



GEORGIAN  
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# THE 11 PRINCIPLES OF APPLIED ANALYTICS

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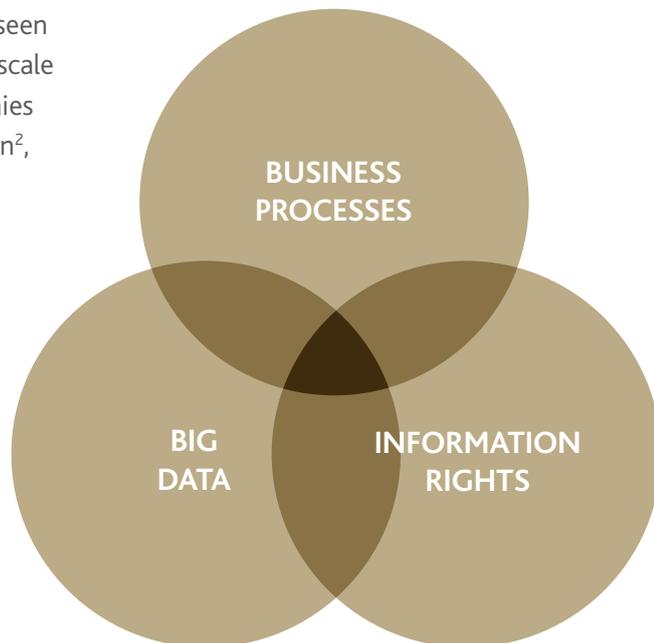


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# THE 11 PRINCIPLES OF APPLIED ANALYTICS

Georgian Partners has developed a thesis that software and information services companies can increase their value, to both shareholders and customers, through leveraging the convergence of three key capabilities: deep domain knowledge around a Business Process, exploitation of Big Data<sup>1</sup> software platforms and the Information Rights to use relevant data. We call this “Applied Analytics”.

Early examples of Applied Analytics in use can be seen in online retail, social networking and other large-scale Internet platforms. Many leading Internet companies provide applications that are inherently data driven<sup>2</sup>, leveraging analytics over massive data sets that they hold rights to, and have done so in such a way that the insights are directly imbedded into the business (e.g. advertising or product recommendations). The adoption of this Applied Analytics model is now occurring in all software application categories including solutions for telecommunications, healthcare, finance, retail, security and media consumption.



## APPLIED ANALYTICS

<sup>1</sup> [http://en.wikipedia.org/wiki/Big\\_data](http://en.wikipedia.org/wiki/Big_data) <sup>2</sup> <http://radar.oreilly.com/2011/09/building-data-science-teams.html>

The purpose of this whitepaper is to introduce the Principles of Applied Analytics, a framework and maturity model that assists in the understanding of applied analytics. These principles bring structure to a complex and often misunderstood topic, and can be an important tool in the execution of an applied analytics strategy.

The principles are grouped into five areas within the framework as shown below. The purpose of this grouping is to separate the principles into areas that should be independent of each other. This is useful for avoiding the two most common mistakes company's make: starting with the data instead of the insights; and failing to look at delivery independent of analytic tooling.

## APPLIED ANALYTICS FRAMEWORK



# 11 PRINCIPLES OF APPLIED ANALYTICS



## START WITH THE INSIGHTS

1. UNDERSTAND THE PROCESS.
2. IDENTIFY AND PRIORITIZE THE MOST VALUABLE INSIGHTS.



## DATA

3. CREATE A DATA SET THAT IS UNIQUE AND BROAD.
4. RECOGNIZE THAT RAW DATA ALONE IS OF LITTLE OR NO VALUE.



## ANALYTICS

5. INSIGHTS ARE MORE VALUABLE THE CLOSER THEY ARE TO BEING ACTIONABLE.
6. LEVERAGE THE SHORTAGE OF DATA SCIENTISTS TO YOUR ADVANTAGE.



## DELIVERY

7. SEPARATE ANALYTIC INSIGHT FROM HOW IT'S CONSUMED.
8. INJECT INSIGHTS INTO BUSINESS PROCESSES AT THE MOMENT OF HIGHEST IMPACT.



## GOVERNANCE AND COMPLIANCE

9. IT'S NOT ABOUT "OWNING" THE DATA.
10. GOVERNANCE AND COMPLIANCE IS A FOUNDATIONAL DISCIPLINE.



## AND FINALLY, LEAD BY EXAMPLE

11. BE ANALYTICAL IN YOUR OWN BUSINESS.

Adopting the Principles of Applied Analytics will be an evolutionary process for any organization. The starting point for one organization vs. another will vary, although all can work towards higher levels of adoption of each of the principles over time. The Applied Analytics Maturity Model shown below and used throughout this whitepaper is a tool that can be used to measure and monitor progress towards that adoption. A simple scale of three levels of maturity helps provide an indicative level of adoption for a given Principle within an organization.

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# APPLIED ANALYTICS MATURITY LEVELS

## LEVEL 1. DELIVERING WHAT'S EXPECTED.

When the principles are adopted at the first level of maturity, an organization's customers will get data about the execution of their own business processes. That data requires further customer interpretation and business judgment before it can be used to improve their processes. Customers will expect this level of support, and be generally unwilling to pay extra for it.

## LEVEL 2. BECOMING INSIGHTFUL.

At the second level of maturity, customers are starting to see insights from more broadly aggregated data, with the potential to impact a wider set of their business processes. While further interpretation may still be required, the insights are easier to apply, and will provide higher business value. This level of maturity offers customers some unique and valuable insights they could not obtain on their own, and as such, they will be willing to pay for them.

