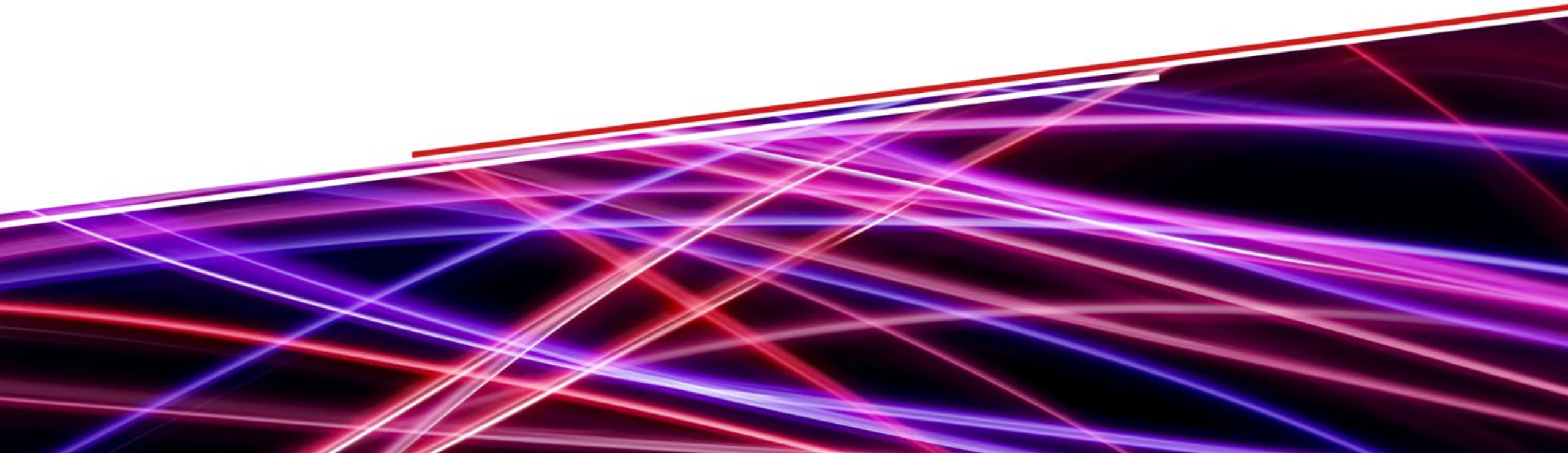


ACE 2024

Empowering Digital Transformation:

Unlocking User Adoption through Innovative e-Learning Solutions



slido



This presentation is interactive!!

I need your help!!

**Join at [slido.com](https://www.slido.com)
#4026533**

Got Questions?
Pop them into the Q&A section.
(Fire Away!)

ⓘ Start presenting to display the joining instructions on this slide.

slido



Where are you from?

ⓘ Start presenting to display the poll results on this slide.

Empowering Digital Transformation:

Unlocking User Adoption through Innovative e-Learning Solutions

Abstract:

Discover DENSO's digital learning evolution at this enlightening session, detailing the shift from dated training methods to an advanced Learning Management System (LMS) integrated within the Aras Platform. In this case study, we'll cover DENSO's journey—starting with the traditional training challenges, through the implementation of an LMS tailored to foster user adoption and compliance with IATF standards.

Learn about the LMS's design, focusing on system reusability, user-friendly interfaces crafted by our partner SteepGraph using Articulate 360, and secure access control. We'll provide a snapshot of the system's impact on DENSO's operations, illustrated through concise case studies, and conclude with a glimpse into the future of DENSO's corporate learning, highlighting the potential for an expansive learning library.

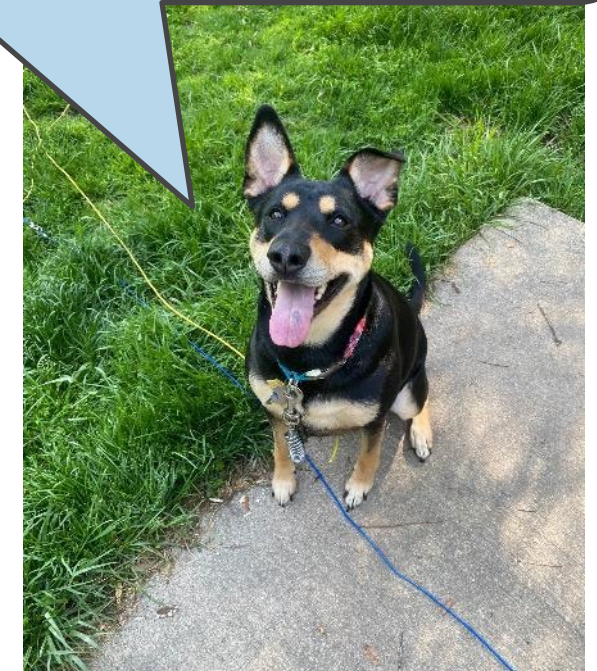
Engage with us in a dynamic Q&A session, delving into the intersection of e-learning and user engagement within the digital transformation framework. Join DENSO in redefining industry learning standards and driving innovation through education.

Hi, I'm Pippi

I am easy to train when engaged

Engagement → Adoption

Adoption → Business Results



slido



What's one thing you recall from the abstract?

ⓘ Start presenting to display the poll results on this slide.

Agenda

Topic	Contents	Duration
Introduction to DENSO	<ol style="list-style-type: none">1. Brief overview of DENSO's industry presence and importance.	5 min
Evolution of Learning at DENSO	<ol style="list-style-type: none">1. Challenges of past learning systems2. Addressing requirements for training traceability and documentation.	5 min
LMS Requirements	<ol style="list-style-type: none">1. Reusability: System maintenance and automatic role-based course assignments.2. User Interface: Developed by Partner SteepGraph, utilizing Articulate 360.3. Access Control: Simplifying and securing user access.	5 Min
Learning Management System (LMS)	<ol style="list-style-type: none">1. The inception of LMS as a response to corporate training needs.2. Details on how LMS is integrated within the PLM to streamline learning.	5 Min
LMS Outcomes & Benefits	<ol style="list-style-type: none">1. Demonstrating the impact of LMS on DENSO's productivity and efficiency.2. Specific case studies of user adoption success stories.	5 Min
Future of Learning at DENSO	<ol style="list-style-type: none">1. Vision for a comprehensive learning library.2. Potential for scaling and adapting the LMS for future learning needs.	5 Min
Q & A	Open Discussion & Questions	15 Min

