Presentation Materials
（Focusing on PLM and Digital Twin Solutions)

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Junatica Japan LLC.

https://www.junatica.com/

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1. Introduction

Junatica Japan LLC and our partners provide end-to-end comprehensive engineering services, mainly in the industries that handle manufacturing and the flow of products, with PLM/SCM/CRM (*1) and Digital Twin (*2) as core solutions.

Based on our experience in large-scale project operation in manufacturing, logistics, finance, real estate, energy, and other industries, we have provided long-term support to our clients from the upstream of system development, such as planning, requirements definition, and architecture design, through production deployment and commercialization.

We offer a variety of methodologies that lead to successful projects, and we believe the keys to success are flexible project management to achieve KPIs, agile development, and product competitiveness when it comes to commercialization.

PLM/SCM/CRM (*1)

PLM refers to methods and systems for managing products life cycle (from planning and manufacturing to disposal and reuse), SCM refers to methods and systems for managing procurement and logistics related to products, and CRM refers to methods and systems for maintaining sales, marketing, and customer relationships. PLM focuses on "making," while SCM focuses on "distribution," and CRM focuses on "selling," but they are usually intricately intertwined.

Digital Twin (*2)

This is a technology that reproduces the real world in its entirety, like a "twin", in a digital space by collecting a variety of data from various sensors. For example, in factory management, IoT devices can be used to collect data on facility operating conditions and reproduce them in a digital space, enabling simulations that are close to reality. In other cases, prior testing of partial changes to factory equipment can be conducted on a Digital Twin, leading to reductions in time and cost. The Digital Twin can also be used for remote monitoring of equipment and remote instructions to on-site workers through a network.

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2. Main Solution - PLM

In the PLM area, the mainstream has shifted from the improvement of design and manufacturing by 3D-CAD/CAM/CAE, to the normalization and integrated data management in BOM.

The following is an example of a "Reforming project for R&D process" aimed at the visualization of cost management.

We have provided many clients with planning support services prior to system implementation.
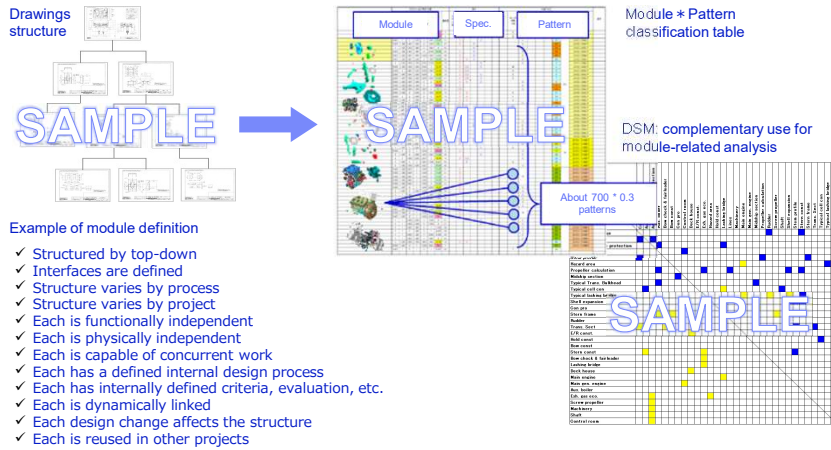

