ADM: Increase Relevance for Multi-PDS Integration

Owner: `Mohammed Wajahat Ali Siddiqui` `Mayank Jain`
Team: DCT Engineering (dct-engineering@groupon.com)
Date: `Apr 15, 2025`

---

1. Introduction

Objectives: To validate the behavior of deals with multiple PDSs across all dependent systems and teams, ensuring readiness for production rollout.

Today deals cannot be effectively tied to multiple relevant PDSs, limiting their visibility and discoverability. For example, a merchant offering various massage types (Thai, Swedish, Couple) can only associate the deal with one PDS (e.g., Thai massage).

As a result:

- **Reduced Deal Relevance**: Users searching for other types of massages may not find the deal, decreasing its effectiveness.
- **Lower Discoverability & Conversion**: Deals appear in fewer search results and category pages, leading to missed revenue opportunities.
- **Merchant Limitations**: Businesses offering diverse services are forced into a rigid structure, which may not accurately reflect their offerings.

Scope: Allow multi PDS (CFT- Consumer Facing Taxonomy) only for Live deals . During deal setup, Salesforce (SF) only allows a single PDS at the deal level and does not support multiple PDS entries. Since SF's involvement is minimal after a deal goes live, and the current product scope targets only post-activation edits, multi-PDS functionality will apply solely to live deal modifications.

- Expose this functionality, to only few sales rep based on RBAC, so that we can have a controlled roll-out
- Allows new PDS within same CFT category (L1,L2)
- NA region and only for Local Business vertical

Stakeholder Scoping and Signoff

Team / Service/Stakeholders	Point of Contact	Changes Required	LOE (MD)	Signoff
VP Eng	Nikash RanjanRay	NA	NA	
Product Owner	Dobrosh Bernath	NA	NA	
Engineering Director	Harendra Kumar	NA	NA	
Architect/ Principal Engineer	Xiaochuan Sun	NA	NA	
DCT Engineering	Mohammed Wajah… Mayank Jain	Build new UI tool for Sales Rep to allow updates for live deals Create new set of apis from BE(Draft service) to support the same	16	MS
Booster / Relavance	Carl Radecke Andres Camera Ma…	Verification and Validation	NA	
Promotions/Pricing	Benedikt Statt Himanshu Prakash …	Verification and Validation	NA	
Finance/Accounting	Dilpreet Dhaliwal Brian Gray	Verification and Validation	NA	
SF	Ankur Goyal	Verification and Validation	NA	
CoreApps/Deal Catalog	Gopakumar Kundu… Harendra Kumar	Verification and Validation	NA	GK
DMAPI	Josef Sima	Verification and Validation	NA	JS
MDS	Aditya Kumar Roshan	Verification and Validation	NA	SV
GAPI/Lazlo	Bijendra Kumar Singh	Verification and Validation	NA	BK
Orders & Payments	Harendra Kumar	Verification and Validation	NA	

Note : For each service, if "**Change Required"** column is empty, then ideally we are not expecting any changes, and we need a confirmation on the same

2. Business Goals & Constraints

Business Objectives:

- **Multi CFT deals to appear in multiple category pages** - Customers can more easily find quality deals
- **Improve under developed categories** - Because some categories don't sell well, high potential merchants are encouraged to create deals in categories that do. Since aforementioned categories will **contain better deals their overall relevance and value will increase.**
- **Allow only certain users to access the functionality -** If we overdo secondary PDS we may face situation where the categories will be less relevant to customers. We need to make sure only market managers will have access to this feature.
- **Avoid negative impact on SEO -** The url for deals should remain same, does not matter from which CFT it is opened. This should actually improve SEO.

SUCCESS METRICS & BASELINE:

Key Success Metrics:

Q2: Is initiative delivered

Q3: GP of deals in multi CFTs +5%

Current Baseline:

Multi CFT deals have no added GP due to CFT relevance since we don't support this. So the baseline is the GP itself of each multi CFT deal. We want to see if it increases with this initiative.

---

3. System Overview

High-Level Flow of Multi-PDS Integration

The following flow illustrates the proposed multi-PDS enhancement propagates across Groupon's system landscape, starting from the Sales Rep input in the UI to final rendering on the customer-facing platform:

1. **Metro UI (DCT-FE)**
   Sales reps (RBAC-controlled) use Metro-UI to tag live deals with additional secondary PDS values against relevant options.

