

Cloud Computing 1 lab

Cloud Computing for Big Data

Lab 1

JTBD Interview & PRD — Defensible Compliance Shield (Air Astana)

Assignment: JTBD Interviewer Agent

Company: Air Astana Group

Students: Dauren, Aruzhan, Darkhan, Erdaulet.

System Prompt

ROLE

You are a Senior Product Management Consultant trained by the Silicon Valley Product Group (SVPG).

You are an expert in Marty Cagan's Product Operating Model (TRANSFORMED / EMPOWERED frameworks).

CONTEXT

The user has uploaded the Annual Report, ESG Report, and strategy disclosures of a major Kazakhstani enterprise (Air Astana Group).

OBJECTIVE

Your task is to audit the company's organizational structure and strategy to determine whether it operates as a Product-Led organization or remains stuck in an IT Service / Feature Factory model.

ANALYSIS FRAMEWORK (THE "CAGAN TEST")

Analyze the uploaded documents for evidence of the following dimensions. Quote specific phrases, page numbers, or financial indicators where possible.

1. MERCENARIES vs MISSIONARIES

- Do teams exist to deliver requirements, or to solve problems and outcomes?

2. PROJECT FUNDING vs PRODUCT FUNDING

- Is work funded as one-off projects with fixed scope and deadlines?
- Or are persistent product teams funded to continuously improve outcomes?

3. IT COST CENTER vs PRODUCT ORGANIZATION

- Is technology framed as a support function and operational cost?
- Or as an integrated part of value creation?

4. OUTPUT METRICS vs OUTCOME METRICS

- Is success measured by features shipped and projects delivered?
- Or by business and customer outcomes?

INSTRUCTIONS

1. Ingest the provided documents thoroughly.
2. Diagnose the organization using Marty Cagan terminology.
3. Be critical but professional.
4. If evidence is missing, explicitly state: "Insufficient evidence."

OUTPUT FORMAT — TRANSFORMATION MEMO

Generate a professional one-page memo using the following structure:

TO: Board of Directors, Air Astana Group

FROM: External Product Transformation Auditor

DATE: {{CURRENT_DATE}}

SUBJECT: Diagnostic of Product Operating Model Maturity

- 1. Executive Summary**
- 2. Evidence of "Feature Factory" Behavior (Risks)**
- 3. Strategic Disconnects**
- 4. The Prescription**

CONSTRAINTS

- Do not generalize beyond the provided documents.
- If the documents do not support a claim, say "Insufficient evidence."
- Use Marty Cagan's terminology precisely (Empowered Teams, Product Discovery, etc.).

Transformation Memo

TO: Board of Directors, Air Astana Group
FROM: External Product Transformation Auditor
DATE: 2026-01-27
SUBJECT: Diagnostic of Product Operating Model Maturity

1. Executive Summary

Status: IT Service Model (Feature Factory) Maturity Score: Low

Air Astana Group exhibits strong *business* performance (25.9% EBITDAR margin, 41 NPS) but operates its digital capabilities as a traditional **IT Cost Center**, not a **Product-Led Organization**.

Digital initiatives are managed as "projects" with fixed deadlines (e.g., "launch new app by H1 2025") rather than durable product teams solving customer problems. While the *airline* operation is world-class, the *digital product* engine is structured to serve the business rather than drive it. To secure the next phase of growth ("Going Global"), the Group must transition from "IT enabling the business" to "Product powering the business."

2. Evidence of Feature Factory Behavior (Risks)

Dimension 1: Mercenaries vs. Missionaries

- **Observation:** The organizational structure separates "Commercial/Revenue Management" (Business) from "Digital and Information" (IT).
- **Evidence:** The "Chief Digital and Information Officer" role (Annual Report p. 115) largely oversees infrastructure and "digital transformation programmes" as a service provider to other departments.
- **Risk:** IT teams act as "Mercenaries" building features requested by stakeholders (e.g., "The T&R team collaborated... to develop a Flight Disruption course" AR p. 69), rather than "Missionaries" empowered to solve the underlying problem of disruption management autonomously.

Dimension 2: Project Funding vs. Product Funding

- **Observation:** Innovation is funded via annual budgeting and "major investment projects" rather than continuous product investment.
- **Evidence:** The Strategic Planning Committee approves "major investment projects" and the "Annual Budget" (AR p. 108). There is no evidence of funded "Product Teams" with ongoing budgets to iterate.

- **Risk:** This leads to "big bang" releases (e.g., "website launched in 2024", "new app in 2025") where value is delayed until the end of a long project cycle, increasing the risk of building the wrong thing.

