TECHgium® 8th Edition

Presentation Round

AI POWERED SMART COMPONENT MANAGEMENT

L&T Technology Services




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CHALLENGE

EOL Identification
Manual identification of End-of-Life components using tools, which is time-consuming and prone to errors.

FFF Replacement
Extensive manual research required to find suitable Form, Fit, and Function replacements.

AI-Based Automation
The need for an AI system to automate EOL identification and FFF replacement suggestions efficiently.

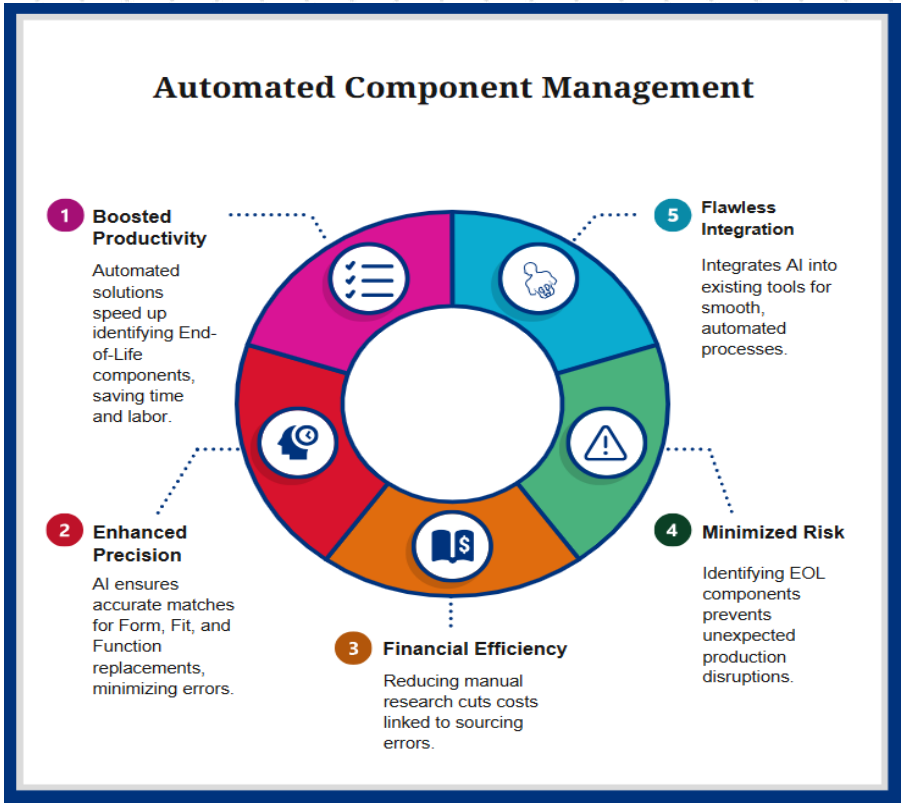
APPROACH

Automated EOL Identification
AI predicts and identifies End-of-Life components automatically using lifecycle data.

Automated FFF Replacement
AI suggests accurate Form, Fit, and Function replacements using GNNs and reinforcement learning.

AI-Based System Integration
AI integrates with existing tools to automate the entire EOL identification and replacement process.

VALUE PROPOSITION



PROS

- Automates EOL and FFF replacement processes, saving time and effort.
- Reduces errors and ensures accurate component identification.
- Predicts obsolescence early, enabling better planning and decision-making.

