Annexure 9: Block Communication Matrix

1. Purpose

This Annexure defines the interfaces between the seven Building Blocks and between them and the MyBhutan Portal, the national platforms, and GA systems. It is the basis for the Interface Specifications that each Vendor publishes at D1 and the TRB approves (ToR Section 3.5). An interface listed here is part of the scope of the providing Lot, and the consuming Lot shall integrate with it. Interfaces not listed here but required by a BRD shall be added through the TRB (ToR Section 3.5). Where this Annexure conflicts with the ToR, Annexure 2 or Annexure 1, those documents prevail (ToR Section 3.3).

2. Participants

Code	Participant	Lot / Owner
PSR	Public Service Registry	Lot 1
MDMB	Master Data Management Block	Lot 1
IDCB	Identity Conversion Block	Lot 2
SSO	Single Sign-On	Lot 2
UPP	Unified Preference Platform (feature of the MyBhutan Portal)	External – not in scope
UCS	Unified Client Support	Lot 3
FDBKB	Feedback Block (national aggregator and agency Feedback Nodes)	Lot 3
ITAR	Product Portal	Lot 3
GovP	MyBhutan Portal (citizen-facing pages and agency back office)	External – not in scope
NDI	Bhutan National Digital Identity	External – not in scope
NDE	National Data Exchange	External – not in scope
NTFB	Notification Block	External – not in scope
JLB	Journaling Block	External – not in scope
OBVP	Observability platform	External – not in scope
DMS	Document Management System (DMS)	External – not in scope

GA System	Government Agency systems, including Ready Services	Agencies
EVTB	Event Bus	External – not in scope
INTP	Interoperability platform of NDE (WSO2)	External – not in scope
SSOT	Agency single source of truth systems	Agencies

3. Overall communication

The seven Building Blocks communicate through NDE, and each writes its audit trail to JLB. The first picture shows the whole map; each section after it shows one block, with what calls it on the left and what it calls on the right.

- Flow numbers (1 to 27; number 5 is not used) match the communication map, so a number means the same thing everywhere.
- The MyBhutan Portal is an external participant, outside the scope of this procurement (ToR Section 3.4). It is the single front door for citizens, businesses and agency staff, and it hosts the Unified Preference Platform (UPP) feature.
- Shared services (NDI, NDE/INTP, NTFB, JLB, EVTB, DOCS) are not counted among the seven blocks.

The MyBhutan Portal starts most of the traffic. PSR, MDMB, IDCB, UCS, FDBKB and ITAR mostly answer calls. Among the seven, UCS, FDBKB, PSR and ITAR call each other, and PSR, UCS and ITAR call MDMB.

