

Drawing Match AI

Geometry-Based Intelligence for Multiple PLM Systems



Vision



Speech



Language



Decision

Celebal Tech - Our Specializations and Strengths



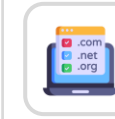
Key Strategic Partnerships



Advanced Specialization



- AI & Machine Learning
- Analytics
- Infra and Database Migration to Microsoft Azure
- Kubernetes
- Cloud Security



Deep Domain Expertise



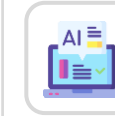
ISD Approved Partner



Azure Open AI industry driven Co-pilots.



ECIF Green+ AMM + Azure Innovate



AI Solutions To Help Retire AI Design Wins



IP Co-sell Partner with Marketplace Transaction and MACC enabled Solutions

3000+
Employees

1500+
Azure Certification

800+
AI Experience Professionals

250+
SAP Experts

Industries We Serve Globally



Manufacturing



Retail & CPG



Financial Services



Energy & Sustainability



Healthcare & Life Sciences

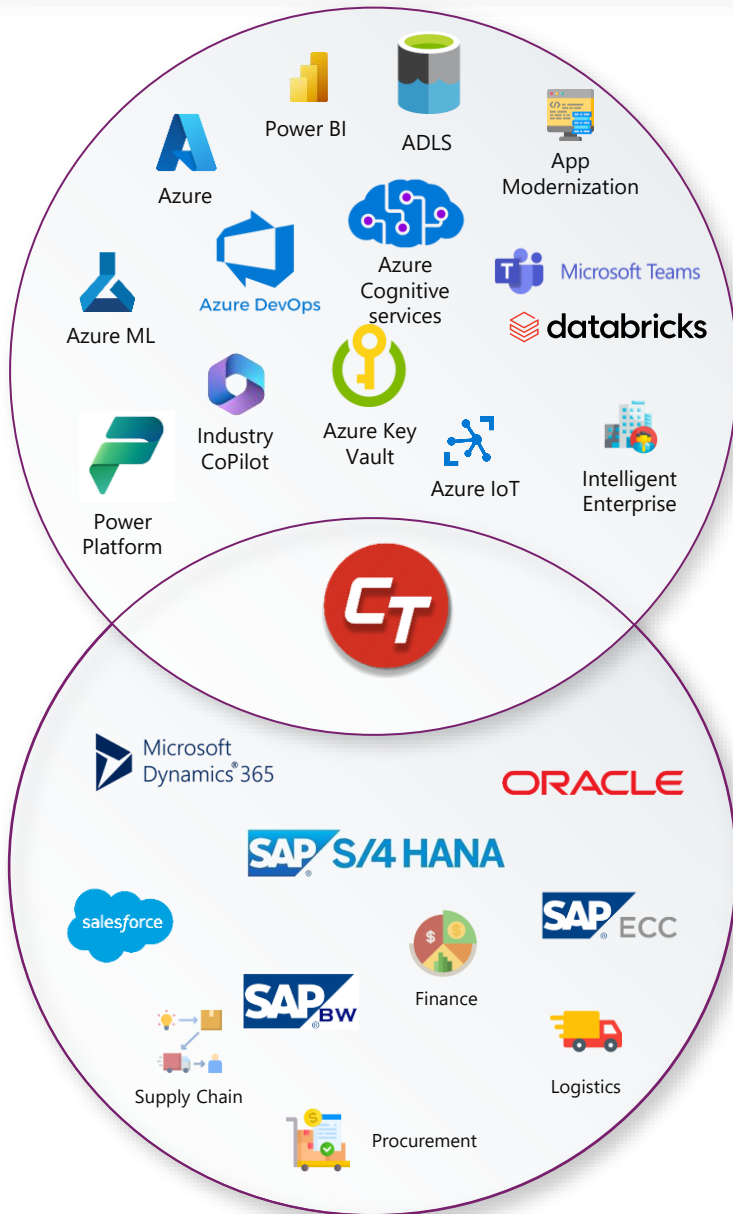


Media & Entertainment

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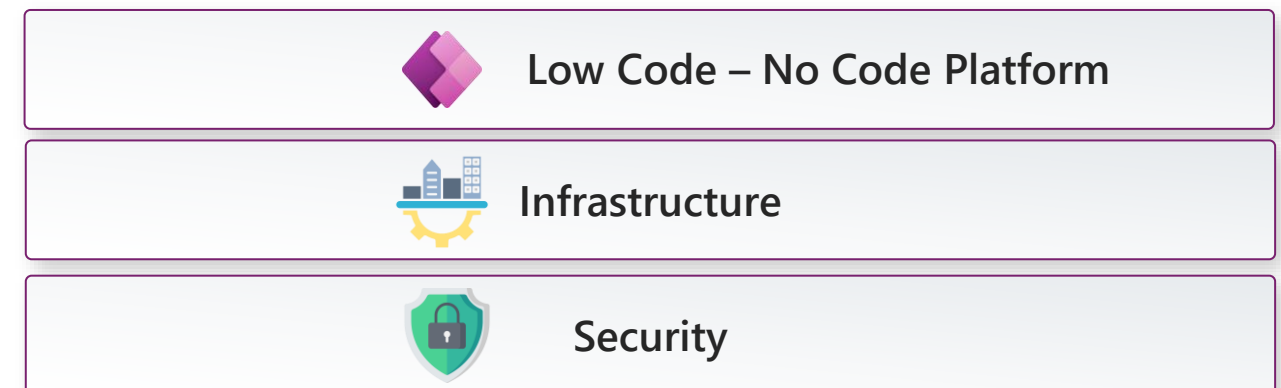
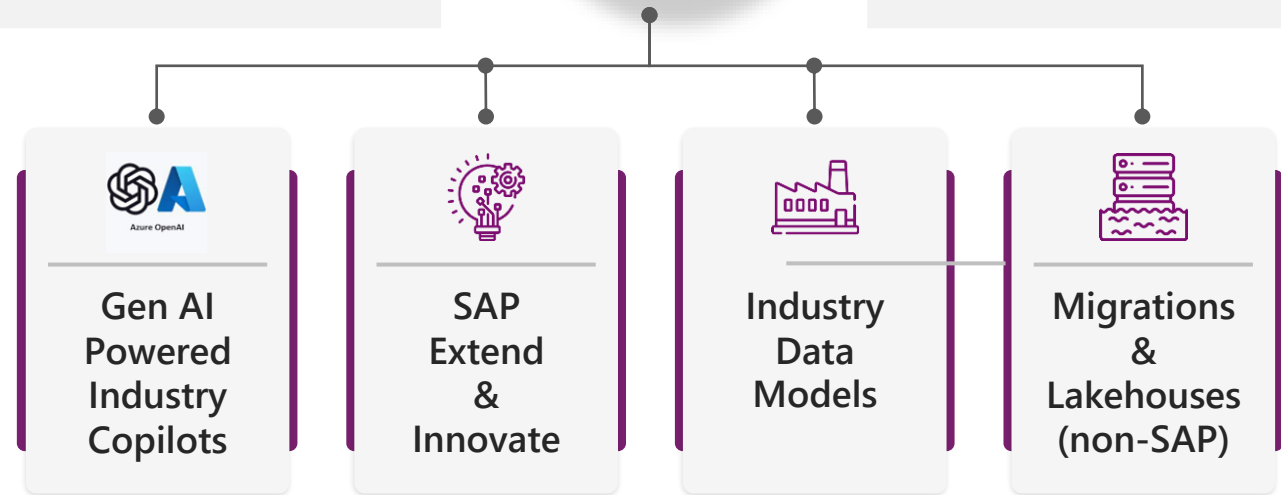
Traditional Enterprise meets Modern Cloud Innovation



- Deep Domain Expertise
- Open AI industry driven Copilots
- Premium Partner for SAP Extend and Innovate
- ECIF Green & Azure Innovate and AMM Cert.



- Partners with Microsoft Research
- IP Cosell Partner with Marketplace Transaction
- MACC enabled Solutions
- ISD Approved Partner



Business Value for Drawing Match AI

Business Challenge

- Comparing components and assemblies across multiple PLM systems
- Comparison reports based on geometry material, weight across multiple PLM
- Enhancing component interchangeability and Reusability



Solution

Drawing Match AI is an intelligent search and comparison solution that scans engineering drawings across PLM systems using geometry-based matching to identify similar designs in components and assemblies, with a built-in chatbot to assist part interchangeability and enhance Engineering Change Management (ECM)

Persona Benefits and Value Creation



**Product
Development
Engineer**

- Reduces design rework by identifying reusable components
- Eliminates unnecessary part creation, reducing costs and complexity



**Design
Engineer**

- Accelerates identification of similar components
- Minimizes engineering effort in searching and validating parts, streamlining ECM workflows

Solution Features

AI-Powered Part Matching & Comparison

Uses advanced AI/ML algorithms to compare engineering drawings

PLM Integration & Multi-Vault Scanning

Connects with multiple PLM repositories and compare component data from various Engineering Drawing Vaults

Gen AI-Powered Data Insights

Live inventory insights with Ad Hoc reports on change impact analysis for smarter decisions.

