

Supply Chain Capacity Center Information System Design

1 Background

1.1 Business Introduction

JD Logistics is China's leading technology-driven supply chain solutions and logistics services provider. With a mission of driving superior efficiency and sustainability for global supply chain through technology. Based on a logistics network that covers the whole nation and reaches every corner of the globe, JD Logistics has accumulated abundant industry insights and offer a full spectrum of supply chain solutions and high-quality logistics services enabled by technology. JD Logistics is the largest player in China's integrated supply chain logistics services market in terms of total revenue in 2020 and served more than 190,000 corporate customers across a wide array of industries in 2020, such as fast-moving consumer goods (FMCG), apparel, home appliances, home furniture, 3C, automotive and fresh produce, among others. JD Logistics will disassemble indicators and process actions on JD warehouses to achieve top-down business standardization and cost visualization.

1.2 Supply Chain Operational Dashboard Design

In order to be able to divide and decouple all warehousing costs undertaken by the supply chain, the supply chain management dashboard is built according to the following caliber

- Associated warehouse information: architecture code, region, park, system warehouse name, distribution center ID, warehouse ID
- Overall cost: total amount of cost, sequential cost, outgoing unit quantity, outgoing unit quantity sequential cost, average cost per unit, sequential cost per unit
- Cost module: housing cost, labor cost, consumables cost, depreciation cost, transfer cost, lease cost, other costs





2 Supply Chain Capacity Center Information System Design

2.1 Background

Customer customization needs are diversified, personalized operations are increasing, and the standardization process of warehousing operations needs to be improved. The headquarters is not transparent in operation management, which leads to over-service in front-line warehousing; the system has no standardization and customized service combination, and the product service is not matched with the WMS system, resulting in the system Insufficient flexibility, more complicated master configuration.

2.1.1 Status Quo

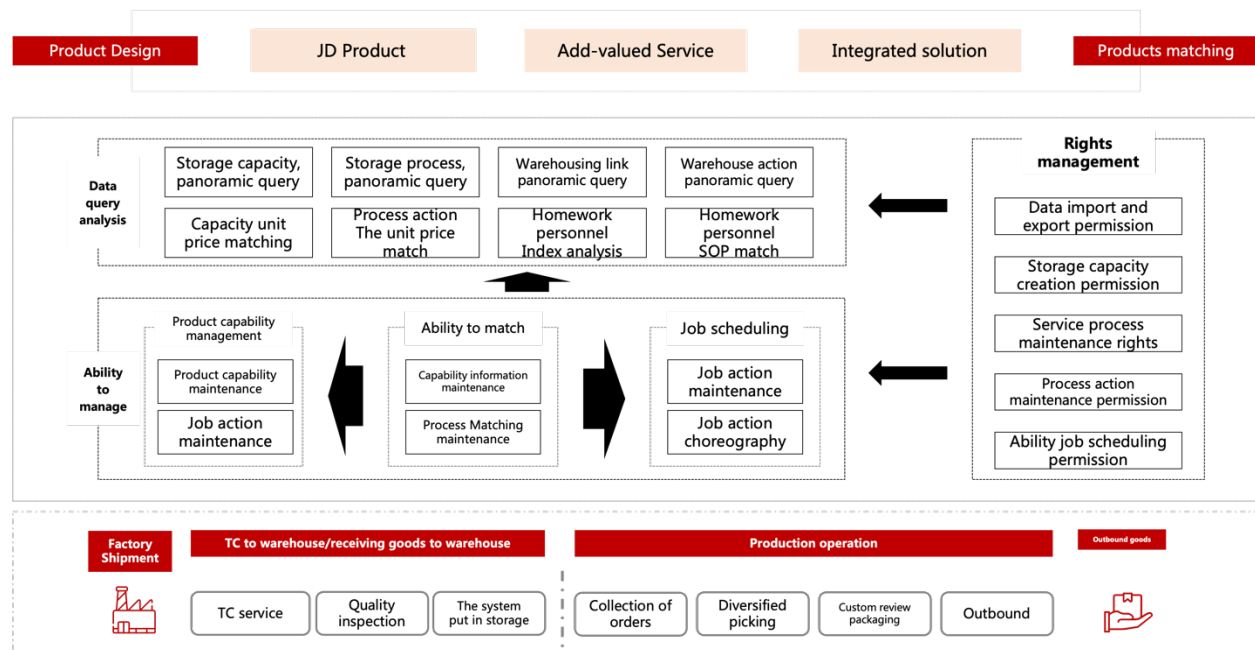
- **Low degree of operation standardization:** human judgment of operation operation, over-service of warehousing; lack of guided operation, high work order rate
- The management in the library is difficult, the business links are many, the process links are intricate, and the management cost of the first-line action process is high
- **Low system connection efficiency:** It is difficult to connect WMS and ECLP/CLPS, and the system transformation and online cycle is long

