. Google Plus, Pinterest and Tumblr are tugging at their heels. Google is leveraging its user base by integrating Google Plus into its other services, and thus making it a natural extension. There is also a definite rise in social networking away from text-only. In fact sharing of video, images and content has risen steeply (data sharing has multiplied nine-fold in the past five years) with social networks like Slideshare, Tumblr and Mobli sharing in the growth. Also mobile based social networks have seen significant growth because of real-time messaging applications like WeChat and WhatsApp, particularly in emerging markets, enabling them to catch up with the traditional social networks.
- On the enterprise side, while the disruptive forces are stronger, the trend in internal-only social networks, seems to be lower. Enterprises which have taken a holistic approach – integrating external parties --like vendors and customers -- into the social fabric along with employees – are seeing better ROI. This is because many enterprises tend to keep the social deployment detached from their essential core business. Social CRM, customer support and social media analyses are merging with the internal enterprise systems. In the same breath, gamification of enterprise apps is being adopted by many early movers. Enterprises are also finding that marketing via social media is much cheaper to do than going the traditional route, which further enhances this drive. Enterprises have taken additional steps towards implementing virtual workspaces. In the knowledge industry, this is mainstream already, while in other domains (for example manufacturing), it is still in early adoption mode. We believe 2014 will be the year where a majority of enterprises will adopt a social media strategy-whether in marketing, through vendor participation, or in its customer interactions.

Technology Adoption Graph: Social and Collaboration, Jan 2014



TELECOM
FINANCIAL SERVICES
LIFE SCIENCES AND HEALTHCARE

Telecom

- The Telecom sector is undergoing major transformations. On the one hand, telecom operators or Communication Service Providers (CSPs) have the challenging task of dealing with decreasing voice revenues and increased capital expenditures. Further, they are facing increased competition from non-traditional CSPs such as Cloud or IaaS providers. At the same time, new technology advances are giving them significant business opportunities to become the dominant players for IoT and thwarting competition through rapid service innovation.
- The traditional voice business is on the decline, leading to minimal spending on circuit-switched equipment. This downward trend is further accelerated by the rapid migration

towards all-IP networks and significant increase in data traffic. Last mile technologies such as copper-based DSL has seen a 40% year-on-year decline[24] and is giving way to optical fiber and broadband wireless technologies such as UMTS [commonly referred as 3G] to meet the subscriber demands for higher speeds and access capacity.

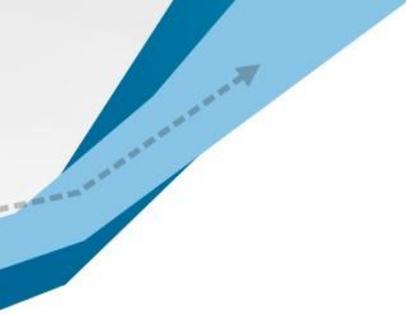
- As CSP revenues increase due to wider adoption of triple-play [voice, high-speed internet and entertainment] and quadruple-play [triple-play + wireless] services as the norm, technologies providing a unified view of the end customer are key to a better customer experience. This experience is further enhanced by the seamless integration of television as the 3rd screen [smartphones and PCs are the other 2 screens], facilitated by the proliferation of IP-enabled Set-top boxes (STB). Services leveraging personalized context via Location, Presence and other subscriber-centric data become the focal point for CSPs to retain and delight their customers. Billing also becomes a lot more streamlined and convenient for the customer, with this type of one-stop-shop bundled pricing. Enterprise customers continue to adopt Multiprotocol Label Switching (MPLS) as the robust and cost-effective way to connect all their office locations for all Enterprise communication services.
- The advent of Cloud Computing and Cloud Services is enabling the Telecom Operator and Telco ISVs to realize the value of moving to a subscription-based model [25]. Telco ISVs (such as Amdocs, Ericsson, Avaya, Cisco) have re-architected their next generation VoIP and OSS/BSS products to operate in a “As-a-Service” model to leverage all the benefits of a SaaS-based solution, which is especially attractive to small and medium CSPs. Consequently, this spurs the need for tools that help in Automated Provisioning, Usage tracking, Billing and Mediation (traditional OSS/BSS), Quality of Service, Performance and User Experience. What about Security? That would be one of the primary concerns for next gen VoIP and OSS/BSS products.
- The rapidly shrinking revenues from standard Telecom services such as Voice and text messaging is forcing telecom operators to rethink their business model. The Over-the-Top (OTT) service providers such as Netflix and Whatsapp are disrupting the Telecom Services. The initial response of staying clear of the OTT players is now being replaced by



At MobiTV, we see the trend of true TV everywhere as delivery of live and VOD content both in and out of the home. Since we solved the hardest part of the equation first - delivering to mobile platforms and devices across networks - we're primed for a seat in the living room and to take full advantage of this trend. As we continue to innovate for the emerging technologies and improved networks, our expertise in cloud-based, bandwidth-efficient delivery provides our customers with a go-to-market solution that will retain and acquire end-users.

