

ATTACHMENT B

Samsung HEVC Patent Pool Case Study Summary

Validation Rule Engine Implementation for Cross-Border Royalty Tax Verification

2015-2024 Implementation Results

EXECUTIVE SUMMARY

This case study summarizes Samsung Electronics successful design and implementation of a Validation Rule Engine for HEVC (High Efficiency Video Coding) patent-pool royalty administration.

The system automated previously manual withholding-tax verification, reduced refund-processing time by **42 percent**, and recovered approximately **USD 16 million (KRW 21.2 billion)** in accurately reconciled funds.

This proven model directly supports the proposed **U.S. Form 1042-S Enhancement Framework** under an Agentic AI-Digital Tax Transparency Framework (AI-DTTF)..

1. PROJECT CONTEXT

1.1 Challenge Overview

Samsung Electronics, as both patent holder and licensee within the global HEVC patent pool, managed royalty transactions involving over 30 patent holders and 70 licensees across 40 jurisdictions.

These transactions required consistent withholding-tax compliance under divergent sourcing and treaty-benefit rules.

1.2 Pre-Implementation Challenges

Before the Validation Rule Engine, the process relied on manual reconciliation of invoices and certificates, long refund cycles, and inconsistent treaty application—leading to delays and potential double taxation.

2. SOLUTION ARCHITECTURE

The Validation Rule Engine consisted of three core components:

1. **Data Mapping Architecture** – unified schema linking payments, contracts, and tax records with digital identifiers and API connectivity.
2. **Treaty Verification Module** – machine-readable treaty database enabling automatic validation of beneficial ownership and withholding rates.
3. **Reconciliation Engine** – automated matching of payments and certificates, with exception reports and audit trails for compliance.

3. Implementation Outcome

After full deployment across the HEVC pool, refund-processing time decreased by 42 percent and approximately USD 16 million (KRW 21.2 billion) in withholding taxes were accurately reconciled.

Treaty-application errors and dispute frequency were significantly reduced, providing a transparent, reproducible model for automated cross-border tax verification

4. KEY SUCCESS FACTORS

- Unified data standardization enabling cross-system integration.
- Machine-readable treaty logic for consistent interpretation.
- Collaboration between finance, IT, and tax functions to ensure regulatory alignment and sustainability.
- Continuous system optimization extended the framework to next-generation codecs (e.g., VVC).

5. Applicability to U.S. Form 1042-S Enhancement

The HEVC Validation Rule Engine demonstrates:

1. **Scalability** — architecture managing 30+ patent holders / 70 licensees can scale to U.S. withholding operations.
2. **Proven Efficiency** — 42 % faster processing and USD 16 M recovery show federal-level ROI potential.
3. **Technical Feasibility** — data standardization and rule-based automation are mature and deployable.
4. **Regulatory Alignment** — consistent with U.S. Treasury Digital Transformation and OECD BEPS 2.0 standards.

6. CONCLUSION

The Samsung HEVC Validation Rule Engine proves that modern tax administration can achieve greater efficiency, accuracy, and transparency through AI-driven automation and data standardization. Its verified results mirror the goals of the AI-Driven Digital Tax Transparency Framework proposed for U.S. Form 1042-S modernization, providing a tested foundation for national-scale implementation.

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