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**OroraTech Customer Success Engineer -
Geospatial API Integration Challenge**

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Self-Serve Fuel Map Integration
Design & Architecture Proposal

Problems, Goals & Assumptions

PROBLEMS

- Customers have their own regional fuel maps
- Currently requires engineering help
- Slow onboarding + limits scalability

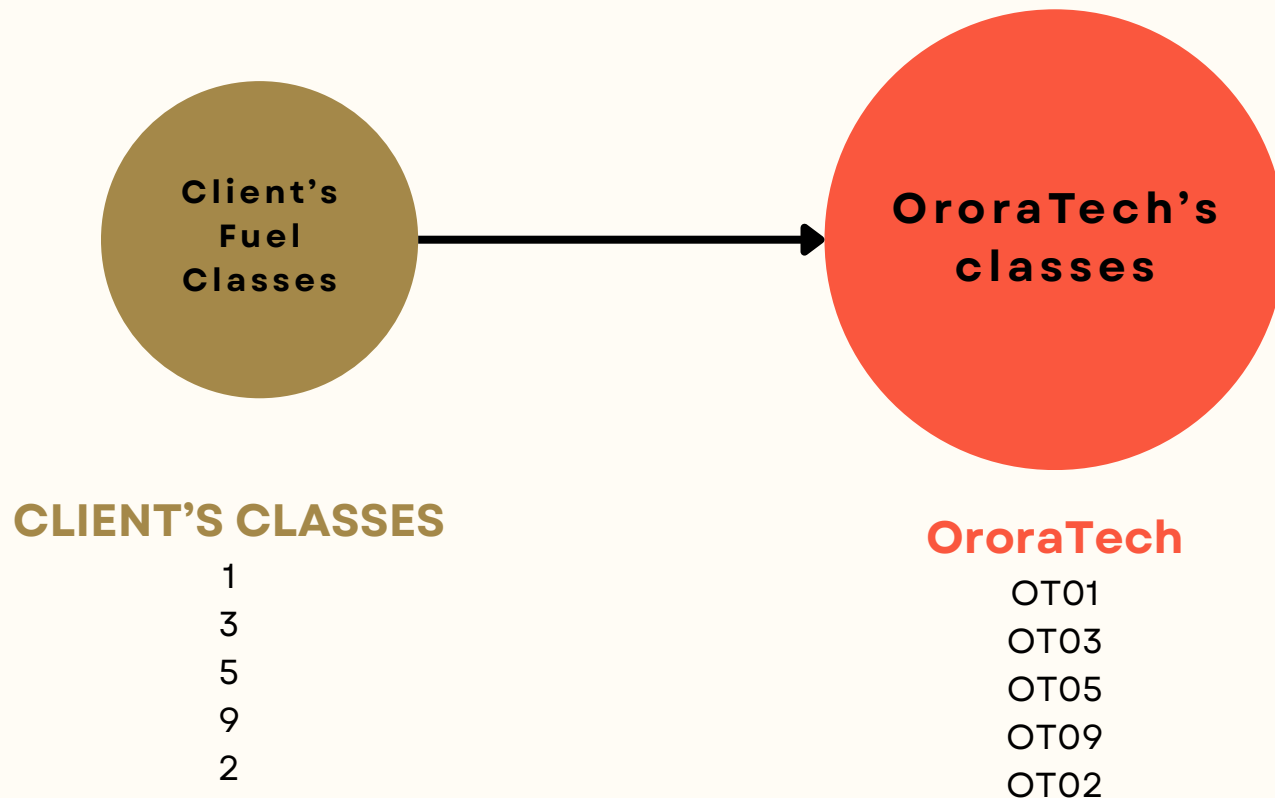
GOALS

- A self-serve integration design for customers to upload and their own fuel maps in fire spread simulations
- Minimal engineering effort (Customer Success can assist)

ASSUMPTIONS

- Needs single band raster with fire codes
- Requests made by bbox and resolution (30 m)
- Customers upload raster as GeoTIFF
- Storage = cloud based (I assume OroraTech uses cloud object storage)
- Customers are logged into the platform (UI or API)