- **Bill Rouff**
Vice President, Operations, MobiTV

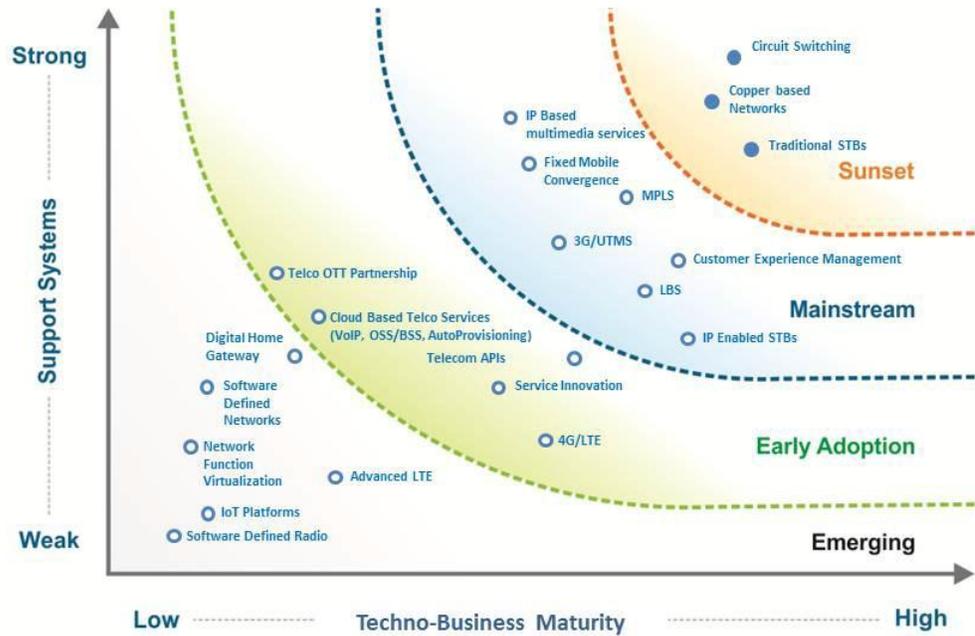




Telecom Operators partnering with the successful OTT players, as evinced in recent examples of Verizon partnering with Netflix or Reliance partnering with Whatsapp to provide a powerful Quality-of-Experience to the end users.

- As telecom operators are going through challenging times, they are realizing that they own a very valuable asset in the Telecom ecosystem – the wealth of subscriber and usage data. The potential of making this data accessible to 3rd parties such as OTT players or VAS (Value Added Service?) providers is immense. This potential has motivated the need for data access through well-defined Telecom APIs and possible monetization via API management platforms. While the challenges around standardization of Telco API have yet to be effectively addressed, the potential benefits are driving Telcos to adopt these APIs.
- A major challenge facing Network Equipment Vendors is the need to enable their customers to support all the complex services. This makes the equipment monolithic, running to several million lines of code. Software Defined Networks (SDN) have revolutionized the technology by enabling various network elements to be supported through software on the commoditized switching hardware. SDNs disrupt the NEV space by separating the Control and Switching plane and enabling an “off-the-shelf” switch to play multiple roles under the centralized control of an SDN Controller. This facilitates cost-effective networks to be built and brings in the full power of Automation for several complex tasks such as Configuration, Provisioning, and Monitoring.
- As mentioned in earlier sections, telecom operators can play a major role as the Internet-of-Things proliferates. On the Telco side, they can provide the IoT platform that can collate, transform and aggregate data from various Internet-connected “things”. The analysis and correlation of this data can enable Telcos to offer meaningful value-added service to the end-users. As Internet-connected homes (or Digital homes) become a reality, it is important to ensure that the various sensors inside the homes (including security cameras, thermostats, refrigerators, fans, lights etc.) can communicate with each other effectively. The low power requirement and low-processing capability of several of these “things” can impede their ability to be connected to the Internet directly. We believe that a Digital home gateway solution can be one way of ensuring this connectivity and reachability of these devices.

