FLOv2 Integration with Forester

Your requirements

Forest Services are implementing a replacement system for their existing Felling Licence Online service, commonly referred to as FLO. FLO version 2 (FLOv2) will be used by both the public and Forest Services users to respectively submit and manage licence applications for tree felling within England.

FLOv2 will be a bespoke application developed by Quicksilva on behalf of Forest Services, which will have an 'external' facing component for use by the public, as well as components used internally by Forest Services.

Integration between FLOv2 and Forester is required to automate workflows between the two systems. This will reduce the administrative burden on Forest Services by removing duplication of data entry in Forester and FLOv2, as well as removing the need to copy reference data from Forester into FLOv2.

The two key integrations required for FLOv2 are covered by this proposal. They are:

- For FLOv2 cases to appear on the Public Registers to fulfil public consultation obligations;
- For FLOv2 users to perform a Land Information Search (LIS) on cases and for the results to be attached to cases in FLOv2.

This document articulates Esri UK's understanding of the requirements and formalises the options for integration already discussed between Forest Research, Forest Services and Esri UK.

Our thoughts on your requirements

The delivery of the above core requirements can be grouped into two work packages:

1. Integration of FLOv2 with the Public Registers.
2. Modifications to the existing LIS tool to extend functionality already in place to integrate with FLOv2.
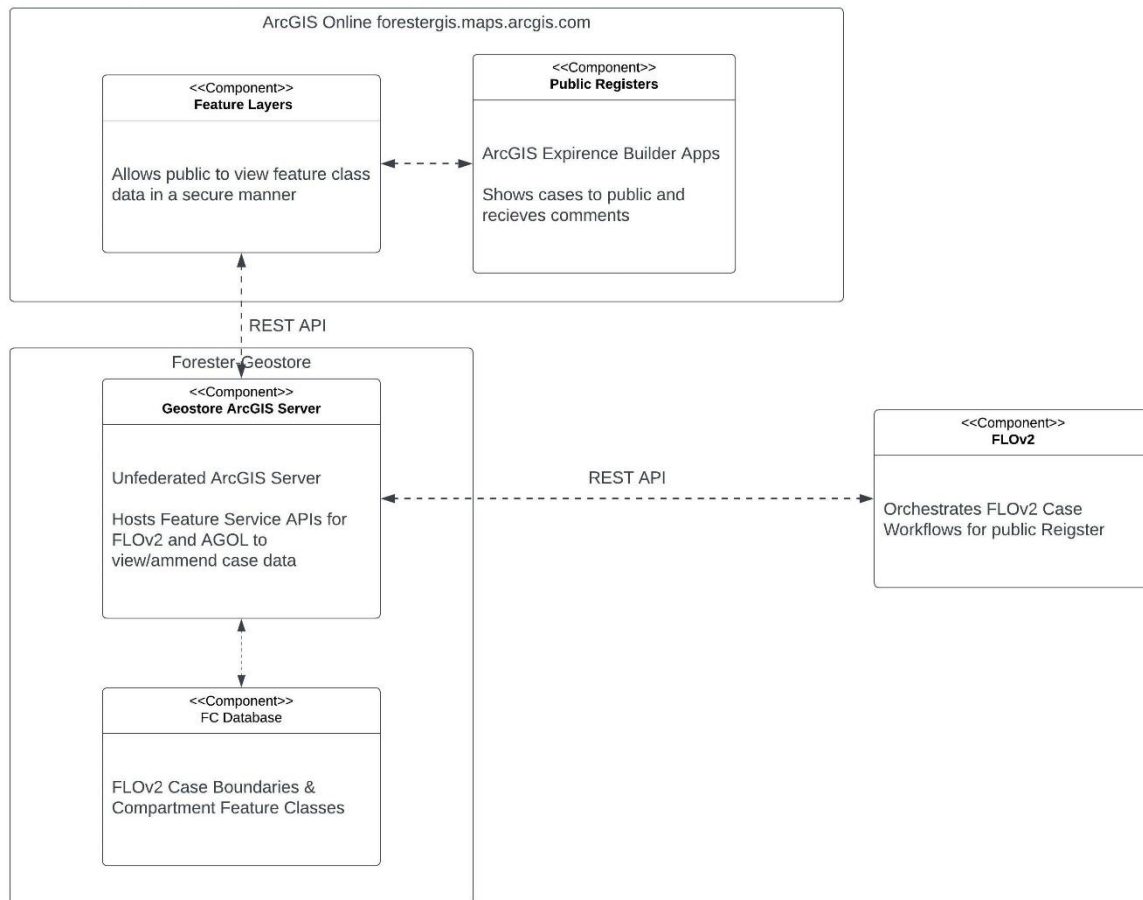
Package 1: Integration with the Public Registers

FLOv2 will master 'FLOv2 cases' shown on the Public Registers and will be responsible for orchestrating the following workflows:

- Sending new cases to the Public Registers with the required attribution and spatial data when a case is required to be shown on the consultation register
- Updating the status of a case when a case needs to be removed from the Consultations Public Register
- Interrogating Forester for new comments against a case
- Updating the status of a case when it needs to be shown on the Approvals Register
- Updating the status of the case when it needs to be removed from the Approvals Register

All notification emails regarding 'FLOv2 cases' will be the responsibility of FLOv2. Existing functionality in Forester for PG&R and 'PR02 cases' will not be extended to accommodate this.