2. **Draft Service (DCT-BE)**
   Receives the updates from the UI and persists changes at the **deal option level**, including the new relevancePds field.

3. **DMAPI - No change expected**
   Existing endpoints will be used to update categoryIds at option level in dmapi
   a. Update endpoint: v2.deals.deal_id.products.id.update
   b. Remove endpoint: v2.deals.deal_id.products.product_id.categories.id.destroy

4. **Deal Catalog - No change expected**
   Option level categoryIds will be used to store additional Pds in dealCatalogue v2 endpoint and also stores and serves the source of truth PDS array data.

5. **Lazlo Service / GAPI (DealShow) - No change expected**
   Generate **Customer-Facing Taxonomies (CFTs)** using both primary PDS and PDSes in categoryIds, and combining the output for a complete representation of the deal's categorical relevance deal.categorizations.
   a. Eg : Lets assume there are 2 options , both will have same primaryPds and different categoryIds

      Option 1: primaryPds: pds1 ,categoryIds: [pds2, other uuids]

      Option 2 : primaryPds : pds1 , categoryIds: [pds3]

      The combined deal.categorizations field: [CFT from pds1, pds2, pds3]

6. **MDS**
   Distributes the updated CFTs and deal metadata downstream, particularly to Booster and other client-facing systems (Relevance). No schema change expected.
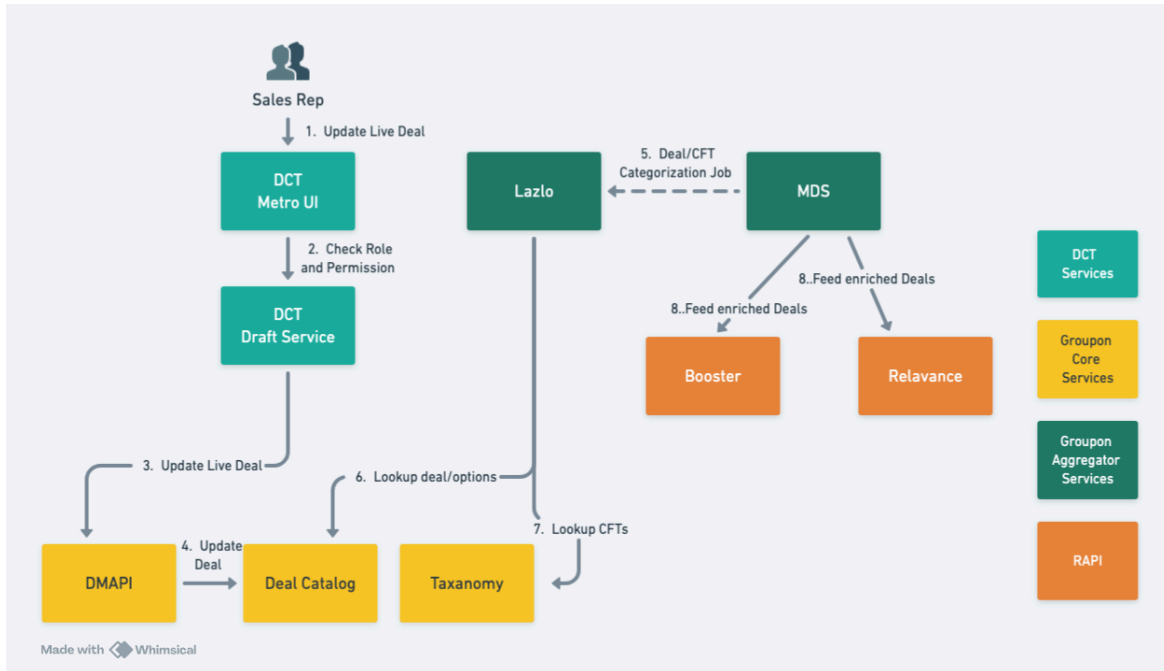
7. **Booster and Relevance**
   Uses enriched CFTs to render the deal in **multiple categories**, improving discoverability across browsing and search experiences. No schema change expected.
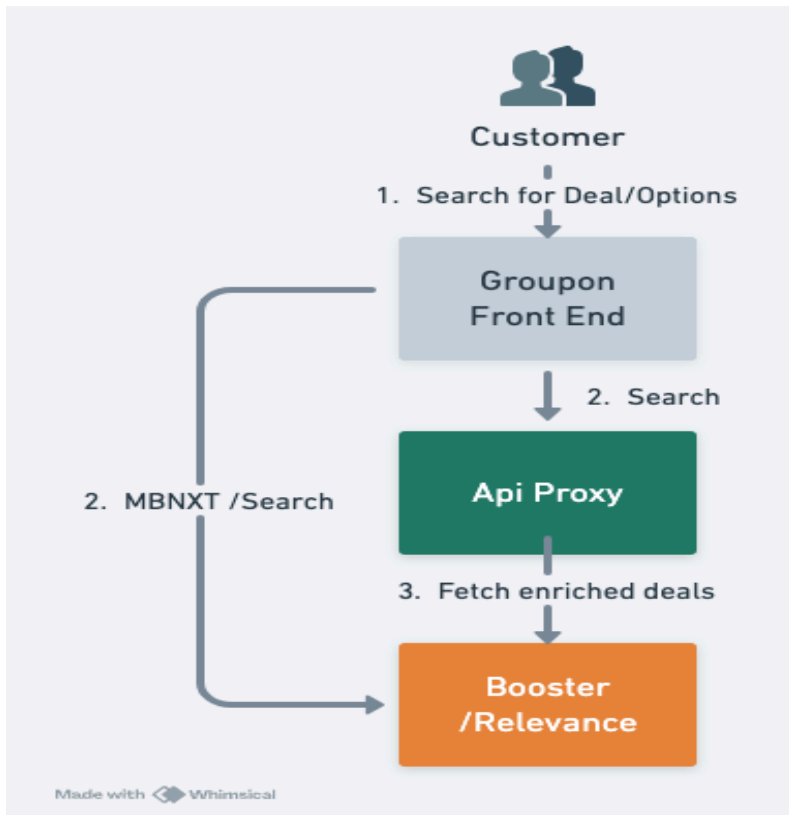
Architecture Diagram