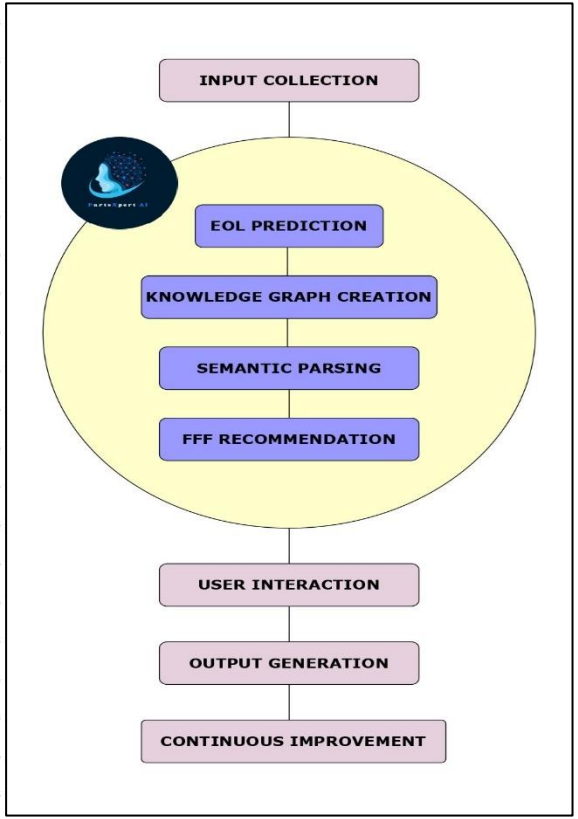
CONS

- Accuracy depends on the availability and quality of data.
- High initial setup costs for development and integration.
- Requires regular updates to stay accurate and effective.