Techno-Business Adoption Graph: Telecom, Jan 2014



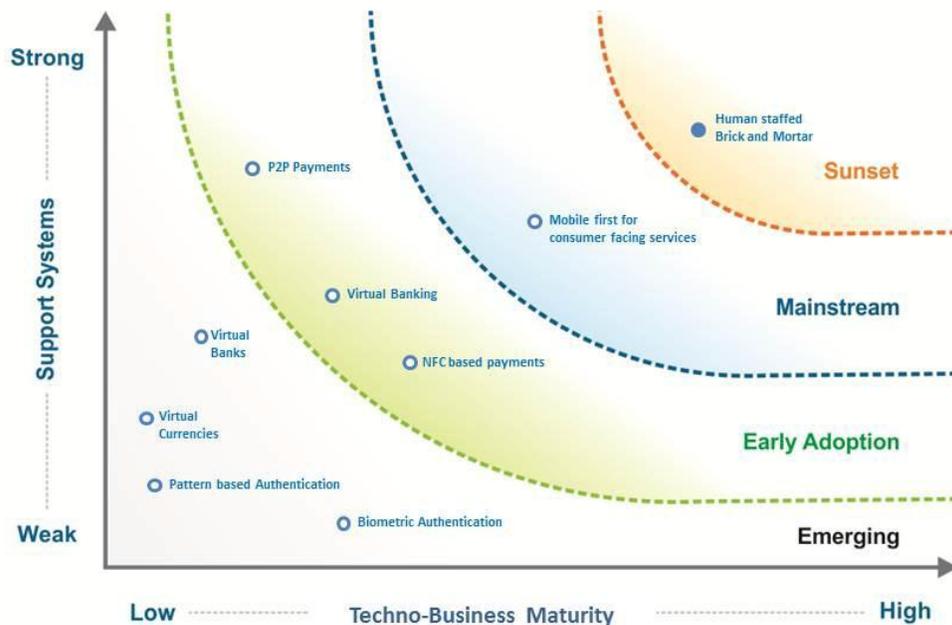
TELECOM
FINANCIAL SERVICES
 LIFE SCIENCES AND HEALTHCARE

Financial Services

- Consumer banking and financial services are experiencing rapid advances in technology. Advances in mobility and the ubiquity of the mobile Internet have accelerated innovation, and has enabled more products to be launched in the past five years than in the last 50 years.
- Payments, with Person-to-Person (P2P) leading the way, is the current area of focus for banks as well as other entities who intend to supersede banks as the first-choice platform for consumers. Advances in OCR technology have meant that even transactions such as depositing a cheque can now be performed by taking a photograph of the cheque and uploading it to your bank. Payments and personal finance continue to provide a fertile breeding ground for innovation.

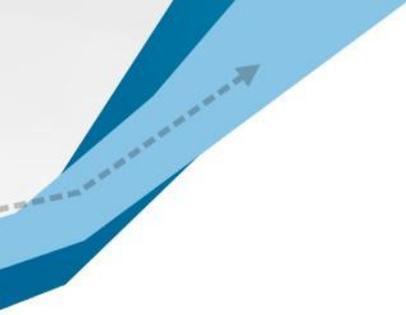
- Increasing reliance on online channels has put the onus on banks to further increase the level of security. While two factor authentication is a de-facto standard, banks have also been exploring biometric as well as pattern based.
- NFC payments are facing challenges in the US due to infrastructure issues (lack of support from Apple, insufficient number of POS terminals), which could change as EMV based terminals become mainstream by 2014-15.
- Virtual banks are emerging as a potentially viable alternative to traditional brick and mortar banks supplemented by online channel banking. Mobile banking is now considered mainstream, and short of dispensing cash like an ATM, almost all transactions can now be performed seamlessly from anywhere, any time. This has resulted in a sharp increase in the number of mobile banking transactions, and a moderate decline in Internet banking transactions. Banks have started to react by reducing the number of physical branches.
- When compared with other financial services companies, consumer-oriented banks need to increase their rate of innovation or be consigned to being pure settlement platforms or back-office partners to consumer facing service providers. In contrast, service providers are facing pressure to create niche products and increase their relevance and value to consumers while partnering with more traditional banks.