2.1.2 Planning Direction

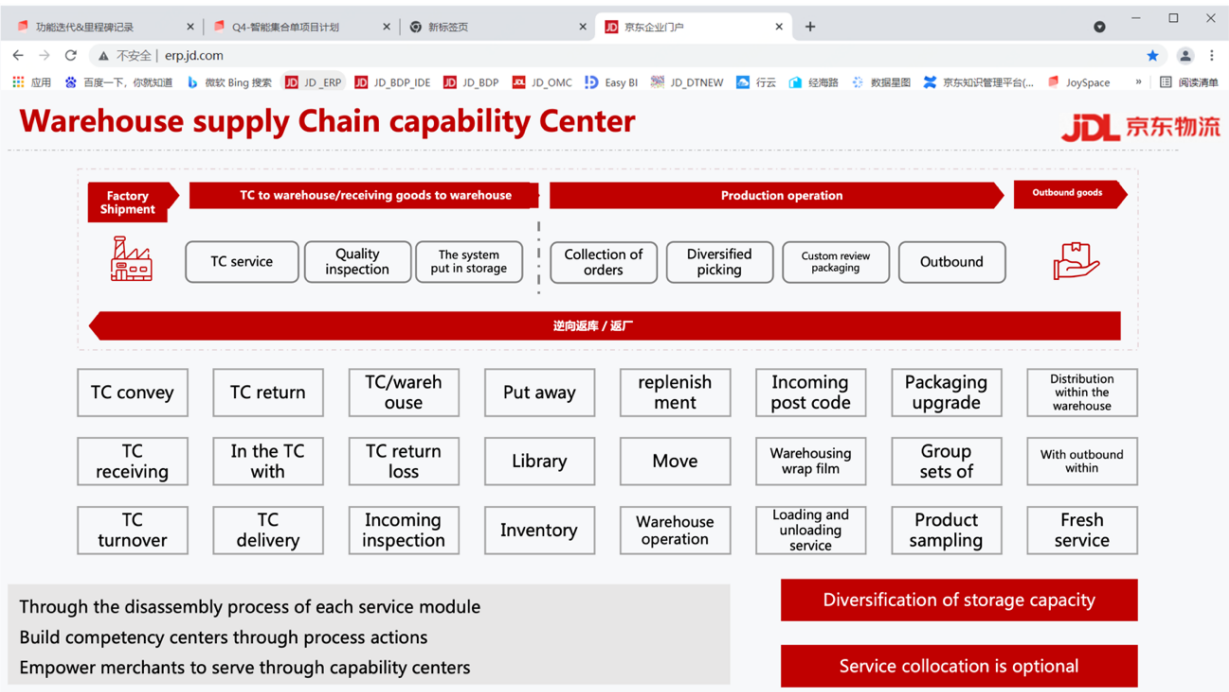
- **Product:** From the unified perspective of customers, sales and products, products guide sales to formulate sales plans, and products provide basic businesss to customers
- **Ability:** Operation planning basic business warehousing process, operation process disassembling basic link action, warehousing ability enabling warehousing products
- **Operation:** The warehouse ability guides the warehouse operation, the warehouse operation is intuitive and transparent, and the system drives the standardized operation of the staff

2.2 Supply Chain Capacity Center Information System Planning

- From the perspective of operational planning, based on the existing operational process, business capabilities are disassembled and sorted according to the process and link of the smallest granularity, planned and combined into various business capabilities to quickly create personalized products.
- Customers can match business capabilities, processes and actions required, and warehouses can provide corresponding business according to product requirements.



3 Capability Center Information System Interaction Prototype Diagram



3.1 Optional Items Maintenance

- **Function:** You can define public optional items. The bill return capability itself involves multi-dimensional operation steps, and the operation steps in each dimension are differentiated. This dimension can be defined as an optional item.
- **Example:** Signature return has multiple attribute dimensions, such as signature return type (signature, id card copy) and signature return type (signature, seal). The operations corresponding to each dimension are differentiated. In this case, you can use the Capability Registration Management - Capability Optional Item Maintenance function to define multiple dimensions of signature return.