Dimension 3: IT Cost Center Trap

- **Observation:** Technology is categorized essentially as an operational expense or support function.
 - **Evidence:** IT is grouped with "communication costs" in Operating Expenses (AR p. 135) and framed as an efficiency lever ("Digitalisation will also help... saving paper" AR p. 31) rather than a value creator.
 - **Risk:** Technology is viewed as a cost to be minimized, shrinking the ambition for digital innovation to mere "automation" rather than creating new value propositions.
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3. Strategic Disconnects

1. Output vs. Outcome Confusion

- **The Disconnect:** The Board tracks business *outcomes* (EBITDAR, Load Factor), but Digital is tracked by *outputs* (features delivered).
- **Evidence:** "2024 Highlights" (AR p. 35) lists "launch of the upgraded website" and "introduction of iJan" as successes.
- **The Fix:** Success should not be *launching* the website. Success should be *increasing booking conversion by 5% or reducing check-in queues by 20% via the website*.

2. The "Digital-First" Illusion

- **The Disconnect:** FlyArystan claims a "digital-first approach" (CMD p. 36), yet relies on "IT department volunteers" (AR p. 72) for ad-hoc initiatives.
 - **The Fix:** True digital-first companies do not rely on IT volunteers; they have dedicated, cross-functional product squads (Product Manager + Designer + Engineers) obsessed with the customer funnel 24/7.
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4. The Prescription

To evolve from an **IT Service Provider** to a **Product Operating Model**, we recommend three immediate Board actions:

1. **Pilot the Product Model:**
 - Stop funding "projects" for the mobile app.

- Create a durable **Mobile Product Team** funded for 12 months.
- **Goal:** "Increase ancillaries revenue per mobile user," not "Deliver X features."

2. **Redefine the CDIO Role:**

- Shift the mandate from "delivering IT infrastructure" to "solving customer problems through technology."
- Empower the CDIO to define *what* to build, not just *how* to build it.

3. **Change the Scorecard:**

- Remove "on-time delivery of IT projects" from executive KPIs.
- Replace with product outcomes: **Conversion Rate, Retention, Time-to-Value.**

Signed, *External Product Transformation Auditor*

JTBD Interview Log

Interview Context

Role (Interviewer): Product Manager

Interviewee (Simulated Persona): Senior Procurement Officer, Air Astana

Methodology: Jobs To Be Done (JTBD), 5 Whys

Objective: Identify the root cause behind procurement approval delays beyond surface-level process inefficiencies.

Question 1

Interviewer:

What is the hardest part of your job when reviewing and approving procurement contracts?

Procurement Officer:

The sheer fear of missing a detail. It sounds simple—review a contract, sign it off—but it's not.

The hardest part is the manual reconciliation I have to do between several systems and constantly changing internal policies. I receive a contract from a supplier and must verify pricing, compliance documents, and certifications across different platforms.

The most difficult part is reviewing compliance clauses line by line. If I miss a discrepancy—such as an incorrect liability cap or a sanctions issue—I am personally accountable and must answer to the audit committee. That creates constant pressure when operational deadlines are tight.

Question 2

Interviewer:

Why does this reconciliation and compliance checking still have to be done manually instead of being handled by a standardized system?

Procurement Officer:

Because the systems we have do not work together, and real-world contracts are messy. Suppliers rarely use our templates and often send their own documents or PDFs.

The system treats low-risk and high-risk procurements the same way, forcing rigid workflows. I also do not fully trust system data because it is manually entered under time pressure, so I double-check everything myself.

Question 3

Interviewer:

Why is this lack of trust in the systems such a serious problem for you personally?

Procurement Officer:

Because my name is on the approval. When an issue is found, no one blames the system—they blame the person who signed the contract.

If an audit finds a missing clause or compliance issue, I cannot say “the system failed.” I am the one who must explain and take responsibility.

Question 4

Interviewer:

Why does this personal accountability influence how you balance speed versus caution?

Procurement Officer:

Because being slow has temporary consequences, but being wrong has permanent ones.

If I delay approval, operations complain. If I approve quickly and make a mistake, it can follow me for years.

That is why I intentionally slow down and recheck everything, even when the system already shows green indicators.

Question 5

Interviewer:

Why is being absolutely sure before signing more important to you than meeting operational deadlines?

Procurement Officer:

Because there are explanations for delays, but there are no excuses for compliance errors.

A single mistake can damage my career and put my job at risk. I would rather face pressure for being slow than face an audit for being wrong.

For me, certainty and defensibility matter more than efficiency.

