Duality

SECURE CROSS-MINISTRY DATA COLLABORATION

Case study: a National Digital Agency's cross-ministry hub, now in production, where ministries get answers from each other's data without transferring it

Government Services Cross Ministries. Sensitive Data Doesn't Have To.

A National Digital Agency leads its state's digital transformation and runs shared digital infrastructure for every ministry. Its mission is higher-value services for citizens: anticipating the services people need, delivering them on time, and never asking for the same information twice.

Each of those goals depends on ministries using each other's data, under the highest standard of privacy protection.

Live

In production

After a successful pilot, the hub runs in production today, with 5+ government bodies connected.

The Challenges the Agency Faced

1 Privacy and regulation

Citizen data in welfare, health and law enforcement is tightly protected. A simple data-sharing arrangement could take years to approve.

2 Legacy infrastructure

Ministries ran disconnected, mostly on-premises systems, with different data formats and strict CISO policies.

3 Ownership and control

Each ministry had to keep control of what it shares, who can access it, and what the recipient may do with it.

The Solution: A Cross-Ministry Hub Under Government Control

The Agency hosts the Duality platform in its own cloud environment. Ministries connect their data read-only from their existing systems and run encrypted queries with Duality Secure Query.

1 Data stays in place

Each ministry keeps its data in its own secure environment and connects it read-only.

2 Encrypted query

The question is encrypted. Only the requester can read it and the result.

3 Protected computation

On the Agency's hub, Duality combines post-quantum FHE and TEEs to protect data in use.

4 Answer, not records

Only the approved answer goes to the agreed recipient. Every run is approved and audited.

Following a successful pilot, the Agency moved to production. The government operates the software and keeps full control of the data and the encryption keys. Duality never accesses the data.

HEADQUARTERS
5 Marine View Plaza, Hoboken, NJ 07030

CONTACT US
info@dualitytech.com

Duality Technologies

dualitytech.com

Six Use Cases Developed with the Agency

Public health planning
Combine health and social data to plan services for at-risk populations.

Benefit take-up
Find citizens eligible for support but not receiving it, without merging registries.

Once-only services
Answer eligibility questions between ministries, so citizens are not asked again.

Integrity of spending
Check claims against other ministries' records to detect error and fraud.

Program evaluation
Measure a policy's outcomes across education, employment and welfare data.

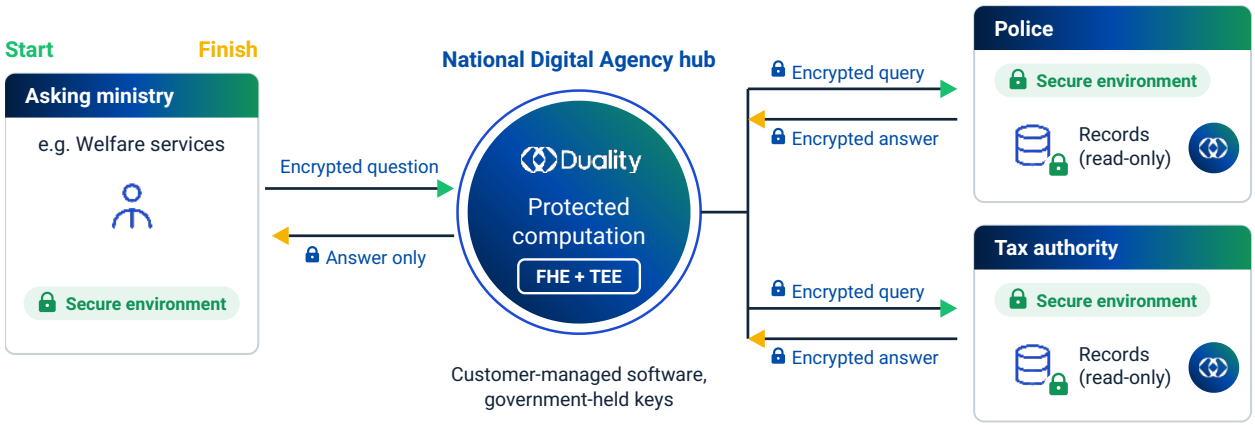
Investigations
Run governed queries across agency datasets without revealing the subject of the inquiry.

