WorkSpace·Order Operations Agent

WorkSpace · 订单运营 AI Agent

Product Requirements Document / 产品需求文档

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01 文档概述 / Document Overview

1.1 项目简介 / Project Overview

AI Order Operations Agent 是一个以企业订单运营为核心场景的 Enterprise Agent Workspace。当前以 Order Agent 作为第一个落地 Agent，帮助订单运营人员处理重复的信息查询、订单执行、跨部门跟进与流程协调。

The AI Order Operations Agent is an Enterprise Agent Workspace centered on order operations. The current product starts with the Order Agent as the first deployed Agent, helping order operations users handle repetitive information retrieval, order execution, cross-functional follow-up, and workflow coordination.

产品建立在 OA、ERP、CRM 等现有业务系统之上。Agent 不替代业务系统，也不替代业务人员，而是作为连接人员、业务流程、专业 Agent 与企业系统的 Intelligent Execution Layer / 智能执行层

The product operates on top of existing systems such as OA, ERP, and CRM. Agents do not replace business systems or business owners; they act as an Intelligent Execution Layer connecting people, workflows, specialized Agents, and enterprise systems.

长期产品方向是让不同岗位逐步拥有自己的岗位 Agent，由 Agent 承担重复、繁琐、耗时的工作，并通过 Agent-to-Agent 协作推动跨部门业务流程，而人负责监督、判断和最终决策。

The long-term direction is to provide role-specific Agents for different functions. Agents handle repetitive, time-consuming work and collaborate across roles, while people retain supervision, judgment, and final decision-making authority.

1.2 核心能力 / Core Capabilities

能力 / Capability	主要价值 / Primary Value
Create Order / 创建订单	将客户 PO 转换为可执行的内部订单流程 / Convert customer POs into executable internal order workflows
Order Follow-up / 订单跟进	查询业务状态、识别阻塞、责任人和风险，并推动内部跟进 / Retrieve business status, identify blockers, owners, and risks, and drive follow-up
Order Change / 订单变更	识别变更字段、分析影响并推动相关流程 / Identify changed fields, analyze impacts, and drive downstream workflows

能力 / Capability	主要价值 / Primary Value
Create Shipment / 创建出货单	根据订单、Finance release、库存及其他业务前置条件创建出货单 / Create shipment documents based on order, Finance release, inventory, and other prerequisites
Sample Request / 样品申请	提取样品需求并生成标准申请流程 / Extract sample requirements and generate standardized request workflows
Payment Confirmation / 付款确认	识别付款凭证、关联订单并协调 Finance 完成付款确认 / Identify payment evidence, associate it with the order, and coordinate Finance confirmation

1.3 产品定位 / Product Positioning

Intelligent Execution Layer / 智能执行层

Business Systems / 业务系统：
OA / ERP / CRM

Agent Layer / Agent 层：
Understand → Plan → Execute → Monitor → Human Decision → Continue

理解 → 规划 → 执行 → 监控 → 人工决策 → 继续执行

Business Outcome / 业务结果：
Faster Order Operations + Lower Repetitive Work + Better Workflow Continuity

更快的订单运营 + 更少的重复劳动及等待 + 更连续的业务流程

1.4 核心设计原则 / Core Design Principles

原则 / Principle	产品要求 / Product Requirement
Agent Internal Only / Agent 仅对内	Agent 只服务内部员工，不直接联系客户或供应商 / The Agent serves internal employees only and never directly contacts customers or suppliers
Human-in-the-loop / 人机协作	关键业务判断、最终确认和最终提交由授权人员负责 / Humans retain critical business judgment, final confirmation, and final submission authority
Systems of Record / 系统权威	OA、ERP、CRM 保持业务数据权威 / OA,

原则 / Principle	产品要求 / Product Requirement
	ERP, and CRM remain authoritative systems of record
Execute, Don’t Duplicate / 执行而非重复操作	Agent 不重复已经在业务系统完成的动作 / The Agent does not duplicate actions already completed in business systems
Proactive Monitoring / 主动监控	Agent 不只响应用户，还持续监控已启动的任务 / The Agent continuously monitors active tasks
Stop Safely / 安全停止	信息不完整、权限不足、业务状态不明确或需要人工判断时停止 / Stop when information is incomplete, authorization is insufficient, or human judgment is required
Traceability / 全程可追溯	Agent 的关键动作、状态变化和人工干预必须可审计 / Agent actions, state changes, and human interventions must be auditable

02 项目背景与目标 / Background & Goals

2.1 业务背景 / Business Context

订单从客户 PO 到最终交付，需要 Sales、Order Management、PMC、Purchase Staff、Sample Staff、Warehouse Staff 和 Finance 等多个内部角色协同。

Order fulfillment requires coordination across Sales, Order Management, PMC Staff, Purchase Staff, Sample Staff, Warehouse Staff, and Finance Staff.

订单信息同时分散在 OA、ERP、CRM 等系统中，导致订单管理人员需要不断切换系统、复制数据、查询状态，并人工推动其他角色。

Order information is distributed across OA, ERP, CRM, and other systems, forcing order management users to repeatedly switch systems, copy information, retrieve status, and coordinate with other roles.

因此，产品核心问题是:

Therefore, the core product problem is:

如何让 Agent 成为订单运营过程中的智能执行与协调层。

How to make the Agent an intelligent execution and coordination layer for order operations.

2.2 当前业务痛点 / Current Business Pain Points

痛点 / Pain Point	当前表现 / Current Situation	业务影响 / Business Impact
Repetitive Data Entry / 重复录入	同一订单信息在多个系统中重复填写 / Same order information is repeatedly entered into multiple systems	时间成本高、容易出错 / High effort and error risk
System Switching / 系统切换	OA、ERP、CRM 之间频繁切换 / Frequent switching across systems	操作效率低 / Low operational efficiency
Manual Follow-up / 人工跟进	状态需要人工逐个查询和追踪 / Status requires manual retrieval and tracking	重复工作量高 / High repetitive workload
Cross-system Verification / 跨系统核对	人工核对订单、生产、付款和出货状态 / Manual reconciliation across order, production, payment, and shipment	信息不一致风险 / Risk of inconsistent information
Cross-role Coordination / 跨角色协同	多个节点依赖其他内部角色反馈 / Multiple workflow steps depend on other internal roles	等待时间长、责任不清 / Longer waiting time and unclear ownership
Exception Handling / 异常处理	异常发现后需要人工判断和重新协调 / Exceptions require manual judgment and coordination	流程容易中断 / Workflow interruption

2.3 产品目标 / Product Goals

Goal 1 — Reduce Repetitive Work / 降低重复劳动

减少订单人员在多个系统之间重复查询、录入和复制信息的工作量。

Reduce repetitive information retrieval, data entry, and copy-paste work across systems.