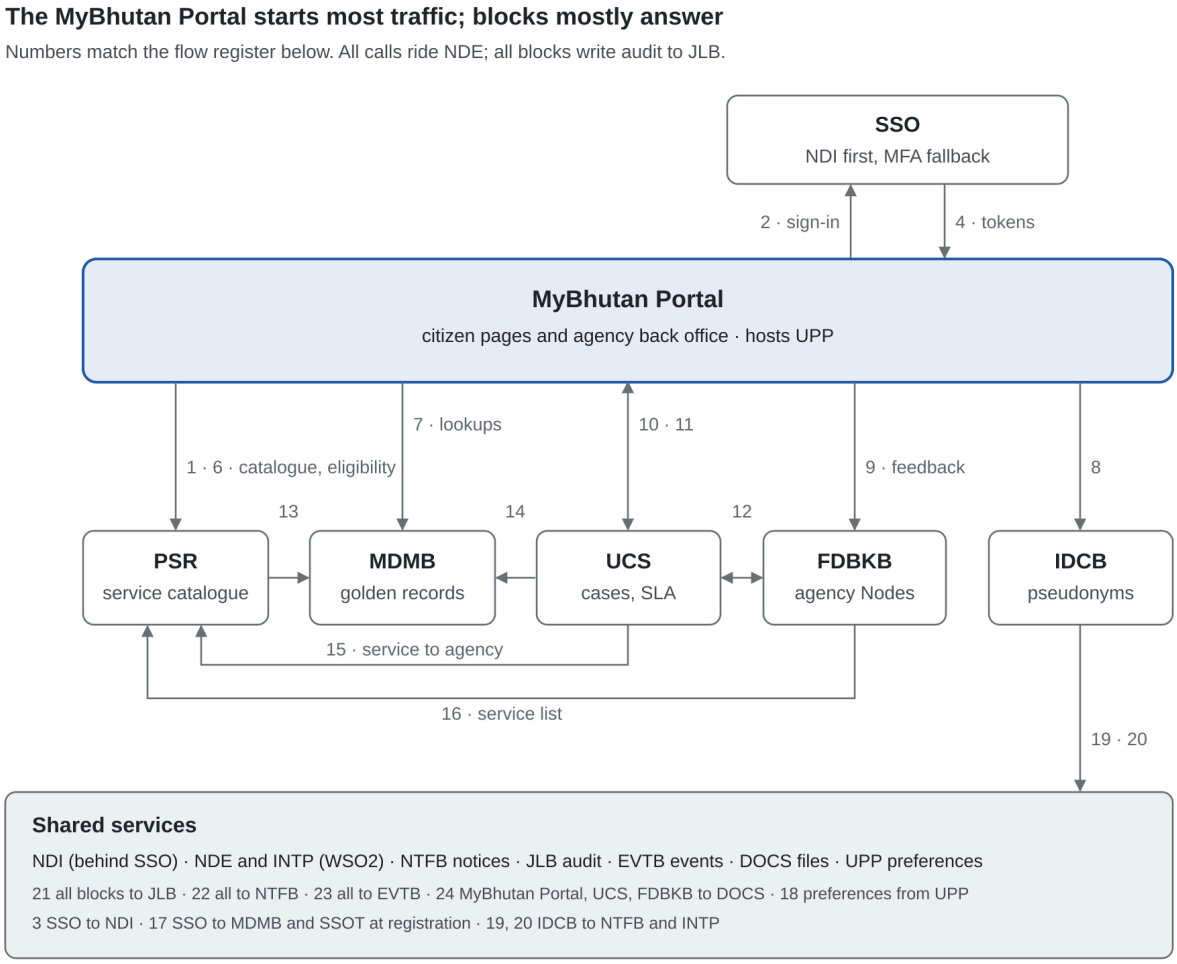


Figure 1: Overall communication

3.1 How the map is organised

- **Entry.** The MyBhutan Portal is the front door for citizens, businesses and agency staff.
- **Identity.**Identity. SSO signs everyone into the MyBhutan Portal and integrated GA systems.
- **Domain blocks.** PSR, MDMB, IDCB, FDBKB, UCS, and ITAR each own one kind of data: services, master data, pseudonyms, feedback, cases, and IT asset records the products. The MyBhutan Portal, GA systems, and the other domain blocks call them. Apart from the status updates UCS pushes to the MyBhutan Portal, and the preference lookups to its UPP feature (flow 18), they do not call the portal.
- **Shared services.** NDE carries every call between blocks. JLB, NTFB, EVTB, and DOCS are used by several blocks and are not counted among the seven.

3.2 Rules that apply to every flow

- Every block-to-block call goes through NDE (WSO2); no block connects to another block's database.
- Every block writes an audit event to JLB for creates, changes, decisions, and access.
- A block that owns a record is the only one that changes it. Others read it or ask the owner to act.
- Citizen-facing status always comes from the system that owns the record: application status from the MyBhutan Portal, case status from UCS, feedback acknowledgement from FDBKB.

3.3 Flows

#	From → To	What moves	Pattern (indicative)
1	MyBhutan Portal → PSR	Service catalogue, details, categories, search results	REST, cached
2	MyBhutan Portal → SSO	"Start application" or officer login on the MyBhutan Portal redirects to sign-in	OIDC redirect
3	SSO → NDI	NDI authentication, wallet proof request, health check every 30 s	OIDC / REST
4	SSO → MyBhutan Portal, GA	Tokens carrying auth_route and act for the MyBhutan Portal and GA systems; single logout	OAuth 2.0 + PKCE
6	MyBhutan Portal → PSR	Citizen attributes in, a verdict per service out	REST, 3 s timeout
7	MyBhutan Portal → MDMB	Taxonomy and code-list lookups, only when the agency SSOT has no value	REST via NDE
8	MyBhutan Portal → IDCB	Citizen's own conversion history and dispute flag	REST
9	MyBhutan Portal → FDBKB	Feedback on a service, sent to the owning agency's Node	Widget SDK + REST
10	MyBhutan Portal (citizen) ⇄ UCS	Complaint or support case raised; status, replies, and closure read live	REST + SSE

