A Deep Dive Into Best Practices

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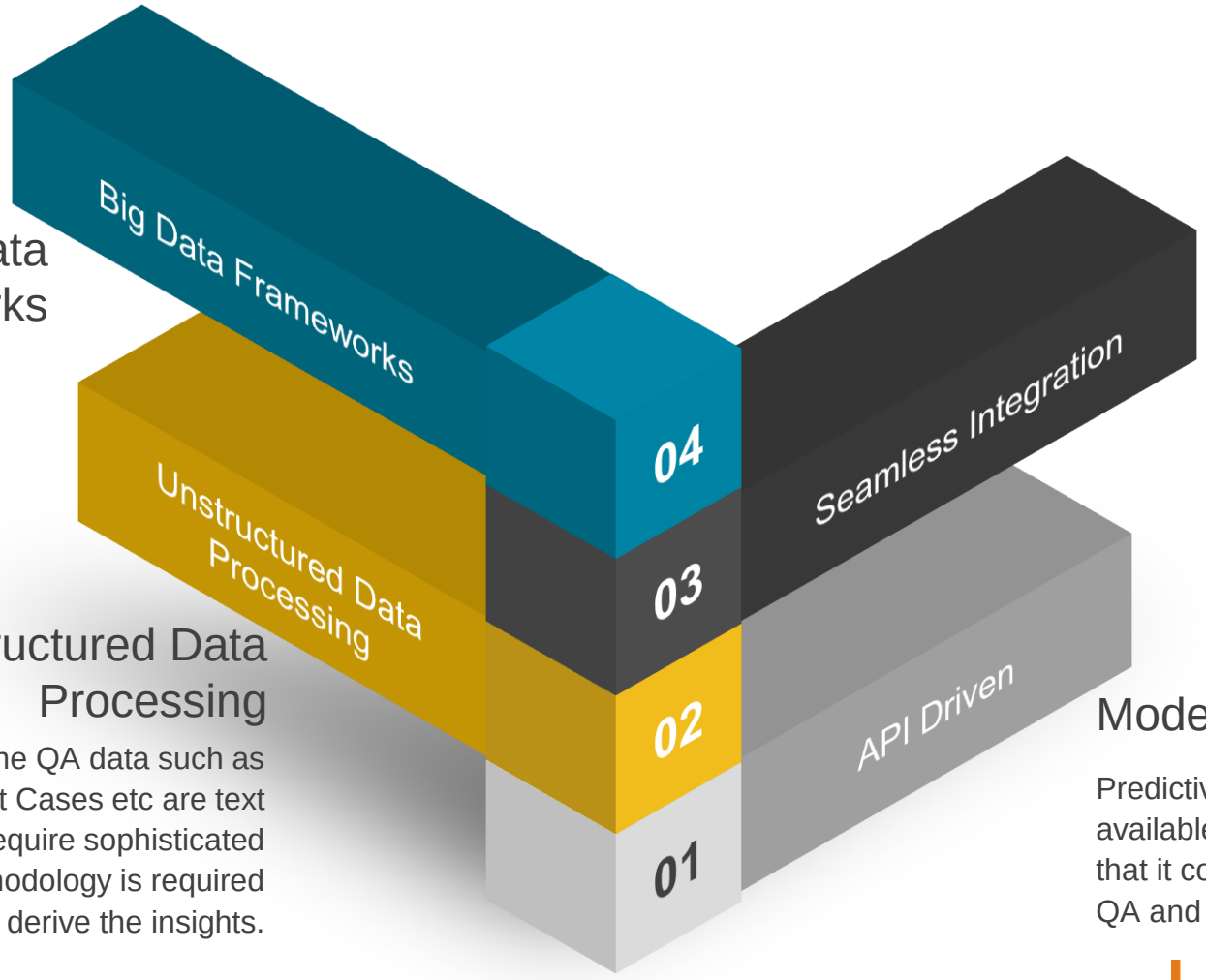
Enterprise level analytics require scalable technologies

Big Data Frameworks

Enterprise level QA analytics adoption would require processing of large volume data.

Unstructured Data Processing

Most of the QA data such as Defects, Test Cases etc are text based and require sophisticated parsing methodology is required to derive the insights.



