

# Definition of roles and business capabilities of CERN Stores

## Recommendations

May, 16<sup>th</sup> 2023



# Agenda

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1

Key findings looking into current operation

2

Recommendations

3

Project prioritization and draft roll-out plan

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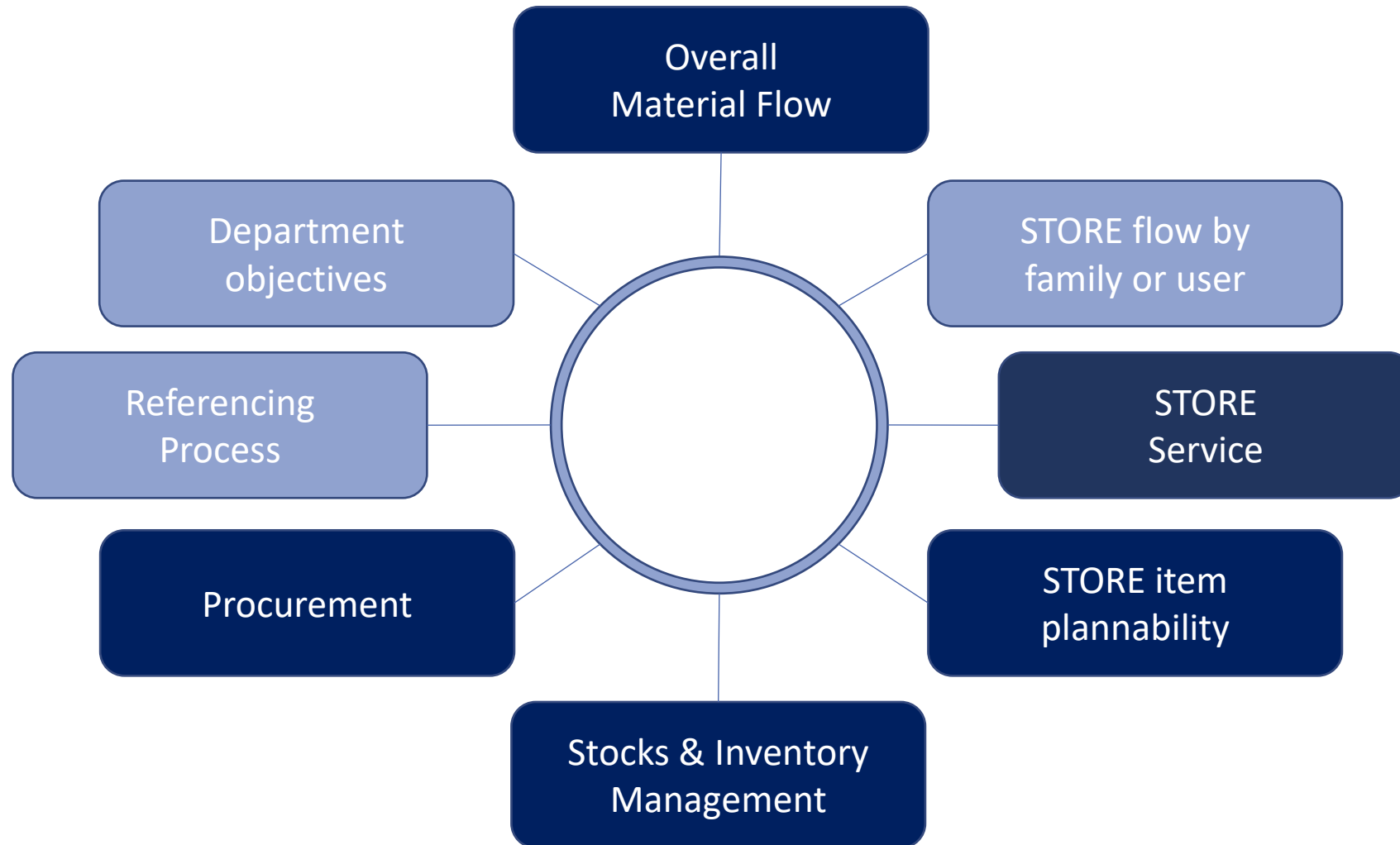


An aerial photograph of a port area, showing a large ship docked at a pier and numerous colorful shipping containers stacked in rows. The image is partially obscured by a white semi-transparent overlay that contains the text.

# 1. Key findings looking into current operation

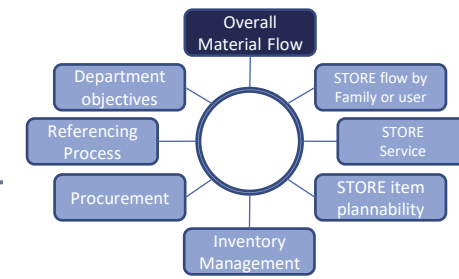
# Understanding the current situation

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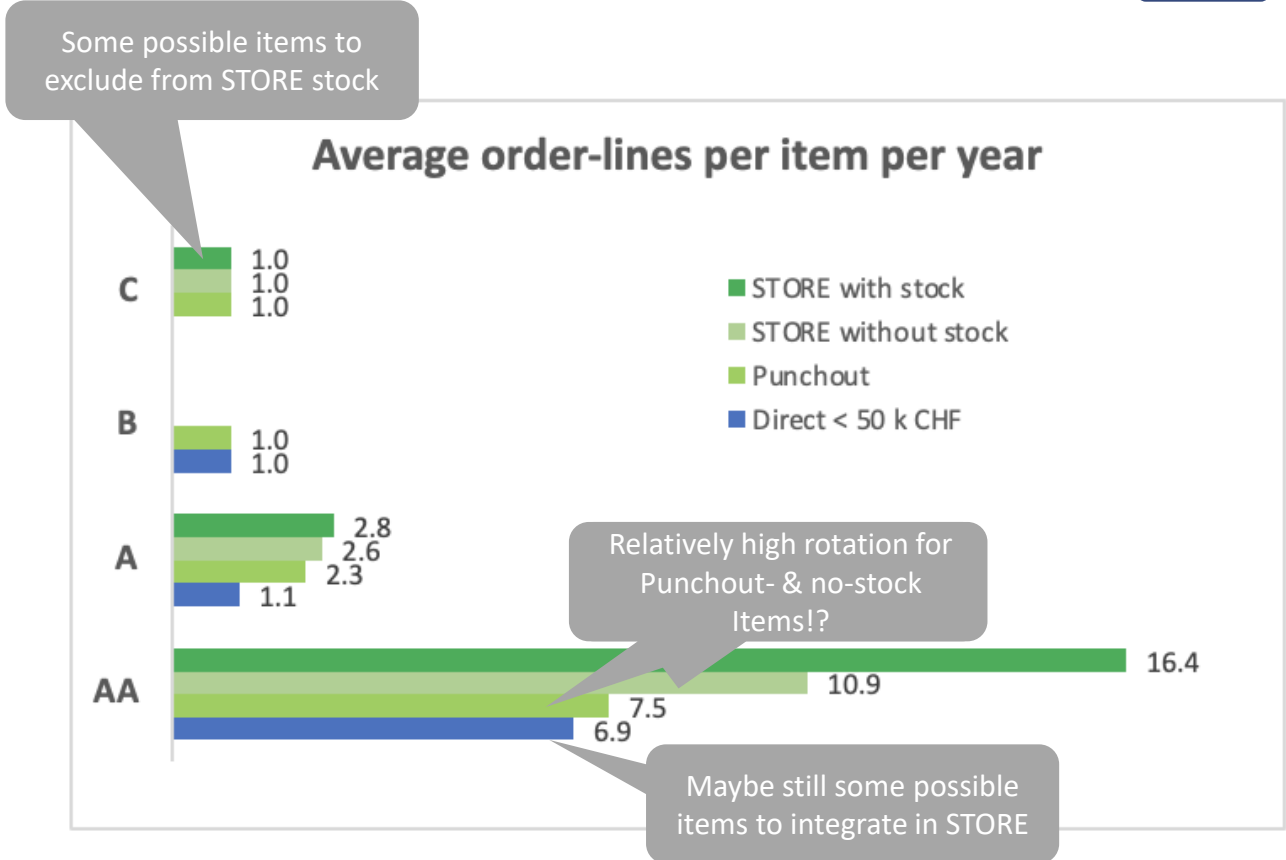


# All channels: The ABC curve is flat (80% of lines by 57% of items) with a long tail of B & C items which are usually by-passing The STORE

Data extraction: One year movements (beginning Dec. 21 to end Nov. 22); Inventory snapshot: 25.22.2022



