BANK OF FINLAND ANNUAL SEMINAR · 11–12 NOVEMBER 2026

Impact of AI on Economy, Finance and Supervision

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Building an AI-Native Central Bank

From Digital Transformation to Enterprise Intelligence

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Strategic goals and initiatives from 2027 · AI-ready data governance · Connecting people and AI · Integrating AI, IT systems and ECM

Four keywords that run through today’s story

Balance

Accelerated yet Governed Innovation

- Innovation vs security
- User autonomy vs bank-wide governance
- Sovereign AI vs frontier AI
- AI automation vs human judgement

Openness

Interoperability, Standards & Transparency

- Open standards and interoperability
- Transparent AI policies and practices
- Wider sharing and reuse of data, knowledge and AI assets

Knowledge

AI-ready Institutional Knowledge

- Data and knowledge managed across the life cycle
- Semantic layer and ontology shared by people and AI
- A virtuous Data → Knowledge → AI cycle

Integrity

Trustworthy & Responsible AI

- Data quality, completeness and provenance
- Life-cycle management, security and resilience
- AI risk management, ethics and accountability
- Ongoing alignment with laws and standards

From DX to AX: the Bank of Korea's journey

Building the foundations for AI transformation

Organisational, institutional, data and platform foundations

2020

Strategy

· BOK2030 medium-term strategy — "actively pursue digital innovation"
· Digital Innovation Department established — AI/ML for central banking set as an explicit goal

2021–22

Foundations

· Bank-wide data governance (2021)
· 10th IT Strategy Plan (2021)
· 1st Data Strategy (2022)
· Bank-wide data inventory
· BIDAS build-out begins — data catalogue, data lake
· Digitisation of knowledge assets

2021–24

Use cases

· GDP and inflation nowcasting (2022, 2024)
· Inflation sentiment index · social-media reputation monitoring (2022)
· AI Transcribe for minutes (2021; Whisper 2024)
· BOKSiri, a RAGchatbot (2023)
· Digital bank-run and systemic-risk detection (2023)
· Real-time press-conference dashboard (2024)
· Industry–academia work on domain models

2024–

Enterprise AX

· Goal — "AI services usable across all lines of work"
· Options appraisal · feasibility assessment · internal and external review
· BIDAS completed — data catalogue (2022) + data lake (2024) + MLOps/LLMOps (2024–25)

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Sovereign AI: adoption through public–private partnership

Korean public institutions are not permitted to use external AI

Sovereign AI = control over the data and AI models we use ≠ the domestic model itself

Objective

- **Trustworthy central bank AI by design**
- **A scalable AI platform for every member of staff to use across all lines of work**

Components

INFRA/COMPUTE	SECURITY	MODEL	APPLICATION
On-premise private cloud	**Compliance with public-sector security and network separation rules**	**· Domestic sovereign foundation model** **· Standardised for scalability**	**Models and services linked to BIDAS and internal records**

Division of roles under PPP

Naver Cloud

- Foundation models and cloud infrastructure operations
- HCX model updates
- Technical support for domain-specific models

Bank of Korea

- Design, build and run central-bank-specific AI applications
- AI-ready data governance · RAG data management
- AI governance · risk management · access control

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[Backup] Residency vs localisation vs sovereignty

Residency ≠ sovereignty

Data held in a hyperscaler's Korean data centre may still fall under another jurisdiction

RESIDENCY

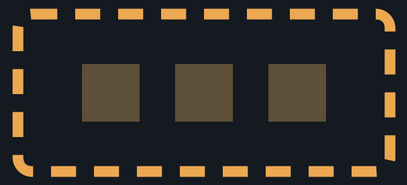


Where is data stored?

The physical location of data — a fact or a choice, not a rule

e.g. stored in Seoul

LOCALISATION



Is it required by law?

A legal requirement to keep certain data inside national borders

e.g. China PIPL · Russia 242-FZ

SOVEREIGNTY



Whose law applies?

