
APS Portal

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Jim Schmidt

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CONTENTS:

1	Introduction	1
2	Overview	3
3	Objective	5
3.1	ABC - Pareto	5
3.1.1	Purpose	5
3.1.2	Assumptions	5
3.1.3	Item Statistics	5
3.1.4	Overview	5
3.1.5	Definition	5
3.1.6	Approach	6
3.1.7	Purpose	6
3.1.8	Modify web page template	7
3.1.9	Item Statistics	7
3.1.10	Item Statistics Fields	7
3.1.11	Approach	8
3.2	Optimal Replenishment Quantity	8
3.2.1	Objectives	8
3.3	Unit Cost	8
3.3.1	Compute Optimal Purchase Quantity	8
3.3.2	Cost Types	8
3.3.3	Graph this relationship	8
3.3.4	Compute Optimal Purchase Quantity	9
3.3.5	Graph this relationship	9
3.4	Multiple Lead Times	9
3.4.1	Overview	9
3.4.2	Acquiring	9
3.4.3	YAML	9
3.4.4	Assumptions	10
3.4.5	Issues	10
3.5	Lead Time By Vendor	10
3.5.1	Overview	10
3.5.2	Acquiring	10
3.5.3	YAML	11
3.5.4	Assumptions	11
3.5.5	Issues	11
3.6	Requisition	11
3.6.1	Instructions	11
3.6.2	Gather Information	12

3.6.3	Out of Scope	14
3.6.4	In aerospace	14
3.6.5	Source of Lead Time	14
3.6.6	Instructions	15
3.6.7	Sequence Diagram	16
3.6.8	Related articles	17

INTRODUCTION

This is the portal.

CHAPTER
TWO

OVERVIEW

OBJECTIVE

- Purpose
- Functionality
- Description

This document reflects the primary source of interaction with the system

3.1 ABC - Pareto

3.1.1 Purpose

Concentrate inventory and dollars on

- high volume,
- high profit item
- highest service level
- core products
- JIT / SLA / KITS

Metric

3.1.2 Assumptions

Users wish to quickly summarize the characteristics of an item

3.1.3 Item Statistics

3.1.4 Overview

This demonstrates computing a number of potentially useful statistics

3.1.5 Definition

This is also known as Pareto or 80/20 rule

https://en.wikipedia.org/wiki/Pareto_principle

- Top 20 percent of sales items are rated A
- Next 60 percent rated B
- Bottom 20 Rated C

This has the following problems, an item may be at 21% but is indistinguishable from a 79

3.1.6 Approach

- Create a table to hold statistics
- Create a script to populate statistics by item
- Create a service to obtain the data model for the web page
- create an angular 8 controller label-name
- Modify the filter screen to allow query filters on the statistics
- Modify the web pages to show the statistics information

3.1.7 Purpose

Concentrate inventory and dollars on

- high volume,
- high profit item
- highest service level for **important** products, those with high margins, not just high

markups, complementary sales, Service Level Agreements, Just in Time Contracts and Kits.

- core products
- ****What should the service level be? An item with a 5% markup that turns 12 times a year may be more profitable than an item with a 30% markup and 1 annual turn****

Certainly a B item at 21% contribution to profit margin is more valuable than a B item at 79%.

package com.pacificdataservices.diamond.apsweb;

import java.io.IOException; import java.sql.Connection; import java.sql.SQLException;

import javax.sql.DataSource;

import org.javautil.core.json.JsonSerializer; import org.javautil.core.json.JsonSerializerGson; import org.javautil.core.sql.Binds; import org.javautil.core.sql.SqlStatement; import org.javautil.util.NameValue; import org.slf4j.Logger; import org.slf4j.LoggerFactory; import org.springframework.beans.factory.annotation.Autowired; import org.springframework.web.bind.annotation.RequestMapping; import org.springframework.web.bind.annotation.RequestParam; import org.springframework.web.bind.annotation.RestController;

@RestController public class IcItemStatController {

private Logger logger = LoggerFactory.getLogger(getClass()); @Autowired private DataSource datasource;