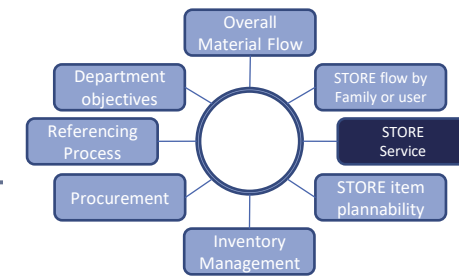
	Items (active)	Orderlines p.a.	OL/ item
Direct < 50 k CHF	25'116	30'483	1.2
Punchout	42'379	75'230	1.8
Store w.o. stock	1'648	4'552	2.8
Store w/ stock	6'358	52'247	8.2
<b>Total</b>	<b>75'501</b>	<b>162'512</b>	<b>2.2</b>



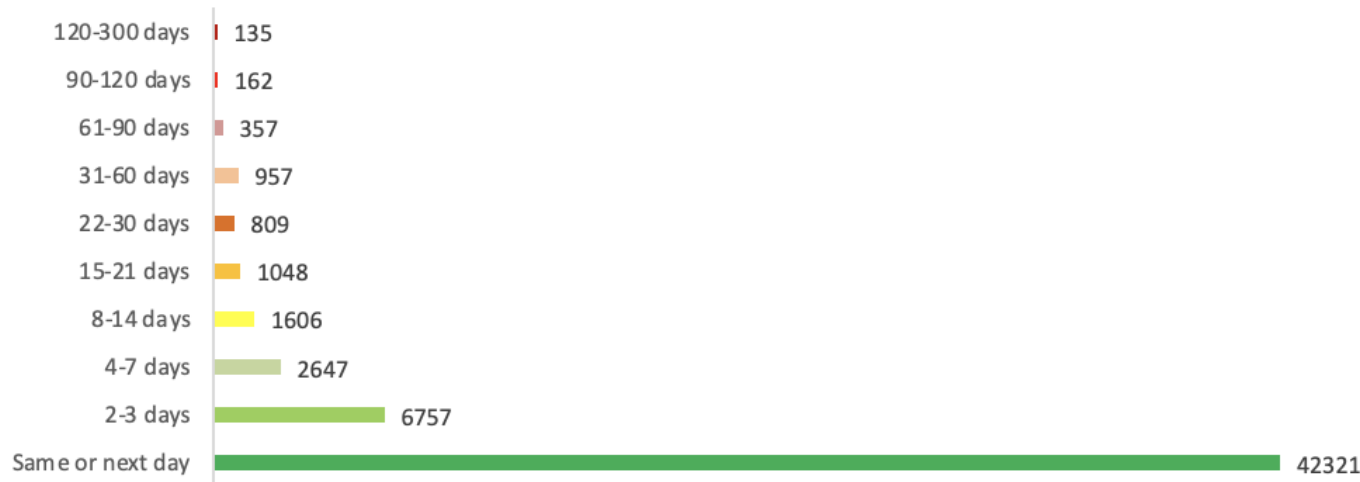


# Only 74% of order-lines are delivered same or next day. For 94% of order-lines are delivered within two weeks.

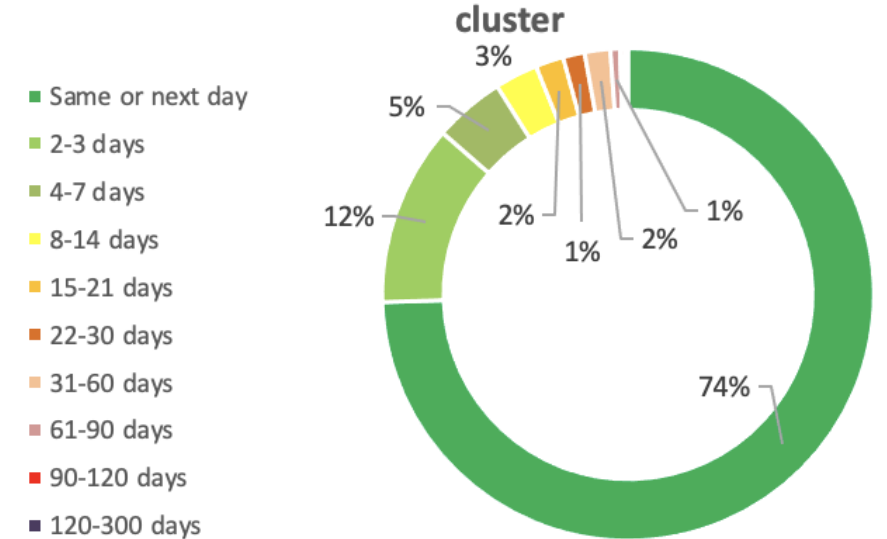
Data extraction: One year movements (beginning Dec. 21 to end Nov. 22); Inventory snapshot: 25.22.2022  
Observed delivery lead time includes weekend days. Delivery policy for stock items is defined as "next weekday delivery".



**Delivery & preparation lines by delivery lead-time cluster**



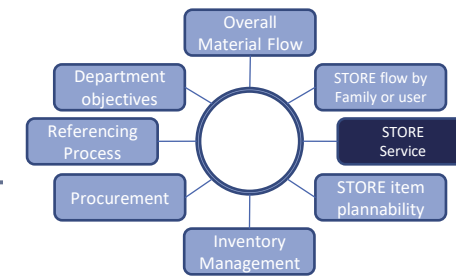
**Percentage of order-lines by delivery lead-time cluster**



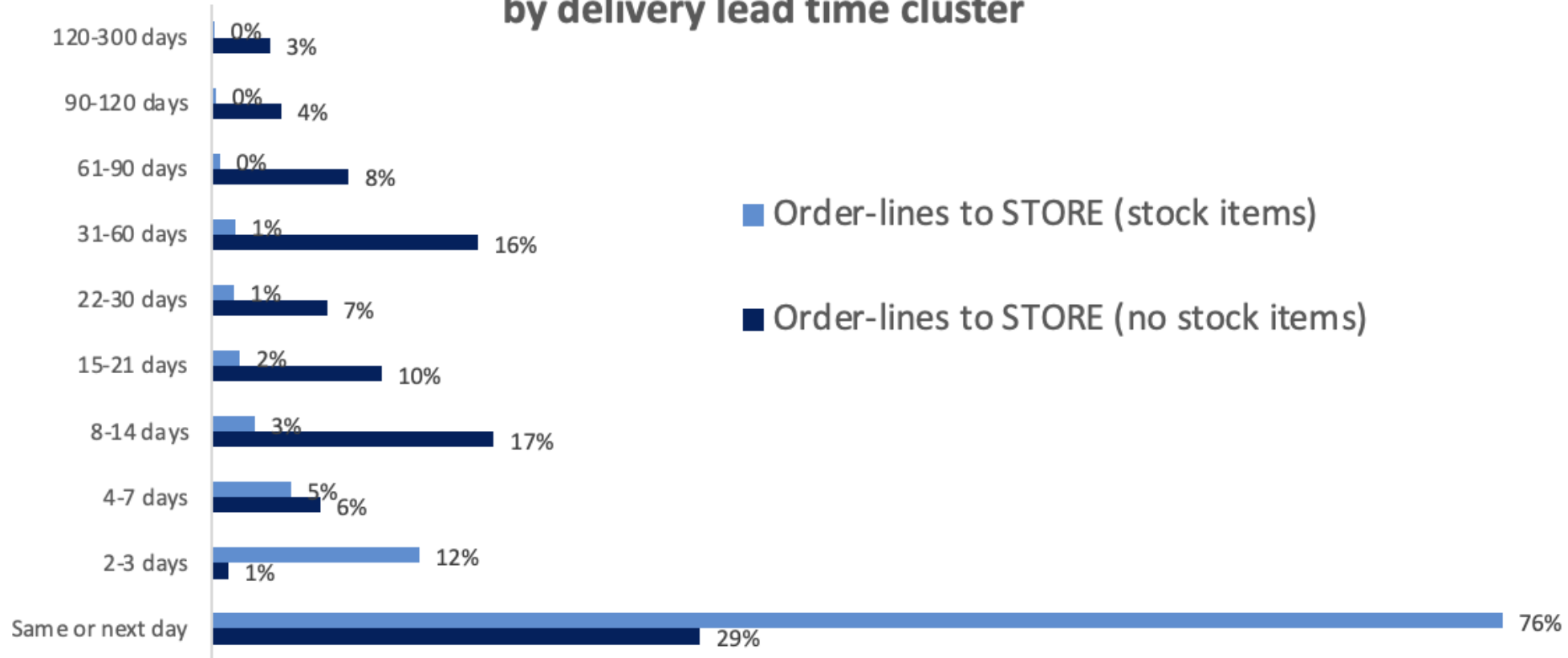
**Average delivery lead time for catalogue items to the users is 4.2 days over all delivery & preparation lines.**