Which jurisdiction can reach or govern the data

e.g. US CLOUD Act · GDPR Art. 3
China Data Security Law Art. 36

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[Backup] Key concepts of data and AI sovereignty

Managed dependence is unavoidable for the technology stack+model

Standardisation+interoperability: min. requirement for maximum autonomy and future scalability

Digital sovereignty

The overarching concept for self-determination over digital assets, infrastructure and operations

Data sovereignty

Location · access · jurisdiction

Operational sovereignty

Who runs and controls the system

Technological sovereignty

Tech-stack independence and continuity

AI sovereignty

· One domain under the umbrella of digital sovereignty, yet the strategic apex
· A cross-cutting concept applying across the AI lifecycle

- Data
- Compute / Inference
- Model

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[Backup] Data sovereignty in the Korean public sector

Public-sector data must be stored/processed in Korean jurisdiction

· On-premises systems in the physically separated network and on NIS-certified public clouds

· Inference residency, not yet specified, warrants consideration under operational sovereignty

CONCEPT	CORE QUESTION	KOREAN PUBLIC-SECTOR INSTRUMENT
Data sovereignty	Whose law governs the data?	**Not codified explicitly, yet enforced in practice** by legislation and national guidelines
Data residency	Where is the data stored?	**Personal Information Protection Act (PIPA)** Controls on cross-border transfers of personal information
Data localisation	What must remain in-country or on the institution’s premises?	**National Information Security Guidelines** **+ Cloud Computing Act** **+ Cloud Security Assurance Program (CSAP)** As the mandatory gateway for data localisation
Operational sovereignty	Who operates and controls it?	**Physical network segregation + CSAP** Operation and resourcing for public institutions

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BOKI as a platform: sovereignty and scalability

Model-agnostic interface + modular development through interoperability and standardisation

MODEL / COMPUTE

· Foundation model: **HyperCLOVA X** + open-source model

· GPU cluster on private cloud

· StudioXP for multi-model serving

· Protected by additional security equipment for data and model safety

· Managed by NAVER Cloud — real-time maintenance and model upgrades

API

APPLICATIONS

LLMOps · UI/UX
model-agnostic interface

· Chatbot: conversational input, output and feedback

· Upload of user documents and files

Agents / sLLMs
substitutable back-end

· Understanding and rewriting prompts

· Data extraction and embedding

· Task allocation among agents

API + data pipeline

DATA (BIDAS + ECM)

Research, analysis and policy

· Reports issued by the BOK

· Domestic and international research reports

· Financial and economic data in BIDAS

Planning, management and organisation

· Laws, regulations, guidelines and work manuals

· Budgeting and enterprise resource planning

GOVERNANCE

· **Model registry and evaluation**

· **Role-based access to data and prompts**

· **Logging and audit trails**

· Observability & FinOps — drift, cost, misuse (in progress)

BOK INTRANET — ALL LAYERS RUN INSIDE THE BANK'S NETWORK

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BOKI as a service: setting priorities

Based on an organisation-wide AI usage survey and in-depth interviews

Selection criteria: general applicability, data-readiness and speed to “go-to-market”

Report search & retrieval

- **Natural-language report search**
- **Related document recommendation**
- **Document-based Q&A support**
- Customised summary generation
- Personalised RAG support

Data search & analysis

- **Enhanced BIDAS data search**
- **Automated preprocessing and analysis (standardisation, classification)**
- **Coding assistant (Python, R, Matlab)**
- Automatic anomaly detection
- Data change history reporting

Policy search & analysis

- **Policy and regulation Q&A**
- Case law and precedent collection
- Regulatory change tracking and alerts
- Domestic vs international comparison
- Legal interpretation and contract review

Others

- **Specialised translation (economics and finance)**
- BOK onboarding support
- Multimedia analysis
- Business efficiency support (budget Q&A, headcount)
- Personal assistant (schedule, audit)

External content monitoring

- Monitoring of specific sites and media
- Topic and sentiment analysis
- Customised summary generation
- Similarity and conflict detection
- Automated fact-checking

Report generation

- TOC-based draft generation
- Data-driven content creation
- Style conversion (bullets ↔ narrative)
- BOK style and term suggestions
- Report format standardisation
- Table, diagram and chart generation

— Function delivered in the first release

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BOKI as a service: specialised functions

BOKI.ra Research assistant

Advanced research workflow

· Optimised for research reports — content-rich with tables and graphs
· Source sentence and report preview always provided

BOKI.ca Compliance assistant

Regulatory interpretation support

· Optimised for regulation analysis — relationships and hierarchical structure
· Answers grounded in internal policies and operating manuals