Techno-Business Adoption Graph: Financial Services, Jan 2014



Life Sciences and HealthCare

- The healthcare industry has begun its move towards a model of “Connected Patient” – keeping the patient at the center and connecting the various stakeholders. This connectedness helps in customizing disease management plans and managing the total cost of care. The biopharmaceutical and medical devices industry has thus far produced solutions (Drugs, Devices) that are used to react to situations. The emerging devices market will create low cost devices that sense and create feedback loops. Thus the Connected Patient can be proactive rather than reactive. The industry is expected to move towards providing proactive solutions that are based on the theme of Connected Health.
- The wearable devices market is emerging and is currently focused on fitness and wellness tracking activities. This usage is expected to expand into the home monitoring segment as remote patient monitors, and eventually be integrated into hospital beds and tables. The devices will also evolve from tracking single features (eg: track body temperature) to multiple ones (eg: sleep tracker, calories, pulse oximeter). The drive towards patient centricity in the world of accountable care is creating a need for patient relationship management solutions. The concepts we saw in sales CRM are now being incorporated into the world of patient management to serve similar needs: building relationships, engaging patients, and tracking patient satisfaction.
- Over 70 percent of clinical trials struggle to recruit enough participants in time to meet enrollment deadlines for conducting trials. For the bio-pharmaceutical industry, the connected patient provides new and faster access to information, and patient recruitment to conduct clinical trials will become faster and cheaper. Indeed, online patient communities are emerging in areas of rare diseases, where patients also get information about diseases and are able to enroll in clinical trials.
- Meanwhile payers are warming up to convenient care and indeed, the adoption of retail clinics is growing fast across the US. Currently, there are over 1500 such clinics and the financial incentive to use these is spurring their adoption. Insurers want their members to use services that will reduce the burden on emergency care services.
- The use of Next Generation Sequencing (NGS) technologies in clinical diagnostics is increasing with the growth in the number of Assay Panels. Currently, a limited number



of genetic tests are reimbursed by payers. However, a growing number of labs are offering NGS Assay Panels, and this will drive adoption of NGS in the clinic. In parallel, the pressure to reduce sales and marketing costs is making pharmaceutical companies adopt closed loop marketing capabilities that leverage mobile technologies. Adoption of e-detailing solutions driven by mobile technologies has increased, to maximize effectiveness of sales, cut costs, while improving physician prescription of products.

- In the healthcare industry, electronic data capture went mainstream due to a combination of stimulus legislation, and cost pressures. The ARRA act of 2009 ushered the Electronic Medical Record (EMR) systems era and resulted in a \$20B market in 2013. Currently, a majority of hospitals have one kind of EMR system or another and this has resulted in the availability of healthcare data in electronic form. The need for sharing data with patients as part of Meaningful Use Stage 2 requirements is pushing patient portals on Cloud to the top of the CIO's priority list heading into 2014. The EMR revolution will also help the clinical trials market. In this segment, the clinical development cost pressures have resulted in the growing adoption of Electronic Data Capture (EDC) technologies. This is resulting in better data quality, more accessible trial data, and immediate feedback to study managers.
- The healthcare industry has moved from paper to pixels. The industry is moving from a fee-for-service business model to a value-for-service business model and CIO's need to be ready to adapt accordingly. IT systems supporting silos of care will become irrelevant, and will be replaced with integrated systems.

Techno-Business Adoption Graph: LSHC, Jan 2014



Technology Recommendations

This section covers our recommendations for businesses and is aimed at business owners who make technology investment decisions for their organizations

- Organizations that generate or handle data as part of their business, will need to find ways to securely expose this data to applications, mobile platforms and consumers. Such organizations should plan for an API centric design from the start and look at using API management vendors for large scale implementations.

Cloud Computing

- Organizations should look at adopting a cloud-centric design philosophy. Even if you are planning to implement an incremental cloud-enablement program, it is highly recommended that the first step should be a complete and well-thought out cloud-centric design to guide IT transformation projects.