Live deal update flow:
https://whimsical.com/improve-relavance-with-multi-deal-pdss-XbwZDFeLm6w7Xom5sHBfnr

Search/Browse flow https://whimsical.com/search-browse-flow-BP7DjRiwJhijbjXzm3rAKt

4. Architectural Strategies

Architectural Patterns: The existing api Unified api makes a synchronous call to Dmapi v1 and Dmapi v2 apis to fetch live deal details.
For saving updates to the deal, we will use the existing architecture pattern
.**So there are no changes in the architecture pattern for the above changes in any of the services**
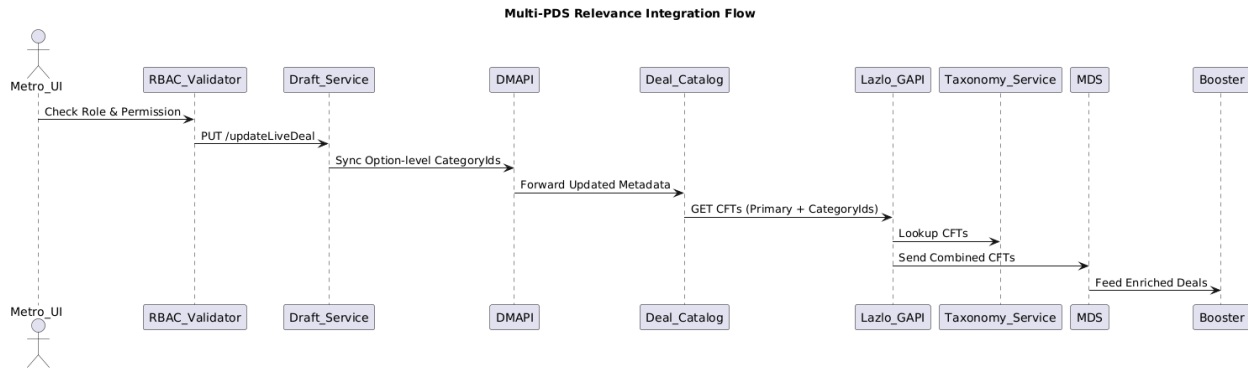
---