FLO / Public Register integration high level solution design

To deliver this functionality, the following is required of Esri UK and Quicksilva:

Esri UK:

- Create two new tables in the Forestry Commission Forester database to store FLOv2 cases: one for case compartments and one for case boundaries. The data needs to reside here in order for it to be shown on the Public Registers.
- Update the definition query used by the feature services consumed by Public Registers to include the cases from the FLOv2 tables
- Provide a secured REST API for Quicksilva to interact with the FLOv2 tables
- Provide a secured REST API for Quicksilva to retrieve comments made against a specific case

Quicksilva

- When a case is needed to be shown on the Consultation Register, FLOv2 will need to send the following data via Esri Feature Service APIs:
  - **FLOv2 Case Boundaries**:
    - i. Geometry in Esri JSON format of a multi-part polygon of all compartments within the case
    - ii. Case Reference
    - iii. Property Name
    - iv. Case Type
    - v. Case Status (This should be **Consultation**)
    - vi. Grid Reference

vii.   Nearest Town
viii.   Local Authority
ix.   Administrative Region
x.   Broadleaf Area (ha)
xi.   Coniferous Area (ha)
xii.   Open Ground Area (ha)
xiii.   Total Area (ha)
xiv.   Public Register Start Date
xv.   Period (length of time on the consultation register)
xvi.   Decision on Public Register (Boolean) – should initially be **true**
- **FLOv2 Case Compartments** (required for each compartment in a given case):
  - i.   Geometry in Esri JSON format
  - ii.   Case Reference
  - iii.   Compartment Label
  - iv.   Case Status
  - v.   Decision on Public Register (Boolean)
  - vi.   Compartment Number
  - vii.   Sub compartment number
  - viii.   Public register start date

- When a case needs to be removed from the Consultation Register, FLOv2 will need to send the following data to the Esri Feature Service APIs:
  - **FLOv2 Case Boundaries**:
    - i.   Case Reference
    - ii.   Case Status (this could be any meaningful status until the case is 'Approved')
    - iii.   Public Register End Date
  - **FLOv2 Case compartments**:
    - i.   Case Reference
    - ii.   Case Status
    - iii.   Public Register End Date

- When a case needs to be added to the approvals register
  - **FLOv2 Case Boundaries**
    - i.   Case Reference
    - ii.   Case Status (this should be **approved**)
    - iii.   Decision on Public Register: **true**
    - iv.   Case approval date
  - **FLOv2 Case Compartments**:
    - i.   Case Reference
    - ii.   Case Status (this should be **approved**)
    - iii.   Decision on Public Register: **true**
    - iv.   Case approval date

- When a case needs to be removed from the Approvals Register
  - **FLOv2 Case Boundaries**:
    - i.   Case Reference
    - ii.   Decision on Public Register: **false**
  - **FLOv2 Case Compartments**:
    - i.   Case Reference
    - ii.   Decision on Public Register: **false**

- To retrieve comments against a particular case, FLOv2 will need to query a REST API with the following information:
  - Case Reference
  - Reference date & time for retrieving comments.

Quicksilva will be given credentials by FR to access the APIs. A token will need to be generated for an API call to be successful. Tokens will expire after 1 hour. A new token should only be generated after the previous one has expired. The Esri REST API documentation on generating tokens is located [here](#).

Package 2: Land Information Search integration

To deliver this requirement, Esri UK will replicate some of the functionality already implemented for Scottish Forestry.