Seamless Integration

Seamless integration should be established with Test and Defect Management Systems to pull incremental data.

Model as a service

Predictive model should be available as a service – such that it could be integrated with QA and CI systems.

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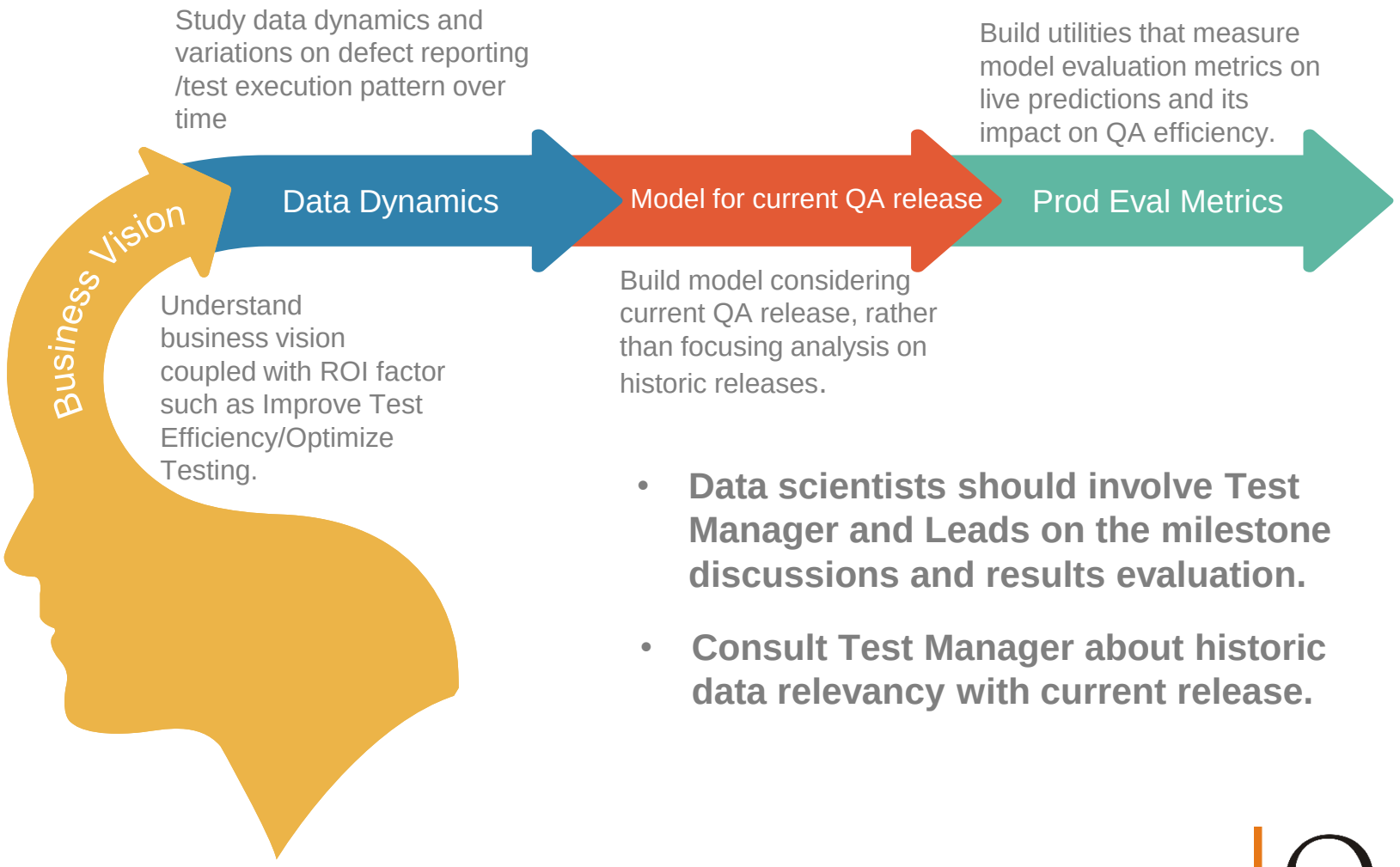
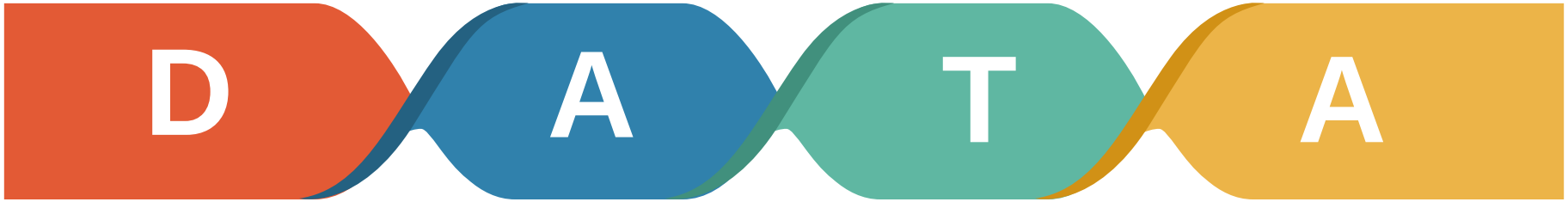
Collaboration between SMEs and Data scientist is the key to create successful model