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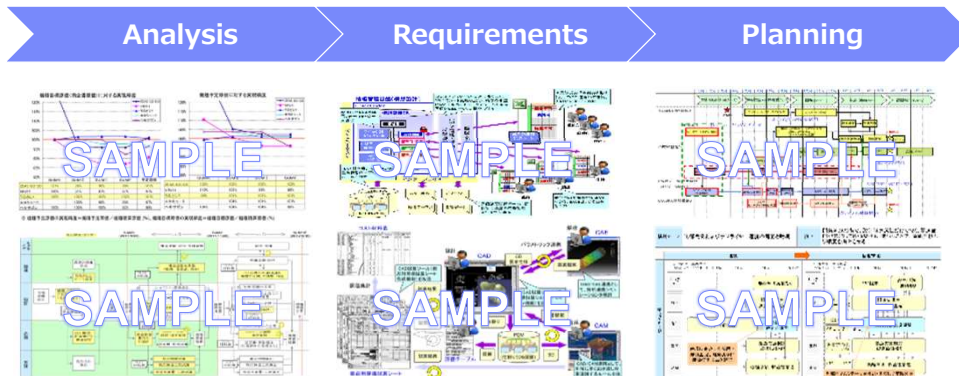
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We also provide system development support for the unique functions implementation.
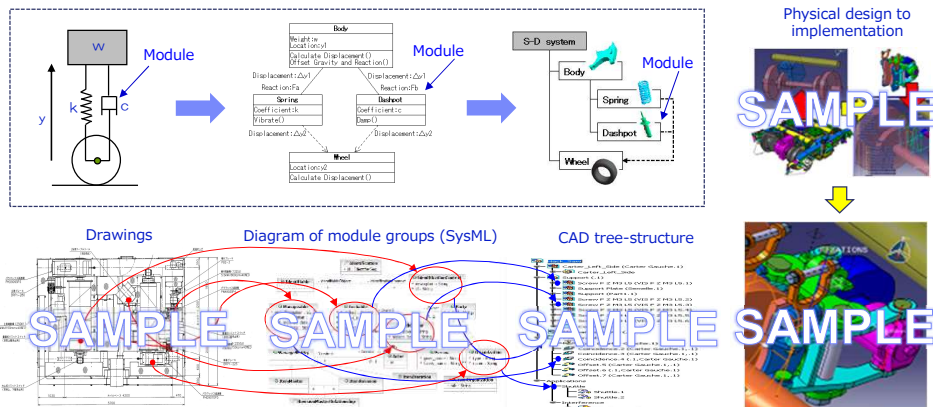The following are examples of "Design Templates development project".

① Extraction of modular components using "DSM method"

Drawings structure

Module ∗ Pattern classification table

DSM: complementary use for module-related analysis

About 700 ∗ 0.3 patterns

Example of module definition

- ✓ Structured by top-down
- ✓ Interfaces are defined
- ✓ Structure varies by process
- ✓ Structure varies by project
- ✓ Each is functionally independent
- ✓ Each is physically independent
- ✓ Each is capable of concurrent work
- ✓ Each has a defined internal design process
- ✓ Each has internally defined criteria, evaluation, etc.
- ✓ Each is dynamically linked
- ✓ Each design change affects the structure
- ✓ Each is reused in other projects

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② Development of Design Templates using "MBSE methodology"

Module

Module

Module

Physical design to implementation
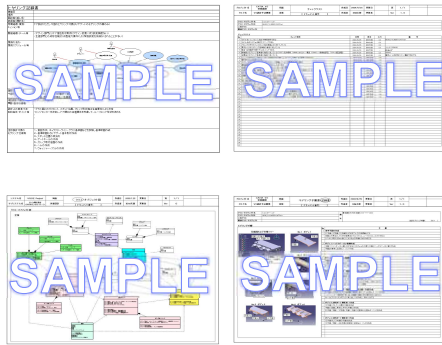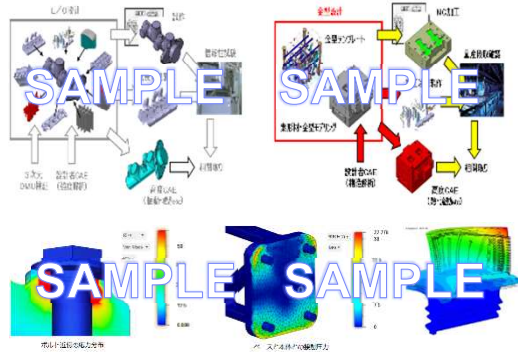
Drawings

Diagram of module groups (SysML)

CAD tree-structure

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③ Mold design using Design Templates and FEM analysis

Standardized design spec documents

Mold design analysis using 3D-CAD

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3. Main Solution - Digital Twin

Digital Twin is a key for DX in various manufacturing domain with the technological innovation of AI/IoT. As it is a new solution, we are working with a leading company in this solution provider.

The solution is implemented using a proprietary toolkit on an IT industry-standard platform, allowing for agile development and smooth go-live, as well as an easy-to-use UI with containers for each domain.