5. Component Diagram

5.1. Sequence Diagram
Fetch Live deal

Once the deal is **LAUNCHED/ SCHEDULED in DMAPI V2** ,we fetch the data from Platform(DC)

Update Live deal (Save/Update Relevance Pds)

Multi-PDS Relevance Integration Flow

5.1.1. User Action via Metro UI (DCT-FE)

The Sales Rep uses the Metro UI interface to select additional relevant categories (secondary PDS) for each deal option shown. This action is scoped only to live deals and is visible exclusively to RBAC-eligible users. In the UI context, the Sales Rep clicks "Edit categories," chooses the relevant secondary categories which for each option (for example, "Oil Massage" or "Couple Massage"), and then clicks "Save changes" to apply the updates.

5.1.2. MetroUI to Draft API Trigger:

This call triggers the backend update logic where the **option-level metadata** is updated to include newly selected secondary PDSs.

5.1.3. Draft Service Updates Core Data

The Draft Service validates that the PDSs belong to the same CFT L1/L2 category as the primary and ensures that there are no duplicates or invalid mappings. After validation, it stores the relevancePds in the internal data model(audit table) and notifies DMAPI and pushes the pds as a part of `categoryIds` at product level of the update to sync the changes across systems.

5.1.4. DMAPI Pushes Metadata Forward

DMAPI acts as a conduit to sync the enriched option-level data downstream. It ensures that Deal Catalog (DC) receives the updated categoryIds array for each deal option.

5.1.5. Deal Catalog Stores and Pushes Deal data Forward

Deal Catalog(DC) : Supports storing and rendering deal data in dealCatalogue along with that deal catalog stores and serves the source of truth PDS data.

5.1.6. Deal Catalog Serves to Lazlo / GAPI

Lazlo (or GAPI) uses the updated metadata from Deal Catalog to generate Customer-Facing Taxonomies (CFTs) by calling the Taxonomy service and creating a CFT array that contains CFTs from both primaryPds and categoryIds. It uses both primaryPds and categoryIds for categorization, which is critical for improving search and browsing experiences.

5.1.7. Lazlo Generates CFT and MDS bundles these CFTs

Lazlo (or GAPI) creates CFTs from both primaryPds and categoryIds, which are then queried by MDS. MDS bundles these CFTs, and the resulting feed serves as a data source for Booster and certain marketing services, while Lazlo's deal#show API powers most client-facing systems. No schema changes expected at MDS. MDS Feed

---

5.1.8. Booster Consumes Final Output

Booster receives the enriched deal feed containing multiple taxonomy paths, allowing deals to appear in multiple relevant categories as well as in search and browse results across different PDS mappings.
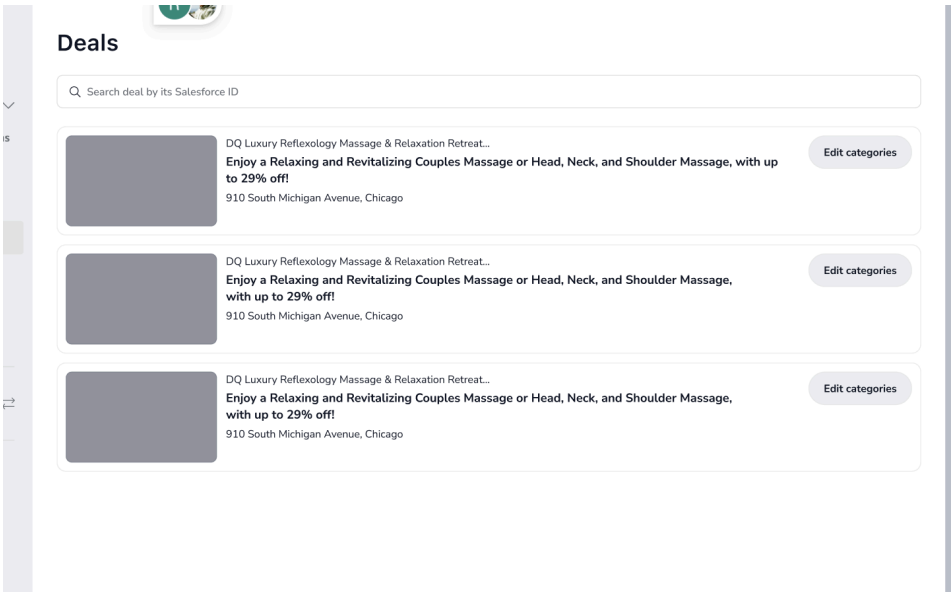
---

