

Process Modularity, Process Framework, and Supply Chain Responsiveness

Let's introduce ourselves

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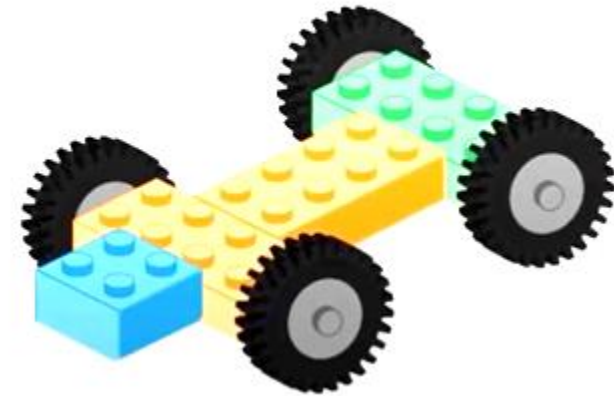
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Stop and switch: Process modularity

- » Change normal process to a process that suits better the change in context
Example: from standard to emergency process or an alternate standard process
- » Change just those parts of the process that need to change
- » Similar to changing LEGO pieces or modules in a car



Does it “work”?

- » MSF’s response to Covid-19
 - » 155 missions in 77 countries
 - » International supply shortages + transport complexity
 - » Existing activities + scale up (Covid-19) + new guidelines
 - » Our study:
 - » No increase in shortages
 - » Stable leadtimes

“no activity[...]was put on stand-by [or] was stopped because we did not have the material.”

“we really managed, and actually we managed pretty well”