Improves Part Interchangeability

Empowers smarter part reuse by leveraging insights to use inventory efficiently

Customer Key Facts



Implementation Window
~ 20 – 24 Weeks



Implementation Cost
\$250k - \$300k

ROI



- 30% to 35% boost in engineering productivity
- Up to 80 % reduction in drawing search time across different PLM system

Data Used



**Unstructured
data
(e.g., CAD
Files)**



**PLM
Metadata**



**ERP
Data**

	Visualization	Technology	Values	Timeline	Implementation Cost	ROI
AI-Powered Part Matching & Comparison	Web/MS Teams/ Mobile Enabled	Azure OpenAI	Uses advanced AI/ML algorithms to compare engineering drawings	~ 20 -24 weeks Assuming infra readiness and connectivity to PLM systems using ADF as per prerequisites	\$250k - \$300k	<ul style="list-style-type: none">• 30% to 35% boost in engineering productivity• Up to 80% reduction in drawing search time across different PLM system
PLM Integration & Multi-Vault Scanning		Azure Data Factory	Connects with multiple PLM repositories and compare component data			
Gen AI-Powered Data Insights		Azure AI search Azure Open AI	Live inventory insights with Ad Hoc reports on change impact analysis for smarter decisions			
Improves Part Interchangeability		Azure AI search Azure Open AI	Empowers smarter part reuse by leveraging insights to use inventory efficiently			

Data Used

PLM Systems



ADLS
Gen 2

ERP Data



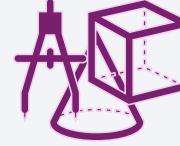
ADLS
Gen 2

Drawing Matching and Comparison

PLM



PLM Integration &
Multi- Vault
Scanning



AI Powered
Geometry matching
& Comparison



Azure
Search

Conversational AI

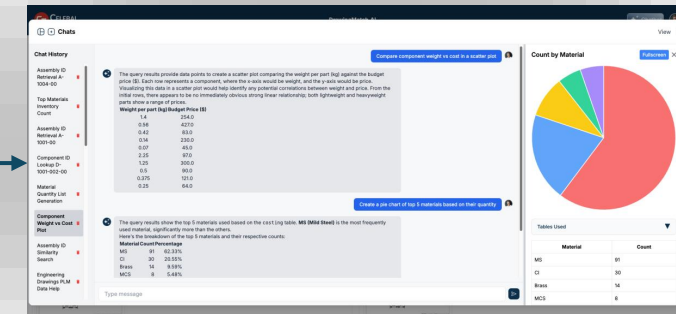
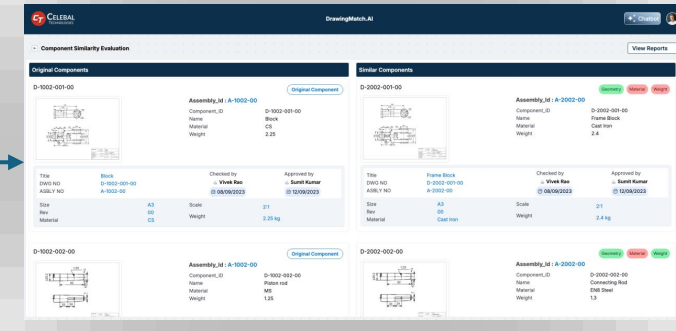
**Design
Engineer**