Canonical Fuel Classes

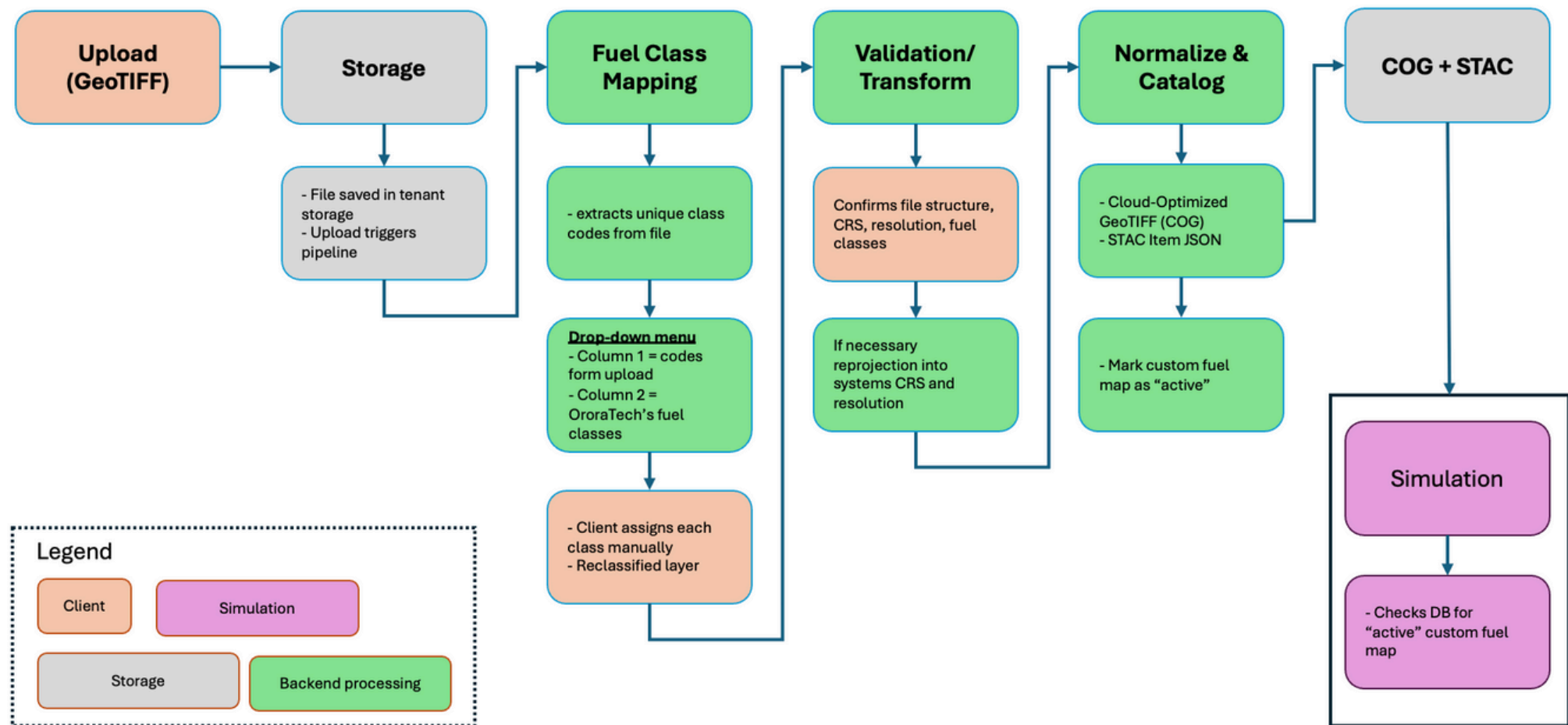


This is an example, actual schema will follow OroraTech's internal standards

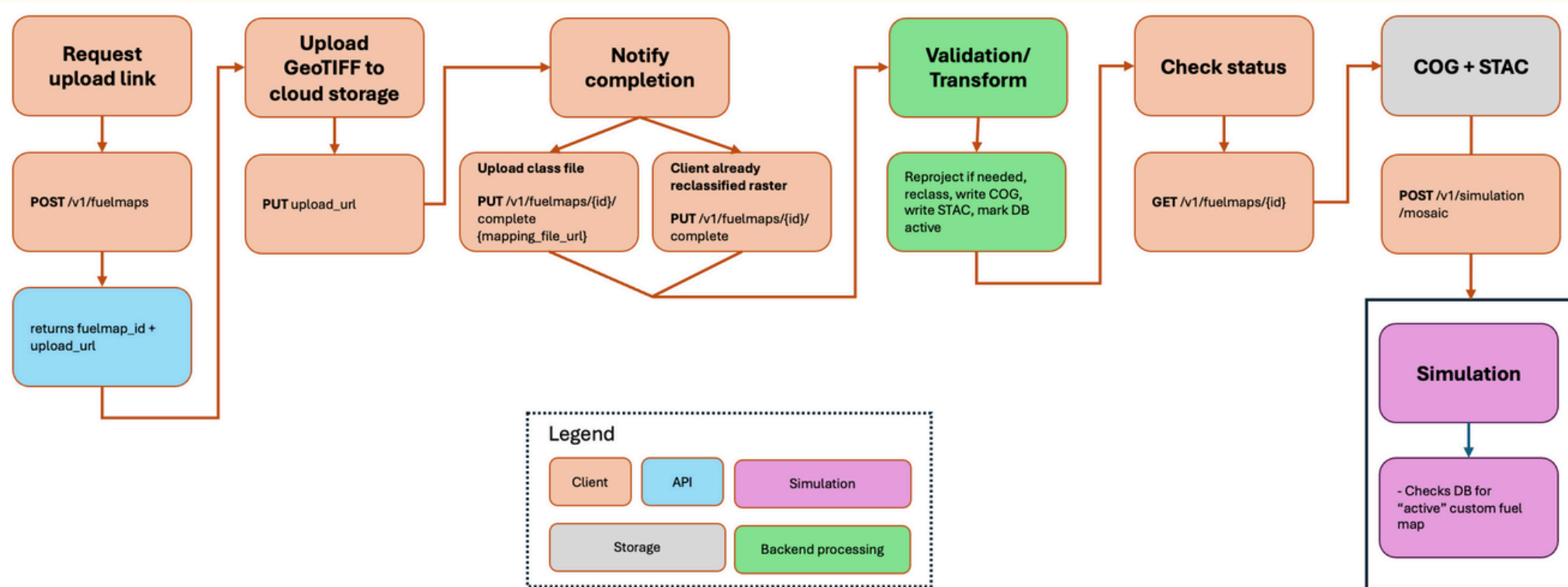
UI Customer Workflow (front end)

1. **Upload** fuel map as GeoTIFF
2. **Convert** customer's fire classes to OroraTech's classes
3. **Review and Validate** (format, CRS, classes, resolution)
4. **Activate** simulation