# The average delivery lead time from the STORE to the users is 3.6 days for stock-items and 28.2 days non-stock-items.

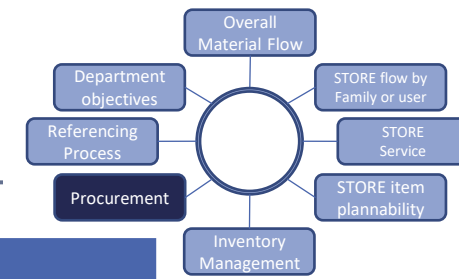
Data extraction: One year movements (beginning Dec. 21 to end Nov. 22); Inventory snapshot: 25.22.2022



## Percentage of delivery/ preparation lines by delivery lead time cluster



# Procurement Meetings: Main Points



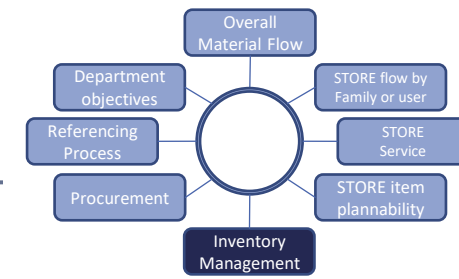
	STORE Procurement Team	Direct Procurement Team < 50000 CHF
Main focus	Balancing countries & procurement rule compliance	Balancing countries & procurement rule compliance
User level	STORE = user User requested to support request with supplier-offer (sometimes with Market Survey and Invitation to Tender)	CERN departments = user User requested to support request with supplier-offer
Secondary focus areas	<ul style="list-style-type: none"> <li>• Support Referencing Process</li> <li>• Establish contracts for STORE items (or negotiate that proposed price and terms will be maintained)</li> <li>• Establish new punchout catalogues with suppliers (discount % on standard prices, no add end-of-year discount)</li> <li>• Approval of replenishment orders (with or without contract)</li> <li>• Organise e-tenders and negotiate prices</li> <li>• Propose selected supplier based on Procurement rules</li> </ul>	<ul style="list-style-type: none"> <li>• Correct user supplier proposals (address change, supplier non-existing, ...)</li> <li>• Identify items which are repeatedly bought directly for potential inclusion in STORE catalogue =&gt; identification of 10-15 supplier p.a. with items to potentially include into STORE</li> </ul>

## Procurement compliance:

- Right number of offers, negotiation effort and approval level depending on purchase value,
- correct/ acceptable commercial terms in supplier offer,
- purchasing value in alignment with department budget situation, ...



# Inventory Management closely linked to Contract availability



Data extraction: One year movements (beginning Dec. 21 to end Nov. 22); Inventory snapshot: 25.22.2022

Analysis active STORE items:

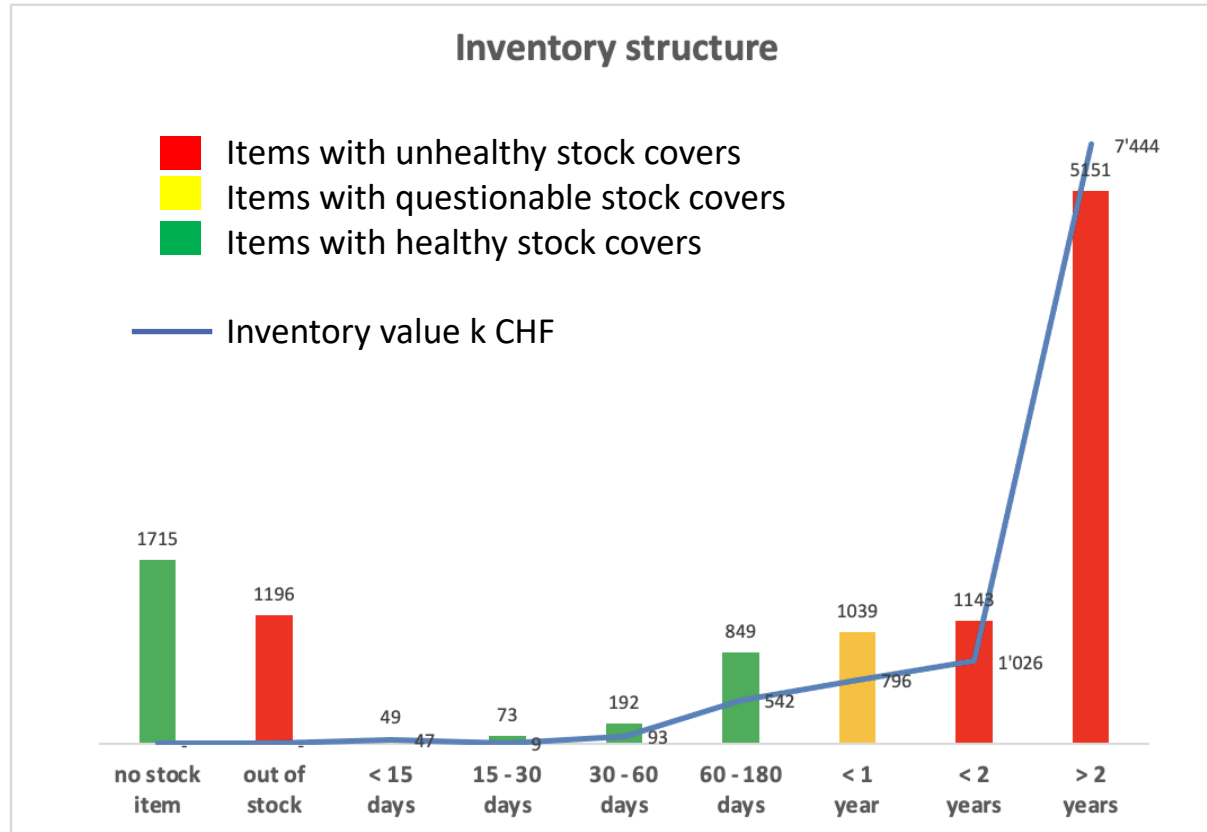
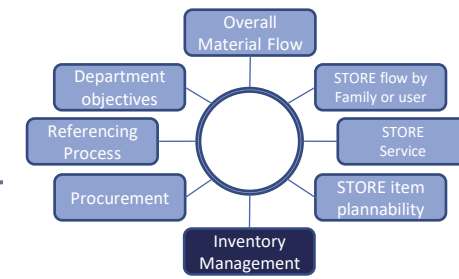
	Items			Order-lines		
	with stock	no stock	total	with stock	no stock	total
with contract	1'086	105	1'191 <b>18%</b>	9'299	315	9'614 <b>19%</b>
without contract	5'184	299	5'483 <b>82%</b>	40'031	1'461	41'492 <b>81%</b>
Total	6'270	404	6'674	49'330	1'776	51'106

Inventory Management current situation:

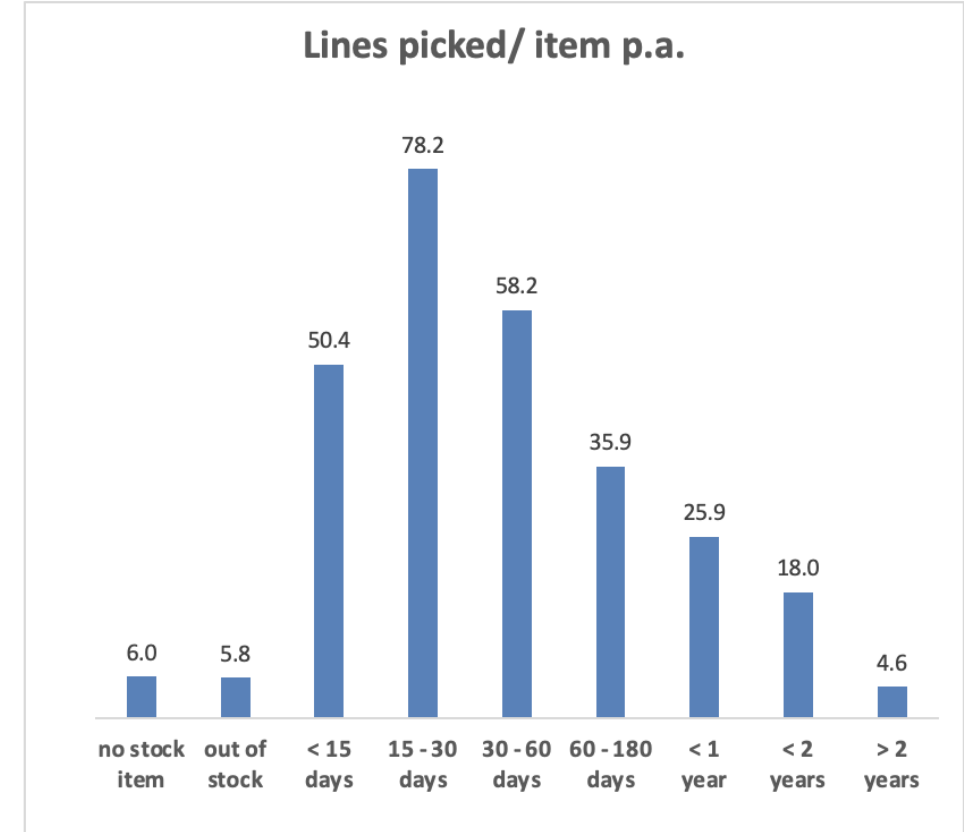
- Inventory Managers involved in re-tendering due to lack of a contract base to allow simple call-off, retendering taking from 1 months to 6 months
- Contact set-up takes 6 months to 1 year.  
Q: Could time-lines be shortened using on “Letter of Intend”?
- As a consequence Inventory Managers do not spend sufficient time on analysing and optimizing stock management parameters

# Over 65 % of items and the value stored in STORE are at an unhealthy inventory level (either out-of-stock or very over stocked)

Data extraction: One year movements (beginning Dec. 21 to end Nov. 22); Inventory snapshot: 25.22.2022



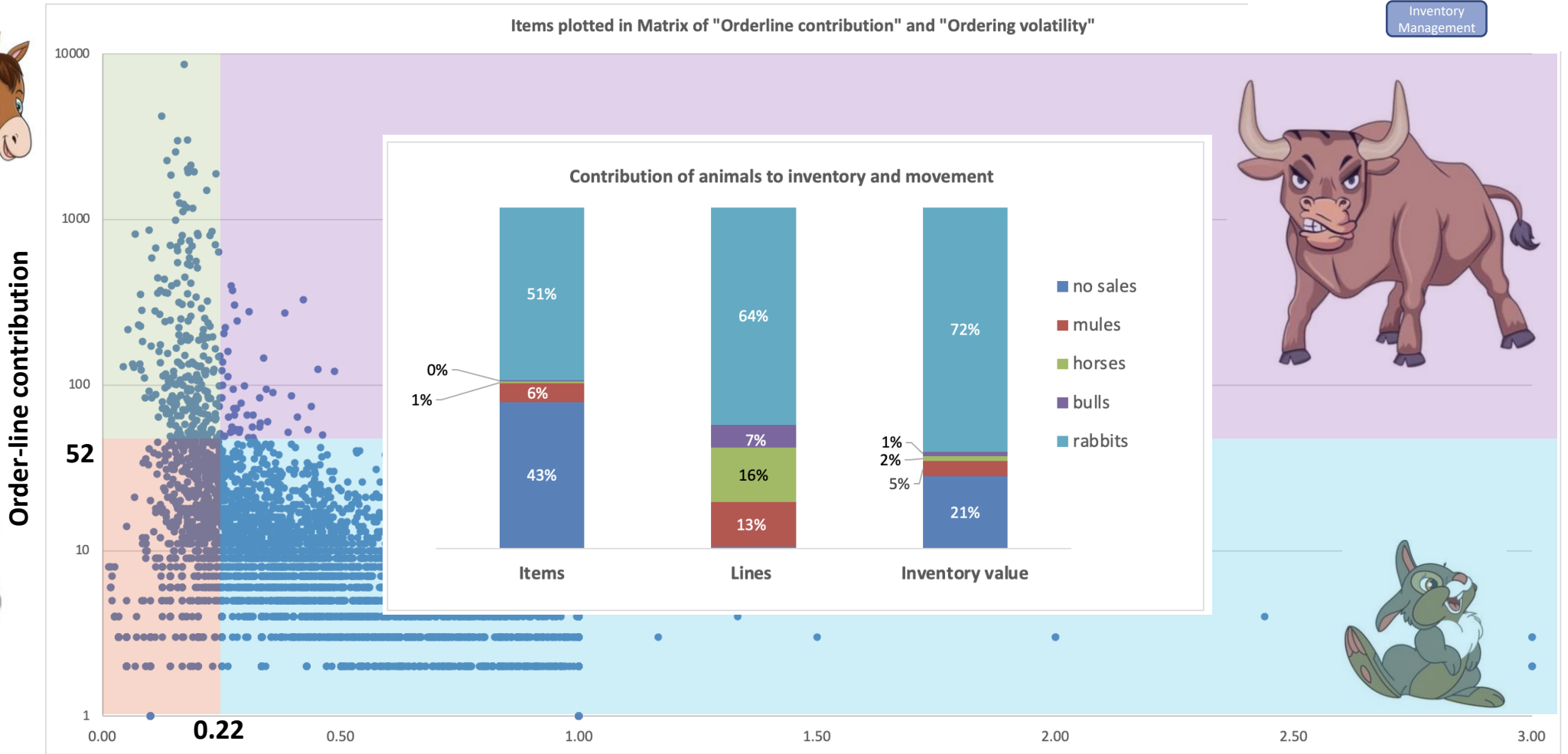
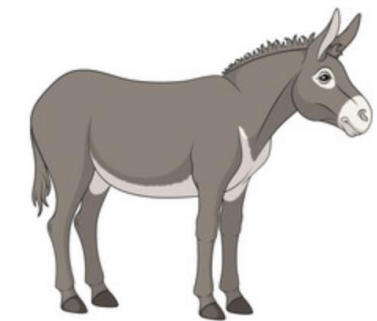
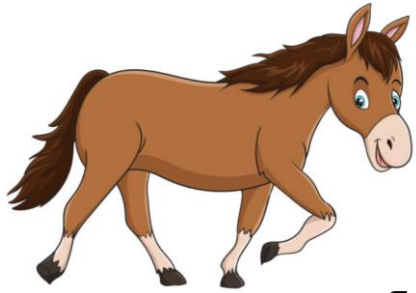
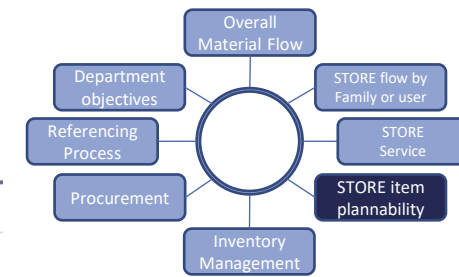
Clusters: Inventory cover in days



Clusters: Inventory cover in days

# STORE only: 7% of the items can be classified as horses & mules. They make 7% of the inventory even so they should be plannable.

Data extraction: One year movements (beginning Dec. 21 to end Nov. 22); Inventory snapshot: 25.22.2022



**Ordering volatility indicator**  
 = (difference between max and min quantity by month \* 1 / number of month ordered during the year)

## 2. Recommendations



# First draft Recommendations deriving from the analysis

## Operations Management

### Define a Goal Alignment Management System for the One Supply Team

*KPI cascading and target setting, Continuous Improvement, alignment meeting at unit and whole team level*

## Organisational adaptations

### Establish Planning routine

- Connect STORE to CERN maintenance/ project planning
- Planning about 200 consumable items, which represent +/- 20% of order-lines

### Review roles & responsibilities and team interfaces

- Catalogue Management
- Strategic Supply Route decision
- Procurement activities

### Create One Supply Team for consumables and spares

*(merge Procurement team into STORE, keep functional management with Procurement)*

### External integration

- Explore new collaboration possibilities with suppliers: VMI, consignment stock
- Use supplier data for opportunity evaluation

## Strategic decisions

### Decision making about Supply Route ...

- More items in online catalogue (STORE or punchout)
- Less items in stock (only: critical/ strategic, long lead time and plannable items)
- Professionalise decision making (clear criteria & expert traffic management)

### Redefine Service Commitment

- Next day only for stock items
- Non-stock items based on supplier lead time
- Track order-line-service-KPI to become consistent with policy
- Condition: Valid contracts for all STORE items