The form is titled 'Optional Basic information' and 'Optional value and priority definition'. It contains several input fields for defining optional items, including 'Optional item name', 'Optional item code', 'Optional item type', 'Optional item related', 'Optional item effective time', and 'Optional item expiration time'. Below these fields is a table for defining optional values and priorities. The table has columns for 'Optional item name', 'Optional item code', 'Optional item value', and 'Optional item priority'. The first row shows 'A001-02' with a value of '身份证复印件' and a priority of '1'. The table also includes 'Add optional value' and 'Delete' buttons. At the bottom, there are 'Cancel' and 'Save' buttons.

3.2 Capability Binding Optional Items

- **Function:** Ability registration requires basic ability information editing and ability matching Settings. Capability options and optional configurations are public information and can be defined in advance.
- **Example:** Sign back in the center of the ability is defined as an ability to operate, can first through the "registration management - ability list - new" page to sign back the definition of basic abilities, such as the ability to name a customizable, ability validity code automatically generated, customizable, positioning check binding to return after the completion of the single type, type of sign after receiving STH such as optional items.

The screenshot shows a web interface for managing capabilities. The top navigation bar includes a logo, '能力中心', and a user profile. The left sidebar has a '工作台' (Workbench) section with '能力注册管理' (Ability Registration Management) expanded, showing '选配项列表' (Optional Item List) and '能力列表' (Ability List). The main content area is titled '能力维护' (Ability Maintenance) and contains two sections: 'Input basic information of ability' and 'Binding capability'. The first section has input fields for '能力名称' (Ability Name), '能力编码' (Ability Code), '维护范围' (Maintenance Scope), '生效时间' (Effective Time), and '失效时间' (Expiration Time), along with a '备注' (Remarks) field. The second section, 'Binding capability', shows a list of '可选选配项' (Optional Items) with columns for '选配项编码' (Optional Item Code), '选配项名称' (Optional Item Name), and '操作' (Action). It also includes a table for '绑定能力' (Binding Capability) with columns for '优先级' (Priority), '选配项编码' (Optional Item Code), '选配项名称' (Optional Item Name), and '操作' (Action). The interface includes '取消' (Cancel) and '保存' (Save) buttons at the bottom.

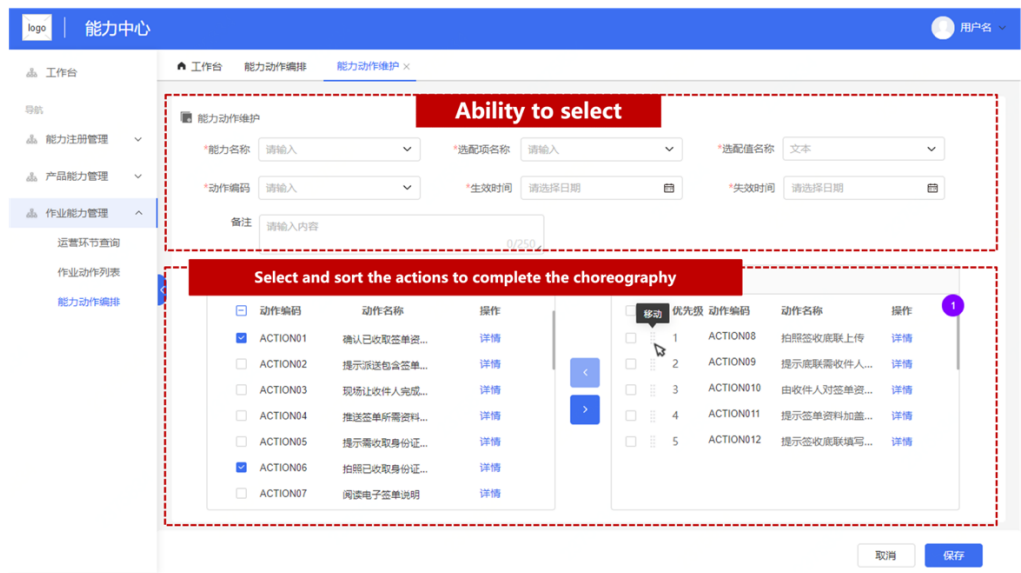
3.3 Job Action Maintenance

- **Function:** Action model is divided into two layers: basic information and action attributes. Action name, meaning, operation hint, example picture upload and other information or constraints are defined through this interface to complete the definition of a basic action.
- **Example:** The operation of PDA can be regulated by defining different operation actions such as operation hints (such as: operation of signing and receiving the signed sheet at the bottom) and sample pictures. In the follow-up, the definition content of operation actions will be enriched with componentization.