11	MyBhutan Portal (agency back office) ⇄ UCS	Agency checks the case, forwards technical faults; GovTech sets L1 to L3 and resolves	REST + WebSocket
12	FDBKB ⇄ UCS	Escalated feedback becomes a case; reference and status come back	REST + webhook
13	PSR → MDMB	Agency-to-service mapping against the agency hierarchy	REST via NDE
14	UCS → MDMB	Canonical institution code on every case and queue	REST via NDE
15	UCS → PSR	Service drop-down and service-to-agency routing	REST via NDE
16	FDBKB → PSR	Service list and owning agency; no score goes back	REST, read-only
17	SSO → MDMB, SSOT	Registration fill: NDI wallet, then agency source, then manual entry	REST via NDE
18	UCS, FDBKB, NTFB, GA → UPP (MyBhutan Portal)	Language, channels, quiet hours and consents	REST
19	IDCB → NTFB	Pseudonymous reference so owners are notified without their CID	Event / REST
20	IDCB → INTP	Lookups in Civil Registry, RSTA, Tax and Land registries	REST via WSO2
21	All → JLB	Audit of logins, decisions, conversions, merges, case events	Async, signed where required
22	All → NTFB	OTPs, acknowledgements, status changes, SLA and security alerts	REST/event
23	All → EVTB	Domain events such as psr.service.updated and mapping.revoked	Kafka, CloudEvents
24	MyBhutan Portal, UCS, FDBKB, ITAR → DOCS	Documents and attachments; blocks keep references only	REST

25	ITAR → PSR	GA details and public service list for stack requests	REST via NDE
26	ITAR → NDE	Approval notice so NDE and the stack team provision access to the approved stack	REST
27	GA → IDCB	Domain identifier in, pseudonym for the requesting domain out	REST via NDE
28	ITAR → SSO	Sign-in for GovTech staff, stack admins, and the super admin	OIDC redirect

4. Block Views

4.1 Single Sign-On

SSO is the only way into the MyBhutan Portal and integrated GA systems. It uses NDI first and falls back to a backup password with mandatory MFA when NDI is down.