- **Data scientists should involve Test Manager and Leads on the milestone discussions and results evaluation.**
- **Consult Test Manager about historic data relevancy with current release.**

Data Analytics – Garbage In, Garbage Out

Data must be **right**: it must be correct, labelled, processed etc; And you must have a **right** data.

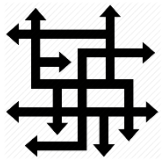


Relevant Data

Less relevant, non-representative historic data of current QA release is not useful.

System Migration Challenges

Migration of QA systems from one product to other impacts data quality. For ex: HP ALM to Jira migration, QTP to Selenium migration.



Extensive Feature Engineering

Extensive, complex grooming of features/attributes might result in a over-fitted model.

Data is first

Sophisticated ML algorithms and processing techniques may not yield good results if data quality is poor.

Self Learning Systems – Continual Learning is key

Continual Learning is about adaptive learning and about autonomous incremental model development and deployment.

01 Adaptive Systems

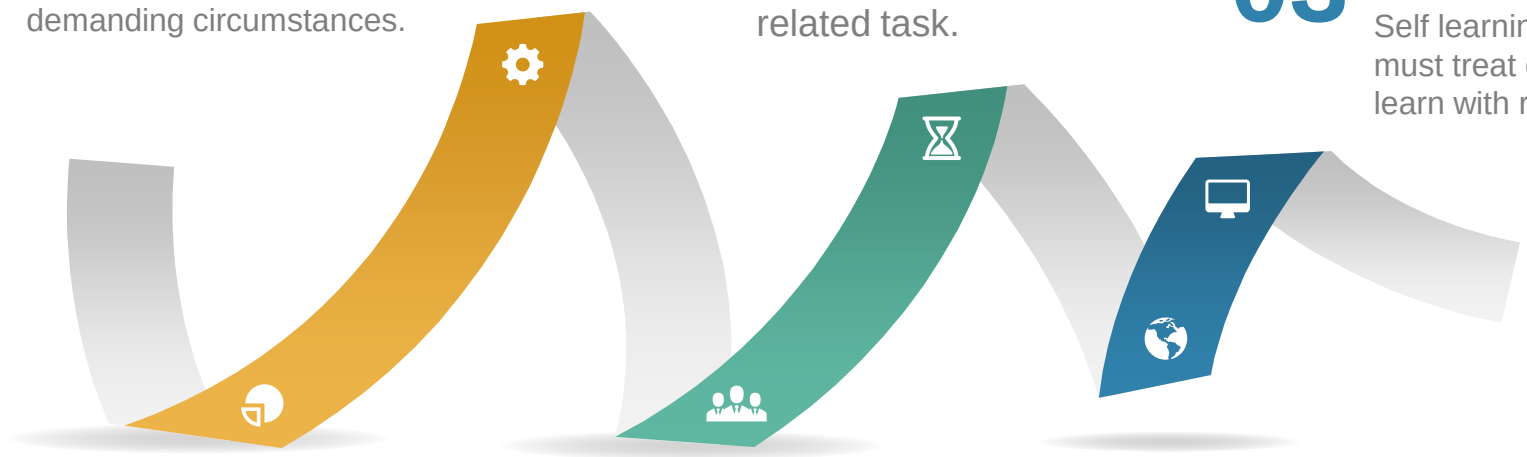
Ability to mold the cognitive system to deal with the always changing demanding circumstances.