Employees

165,000

Consolidated
Revenue

\$48 billion

World-First
Products

over **130**

Patents Held

41,000

Medals at the
WorldSkills
Competition

77

Global Network

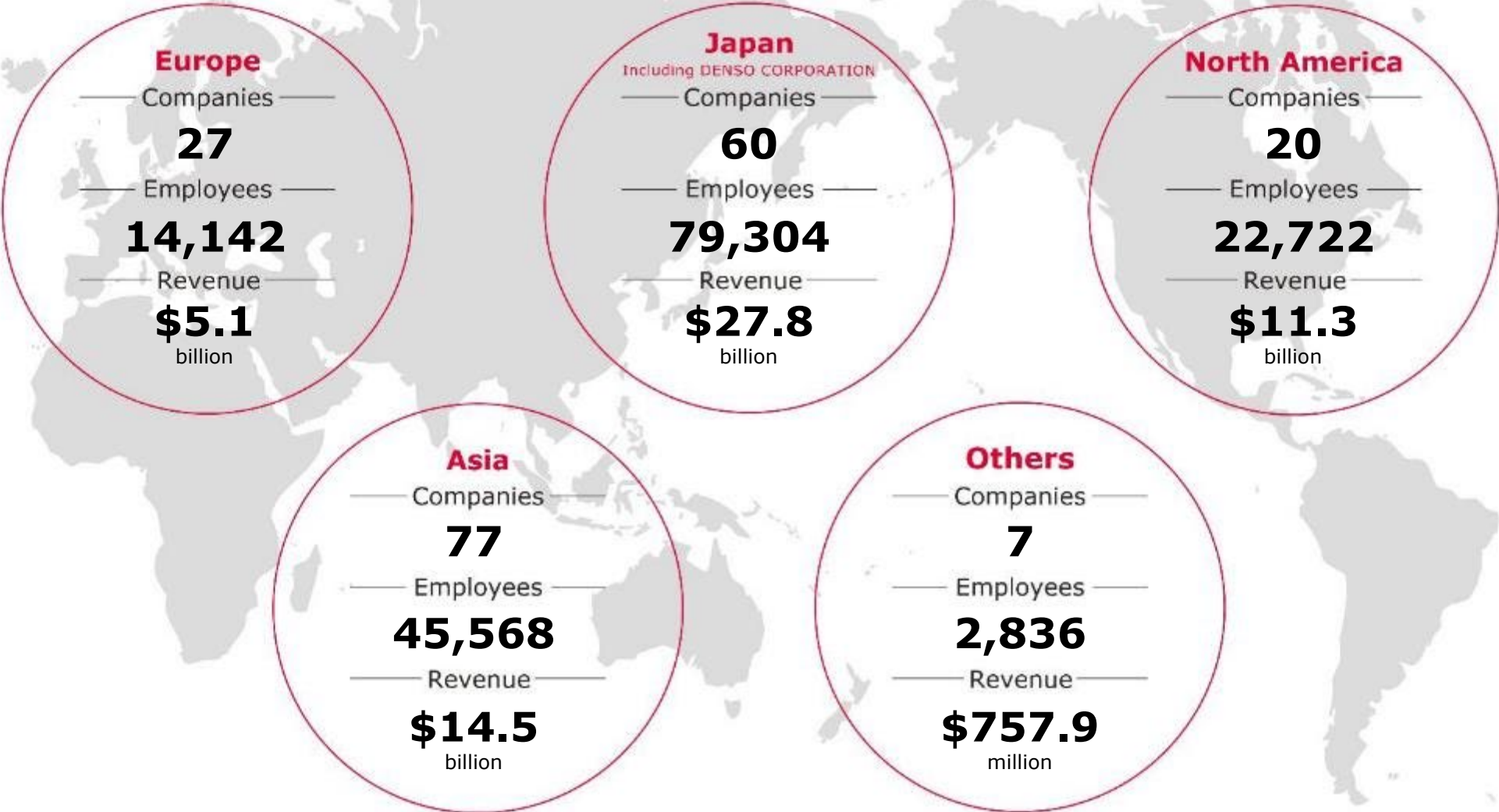
**35 countries
and regions**

Overseas Revenue
Ratio

56%

As of March 31, 2023

Global Network



The figures for revenue include adjustments between segments.

As of March 31, 2023

4 FOCUS FIELDS

DENSO is contributing to the improvement and social productivity by working to provide new mobility value, establish factory automation (FA) and industrialize agriculture.



ELECTRIFICATION

Reducing Environmental Burden and Realizing Highly Efficient Mobility


- Electrification Systems
- Powertrain Systems
- Thermal Systems
- Mobility Electronics
- Advanced Devices



ADVANCED SAFETY & AUTOMATED DRIVING

Realizing a Safe Society without Fatalities from Traffic Accidents, and Free and Comfortable Mobility

- Thermal Systems
- Mobility Electronics
- Advanced Devices



CONNECTED DRIVING

Realizing a New Mobility Society That Connects Vehicles, People, and Goods

- Mobility Electronics



NON-AUTOMOTIVE BUSINESSES
(FACTORY AUTOMATION & AGTECH)

Contributing to Improved Social and Industrial Productivity

- Advanced Devices
- Food Value Chain
- Industrial Solutions

7 CORE BUSINESSES

1 Advanced Devices
Leading the industry in sensing and semiconductor technologies and energy management that are eco-friendly and help realize a mobility society with comfort and peace of mind. Non-Automotive Businesses main products: semiconductor sensors

2 Electrification Systems
Supporting electrification in all areas of mobility to realize an enriched environment and comfortable mobility

3 Powertrain Systems
Providing solutions that help overcome the seemingly contradictory task of balancing the joy of life with vehicles with superior environmental performance

4 Thermal Systems
Resolving various thermal-related issues present in the mobility society in order to realize a more comfortable society for both the earth and its people

5 Mobility Electronics
Realizing a society in which all people can move comfortably and with peace of mind (Quality of Mobility)

6 Food Value Chain
Combining technologies and ideas to contribute to an enriched society where all people can live safely and with peace of mind

7 Industrial Solutions
Enhancing the productivity of the Monozukuri (manufacturing) industry and contributing to an improved quality of life

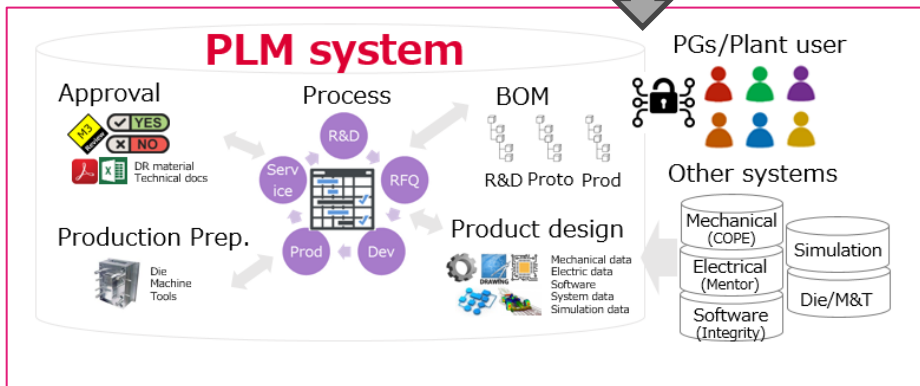
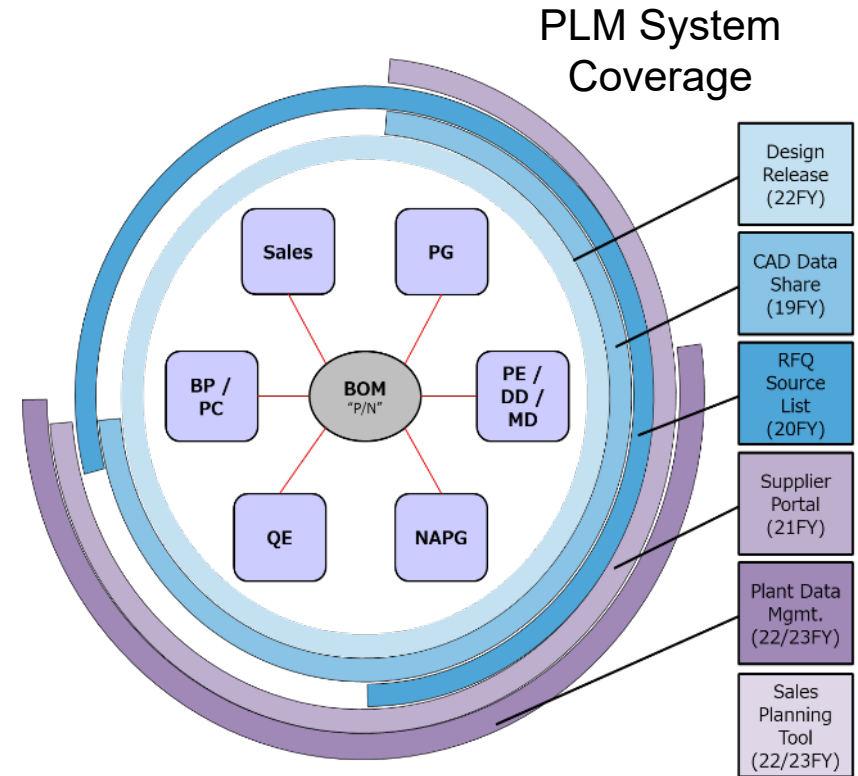
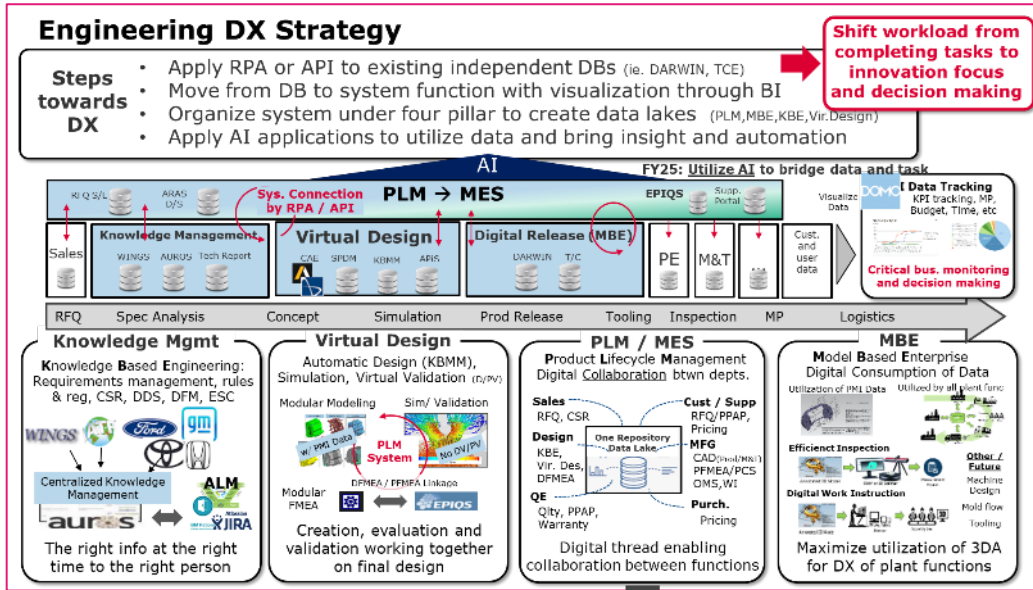
slido



