



# Blending the proven present with emerging tech enables our work to fly higher.

Despite all the recent attention that my co-author, ChatGPT is getting, per Gartner, 85% of Machine Learning (ML) projects fail –and the trend is expected to continue for a few more years. CIOs and business leaders are wound around all the social media hype and overselling by vendors.

In reality, AI/ ML projects require thoughtful planning, a relevant technical framework, trainable data sets, and a process that is deliberate about expected features v. actual outcomes, backed by a fast, iterative path to push the latter closer to the former.



**Bälaji Ramanujam**  
*SVP Technology, Business Integra*

*Learn more  
about BI!*





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-GARTNER



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## ANSWERING THE CHALLENGE

*One of our industry's greatest challenges:*  
Trying to fit a new technology into an old framework, pipeline, and process.

### THE SOLUTION

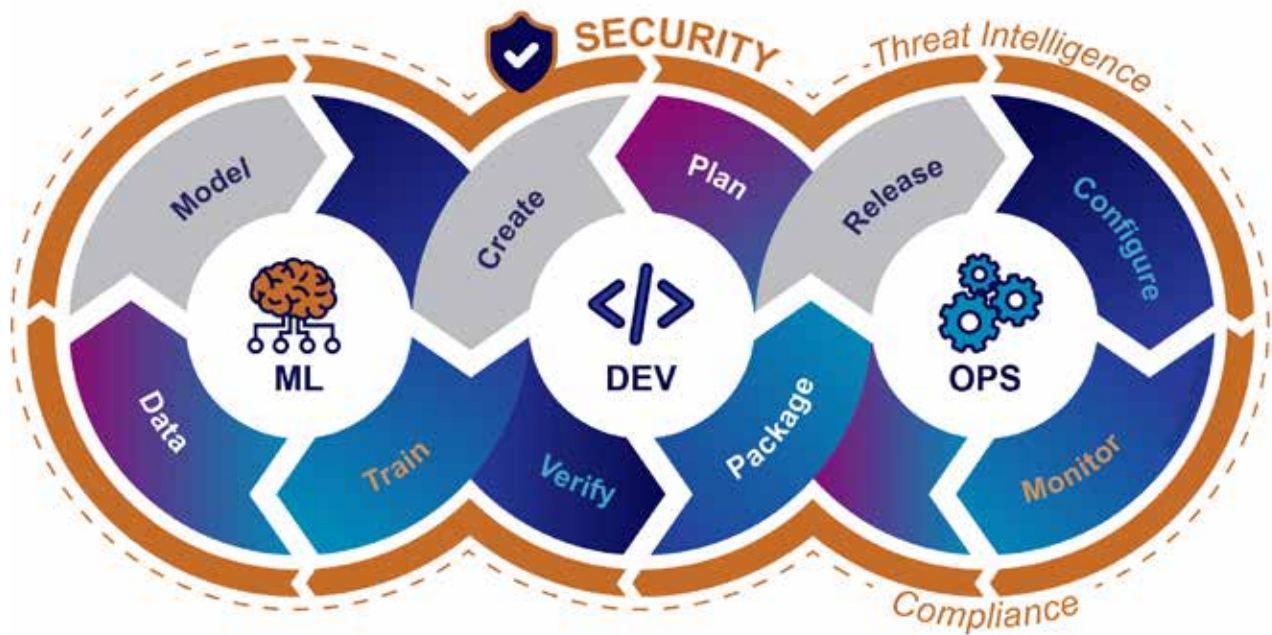
MLOps is a set of practices and tools that aims to make ML deployment and maintenance more efficient and effective. This white paper will provide an overview of MLOps and its key components.

### MIXING THE PROVEN PRESENT WITH NEW TECH

MLOps is an extension of DevOps or DevSecOps, which is a set of practices and tools for software development and deployment. Like DevOps, MLOps aims to automate and streamline the process of deploying and maintaining ML models. However, ML models are different from traditional software in several key ways. They are typically trained using large amounts of data, they can be complex and difficult to understand, and they may require specialized hardware and infrastructure. As a result, deploying and maintaining ML models requires a different set of practices and tools than deploying traditional software. Models need to be continually trained for directional accuracy and relevance against measurable business/mission outcomes. Cyber security considerations are also special within an ML realm. The last thing anyone wants is the power of our ML capabilities in the wrong hands!