### Extend STORE Team to manage all site supplies & stocks

- Entitle STORE Team to manage user stocks
- STORE Team to decide priorities
- STORE Team to create transparency
- Stock holding service for user stocks in STORE

## Data foundation

### Ensure completeness and consistency of item data

*(Consistent sales and inventory units, representation of all packaging levels, ...)*

### Create additional item characteristics

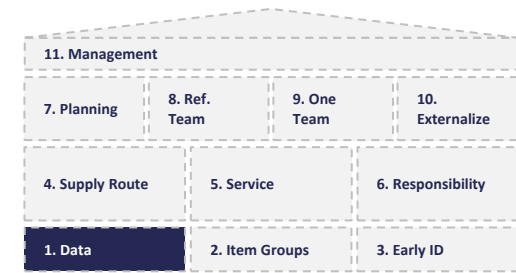
- Spare parts versus consumables
- Criticality/ strategic vs. standard items
- Plannable vs. non plannable items

### Central identification and registration of direct-supply-items

*(Ensure recognition and demand quantification for later supply route review)*

# 1. Recommendations Data Management

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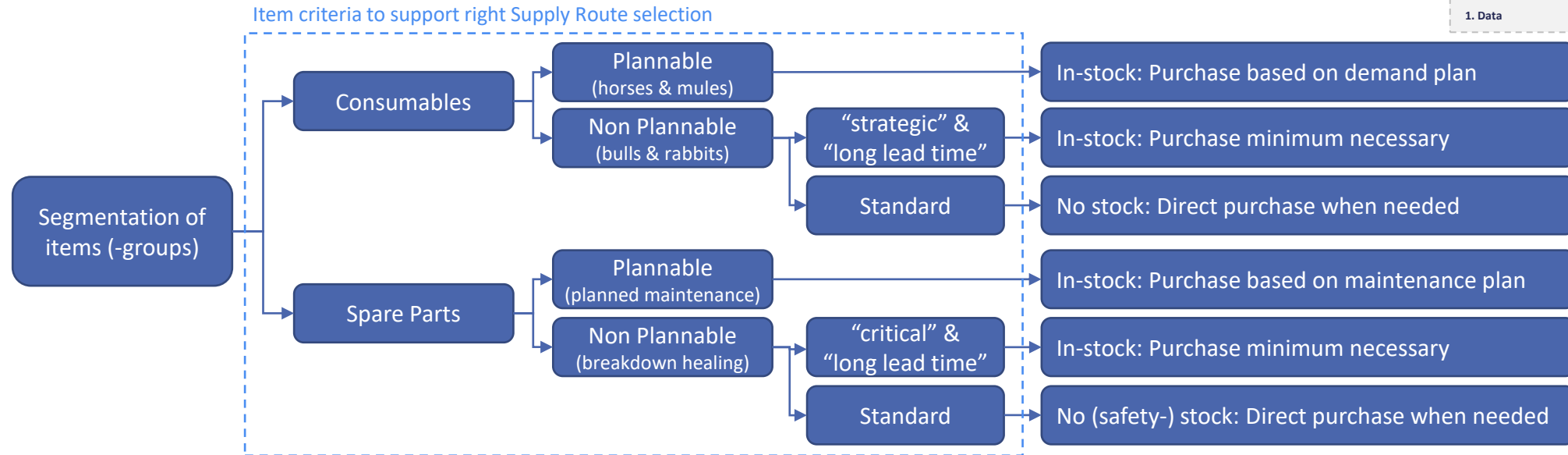


## Observations regarding data consistency gaps

- Only two packaging levels in system: “sales unit” and “inventory unit”, but in reality often three levels of packaging  
Recommendation:
  - Adding the possibility of a third intermediate packaging level
  - Expressing sales and inventory in single units
  - Rounding of requests and fulfilment to next available packaging unit
- Conversion of inventory-unit to sales-unit not always consistent
- Different data files by Supply Route, no common article ID across supply routes
- Supply Route STORE item with or without stock not easily identifiable
- Replacement items not identifiable leading to disrupted consumption history

## 2. Add Item Characteristics to support Supply Route Decision

11. Management			
7. Planning	8. Ref. Team	9. One Team	10. Externalize
4. Supply Route		5. Service	6. Responsibility
1. Data	2. Item Groups	3. Early ID	



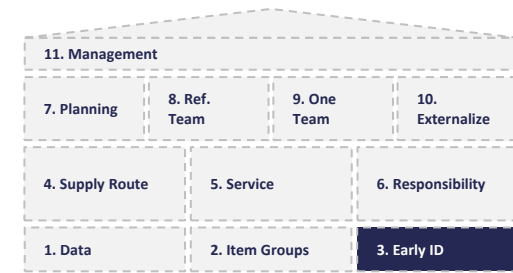
### Additional item characteristics help to select the right Supply Route:

- Spare Parts: Stock holding at STORE optional (stock holding directly next to equipment)
- Plannable Consumables: Stock holding at STORE
- Unplannable items: Ideally no stock on site, only for strategic / critical items

**Information about item families to be maintained (cables, raw materials, PPE, ...)**

### 3. Identification of direct-supply-items as pre-catalogue item

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#### Central identification & registration of direct-supply-items

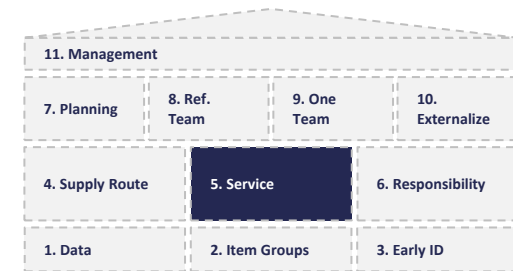
- Ensure recognition of item already when ordered by user from supplier
- Register item as pre-catalogue item following a specific standard:
  - Manufacturer code
  - Supplier code
  - “Short description” write up in line with a standard for this technical family
- Keep record of demand for later supply route review







## 5. The STORE's Service has to be consistently as committed



### For a high level of Customer Satisfaction (with reasonable stocks) ...

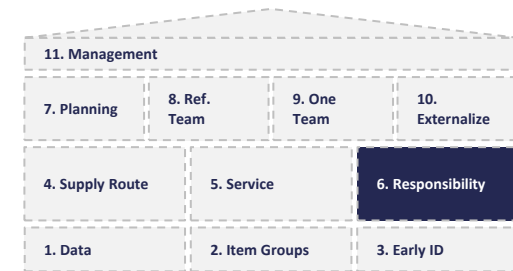
- The STORE has to communicate an achievable Service Commitment
  - Next day delivery for in-stock-items only
  - No-stock-items to be delivered according to supplies lead time
- Order status information has to be reliable and available proactively to the users
- Weekly, monthly, annual Service results to be measured and communicated
- Service target has to be set at a level to gain user's full trust in the STORE's service\*
- Collaboration with Procurement has to support the service target:
  - Active contracts (or "letters of intend") behind all STORE items (today < 20%)
  - Defined escalation process in case of resource shortages



\* To gain customer trust in the delivery service at least 95% of the order-lines should be delivered "On Time In Full", full confidence is usually reached at 98%

## 6. Extended Responsibility of Supply Team to Full Site

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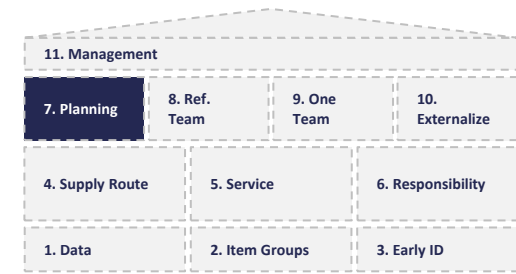
### Current situation:

**No full site Supply Management leading to huge untransparent stocks at user departments across CERN site**

### Proposal:

- Make STORE Supply Chain responsible for all site stocks, allowing the STORE Management to decide in which local department stocks they would like to get involved
- Gain transparency
  - Offer to host department stocks within STORE facilities (needs a WMS with client management capabilities)
  - Offer common system to register decentralized stocks
  - Perform inventory audits at user departments
- Extend Inventory Management to user stocks gaining in inventory reduction