Remind me, what does DENSO do?

ⓘ Start presenting to display the poll results on this slide.

Our PLM Strategy



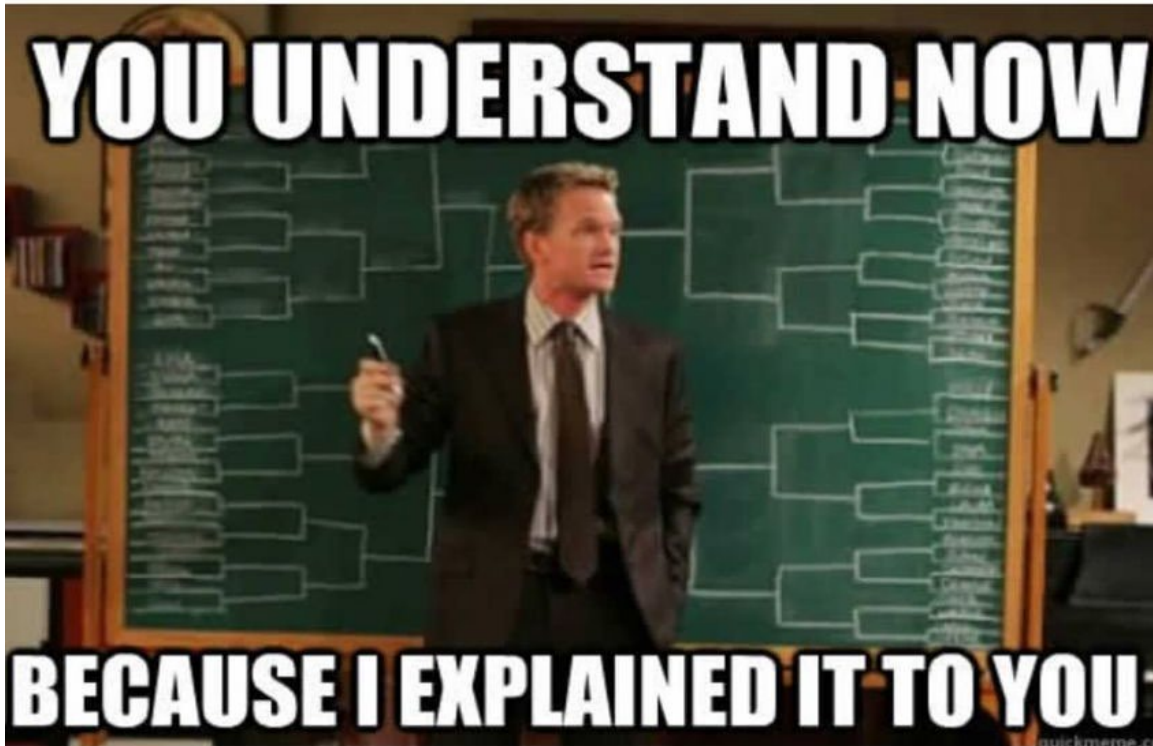
Key Points:

1. PLM is the heart of DENSO's DX Strategy
2. As our PLM system becomes more complex, we need educated, adopted users.

Evolution of Learning

Traditional Training Challenges

Traditional lectures be like:



- Training Time
- Cost
- Attendee's schedule

Hi again, Pippi here.
I won't focus on training if I'm not engaged. My schedule is busy, I have feather puppies to care for!



slido



Who here has taught a class and caught someone distracted or sleeping in the class?

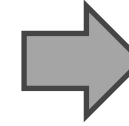
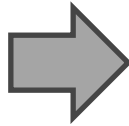
ⓘ Start presenting to display the poll results on this slide.

From PowerPoint to Empowerment

Transitioning from PowerPoint to a learning management system empowers education with **interactive engagement** and **digital accessibility**.

Interactive Engagement

Digital Accessibility



IATF Training Standards



- International Automotive Task Force
 - IATF 16949
 - Think ISO 9001 but with some specifics for the Automotive Industry
- Traceability
- Evidence of completion
- Assigned required trainings by role or department

Case Study: Traditional vs. LMS

Traditional training methodology

- Development cost
- 8 sessions for 1800 in-person and a few “recorded training” viewers
- 217 Help desk tickets

Total cost of training: \$350K

Goals of the LMS:

- Reduction in training time
- Reduction in investment cost
- Reduction in help desk tickets