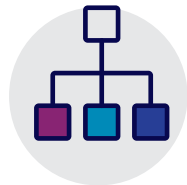
## How do we get started?

In answer to this challenge, we'd build off of our existing, proven practices, using Agile storyboards, scenario planning and scrums to deliver into a CI/CD pipeline. However, there now needs to be a renewed focus on building expected data sets as a part of the feature buildout and frame a process to measure actual results. *The following are the additional steps to undertake in order to shift an existing approach from DevOps to MLOps.*



### Model development and experimentation

This is the process of creating and testing new ML models. It includes data preparation, model training, and model evaluation. Tools such as Jupyter Notebook and Google Colab are commonly used for model development and experimentation.



### Model versioning and management

This is the process of maintaining different versions of an ML model and tracking changes to them. It is important to keep track of different versions to be able to roll back to a previous version if necessary. Tools such as Git and GitHub can be used for model versioning and management.



### Model deployment and monitoring

This is the process of deploying an ML model to a production environment and monitoring its performance. It includes infrastructure provisioning, model containerization, and continuous integration and continuous deployment (CI/CD) practices. Tools such as Kubernetes and Jenkins are commonly used for model deployment and monitoring.



### Model governance and compliance

This is the process of ensuring that an ML model is compliant with laws and regulations, as well as with an organization's.

## 1.0 ANSWERING THE CHALLENGE

“ AI/ ML projects require thoughtful planning, a relevant technical framework, trainable data sets, and a process that is deliberate about expected features...” – Bälaji Ramanujam, SVP Technology, BI

### MLOps Benefits

#### 1. Improved model performance

By automating the deployment and monitoring of ML models, MLOps can help organizations ensure that models are performing optimally in production.

#### 2. Faster time to market

By streamlining the deployment process, MLOps can help organizations get new models to market faster.

#### 3. Increased collaboration

By using common tools and practices, MLOps can help different teams within an organization collaborate more effectively.

#### 4. Better compliance

By automating compliance checks and monitoring, MLOps can help organizations ensure that their models are compliant with laws and regulations.

## Conclusion

MLOps is a set of practices and tools that aims to make ML deployment and maintenance more efficient and effective. By automating and streamlining the process of deploying and maintaining ML models, MLOps can help organizations get new models to market faster, improve model performance, and ensure compliance with laws and regulations.

### I DON'T HAVE A DEVOPS PROCESS. CAN I JUMP DIRECTLY INTO MLOPS?

**Yes!**

BI's MLOps Accelerators can help organizations directly adapt and mature their current and legacy systems and processes. BI's Prebuilt libraries, GitHub code repositories, Cloud setup templates, automated test and deployment pipeline tools, organizational change management, culture change workshops and other related services have helped out clients operationalize MLOps within 3 months.

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## WHY BUSINESS INTEGRA?

### At a glance

BI is an award-winning, global provider of information technology, cybersecurity, specialized engineering, scientific and mission support services.

- Founded 2001
- Headquarters: Bethesda, Maryland
- Teams and office locations across the United States and Southwest Asia
- 1 of 21 in the U.S. with CMMI Level 5 certification (for Services & Development / Exp. 2025)
- Minority, woman-owned business
- [Current Certifications](#) / [Current Contract Vehicles](#)



*Committed to quality, and proudly serving military, civilian and commercial entities.*

**Learn more about BI!**



**INDUSTRY**  
Information Technology

**SECTORS**  
Federal Government,  
Aerospace & Defense,  
Intelligence

**2022 REVENUE**  
\$85 Million  
(85% Federal / 15% Comm.)

**EMPLOYEES**  
500+ (250+ cleared)





# Our quality statement

## Committed to quality

Business Integra (BI) is dedicated to providing the highest quality services and products to our clients. We have made it a top priority to maintain a level of excellence in everything we do. This is reflected in our achievement of a CMMI Level 5 maturity rating, the highest level possible.

## Process improvement

The CMMI Level 5 rating indicates that our company has implemented a mature, highly developed process improvement program. This means that our processes are optimized for efficiency, effectiveness, and adaptability.

## Industry recognition

Achieving a CMMI Level 5 rating is a notable accomplishment in the industry and

demonstrates our insistence upon the highest quality outputs and operational systems. As a result, our clients receive products and services from a company that has been vetted and recognized for its excellence in process improvement and commitment to quality. The recognition also helps us to attract and retain talented employees, further perpetuating our ability to continuously provide solutions.



THANK YOU.

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