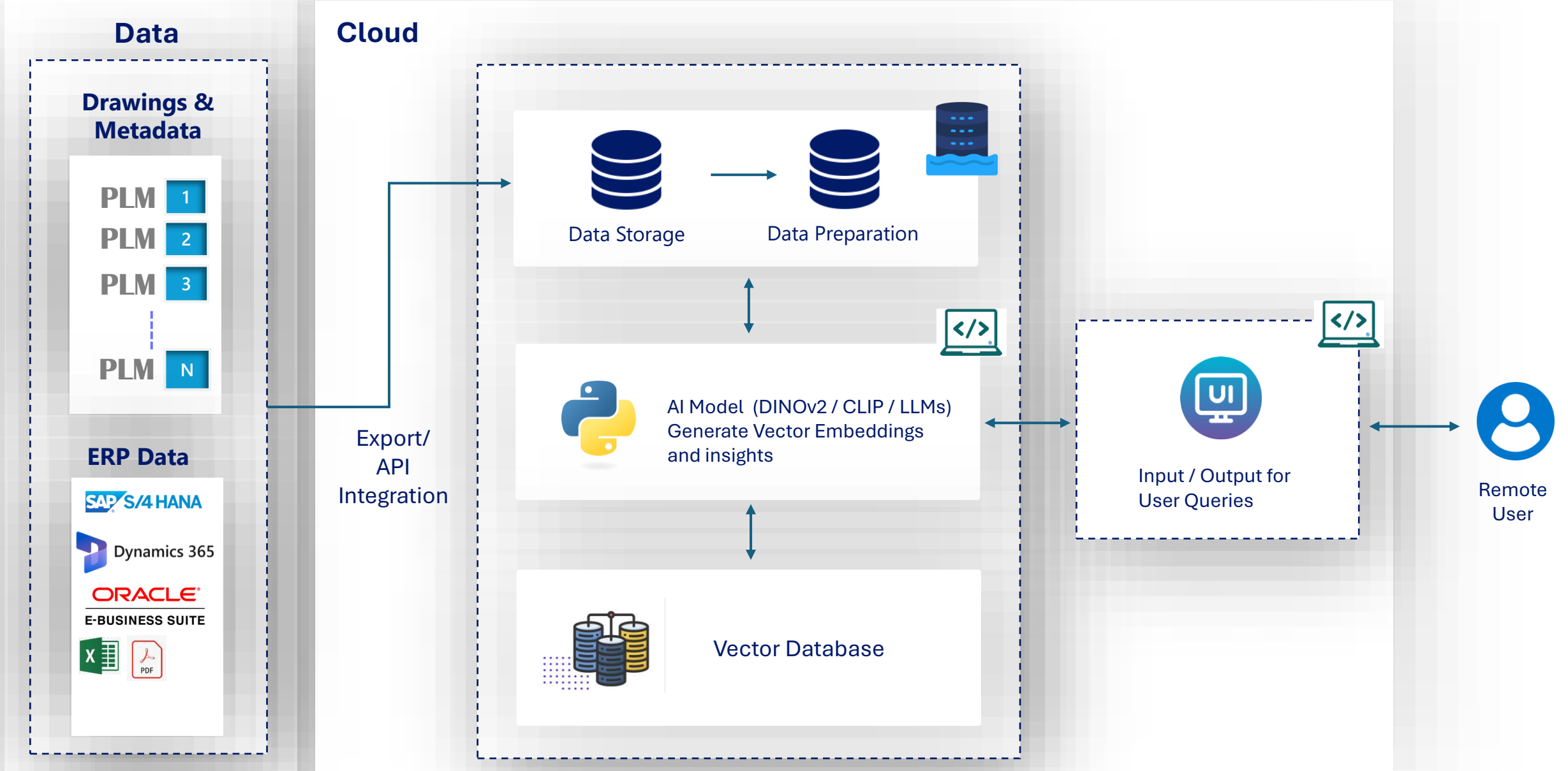


**Product
Development
Engineer**