- » Secret: Process modularity



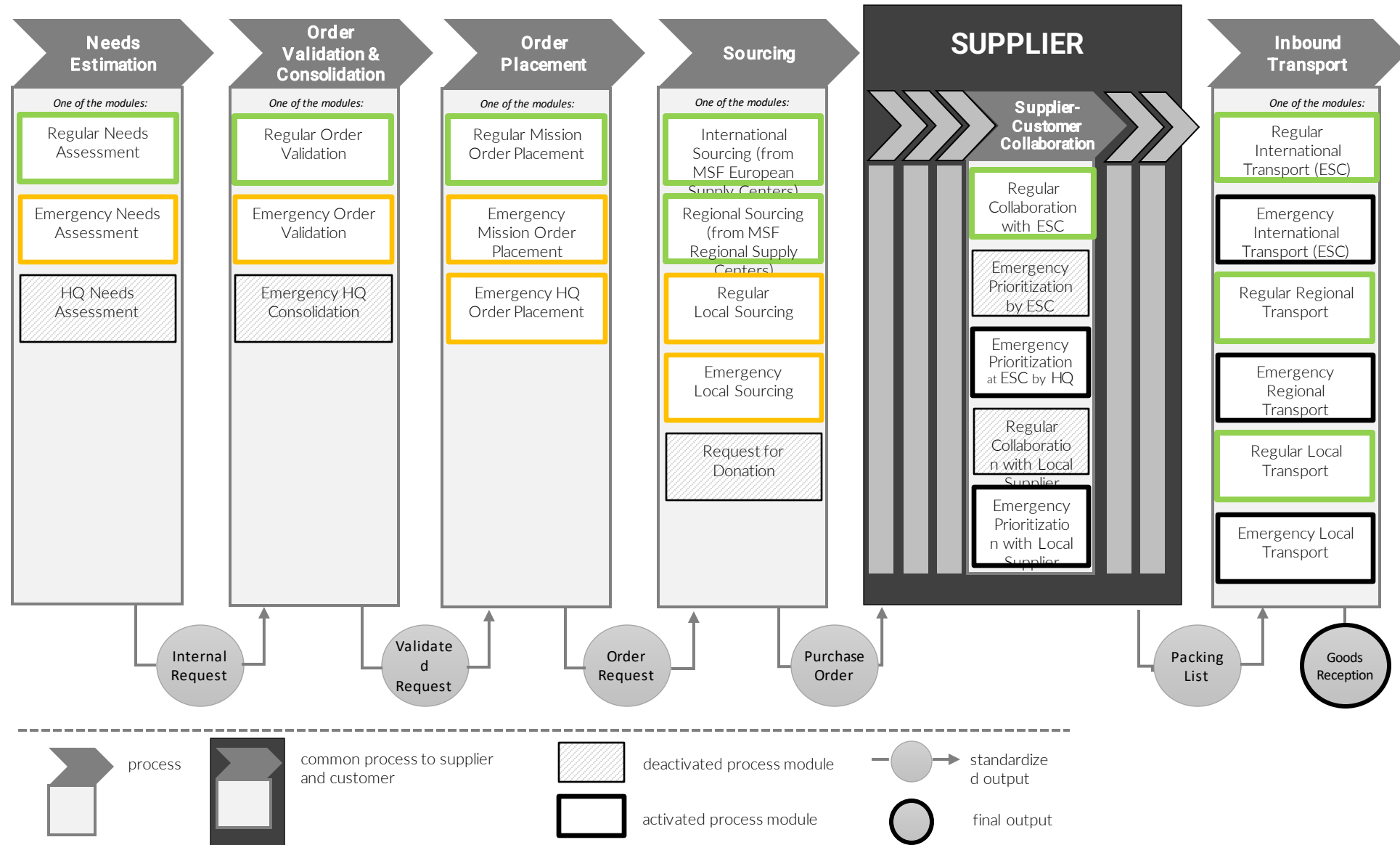
MSF's modular process architecture



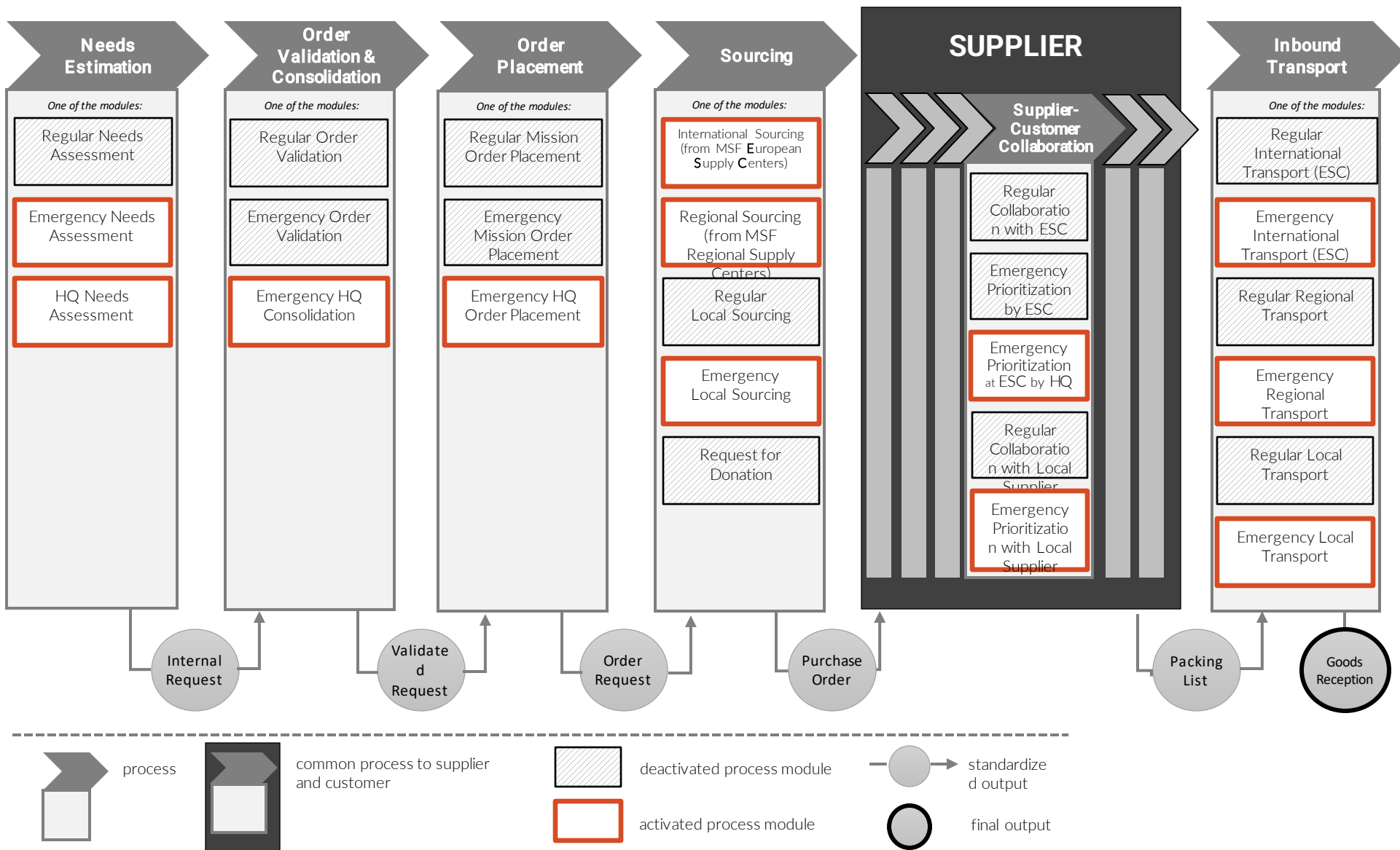
HUMLOG



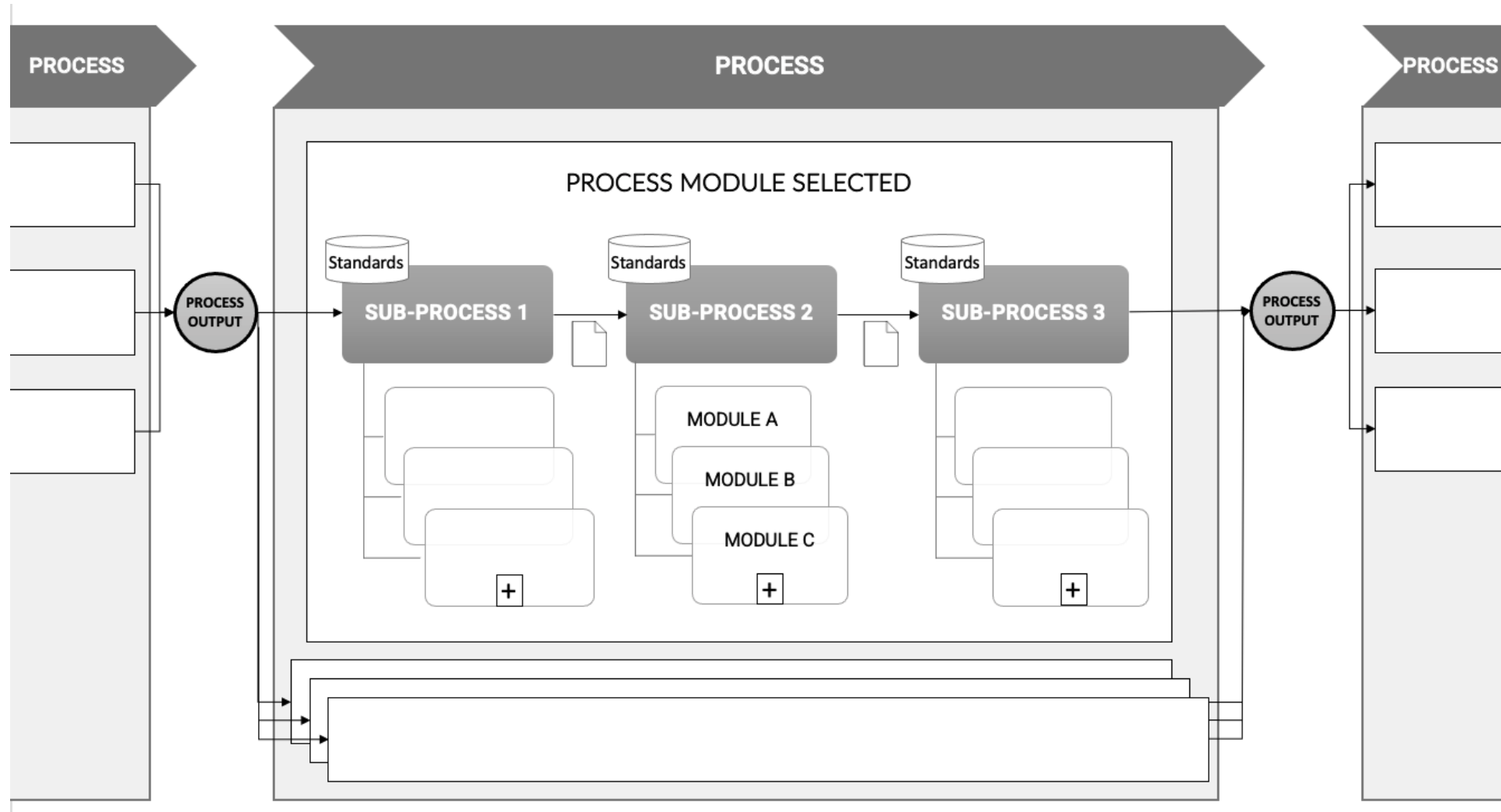