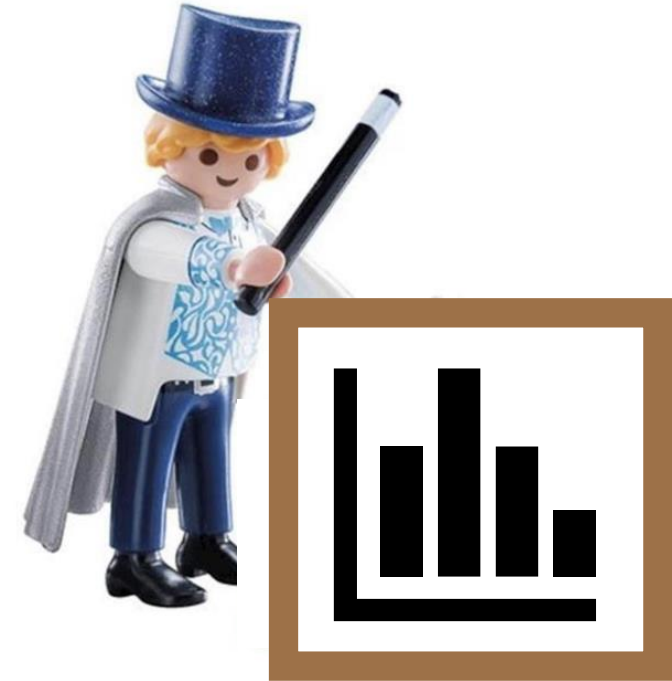
# 7. Ensure availability and use of Planning Information



**Connect STORE to overall CERN planning for maintenance and project roll outs**

**Establish Planning Routine for selected items to improve Service and/or Inventory Levels**

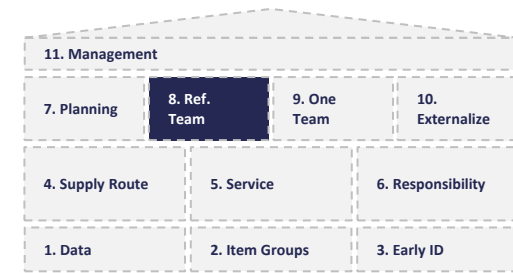
- For approx. 200 plannable items (mainly “horses” plus some “mules”)
- Causing about +/- 20% of STORE order-lines
- Routine as part of the Inventory Management Process of these items





## 8. Review roles & responsibilities and team interfaces

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The current “Referencing Team” is engaged in a set of activities with require very different skill sets:



**Catalogue Management:** Data management and workflow administration requiring strong process adherence and compliance

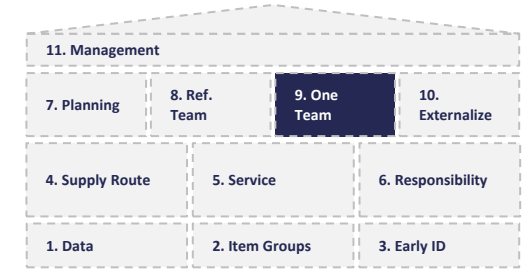


**Procurement:** “Market Survey” to check available supplier basis and write-up of “Invitations to Tender” requiring openness, curiosity and ad hoc self-organisation



**Supply Strategy:** Decisions about Supply Route by item requiring strong data analysis capabilities (today partially done as well in Replenishment Team)

# 9. Recommendation to Create One Supply Team



Catalogue Management	Supply Chain Strategy	Procurement	STORE Fulfillment
<p><b>Catalogue Functions:</b></p> <ul style="list-style-type: none"> <li>Clustering portfolio (consumables/spares; plannable y/n; critical y/n)</li> <li>Defining transparency needs (lot, serial number, expiry date, ...)</li> <li>Data Management &amp; Master Data for catalogue portfolio</li> <li>Full life-cycle responsibility (de-listing, de-stocking)</li> <li>Succession of de-listed items</li> </ul> <p><b>Working elements:</b></p> <ul style="list-style-type: none"> <li>Well established connection with technical experts</li> <li>Data driven decision making</li> </ul>	<p><b>Coordination Functions:</b></p> <ul style="list-style-type: none"> <li>Strategic rules to chose supply route                             <ul style="list-style-type: none"> <li>in/out catalogue</li> <li>with/ w.o. stock (stock only fast movers and critical items)</li> </ul> </li> <li>Performance tracking and Continuous Improvement (service, user engagement, portfolio optimization, supply route opt., inventory reduction, cost optimization)</li> </ul> <p><b>Working elements:</b></p> <ul style="list-style-type: none"> <li>Data-Mining</li> <li>Cascaded KPIs and target setting to facilitate alignment</li> <li>Structured review meetings within departments and across departments</li> </ul>	<p><b>Functions:</b></p> <ul style="list-style-type: none"> <li>Procurement of catalogue items always based on contract to enable seamless replenishment</li> <li>Supplier for catalogue items managed to service performance</li> <li>Procurement support for direct procurement with focus on recognition of item</li> </ul> <p><b>Working elements:</b></p> <ul style="list-style-type: none"> <li>Country of origin balancing and tender process as today</li> <li>Still extending punchout catalogues</li> <li>Additionally more structured supplier management support</li> </ul>	<p><b>Functions:</b></p> <ul style="list-style-type: none"> <li>Demand Planning of plannable items (in connection with the user-community)</li> <li>Inventory management function</li> <li>Transparent service commitments and tracking</li> <li>Customer service enabling transparency on order status</li> </ul> <p><b>Working elements:</b></p> <ul style="list-style-type: none"> <li>Inventory management settings and system proposals for replenishment</li> <li>No procurement involvement: Supplier contract expiration triggers Procurement action until then automatic PO release</li> </ul>

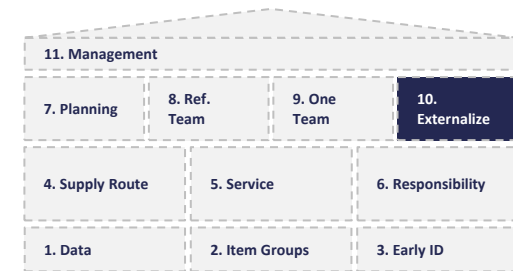


## One Supply Team

- Supply Strategy benefits from its proximity to the STORE
- Catalogue Management (including Data Management) is close to Procurement, but manages workflows closely interacting with Supply Strategist as well
- Merging Procurement for Spares & Consumables with the STORE team to enable joint management of set of team objectives
- Keep Procurement Functional Management with Procurement working in a Matrix set-up

# 10. Increase Collaboration and Benefit from External Support

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## External partners, like Product Suppliers, could bring additional benefits to the CERN Supply

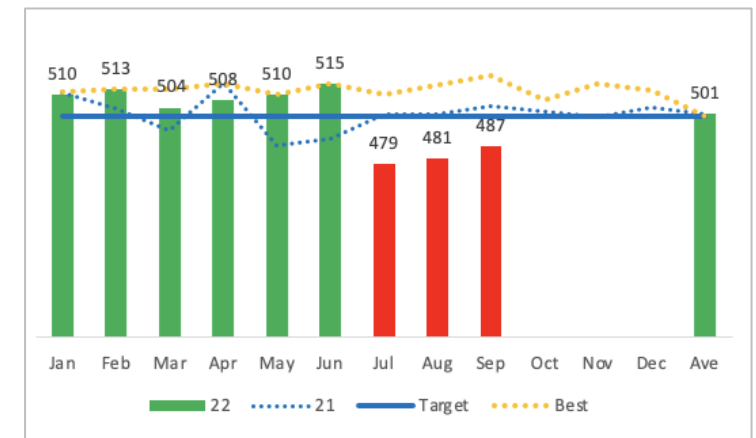
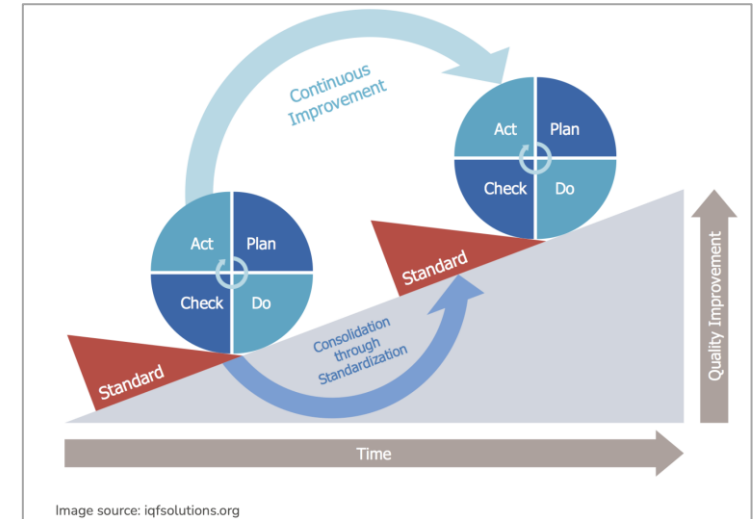
- Engagement of suppliers in making supply data more consistently
- Exploring possibilities to engage suppliers in stock holding for CERN
  - VMI
  - Consignment stock