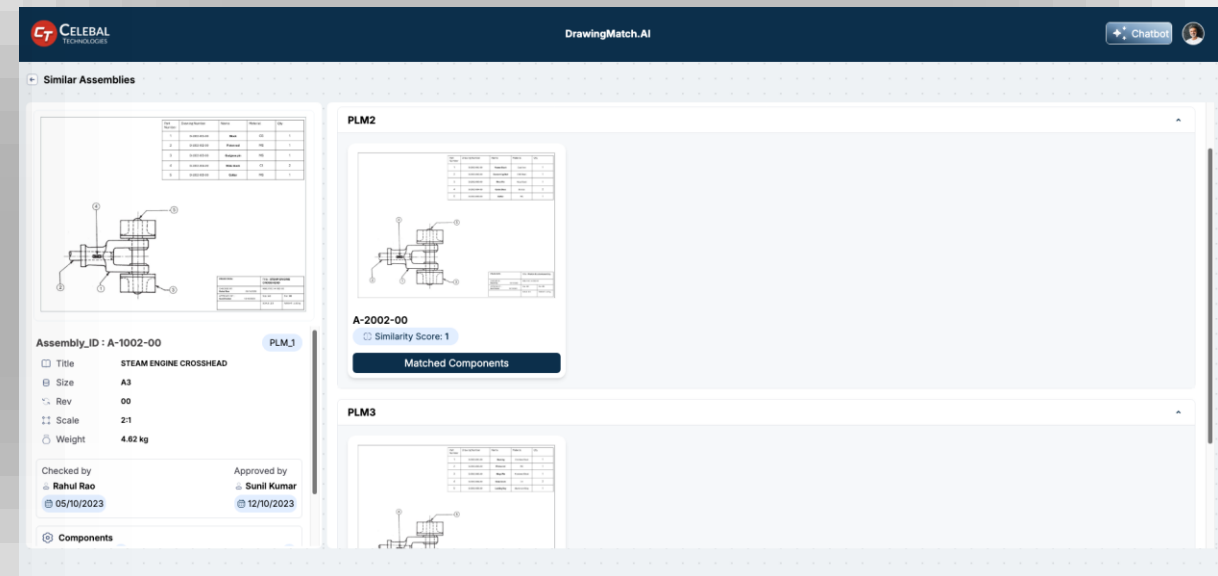
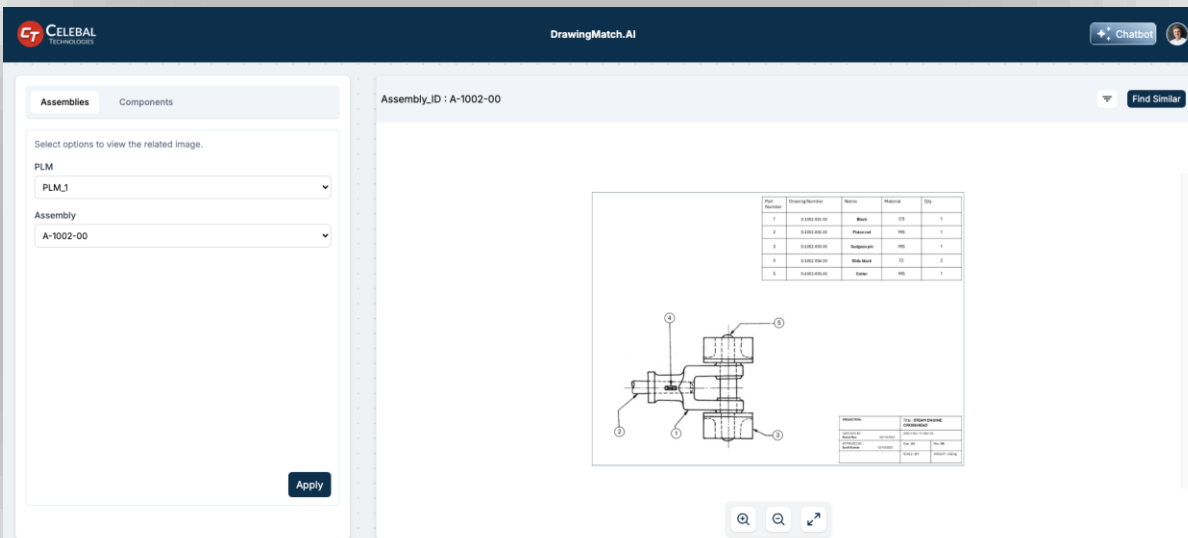
Azure Open
AI





