a. Requirements

DUPLO Introduction

Duplo is a Work order management system that allows internal users to control “manual” or automated processes in the content supply chain. The current application is focused on language order management, but we’re expanding it to include orders for human Quality Control, editing, compliance review, and all other human-driven activities over time.

Currently, there is a lot of operational overhead due to the lack of a good workflow management system for the QC and several different tools being used for the language management (Audio/Subtitles etc.,). This will be unified with the new Duplo system that will be executed from IDC. Duplo shall use Automation (AI/ML) capabilities to generate multilingual contents wherever possible. Contents should be tagged, and preferably, automated generation should be used for all non-high engagement contents (which may be 80% of contents available with Discovery)

Here is a list of the work order types in the scope;

- Advanced Quality Control (AQC) Work Order
- Language Work Order
- Video Edit Work Order
- Metadata Translation Work Order: Future

Functional Requirements

1. DUPLO shall create work orders based on events from input sources of schedules, inventory, metadata and SDVI Rally.
2. Work order for manual tasks shall be created as a record in a persistence with email notifications to stakeholders.
3. Status of manual work order shall automatically get updated based on the arrival of processed material in the inventory.
4. There shall be a management console (UI) to create (manual work orders creation), track and manage work orders status and override when needed.
5. Automated work orders shall be created as a record in a persistence with events to the downstream system responsible for execution of the work order.
6. System shall update the status of automated work orders based on response from the downstream system.
7. There shall be a sufficient amount of tabular reports and dashboards for various KPI Metrics.
8. Work order system shall be a generic engine, customisable ideally through configurations for.
    a. MVP requirements of DUPLO. (AQC, Languaging etc.)
    b. Extendible to the future requirements of DUPLO (like automated packaging and transfer of reference media as part of work order dispatch).
    c. Extendible to similar other work order solutions.
9. There shall be a provision to create a single work order for multiple work types like dubbing, subtitles etc., from the same vendor for the same reference material.
10. There shall be a common work order management for multiple regions with region specific customisation.
11. Customisations shall be driven by configurable rules (Ex. Vendor, region and service mappings, SLA terms etc,.). Management console shall allow configuration of various rules for work orders.
12. There shall be automated notifications on change of order status, delays and due dates.
    a. Users shall be able to manage their notification preferences
13. System shall support work orders search based on ID, and text based search on various metadata, status and edit instructions.
14. All access to the APIs and UI features shall be controlled based on least privilege principle.
15. System shall incorporate consolidated necessary features from PALM and DRA into DUPLO

Technical Requirements & Design considerations

Some of the key technical requirements of DUPLO media work order application are.

1. Integration with event sources shall be reliable and timely.
    a. Event streams to be analysed to understand the possible integrations.
    b. Sample events from Rally to captured to analyse these further. - Abe/Lexa.
        i. Whether directly from Rally or filter them through BirdDog events (Aurora MySQL) - Discuss with Kathy/Simon Mills.
    c. Sample events for languaging. - Prerna.
2. System shall service any volume of events, at any level of throughput, without losing events or requiring work order services to be available. Use of throttling to be considered for input source events.
    a. System needs to be tolerant of out of order events.
3. Shall use information from the source of truth rather than maintaining local copies.
4. Consideration of requirements to process workflows in parallel - There can be multiple parallel work orders for the same asset.
5. Consideration of auto scaling infrastructure for the work order system.
6. Consider throttling the requests to the downstream system.
7. Decouple all the services including UI to ensure them independently scalable and highly available.
8. Choice of rule engine / custom development shall be decided based on the evaluation of requirements for rules and their feasibility with the rule engines.
9. Choice of workflow engine based on the requirements for scale, resilience and performance.
    a. Ability to manage 20 work order requests per second (create and update) and ability to auto scale in case of spikes (batch upload?).
    b. Automated timeouts and retry policies.
    c. Automated error handling and replaying of multiple steps of workflow like DB Record update and notifications, and emails. Ability to resume workflow from where it ended (state persistence).
10. Security considerations - primarily for the reference materials transferring out to the vendors.
11. Mechanism for tracking due dates & delays and notifications - Timer based over DB poll mechanisms - ensuring they are scalable.
12. Design to capture acknowledgements from vendors on receipt of email notifications.
13. Analysis of failure points in the system and recovery plans. Further analysis needed.
14. Performance considerations - throughput requirements, latency limits etc.
15. Deployment & CI/CD infrastructure considerations (Existing deployment for D-Suite to be used).
16. Observability use cases and tech stack considerations (NewRelic and Splunk).
17. Choice of tech stack (Service layer in Java Spring Boot) / design for text based search (ELK).
18. Choice of Database (Default PostgreSQL, open for NoSQL considerations based on needs).
19. Use of Authz (integrated with Okta) frameworks for user management.
    a. There are 2 Okta domains - One for Discovery and the other for vendors.