@RequestMapping("/icItemStat") public String planData(@RequestParam(value="itemNbr") String itemNbr) throws SQLException, IOException { logger.info("invoked with itemNumber {}",itemNbr); Connection conn = datasource.getConnection(); SqlStatement ss = new SqlStatement(conn, "select * from ic_item_stat where item_nbr = :item_nbr"); Binds binds = new Binds(); binds.put("item_nbr", itemNbr); NameValue nameValue

```
= ss.getNameValue(binds,true); JsonSerializer serializer = new JsonSerializerGson(); String json = serializer.toJsonPretty(nameValue); return json; }
```

```
<https://www.briantracy.com/blog/personal-success/how-to-use-the-80-20-rule-pareto-principle/
//www.briantracy.com/blog/personal-success/how-to-use-the-80-20-rule-pareto-principle/> }
```

Create a node service

```
import { HttpClient } from '@angular/common/http';
import { Observable } from 'rxjs';
...
getItemStat(): Observable<IcItemStat[]> {
    return this.http.get<IcItemStat[]>(HOST + '/api/v1/icitemstat/' + itemnbr);
}
```

3.1.8 Modify web page template

https://en.wikipedia.org/wiki/Pareto_principle

<https://www.briantracy.com/blog/personal-success/how-to-use-the-80-20-rule-pareto-principle/>

3.1.9 Item Statistics

3.1.10 Item Statistics Fields

Name

Code

Description

Benefit

Disadvantage

Compare to

While we are at it we may as well get

- Number of customers
- Number of approved manufacturers
- Annual Turns
- Sales Conversion Percentile from quotes

ABC

ABC_SLS

Top 20 of previous 12 month contribution to sales dollars

Does not adequately support new product introduction

ABCUSTQUOTE

Top 20 percent of CUST OPEN Quotes

Similar to ABC

3.1.11 Approach

- Create a table to hold statistics
- Create a script to populate statistics by item
- Create a service to obtain the data model for the web pages
- Modify the filter screen to allow query filters on the statistics
- Modify the web pages to show the statistics information

3.2 Optimal Replenishment Quantity

3.2.1 Objectives

- Highest Profit
- Highest Customer Satisfaction
- JITS / KITS / SLA

3.3 Unit Cost

During one of my calls with Peter he told me that he was reviewing purchase orders a simple line such as “Buyers don’t buy the correct quantities to get a good price” was extended to:

3.3.1 Compute Optimal Purchase Quantity

3.3.2 Cost Types

Compute a projected per unit cost by solving the equation

$$\text{unit_cost} = (\text{setup_cost} / \text{qty}) + \text{incremental cost}$$

For two different known qty and prices (vendor quotes) using linear algebra

3.3.3 Graph this relationship

Find the “price knee” the first derivative of the function, the slope of the tangent starts to level off (it asymptotically approaches 0, meaning the limit is the unit cost doesn’t decrease at all. Depending on setup cost, incremental cost and annual consumption a three year supply may be ten percent more than a one year supply, it may also be three times the acquisition cost and additional carrying costs must be considered.

Vendor quotes should include this range of quantities, purchasing quantities should be in this range, buys can be made and even scheduled so that lower per unit costs can be realized.

During one of my calls with Peter he told me that he was reviewing purchase orders a simple line such as “Buyers don’t buy the correct quantities to get a good price” was extended to:

3.3.4 Compute Optimal Purchase Quantity

Compute a projected per unit cost by solving the equation

$$\text{unit_cost} = (\text{setup_cost} / \text{qty}) + \text{incremental cost}$$

For two different known qty and prices (vendor quotes) using linear algebra

3.3.5 Graph this relationship

Find the “price knee” the first derivative of the function, the slope of the tangent starts to level off (it asymptotically approaches 0, meaning the limit is the unit cost doesn’t decrease at all. Depending on setup cost, incremental cost and annual consumption a three year supply may be ten percent more than a one year supply, it may also be three times the acquisition cost and additional carrying costs must be considered. by vendor Vendor quotes should include this range of quantities, purchasing quantities should be in this range, buys can be made and even scheduled so that lower per unit costs can be realized. by vendor

3.4 Multiple Lead Times

3.4.1 Overview

Vendors may have drastically different lead times.

3.4.2 Acquiring

Data for lead times should be derived from the latest vendor quotes that is the longest lead tie from the maximum effective date for a vendor quote.