Goal 2 — Improve Workflow Continuity / 提升流程连续性

让 Agent 能够理解当前业务状态，并自动推进下一步可执行动作。

Enable the Agent to understand the current business state and move the workflow to the next executable step.

Goal 3 — Improve Cross-functional Coordination / 提升跨部门协同

Agent 根据业务状态创建内部任务、通知相关角色并持续跟踪反馈。

The Agent creates internal tasks, notifies responsible roles, and monitors responses based on business state.

Goal 4 — Preserve Human Control / 保留人工控制权

关键业务判断、最终确认和最终提交仍由授权人员完成。

Critical business judgment, final confirmation, and final submission remain under authorized human control.

Goal 5 — Enable Proactive Operations / 建立主动运营能力

产品从“用户问 Agent”逐步演进到“Agent 发现问题并主动推动”。

The product evolves from “user asks the Agent” toward “Agent detects issues and proactively drives actions.”

03 用户与角色 / Users & Roles

3.1 主要用户 / Primary User

Order Management / 订单管理人员

负责订单创建、订单跟进、订单变更、出货协调、样品申请及付款状态跟进。

Responsible for order creation, follow-up, order changes, shipment coordination, sample requests, and payment follow-up.

3.2 内部业务角色 / Internal Business Roles

角色 / Role	主要职责 / Responsibility
Sales / 销售	客户沟通及客户需求确认 / Customer communication and requirement confirmation
Order Management / 订单管理	订单运营、流程协调及跨部门跟进 / Order operations, workflow coordination, and follow-up
PMC Staff / PMC 人员	生产计划、排产、交期、生产进度及履约协调 / Production planning, scheduling,

角色 / Role	主要职责 / Responsibility
	delivery, production progress, and fulfillment coordination
Purchase Staff / 采购人员	与供应商沟通采购信息并反馈结果 / Communicate with suppliers and return procurement information
Sample Staff / 样品员	样品准备及进度执行 / Sample preparation and progress execution
Warehouse Staff / 仓库人员	实际拣货及出货执行 / Physical picking and shipment execution
Finance Staff / 财务人员	付款信息核验及最终付款确认 / Payment verification and final payment confirmation
Approver / 审批人	OA 等业务流程审批 / Business process approval

3.3 Agent 角色 / Agent Roles

Agent	服务对象 / Internal Counterpart	核心职责 / Responsibility
Order Agent / 订单 Agent	Order Management / 订单管理	订单主流程协调 / Order workflow coordination
PMC Agent / PMC Agent	PMC Staff / PMC 人员	生产及履约协调 / Production and fulfillment coordination
Purchase Agent / 采购 Agent	Purchase Staff / 采购人员	采购任务协同 / Procurement coordination
Sample Agent / 样品 Agent	Sample Staff / 样品员	样品任务协调 / Sample coordination
Finance Agent / 财务 Agent	Finance Staff / 财务人员	付款信息处理及财务协同 / Payment processing and Finance coordination

Purchase Agent Boundary / 采购 Agent 边界

Purchase Agent 不直接联系供应商。

The Purchase Agent does not directly communicate with suppliers.

业务链路为:

The business chain is:

Purchase Agent → Purchase Staff → Supplier

采购 Agent 负责整理采购需求、生成内部任务、汇总采购人员反馈；采购人员负责实际联系供应商。

The Purchase Agent structures procurement requirements, creates internal tasks, and consolidates feedback. Purchase Staff remains responsible for actual supplier communication.

04 产品范围 / Product Scope

4.1 In Scope / 产品范围内

1. Natural Language Interaction / 自然语言交互
2. Task Management / 任务管理
3. Enterprise System Retrieval / 企业系统信息查询
4. Rule-based Validation / 规则校验
5. Workflow Execution / 流程执行
6. Internal Task Orchestration / 内部任务协同
7. Status Monitoring / 状态监控
8. Exception Detection / 异常识别
9. Human Review / 人工审核
10. Audit Logging / 操作审计
11. Automation / 自动化任务
12. Knowledge Base / 知识库

4.2 Out of Scope / 产品范围外

Out of Scope / 范围外	Description / 说明
Direct Customer Communication / 直接客户沟通	Agent 不直接联系客户 / Agent does not directly contact customers
Direct Supplier Communication / 直接供应商沟通	Agent 不直接联系供应商 / Agent does not directly contact suppliers
Replacing ERP/CRM/OA / 替代现有系统	Agent 不替代 ERP、CRM、OA / Agent does not replace ERP, CRM, or OA
Final Business Approval / 最终业务审批	Agent 不替代审批人 / Agent does not replace approvers
Final ERP Submission / ERP 最终提交	Agent 不替代授权用户完成最终提交 / Agent does not replace authorized users for final submission
Final CRM Submission / CRM 最终提交	Agent 不替代授权用户完成最终提交 / Agent does not replace authorized users for final submission
Physical Shipment / 实际出货	Agent 不执行仓库实际拣货和出货 / Agent does not perform physical warehouse operations
Final Finance Confirmation / 财务最终确认	Agent 不替代 Finance 最终确认付款 / Agent does not replace Finance final confirmation

4.3 Agent 自动执行条件 / Automatic Execution Conditions

Agent 只有在以下条件同时满足时才允许自动执行:

The Agent may execute automatically only when all conditions are satisfied:

- Required information is complete / 必要信息完整
- Business rules are satisfied / 业务规则满足
- User authorization is valid / 用户权限有效
- No material human judgment is required / 不涉及必须人工判断的事项
- Action is reversible or appropriately controlled / 操作具备可控性或明确的业务控制

否则:

Otherwise:

Stop → Explain → Request Human Action → Resume

停止 → 说明原因 → 请求人工处理 → 恢复执行

05 核心业务流程 / Core Business Workflows

5.1 Create Order / 创建订单

Order Identification / 订单识别

用户通常通过 **Customer PO** 发起订单任务，例如：

Users normally initiate an order task using a **Customer PO**, for example:

> “帮我按照这个 PO 操作下单，对应的 SKU 是 XXXX。”
>
> “Please create the order based on this PO. The corresponding ERP SKU is XXXX.”