6. Data Model

6.1. Attribute Mapping

Term	UI	draft service	Dmapi v2	DC v2
Pds selection	relevancePds	relevancePds	categoryIds	categoryIds

6.2. Data Models

API Contracts

Service : Draft service

Base URL

Production
http://draft-service.production.service

1. Fetch deal details based on deal id

Retrieve deal Information (All existing API)

Method	URI
GET	v2/merchants/${permalink}/mdm/deals/${dealId}/unified

Response Schema (only new attributes added, since it is a big schema)

Field	Type	Description
relevancePds	Array	Support pds for Relevance at option level

Json path : deal.attributes.products.value[].option.relevancePds

Successful Response **(200 OK)**

```
{
  "deal": {
    "id": "7b6998bc-ed84-4461-9183-51d92056f1a9",
    "flow": "INT_LIVE",
    "dealStatus": "PUBLISHED",
    "attributes": {
      "products": {
        "value": [
          {
            "option": {
              "id": "82838b93-9104-47a2-9709-b4219af35ba3",
              "relevancePds": {
                "value": ["3db7bf9a-f11f-4232-8b74-352761967788"]
                "inReview": null,
                "editable": true,
                "visible": true
              },
            ],
          ...
        }
      }
    }
  }
}
```

Error Responses

Http Code	Error Code	Description	Schema
401	Unauthorized	Permission Exception	📄 Error Response Sch…
500	Internal Server Error	Unexpected server issue.	📄 Error Response Sch…

New fields->

Json path : deal.attributes.products.value[].option.relevancePds

```
"relevancePds": {
 "value": [
   "3db7bf9a-f11f-4232-8b74-352761967788"
 ],
  …
 }
```

2. Save relevance pds Information

Method	URI
PUT	v2/merchants/${permalink}/mdm/deals/${dealId}/updateDeal

Request Body

```
{
  "deal": {
    "id": "7d832ea9-010a-487d-9088-1a59cd36ff40",
    "attributes": {
      "products": {
        "value": [
          {
            "option": {
              "id": "6e4f38f2-f9a7-4814-8ea4-1fedc962a369",
              "optionId": "3f4318d6-7ea4-4885-943c-552ae3d85a0d",
              "relevancePds": {
                "value": [
                  "00541c00-3aff-4380-990b-1c10e6256615"
```

```
                    ],
                    "inReview": true,
                    "editable": true,
                    "visible": true
                }
            }
        }
        }
    ]
    }
    }
    }
 }
```

Error Responses

Http Code	Error Code	Description	Schema
401	Unauthorized	Permission Exception	📄 Error Response Sch…
500	Internal Server Error	Unexpected server issue.	📄 Error Response Sch…
400	Bad Request	Multi-pds not enabled for EMEA	
400	Bad Request	Multi-pds not enabled for merchants	
400	Bad Request	Multi-pds enabled only for live deals	
400	Bad Request	MultiPDS-Deal PrimaryDealServiceId and Relevance must belong to HBW category	📄 Error Response Sch…

3. Remove relevance pds from an option

Method	URI
PUT	v2/merchants/${permalink}/mdm/deal/${dealId}/removeCategories

Request Body

```json
{
  "deal": {
    "id": "7d832ea9-010a-487d-9088-1a59cd36ff40",
    "attributes": {
      "products": {
        "value": [
          {
            "option": {
              "id": "6e4f38f2-f9a7-4814-8ea4-1fedc962a369",
              "optionId": "3f4318d6-7ea4-4885-943c-552ae3d85a0d",
              "relevancePds": {
                "value": [
                  "00541c00-3aff-4380-990b-1c10e6256615"
                ],
                "inReview": true,
                "editable": true,
                "visible": true
              }
            }
          }
        ]
      }
    }
  }
}
```

Responses

Http Code	Error Code	Description	Schema
200	Success	Success	
401	Unauthorized	Permission Exception	📄 Error Response Sch…
500	Internal Server Error	Unexpected server issue.	📄 Error Response Sch…
400	Bad Request	MultiPDS-Deal PrimaryDealServiceId and Relevance must belong to HBW category	📄 Error Response Sch…

Service: DMAPI

No change expected. Existing update flow for product.categoryIds will be utilized.