## LEVEL 3. ACTIONABLE, OPTIMIZED, INTEGRATED INSIGHTS.

At the highest level of maturity, the insights are provided from the broadest set of available data, well beyond what the customer could have access to on their own. These insights are provided in a way that allows them to be acted upon without further interpretation, and can be integrated into customers' business processes at the point where they can have the optimal effect on business outcomes. Insights provided in this way will have the highest customer value, and can enjoy premium pricing.

Finally, to help illustrate how the Applied Analytics framework can be used to identify and deliver analytic value in a solution, we will refer throughout our paper to a fictional software provider, “*LoyaltyInsight*”. Although *LoyaltyInsight* is retail merchant tool our thesis remains applicable to enterprise solutions across all industries.

## UNDERSTANDING THE LOYALTYINSIGHT BUSINESS

Small to medium sized merchants have historically used informal, manual or card-based systems to implement customer loyalty programs, e.g. frequent visit discount cards. More recently a number of social and mobile apps have emerged with a variety of different approaches that enable merchants to track customer usage as the foundation of a marketing program.

*LoyaltyInsight* is a mobile and online loyalty management solution that tracks customer visits, “customer spend”, and offer response, all enabling targeted offers and rewards. The solution supports both brick & mortar and online merchants, enabling them to drive increased revenue from high value repeat customers. The *LoyaltyInsight* solution is delivered via a Software as a Service (SaaS) model as both web and merchant/customer facing smart phone apps.

Automating what was a simple manual application as part of a marketing automation program is an excellent base. We will now take *LoyaltyInsight* through our Applied Analytics approach to expand beyond basic reporting on Key Performance Indicators (KPIs) in order to drive new revenue growth from applied analytic capabilities.

The founder of *LoyaltyInsight* has embraced Applied Analytics as a core growth strategy. It was only once the company had achieved critical mass in its customer base that the founder saw there was significant opportunity and value in the data they were now managing. The company has already implemented a number of analytic innovations and plans to do more.



# START WITH THE INSIGHTS

**(1) UNDERSTAND THE ENTIRE PROCESS. NOT JUST THE PROCESS YOU CONTROL BUT THE ENTIRE PROCESS FROM THE CUSTOMER'S POINT OF VIEW.**

When implementing analytics, companies often limit themselves by only thinking about the data they already have access to or the analytics technologies they currently understand. A better approach is to instead focus on identifying what the most actionable and valuable insights are which could change outcomes in the business process that your solution drives. Companies can achieve this understanding by first mapping out key business processes and then identifying key performance indicators (KPIs) that measure the process. From this, any potential information gaps that may exist will be revealed (what isn't known that needs to be known).

## APPLIED ANALYTICS MATURITY LEVELS

1. **Within your company's solution.** At this level a company will have a deep understanding of the business process their solution delivers or influences but not the wider context.
2. **Entire customer process.** A company at this level of maturity not only understands the core business process but also how it integrates into and interacts with the wider customer environment.
3. **Entire eco-system.** A company at this level understands a wide eco-system of both internal and external business processes including suppliers, distributors, partners, government regulators, etc.

## APPLIED ANALYTICS ENABLES LOYALTYINSIGHT TO DEEPEN CUSTOMER INSIGHTS

Manual loyalty programs only track customer activity at the time of purchase, e.g. buy ten cups of coffee get the eleventh one free. But with LoyaltyInsight the merchant captures a record of the purchase action, including the digital redemption of an offer providing clear benefits over non-digital solutions in terms of closed loop insights. However, the full customer purchase cycle actually spans:

- Creating and making offers,
- Tracking details of purchase activity, and
- Managing follow-up communications with the customer.

Currently LoyaltyInsight is currently at level one on the maturity model for the principle of "Understand the entire process". The company has a deep understanding of the core loyalty process, however insights are not integrated into the broader merchant environment that includes point-of-sale systems, financial management software and inventory management solutions. For example, while LoyaltyInsight provides insight into the spending patterns of participating customers, it doesn't integrate with point of sale systems to enable comparisons with overall average per customer spend.



It is possible to develop a much stronger understanding of the insights needed to drive improvements through analysis of the business process. It also helps to step back and look more broadly at how specific aspects of the business process interconnects with the solutions around it. This creates a better understanding of the wider process flows and what insights are going to be relevant across that ecosystem. All commerce solutions for example, would interact with payment vendors (e.g. digital wallets) and marketing platforms (e.g. for making offers), other systems. These provide data that can be leveraged.

It is important to look at audiences for insights once there is a deeper understanding of the wider processes. First consider the existing audience for an insight, then look at the wider spectrum of people, businesses, and participants across an ecosystem that could acquire value from an insight. Potential audiences within a single organization might include field staff or call center staff supporting customers, regional managers, the CEO, CFO, the Chief Compliance Officer, the customers themselves (i.e. your customer's customers). Third party players who hold governance or regulatory roles, or third parties who provide complementary services to a solution are likely to be additional audiences. In short, there can be many audiences, each with quite different views on which insights are valuable. This presents opportunities to monetize insights.

### LOYALTYINSIGHT IDENTIFIES NEW AUDIENCES

The primary audience for insights from the LoyaltyInsight solution is the manager / owner or senior staff. However other potential audiences include the consumers themselves (where they are spending money, getting the best discounts, visiting popular locations) and suppliers who are partnering with a LoyaltyInsight merchant to support a special offer of their product or service through another channel.

For larger customers of LoyaltyInsight (e.g. nationwide chains) users might include marketing staff that set budgets and define programs as well as financial staff or the CEO looking at issues of profitability across locations or regions.

Finally, companies already providing some sort of reporting or insight capability can ask users what they are doing with a particular report or insight. What does it tell them? Do they then combine it with other reports from other systems? Or do they use it with a different tool outside of the reporting environment to refine it further? Understanding how a user is consuming existing data and reports can be very insightful and a great source of product requirements and ideas.