# 11. Create Management System for Goal Alignment

11. Management			
7. Planning	8. Ref. Team	9. One Team	10. Externalize
4. Supply Route	5. Service	6. Responsibility	
1. Data	2. Item Groups	3. Early ID	

## Elements of a Goal Alignment Process

- Define and track a set of KPI reflecting the team's contribution to CERN success
- Setting targets for the KPI
- Establish Continuous Improvement
- Establish a set of Review Meetings
  - Daily small team reviews (operational)
  - Weekly full team reviews (operational)
  - Monthly full team reviews (tactical)



### 3. Project prioritization and draft roll-out plan



# Recommendations deriving from the analysis

## Operations Management

### 11 Define a Goal Alignment Management System for the One Supply Team

*KPI cascading and target setting, Continuous Improvement, alignment meeting at unit and whole team level*

## Organisational adaptations

### 7 Establish Planning routine

- Connect STORE to CERN maintenance/ project planning
- Planning about 200 consumable items, which represent +/- 20% of order-lines

### 8 Review roles & responsibilities and team interfaces

- Catalogue Management
- Strategic Supply Route decision
- Procurement activities

### 9 Create One Supply Team for consumables and spares

*(merge Procurement team into STORE, keep functional management with Procurement)*

### 10.1/2 Supplier integration VMI, consignment stock

### 10.3 Supplier integration: data exchange

## Strategic decisions

### 4 Supply Route Decision

- More items in online catalogue (STORE or punchout)
- Less items in stock (only: critical/ strategic, long lead time and plannable items)
- Professionalise decision making (clear criteria & expert traffic management)

### 5 Redefine Service Commitment

- Next day only for stock items
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- Condition: Valid contracts for all STORE items

### 6 Extend STORE Team to manage all site supplies & stocks

- Entitle STORE Team to manage user stocks
- STORE Team to decide priorities
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- Stock holding service for user stocks in STORE

## Data foundation

### 1 Ensure completeness and consistency of item data

*(Consistent sales and inventory units, representation of all packaging levels, ...)*

### 2 Create additional item characteristics

- Spare parts versus consumables
- Criticality/ strategic vs. standard items
- Plannable vs. non plannable items

### 3 Central identification and registration of direct-supply-items

*(Ensure recognition and demand quantification for later supply route review)*

# Recommended Initiatives for Supply Chain Optimization



Colour code by topic

Supply Route

Inventory

Organisation

Service

Main Initiative

# Benefits connected to single initiatives

## Estimate of impact on service, cost and inventories

Initiative Text (short)		Benefits - quantifiable					
		Enhanced customer satisfaction	Better Cost mngmnt		Improved Inventory mngmnt		Reduced waste
		KPI Service = OTIF (On Time In Full)	Handling cost	Procurement price	Capital in inventory	Storage cost	Inventory write-offs
		Increase %	Reduction %	Reduction %	Reduction %	Reduction %	Reduction %
1	Ensure completeness and consistency of item data	0.5%	0.2%		0.5%	0.3%	
2.1	Additional item parameter about item type	0.5%	0.2%		2.0%	1.0%	1.0%
2.2	Additional item parameter about item criticality	1.0%			2.0%	1.0%	1.0%
2.3	Additional item parameters planability	0.5%			1.0%	0.5%	0.5%
3	Early identification of direct-supply-items			0.1%			
4	Professional decision making about route				5.0%	2.5%	3.0%
5	Service committment based on available contracts	10.0%					
6	STORE team to manage all site inventories	0.5%	4.0%		8.0%	4.0%	5.0%
7	Planning routine based on cross-functional input	0.5%			1.0%	0.5%	1.0%
8	Roles & responsibilities Referencing Team	1.0%					
9	One supply team	2.5%	1.0%				
10.1	Benefits from external partners - VMI	1.0%			1.0%	0.5%	
10.2	Benefits from external partners - Consignment				3.0%	1.5%	1.0%
10.3	Benefits from external partners - Info						1.0%
11	Goal alignment	2.5%	1.0%		1.0%	0.5%	1.0%
		<b>20.5%</b>	<b>6.4%</b>	<b>0.1%</b>	<b>24.5%</b>	<b>12.3%</b>	<b>14.5%</b>

# Implementation effort by single initiative

## Evaluation of implementation complexity

Project Complexity Factors		Efforts "1" (very low) to "5" (very high)										
		Data volume	Process complexity	Change of roles	Change of paradigme	Investment	Involvement other dptm	Tool needs	System change	Impact on speed of operation	Implementaiion time	
Initiative Text (short)												
1	Ensure completeness and consistency of item data	3 review all STORE items one by one				1 just one off internal time	1 Technical (reduced)		1 new field(s)		1 easy, but many items	7
2.1	Additional item parameter about item type	3 review all STORE items one by one	1 new field to fill	1 Technical to support		1 just one off internal time	2 Technical		1 new field(s)		1 easy, but many items	10
2.2	Additional item parameter about item criticality	3 review all STORE items one by one	1 new field to fill	1 Technical to support		1 just one off internal time	2 Technical		1 new field(s)		1 easy, but many items	10
2.3	Additional item parameters planability	3 review all STORE items one by one	1 new field to fill	1 assessment		1 just one off internal time	2 Technical		1 new field(s)		1 easy, but many items	10
3	Early identification of direct-supply-items	2 review all new items	4 discussion for all new item	2 early involvement of STORE	2 early involvement of STORE	1 ongoing need of internal time	3 Procurement, users		2 process change in system	3 new process when raising item	2 new porocess	21
4	Professional decision making about route	2 review all STORE items formula	4 new process (automated)			2 extrenal time		3 Excel crunching parameters	2 new field(s) plus routines?	1 new check within catalogue mngmnt	2 new porocess	16
5	Service committment based on available contracts	5 review items & suppliers one by one	5 contracting to be shortened		5 change for Procurement	3 ongoing and one-off need of internal time	5 Procurement (heavily impacted)			5 contracting time currently too long	3 complete review of process & pardigm	31
6	STORE team to manage all site inventories	5 review all site items & locations	5 new management process	4 current role extended	5 users no longer alone in charge of stocks	3 int/external time, system invest	5 Many users	5 Software to view stocks on site	3 additional software(s) to connect?	1 coordination when ordering?	5 huge data & user unvers	41
7	Planning routine based on cross-functional input	1 review all plannable items	3 coordinate planning input	1 Technical to support	3 need to share data	1 ongoing need of internal time	2 Technical	3 Planning Excel?	1 minor changes?	1 planning before replenishment	2 new porocess	18
8	Roles & responsibilities Referencing Team			1 focus areas in Ref Team			2 Procurement				1 new set-up	4
9	One supply team			2 Procurement part of team	5 Procurement part of STORE team	1 just one off internal time	2 Procurement				3 new set-up	13
10.1	Benefits from external partners - VMI		2 VMI coordination	1 Supplier roles	1 no stock management	1 just one off internal time	1 Supplier		1 new field(s)		2 new set-up	9
10.2	Benefits from external partners - Consignment		2 Cons coordination	1 Supplier roles	2 no stock ownership	1 just one off internal time	2 Supplier, finance		1 new field(s)		2 new set-up	11
10.3	Benefits from external partners - Info		1 request supplier data		1 suppliers can help	1 ongoing need of internal time	1 Supplier				1 new process	5
11	Goal alignment		2 goal alignment routines		2 usefulness of goal alignment	1 ongoing need of internal time	1 Procurement	1 GA visualisation	1 new KPIs to track		2 continuous improvement	10
		27	31	15	26	19	31	12	15	11	29	

