

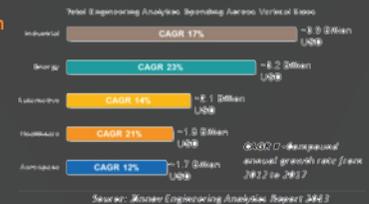


# A Distributed Analytics Workbench

PANGEA is a platform to operationalize analytics faster, cheaper, better

## ADDRESSABLE MARKET

- The potential **addressable Engineering Analytics market** for this solution is estimated to be **4.93 Billion USD by 2017**.
- The adjacent market addressable by the solution is estimated to be **9.85 Billion USD by 2017**.
- The **Industrial** and the **Energy** verticals witness the largest EA related spending and also have the largest addressable EA market with respect to service providers.
- The potential benefits to companies from Engineering Analytics are currently estimated to be close to 250 billion USD and are expected to rise to nearly 500 billion USD by 2017.



## KEY ANALYTICS CHALLENGES – DISTRIBUTED ANALYTICS WORKBENCH

- Delayed insights causing loss of value and missed opportunities
- Extend the use of predictive analytics for better business decisions
- Process to consolidate and process information from disparate systems are manual, time consuming and error prone
- Enable domain experts to mine data quickly and more efficiently
- Collaboration and information sharing within the organizations is often not seamless
- Lack of data governance in place to effectively manage the data
- Extensive manual coding in solving each business problem related to prescriptive and predictive analytics
- Ability to manage product variants and associated data models seamlessly during and post implementation
- Reliance on existing infrastructure investments
- Shortage of adequate skillsets to address the addressable market

Delivers end-to-end analytics with an intuitive drag-and-drop based zero-coding approach

Reduces model deployment time from several months to days

### Zero Coding Approach

### Single Click Deployment

### INTEGRATE DISPARATE DATA SOURCES

Layer of Data Governance  
Ontology based data management

### CREATE DATA MODELS

- Ingest, Clean, Preparation data
- Build, Score and Share Models
- Model versioning for quick re-use
- Pre-packaged Algorithms

### DEPLOY THE MODELS

### BUSINESS PROBLEM

- Log your business problem
- Collaborate with other stakeholders
- End to end view of the process

### MONITOR THE MODELS

- Monitor model accuracy
- Alerts on Accuracy deterioration
- Production roll back
- Version control

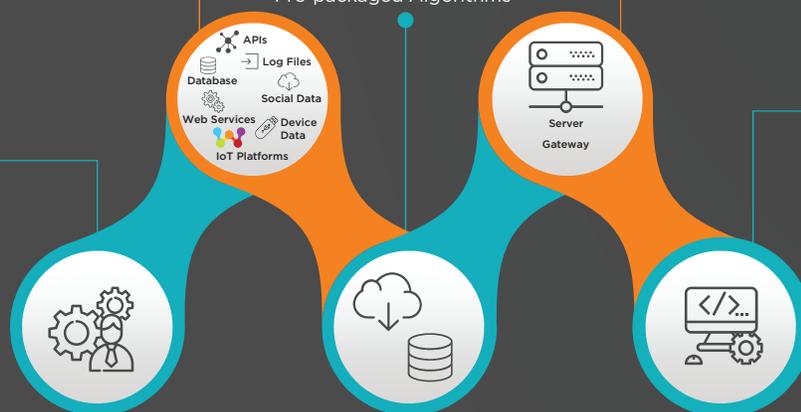
### Modular and Flexible

### Distributed Analytics at Scale

### Customizable solution to fit the customer needs

- Re-usable readymade components
- Flexible deployment options

Built on cloud and big data technologies to handle huge volumes of data



## SOLUTION BENEFITS

### Accelerated Development

- Simplified and accelerated development of predictive models enabled through zero coding
- Reduced time to produce accurate insights by over 70%
- Versioning of data and associated models for quick re-use

### Platform Agnostic

- Cross-platform vendor-neutral deployment of models enabled through PMML
- Flexibility to deploy models on cloud or on premise to avoid cloud vendor lock-in

### New Revenue Streams

- Transform the business by creating new business models and diversified revenue streams

### Product Innovation

- Identify new product opportunities and reengineer products for better performance

### Competitive Edge

- Increased speed, quality and consistency business decisions
- Time to generate insights is now reduced from months to days to enable businesses come up with quick service offerings

## PROOF POINTS



### Survivability Analysis

HCL solution analysed Visit time prediction data along with other properties like pressure, temperature & humidity of the particular Copier machine. The solution comprised of removing unused data, removing correlated data by using Pearson Correlation, and predicting count of days between 2 failures and survival probability, by using COXPH algorithm. This will help in saving cost associated for unscheduled maintenance, increasing equipment usage and improving process of scheduling maintenance.

### Diagnostic Analytics for Printer Failure analysis

The solution analysed the printer's operational data to identify the most significant parameters that are causing failures and non-failures. The data was pre-processed and top 5 parameters (Out of 15+ parameters) causing printer failure, were identified and monitored. This resulted in effective planning of printer's maintenance and helped in avoiding maximum number of failures.



### Prediction of Project's Defect Density

HCL provides the solution to keep the project/ code quality intact, by predicting the defect density using random forest-regression type algorithm on project data integrated using Pangea. The model was deployed and defect density was predicted on new data by analysing the parameters affecting the code quality. This ensured the desired levels of code and project quality were maintained and insights for better business decision were gathered from multidimensional data and time to achieve the same was reduced by 50%.

### Prediction of Overall Effectiveness of Manufacturing Equipment

The solution increased the equipment and plant efficiency, by proactively identifying the right time for a maintenance schedule/ replacement. In this case, Pangea uses Gradient Boost Trees algorithm on equipment's operational data to predict overall equipment effectiveness across manufacturing lines. The dashboards created, gave a view of Mean time between failures, downtime, equipment effectiveness within and across manufacturing lines. The overall solution helped to reduce maintenance cost, increase device availability and utilization.



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