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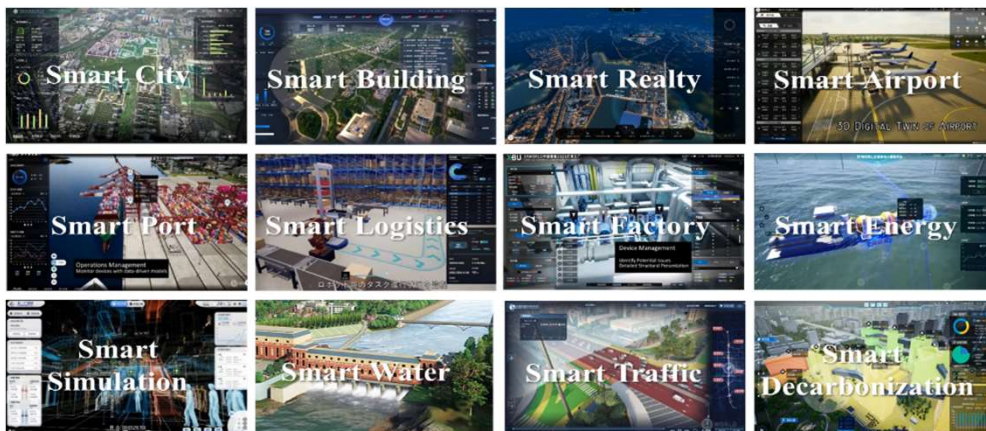
Case studies of Digital Twin solution in Japan

Automated Vehicle Driving Test System (2019)
Development of a platform to incorporate various traffic scenarios and validate the execution timing and reaction speed of the automated driving module.

Real Estate Sales and Display System (2021)
Simulation system to support planning, marketing, and sales promotion prior to property completion. A 3D visualization module is implemented to confirm the surrounding environment and building appearance, select rooms, and conduct virtual previews. The system facilitates the visualization of the living environment and reduces the cost of model rooms.

Smart Building & Human Flow SIM (2020)
Verify the practicality of 3D models in urban area management and facility management. Furthermore, we developed a simulation of human flow for disaster countermeasures and performed simulations of human running speed and congestion under various scenarios. This will contribute to the optimization of disaster countermeasure plans.
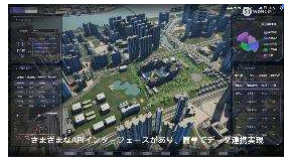
WDP Platform System (2023)
Utilizes pre-developed city and industry scenes; allows users to import their own BIM data and customize scenarios; uses SuperAPI interface to link data with IoT facilities and display information in real time; provides a wide range of scenarios to operate in a variety of industries. A wide variety of scenarios are available and can be operated in various industries.

DCP Platform System (2023)
Open BIM platform with data integration, visual rendering, collaborative work simulation, and asset operations management capabilities. Ability to upload large models in multiple formats. Data-driven simulation for cost control, construction planning, and construction risk management.

51MEET Metaverse (2023)
Online conferences, exhibitions, new car launches, and other events are held using the various spaces of the 51MEET service. Real-time cloud rendering technology is applied, requiring no advance preparation at the time of use. Multiple terminals (PC, smartphone, iPad, etc.) can be used.

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4. Project Management

We propose the most appropriate project management methods based on our understanding of your business type, management standards, and rules, and assist you in each phase of project operation.