02 Transfer Learning

Models trained on a given task, is repurposed for related task.

03 Learn from good

Self learning systems must treat outliers and learn with right data.



Operationalizing Analytics at scale

Successful operationalization strategy of Analytics is key to realizing the benefits of Machine Learning solutions.

Model Versioning and Governance

Version control the models with hyper-parameter and parameter information.

Roll back Strategy

Strategize rollback plans of analytics models in case of performance degradation.

Disaster Recovery

Periodically backup models and persist key information as part of disaster management.

Benchmarking & Scoring

Benchmark model performance and continuously monitor model scoring in production.

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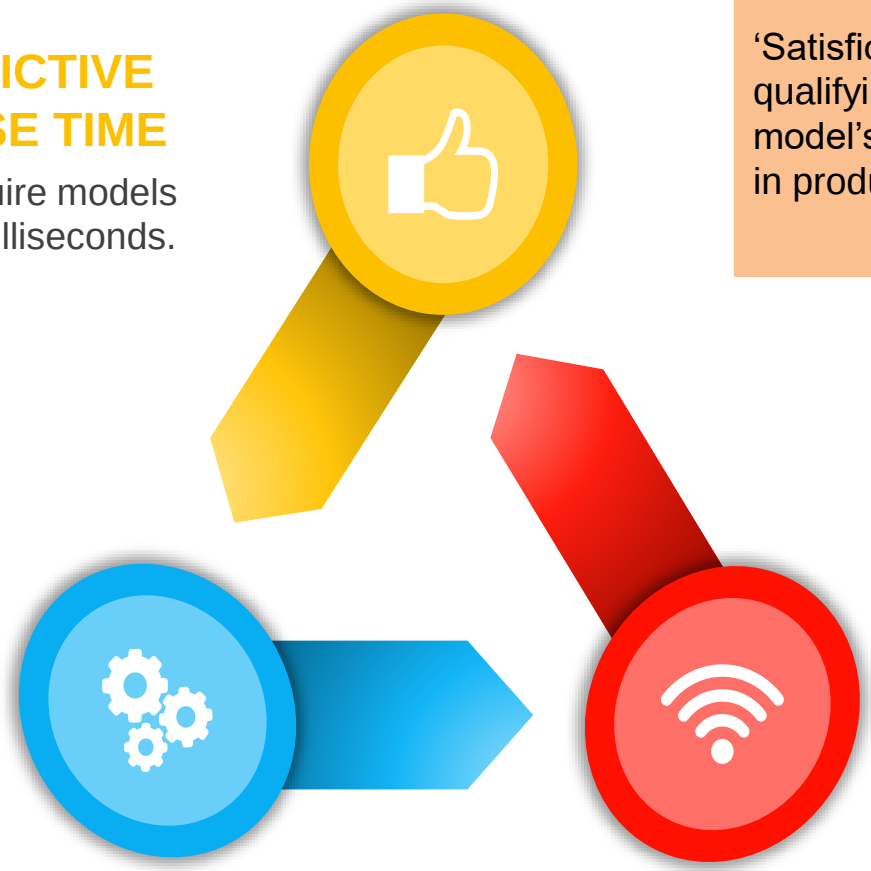
Accuracy is not a ONLY qualifying factor of analytics/prediction model.

PREDICTIVE RESPONSE TIME

Enterprise require models to predict in milliseconds.



'Satisficing Metrics' are the qualifying metrics for the model's optimal performance in production.

TRAINING TIME

Model retrain time should be optimal. It should not take days to retrain with newer data.

ROBUSTNESS

Memory usage and model robustness are critical factors in qualifying models.

