



8TH ADVANCED GMP WORKSHOP 2023

ROLE OF AUTOMATION AND DIGITIZATION IN MANUFACTURING AND QUALITY

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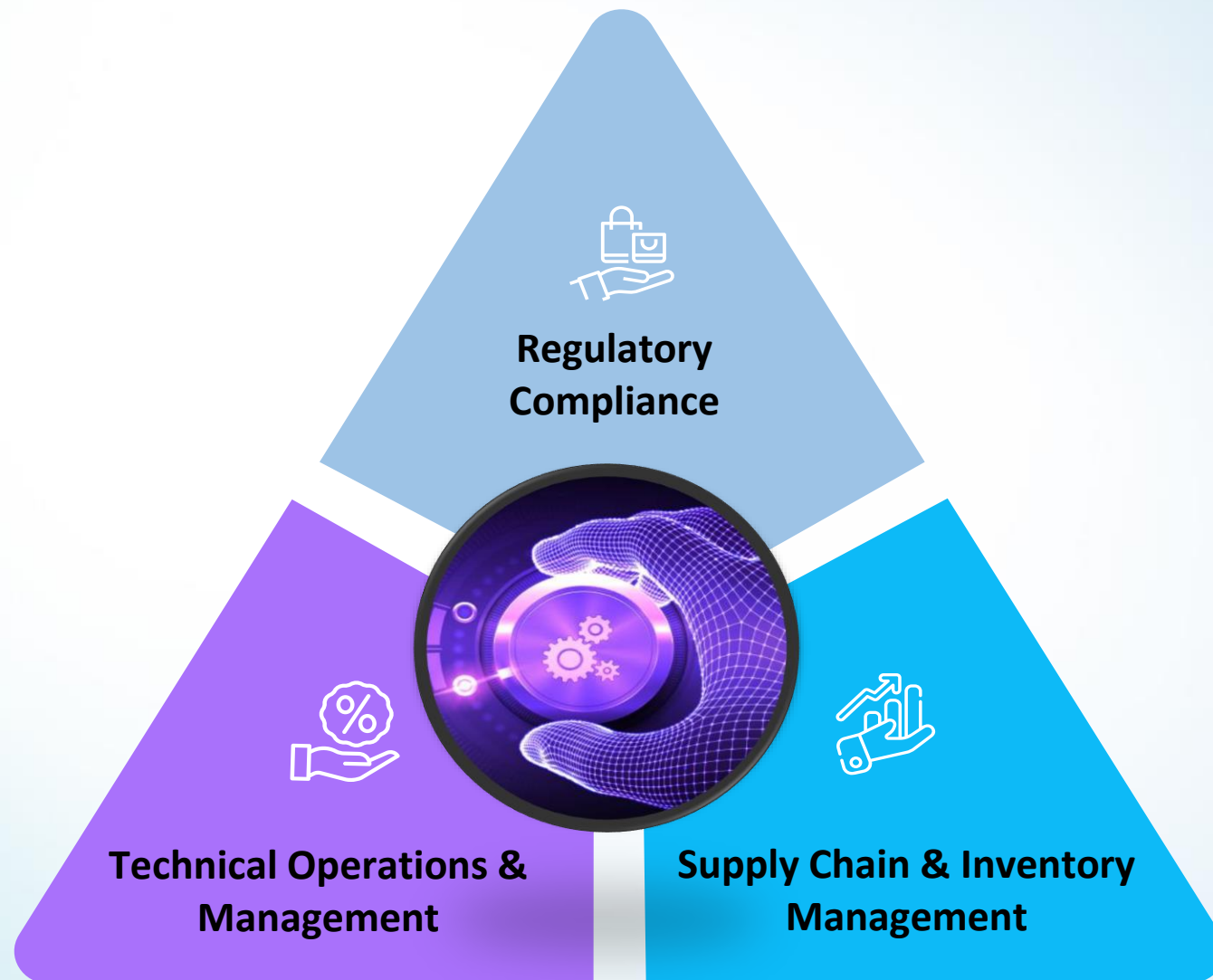
President, Global Quality Head