The screenshot shows a web interface for managing job actions. The top navigation bar includes the JD Logistics logo, '能力中心', and a user profile. The left sidebar has a '工作台' (Workbench) section with '作业动作维护' (Job Action Maintenance) expanded, showing '作业动作列表' (Job Action List) and '能力动作编排' (Ability Action Arrangement). The main content area is titled '作业动作维护' (Job Action Maintenance) and contains two sections: 'Operation action basic information' and 'Maintain the content of specific actions'. The first section has input fields for '作业动作名称' (Job Action Name), '作业动作编码' (Job Action Code), '所属运营环节' (Operational Link), '生效日期' (Effective Date), and '失效日期' (Expiration Date), along with a '作业标准' (Job Standard) field. The second section, 'Maintain the content of specific actions', includes a '绑定属性' (Binding Attribute) section with checkboxes for '动作属性' (Action Attribute), '操作提示' (Operation Hint), '示例图片' (Example Image), and '数量约束' (Quantity Constraint). The interface includes '取消' (Cancel) and '保存' (Save) buttons at the bottom.

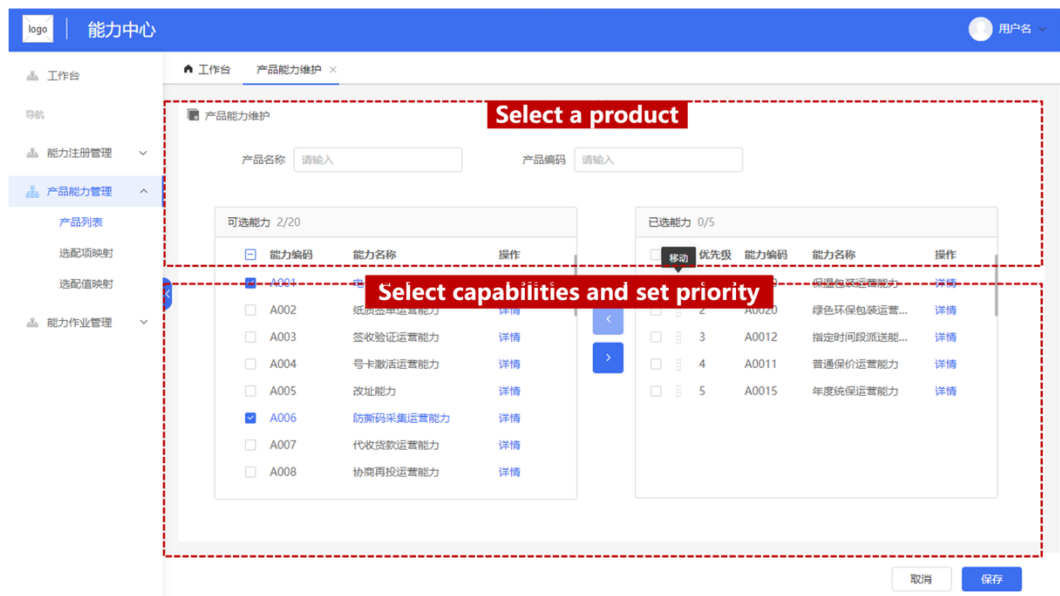
3.4 Ability Scheduling

- **Function:** Through this interface, it can realize the action of borrowing capacity to the smallest dimension and sort the action to guide the operation.
- **Example:** the paper receipt return capability includes the following operations: 1. Operation prompt: Operation of the bottom line of the receipt prompt. 2. 3. Photo taking: The user can take a maximum of 3 photos, which can be flexibly defined in the ability center. And prioritize the actions.