- Large organizations that are early in their cloud strategy formulation should start with categorizing their applications into business-critical services, business-as-usual services, external facing applications and internal facing applications. Cloud technology selection will be dependent on the organization's unique needs – the criteria, current challenges they face and a desired future-state.
- Enterprises in the process of investing in company-wide cloud enablement need to consider taking a hybrid approach by selecting technologies that are open and curated for creating interoperable and portable solutions. And at the same time, enterprise models for governance and security for applications and data need to be developed before exposing them to external world through hybrid cloud deployments.
- Enterprise IT should plan to re-imagine and try transforming into being a cloud services broker for various users and departments compared to being just a service organization. For an enterprise wide cloud migration program of legacy applications and workloads, IT should leverage end to end cloud migration platforms that not only have tools for forklifting, but also have a workload assessment and recommendations platform, monitoring and optimization along with a set of proven processes and tools.
- For small and medium businesses, business continuity solutions like managed Disaster Recovery as a Service (DRaaS) could be a good starting point to derive immediate value from cloud. Other SaaS services such as payroll, IT management and office productivity management can get SME's up and running on the cloud within few days.
- For ISVs that are already delivering products and services through the cloud, a key consideration should be given to building end-to-end automation of product development to continuous market delivery by using an integrated suite of DevOps tools chain. On the business side, integrating other third-party cloud services for marketing, promotion, customer support and billing could help expedite product rollouts.

Mobility

- Many enterprise IT departments are evaluating app stores for internal deployment. The primary concerns around security and access control get addressed using MDM, MAM and containerization. The IT departments further need to look at mobile-enabling backend systems, using API management platforms, mobile-backend-as-a-service (MBaaS) libraries and ERP customization.
- In our 2013 PersisTrends report, we recommended treating tablet devices as first class citizens in the mobile world. Building on that recommendation, ISVs should use tablets as the first form-factor for their product design. Tablets afford a larger real estate for

mobile apps. Mobile phone app and web versions can be derivatives of the tablet version.

- Bluetooth® Smart presents tremendous potential for Internet of Things ISVs who adopt this low energy consuming protocol for connected devices and wearables. Apple's eschewing NFC for iBeacons, a Bluetooth Smart based technology in iOS7 has been a setback for NFC adoption. We maintain that it's too early to sound the death knell for NFC, but with Apple not supporting NFC, coupled with the potential of Bluetooth Smart there seems to be a significant threat to the technology. NFC continues to be in the early adoption stage, especially in the area of mobile payments, but its greater use seems to be more limited than previously believed.
- In our 2013 edition of PersisTrends, we reported that HTML5-based hybrid apps were being evaluated by enterprises aggressively. It's now time to adopt HTML5-based hybrid apps for enterprise mobility projects, and to build cross-platform applications that provide a good balance between superior UI and lower TCO. Cross-platform app development platforms that support the write-once-run-anywhere (WORA) paradigm hold the promise of further reducing TCO.
- With the proliferation of native and HTML5-based hybrid apps on mobile devices, we consider URL-based mobile browser apps to be in the sunset phase, especially with people spending less time on the web than before. Greater focus on building hybrid or native mobile apps is needed instead of relying on web-based delivery.

Business Intelligence and Analytics

- To cater to the growing data and processing velocity demand by businesses, ISVs in the Big Data space should focus on building their platform/product with real-time and in-memory analytics as key drivers.
- ISVs in general, should design their software architecture with analytics and feedback loops as first-class decision points since analytics is moving deeper into the fabric of the application rather than being seen as post-facto. Analytics platform ISVs in turn should architect APIs and hooks that allow developers to tightly integrate the analytics core into their applications.
- Enterprises must start utilizing the already maturing big data platforms around self-serve analytics, data exploration and advanced visualization as they start adopting data-driven decision-making. For the same reasons, ISVs building analytics solutions will do well to stay ahead of this trend and make it easy for non-analysts and CXOs to connect with the data.

- Enterprises should align their analytics initiatives firmly with business goals and strategies, and look at leveraging both structured and unstructured data across various Lines of Businesses to help drive efficiency, optimizations as well as revenue.
- Enterprise should monitor their social media accounts for proactive statutory and regulatory compliance, as well as listen to customer feedback/complaints and respond, within minutes, via real-time social analytics platforms encompassing tools for text mining, and sentiment analysis.

Social

- Most platforms and software products need to have a social media integration strategy laid out from day one.
- User expectations from most enterprise software include a desire to have “social features” built-in.. ISVs need to take note of this trend to add the appropriate features into their products
- Enterprises that are deploying social software that is tightly integrated with their business processes are finding better success. CXOs are finding it hard to justify ROI for deploying social software by itself.
- Organizations that interact directly with consumers should implement a robust social CRM strategy. This will move the support load from traditional channels to social channels which has the potential to save costs in the long run, while increasing customer satisfaction.