Mankind Pharma Ltd

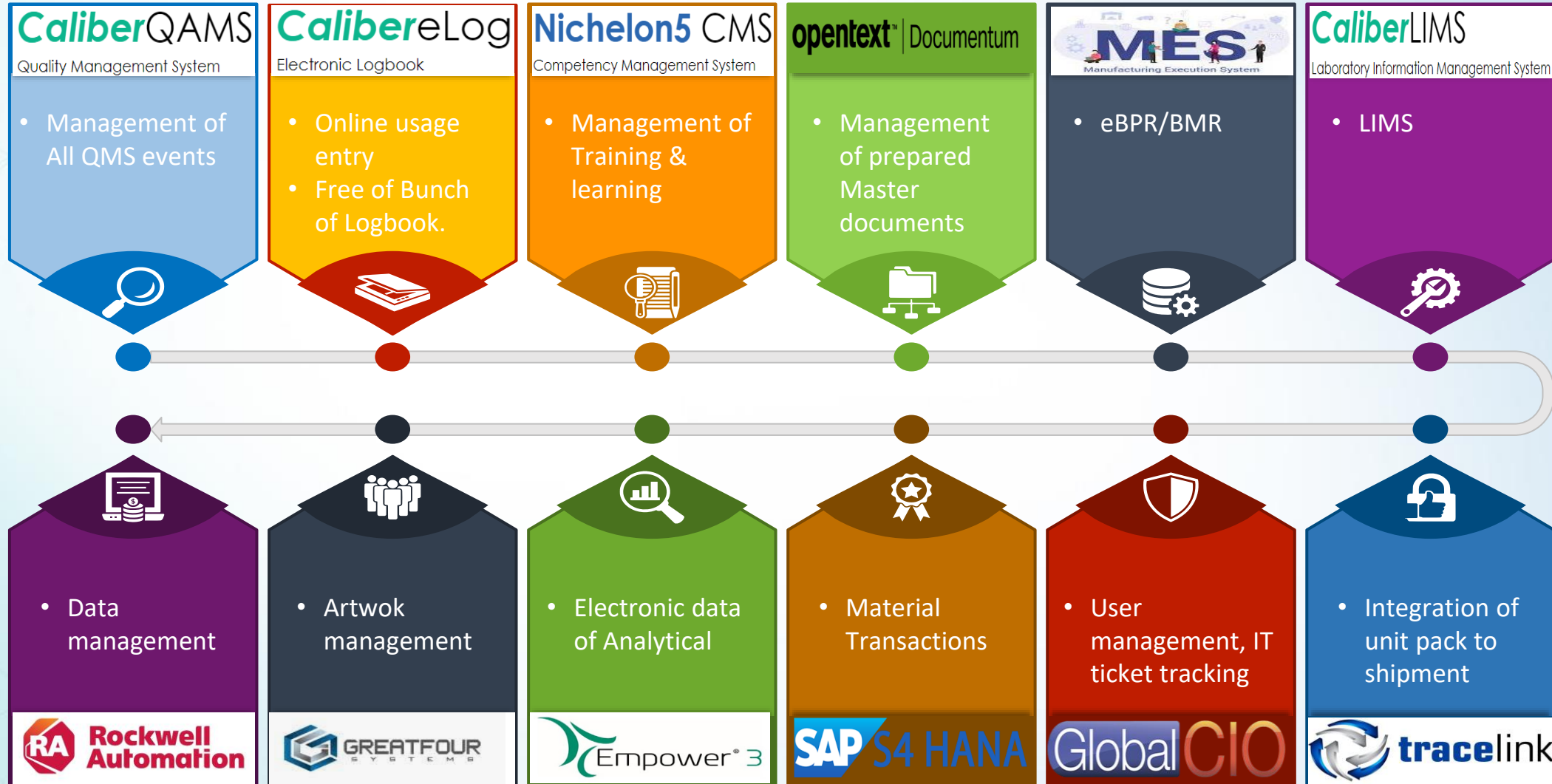
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Automation in Pharma