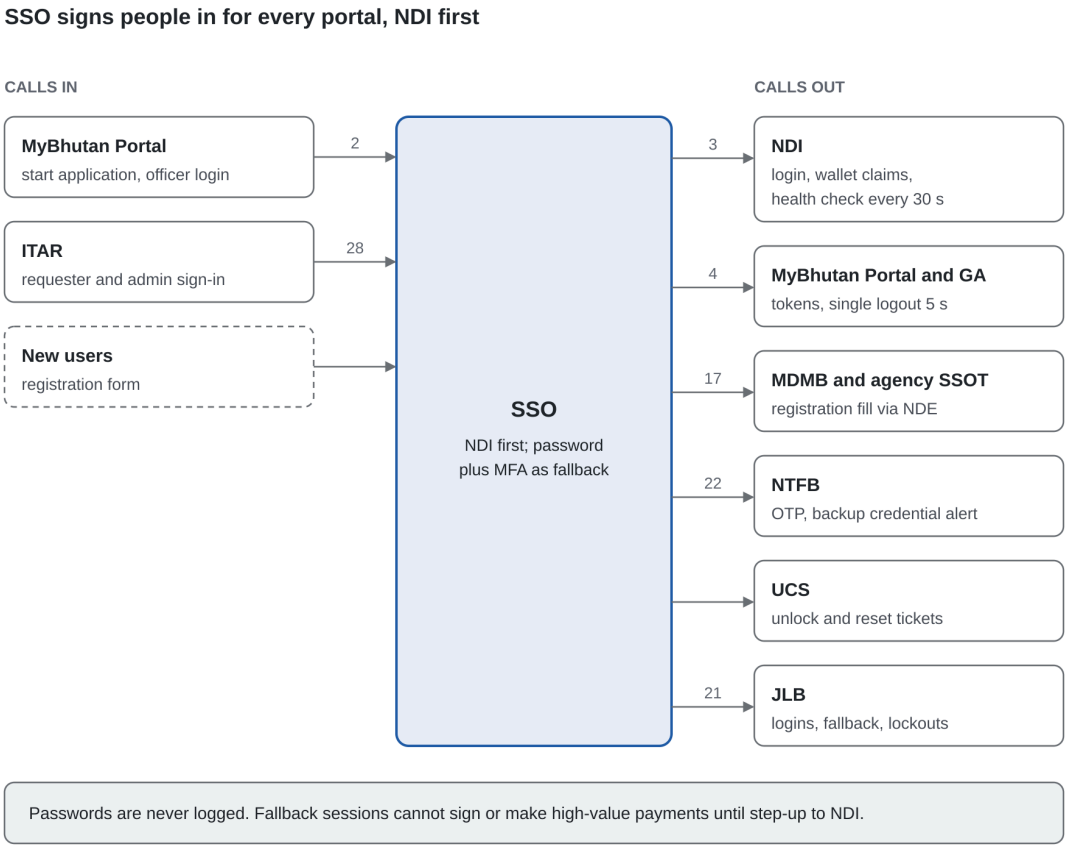


Figure 2: SSO block communication

4.2 Public Service Registry

PSR is the service directory. The MyBhutan Portal, UCS and FDBKB read from it, and the only block it calls is MDMB; everything else it sends goes to shared services.

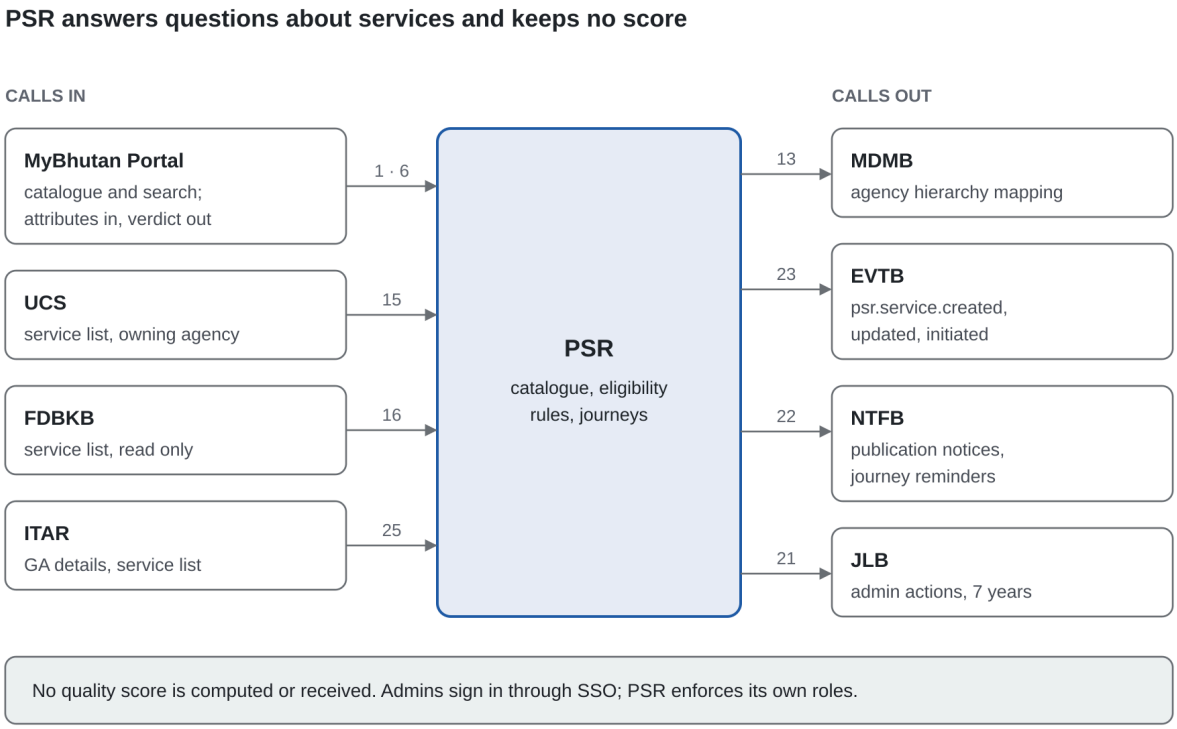


Figure 3: PSR block communication

4.3 Master Data Management Block

MDMB sits at the end of the lookup chain. Blocks ask it for code lists, hierarchies, and institution codes; it calls nothing except its authorisation check and JLB.