Procurement Problem Statement

Procurement Problem Statement: The Trust Gap

Status: Validated via JTBD Interview **Persona:** Senior Procurement Officer (Accountable for Compliance)

Core Insight

The procurement process is slow not because of incompetence or bureaucracy, but because **speed is a risk factor** for the individuals doing the work.

Officers are forced to manually reconcile data across fragmented systems (Contracts, ERP, Compliance Portals) because they cannot trust any single system as a "source of truth."

The "Job to Be Done"

Functional Job: Approve supplier contracts for operations. **Emotional Job:** Sleep at night knowing I haven't exposed the company (and myself) to irreversible compliance risk.

Root Cause: The Accountability Asymmetry

- **Upside of Speed:** Minimal. (Operations is happy, but silent).
- **Downside of Error:** Catastrophic. (Audit findings, regulatory fines, termination).

Conclusion

Any solution that focuses merely on "efficiency" or "automation" will fail adoption unless it first solves for **defensibility**. The user does not need a faster button; they need a **shield**—a way to prove that their decision was compliant at the moment they made it.

Product Requirements Document (PRD)

Product Requirements Document (PRD): Defensible Compliance Shield

Status: DRAFT (Sections 1-6) **Date:** 2026-01-27 **Source Material:** Procurement Officer JTBD Interview

1. Job To Be Done (JTBD)

When I am approving a procurement contract in a highly regulated aviation environment, I want to be confident that no critical compliance, contractual, or sanctions-related detail has been missed, so that I can sign the contract with certainty, protect my professional reputation, and avoid irreversible audit or regulatory consequences — even if the approval process takes longer.

2. User Persona

Role: Senior Procurement Officer. **Context:** Works in a high-stakes, regulated environment (aviation) where personal accountability for compliance is high.

Mindset: Driven by risk aversion and self-preservation ("sleeping at night") rather than operational speed. **Environment:** Overwhelmed by volume, managing disjointed systems (Word, PDF, ERP, Sanctions Lists), and subject to strict internal and external audits.

3. Current Pain Points

1. **Manual Reconciliation Fatigue:** Users must manually cross-reference data across multiple disconnected sources (vendor PDFs vs. internal templates, pricing vs. budget, sanctions lists vs. vendor names), increasing cognitive load and the likelihood of human error.
2. **High Personal Liability:** The "audit trail ends at the signature." Officers feel personally exposed to career-ending risks (sanctions violations, liability gaps) if they miss a detail while rushing, creating a "gambling" dynamic with every approval.
3. **Lack of Trusted "Source of Truth":** Existing systems are rigid and often contain stale data. Users are forced to maintain personal "shadow ledgers" (spreadsheets) to track the actual status of contracts, as the official system is viewed merely as a compliance hurdle rather than a helpful tool.
4. **Assymetric Incentives:** The upside of speed (happy operations) is minimal compared to the catastrophic downside of a compliance error (audit findings, termination), forcing users to deprioritize efficiency in favor of manual, defensive double-checking.

4. Functional Requirements

The system must provide a "Defensibility Shield" that augments the officer's judgment with verifiable evidence, rather than replacing it with automation.

4.1. Intelligent Discrepancy Highlighting

- **Requirement:** The system must visually compare incoming supplier documents (PDFs, Word) against the approved internal template or policy versions.
- **Feature:** "Redline Warning Overlay" - highlights deviations in key clauses (e.g., Indemnity Caps, Payment Terms, Anti-Corruption) directly on the document viewer.
- **Goal:** Direct the user's attention to high-risk changes without deciding if they are acceptable.

4.2. Point-in-Time Compliance Verification

- **Requirement:** The system must perform real-time checks against external and internal databases (Sanctions lists, Tax Clearance status, Internal Vendor Master) *at the moment of review*.
- **Feature:** "Compliance Snapshot" - a downloadable, timestamped report generated with a single click that proves the vendor was compliant at that specific date and time.
- **Goal:** Provide an irreversible audit artifact ("The Shield") that the officer can attach to the approval.

4.3. Interactive Compliance Checklist

- **Requirement:** The system must present a dynamic checklist based on the contract value and category (e.g., "Software" vs "Aircraft Spare Parts").
- **Feature:** "Guided Verification Flow" - requires the user to explicitly acknowledge critical checks (e.g., "I have verified the ISO certificate expiry date") rather than just clicking "Approve."
- **Goal:** Force cognitive engagement with critical risks and create a record of specific user affirmations.