A user would click on a deep-link in FLOv2, which will open and load the Land Information Search (LIS) in Forester Web (for internal users) and the LIS tool on the External Map Browser for public users.
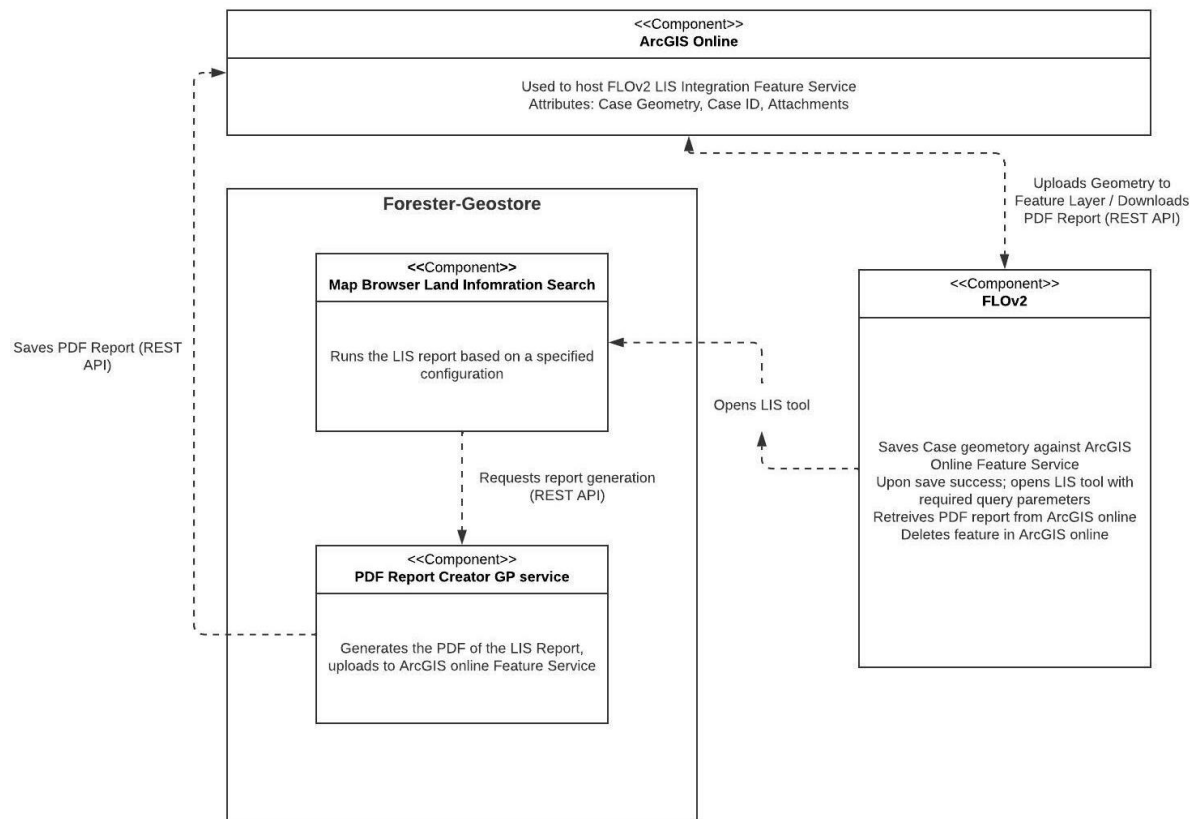
The deep link will have the following URL scheme : https://<url to LIS>?**isFlo**=true&**id**=<case id>

If the user is an internal user, a parameter called **isInternalUser**=**true** will need to be added so that the LIS will use the correct search configuration.

Unlike the LIS integration for Scottish Forestry, it will not be possible to share the geometry from FLOv2 using cross-tab communication as standard browser security protocols will prevent communication across domains in this way (assuming that FLOv2 will not be hosted on forestergis.com.) Likewise, Esri JSON Geometry can be too long to form part of a query parameter in a URL. In order to open the geometry of the case in LIS with minimal user input, our solution is for FLOv2 to save the geometry and case ID as a new feature in an ArcGIS Online feature service. LIS would be modified to use this feature service when being opened from FLOv2. A scheduled task will clear this temporary table each evening to avoid it growing indefinitely.

The report would be automatically generated and the user can review the report, then click a button in the LIS tool to "Upload to Felling Online". The button will call a geoprocessing service which would generate a PDF report and save it as an attachment against the case in the ArcGIS Online feature service. FLOv2 will then need to download the attachment and delete the record from the AGOL feature service.

LIS / FLOv2 Integration high level solution design

To deliver this solution, the following is required of Esri UK, Quicksilva and Forest Research:

Esri UK

- Modify the LIS tool so that the External Map Browser can be opened with the LIS tool open from FLOv2; read in the necessary query parameters so it can open with the correct configuration; download the geometry from the ArcGIS Online Feature Service; request PDF creation from a modified copy of PDF generation GP tool used by Scottish Forestry.
- Modify the PDF generation GP tool used by Scottish Forestry so that it will save the report to the ArcGIS Online feature service.

Quicksilva

- Save the case geometry and case id in the ArcGIS Online feature service before opening the LIS tool via deep link
- Open the LIS tool via deep link using the query parameters specified
- Download the PDF attachment of the report from the ArcGIS Online feature service
- Delete the case from the ArcGIS Online feature service when the report has been downloaded into FLOv2.

Forest Research

- Agree for the PDF Generation GP service to be hosted on the Geostore server.
- Agree for an ArcGIS Online account (a named user in a given tenant) to be used to host the feature service.

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Support

Esri UK will support Quicksilva with their development efforts to integrate FLOv2 with Forester by identifying a named contact in the Esri UK PS team, as well as providing them with the location of relevant Esri API documentation. We have allowed 3 days in our estimate to provide this support.

Following delivery and transition, which will consist of 5 days hyper-support, Esri UK will hand the solution over to FR to support.

Delivery

Esri UK plan to deliver this in an agile manner over a period of 6 weeks, consisting of 2 sprints each lasting two weeks, a third sprint lasting one week to focus on transition and concluded by a final week of hyper-support. Esri UK will host agile ceremonies including sprint planning, show & tells, retrospectives and daily stand-ups during the sprinting phase, which team members from Forest Services and QuickSilva are required to participate in to ensure aligned delivery.

Next Steps

- Forest Research to review the proposal.
- Forest Services to confirm the work packages they would like to progress with.
- Esri UK to finalise resourcing and delivery dates.

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