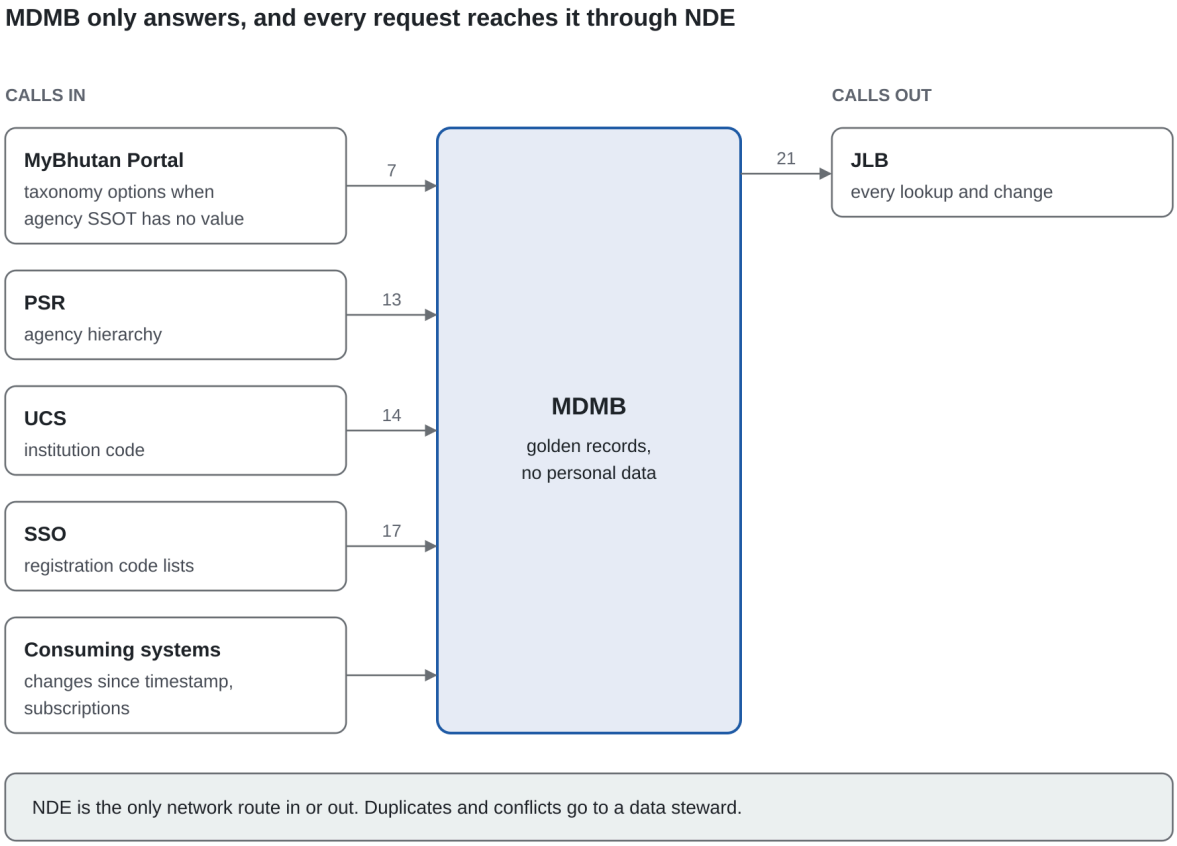


Figure 4: MDMB block communication

4.4 Identity Conversion Block

IDCB turns an identifier in one domain into a pseudonym for another. It reaches registries only through INTP, and callers get the pseudonym, never the CID.