BOKI.da Document assistant

Search, summarisation, drafting

· Q&A, summarisation, comparison and translation over the user's own documents

BOKI.tr Specialised translation

International policy communication

· Review of sensitive international materials and contracts
· Finance and economics terminology dictionary applied
· File-level translation preserving format and structure

BIDAS.ai Data search & analysis

The layer beneath all four assistants

· Search and analysis through the integrated data platform and AI
· AI-augmented data search
· 13 AI agents to assist econometrics, modelling and policy implications

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BOKI as a service: the evolution of BOKI

BOKI 1.0

launched Jan 2026

Purpose-specific assistants

· BOKI.ra research
· BOKI.ca regulations
· BOKI.da personal documents
· BOKI.tr specialised translation
· BIDAS.ai data search and analysis



BOKI 2.0

beta Apr 2026 → live Jul 2026

Integration and reach

· Research, regulations and document assistants unified in a single UI/UX
· RAG over internal records plus internet sources
· Batch translation preserving document layout



BOKI 3.0

beta Jul 2026 → live Sep 2026

Automating analysis

· Coding assistant
· BOK-da, a standard econometric library
· Large models plus task-specific skills
· Domain-specific MCP trials



BOK AI Benchmark Performance measured objectively across nine domains — economic and financial understanding, RAG, instruction following and others

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Next: “AI-native”

Systems are in place; culture and ways of working still evolving

DONE **Exploring Digital** → WE ARE HERE **Doing Digital** → NEXT **Being Digital**

WHAT REMAINS

Remaining challenges

- Unstructured text → AI-Ready
- Complete ontology & enterprise semantic model
- Advance ECM (content management)
- Legacy systems lack AI-readiness, blocking AI integration

Cultural shift

- A "fail fast" culture: agility over perfectionism
- Cross-functional, interdisciplinary teamwork
- Shadow AI habits formed through early use of external AI
- Data/AI governance not yet embedded in day-to-day work

WHAT WE HOLD TO

Data-driven change
AI-Ready, machine-interpretable data assets

Human–AI collaboration
AI as copilot; capability, trust, explainability

Responsible AI
Independent risk management; public-sector AI ethics

Vision
AI in every business area; AX as public value

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Strategic Framework under ISP (2027–30, in progress)

Vision: an AI-native central bank

A central bank where people and AI work together on trusted data and knowledge

AI TOOLS EVERYWHERE, EMBEDDED IN **Utilisation** → **Analysis** → **Decision-making**

BOKI DESIGN PRINCIPLES

- **Balance** — AI use with human accountability
- **Openness** — Openness and interoperability
- **Knowledge** — Accumulating and reusing organisational knowledge
- **Integrity** — Trust, verification and traceability

STRATEGIC GOAL 3

AI-readable

Data & Knowledge Foundation

Securing the meaning and trustworthiness of data and knowledge

→

STRATEGIC GOAL 4

AI-enabled

Work & Process Transformation

Redesigning work through human–AI collaboration

→

TARGET OPERATING MODEL

AI-native

· AI across every stage of work
· Final judgement and accountability stay with people

Knowledge loop Analyses and know-how validated in daily work become reusable organisational assets

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Strategic goals under ISP (2027–30)

Trusted Data → Trusted AI → Trusted Decision

Two strategic goals, connected through a knowledge loop

STRATEGIC GOAL 3

Advancing the data & knowledge value chain

AI-readable Data & Knowledge Foundation

3-1 Data & knowledge standards and semantics
- Common definitions and clear ownership
- Linking data with documents and regulations by meaning

3-2 Intelligent data & knowledge sharing
- Consistent access to dispersed data and knowledge
- Cross-departmental reuse of validated assets

3-3 Trusted data & knowledge for AI
- Managing provenance, quality and timeliness
- Fitness for AI use; traceable evidence for outputs

Trusted knowledge in use →

KNOWLEDGE LOOP

← Validated knowledge fed back

STRATEGIC GOAL 4

Transition to AI-native ways of working

AI-enabled Work & Process Transformation

4-1 Risk-based AI governance
Risk-tiered controls and accountability; quality and performance management

4-2 User-centred AI workspace & ecosystem
Knowledge in the flow of work; sharing of AI assets

4-3 AI assistants & agents in core processes
Research, administrative and development work redesigned; people keep final accountability