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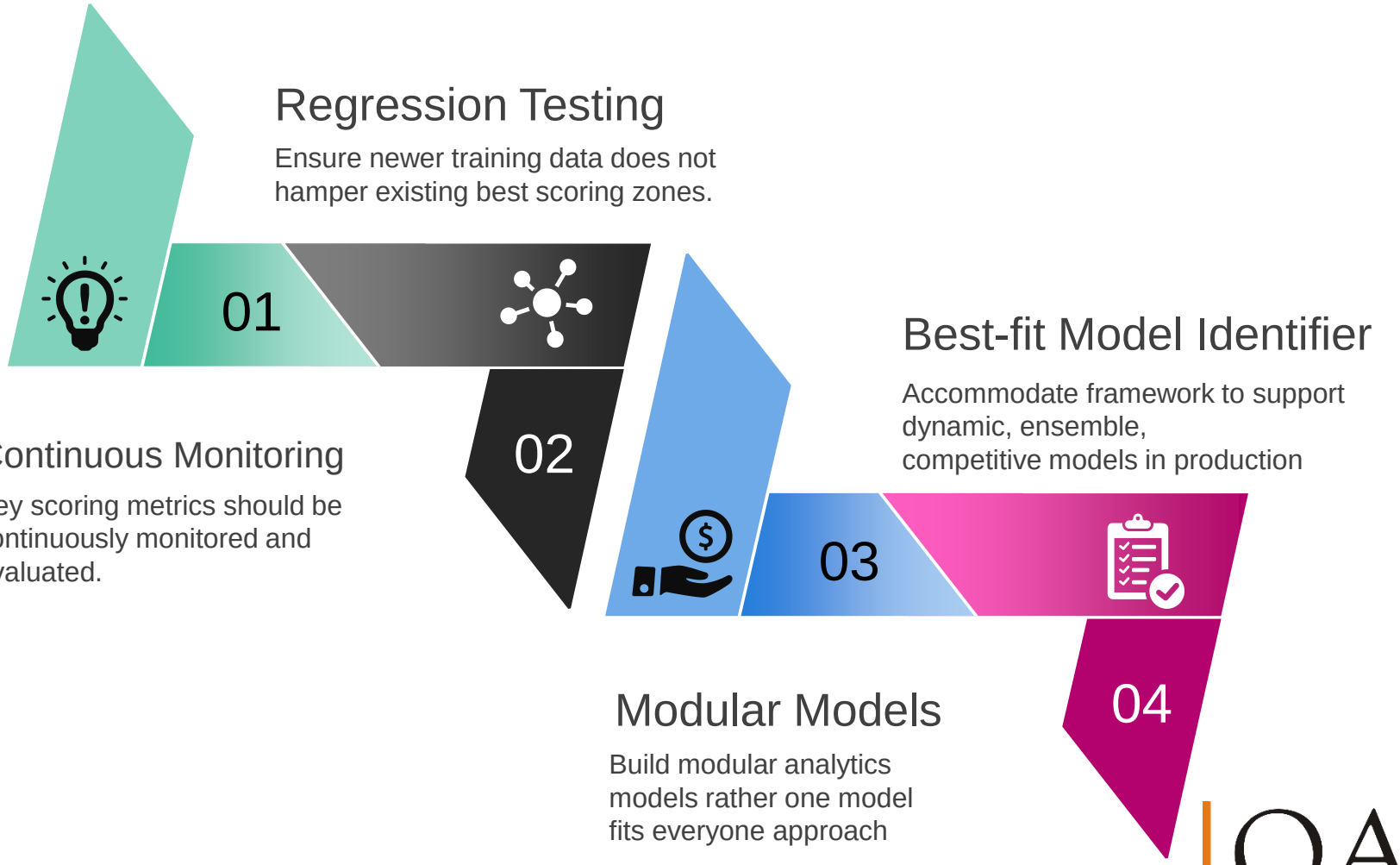
Sustaining Model Performance over time requires discipline and focused effort.



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Automated Defect Triaging for a Telecom Provider

Leading US Telecom provider was spending considerable human effort with regard to triaging activity of defects. It was looking forward to automate the process across enterprise leveraging the intelligence from historic defects.

250 K
Defect Predictions

95+ %
Environment Uptime

15+
Competing Models Any day

1200+
Defects/Day

- Enterprise wide implementation using big data frameworks, processing 500K defects.
- Continuous learning prediction models on a daily basis.
- Prediction response time of <2 seconds.
- Seamless integration with Enterprise Defect Management System.
- Model versioning, governance with sophisticated model promotion/rollback mechanism.

QAI

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Thank You!!!

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