## **(2) IDENTIFY AND PRIORITIZE THE MOST VALUABLE INSIGHTS. THE VALUE OF ANALYTIC IMPACT = VALUE OF INSIGHT X DEGREE OF REFINEMENT X CONSUMPTION.**

Budgets are always limited and not all analytic insights are of equal value, so it is important to attempt to quantify the impact of one insight vs. another on the business. When attempting to rank the relative value of various analytic opportunities consider not just the value of a particular individual insight but look at the extent to which it has been refined as well as how widely it can be used across an organization.

The extent to which an insight has been refined to minimize or eliminate the need for user interpretation of the insight is an important consideration. Raw insights that require significant interpretation to utilize represent less value overall. A view of organizational impact is also important because some insights that at first appear to have small incremental value, can have significant value when used widely or as part of an automated process, across the wider organization. While the individual value may be lower, the overall impact of the insight may be greater due to wide usage. A single business intelligence report showing a Board of Directors a gap in the market being targeted could be worth millions of dollars but used only once.

On the other hand, analytics that proactively prevent fraudulent banking transactions before they occur can ensure the validity of millions of customer interactions every year.

It is therefore important to not just look at the individual impact of a new insight but the extent to which it can be consumed across the potential audiences for that insight. This can be thought of as a simple equation where the overall value of an "analytic impact" is the product of the value of an individual insight multiplied by the number of times that insight can be consumed across an organization (Analytic Impact = Value of Insight x Degree of Refinement x Consumption).

The ultimate test of whether or not an insight has real value vs. being a 'nice to have' is determine if a customer is willing to pay for the insight. Regardless of whether a new customer or not, a test of whether or not an insight can be charged for helps a team focus on the opportunities to quickly drive revenue and company value.



## APPLIED ANALYTICS MATURITY LEVELS

1. **Low value; low refinement;** limited number of people. Little refinement of the insights (e.g. generic reports) means significant interpretation required. Insights typically of low incremental value and used by a limited number of people in the organization.
2. **High value, high refinement; limited number of people.** Insights are highly refined and so directly actionable. Individual insights will tend to be of high incremental value but those insights will only be used by a few people in the organization such as select few managers or senior executives.
3. **Low value; high refinement; mass consumption.** Insights are highly refined and so directly actionable. In addition to delivering high value insights, more tactical, lower value, insights are used broadly across the organization.

## LOYALTYINSIGHT DRIVES NEW REVENUE FROM ANALYTIC INSIGHTS

In terms of identifying and prioritizing the most valuable insights, LoyaltyInsight is operating at maturity level two. It provides bundled reports to the merchant detailing KPIs such as average revenue per participant and provides suggestions to the merchant as to potential actions to take, e.g. increase discount levels for certain customer segments.

LoyaltyInsight also provides additional-price reports that show a merchant how they compare against other similar merchants and suggests actions to improve performance further. The next step will be to enable these types of insights for front line customer service staff and to embed the insights into the offer-creation process to ensure the most targeted and effective offers are being generated. In this way the insights will be embedded in every touch point with the consumer and by doing so will drive the maximum 'consumption' of the insights.

# DATA

## **(3) CREATE A DATASET THAT IS UNIQUE AND BROAD. THE ULTIMATE GOAL IS TO CREATE A DATASET THAT NO ONE ELSE CAN DUPLICATE, AND WHICH USES DATA FROM ACROSS A MARKET ECO-SYSTEM.**

A dataset that is unique and broad will draw data from the widest range of sources, ideally with exclusive usage rights allowing the creation of a rich set of insights. Such a dataset would be difficult for a competitor, or a potential customer to duplicate, creating a barrier for others to provide the same insights. Creating such a dataset will largely be a function of two key factors; the ability to gain access to the right data, under contract or by usage tracking; and the extent to which rights to use the data are exclusive;

Gaining access to the right data involves both securing the rights to use customer data for the purpose of analytics, as well as sourcing information from third parties. At a minimum, companies need the right to use customer-generated data including core transaction data and usage information or other so called "exhaust data". Companies should seek the right to aggregate that data (once anonymized) to enable benchmarking of individual performance vs. others, or to look for broad trends across a population. Companies may also integrate data from third parties, such as demographic data, in order to improve the utility of the overall dataset.

Having exclusive rights to data can create significant value. The primary source of exclusive data will be data generated through the usage of a company's platform, application or a business process which it controls. While that data can be used by and even exported by an individual user, it would be difficult or impossible for a third party to recreate the entire dataset with all users. Facebook, LinkedIn and Google Analytics are all examples of where an individual user can export their individual information but the company retains rights to that data and exclusively controls the ability for third parties to access it for purposes such as advertising. A second opportunity for a company to create exclusive rights to data is through the generation of 'derived data'. This occurs when the company is able to apply an algorithm or process to derive data that represents some new insight such as a reputation or credit score. Finally a company may also be able to obtain some measure of exclusivity using third party data, either through exclusive licensing terms or as a result of other barriers such as cost or complexity of managing the data.

## APPLIED ANALYTICS MATURITY LEVELS

1. **Data available for analytics limited to a single customer.** Insights are based on data from a single customer rather than a wider population of customers.
2. **Aggregation of data across multiple customers; use of data exhaust.** The dataset aggregates anonymized customer data for benchmarking and analytic model development. Creating derived data (e.g. scoring) and utilizing exhaust data (e.g. application usage data).
3. **Incorporation of 3rd party data; some exclusive rights.** Dataset incorporates externally sourced data and has secured some exclusive data rights. Customers may be providing rights to data created in their other systems.