4-4 Open, hybrid AI operating model
Selective use of internal and external AI; common operations and security

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AI-readiness so far: machine-readable

Standardised knowledge assets read by people and AI alike

Current Structured and semi-structured · dataset-level catalogue · business metadata → **AI-ready** Extended to unstructured · ontology and semantic model · context-rich metadata

Digitising documents making knowledge assets AI-ready

3.33m internal reports since 2000

Existing documents suit people, not AI

· Not managed under a unified taxonomy or common principles
· HWP(X) 1.76m · DOC(X) 0.2m · PDF 1.37m
· 2,000 published reports

→

1.36m documents → structured JSON

· Duplicates & personal data excluded
· JSON tree: tables, images, merged fields
· Hierarchy kept (main message → rationales → evidence) for RAG accuracy
· Unified taxonomy and security classification assigned
· Automated + manual conversion

Differentiated AI use by security classification

Under the new National Network Security Framework (N2SF)

RAG	Fine-tuning	Pre-/post-training
assistant knowledge base	BOK-specific models	public data only

An AI-friendly conversion standard

67 metadata specifications redefined for efficient management and maximum reuse

```
{
  "doc_title": "...",
  "security_level": "s",
  "authors": [...],
  "created_date": "...",
  "description": "...",
  "language": "ko",
  "body": [...],
  "organization": "..." ...
}
```

Ontology: machine-interpretable

Connecting the dots across datasets to break down silos

ONTOLOGY · FROM SINGLE-DOCUMENT LINKS TO CROSS-DATASET RELATIONS



ONTOLOGY AS A DIGITAL TWIN

ANCHOR	MODEL	OUTCOME
Business Reference Model	**How the Bank works**	**Digital twin**
R&R model for public institutions	Responsibilities · workflows · data flows	Of central banking operations



Knowledge graph: entities linked across departments

KNOWLEDGE GRAPH · WHAT IT ENABLES

Find and reason across silos
Data linked across departments

Sharper RAG & BIDAS.ai search
Significant gains expected

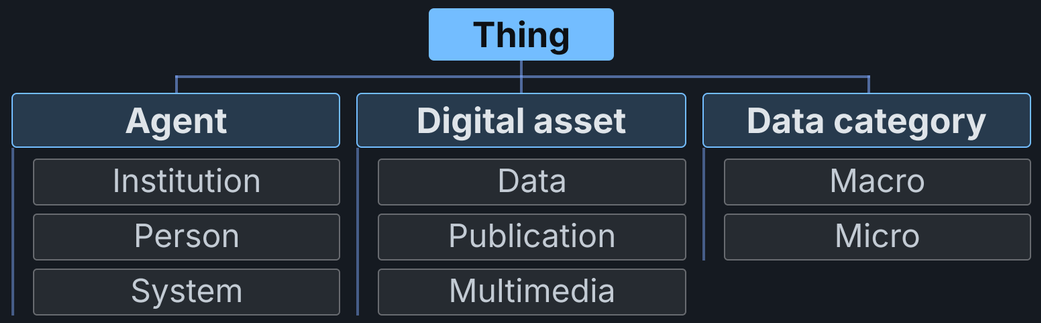
Connecting people and AI, towards trusted AI

Making tacit knowledge AI-interpretable and people AI-native

TACIT → EXPLICIT

Ontology

Surfacing knowledge held in people's heads and working practice as a machine-readable network of relations



Aligned to the business reference model
Organisation – business – data linked
74 classes · 31 object properties · 100 data properties

STAFF → AI-NATIVE

Capability

AI literacy training so that staff who hold the business knowledge can use AI themselves

Induction	AI literacy, governance and risk	2026
Foundation	Hands-on generative AI · automation	2026
Intermediate	BIDAS and LLM APIs · governance	2027
Advanced	Own use cases · PoC and MVP	2027
Leadership	Governance · adoption decisions	2026

Intermediate and advanced graduates serve as in-house instructors and project leads in the **CoE**

“AI-ready” Knowledge Management

Introducing “AI-ready” Enterprise Content Management

Content made AI-ready at creation, rather than manually converted after the fact

IT SYSTEMS

Legacy systems run by business areas and IT

- Fragmented across systems
- Limited AI-readiness + interoperability

INTEGRATION WITH AI + ECM

- **Groupware**
- **Record Management System**
- **ERP**
- **Communication tools**