Note that item_nbr, the item surrogate key is not used, allowing you to get vendor quotes for items that have not been set up;

```
create view ic_item_vnd_lead_time as
select  item_cd_qte,
        vq_qte_dt,
        vq_qte_eff_dt,
        max(vq_qte_exp_dt) max_qte_exp_dt,
        (max(vq_qte_exp_dt) - vq_qte_eff_dt) / 7 lead_tm_wks
from    vq_qte_vw
group by org_nbr_vnd,
        item_cd_qte,
        vq_qte_eff_dt,
        vq_qte_dt;
```

3.4.3 YAML

```
ic_item_vnd_lead_tm:
  sql: >
    create view ic_item_vnd_lead_time as
    select item_cd_qte,
           vq_qte_dt,
           vq_qte_eff_dt,
```

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```

        max(vq_qte_exp_dt) max_qte_exp_dt,
        (max(vq_qte_exp_dt) - vq_qte_eff_dt) / 7 lead_tm_wks
    from vq_qte_vw
    group by org_nbr_vnd,
            item_cd_qte,
            vq_qte_eff_dt,
            vq_qte_dt;
description: Create ic_item_vnd_lead_tm
narrative: >
    TODO describe consequence of using the quote expiration date, vq_qte_exp_dt
    rather than the quote of quotation or the effective date of quotation.

```

3.4.4 Assumptions

The most recent vendor quote for lead times will be used.

If multiple vendor quotes exist for the same quote date, the maximum lead time will be used.

Full historical vendor quotes are useful to see trends in cost and lead time.

3.4.5 Issues

Vendor on-time performance.

3.5 Lead Time By Vendor

3.5.1 Overview

Vendors may have drastically different lead times.

3.5.2 Acquiring

Data for lead times should be derived from the latest vendor quotes that is:

Note that item_nbr, the item surrogate key is not used, allowing you to get vendor quotes for items that have not been set up;

```

create view ic_item_vnd_lead_time as
select  item_cd_qte,
        vq_qte_dt,
        vq_qte_eff_dt,
        max(vq_qte_exp_dt) max_qte_exp_dt,
        (max(vq_qte_exp_dt) - vq_qte_eff_dt) / 7 lead_tm_wks
from vq_qte_vw
group by org_nbr_vnd,
        item_cd_qte,
        vq_qte_eff_dt,
        vq_qte_dt;

```

3.5.3 YAML

ic_item_vnd_lead_tm:

sql: >