Experienced Main Project History

Industry	Title	Description	Roll	Period (Month)
Electrical	生産管理システム導入支援	Lead the project management office of SaaS implementation projects	PMO	5
Retail	需要・補充予測システム導入支援	Lead the SaaS solution implementation project for a worldwide coffee chain	PM	20
Electrical	物流管理システム導入支援	Lead the project management office for SaaS solution implementation project of an electric product manufacturer	PMO	5
Retail	クラウド移行計画支援	Lead the pre-sales activities and enterprise architectural design for some contracted customers	Consultant	20
Medical	組織設計・製品健全性アセスメント	Lead the enterprise organization design and product integrity assessment for medical device company with 10 India members	PM	6
Electrical	デジタルサイネージ戦略企画支援	Lead the conceptual design of transportation AD platform and digital signage terminal for an electronic device company	Consultant	3
Automotive	文書管理システム導入支援	Lead the project management office for global engineering document management systems of an automotive manufacturer	PMO	3
Healthcare	新ビジネス企画支援	Lead the total fitness system development project for a nursing care establishment	Consultant	12
Financial	システム基盤統合支援	Lead the banking system migration project with multi-vender teams including IBM as a customer side project manager	PMO	26
Government	総合行政運営システム運用管理	Lead the operational management & cloud transformation teams for some governmental critical systems in Japan	PM	20
Transportation	運航管理システム移行支援	Lead the project management office of the air transport company's system renewal project	PMO	6
Mechanical	設計プロセス改革支援	Lead the design process innovation project of air-conditioning system manufacture and some automotive parts suppliers	Consultant	8
Medical	製品開発支援	Lead the R&D teams and project management office of a medical systems engineering company	Consultant	28
Medical	製品開発支援	Lead the product development team for some surgical device controllers of a medical systems engineering company	Consultant	20
Insurance	業務管理システム再構築	Lead the architectural planning team of the insurance company's system migration project	Architect	8
Electrical	部品設計手法改革支援	Lead customer's design process innovation teams of some automotive parts suppliers	Architect	20
Heavy Ind.	船舶設計プロセス改革支援	Lead customer's design process innovation teams of ship building company	PM	8
Automotive	自動車部品管理システム開発	Lead the multi-PDM system migration project of an automotive electronic parts supplier	PM	8
Automotive	金型設計システム導入	Develop knowledge-based CAD systems at some automotive mechanical parts suppliers	PM	8
Automotive	自動二輪設計システム開発	Develop and apply MBSE (Model Base Systems Engineering) methodology for some heavy industrial companies	Architect	12
Automotive	自動車設計システム開発	Apply Dassault's PLM systems to automotive manufacturers and some automotive mechanical parts suppliers	Architect	12

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Case studies of Project Management support

① Demand/Fulfillment Solution Implementation (Retail)

Project period： 15 months
Project formation： Project manager with 10 India-Japan mixed members
Project site： Tokyo, Japan
Method： Project management, SaaS Implementation Methodology
Solution： Blue Yonder

Background

Challenges
- Store orders were manually processed
- Store demand forecast was low level and caused mark-out (waste loss)
- Manual ordering and inventory management would increase

Highlights
- End to end streamlined capability leading to improvement of inventory, reduction of wastes and daily operation

Working image of Design phase (Dynamic view)
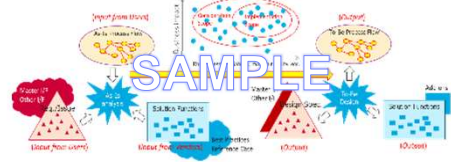
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Case studies of Project Management support

② Product Integrity Assessment (Healthcare)

Project period： 3 months
Project formation： Project manager with 10 India members
Project site： Kobe, Japan
Method： Project management, Business assessment, PLM assessment
Solution： -
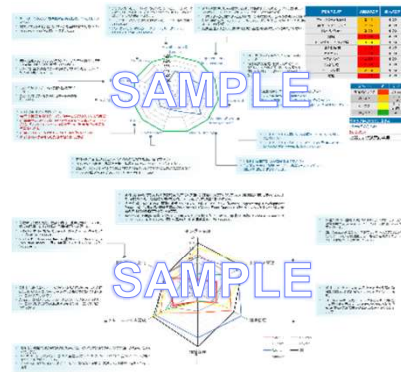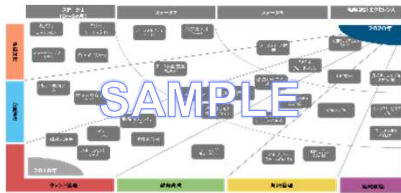
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Case studies of Project Management support

③ Design Process Change (Heavy Industry)