Basic Automation in Technical Operations



QR Code printing on Primary Packaging

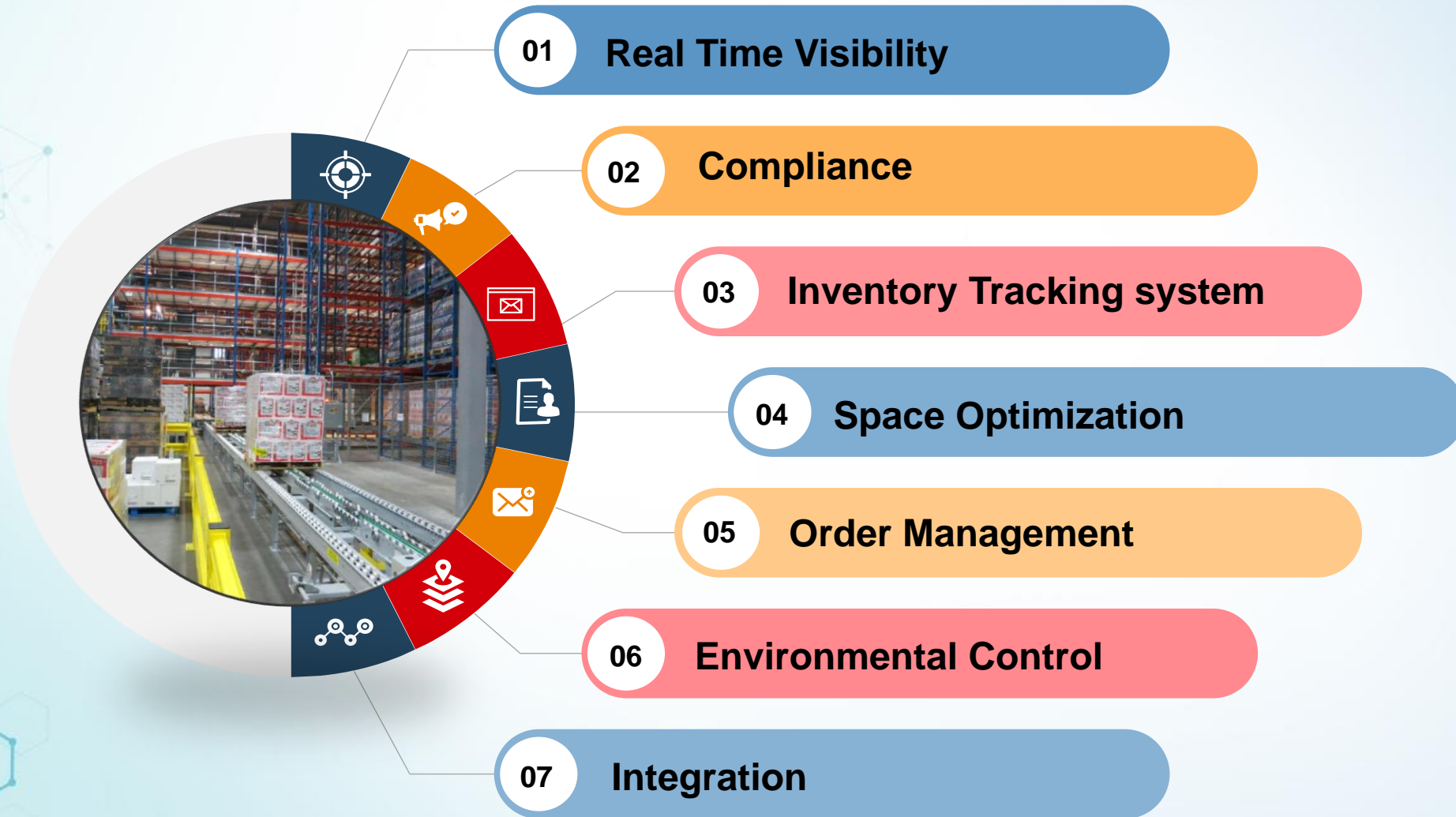
Incorporating QR codes on primary packaging will enhance patient safety, provide information, and to the fight against counterfeit drugs.

