ARCHITECTURE REFERENCE

ODT-MIM

MIM — MIP Information Model Toolchain

Architecture Reference

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MIM — MIP INFORMATION MODEL TOOLCHAIN

A Python monorepo that parses, models, and generates code from NATO's MIP Information Model (MIM) 5.3 specification.

DATA SOURCES

Two parsers, each suited to different use cases:

Source	Classes	Enumerations	Literals
HTML Export	1,208	522	6,717
XSD Schemas	1,127	499	5,235

HTML Export Parser (recommended)

Parses the Enterprise Architect HTML export. Preserves the full EA metamodel including association roles, primitive types, and original stereotypes.

```
import mim.portal as portal

files = portal.get_files("5.3")          # download / cache the 5.3 release
model = portal.parse.parse_html(files)   # returns a MIMModel
```

XSD Schema Parser

Parses the XSD schema files. Use for exchange-schema compliance where inheritance is flattened and attribute names are class-prefixed.

```
from mim.portal.parse.xsd import parse_xsd_directory

model = parse_xsd_directory("data/model_version_5_3/xsd")
```

Key Differences

Aspect	HTML Parser	XSD Parser
Inheritance	Preserved hierarchy	Flattened (includes inherited attrs)
Stereotypes	EA stereotypes (`cls` , `dataType`)	Schema annotations (`Abstract`)
Attribute naming	Short names (`bearingAngle`)	Prefixed (`ActionBearingAngle`)
Use case	Complete model fidelity	Exchange schema compliance

REPOSITORY STRUCTURE

`uv` workspace monorepo. Active packages are **bold**.

Directory	Description	Status
`mim-ir/`	Canonical IR types — `MIMModel` , `MIMClass` , `MIMEnumeration` , etc.	**89 tests passing**
`mim-portal/`	HTML & XSD parsers, MIM portal client, model download	**106 tests passing**
`mim-backends/mim-backend-foundry/`	Palantir Foundry ontology code generation	**Active**
`mim-backends/mim-backend-sql/`	SQL DDL generation from MIM IR	Active
`mim-backends/mim-backend-*`	Future backends (OpenAPI, JSON Schema, Python, TS)	Planned
`shared/mim-kernel/`	Shared primitives: IDs, errors, time utilities	**42 tests passing**
`shared/mim-provenance/`	Provenance & lineage tracking	Planned
`shared/mim-testing/`	Shared test fixtures and helpers	Active
`mim-adapters/`	Data-pipeline adapters (Foundry, S3, Kafka, REST, …)	Planned
`apps/mim-viewer/`	React model browser (Vite + JSX)	Active
`apps/mim-admin/`	FastAPI admin server + Vite client	Active

Directory	Description	Status
`data/model_version_5_3/`	MIM 5.3 source data (HTML export, XSD, XMI) — Git LFS	Committed

Dependency Graph

```
shared/mim-kernel  (IDs, errors, time)
       ↑
    mim-ir         (Pydantic IR types)
       ↑
  mim-portal       (parsers, client)     →  notebooks, apps
       ↑
  mim-backends/*   (Foundry, SQL, …)
```

PACKAGE QUICK REFERENCE

`mim.ir` — Intermediate Representation

```python
from mim.ir import MIMModel, MIMClass, MIMEnumeration, MIMAttribute
from mim.ir import load_model, save_model, model_to_json

model = load_model("snapshot.json")
for cls in model.classes:
    print(cls.name, len(cls.attributes))
```

`mim.portal` — Portal Client & Parsers

```python
import mim.portal as portal

versions = portal.get_versions()
files    = portal.get_files("5.3")

from mim.portal.parse.html import parse_html_export
model = parse_html_export("data/model_version_5_3/MIM 5.3 - HTML Export")
```

Environment variables (set in `.env`):

Variable	Purpose
`MIM_PORTAL_USERNAME`	Portal login
`MIM_PORTAL_PASSWORD`	Portal password

Variable	Purpose
`MIM_DEFAULT_VERSION`	Default version (e.g. `5.3`)
`MIM_CACHE_DIR`	Cache directory (default `~/.mim/cache`)

`mim.backend.foundry` — Foundry Code Generation

```
from mim.ir import MIMModel
from mim.backend.foundry import MIMToFoundryConverter, MappingConfig

model: MIMModel = ...  # loaded via mim.portal
converter = MIMToFoundryConverter(MappingConfig())
result = converter.convert(model)
converter.write_output(Path("output/"))
```

`mim.kernel` — Shared Primitives

```
from mim.kernel import SemanticId, generate_stable_id, MIMError, ParseError
from mim.kernel import parse_ea_datetime, format_iso_datetime, utc_now
```

RELATED DOCUMENTS

- MIM_STANDARD.md — MIM semantic model, namespaces, roles, code types, design principles
- MIM_STATE.md — Project status snapshot (2026-02-28), maturity by area
- MIM_ACADEMICS.md — Dr. Gerz, NATO interoperability, MIM→Foundry alignment analysis
- MIM_DECISION_RECORDS.md — ADR: repository ADR structure
- MIM_FUTURE_CLASSES.md — Planned components: adapters, backends, studio, SDK
- MIM_ONTOLOGY_DOCS.md — OSDK Maker Package TypeScript API reference