```
create view ic_item_vnd_lead_time as select item_cd_qte,
      vq_qte_dt,      vq_qte_eff_dt,      max(vq_qte_exp_dt)      max_qte_exp_dt,
      (max(vq_qte_exp_dt) - vq_qte_eff_dt) / 7 lead_tm_wks
from vq_qte_vw group by org_nbr_vnd,
      item_cd_qte, vq_qte_eff_dt, vq_qte_dt;
description: Create ic_item_vnd_lead_tm narrative: >
      TODO describe consequence of using the quote expiration date, vq_qte_exp_dt rather than the
      quote of quotation or the effective date of quotation.
```

3.5.4 Assumptions

The most recent vendor quote for lead times will be used.

If multiple vendor quotes exist for the same quote date, the maximum lead time will be used.

Full historical vendor quotes are useful to see trends in cost and lead time.

3.5.5 Issues

Vendor on-time performance.

TODO flesh out

3.6 Requisition

]How and why to create a requisition

3.6.1 Instructions

1. Look at the report section of the portal
2. Review the information
3. Fill out the checklist
4. Simulate
5. Create the requisition
6. Proper quantity for ABC?

3.6.2 Gather Information

- Lead Times
- Unit Costs
- Optimal Replenishment Quantities
- Approved Manufacturers

Requisition Checklist

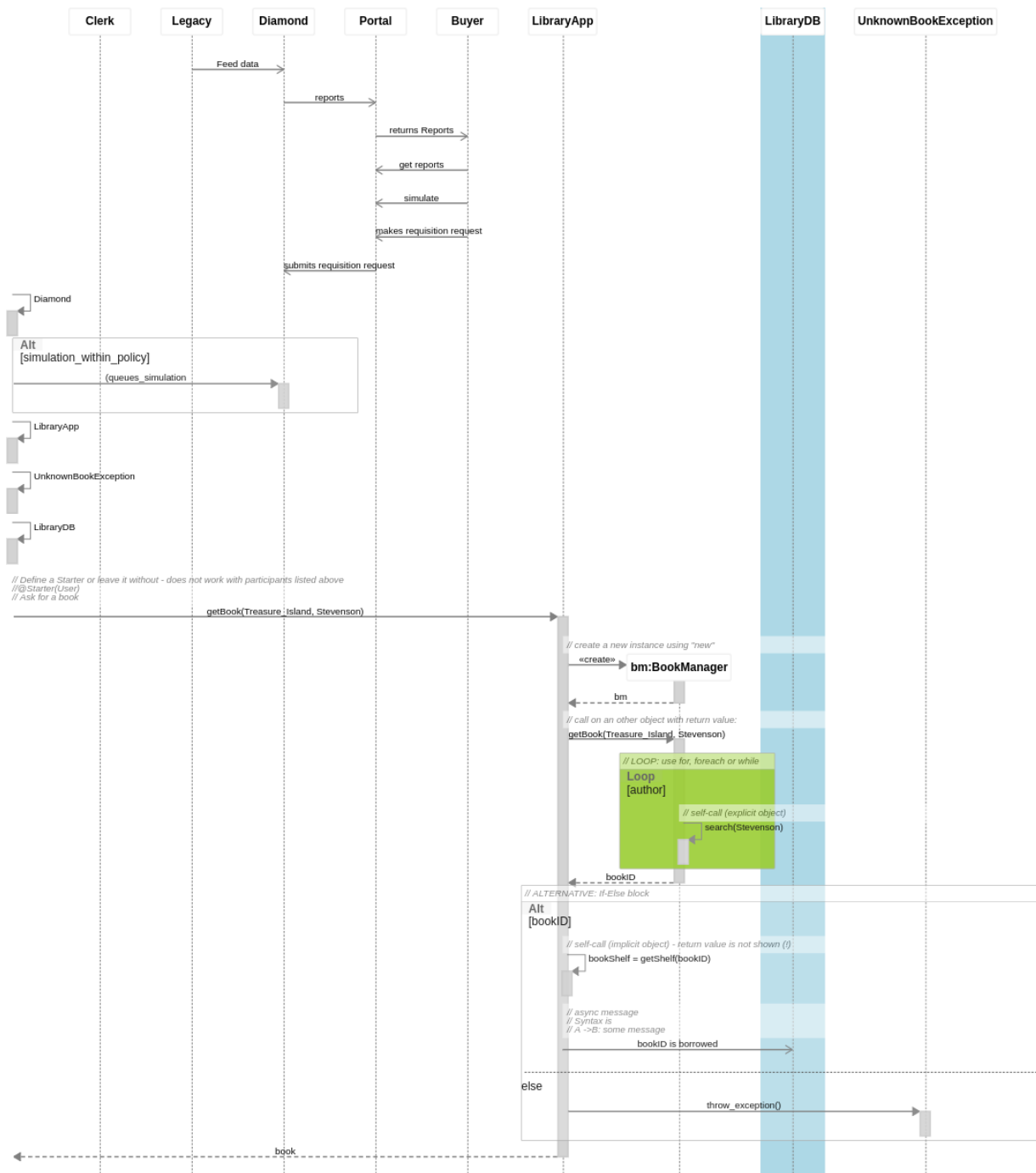
Intrinsic Information

Extrinsic Information

Simulate

DOCTHIS

Sequence Diagram



1. What are the requisition review requirements?

- When is a requisition subject to review?
- What are the needs additional work conditions?
 - Need more vendor quotes
 - Need work on equivalent parts

- Incorrect buy quantity
- Get existing inventory certified.

3.6.3 Out of Scope