Before Covid-19 first wave



During Covid-19 first wave

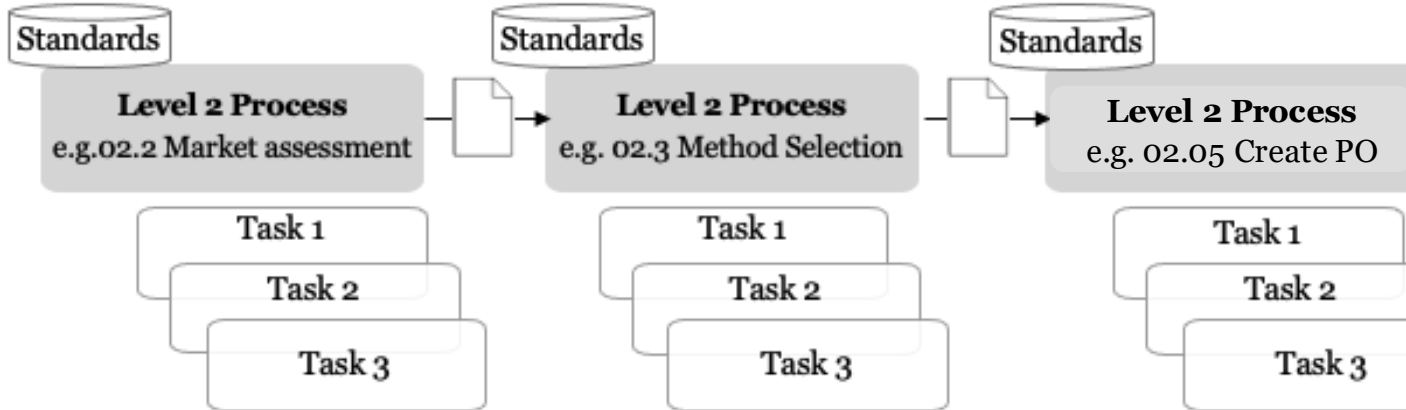


Process modularity also exists at sub-process level

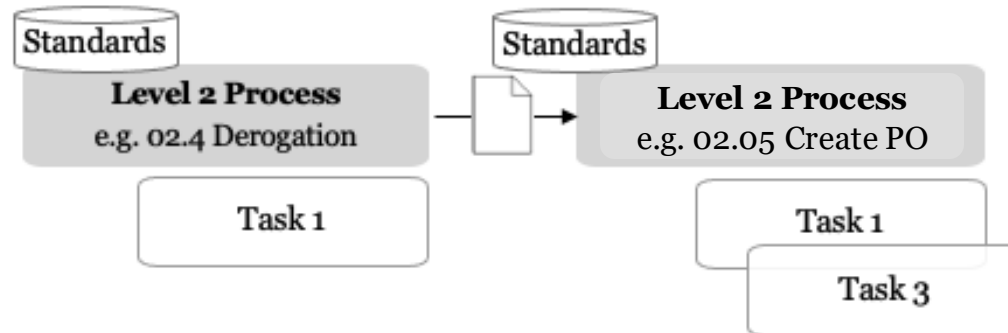