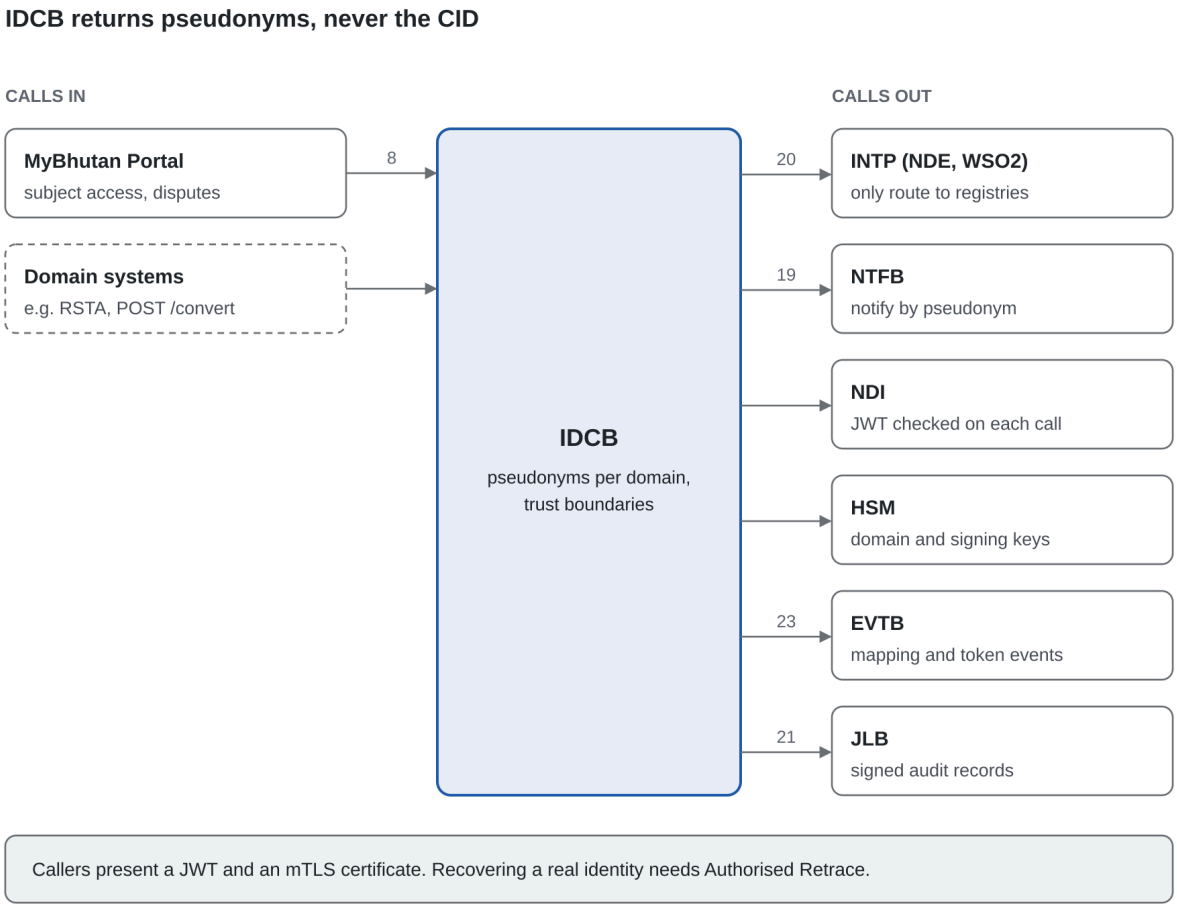


Figure 5: IDCB block communication

4.5 Feedback Block

Each agency runs its own Node. The Node acknowledges feedback, and when the agency escalates an item, UCS takes it from there.