## LOYALTYINSIGHT CREATES VALUE FROM UNIQUE DATA

In terms of creating a dataset that is unique and broad, LoyaltyInsight is operating at a level two maturity. In addition to reporting on individual merchant performance LoyaltyInsight has secured the rights to aggregate individual merchant data together for the purpose of benchmarking relative performance and to generate new analytic models. Merchants can now compare their own individual performance with others and LoyaltyInsight will be able to deliver insights that highlight long-term merchant performance.

The company is also now storing derived data in the form of 'merchant scores' to simplify merchant benchmarking as well as a 'customer scores' intended to help better match offers to consumers.

The next step will be to begin to integrate third party demographic data for a given area enabling comparisons of actual customer data with local demographic information. This will help merchants understand which segments of the local market they are successfully targeting. The company is also looking into what sort of agreements it can secure with location data suppliers to provide exclusive access to location based information for loyalty applications.

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# DATA

## **(4) RAW DATA IS OF LITTLE OR NO VALUE. SIMPLY STORING AS MUCH DATA AS POSSIBLE IS NOT USEFUL; DATA SHOULD BE PROCESSED INTO A REFINED STATE TO SUPPORT INSIGHTS.**

Large data storage and analysis has traditionally been the domain of enterprises with significant IT budgets to spend on expensive parallel hardware and software. This has changed with the availability of commodity and open source parallel processing platforms, such as Hadoop, and the economics of cloud-computing infrastructure and commodity hardware. It is now possible for smaller organizations to store and analyze 'big data' with more modest IT budgets. However, just because a company is able to store more data, from more sources, doesn't necessarily make that data valuable. In fact, data in its unrefined state may be of little or no value and could lead to what is becoming known as 'data obesity'<sup>3</sup>.

Rather than simply storing ever-growing amounts of data, companies need to get data into a refined state that supports current and future analytic processing needs. This operational capability should include providing data validation, cleansing and de-duplication, data integrity checks, creation of aggregates and importantly, standardization of the structures and definitions of data through techniques such as master data management. The use of a common data model is particularly important where multiple data sets are being brought together to provide new insights. Only when these foundational capabilities are present will a company be in a position to get the most value out of the data they have access to.

<sup>3</sup> Mary Meeker introduced the term "Data Obesity" in 2012 <http://www.kpcb.com/file/kpcb-internet-trends-2012>

## APPLIED ANALYTICS MATURITY LEVELS

1. **Unrefined dump of transactional data; limited historic data.** Data available for analytics is largely unrefined and is limited to data from the core application, but little or no historic data available.
2. **All data available; limited refinement for specific insights.** Company has the infrastructure, e.g. Hadoop, to manage large volumes of data for analytic use. Data may have been normalized and cleansed in targeted areas only for specific analytic requirements.
3. **Highly refined data stored to support broad analytic use.** The company has a master data model for analytics where data is mapped into a common format to enable analytic use. Processes for normalization, ETL, data profiling, data quality, metadata management, master data management etc. to support a broad range of analytic requirements.

## LOYALTYINSIGHT MAXIMIZES THE USE OF ITS DATA

LoyaltyInsight is at level two maturity in terms of its refinement of data. It keeps a record of every offer made. By keeping this data, LoyaltyInsight already providing insights into long-term offer effectiveness. This data is kept online in a Hadoop cluster. Using this approach LoyaltyInsight retains ALL transactional data across all companies (anonymized) and is able to use this to identify seasonal trends over multiple years. The “old days” of companies similar to LoyaltyInsight having to keep a limited historical set of data has been pre-empted by inexpensive storage.

While LoyaltyInsight does not yet have a common master schema across all aspects of its solution it is planning to expand from its current focus on offer effectiveness to include social graph, location and demographic information. It has also started to assign unique ID numbers to all merchants and consumers to enabling broader analytic insights over time such as tracking consumer movements between merchants.

<sup>3</sup> Mary Meeker introduced the term “Data Obesity” in 2012 <http://www.kpcb.com/file/kpcb-internet-trends-2012>

# ANALYTICS

**(5) INSIGHTS ARE MORE VALUABLE THE CLOSER THEY ARE TO BEING ACTIONABLE.**  
MINIMIZE THE AMOUNT OF INTERPRETATION AND EFFORT REQUIRED TO TAKE ACTION.

The goal should be to minimize the effort required, by a user or a downstream process, to turn an insight into an action. That effort is the “analytic delta” and the closer that any insight is something from which an action could be taken, the smaller the delta will be. Examples are where users have to manipulate reports, export raw data, perform their own calculations or merge datasets to get the insights they require. The goal should be to find ways to make the insights more actionable and reduce the user effort.

## APPLIED ANALYTICS MATURITY LEVELS

1. **Insights are incomplete and require human interpretation.** Before an action can be taken the user needs to interpret the insights and may need to integrate other data or related insights.
2. **Insight is complete but still requires human interpretation.** Analytic output is complete but a user must interpret the results and then take action.
3. **No interpretation required, the insight is directly actionable.** The insight comes in the form of either a recommendation taken by a user or an automated behavior such as a rule being executed or an API request / response.

## LOYALTYINSIGHT MINIMIZES MERCHANT EFFORT

LoyaltyInsight is operating at level two maturity in terms of making its insights actionable. Originally LoyaltyInsight provided basic reports to its merchants, reporting on what amount of product they had sold at what price for customers in the system. It didn't integrate point-of-sale data so comparisons to average customer spend overall were manual. There was also no easy way to compare performance to other complementary or competing merchants. It was also left up to the merchant to figure out what that meant, and then to take action.

LoyaltyInsight now provides more complete insights including integrating point-of-sale and comparative merchant data that shows historic competitiveness vs. the market. The insights however still require some interpretation by the merchant before they action can be taken. The next step for LoyaltyInsight is to predict what the insights mean and provide a recommended action for approval by the merchant.