Level 1 Process e.g.: 02a. Procurement of Goods and Services

Process module for context A – e.g.: Regular Context



Process module for context Z – e.g.: Dire emergency



Process module for context B

**STANDARD
PROCESS
INPUT**
e.g.: Formal
Request

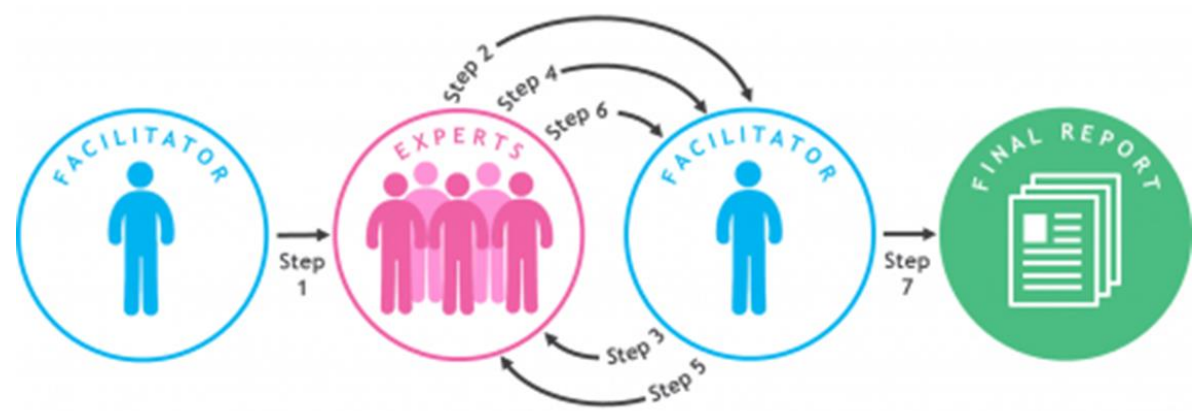
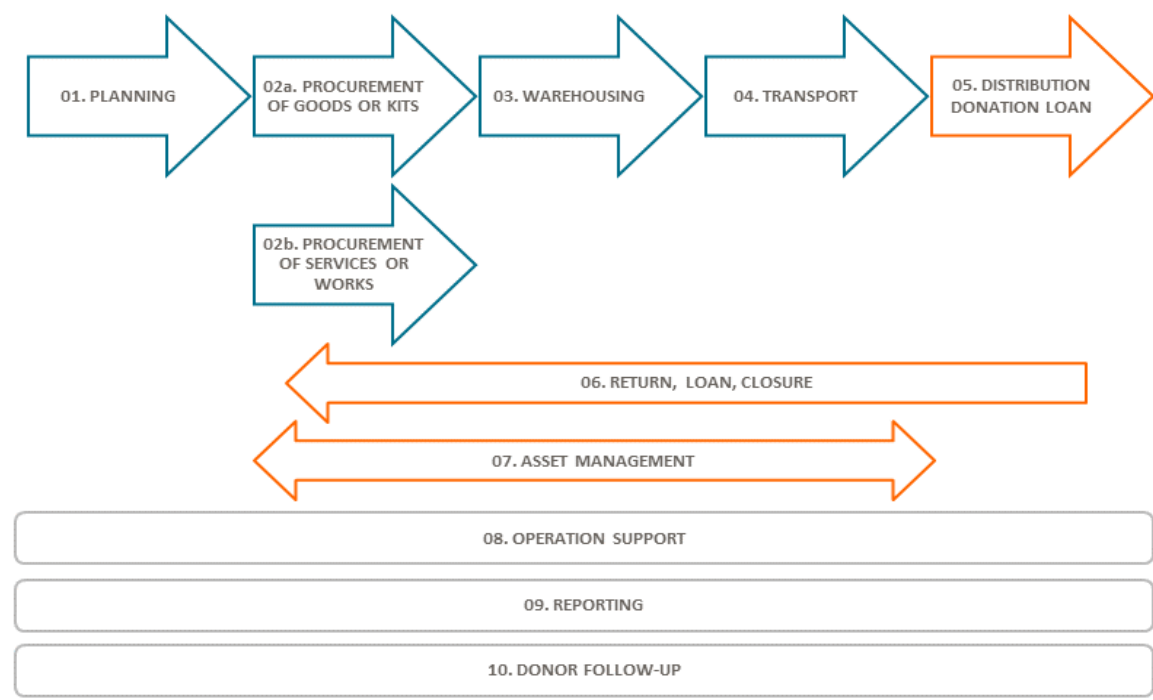
**STANDARD
PROCESS
OUTPUT**
e.g.: Purchase
order


Why does it work?