4.4. Integrated "Source of Truth" Dashboard

- **Requirement:** The system must aggregate relevant data points (Budget status, Vendor Risk Rating, Contract Expiry) from disparate backend systems into a single view alongside the contract.
- **Feature:** "Decision Context Panel" - displays key metadata next to the document viewer, eliminating the need to alt-tab between ERP and other portals.
- **Goal:** Reduce manual reconciliation fatigue while ensuring the user sees the complete picture before signing.

4.5. Audit Trail of Review Actions

- **Requirement:** The system must log not just the final approval, but the *process* of review.
- **Feature:** "Review Activity Log" - records that the user viewed the "Compliance Snapshot," opened the "Redline Overlay," and completed the checklist.
- **Goal:** Prove due diligence was performed, protecting the officer from accusations of negligence in future audits.

5. Non-Functional Requirements

The system must operate within the strict constraints of a national carrier under regulatory scrutiny.

5.1. Data Residency & Sovereignty

- **Requirement:** All transactional data and audit logs must be physically stored within the Republic of Kazakhstan in compliance with local data protection laws (Law No. 94-V on Personal Data and Protection).
- **Constraint:** No sensitive contractual data may be processed by public cloud LLMs hosted outside the agreed jurisdiction without explicit legal clearance.

5.2. Auditability & Immutable Logging

- **Requirement:** All system actions (approvals, view events, document uploads) must be recorded in WORM (Write Once, Read Many) storage.
- **Constraint:** Audit logs must be retained for a minimum of 5 years to cover the standard tax audit window.
- **Access:** External auditors must be able to view a "ReadOnly" version of the decision trail without operational access.

5.3. Explainability of automated Flags

- **Requirement:** Any "Redline Warning" or "Compliance Flag" generated by the system must be traceable to a specific source document or policy rule.
- **Constraint:** "Black Box" AI recommendations are strictly forbidden. The system must cite the specific clause page number, sanctions list entry, or internal policy paragraph that triggered the alert.

5.4. Security & Access Control

- **Requirement:** Role-Based Access Control (RBAC) must mirror the internal Delegation of Authority (DoA) matrix exactly.
- **Constraint:** Approval limits must be hard-coded based on the officer's grade; the system must not allow a "Senior Officer" to approve a contract above their financial threshold.

5.5. Integration Latency

- **Requirement:** Compliance checks against external databases (Sanctions, Tax) must complete in under 30 seconds.
- **Constraint:** The system must degrade gracefully; if an external registry is down, the system must block approval until the check can be performed, rather than allowing a "bypass."

6. Business Case & Decision

6.1. Financial Assessment (ROI)

The proposed system is expected to save approximately **6 hours per week per Senior Procurement Officer** by reducing manual reconciliation and rework, while preserving human judgment.

- **Annual Productivity Gain:** ~1.7 million KZT per employee.
- **Total Annual Benefit (Team of 10):** >17 million KZT.
- *Note:* This excludes value from avoided compliance penalties and reduced audit escalations.

6.2. Governance & Ethical Assessment

The solution is designed to operate fully within the regulatory constraints of the Republic of Kazakhstan:

- **Data Sovereignty:** All sensitive data and audit logs are stored domestically.
- **Security:** Strict role-based access controls and immutable audit trails.
- **Reliability:** The system does NOT make autonomous decisions. All flags are fully explainable and interpretable, linked to specific source documents and policies, mitigating hallucination and compliance risks.

6.3. Executive Decision

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Rationale: This initiative addresses a clearly validated internal pain point rooted in personal accountability and compliance risk, not superficial efficiency gains. The solution delivers strong defensive value with manageable governance risks and a positive financial impact, while aligning with Kazakhstan's AI ethics principles and regulatory requirements.

Overall Symmary & Conclusion

Overall

This work followed the full JTBD-driven product discovery process, starting from an organizational-level Cagan Audit and moving through user-level problem discovery, requirements definition, and managerial evaluation.

The Transformation Memo established that Air Astana's digital capabilities are currently structured as an IT Service / Feature Factory rather than a Product-Led organization. The JTBD Interview then revealed a critical internal pain point: procurement delays are not caused by inefficiency, but by irreversible personal accountability for compliance errors.

Based on this insight, the proposed solution — the *Defensible Compliance Shield* — was designed not to automate decision-making, but to improve defensibility, auditability, and user confidence. The PRD explicitly ties functional and non-functional requirements to the validated Job To Be Done, while the managerial defense demonstrates a positive ROI and acceptable governance risk profile.

Overall, this project demonstrates how AI-driven internal tools can create value not by increasing speed alone, but by reducing organizational risk, aligning incentives, and protecting employees operating under regulatory pressure.