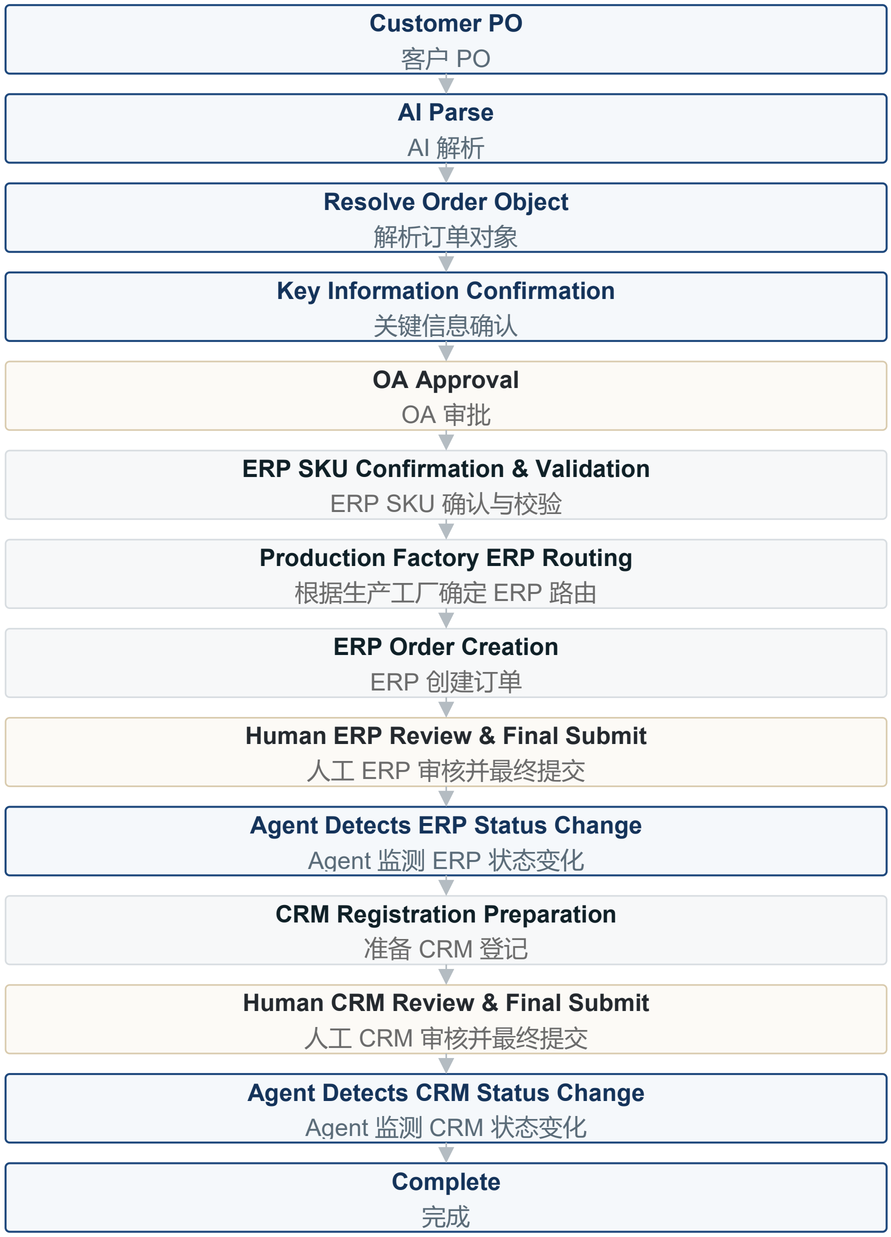
也可以直接提供 ERP Internal Order Number。

Users may also provide the ERP Internal Order Number directly.

Agent 不要求用户额外提供 Business ID，而是通过 Customer PO 或 ERP Internal Order Number 解析并关联内部订单对象。

The Agent does not require users to provide a separate Business ID. It resolves the internal rder object from the Customer PO or ERP Internal Order Number

Workflow / 流程



Key Rules / 关键规则

- Customer PO does not inherently provide ERP SKU.
  客户 PO 不默认包含 ERP SKU。
- If the user already provides an ERP SKU, Agent uses it and validates it against ERP.
  如果用户已经提供 ERP SKU，Agent 使用该 SKU 并在 ERP 中校验。
- If ERP SKU is missing, Agent asks for it at the ERP execution stage.
  如果没有 ERP SKU，Agent 在进入 ERP 执行阶段时向用户询问。

- Invalid SKU blocks ERP order creation.
  SKU 无效时停止 ERP 创建。
- Production Factory determines ERP routing.
  生产工厂决定 ERP 路由。
- ERP authorization and production factory are separate concepts.
  ERP 权限与生产工厂属于不同概念。
- ERP and CRM final submission remain human-controlled.
  ERP 和 CRM 最终提交权由人工保留。