- » 1. Process modules can be designed to reduce lead times
by skipping time-consuming, less essential tasks
- » 2. Modules can be designed to mitigate the risk of serious delays
by relieving potential bottlenecks (internal or external)
- » 3. Process modules can be designed to
facilitate the prioritization, allocation, and rationing of scarce resources in line with needs



Frontline Humanitarian Logistics – Process Framework



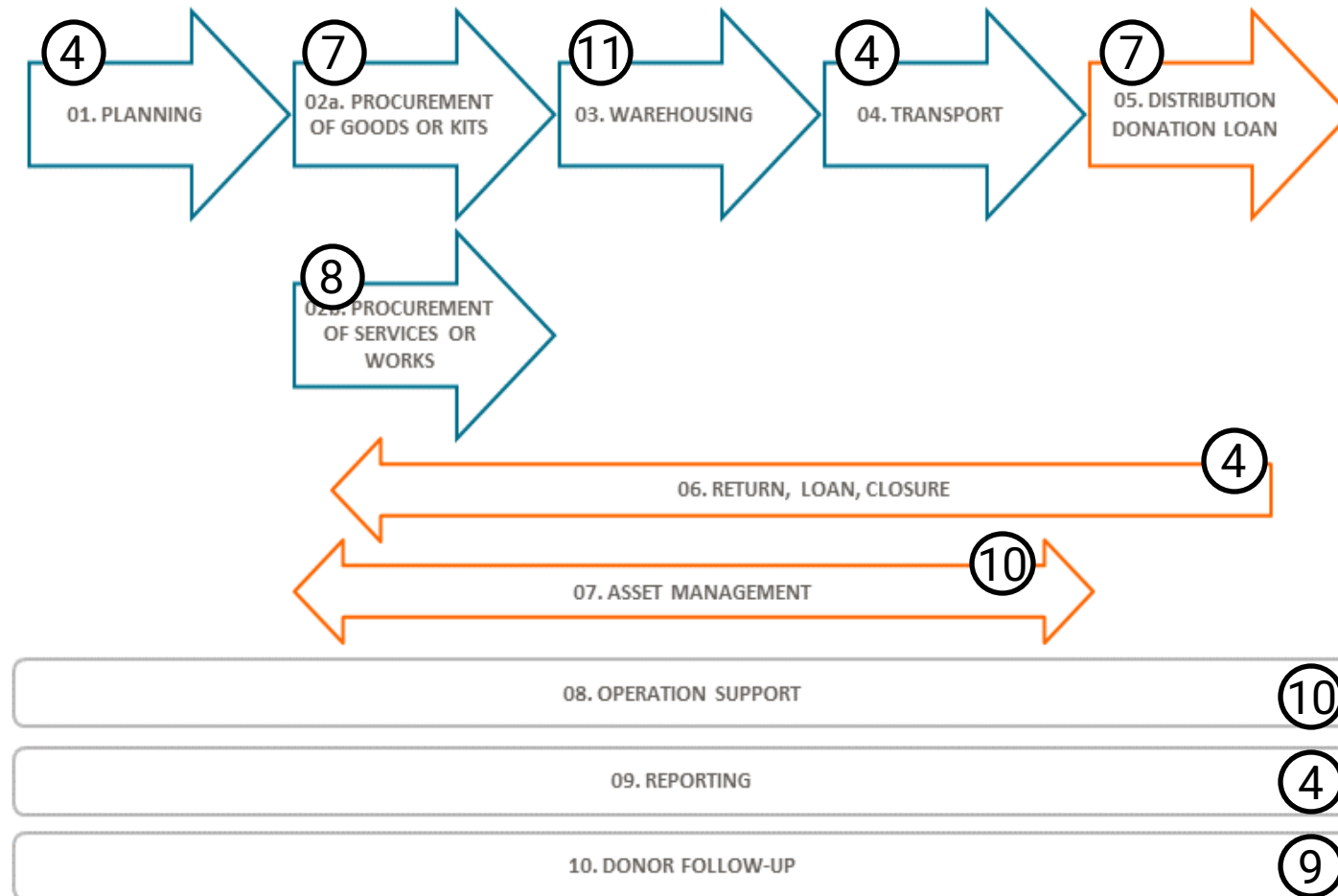
 Frontline Humanitarian Logistics Data Standard and Guide for Use