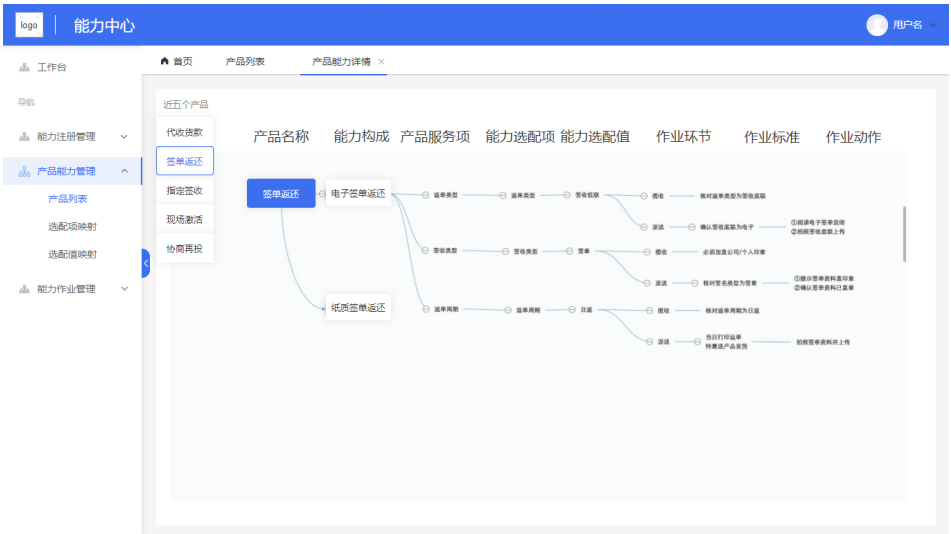


3.5 Binding Product Capabilities

- **Function:** Capability center displays all unbound capabilities in the product center. A product needs to be selected and bound to a product. You can maintain the relationship on the Product List-Add page. Select the product information automatically synchronized from the product center and select the registered capability to save.
- **Example:** If the product is divided into paper signature return capability and electronic signature return capability, select the two capabilities, and save them to bind the product and capability.

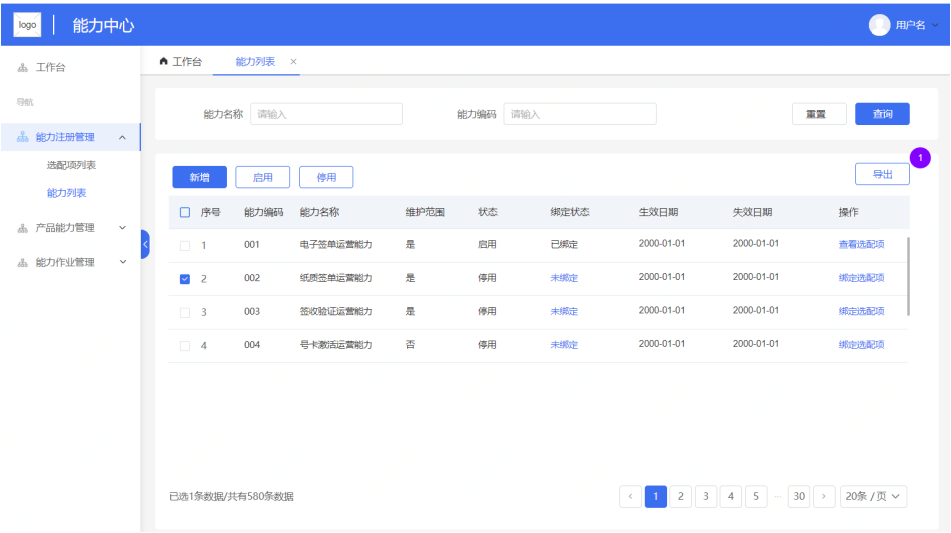


- Function:** You can view and export the binding relationship between products, capabilities, and jobs on the Product Capability Management - Product Capability Query Panorama page.
- Example:** There are electronic signature return capability and paper signature return capability. Under this capability, there are different options, such as order return type and signature receipt type, under which different operation links, operation standards and operation actions are defined. Including but not limited to product code, capability code, job code and other query conditions.



3.7 Operational Perspective Capability Panorama

- Function:** Export capabilities and job relationships from the perspective of operational capabilities (without product-related information). You can view or export them through the Capability Action List function. The visual interface is planned to improve readability.



4 Conclusion

After about 15 days of product design and 2 months of product development, we have completed the test of capability center-V1.0, which can realize the configuration and construction of warehouse capacity in each link and make the warehouse distribution cost structure more clear and transparent.