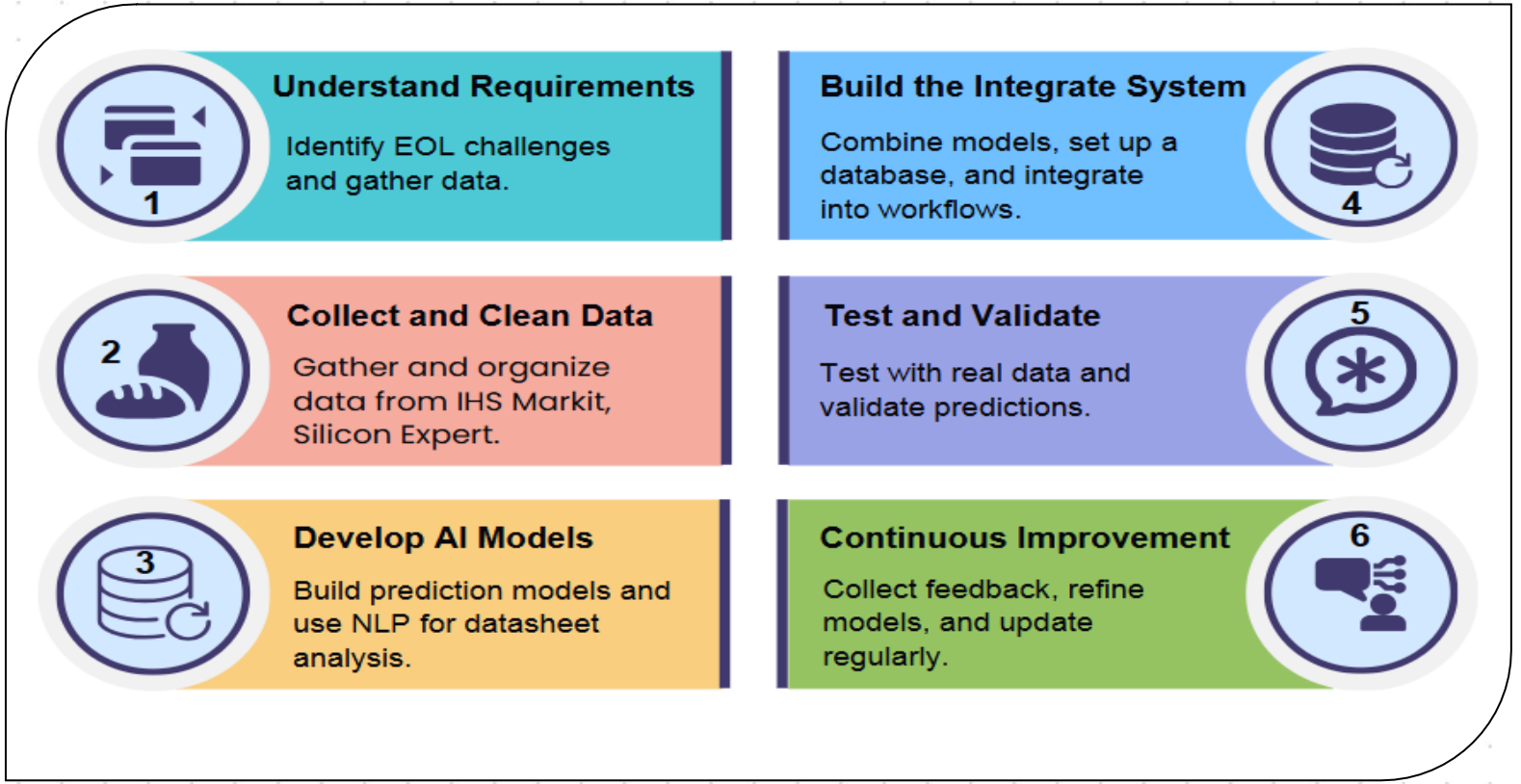
TECHNICAL STACK

Technical Stack	
Frontend	React.js, HTML, CSS, Material-UI.
Backend	Python (FastAPI/Flask), PostgreSQL/MongoDB.
AI/ML	TensorFlow, PyTorch, Hugging Face Transformers.
Data Sources	IHS Markit, SiliconExpert APIs.
Integration	REST APIs, Docker, AWS/Google Cloud.
DevOps	GitHub Actions, Jenkins, Prometheus.

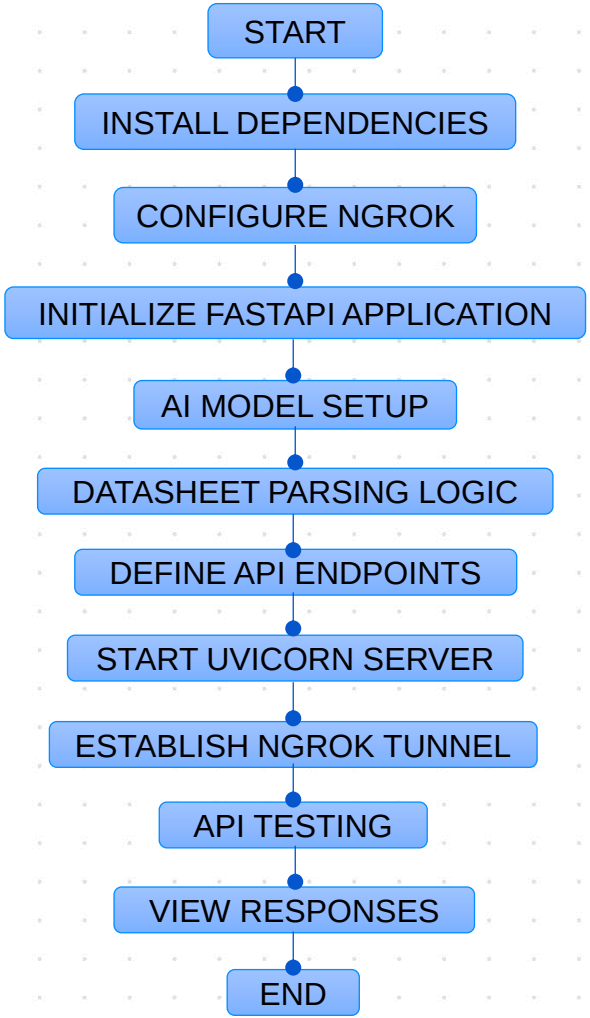
WORKFLOW



IMPLEMENTATION PLAN



EXECUTION FLOW



Execution Drive Link

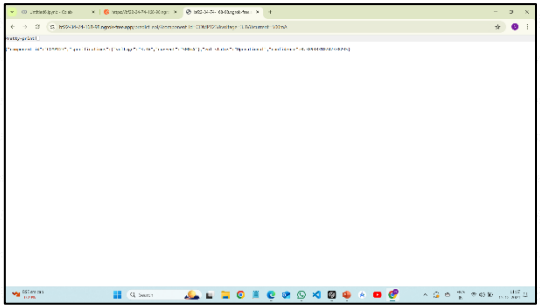
https://drive.google.com/file/d/1iwtOgDaIZKsFl2ST_t3_TmzjcJY4Rk3i/view?usp=drivesdk