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## (6) LEVERAGE THE SHORTAGE OF DATA SCIENTISTS TO YOUR ADVANTAGE. THE SCARCITY OF PEOPLE WITH ANALYTICAL AND DATA SCIENCE SKILLS WILL ALLOW YOU TO DRIVE HIGHER MARGINS THROUGH NEW ANALYTIC INSIGHTS IN YOUR PRODUCT.

There is a significant shortage of skills related to Big Data and analytics as pointed out by the 2011 McKinsey report on Big Data<sup>4</sup>. This is resulting in a highly competitive market for both data scientists and software infrastructure specialists with skills in managing big data platforms such as Apache Hadoop. There are two key types of 'big data' skills in particular that organizations need to consider:

1. Data Science: The deep understanding underlying analysis techniques, algorithms and math required to create new insights from data.
2. Big Data Infrastructure: The engineering skills to build and maintain the necessary storage and analysis platforms to support Big Data analysis.

The good news is that companies delivering insights from Big Data as a solution, or part of a wider offering, will be at an advantage in the battle to build Big Data and analytic capabilities. Compared to end-user organizations these solution providers have access to pools of data and challenges which are more interesting to top data scientists and engineers alike. Few corporations, for example, will have access to the aggregated data that many SaaS companies are building as a by-product of providing the solution to multiple organizations. These companies can also afford to pay a premium because the value of the insights will be amplified across a wide number of customers.

Organizations are scrambling to find these skills and have realized the largest concentration of skilled Data Scientists hold actuarial jobs within Insurance companies, working as quants on Wall Street and risk analysts in banks. Most are very well paid, and the pay is improving with the rise in demand. There are also an increasing number of schools offering 'big data' and analytics post-graduate courses to help train more, however a solid background in mathematics is critical to getting the most out of your data.

Because Big Data Engineers with real world experience at scale are also hard to find, the best option is likely to engage hands on engineers and architects with a solid data management background. These experts have the potential to lead the experimentation, whether the work is done entirely in-house or leveraging one of the emerging specialist Big Data consulting firms.

<sup>4</sup> [http://www.mckinsey.com/insights/mgi/research/technology\\_and\\_innovation/big\\_data\\_the\\_next\\_frontier\\_for\\_innovation](http://www.mckinsey.com/insights/mgi/research/technology_and_innovation/big_data_the_next_frontier_for_innovation)

## APPLIED ANALYTICS MATURITY LEVELS

1. **Customers export your data and perform analytics in-house.** Customers have employees with data science skills and take exports of data from the solution to integrate into their analytic environments. Limited opportunities for monetization.
2. **Analytic skills are spread between you and your customers.** While your solution refines insights to a level they can be monetized, customers still see the need to refine those insights further themselves. The customer keeps in-house data science skills and data to support that refinement.
3. **You are hiring the best data scientists and providing all the insights your customers need.** Customers don't see the need for in-house data science skills because the solution is providing all required insights, and better quality insights than they could achieve themselves.

## LOYALTYINSIGHT ENGAGES EXPERTISE TO ENHANCE CAPABILITIES

LoyaltyInsight is operating at a level three maturity in its ability to exploit the shortage of big data skills. The analytic product capabilities that LoyaltyInsight now delivers to its customers would otherwise be out of reach of all but the most sophisticated merchants. It employs both Big Data Infrastructure staff (e.g. to manage a Hadoop cluster and Hive) along with a Data Scientist focused on creating new insights. LoyaltyInsight then delivers those capabilities through Cloud-based analytic product features. The barriers to entry for those wanting to reproduce analytic capabilities in-house are significant and no one customer, no matter how large, could reproduce the same insights due to the unique dataset that LoyaltyInsight has.

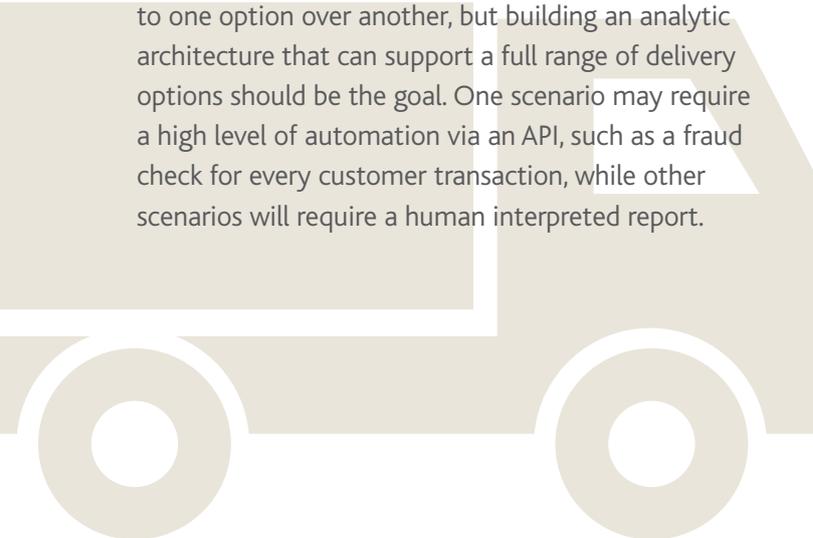
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# DELIVERY

## **(7) SEPARATE ANALYTICAL INSIGHT FROM HOW IT'S CONSUMED.** DON'T LET CHOICE OF ANALYTIC TOOL DEFINE THE DELIVERY METHOD.

Companies shouldn't limit their options for delivering insights to the particular analytic tooling or platform the organization knows best or has access to today. Even experienced analytic organizations won't typically take a broad enough view of how insights could be delivered across the organization. This will often occur when an organization takes a narrow view of potential audience, such as focusing exclusively on delivering reports to managers or power users. As a result, many companies still overlook the potential value of delivering insights via an API accessible from within an automated business processes, possibly available to third parties in the eco-system.