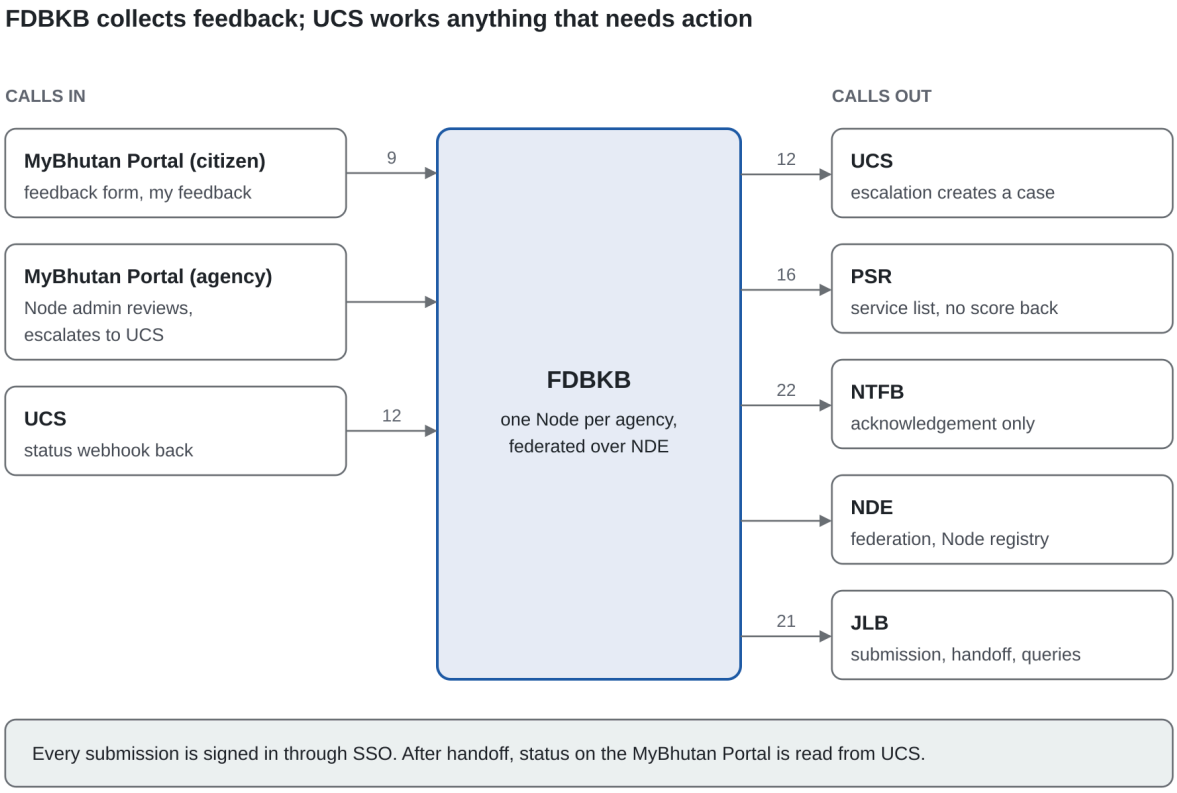


Figure 6: FDBKB block communication

4.6 Unified Client Support

UCS holds the single case record. The MyBhutan Portal reads status from it, whether the case was raised directly on the portal or came from escalated feedback.