4147- PDF Drive Link

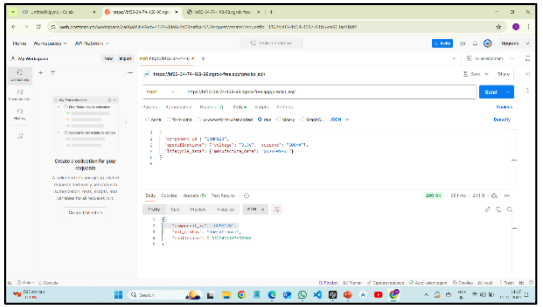
https://drive.google.com/file/d/1jMOsYWr5njmlV-ydzVUYs_yS4Jv4_a1b/view?usp=drivesdk

VALIDATION

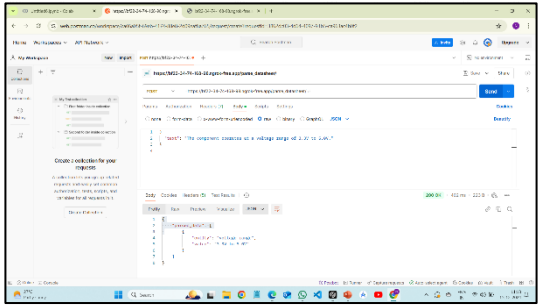
(1) EOL Prediction→**GET**



(2) EOL Prediction→**POST**



(3) Datasheet Parsing→**POST**



COST ESTIMATE

COST ESTIMATION	
AI/ML Model Development	₹5,00,000 - ₹10,00,000
Frontend and Backend Development	₹4,00,000 - ₹8,00,000
Data Collection and Integration	₹3,00,000 - ₹5,00,000
Cloud Hosting (AWS, Google Cloud, Azure)	₹1,50,000 - ₹3,00,000
Licensing for APIs (IHS Markit, SiliconExpert)	₹2,00,000 - ₹5,00,000
AI/ML Libraries (TensorFlow, PyTorch)	₹1,00,000 - ₹2,00,000
Third-Party Tools (Hugging Face, PyTorch Geometric)	₹50,000 - ₹1,00,000
Server Maintenance	₹50,000 - ₹1,00,000 per year
Model Retraining and Updates	₹2,00,000 - ₹3,00,000 per year
AI Developers	₹8,00,000 - ₹12,00,000 per year
Frontend/Backend Developers	₹6,00,000 - ₹10,00,000 per year
Project Manager	₹5,00,000 - ₹8,00,000 per year
Data Scientists	₹7,00,000 - ₹12,00,000 per year
Total Estimated One-Time Development Cost	₹20,00,000 - ₹40,00,000
Annual Maintenance Cost	₹5,00,000 - ₹8,00,000

ASSUMPTIONS

Data Availability
Reliable and complete component data, including specifications and lifecycle information, is accessible from trusted sources.

Model Training
Sufficient historical data is available to train the AI models for accurate EOL predictions and FFF replacement suggestions.

System Integration
The AI system can be seamlessly integrated with existing tools and workflows without significant technical challenges.

CONCLUSION

The AI-powered solution automates EOL identification and FFF replacement, improving accuracy and reducing manual effort. By using advanced technologies like predictive analytics and natural language processing, it offers a scalable, cost-effective way to manage components. The system enhances decision-making and evolves with user feedback for continuous improvement, providing long-term benefits for industries.

REFERENCES

- **Input Collection**
IHS Markit for lifecycle data.

- **EOL Prediction**
AI and Supply Chain Management.

- **Knowledge Graph**
AI lifecycle management (IEEE Xplore).

- **Semantic Parsing**
LLMs for datasheet parsing.

- **FFF Recommendations**
AI optimization (IEEE Xplore).

- **User Interaction**
AI decision support (IEEE Xplore).

- **Continuous Improvement**
Feedback loops (IEEE Xplore).

THANK YOU!

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