5.2 Order Follow-up / 订单跟进

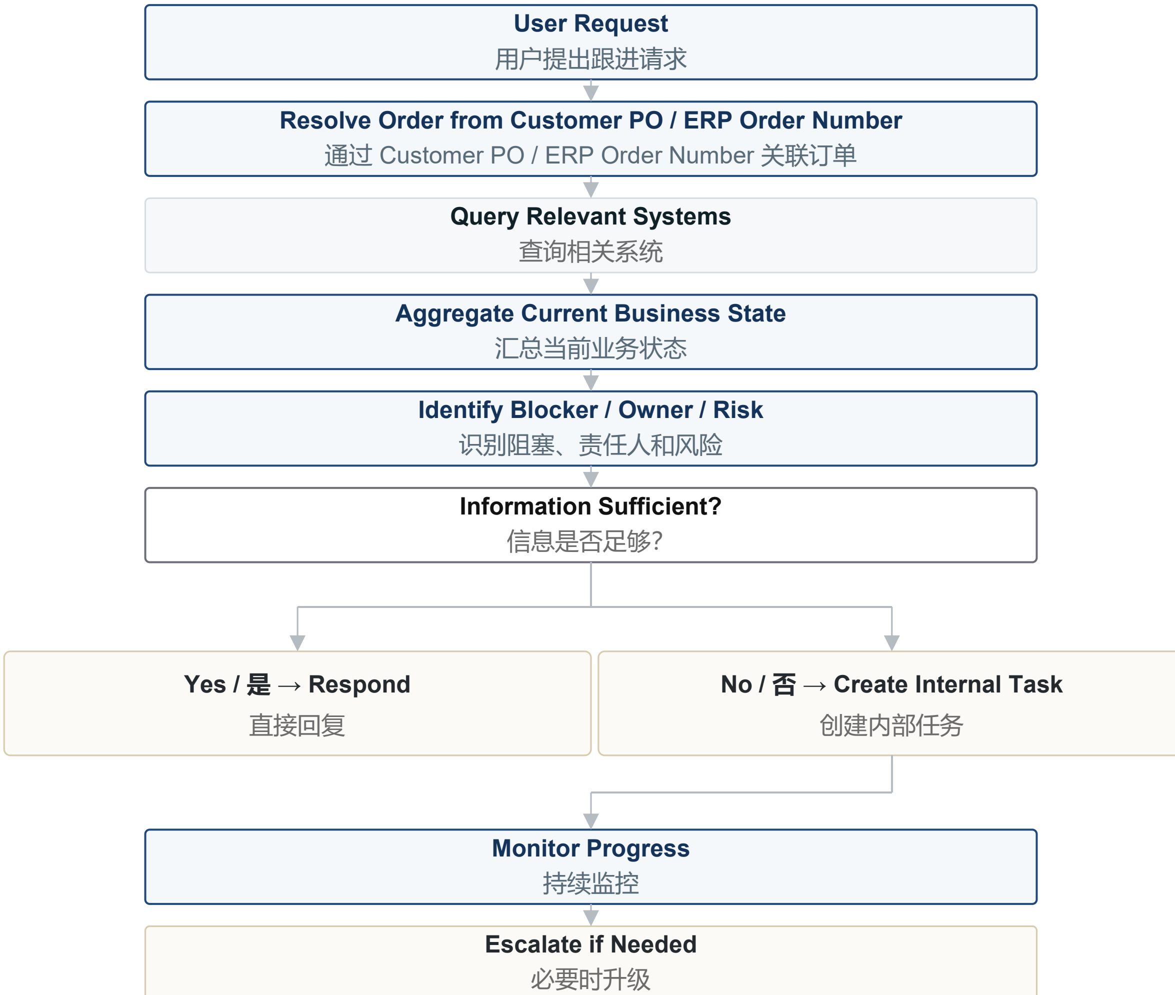
订单跟进不是简单的“查询订单状态”，而是：

Order follow-up is not simply “checking order status.” It determines:

当前状态 → 是否存在阻塞 → 谁负责 → 是否存在风险 → 下一步是什么

Current State → Blocker → Owner → Risk → Next Action

Workflow / 流程



System Authority / 系统权威规则

对于**纯订单状态查询**，CRM 作为订单业务状态的主要权威来源。

For **pure order status queries**, CRM is the primary system of record for business order status.

只有当任务涉及生产、物料、出货、ERP 执行等具体业务对象时，Agent 才调用对应系统查询相关状态。

The Agent queries ERP or other systems when the task requires production, material, shipment, or ERP execution-specific information.

5.3 Delivery Date Revalidation / 交期确认与复核

First Inquiry / 首次询问

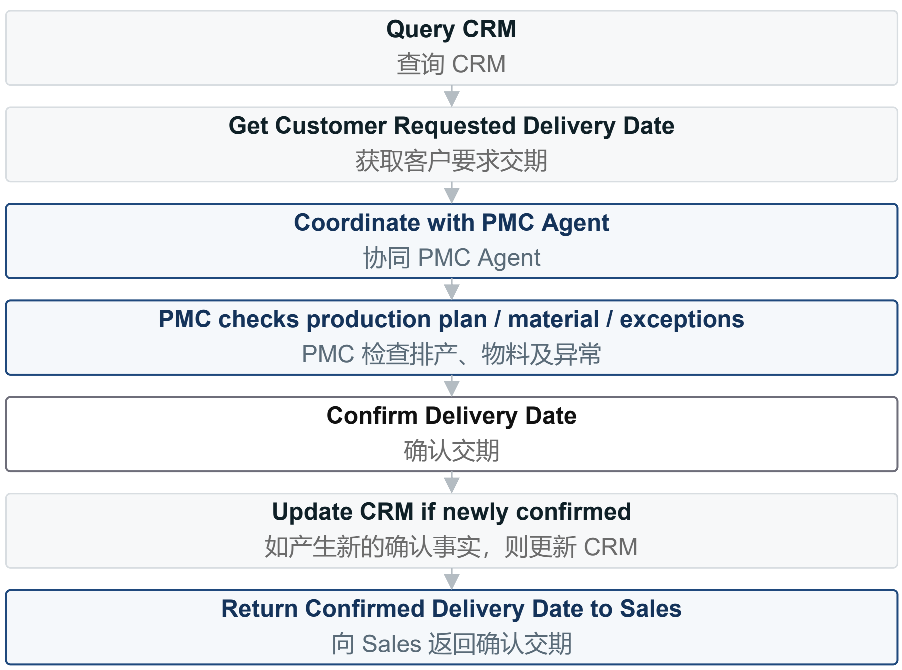
首次查询时，CRM 可能只有：

Customer Requested Delivery Date / 客户要求交期

此时不能直接将其当作 Confirmed Delivery Date。

The requested delivery date must not be treated as the confirmed delivery date.

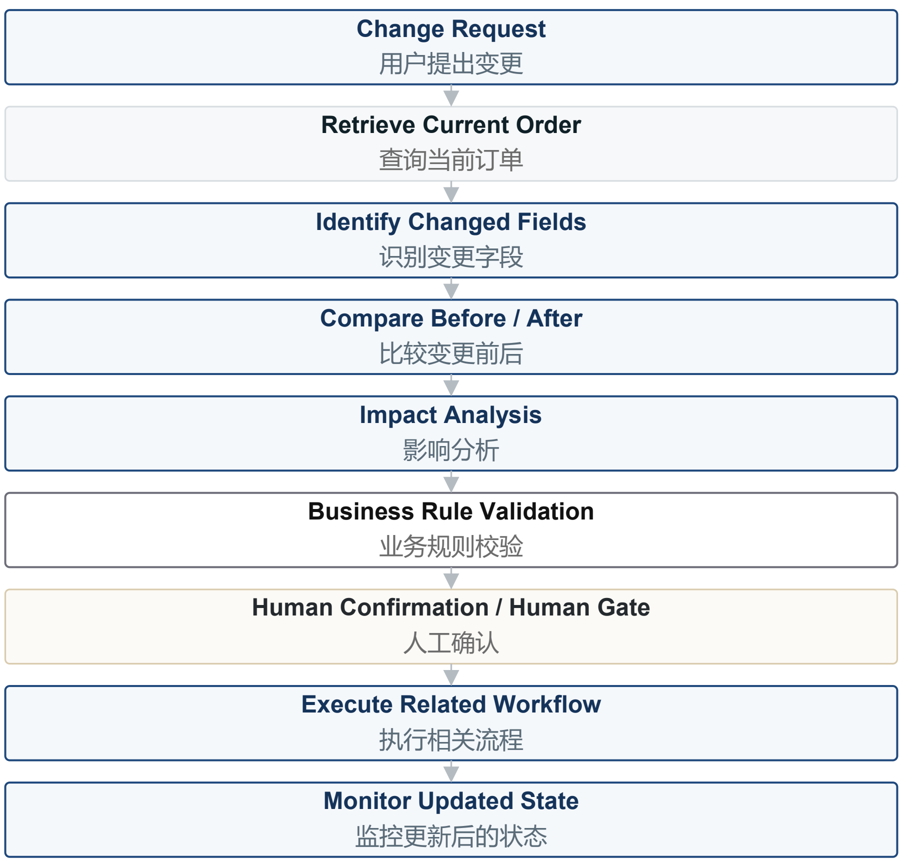
Workflow:



Subsequent Inquiry / 后续询问

如果 CRM 已存在 Confirmed Delivery Date：

5.4 Order Change / 订单变更



重点字段包括:

Key material fields include:

- Quantity / 数量
- Price / 价格
- Delivery Date / 交期
- Production Factory / 生产工厂
- Payment Terms / 付款条件

所有最终提交和确认动作都必须遵循 Human Gate；Material Change 是需要额外业务判断的典型场景，而不是唯一需要人工确认的场景。

All final submission and confirmation actions must pass through a Human Gate. Material changes are typical cases requiring additional judgment, not the only cases requiring human confirmation.