Examples of Checks Running in Production

ASKING MINISTRY	THE CHECK	ANSWERING MINISTRY	WHAT STAYS HIDDEN
Welfare services	Before a home visit: are there relevant police or tax records for this household?	Police, tax authority	That a welfare visit is planned, and for whom
Prison service	Is this person already known to welfare services?	Welfare services	The person's incarceration status
Welfare services	Which of our highest-need clients are recent arrivals, for priority support?	Population and immigration authority	Which clients welfare considers highest-need
Social security	Does this claimant's reported income match tax records?	Tax authority	That the person has claimed a benefit

Government privacy also means guarding against surveillance and against any single organization assembling a central view of its citizens. In each check, the question itself could reveal too much. **Each check returns only the answer it needs. The question, and the context behind it, stay encrypted.**

How a Check Works on the Agency's Hub



FROM PILOT TO PRODUCTION

1 — PHASE 1
Discovery
Joint mapping of use cases and the barriers to sharing.

2 — PHASE 2
Pilot and approval
Encrypted queries on real data, then a governance review.

3 — LIVE
Production
Customer-managed software, government-held keys.

4 — ONGOING
Scale
More ministries and use cases onboarded.

HEADQUARTERS
5 Marine View Plaza, Hoboken, NJ 07030

CONTACT US
info@dualitytech.com
Duality Technologies
dualitytech.com

Compliance by Design: What the Regulator and DPOs Required

PRINCIPLE	WHAT IT MEANS ACROSS MINISTRIES	HOW IT IS ENFORCED
Minimization	Only the identifiers and fields a check needs are used, and only the answer leaves.	Each approved computation fixes its inputs and outputs
Confidentiality	The answering ministry never learns who is being asked about, or why.	Encrypted queries: only the requester can read the question and the result
Security	Records are not exposed or copied between ministries.	FHE and TEEs protect data in use; post-quantum encryption
Sovereignty	Each ministry keeps control of its data, keys and analyses.	Customer-managed software, government-held keys, attestation before key release
Ease of use	Fits each ministry's current tools, dashboards and legacy systems.	UI, API and SDK, including Python; no cryptography expertise needed
Governance	The data owner decides what is shared, who receives it and what they may do with it.	Policy enforced on every computation, approved before it runs
Auditing	Every analysis and every result can be accounted for.	Full audit trail of each run across the collaboration

Built for regulator approval

Data owners, the privacy regulator and DPOs sign off on the workflow itself, not a separate exception for every collaboration. Each computation is agreed before it runs and audited, which gave each ministry the assurance to authorize its participation.

Hosted and operated by the government

Software, not SaaS. The Agency hosts and operates Duality in its own cloud, with full control of the software, data and keys. Post-quantum encryption at rest, in transit and in use; ISO 27001 certified.

Lessons Learned: The Hard Part Isn't the Cryptography

Choosing the privacy technology was the first step. What made it work was the governance around it: who takes part, what each computation may touch, who holds the keys, who receives which answer, and approval before every run, with the same controls across every ministry.

Duality Technologies provides that layer, so each ministry's effort goes into the service.

Duality

Start a free trial

dualitytech.com/start-a-free-trial

Start with one use case.

See how your ministries could get answers from each other's data without sharing the records.

PROUDLY WORKING WITH

ARPA-H · DARPA · mastercard · intel · Dana-Farber Cancer Institute · Deloitte. · NVIDIA · Azure · Google Cloud · aws · IBM

Client identity withheld under confidentiality. All use cases, architecture and outcomes reflect a live engagement with a National Digital Agency.

HEADQUARTERS
5 Marine View Plaza, Hoboken, NJ 07030

CONTACT US
info@dualitytech.com

Duality Technologies

dualitytech.com