Companies need to consider the full spectrum of delivery techniques when considering delivery approaches, including reports, dashboards, search & query UIs, alerts, rules engines and APIs / "Insight as a Service". A particular insight can be better suited to one option over another, but building an analytic architecture that can support a full range of delivery options should be the goal. One scenario may require a high level of automation via an API, such as a fraud check for every customer transaction, while other scenarios will require a human interpreted report.



## APPLIED ANALYTICS MATURITY LEVELS

1. **User must seek out the insight.** The delivery method is an analytic tool that is standalone and the user must proactively seek the insight by leaving their application environment to use the tool.
2. **User is notified of events and insights.** A user is able to get alerts that new insights are available, but still needs to use a stand-alone tool or application to consume them.
3. **API delivery of insight enables direct injection into a business process.** All insights can be accessed via an API enabling seamless integration of insights into the workflow of users (e.g. within a third party mobile application).

## LOYALTYINSIGHT DIVERSIFIES ITS ANALYTIC INSIGHTS

LoyaltyInsight is operating at level three in terms of its maturity for delivery of analytic insights. The analytic insights are delivered in a wide range of ways from basic reports in a dedicated environment through to alerts on a point-of-sale terminal and on a merchants' smartphone.

Because in most customer environments the solution is replacing a manual process, the application is the primary tool and the insights are embedding in that tool.

Mobile and point-of-sale integration is enabled via a real time API that enables third party solution providers to incorporate insights into their environments. While the majority of users access insights via the merchant, new applications can now be created outside of LoyaltyInsight that help maintain a focus on the core insights.

<sup>3</sup> Mary Meeker introduced the term "Data Obesity" in 2012 <http://www.kpcb.com/file/kpcb-internet-trends-2012>

## 8) INJECT INSIGHTS INTO BUSINESS PROCESSES AT THE MOMENTS OF HIGHEST IMPACT. INCREASE THE VALUE OF INSIGHTS BY AUTOMATING DELIVERY TO INCREASE

The objective of Applied Analytics is to enable insights that have an impact on a business processes at the right time and in the most appropriate way for a given process. For some processes that will mean automated delivery to an experienced employee (e.g. via Alerts, Reports, Dashboards) and in others it might mean an automated decision or rule integrated directly into a business process that doesn't require any additional employee input.

If a retailer or a bank obtains a monthly report listing all the fraud that occurred in the past 30 days it can change processes in the future to try to reduce that fraud. However, the organization can potentially make changes to its business by generating daily insight. A month of fraud could be reduced to one day. If an insight is provided in real time, as an API call within the transaction process, it would enable the parties to stop a transaction before it is completed.

### APPLIED ANALYTICS MATURITY LEVELS

1. **Insights are provided after the fact.** Insights are delivered as historic reports on past performance or events.
2. **Real time delivery to a person who then takes action.** Insights are delivered within a larger application or in an analytic dashboard, the insights arrive as events are happening but require a human intervention for action to occur.
3. **Automatic insertion of insights into business processes.** The action is automatic and integrated into the business process at the point that ensures the most significant positive impact.

#### LOYALTYINSIGHT: INSIGHTS ALLOW FOR TIMELY INTERVENTIONS

LoyaltyInsight is a level two-maturity company in its ability to insert insights at the point of highest impact. The company provides daily insights to merchants that provide the merchant recommendations of which customers to target, with which offers, at what time.

In order to move to a level three maturity the insights would be pushed into the offer creation process and the merchant be provided with offers to approve or the offers could be made automatically.

For example, when a customer has 'checked in' or redeemed a coupon at another merchant nearby an offer could be made to that customer. By automatically inserting the insight (past behavior, best offer to make and proximity) into the offer creation process and automatically generating and delivering the offer LoyaltyInsight is able to maximize the chance of that customer visiting the merchant at that point in time.

<sup>3</sup> Mary Meeker introduced the term "Data Obesity" in 2012 <http://www.kpcb.com/file/kpcb-internet-trends-2012>



# GOVERNANCE & COMPLIANCE

## (9) IT'S NOT ABOUT 'OWNING' THE DATA. WHAT YOU REQUIRE IS THE RIGHT TO USE DATA AND ENSURE THAT YOUR USE OF THAT DATA COMPLIES WITH BOTH REGULATIONS AND MARKETPLACE EXPECTATIONS.

Whether a company "owns" a particular set of data, or not, is less relevant than what that company's rights are to use the data. This is because ownership of data does not guarantee the right to use it, and lack of ownership does not necessarily preclude its use. Instead it is more useful to consider the 'information rights', the various contractual agreements in place, any legislative restrictions and 'social norms' that govern how that data can be used. For example, a company will almost always need a customer's permission before disclosing their name and address, even though that company might "own" that data.

Once secured, these information rights will become the basis for an Applied Analytics strategy, enabling a company to acquire, store and enhance a wide range of data, produce new products or services, and ultimately realize an increase in value of the business through an acquisition or fund-raising process. These rights may come from customers directly (and/or their end users, i.e. a customer's customer), from usage of the system by customers or their end users, from third parties, or from public sources. The ability to merge data sets is a particularly important type of right. This is a process which some organizations will view with suspicion.

It is possible that providing insights are limited, based on fully anonymized and aggregated data such as a trend across all customers without any personally identifiable information - even for data that a company 'owns'. Nevertheless, valuable insights may still be possible from the data. A cloud-based

eCommerce platform could, for example, provide insights into the relative effectiveness of one social media channel vs. another as a referring source to online stores (Facebook vs. Twitter vs. Pinterest) without revealing any customer specific data.