Glossary and Acronyms

The table below lists a glossary of the terms used in this document

Term	Meaning
Augmented Reality	A view of the real world that is superimposed by input generated by a computer. An example of this is Google Goggles that superimpose data seen through a camera with internet search results and merges it with image recognition.
Brick and Mortar	A term used to denote retail branches of an organization where consumers can physically receive services.
Complex Event Processing (CEP)	The process of automating the correlation of events into patterns that may represent a threat or an opportunity to provide analyses and the orchestration of subsequent actions as a response.
Data Monetization	A form of monetization that involves maximizing revenue potential from available data by institutionalizing the capture, storage, analysis, effective dissemination, and application of that data.
DevOps	A software development method that stresses communication, collaboration and integration between software developers and information technology professionals.
Digital Curation	The process of managing the lifecycle of digital assets right from selection, preservation, maintenance and archival.
Gesture Computing	A branch of computer science that deals with understanding human gestures via computer algorithms that watch them via a video device.
Internet Scale	Large scale systems that include high reliability, security, elasticity, and are typically available on demand.
MPFS	Monolithically Packaged Fat Systems. This term is used to describe software systems that were built earlier. They were usually architected as large single systems.
Retail Clinics	This is term used for small hospitals run in pharmacies and other retail locations where people can get treated.
Virtual Currencies	A peer to peer digital currency that functions without the intermediation of a central authority (like a government or a bank). E.g.: Bitcoin
WORA	Write Once Run Anywhere signifies a programming paradigm where the code is written once but can be executed on multiple devices and platforms.

Acronyms

The following table lists the acronyms used in this document

Acronym Used	Meaning
BI	Business Intelligence
CRM	Customer Relationship Management
EDC	Electronic Data Capture
EHR	Electronic Health Record
EMR	Electronic Medical Record
GPU	Graphical Processing Unit
HPC	High Performance Computing
IaaS	Infrastructure as a Service
IoT	Internet of Things
LBS	Location Based Services
MAM	Mobile Application Management
MDM	Mobile Device Management

References

1. <http://www.nasscom.in/nasscomdeloitte-release-study-enterprise-mobility?fg=235321>
2. <http://www.prweb.com/releases/bring-your-own-device/market/prweb11098097.htm>
3. <http://www.gartner.com/newsroom/id/2304615>
4. <http://www.gartner.com/newsroom/id/2352816>
5. <http://techcrunch.com/2013/06/12/nfc/>
6. <http://www.wired.co.uk/magazine/archive/2013/09/ideas-bank/the-web-is-dead-and-the-app-thankfully-killed-it>
7. <http://www.idc.com/prodserv/FourPillars/bigData/index.jsp>
8. <http://www.fastcompany.com/3003473/cant-miss-social-media-trends-2013>
9. <http://www.forbes.com/sites/jaysondemers/2013/09/24/the-top-7-social-media-marketing-trends-that-will-dominate-2014/>
10. <http://blog.bufferapp.com/10-surprising-social-media-statistics-that-will-make-you-rethink-your-strategy>
11. <http://socialmediatoday.com/docmarketing/1818611/five-surprising-social-media-statistics-2013>
12. <http://www.zdnet.com/2013-predictions-for-enterprise-social-media-7000009964/>
13. <http://press.ihc.com/press-release/design-supply-chain/flexible-display-market-reach-nearly-800-million-unit-shipments-20>
14. **Finovate – the premier conference for Financial Innovations -**
<http://www.finovate.com/archives.html>
15. **Bank Innovation -** <http://bankinnovation.net/2013/08/top-5-technology-trends-in-financial-services-july-2013/>
16. **Bank Marketing Strategy – Jim Marous -** <http://jimmarous.blogspot.in/>
17. <http://blog.bufferapp.com/10-surprising-social-media-statistics-that-will-make-you-rethink-your-strategy>
18. <http://www.velocitydigital.co.uk/infographic-social-media-statistics-for-2013/>



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About Persistent Systems

Persistent Systems is a global company specializing in software product and technology services. For over two decades, Persistent has consistently been selected as the trusted innovation partner for the world's largest technology brands, leading enterprises and pioneering start-ups. Persistent has a global team of more than 7,000 employees worldwide including offices and delivery centers in North America, Europe, and Asia-Pacific. Persistent develops best-in-class solutions in key next-generation technology areas including Analytics, Big Data, Cloud Computing, Mobility and Social, for the telecommunications, life sciences, healthcare, and banking & financial services verticals. For more information, please visit: www.persistentsys.com.