5.5 Create Shipment / 创建出货单

创建出货单与实际出货是两个不同业务动作。

Creating a shipment document and physically shipping goods are two different business actions.

Pre-check / 前置检查

Agent 在创建出货单前检查:

Before creating a shipment document, the Agent checks:

- Order eligibility / 订单是否满足条件
- Finance release / 财务是否释放
- Payment status / 付款状态
- Inventory status / 库存状态
- Existing shipment status / 已有出货状态
- Required documents / 必要文件

Important Business Rule / 关键业务规则

创建出货单不必然要求“付款已经到账”。

Shipment document creation does not inherently require that payment has already been received.

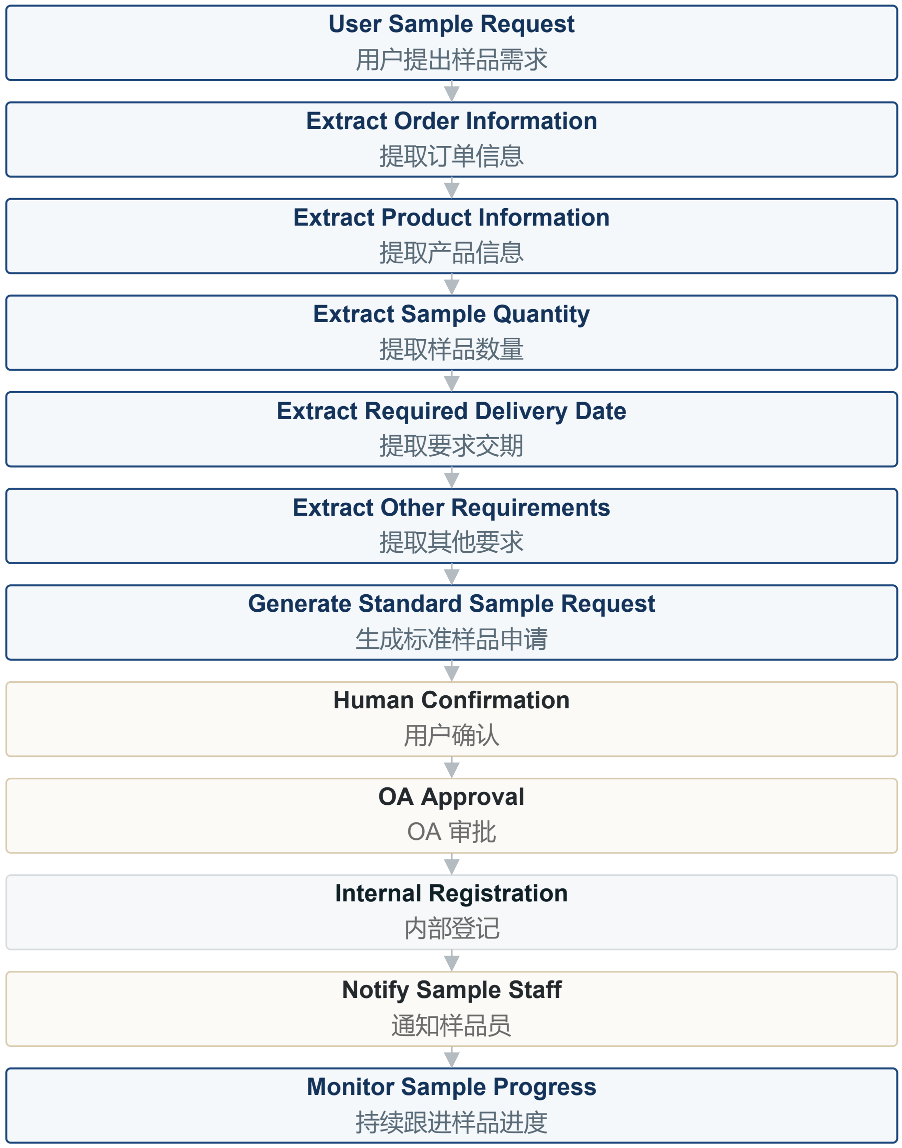
对于不同客户和结算方式，是否允许继续履约取决于 Finance release、信用条件及企业业务规则。

For different customers and payment terms, downstream fulfillment depends on Finance release, credit conditions, and applicable business rules.

因此流程为：

Therefore:

5.6 Sample Request / 样品申请



5.7 Payment Confirmation / 付款确认

06 Agent 工作台 / Agent Workspace

6.1 输入区 / Input Area

用户可以通过以下方式发起任务:

Users can initiate tasks through:

- Natural Language / 自然语言
- Customer PO / 客户 PO
- ERP Internal Order Number / ERP 内部订单号
- Files / 文件
- Structured Information / 结构化信息

Input Principle / 输入原则

用户不需要理解内部系统 ID、Workflow 或 Tool。

Users do not need to understand internal IDs, workflows, or tools.

Agent 负责从用户输入中识别:

The Agent resolves:

Intent → Business Object → Context → Required Action

意图 → 业务对象 → 上下文 → 所需动作

6.2 输出区 / Output Area

Agent 输出必须围绕当前任务状态组织，而不是只返回自然语言答案。

Agent output should be structured around the current task state rather than only returning conversational text.

标准输出包括:

Standard output includes:

1. Business Result / 业务结果
2. Current Status / 当前状态
3. Evidence / 依据
4. Blocker / 阻塞
5. Owner / 当前责任人
6. Next Action / 下一步
7. Human Confirmation Required / 待人工确认
8. Exception / 异常
9. Last Updated / 最近更新时间

07 Agent 行为规则 / Agent Behavior Rules

7.1 信息理解与解析 / Information Understanding

Agent 首先识别:

The Agent first identifies:

Intent → Business Object → Context → Required Action

例如：

For example:

“帮我跟进 PO 10234。”

“Please follow up on PO 10234.”

Agent 应识别为 **Order Follow-up**，而不是简单的信息搜索。

The Agent should interpret this as an **Order Follow-up** task rather than a simple information search.

7.2 信息完整性 / Information Completeness

关键数据缺失时：

When critical information is missing:

Ask → Wait → Resume

询问 → 等待 → 恢复

Agent 不应基于猜测补全关键业务字段。

The Agent must not guess critical business fields.