Companies should seek to acquire rights early in the relationship with customers. It is harder to obtain rights to data subsequent to an initial contracting process. A balancing act is needed to acquire those rights without having the issue becoming an inhibitor to the sales process.

When problems do arise during the process of contracting rights to data it is likely to be because of one or both of the following issues:

- (1)The company hasn't clearly explained what is in it for their customer, and/or
- (2)The clause associated with these rights is too complex.

It is critical to ensure a clear articulation of the benefits to the customer of having 'their' data included in an anonymous data pool along with easy to understand boilerplate language in the contract. It is worth noting too that it is important to get a standardized approach to data rights. If some customers grant certain rights but others exclude those rights, it will be very difficult to deliver benchmarking, or insights that span multiple customers requiring an aggregated view.



## APPLIED ANALYTICS MATURITY LEVELS

1. **Rights to deliver insights based on a single company's data.** Insights can only be provided on an individual customers' data for that customer.
2. **Rights to aggregate data for benchmarking and analytic model creation.** Rights to aggregate data that is not considered highly sensitive enabling insights based on the entire population of data, with key elements anonymized. Applications include benchmarking and the creation new analytic models based on multiple companies' data.
3. **Broad rights to use all required data.** Sufficient trust has been established with the customer and end users to allow the use of data that would ordinarily be considered too sensitive. The combination of that trust and the business value from the insights using that data outweigh concerns.

## LOYALTYINSIGHT IDENTIFIES A PATH TO SUCCESSFUL DATA ACQUISITION

As a level two company in terms of its data rights, LoyaltyInsight has secured substantial rights to use aggregated data. Securing the rights to aggregate data from their merchant customers was assisted by clear articulation of the benefits of opting in to merchants. Merchants are shown direct benefits such as the ability to benchmark themselves against similar merchants, and the company shows that it has best practice security and privacy controls to support that.

The next step for the company will be to support its broader analytic goals with even broader information rights such as having access to end-user location data and to combine third party data such as demographic information to support the creation of more effective offers.



## (10) GOVERNANCE AND COMPLIANCE IS A FOUNDATIONAL DISCIPLINE. THE ABSENCE OF A PRO-ACTIVE STRATEGY RESULTS IN AD-HOC AND REACTIVE RESPONSES TO EVENTS.

Taking a proactive approach to privacy, such as adopting the '7 Principles of Privacy'<sup>5</sup>, should be a top priority. Once informational rights are secured it is critical they are integrated into the operations of the company with clear policies in place as many key governance and compliance risks relate to data privacy.

Any strategic approach to governance and compliance within a broader Applied Analytics strategy should also look at the issue of customer business continuity. As the insights provided become more valued and tightly integrated into a customer's business processes the greater the impact of any outage, data quality issues or even faulty insights (e.g. false positives). The more successful a company is at implementing an Applied Analytics strategy that drives value within its customers' processes, the greater the potential exposure to their businesses.

Proactive companies will therefore look at the range of risks that the company has taken on as part of implementing an Applied Analytics strategy, including:

- Operational risk. This includes any risk to hacking or exposures due to the company storing data in a Cloud.
- Regulatory Risk. Identifying reports required by government agencies and other standards of compliance, such as SAS70.
- Market Risk: Important to understand market volatility in the "Court of Public Opinion", as CarrierIQ<sup>6</sup> and Path<sup>7</sup> both discovered.

Companies must consider the threat of any negative press that might ensue in addition to the issues that traditionally 'rile' the public. Target, for example, discovered that despite owning the data, having certain insights about customers, and acting on those insights can lead to negative consumer and media attention<sup>8</sup>.

<sup>5</sup> From Ontario Privacy Commissioner: <http://www.privacybydesign.ca/content/uploads/2009/08/7foundationalprinciples.pdf>

<sup>6</sup> [http://www.washingtonpost.com/business/technology/carrier-iq-taking-steps-to-rebuild-its-reputation/2012/05/08/gIQAKIH8AU\\_story.html](http://www.washingtonpost.com/business/technology/carrier-iq-taking-steps-to-rebuild-its-reputation/2012/05/08/gIQAKIH8AU_story.html)

<sup>7</sup> [http://www.readwriteweb.com/archives/path\\_is\\_a\\_free\\_app\\_and\\_it\\_will\\_spy\\_on\\_us.php](http://www.readwriteweb.com/archives/path_is_a_free_app_and_it_will_spy_on_us.php)

<sup>8</sup> <http://www.nytimes.com/2012/02/19/magazine/shopping-habits.html>



## APPLIED ANALYTICS MATURITY LEVELS

1. **Meeting legal requirements; difficult to prove compliance.** Organizations are meeting the minimum requirement of the appropriate laws, although if required to show compliance with those laws it would be challenging.
2. **Meeting both legal and marketplace expectations; able to prove compliance.** The organization is able to quickly show it is meeting legal and marketplace expectations of privacy and security etc.
3. **Adopting a market leadership position on compliance issues.** The organization is actively influencing the standards for the industry from both a marketplace and regulatory perspective.

## LOYALTYINSIGHT PLACES CRITICAL IMPORTANCE ON REGULATORY COMPLIANCE

LoyaltyInsight is operating at a level two maturity in terms of making governance and compliance a foundational issue and taking a proactive stance. It has considered a range of privacy and information ownership issues, especially those focused on managing customer data on behalf of merchants, as well as future issues of sensitivity towards real time location based offers.

To manage market risk LoyaltyInsight's CMO takes responsibility for overseeing privacy issues with a focus on merchant and end-user data usage. Monthly reviews of market issues are conducted and LoyaltyInsight is exploring a partnership with Truste (<http://www.truste.com/>) for external reviews.