Lead times can vary drastically based on

- vendor
- material shortages
- new product introduction
- product recall MRO (Maintenance, Repair and Overhaul)Definition

The elapsed time, usually measured in weeks between when a product is ordered and received.

Usually not considered

- Recieving time
- Inspection Time
- Intra-facility transfer time
- These are consider *availability times*

Typically in DRP Planning

- There is only one lead time
- This lead time is fairly consistent
- Costs due not vary based on lead time.

3.6.4 In aerospace

3.6.5 Source of Lead Time

vendor quotes

Take the lead time from the maximum quote expiration date

Summarized Lead Times should include

- Vendor Code
- Vendor type (Manufacturer, Distibutor, intra-company
- Vendor quote beginning and ending effective date
- Date of request for quote

Lead time details should include:

- Historical lead times

Lead time projections

Factors that can effect lead time, Lead times can vary drastically based on

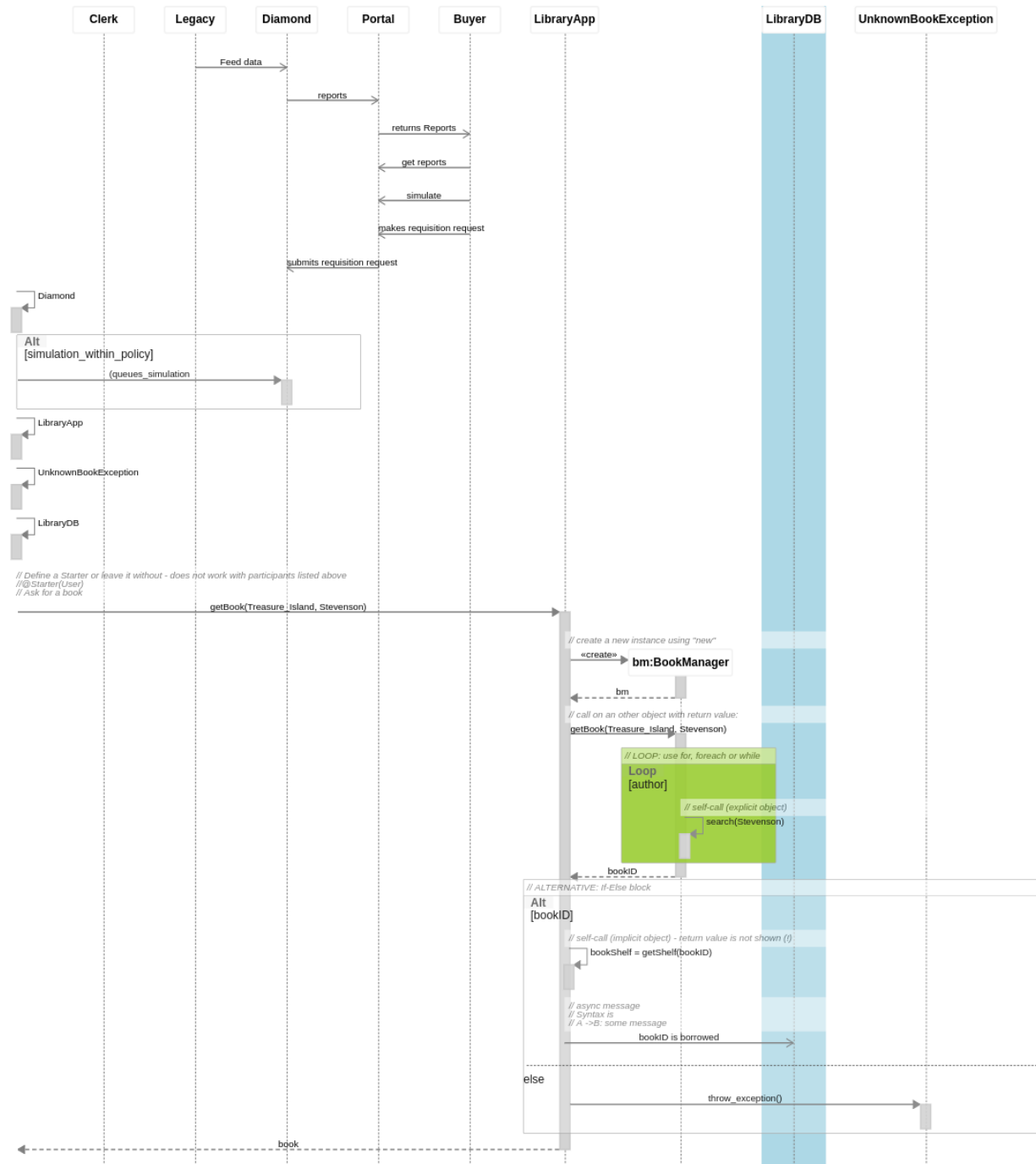
- vendor
- Some vendors will stock
- Some manufacturers will build to stock
- Some manufactureres will build only on demand, see Cost per Unit
- material shortages
- new product introduction
- product recall MRO (Maintenance, Repair and Overhaul)

3.6.6 Instructions

1. Look at the report section of the portal
2. Review the information
3. Fill out the checklist
4. Create the requisition

Requisition Checklist

3.6.7 Sequence Diagram



Intrinsic Information

Extrinsic Information

Gather all information, it should all be available in the portal

3.6.8 Related articles