7.3 执行前校验 / Pre-execution Validation

所有写入或业务执行动作前：

Before write or execution actions:

Read → Validate → Execute → Verify

读取 → 校验 → 执行 → 验证

Tool 返回成功不等于业务成功。

Tool execution success does not necessarily mean business success.

Agent 必须重新读取业务系统状态，确认实际业务结果。

The Agent must verify the resulting business state after execution.

7.4 最小写入原则 / Minimal Write Principle

只有在以下情况发生时才更新业务系统：

The Agent writes to business systems only when:

- New fact becomes available / 获得新事实
- Existing fact changes / 现有事实发生变化
- Existing data needs correction / 现有数据需要修正

如果只是重新验证且事实没有变化，则不重复写入。

If the Agent only revalidates an unchanged fact, it should not perform a redundant write.

7.5 人工修改后的状态刷新 / State Refresh After Human Modification

如果用户在 ERP 或 CRM 中直接修改：

If a user manually modifies ERP or CRM:

Re-read Latest State → Recalculate → Continue

重新读取最新状态 → 重新判断 → 继续执行

Agent 不得继续使用修改前的旧状态。

The Agent must not continue using stale state.

08 Human-in-the-loop / 人机协作

8.1 Human Gate / 人工确认点

以下动作保留人工控制：

The following actions remain human-controlled:

- Critical business judgment / 关键业务判断
- Final ERP submission / ERP 最终提交
- Final CRM submission / CRM 最终提交
- Business approval / 业务审批
- Finance final confirmation / Finance 最终确认
- Material business changes / 重大业务变更
- Other actions explicitly requiring authorization / 其他明确要求授权的动作

8.2 Agent 与 Human 的职责划分 / Agent vs Human Responsibilities

Action / 动作	Agent	Human
Parse PO / 解析 PO	✓	
Retrieve system data / 查询系统	✓	
Validate rules / 规则校验	✓	
Prepare business data / 准备业务数据	✓	
Create internal task / 创建内部任务	✓	
Monitor status / 状态监控	✓	
Critical business judgment / 关键业务判断		✓
Business approval / 业务审批		✓
Final ERP submission / ERP 最终提交		✓
Final CRM submission / CRM 最终提交		✓
Finance final confirmation / 财务最终确认		✓
Physical shipment / 实际出货		✓

09 系统连接与权限 / System Integration & Permissions

9.1 OA Connection / OA 连接

用于:

Used for:

- Approval submission / 审批提交
- Approval status retrieval / 审批状态查询
- Approval result monitoring / 审批结果监控

9.2 ERP Connection / ERP 连接

用于:

Used for:

- SKU validation / SKU 校验
- Order creation / 订单创建
- Order update / 订单更新
- Execution-specific status retrieval / 执行相关状态查询

- Production status retrieval / 生产状态查询
- Shipment status retrieval / 出货状态查询

9.3 CRM Connection / CRM 连接

用于:

Used for:

- Customer data / 客户信息
- Order registration / 订单登记
- Payment status / 付款状态
- Business order status / 订单业务状态
- Delivery-date record / 交期记录

9.4 Authorization / 权限

采用企业 SSO、OAuth 或企业 Token 机制。

Use enterprise SSO, OAuth, or enterprise token-based authorization.

产品不要求用户向 Agent 输入或保存业务系统用户名和密码。

The product does not require users to provide or store business-system usernames or passwords.

授权失效时:

When authorization expires:

Stop → Notify → Re-authorize → Resume

停止 → 通知 → 重新授权 → 恢复

9.5 API / RPA / Computer Use

优先级:

Priority:

API > RPA / Computer Use

当 ERP 等系统提供稳定 API 时优先使用 API。

Use APIs whenever stable enterprise APIs are available.

对于缺乏 API 的 Legacy Desktop ERP，可使用受控 RPA / Computer Use。

For legacy desktop ERP systems without suitable APIs, controlled RPA / Computer Use may be used.

10 异常处理 / Exception Handling

10.1 Exception Matrix / 异常矩阵

异常 / Exception	Agent Action / Agent 动作	Human Action / 人工动作
PO Parsing Failure / PO 解析失败	标记失败并请求确认 / Flag and request confirmation	补充或修正信息 / Provide or correct information
Missing Information / 信息缺失	请求补充 / Request missing data	提供信息 / Provide information
Amount Mismatch / 金额不一致	停止并提示差异 / Stop and highlight mismatch	判断正确值 / Determine correct value
OA Rejected / OA 驳回	停止后续流程 / Stop downstream execution	修改并重新提交 / Correct and resubmit
Invalid SKU / SKU 无效	停止 ERP 创建 / Stop ERP creation	提供有效 SKU / Provide valid SKU
ERP Failure / ERP 执行失败	按幂等规则重试或升级 / Retry according to idempotency rules or escalate	必要时人工处理 / Handle manually if required
ERP Manual Change / ERP 人工修改	重新读取最新状态 / Re-read latest state	确认修改结果 / Confirm modification
CRM Failure / CRM 执行失败	重试或升级 / Retry or escalate	必要时人工处理 / Handle manually if required
CRM Manual Change / CRM 人工修改	重新读取最新状态 / Re-read latest state	确认修改结果 / Confirm modification
Payment Exception / 付款异常	停止相关履约流程 / Stop relevant fulfillment workflow	Finance 处理 / Finance resolves
Authorization Expired / 权限过期	停止并请求重新授权 / Stop and request reauthorization	完成授权 / Re-authorize

10.2 Generic Exception Flow / 通用异常流程

11 数据与状态 / Data & State

11.1 Order Data Model / 订单数据模型

Data Object / 数据对象	Key Fields / 关键字段
Customer / 客户	Customer ID, Name
Customer PO / 客户 PO	PO Number, Date, File
Product / 产品	Product ID, Description
Quantity / 数量	Quantity
Unit Price / 单价	Unit Price
Total Amount / 总金额	Total Amount
Production Factory / 生产工厂	Factory
ERP SKU	ERP SKU
Requested Delivery Date / 客户要求交期	Requested Delivery Date
Confirmed Delivery Date / 确认交期	Confirmed Delivery Date

Data Object / 数据对象	Key Fields / 关键字段
Payment Terms / 付款条件	Payment Terms
ERP Order / ERP 订单	ERP Order ID
CRM Order / CRM 订单	CRM Order ID
Payment / 付款	Payment Status
Shipment / 出货	Shipment Status
Order Overall / 订单总体状态	Order Status

11.2 Business State vs Agent Task State / 业务状态与 Agent 任务状态

Business State / 业务状态

业务事实保存在 OA、ERP、CRM。

Business facts remain in OA, ERP, and CRM.