# Concepts to Evaluate Benefits versus Implementation Effort by Initiative

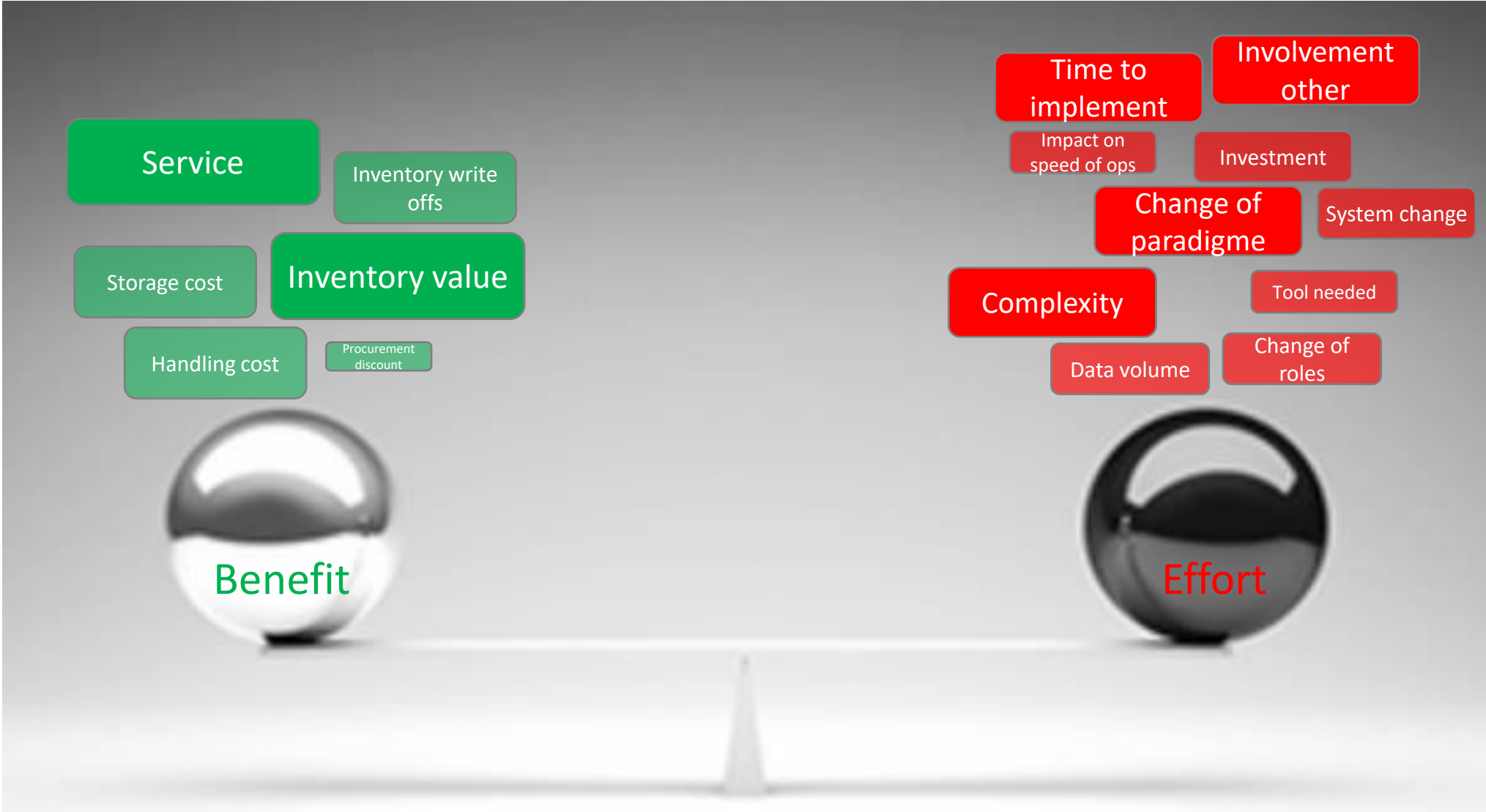
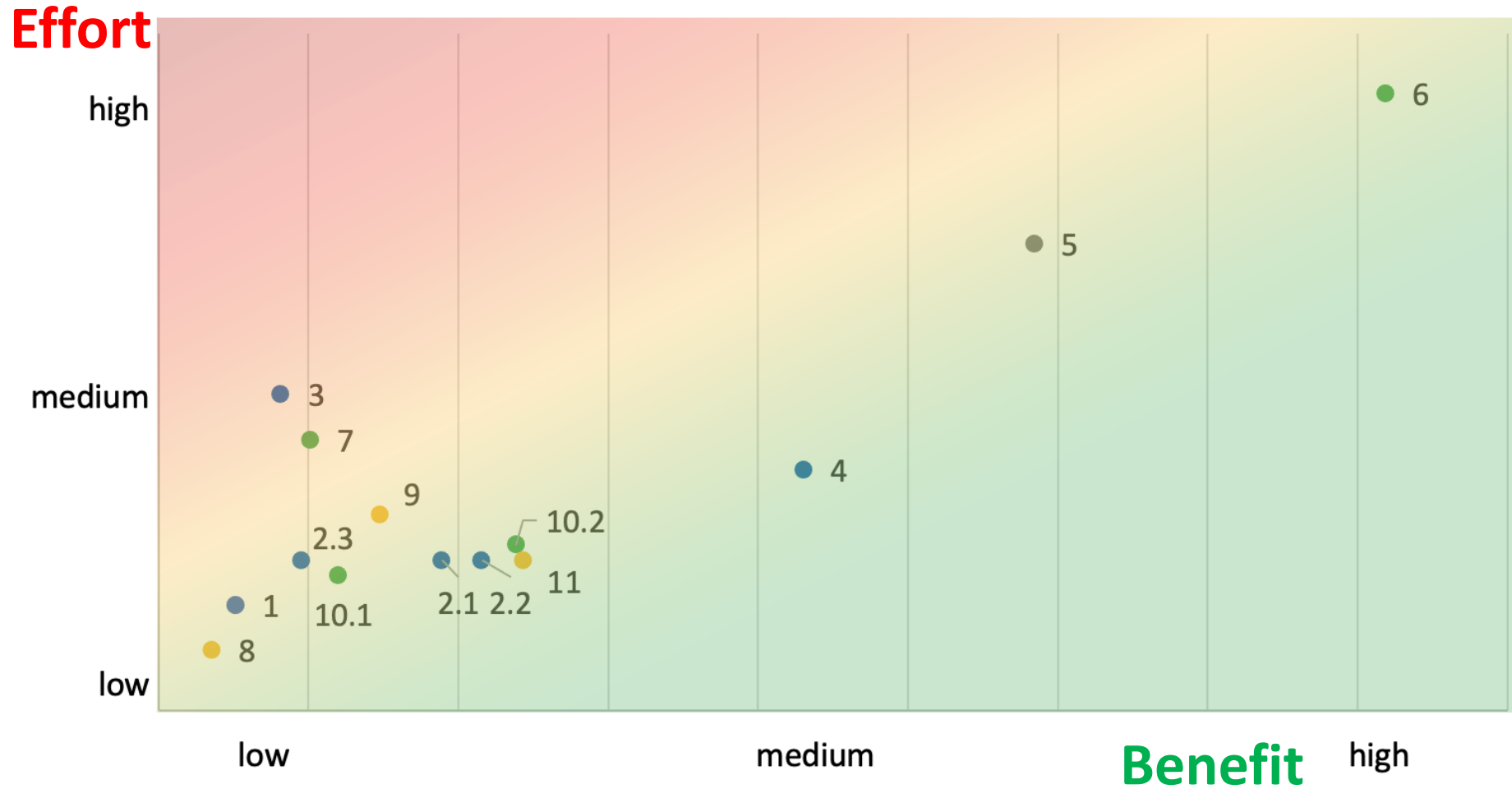


Image: Principles of design, Kwikkopy



# Initiative Positioning within a Effort-Benefit-Matrix



- 4 Route decision**
- 1 Data Consistency
- 2.1 Item type parameter
- 2.2 Criticality parameter
- 2.3 Planability parameter
- 3 Early identification
- 5 Accelerate contracting**
- 6 All CERN inventories**
- 7 Planning routine
- 10.1 VMI
- 10.2 Consignment stock
- 9 One supply team**
- 8 Redview R&R
- 11 Goal alignment

Colour code by topic

Supply Route

Inventory

Organisation

Service

Main Initiative



# Grouping of Initiative Packages

	Pick best supply route	Boost service	Extend inventory management	Implement right organisation
<b>Main initiative</b>	Professionalisation Supply Route Decision	Redefine Service Commitment based on more supplier contracts	Extend STORE Team to manage all site supplies & stocks	Create One Supply Team for consumables and spares
<b>1<sup>st</sup> tier support initiative = necessary</b>	<p>Ensure completeness and consistency of item data</p> <p>Create additional item characteristics</p>		Establish Planning routine	Goal Alignment Management System for the One Supply Team
<b>2<sup>nd</sup> tier support initiative = optional</b>	<p>Central identification and registration of direct-supply-items</p> <p>Supplier integration data exchange</p>		Supplier integration VMI, consignment stock	Review roles & responsibilities and team interfaces



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