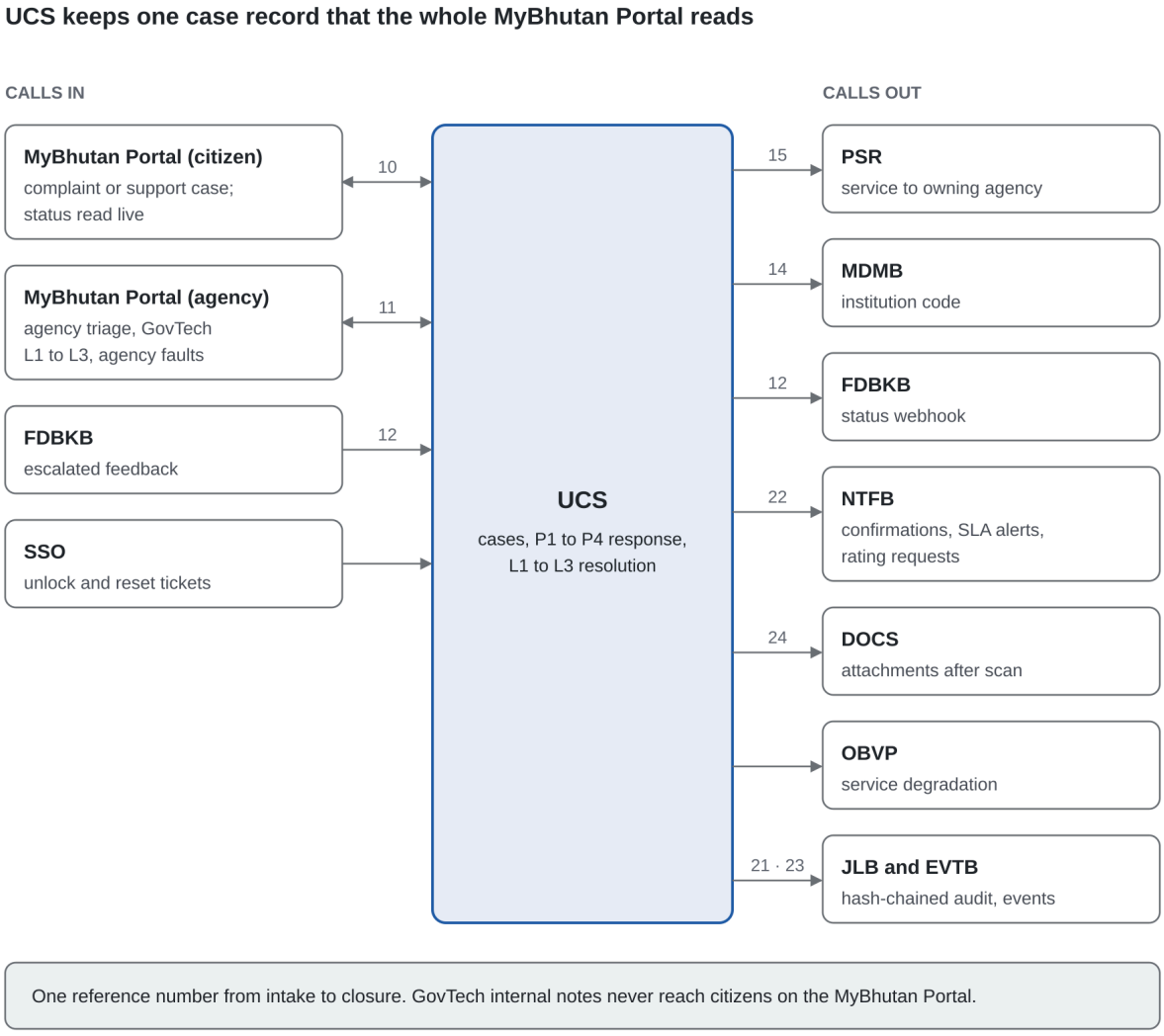


Figure 7: UCS block communication

4.7 IT Asset Repository (ITAR)

ITAR is GovTech's internal portal for GovStacks and is used only by GovTech staff. Staff sign in through SSO to view stack details and request a stack for a GA system; each stack's admin approves or declines it with a reason. ITAR pulls GA details and services from PSR and tells NDE when to provision access.

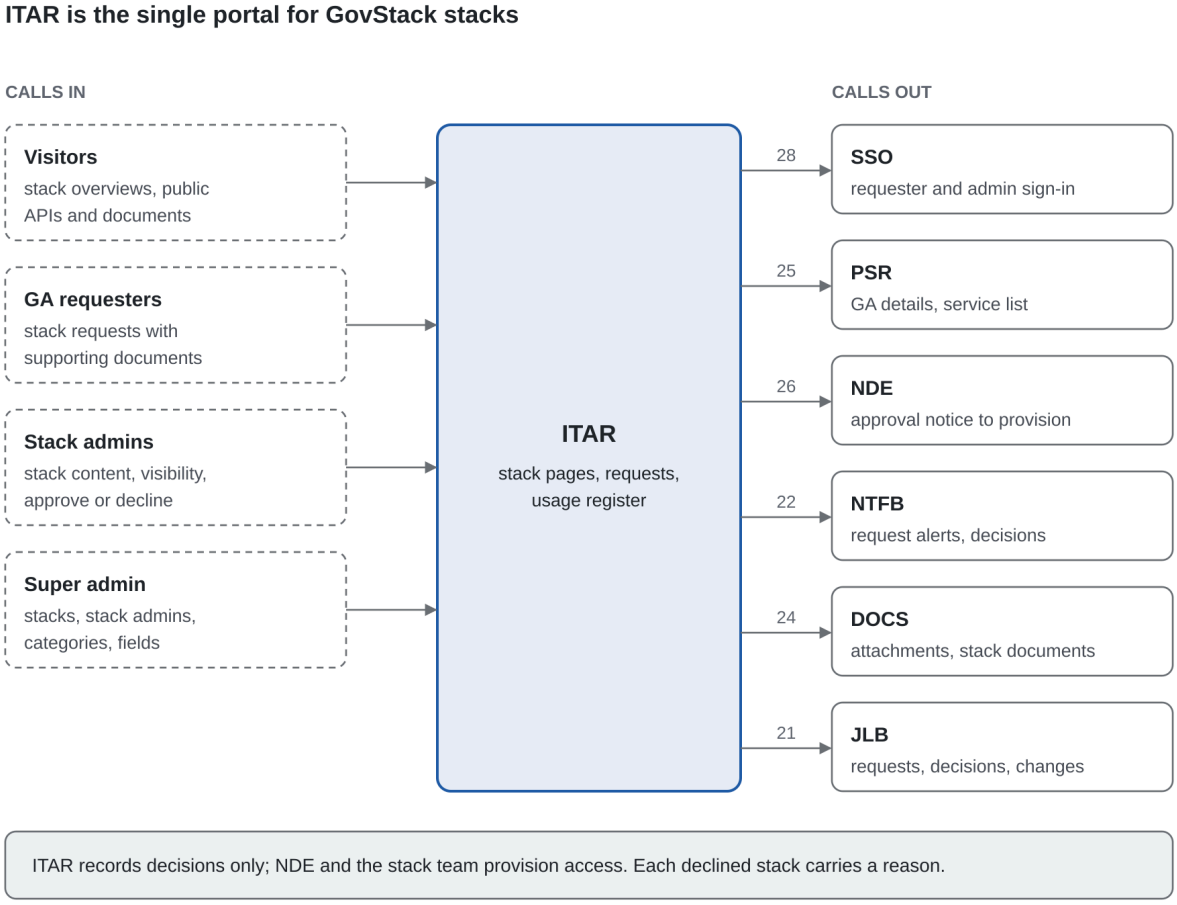


Figure 8: ITAR block communication