Applications:

- Product authentication to confirm the genuineness.
- Non tempered medicine.
- Information of product dosage, Drug interactions, batch related information e.g. Expiry and Manufacturing date,
- Linked to educational material,
- Reporting adverse events,
- Tracking of supply chain



eWarehouse Management (eWMM)



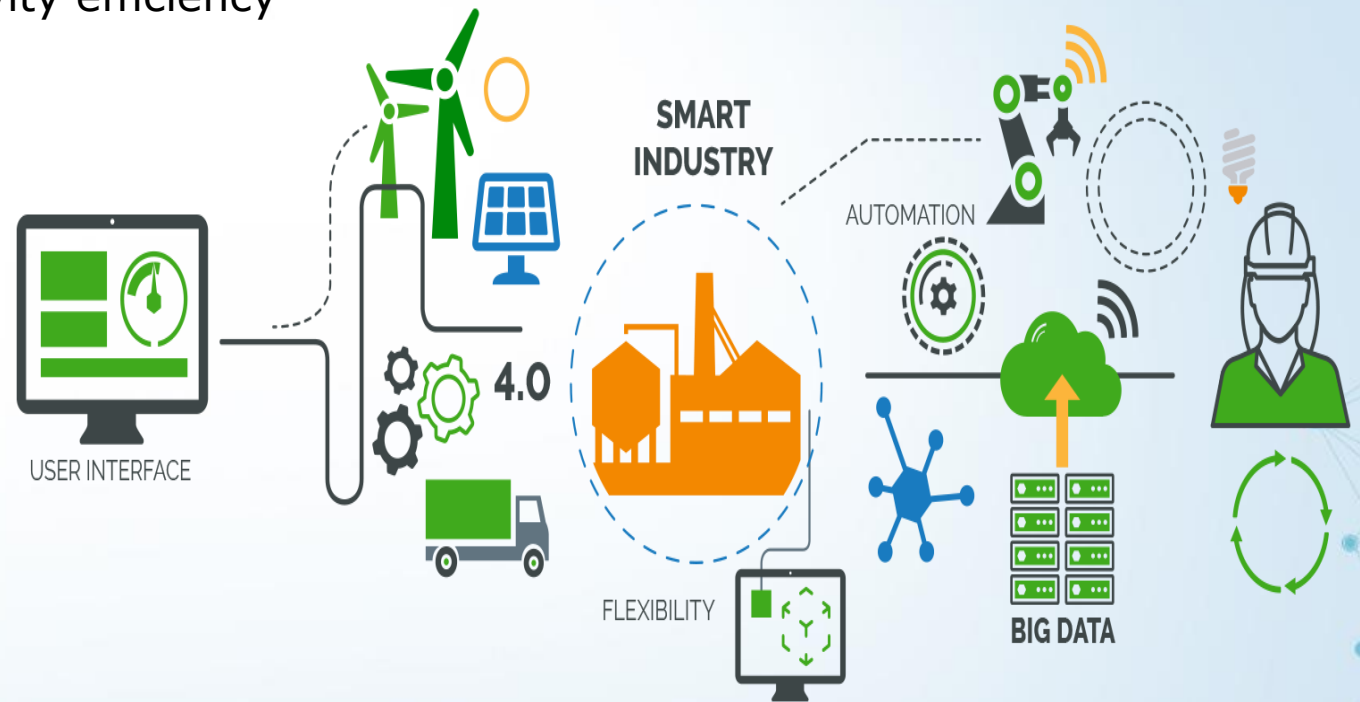
Internet Industry of Things (IIoT)

The **industrial internet of things (IIoT)** refers to interconnected sensors, instruments, and other devices networked together with computers' industrial applications, including manufacturing and energy management.

- Data Collection
- Exchanges of data
- Analysis of data & to improve productivity efficiency

Applications:

- Real time data collection of **Energy consumption** machinery.
- **Predictive Maintenance** where sensors continuously monitor the health of machines and predict when equipment is likely to fail.
- **Centralized Environmental** condition analytics.
- Intelligence **Energy Controllers**.