slido



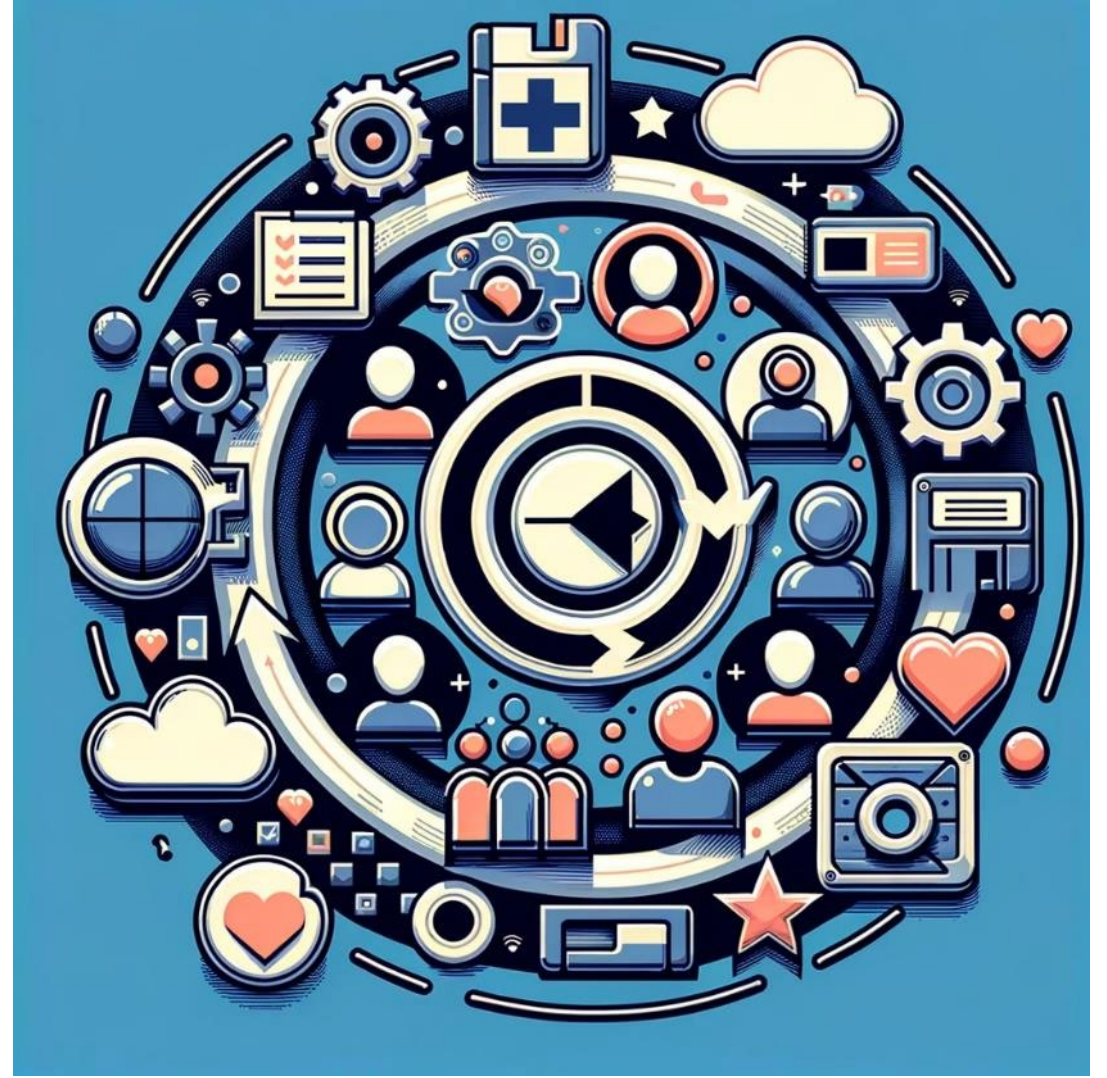
**What do you think will be the (ROI)
Benefit of the LMS?**

① Start presenting to display the poll results on this slide.

LMS Requirements

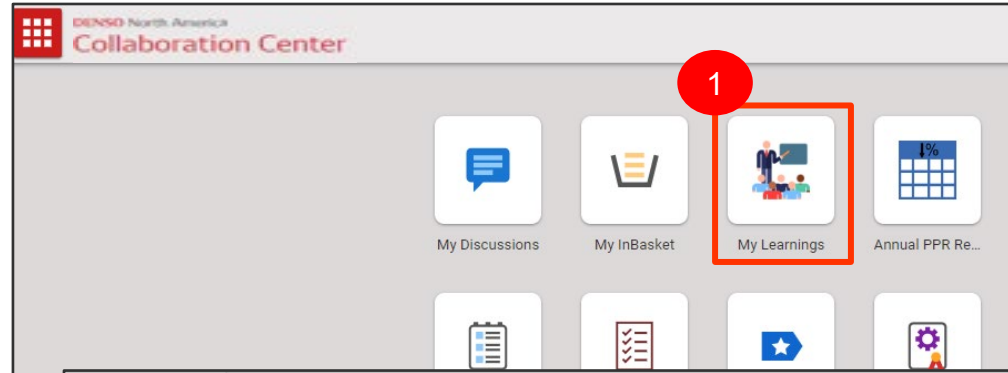
Requirements

- Reusable
- Specific to each user type and role
- High level of engagement
- Ability to save progress
- Traceability: Easy to identify completion status

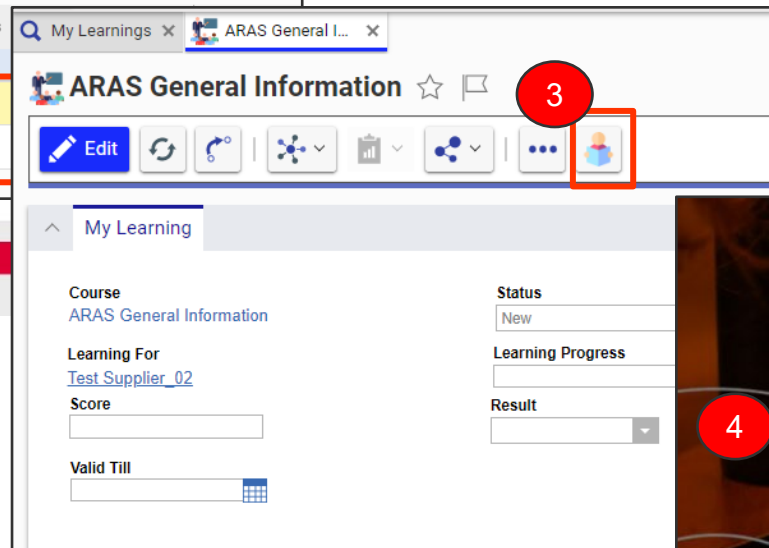
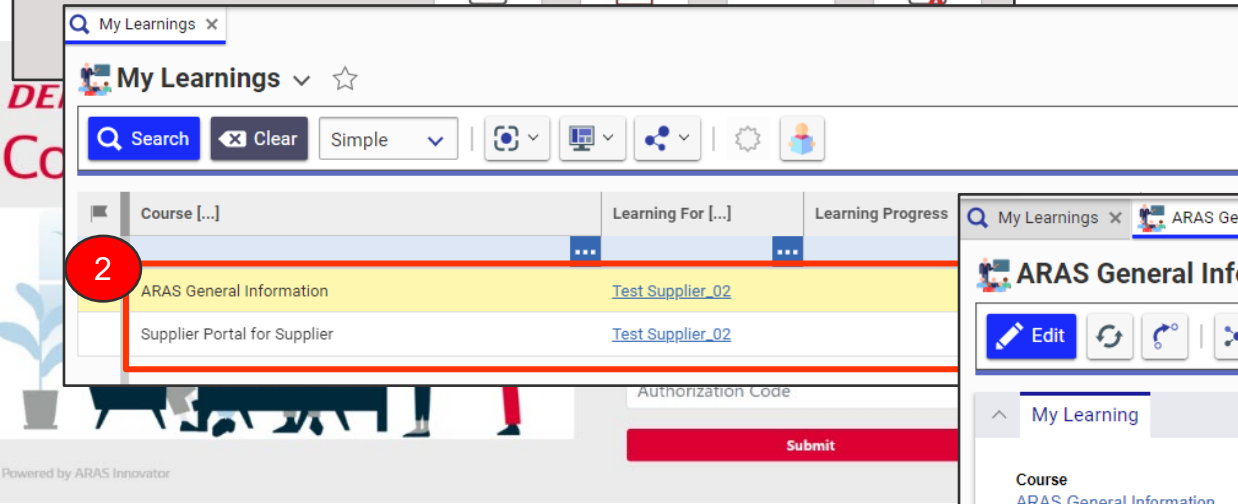


Learning Management System (LMS)

My Learnings - E-Learning Courses



E-Learning courses detail step by step instructions for each module.



My Learnings - E-Learning Courses (cont.)

Users can scroll to go through all of the course sections and knowledge checks.

They can come back to the course and any time to complete the material or use later as a point of reference.

The system will keep track of your learning progress as you go along as indicated by the check marks and completion rings.

DENSO North America
Collaboration Center



Powered by ARAS Innovator

Welcome!

Username

aamdommer

Password

You can complete the learning sections in any order or come back to them later as points of reference.