Value for Design Engineer

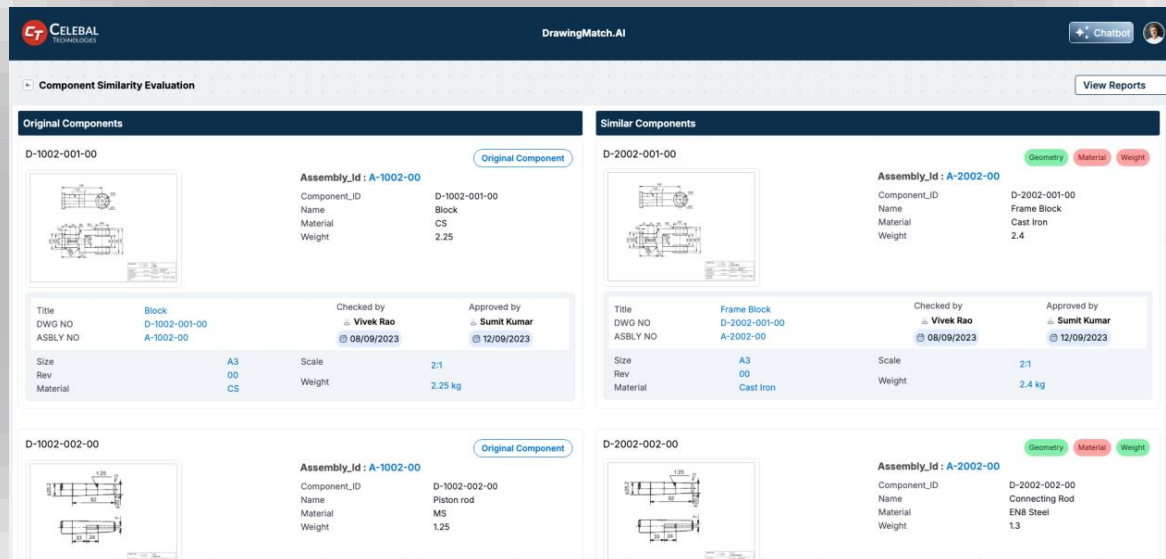
- Eliminates redundant designs, ensuring optimized use of existing components
- Enhances Engineering Change Management (ECM) by showing reusable alternatives with inventory insights
- Improves decision-making with live inventory visibility by assembly and plant
- Enhances decision-making with clear visibility into supplier options and component costs



A detail-oriented professional who specializes in creating, analyzing, and optimizing engineering designs, ensuring component standardization, manufacturability, and compliance with industry standards

Value for Product Development Engineer

- Eliminates unnecessary part creation, reducing costs and complexity
- Supports design-to-cost strategies with real-time inventory and sourcing insights
- Empowers data-driven design decisions through integrated PLM and inventory analytics
- Improves data-driven decision-making by merging geometry, metadata, and inventory insights

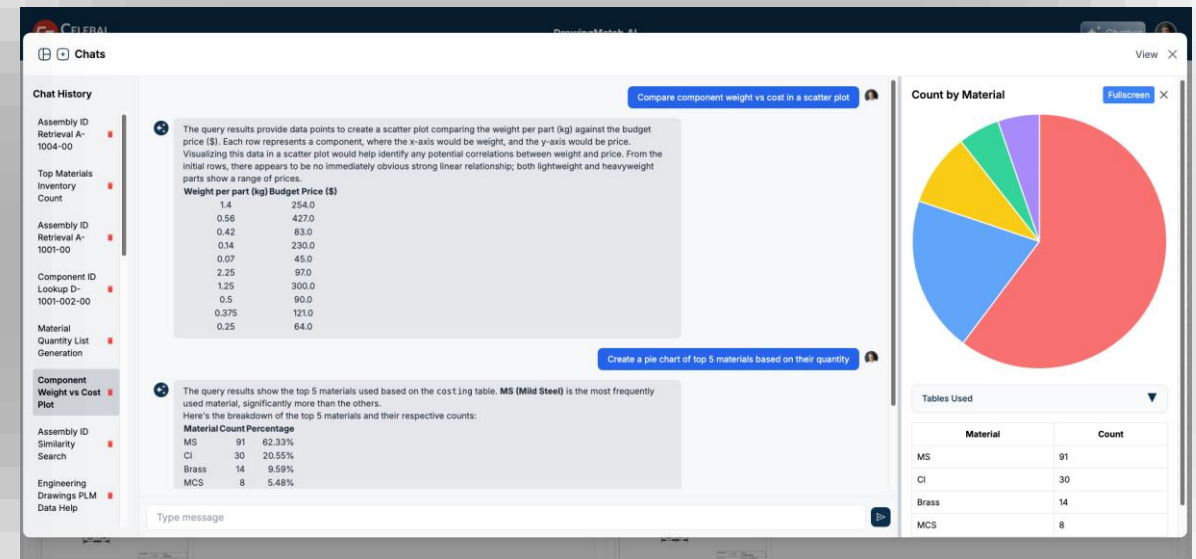


Original Components

Component ID	Name	Material	Weight
D-1002-001-00	Block	CS	2.25
D-1002-002-00	Piston rod	MS	1.25

Similar Components

Component ID	Name	Material	Weight
D-2002-001-00	Frame Block	Cast Iron	2.4
D-2002-002-00	Connecting Rod	EN8 Steel	1.3



Chat History

The query results provide data points to create a scatter plot comparing the weight per part (kg) against the budget price (\$). Each row represents a component, where the x-axis would be weight, and the y-axis would be price. Visualizing this data in a scatter plot would help identify any potential correlations between weight and price. From the initial rows, there appears to be no immediately obvious strong linear relationship; both lightweight and heavyweight parts show a range of prices.