To show compliance to its customers, and if necessary regulators, tools have been developed that report on data usage, indicating which merchants can access what data and reporting on internal access to non-anonymized data. LoyaltyInsight has also adopted the '7 Principles of Privacy' across the business (product, marketing and data management) and intends to appoint a Chief Privacy Officer in time.



# LEAD BY EXAMPLE

## (11) BE ANALYTICAL IN YOUR OWN BUSINESS. LEVERAGE ANALYTICS INTERNALLY TO OPTIMIZE YOUR OPERATIONS.

Companies must 'analytically' enable all employees. While many companies take an analytical approach to measuring certain parts of their business, fewer embrace the idea of enabling the wider organization to be more analytical as a whole. There are plenty of strong examples to learn from (LinkedIn, Zynga, Facebook and Google) where companies have embraced a data-driven approach to decision-making about their solutions and customers.

Consider the types of training that staff need to become better analytic decision makers<sup>9</sup>. Look for opportunities to make data available to employees to experiment with and develop a culture that expects data to back up a thesis or point of view. For example, once staff have basic analytical skills, consider exposing a data environment to employees so they can explore the data and test hypotheses. This might range from making sales, customer interaction and product support reports more widely available through to providing interactive tools to access appropriately protected (e.g. anonymized) customer information.

### APPLIED ANALYTICS MATURITY LEVELS

1. **Data rich, analytics poor.** Data is kept track of, and reported on, but not used to drive improved decisions or optimize the business.
2. **Analytics is the domain of the few.** Data scientists and analytic specialists support senior management in certain key areas of the business to drive improvement. Limited optimization of the business with a small number of people involved, e.g. senior management.

3. **Analytically Optimized.** Employees have access to data, tools, and the training, to find new insights. Optimized decisions across all business processes using a broad range of KPIs.

### LOYALTYINSIGHT APPLIES ITS FOUNDATION ANALYTICAL PRINCIPLES THROUGHOUT THE WHOLE COMPANY

LoyaltyInsight was founded on the concept of analytical decision-making and uses this approach across all aspects of its business. It has achieved a level two maturity where data science is a key part of the senior management decision-making process. Each group (sales & marketing, product management, customer support) has a monthly ops review meeting in which they review tactical issues and progress on longer-term projects.

LoyaltyInsight provides staff access to key performance indicators via dashboards that track how well the company is doing. These KPIs are across user engagement, marketing effectiveness and value / revenue driven for merchants by the LoyaltyInsight solution.

LoyaltyInsight is moving toward level-three maturity by planning to provide training for most staff in the fundamentals of data science including the use of statistical analysis techniques. It intends to provide access to all critical business data as part of its data exploration environment in order to encourage staff to perform open-ended analysis to find new patterns.

<sup>9</sup> <http://www.amazon.com/Analytics-Work-Smarter-Decisions-Results/dp/1422177696>

# CONCLUSION

Applied Analytics presents a significant opportunity for companies to create value from the convergence of business process knowledge, big data and information rights. To capture that value, companies must take a methodical approach that helps to keep the focus on the broader analytic opportunity. Too often companies instead limit their thinking to a narrow set of issues. The three most common mistakes are: to focus only on the data a company currently has access to; to deliver insights only within the constraints of the analytic tooling; and to fail to take a proactive approach towards governance and compliance.

The very first step for any company looking to bring new analytic offerings to market and drive company value through an applied analytic strategy should be to understand the starting point. The Principles of Applied Analytics and the associated maturity model can help companies with that understanding as well as illustrating what a future approach to analytics could look like.

The final, and perhaps most important element of Applied Analytics is to bring an analytic mindset to running a business. This is fast becoming a priority for companies in all industries and at all stages. Fact based decision-making and data driven prioritization of effort should be the norm. Companies should look for ways to make themselves more analytically driven starting with ensuring employees have the necessary skills to take an analytic approach to their role.

# APPENDIX

## APPLIED ANALYTICS PRINCIPLES AND MATURITY LEVELS

PRINCIPLE	MATURITY LEVEL		
	LEVEL 1	LEVEL 2	LEVEL 3
1. Understand the entire process.	Within your company's solution.	Entire customer process.	Entire eco-system.
2. Identify and prioritize the most valuable Insights.	Low refinement; low value; limited number of people.	High refinement; high value; limited number of people.	High refinement; low value; mass consumption.
3. Create a dataset that is unique and broad.	Data available for analytics limited to a single customer.	Aggregation of data across multiple customers; use of data exhaust.	Incorporation of 3rd party data; some exclusive rights.
4. Raw data is of little or no value.	Unrefined dump of transactional data; limited historic data.	All data available; limited refinement for specific insights.	Highly refined data stored to support broad analytic use.
5. Insights are more valuable the closer they are to being actionable.	Insights are incomplete and require human interpretation.	Insights are complete but require human interpretation.	No interpretation required, the insight is directly actionable.
6. Leverage the shortage of data scientists to your advantage.	Your customers are doing analytics on your data.	Analytic skills are spread between you and your customers.	You are hiring the best data scientists and providing all the insights your customers need.
7. Separate analytical insight from how it's consumed.	User must seek out the insight.	User is notified of events and insights.	API delivery of insight enables direct injection into a business process.
8. Inject insights into business processes at the moments of highest impact.	Insights are provided after the fact.	Real time delivery to a person who then takes action.	Automatic insertion of insights into business processes.
10. Governance and compliance is a foundational discipline.	Meeting legal requirements; difficult to prove compliance.	Meeting both legal and marketplace expectations; able to prove compliance.	Adopting a market leadership position on compliance issues.
11. Be analytical in your own business.	Data rich, analytics poor.	Analytics is the domain of the few.	Analytically Optimized.