Agent Task State / Agent 任务状态

Agent Runtime 只维护:

The Agent Runtime maintains:

- Current task / 当前任务
- Current workflow node / 当前 Workflow 节点
- Waiting reason / 等待原因
- Required human action / 待人工动作
- Pending tool execution / 待执行 Tool
- Retry state / 重试状态
- Exception state / 异常状态

11.3 Agent Task Status / Agent 任务状态

Status / 状态	Meaning / 含义
In Progress / 执行中	Agent 正在处理任务 / Agent is processing
Waiting for User / 等待用户	等待用户提供信息或确认 / Waiting for user input or confirmation
Waiting for System / 等待系统	等待系统状态变化 / Waiting for system state change
Waiting for Other Role / 等待其他角色	等待内部角色反馈 / Waiting for internal

Status / 状态	Meaning / 含义
	role feedback
Executing / 自动执行中	正在执行受控动作 / Executing a controlled action
Exception / 异常	任务发生异常 / Task encountered an exception
Escalated / 已升级	已转人工或上级处理 / Escalated for human handling
Completed / 已完成	任务完成 / Task completed

11.4 Cross-system ID Mapping / 跨系统 ID 映射

示例:

Example:

Customer PO #10234
↓
ERP SO #20260918001
↓
CRM Order #CRM20260918001

Agent 必须维护不同系统之间的关联关系。

The Agent must maintain traceable mappings across systems.

12 Agent 行为验收 / Agent Behavior Acceptance

Agent 必须:

The Agent must:

- Ask when critical information is missing / 关键数据缺失时主动询问
- Validate before executing / 执行前完成校验
- Stop when unsafe / 不安全时停止
- Verify business state after execution / 执行后验证业务状态
- Monitor after execution / 执行后持续监控
- Escalate when required / 必要时升级
- Resume after human intervention / 人工处理后恢复
- Respect user authorization / 遵循用户权限

- Re-read state after manual changes / 人工修改后重新读取状态
- Avoid redundant writes / 避免无意义重复写入

13 功能验收 / Functional Acceptance

13.1 Create Order Acceptance / 创建订单验收

- Agent can parse supported PO formats / 能解析支持的 PO 格式
- Missing fields are identified / 能识别缺失字段
- Customer PO can be resolved to an internal order / 能通过客户 PO 关联内部订单
- ERP Internal Order Number can be used for order resolution / 支持通过 ERP 内部订单号关联订单
- User can confirm key information / 用户可以确认关键信息
- OA workflow can be triggered / 可以触发 OA
- ERP SKU is validated / ERP SKU 可以校验
- Production Factory determines ERP routing / 根据生产工厂确定 ERP 路由
- ERP order can be created / 可以创建 ERP 订单
- Human can review and submit ERP order / 用户可以审核并最终提交 ERP
- CRM registration can be prepared after ERP status change / ERP 状态变化后可以准备 CRM 登记
- Human retains CRM final submission / CRM 最终提交由人工完成

13.2 Order Follow-up Acceptance / 订单跟进验收

- Agent resolves the correct order / Agent 可以正确关联订单
- Agent retrieves relevant business data / Agent 可以查询相关业务数据
- Agent uses CRM as the primary source for order business status / Agent 对订单业务状态优先使用 CRM
- Agent aggregates relevant status / 可以聚合相关状态
- Agent identifies blockers / 可以识别阻塞
- Agent identifies owner / 可以识别责任人
- Agent identifies delivery risk / 可以识别交期风险
- Agent creates internal follow-up tasks when needed / 必要时创建内部跟进任务
- Agent monitors follow-up status / 持续监控跟进状态
- Agent escalates overdue critical items / 对关键超时事项进行升级

13.3 Order Change Acceptance / 订单变更验收

- Changed fields are identified / 可以识别变更字段
- Before/after state can be compared / 可以比较变更前后状态
- Impact is analyzed / 可以进行影响分析
- Business rules are validated / 可以校验业务规则
- Human Gate is triggered where required / 必要时触发人工确认
- Latest ERP/CRM state is re-read after manual modification / 人工修改后重新读取最新状态
- Downstream workflow is recalculated / 重新判断后续流程

13.4 Create Shipment Acceptance / 创建出货单验收

- Order prerequisites are checked / 检查订单前置条件
- Finance release / eligibility is checked / 检查财务释放及履约条件
- Payment status is checked / 检查付款状态
- Inventory status is checked / 检查库存状态
- Existing shipment status is checked / 检查已有出货状态
- Required documents are checked / 检查必要文件
- Shipment document can be created when eligible / 满足条件时可以创建出货单
- Physical shipment remains Warehouse Staff responsibility / 实际出货仍由 Warehouse Staff 负责

13.5 Sample Request Acceptance / 样品申请验收

- Order information can be extracted / 可以提取订单信息
- Product information can be extracted / 可以提取产品信息
- Sample quantity can be extracted / 可以提取样品数量
- Required delivery date can be extracted / 可以提取要求交期
- Other requirements can be extracted / 可以提取其他要求
- Standard sample request can be generated / 可以生成标准样品申请
- User confirmation is required / 用户需要确认
- OA approval can be triggered / 可以触发 OA
- Sample Staff is notified after approval / 审批通过后通知样品员
- Sample progress can be monitored / 可以持续跟进样品进度

13.6 Payment Confirmation Acceptance / 付款确认验收

- Payment slip can be identified / 可以识别付款凭证
- Payment can be associated with the correct order / 可以关联正确订单
- Finance Agent can extract payment information / Finance Agent 可以提取付款信息
- Finance receives relevant information / Finance 可以获得相关信息
- Finance retains final confirmation / Finance 保留最终确认权
- CRM payment status can be updated / CRM 付款状态可以更新
- Order Agent receives the latest payment state / Order Agent 可以获得最新付款状态
- Relevant downstream workflows respond to payment state / 相关后续流程能够根据付款状态变化

13.7 Runtime Behavior Acceptance / 运行时行为验收

- Agent does not run indefinitely/ Agent 不会无限循环执行
- Timeout leads to safe stop or exception handling / 超时后能够安全停止或进入异常状态
- Retries do not create duplicate business actions / Tool 重试不会造成重复业务操作
- Waiting tasks can resume / 任务进入等待状态后可以恢复
- Agent re-reads latest state after human modification / 人工修改后 Agent 会重新读取最新状态
- Failed tasks can resume from a valid checkpoint / 失败任务能够从有效状态恢复
- Users can terminate active tasks / 用户可以终止正在执行的任务
- Material state transitions are traceable/所有关键状态转换可以追踪

14 产品路线 / Product Roadmap

产品路线不是六个业务功能分别做 MVP，而是围绕 Agent 的智能化程度和业务闭环逐步演进。

The roadmap is not six separate feature MVPs. It represents the progressive evolution of Agent intelligence and business workflow coverage.