A screenshot of the DENSO North America Collaboration Center interface. The page title is "General Information" with a "14% COMPLETE" indicator. Below the title is a list of course sections: "GETTING STARTED" (highlighted in green), "Preface" (checked), "More About This Course..." (checked), "What Will You Learn?" (in progress), "SUPPLIER PORTAL OVERVIEW" (highlighted in green), "Overview" (unchecked), "SUPPLIER PORTAL NAVIGATION" (highlighted in green), "Login & Logout" (unchecked), and "Splash Screen & Table Of Contents" (unchecked). The "Preface" and "More About This Course..." sections are highlighted in yellow, and a red arrow points from a text box to the checkmark next to "Preface".

Specific questions on the technical requirements on how the team developed and integrated this training into Aras will be presented by our partner SteepGraph at **4:50PM in Elm Fork 2. Accelerated User Adoption with Next-Gen e-Learning Solution.** (Tajagna & Lars)

LMS Outcomes & Benefits

Impact: Benefits & Outcomes

Method	System	Total Cost	Users	\$/User	Cost Reduction
Traditional	DxEEEP	\$350K	1800	\$194	N/A
New	Supplier Portal (Int+Ext)	\$185K	1800	\$103	47%
New	Supplier Portal (Ext)	\$93K	2208	\$42	73%

Dad gets to spend more time (And Milkbones) on me!



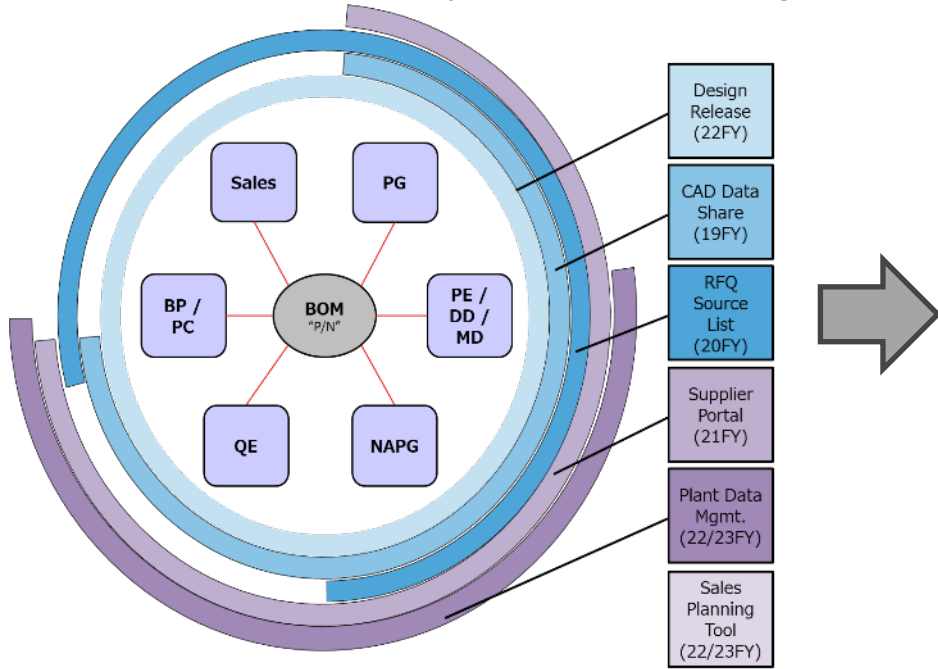
What's better than a \$421K Cost Savings? Using an integrated LMS saved us 6,012 hours and reduced our IT burden by 1302 hours!

What would you do with an extra 7,314 hours this year?

Future learning at DENSO

The Future! What's Next?

Remember our PLM system & upcoming modules? Let's apply this to all of our existing & new modules:



Method	System	Total Cost	Users	\$/User	Cost Reduction
Traditional	DxEEP				
New	Supplier Portal (Int+Ext)				<div data-bbox="1554 456 2535 699" data-label="Text"> <p>In the next 2 years, the LMS will potentially save DENSO over 13K hours, which at \$85/hour is \$1.1Million</p> </div>
New	Supplier Portal (Ext)				
New	Change Management				
New	Sales Portal				
New	Supplier Portal Wave 2				
New	Source List				
New	Plant Data				

Key Point: All modules should have a training target that considers both a time and cost saving.



Almost to the Q&A...

slido



Before we start the Q&A, how was this training?

ⓘ Start presenting to display the poll results on this slide.

slido



What did you like / Dislike about this training? What can we do to improve this training next time?

① Start presenting to display the poll results on this slide.

Q & A

slido



Audience Q&A Session

① Start presenting to display the audience questions on this slide.



DENSO

Crafting the Core

ACE
2024

Speaker: Christopher M. McDermott, PE, PMP



Job title: Engineering Manager, Reserve Naval Officer, CrossFit enthusiast



DENSO Bio:

Chris leads DENSO International America's PLM team, steering 23 years of corporate evolution with 1.5 years in PLM helm. A digital transformation maestro, he's leveraged global insights from stints in Mexico, Japan, and Canada to fuel innovation from Michigan. Chris catapulted DENSO's North American PLM with two new modules and a major in-house digital upgrade. His strategic and nurturing leadership boosts team spirit and sets industry standards.

Speaker Bio (Formal)



Name: Christopher M. McDermott, PE, PMP

Job title: Engineering Manager

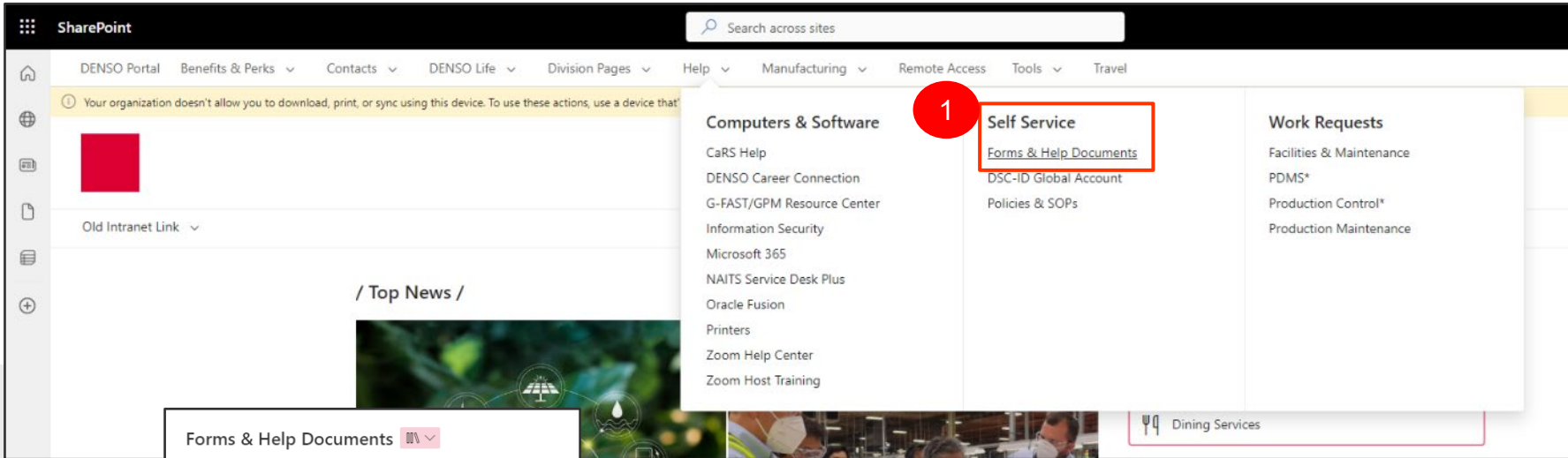
Bio:

Chris is a distinguished leader at DENSO International America, Inc. (DIAM), where he heads the PLM team within the Engineering Development Promotion Division. With a rich tenure of 23 years at DENSO, including 1.5 years in PLM leadership, Chris has been instrumental in navigating the company through the complexities of the automotive sector's digital transformation. His expertise stretches across engineering, management, and strategy, underpinned by his experience in Mexico, Japan, and Canada, showcasing his commitment to global innovation from his Southfield, Michigan base.