Artificial Intelligence & Machine Learning

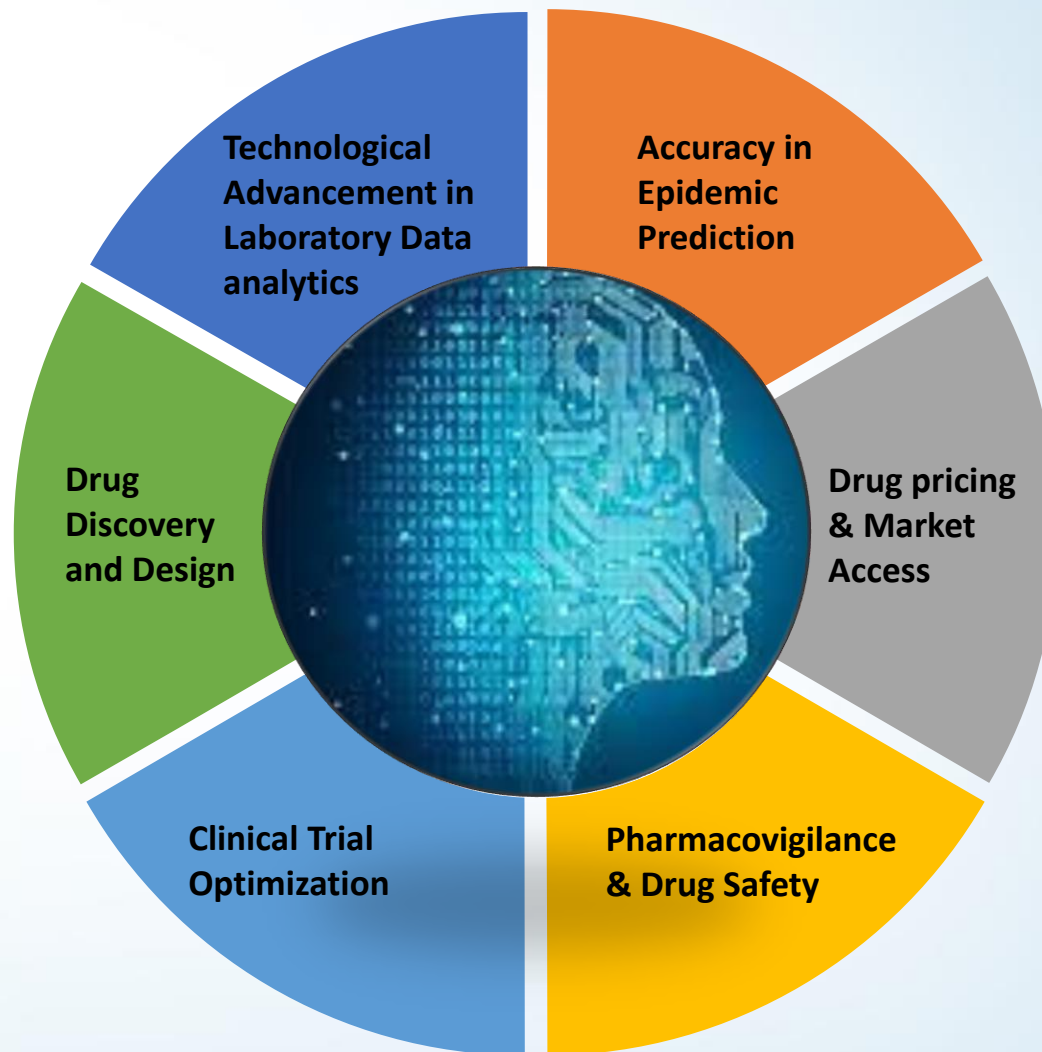
- Pharma analytics allows pharmaceutical companies to improve their decision-making throughout the drug development and marketing processes.
- Integrating advanced data into daily operations allows pharmaceutical manufacturers to make more informed business decisions and improve overall results.

Industrial Robots-

Automated operations with high accuracy

Machine Learning-

Biomarker discovery, Drug interaction prediction



Artificial Intelligence-

Accurate Decision making & Conducting Repetitive tasks

Additive Manufacturing-

3D printing used to develop complex dosage forms.

Supply Chain & Inventory Management

Digital Business Planning Tool for Supply Chain

- Demand forecast
- Supply requirement
- Distribution at market
- End -to -End Process
- Notifications to all stakeholders
- Lower inventory costs
- Reduced compliance risk
- Increased business agility



Patient Engagement



THANKS

LEARNING FROM YOUR QUERIES?