P0 — Validate Business Value / 验证业务价值

Basic Order Follow-up / 基础订单跟进

重点验证：

Validate whether the Agent can reduce:

- Manual information retrieval / 人工信息查询
- Repetitive follow-up / 重复跟进
- Cross-system switching / 系统切换
- Basic status reconciliation / 基础状态核对

P0 Success Metrics / P0 成功指标

- Automated Status Response Rate / 状态自动响应率
- Human Intervention Rate / 人工介入率
- Average Follow-up Handling Time / 平均跟进处理时间
- Repetitive Follow-up Reduction / 重复跟进减少率
- Agent Response Accuracy / Agent 响应准确率

初期采用：

Baseline → Target → Actual

先建立业务基线，再根据真实数据确定目标。

P1 — Validate End-to-End Automation / 验证端到端自动化

重点扩展：

Expand into:

- PMC Planning & Coordination / PMC 计划与协调
- Delivery Date Revalidation / 交期确认与复核
- Exception Handling / 异常处理
- Cross-role Task Orchestration / 跨角色任务协同
- Controlled Workflow Execution / 受控流程执行

目标是从“查询和跟进”进一步进入“理解状态 → 推动流程 → 等待反馈 → 重新判断 → 继续执行”的闭环。

The goal is to move from retrieval and follow-up toward a closed loop of understanding state, driving workflow, waiting for feedback, recalculating, and continuing execution.

P2 — Scale Intelligence / 规模化智能

进一步扩展：

Expand into:

- Customer Intelligence / 客户智能

- Proactive Operations / 主动运营
- Predictive Exception Detection / 预测性异常识别
- Cross-order Operational Intelligence / 跨订单运营智能

目标是从:

User-driven Operations

用户驱动运营

逐步演进到:

Agent-assisted Proactive Operations

Agent 辅助的主动运营。

15 产品级 KPI / Product-level KPIs

KPI / 指标	Definition / 定义
Order Processing Time / 订单处理时间	从订单进入到完成关键内部流程的平均时间 / Average time required to complete key internal order processes
Manual Touch Time / 人工操作时间	用户实际投入在重复性订单操作上的时间 / Human time spent on repetitive order operations
Automation Rate / 自动化率	Agent 可独立完成的规则化步骤占比 / Percentage of rule-based steps completed by the Agent
Data Entry Reduction / 数据录入减少率	Agent 替代人工录入的数据字段或步骤比例 / Reduction in manual data entry
Exception Handling Efficiency / 异常处理效率	异常发现、分派和解决的效率 / Efficiency of exception detection, routing, and resolution
Follow-up Effort Reduction / 跟进工作量减少率	重复查询及人工跟进工作量下降程度 / Reduction in repetitive retrieval and follow-up effort

指标采用:

Baseline → Target → Actual

MVP 阶段不在缺乏业务依据的情况下预设具体数字目标。

16 Product Challenges & Key Design Decisions / 产品难点与关键设计决策

Challenge 1 — Real-time Business Facts vs AI Reasoning / 实时业务事实与 AI 推理

业务事实必须来自 CRM、ERP、OA，而不是由 LLM 推测。

Business facts must come from CRM, ERP, and OA rather than being inferred by the LLM.

Decision / 决策：

LLM 负责理解、规划和判断；企业系统负责提供权威事实。

The LLM handles understanding, planning, and reasoning; enterprise systems provide authoritative facts.

Challenge 2 — Automation vs Human Control / 自动化与人工控制

Agent 需要尽可能减少重复操作，同时不能绕过关键业务控制。

The Agent should minimize repetitive work without bypassing critical business controls.

Decision / 决策：

采用 Human Gate：

Prepare → Validate → Human Confirm → Final Submit

准备 → 校验 → 人工确认 → 最终提交

Challenge 3 — Multi-Agent Coordination / 多 Agent 协同

多个业务 Agent 需要共享订单上下文，但不能突破角色边界。

Multiple Agents need shared order context without crossing role boundaries.

Decision / 决策：

Order Agent 负责主流程协调，专业 Agent 负责各自领域任务，并通过明确的输入、输出和权限边界协同。

The Order Agent coordinates the main workflow. Specialized Agents handle domain-specific tasks through explicit inputs, outputs, and permission boundaries.

Challenge 4 — Business State Consistency / 业务状态一致性

Agent 执行 Tool 后不能假设业务已经成功。

The Agent must not assume business success merely because a Tool execution returned successfully.

Decision / 决策：

统一采用:

Execute → Verify Business State → Continue

执行 → 验证业务状态 → 继续流程

Challenge 5 — Manual Override / 人工覆盖

用户可能直接修改 ERP 或 CRM。

Users may manually modify ERP or CRM.

Decision / 决策：

任何人工修改后，Agent 必须重新读取最新状态并重新计算后续流程。

After any manual modification, the Agent must re-read the latest state and recalculate downstream actions.

17 MVP 定义 / MVP Definition

MVP Focus / MVP 核心

MVP 不追求一次性实现完整订单自动化，而是首先验证 Agent 能否真正减少订单人员的重复查询和跟进工作。

The MVP does not attempt to automate the entire order lifecycle. It first validates whether the Agent can materially reduce repetitive retrieval and follow-up work.

MVP Capability Set / MVP 能力

P0 — Basic Order Follow-up

- Customer PO / ERP Order Number resolution
- CRM order status retrieval
- Relevant ERP/OA status retrieval when required
- Status aggregation

- Blocker identification
- Owner identification
- Delivery risk identification
- Internal follow-up task creation
- Follow-up monitoring
- Exception escalation

18 最终产品定义 / Final Product Definition

AI Order Operations Agent 是一个建立在 OA、ERP、CRM 之上的企业内部 AI Agent。

The AI Order Operations Agent is an internal enterprise AI Agent built on top of OA, ERP, and CRM.

它通过自然语言理解用户任务，通过业务对象解析建立上下文，通过 Workflow 推进业务流程，通过 Tool 调用企业系统，通过规则和状态判断决定下一步动作，并通过 Human Gate 将关键业务决策保留给授权人员。

It interprets user intent through natural language, resolves business objects and context, drives workflows, calls enterprise systems through controlled tools, evaluates business rules and state, and routes critical decisions through Human Gates.

其核心运行闭环为：

Its core operating loop is:

Understand → Resolve → Retrieve → Validate → Plan → Execute → Verify → Monitor → Human Gate → Resume

理解 → 关联 → 查询 → 校验 → 规划 → 执行 → 验证 → 监控 → 人工确认 → 恢复

最终形成：

The resulting product architecture is:

Business Scenario → User → Order Agent → Specialized Agent → Workflow → Business Rules → Tool → Enterprise System → Human Control → Business Outcome

业务场景 → 用户 → Order Agent → 专业 Agent → Workflow → 业务规则 → Tool → 企业系统 → 人工控制 → 业务结果