ENTERPRISE CONTENT MANAGEMENT

AI-generated content registration “AI-ready” Knowledge in the closed loop

- Approval workflow
- Records management
- Metadata management
- Document sharing
- Version control
- Document creation

MANAGEMENT ACROSS THE LIFECYCLE

- **Security level assignment**
- **AI-ready conversion**
- **Automated AI/data pipeline**

BIDAS + BOKI

Advancement as AI Platform Full integration with BIDAS

- BIDAS architecture review
- Multimodal handling and workflow
- Embedding and vector database

NEW FEATURES AS THE PLATFORM

- **Coding agent for economists + IT**
- **Personalised AI workspaces**
- **Model and API provisioning for advanced users + production**

BOKI as an open and hybrid AI platform

A secure LLM gateway serving internal and external models

High-performance open-weight models alongside external frontier models

EXTERNAL FRONTIER MODELS

External AI used in line with data sovereignty and security

· Relay server with reinforced perimeter security against cyber risk
· Internal AI: all Bank data · External AI: public (O-grade) data only

HIGH-PERFORMANCE INTERNAL MODELS

Stronger internal models for sensitive, specialised work

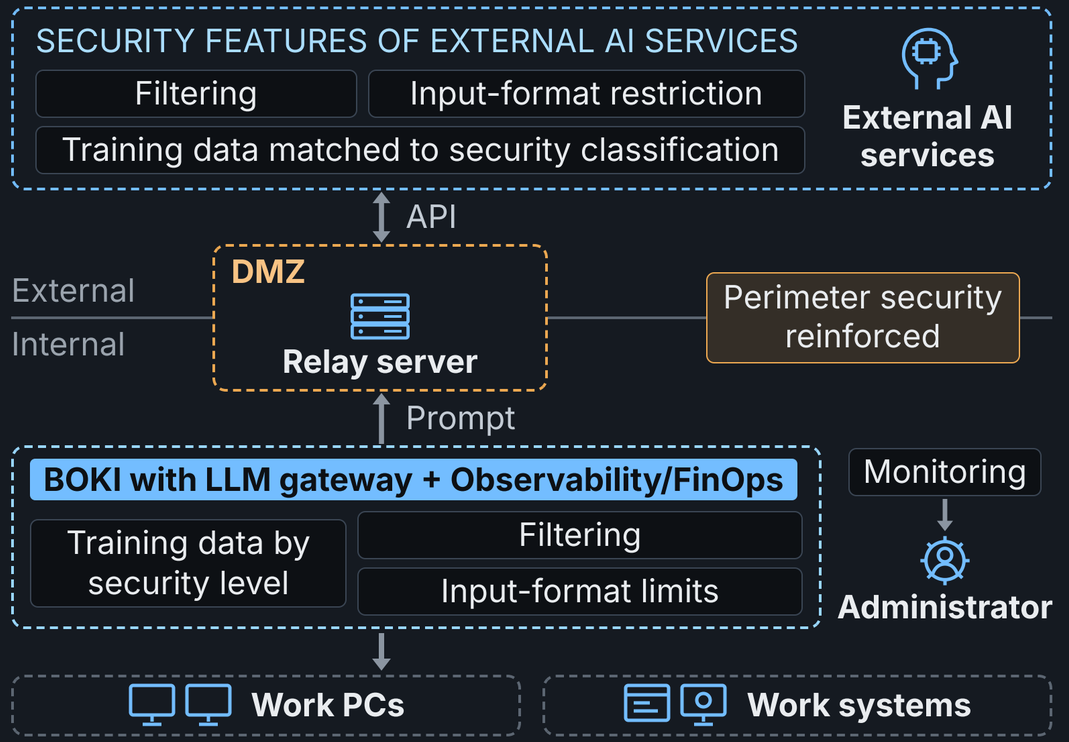
· Large models served concurrently
· Ready for specialised models (security, coding) and AI agents

ADVANCED GOVERNANCE LAYER

Monitoring and cost control across all data and AI use

· Stronger observability layer monitoring all data and AI use
· A FinOps layer managing token use and cost by model

System configuration for using commercial AI services



Source: adapted from NIS, AI Security Guidebook, p. 56

Thank you

Questions and discussion



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