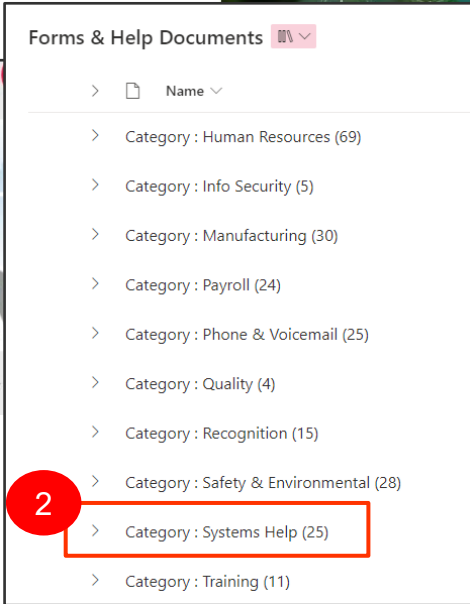
Under Chris's stewardship, DENSO's PLM initiatives across North America have seen remarkable advancements, including the successful launch of two additional PLM modules—expanding the system to five—and spearheading a significant in-house development project that has notably enhanced DENSO's digital infrastructure. His leadership philosophy marries strategic foresight with a supportive, coach-like approach, emphasizing high team engagement and morale as the keystones of success. Chris's visionary leadership not only strengthens DENSO's digital backbone but also sets new benchmarks in the automotive industry's digital landscape.

Supplemental




Accessing DENSO User Guides



User Guides with detailed step by step instructions are available on the DENSO NA SharePoint site.

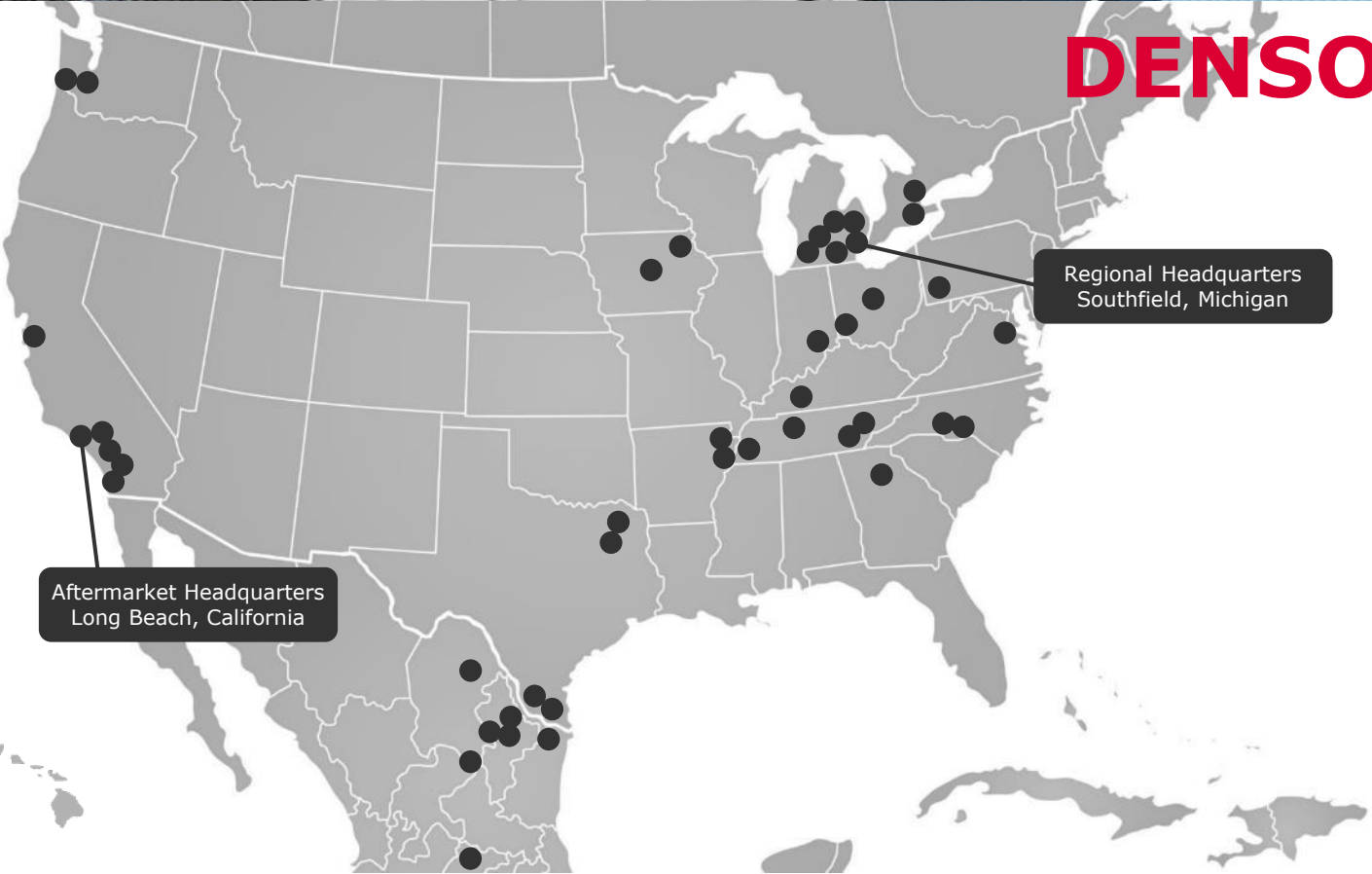


The screenshot shows a table of documents. A red circle '3' highlights the first row. The table has columns for document name, author, and location.

 NA - DENSO Supplier Portal - Associate Supplier Portal User Guide.pdf	Jennifer Taylor	North America
 NA - DENSO Supplier Portal - NAPG User Guide.pdf	Jennifer Taylor	North America
 NA - DENSO Supplier Portal - Production Control User Guide.pdf	Jennifer Taylor	North America



DENSO in North America



Established	1966
Facilities	46
Consolidated Revenue	\$11.3 billion
Operating Profit	\$134.2 million
Employees	27,000+