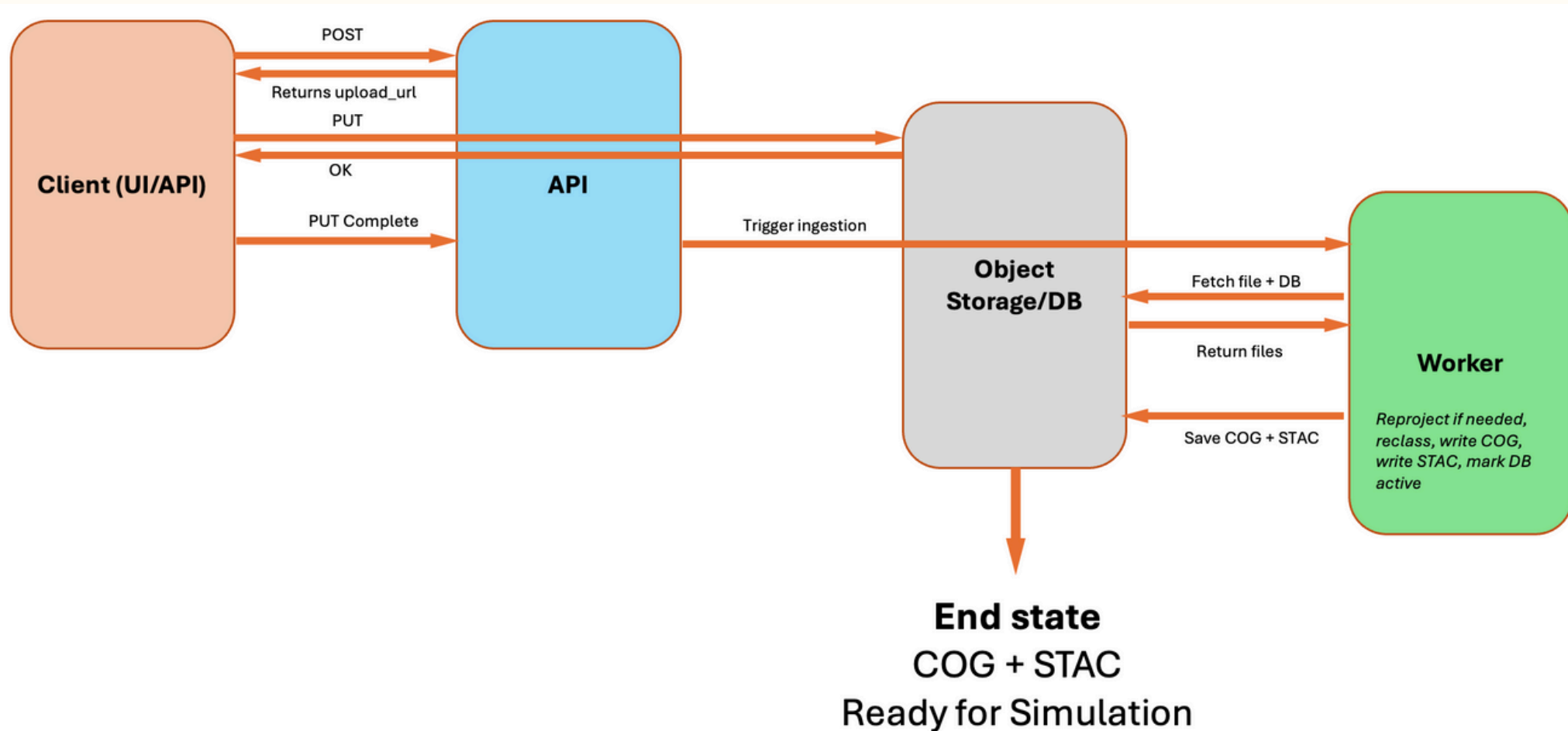
UI Customer Workflow (backend)



API Workflow



System Architecture



API Surface & Versioning

Minimal API Surface

- **POST /v1/fuelmaps**
 - create record, get fuelmap_id + upload_url
- **PUT /v1/fuelmaps/{id}/complete**
 - trigger processing
- **GET /v1/fuelmaps/{id}**
 - status, links (COG, STAC)
- **POST /v1/simulation/mosaic**
 - request data window {bbox, resolution}

All endpoints live under /v1

Any breaking changes = /v2

Fuel Class Mapping

- **User Interface**

- Client uploads raster
- Auto detect classes
- drop down menu to change to OroraTech's classes

- **API**

- OPTION 1: Client prepares matching OroraTech's classes
- OPTION 2: Raster + mapping file



Storage & Privacy

- COG - streaming pixels
- STAC - metadata (source, mapping profile, CRS, resolution, stats)
- Large rasters - pre-signed upload URLs and storage lifecycle rules for archiving
- Tenant isolation in storage + DB
- DB “Active” custom fuel map - one active per AOI/tenant
- Simulation engine uses “Active” and fallback to global elsewhere

Next Steps

Issues and Risks

- Large files (10+ GB)
 - need multipart upload and lifecycle rules
- Single custom fule map per AOI?
- What if CRS is missing?
- How does OroraTech's backend talk to each other

Next Steps

- Prototype
- Pilot
- UI
- Explore ESRI integration