Project period ： 3 months
Project formation ： Project manager with 3 Japan members
Project site ： Kobe, Japan
Method ： Project management, PLM consulting, Architectural design, IDEF, DSM
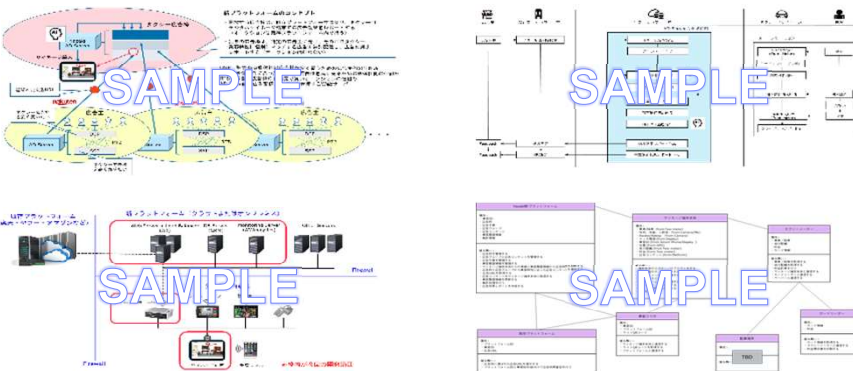Solution ： Dassault
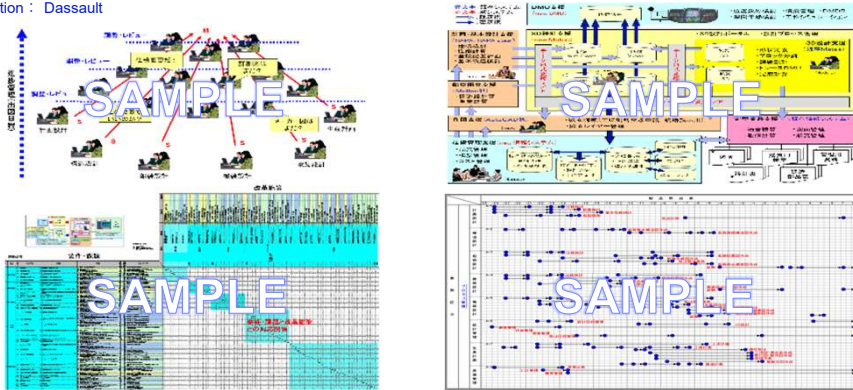
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Case studies of Project Management support

④ Digital Signage System Planning (Electric)

Project period ： 3 months
Project formation ： Architect with 2 Japan members
Project site ： Tokyo, Japan
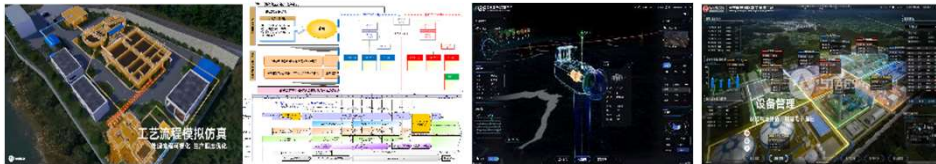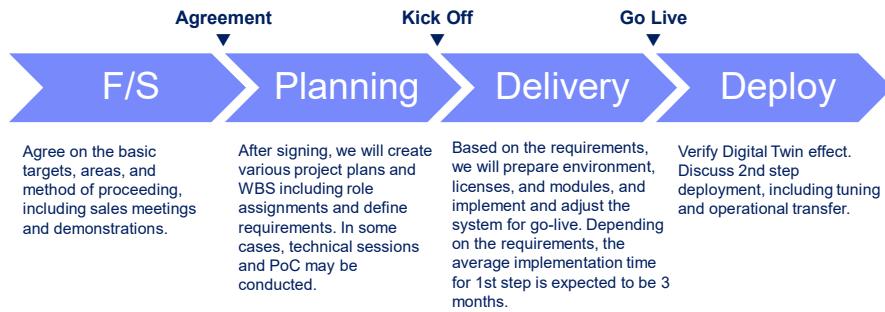Method ： Business assessment, Architectural design
Solution ： AWS

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Typical project process (for Digital Twin implementation project)

Agreement ▼   Kick Off ▼   Go Live ▼

F/S → Planning → Delivery → Deploy

F/S: Agree on the basic targets, areas, and method of proceeding, including sales meetings and demonstrations.

Planning: After signing, we will create various project plans and WBS including role assignments and define requirements. In some cases, technical sessions and PoC may be conducted.

Delivery: Based on the requirements, we will prepare environment, licenses, and modules, and implement and adjust the system for go-live. Depending on the requirements, the average implementation time for 1st step is expected to be 3 months.

Deploy: Verify Digital Twin effect. Discuss 2nd step deployment, including tuning and operational transfer.

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Core development process (for Digital Twin implementation project)

☐ Client tasks   ☐ Vendor tasks

*Adjustments are required for client tasks

- Prepare model data for construction and equipment (CAD, BIM, GIS etc.)
- → Develop Digital Twin system
- → Develop UI and data interface
- → Prepare server environments
- → System build in server and release
- → Connect to IoT devices and peripheral systems
- → System maintenance and additional development

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