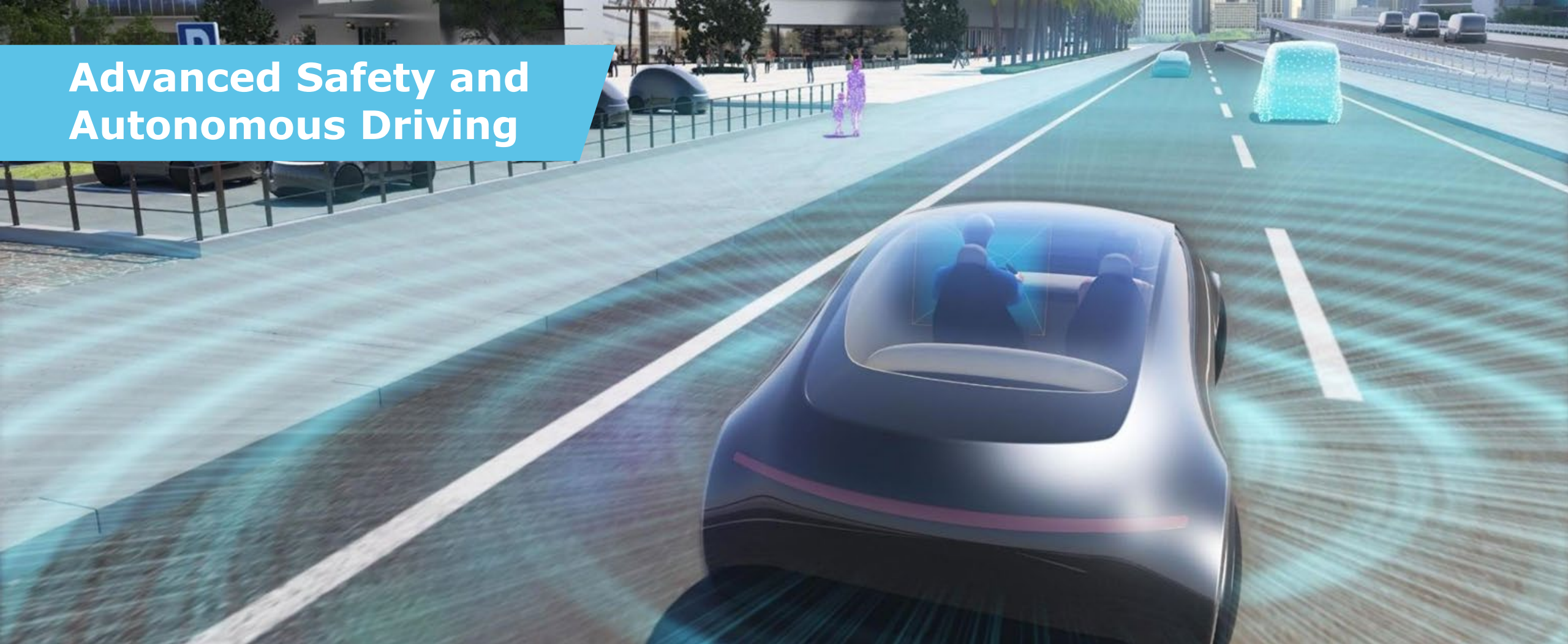
As of March 31, 2023

Electrification



DENSO will leverage our expansive business domains to form connections between various in-vehicle systems and products in an effort to efficiently manage energy within vehicles. In this manner, we will further improve fuel efficiency and contribute to the conservation of energy.

Advanced Safety and Autonomous Driving



By enhancing our long-cultivated sensing technologies as well as our AI and information technologies, we will further contribute to the development of autonomous driving technologies, and deliver genuine peace of mind for the future of mobile society.

Connected Cars



DENSO is pursuing efforts in providing mobility services that are convenient, safe, secure, and efficient transportation methods with low environmental burden for people with vehicles and for those without, thereby contributing to the realization of a new mobile society.

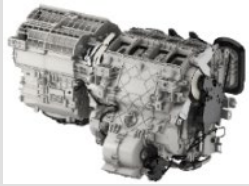
Non-Automotive Businesses (Factory Automation and Agriculture)



DENSO provides Factory Automation systems that can meet the diverse needs of our customers, thereby making extensive contributions to the development of the manufacturing industry. We draw on the expertise and know-how we have cultivated in the automotive field to offer new value in agricultural fields.

Main Products: Automotive Business

Thermal Systems



Car Air-conditioner



Water Cooled Intercooler



Radiator



High Voltage Water Heater

Powertrain Systems



Direct Injection High Pressure Injector



Common Rail Systems



Variable Cam Timing



Accelerator Pedal Module

Electrification Systems



Inverter



Motor Generator



Alternator



Wiper System

Mobility Systems



Stereo Vision Sensor



Millimeter-Wave Radar Sensor



Driver Status Monitor



Engine ECU

Sensing System, Semiconductor



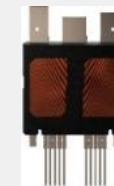
Solar Sensor



Steering Torque Sensor

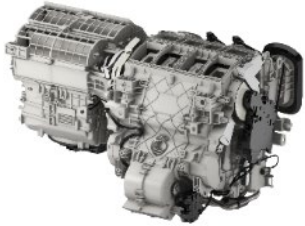


Matrix IR Sensor

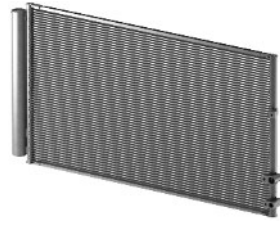


Power Module for Automobiles

Main Products: Thermal Systems



Car Air-conditioner



Condenser



Evaporator



Heater Core



Water Cooled Intercooler



Radiator



Electric Compressor



High Voltage Water Heater



Electric Bus Air-conditioner

Main Products: Powertrain Systems



Direct Injection
High Pressure Injector



Direct Injection High Pressure Pump



Variable Cam Timing



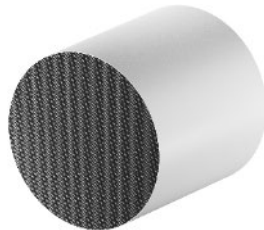
Iridium Spark Plug



Ignition Coil



Oxygen Sensor



Substrate



Common Rail Systems

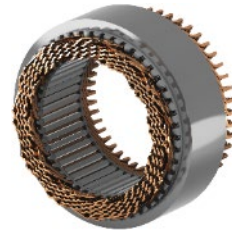


Accelerator Pedal Module

Main Products: Electrification Systems



Inverter



Motor Generator



Lithium-ion Battery Pack



Alternator



Starter



Lithium-ion Battery
Electronic Control Unit



Electric Power Steering Motor



Wiper System



Power Window Motor

Main Products: Mobility Systems



Stereo Vision Sensor



Millimeter-Wave Radar Sensor



Instrument Cluster



Head-Up Display Unit



Driver Status Monitor



Telematics Control Unit
DCM(Data Communication Module)



ETC and ETC2.0 On-Board Equipment



11.6-inch Touch Display



Engine ECU

Main Products: Sensing System, Semiconductor



Solar Sensor



Matrix IR Sensor



Intake Air Pressure Sensor



Engine Oil Level Switch



Steering Torque Sensor



Wheel Speed Sensor



Rain Sensor



Power Module for Automobiles



SiC Power Device for Audio

Main Products: Non-automotive business (Factory Automation, Agriculture, Industry/Home)



Automated Modules



QR Solution Services



Spot Cooler



Vertical Articulated Robot



Automated Harvesting Robot
(Under verification testing)



HEMS
(Home Energy Management System)



Collaborative Robots



Environmental Control Systems for
Greenhouse Cultivation



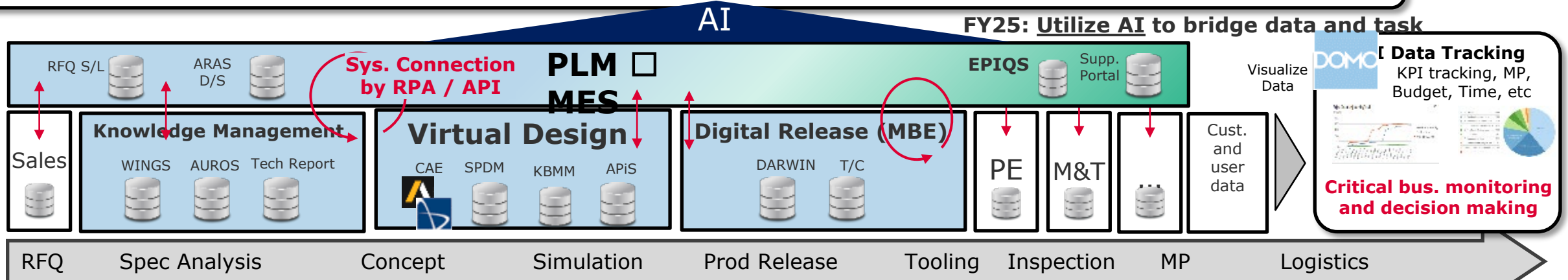
CO₂ Refrigerant Heat-Pumps

Engineering DX Strategy

Steps towards DX

- Apply RPA or API to existing independent DBs (ie. DARWIN, TCE)
- Move from DB to system function with visualization through BI
- Organize system under four pillar to create data lakes (PLM, MBE, KBE, Vir. Design)
- Apply AI applications to utilize data and bring insight and automation