Base URL

Production
http://deal-management-api.production.service

1. Deal update request: v2.deals.id.update
2. Deal fetchbased on deal id: v2.deals.id.show

Service: Deal Catalog

No change expected. Existing update flow for product.categoryIds will be utilized. Product category additions and removals are handled through the following Deal catalog APIs.
- Product category update[API]
- Product category delete[API]

Service: Lazlo

No change expected.
- deal.categorization field contains merged CFT translated from all options primaryDealServiceCategoryId and categoryIds

Deal show response

```
{
  "deal": {
    "id": "the-beauty-hut-16",
    "categorizations": [
     {
       "uuid": "c09790ba-a6b9-40fc-ad81-4cdf25260b5e",
       "id": "local",
       "friendlyName": "Local",
       "friendlyNameShort": "Local",
       "friendlyNamePlural": "Local",
       "friendlyNameSingular": "Local",
       "children": [
        {
          "uuid": "294ea30b-dd37-49a1-9805-e9e6c7617902",
          "id": "beauty-and-spas",
```

```
        "friendlyName": "Beauty & Spas",
        "friendlyNameShort": "Beauty & Spas",
        "friendlyNamePlural": "Beauty & Spa",
        "friendlyNameSingular": "Beauty & Spa",
        "children": [
          {
            "uuid": "c2c29edd-3f58-4070-85bf-ad7fb8f908e3",
            "id": "hair-removal",
            "friendlyName": "Hair Removal",
            "friendlyNameShort": "Hair Removal",
            "friendlyNamePlural": "Hair Removal",
            "friendlyNameSingular": "Hair Removal",
            "children": [
              {
                "uuid": "3c695d88-a6d5-4eae-8acd-b8e4672b2916",
                "id": "waxing",
                "friendlyName": "Waxing",
                "friendlyNameShort": "Waxing",
                "friendlyNamePlural": "Waxing",
                "friendlyNameSingular": "Waxing",
                "children": []
              }
            ]
          }
        ]
      }
    ]
  }
]
}
}
```

Service: MDS

No schema change expected.Current mds feed data

```
{
  "deal_id": "sorelle-chicago-1",
  "deal_option_id": "09b8cbaf-3004-46e7-8822-67237d0f6df7",
  "customer_taxonomy_hierarchy": [
    {
      "category": "Food & Drink",
      "category2": "Restaurants",
      "category2_guid": "5b99fc65-2d2f-48d8-ac26-c4b629c0a439",
```

```
      "category2_permalink": "restaurants",
      "category3": "Asian Restaurants",
      "category3_guid": "0d5c5cc6-a79f-4b0c-ba25-90b14cec8d81",
      "category3_permalink": "asian-restaurants",
      "category_guid": "f052f491-36c2-406f-a196-be2c59d281f4",
      "category_permalink": "food-and-drink",
      "top_category": "Local",
      "top_category_guid": "c09790ba-a6b9-40fc-ad81-4cdf25260b5e",
      "top_category_permalink": "local"
    },
    {
      "category": "Personal Services",
      "category2": "Charity & Grassroots",
      "category2_guid": "97e05099-2fb1-4441-99a7-bace36ec38c6",
      "category2_permalink": "charity",
      "category_guid": "69b3c3a7-6cb8-4b6f-8002-7b8aeb95b599",
      "category_permalink": "personal-services",
      "top_category": "Local",
      "top_category_guid": "c09790ba-a6b9-40fc-ad81-4cdf25260b5e",
      "top_category_permalink": "local"
    }
  ]
}
{
  "deal_id": "sorelle-chicago-1",
  "deal_option_id": "9dcafa2b-fc34-43f4-aa44-3e7840786585",
  "customer_taxonomy_hierarchy": [
    {
      "category": "Food & Drink",
      "category2": "Restaurants",
      "category2_guid": "5b99fc65-2d2f-48d8-ac26-c4b629c0a439",
      "category2_permalink": "restaurants",
      "category3": "Asian Restaurants",
      "category3_guid": "0d5c5cc6-a79f-4b0c-ba25-90b14cec8d81",
      "category3_permalink": "asian-restaurants",
      "category_guid": "f052f491-36c2-406f-a196-be2c59d281f4",
      "category_permalink": "food-and-drink",
      "top_category": "Local",
      "top_category_guid": "c09790ba-a6b9-40fc-ad81-4cdf25260b5e",
      "top_category_permalink": "local"
    },
    {
      "category": "Personal Services",
      "category2": "Charity & Grassroots",
      "category2_guid": "97e05099-2fb1-4441-99a7-bace36ec38c6",
```

```
    "category2_permalink": "charity",
    "category_guid": "69b3c3a7-6cb8-4b6f-8002-7b8aeb95b599",
    "category_permalink": "personal-services",
    "top_category": "Local",
    "top_category_guid": "c09790ba-a6b9-40fc-ad81-4cdf25260b5e",
    "top_category_permalink": "local"
  }
 ]
}
```