Weight per part (kg)	Budget Price (\$)
1.4	254.0
0.56	427.0
0.42	83.0
0.14	230.0
0.07	45.0
2.25	90.0
1.25	300.0
0.5	90.0
0.375	121.0
0.25	64.0

Count by Material

Material	Count
MS	91
CI	30
Brass	14
MCS	8



Product Development
Engineer

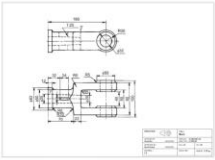
A Product Development Engineer focuses on designing, testing, and optimizing products by selecting standardized components, improving reusability, and ensuring efficient manufacturing while reducing costs and development time.

Component Comparison

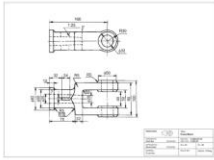
Engineering Drawing Comparison Report

Component Comparison

Drawing 1: Block
ID: D-1002-001-00



Drawing 2: Frame Block
ID: D-2002-001-00



General Information Comparison

Aspect	Drawing 1 (Housing)	Drawing 2 (Body)	Remarks
Title	Block	Frame Block	Different values
DWG No.	D-1002-001-00	D-2002-001-00	Different values
ASSY No.	A-1002-00	A-2002-00	Different values
Material	CS	Cast Iron	Different values
Weight	2.25	2.4	Different values

Geometrical and Dimensional Comparison

CT CELEBAL TECHNOLOGIES

DrawingMatch.AI

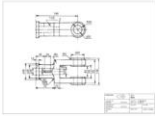
Chatbot

Component Similarity Evaluation

View Reports

Original Components

D-1002-001-00



Assembly_Id : A-1002-00

Component_ID

D-1002-001-00

Name

Block

Material

CS

Weight

2.25

Title

Block

DWG NO

D-1002-001-00

ASBLY NO

A-1002-00

Size

A3

Rev

00

Material

CS

Scale

2:1

Weight

2.25 kg

Checked by

Vivek Rao

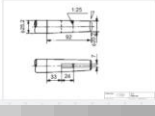
Approved by

Sumit Kumar

08/09/2023

12/09/2023

D-1002-002-00



Assembly_Id : A-1002-00

Component_ID

D-1002-002-00

Name

Piston rod

Material

MS

Weight

1.25

Title

Frame Block

DWG NO

D-2002-001-00

ASBLY NO

A-2002-00

Size

A3

Rev

00

Material

Cast Iron

Scale

2:1

Weight

2.4 kg

Checked by

Vivek Rao

Approved by

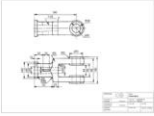
Sumit Kumar

08/09/2023

12/09/2023

Similar Components

D-2002-001-00



Assembly_Id : A-2002-00

Component_ID

D-2002-001-00

Name

Frame Block

Material

Cast Iron

Weight

2.4

Title

Frame Block

DWG NO

D-2002-001-00

ASBLY NO

A-2002-00

Size

A3

Rev

00

Material

Cast Iron

Scale

2:1

Weight

2.4 kg

Checked by

Vivek Rao


Approved by

Sumit Kumar

08/09/2023

12/09/2023

D-2002-002-00



Assembly_Id : A-2002-00

Component_ID

D-2002-002-00

Name

Connecting Rod

Material

EN8 Steel

Weight

1.3

Title

Frame Block

DWG NO

D-2002-001-00

ASBLY NO

A-2002-00

Size

A3

Rev

00

Material

Cast Iron

Scale

2:1

Weight

2.4 kg

Checked by

Vivek Rao

Approved by

Sumit Kumar

08/09/2023

12/09/2023

Document Viewer

Engineering Drawing Comparison Report

Component Comparison

Drawing 1: Block
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Drawing 2: Frame Block
ID: D-2002-001-00



General Information Comparison

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Material	CS	Cast Iron	Different values



CELEBAL
TECHNOLOGIES

Thank You