Shift workload from completing tasks to innovation focus and decision making



FY25: Utilize AI to bridge data and task

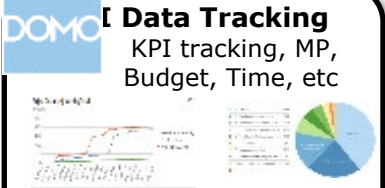
Sys. Connection by RPA / API

PLM
MES

EPIQS

Supp. Portal

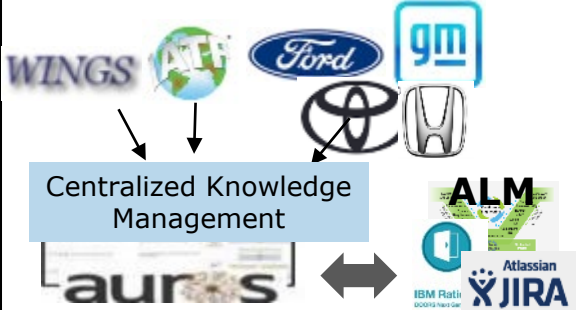
Visualize Data



Critical bus. monitoring and decision making

Knowledge Mgmt

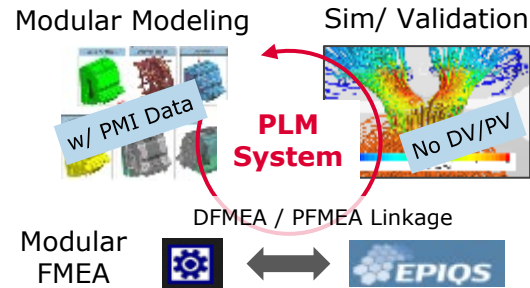
Knowledge Based Engineering: Requirements management, rules & reg, CSR, DDS, DFM, ESC



The right info at the right time to the right person

Virtual Design

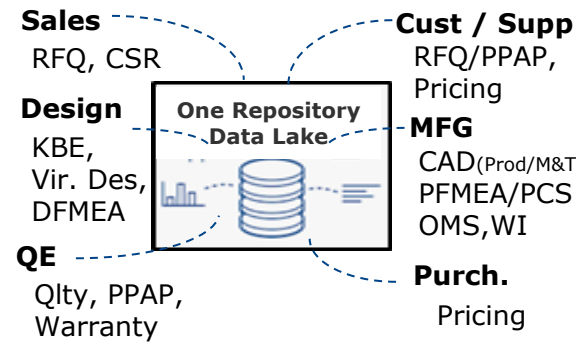
Automatic Design (KBMM), Simulation, Virtual Validation (D/PV)



Creation, evaluation and validation working together on final design

PLM / MES

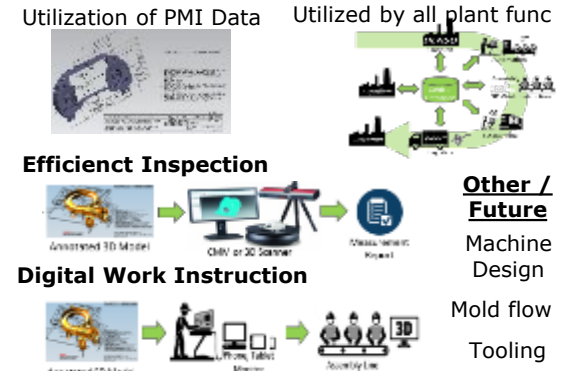
Product Lifecycle Management
Digital Collaboration btwn depts.



Digital thread enabling collaboration between functions

MBE

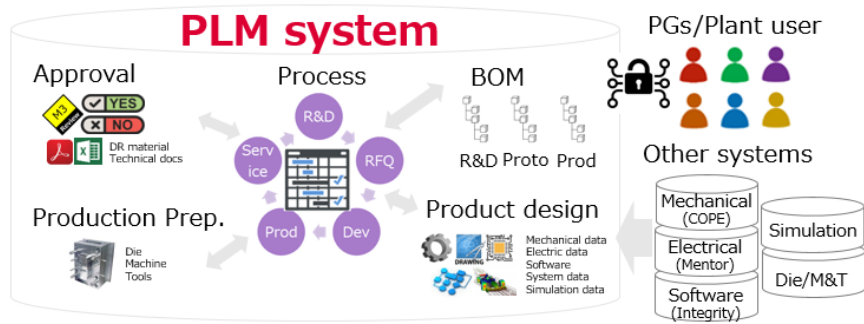
Model Based Enterprise
Digital Consumption of Data



Maximize utilization of 3DA for DX of plant functions

Other / Future
Machine Design
Mold flow
Tooling

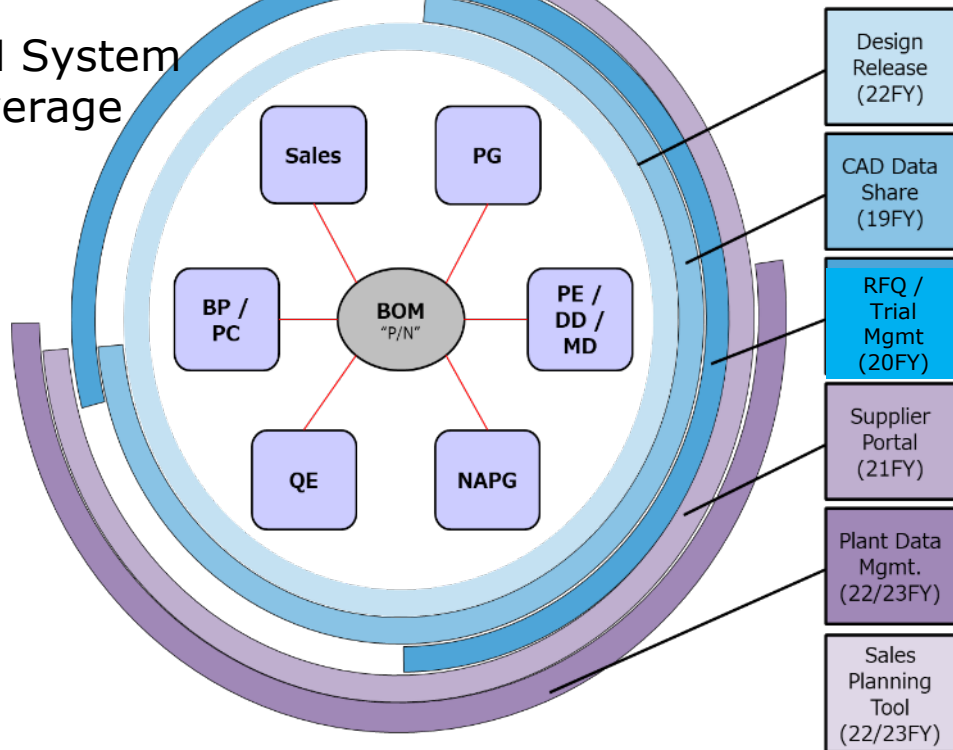
PLM as a Collaboration Platform



TO-BE Easy to see all information.

- **Stored/shared all data and link each other.**
- **Backbone for MBE activities.**

PLM System Coverage



Description	Collaboration Silos
Prototype and Production Released official data available in NA Aras from DXEEP so that Engineering collaborate w/ Plant for RFQ/Source BOM, WIP CAD data sharing within NA , Supplier data exchange.	Product Design, Sales, Plant FG
Created to automatically/efficiently share latest CAD data with DIAM plants. Integrated collaboration tool allows alignment/discussion.	Product Design, Plant FG
Automate & centralize RFQ & Sourcing process w/connection to team center & BOM. Create collaboration & communication between groups. Track changes and related impact with history & lessons	PD, BP, PU, PC, DD, Sales
Within DENSO, interacting between related groups Outside of DENSO, interacting with Suppliers to monitor data exchange, part/tool maturity, logistics, PPAP, Quality, etc.	NAPG, QE, PD
Automate & centralize BOM/CAD Documents for machine, tool and die design area & allow collaboration & communication between groups	M&T, DD, PD
Process to manage new business opportunity and price/profit during RFQ & development. Create a collaboration between Sales, Engineering and Manufacturing by utilizing ties to supplier portal and Source list/RFQ thus modernizing the sales process and source data.	Sales, PD, BP