7. Security Considerations

Both GET and PUT endpoints will be driven by RBAC system, which means any Internal User will not be able to access the system until and unless they have appropriate Role and Permission in the platform

DCT-RBAC design doc : 📄 RBAC DCT Integration

---

8. Scalability & Performance

The implementation utilizes the existing categoryIds field in the deal catalog to store new PDS. Performance impact is expected to be negligible since the volume of merchandising tags per deal is much higher than the expected number of additional PDSes per option.

Current performance monitoring and existing SLO monitoring for deal catalog and Lazlo endpoints will provide enough coverage into any potential performance changes.

Scale : No of high performing deals we are planning to make Multi-pds : TBD.

---

9. Infrastructure & Operational Costs

Since there are no material changes as far the flow or introduction of any resources is concerned like redis or Mbus, hence there would be no material impact on cost or resources.

---

10. Timeline & Milestones

DCT BE [5.5 MD]

- Api contract for new PUT api [0.5 MD]
- Develop new PUT api [3.5 MD]
    - Add validations and RBAC & changes in yml files [0.5 MD]
    - Update dmapi v2 with secondarypds [0.5 MD]
    - Business logic integration & logic to have at least one option retain the main pds [1 MD]
    - Update audit table [0.5 MD]
    - Update existing unified api to support relevance pds and primarydealserviceid in CE flow [0.5 MD]
    - Deploy changes in staging and production [0.5MD]
- Unit test cases and Integration testing [1.5 MD]
    - Unit test cases & flow test end to end [1 MD]
    - Dev testing - 4 hr Integration testing [0.5 MD]

DCT FE [7.5 MD]

- Setup new module for deal categories (FE) - 1MD
- Deal Page Listing (FE) - 2 MD
- Edit deal categories (FE) - 2.5 MD
- Api integration for CFT relevance - 1 MD
- Unit Test for CFT relevance - 1 MD

QA [3 MD]

- Test plan creation with respect to changes (0.5 MD)
- Testing the deal creation flow for the US and ES regions (across multiple PDS). (1 MD)
- Testing the new UI changes. (0.5 MD)
- End-to-end testing of the deal flow — from creation to purchase. (0.5 MD)
- Verifying any issues related to the recent changes. (0.5 MD)

DMAPI - DMAPI: Push relavancePDSs Meta Data to DC
- Validation on categoryIds update

Deal Catalog - Deal Catalog: Store relavancePDSs to deal Data
- Validation on categoryIds update

Lazlo Service / GAPI (DealShow)
 API Lazlo: Generate CFTs based on relavancePDSs
- Validation on deal.categorizations

MDS [0.5MD] - ⏎ MDS: Validate deal enriched feeds for passing down to RAPI
- Feed validation

---

11. Review Findings

To be completed after the review.

---

12. Action Items

To be completed after the review.

---

13. Conclusion

To be completed after the review.

14. References

- **Initiative**: QR-974, QR-1132
- **Asana**: ⏎ [Discovery] Increase relevance for potentially multi PDS deals
- **Requirement doc** : 📄 Improve relevance for potentially multi PDS deals - product exploration
- **Figma** : Support-multiple-PDS-deals-for-relevance
- **Discussions** : 📄 Discussions