- FHL Data Standard
- Thesaurus



Process Framework : 10 Level 1 -> 80 Level 2

Frontline Humanitarian Logistics – Process Framework



Example of framework structure	
Level in framework	Title of framework Item
Process Level 1 (PL1):	02 Procurement
Process Level 2 (PL2):	02.1. Procurement planning of goods and kits
Process Level 2 (PL2):	02.2. Markets assessment of goods and kits
Process Level 2 (PL2):	02.3. Procurement method selection
Process Level 2 (PL2):	02.4. Procurement derogation validation
Process Level 2 (PL2):	02.5. Purchase Order management for goods and kits
Process Level 2 (PL2):	02.6. Invoice matching and payment
Process Level 2 (PL2):	02.7. Donation (Request for in kind donation)



Level 2 – Structure

FHL Process Framework				
Process ID	Process Level 1	Process Level 2	Description	
P0200	2 Procurement		The processes associated with ordering, delivery, receipt and transfer of a. goods or kits b. services or work	
P0201	2a Procurement of goods	02.1. Procurement planning of goods and kits	The process associated with tactical management of procurement activities for goods and kits, including among others but not exclusively, supplier management, contract follow-up, market assement update schedules, procurement schedule, pipeline monitoring and coordination with Finance.	
P0202	2a Procurement of goods	02.2. Markets assessment of goods and kits	The process associated with assessing available supply sources for goods and kits in one or more markets, including among others but not exclusively, supplier information, quality assurance, framework agreements and negotiated price list.	
P0203	2a Procurement of goods	02.3. Procurement method selection	The process associated with selecting and conducting the appropriate procurement method in line with procurement threshold for goods and kits, including among others but not exclusively, direct purchase, one quote, waivers, request for quotations, tender process and Comparative Bid Analysis.	
P0204	2a Procurement of goods	02.4. Procurement derogation validation	The process associated with validating and recording a procurement derogation process for goods and kits, including among others but not exclusively, proof of supplier monopoly, justification of lead time urgency, headquarter electronic validation, and local regulations derogation.	
P0205	2a Procurement of goods	02.5. Purchase Order management for goods and kits	The process associated with receiving, creating, validating and issuing a purchase order for goods and kits, including among others but not exclusively, follow-up with suppliers, and the update of the PO upon reception in the warehouse.	
P0206	2a Procurement of goods	02.6. Invoice matching and payment	The process associated with processing and validating an invoice for goods or kits, including among others but not exclusively, payment proceeding, PO closure and invoice closure.	

One framework adaptable to all:

Generic - Tailored – Specific – Unique Process Classification



Generic: little to no customization needed to align with the humanitarian sector,

Tailored: similarities across sectors that needed some core adjustments to fit the humanitarian sector,

Specific: common processes across IHOs that do not exist in most other industries

Unique: processes that exist only in a minority of IHOs but are sufficiently important to be represented

80 subprocesses :

- **25 were generic**
- **15 tailored**
- **18 specific**
- **22 unique.**

	Generic	Tailored	Specific	Unique	Total
01 Supply and Logistics Planning	0	4	0	0	4
02a Procurement of goods or kits	3	2	1	1	7
02b Procurement of services or works	4	2	1	1	8
03 Warehousing	7	1	0	3	11
04 Transport	3	0	0	1	4
Total "commercial like" macro-processes	17	9	2	6	34
05 Distribution Donation Loan	0	0	3	4	7
06 Return Loan Closure	2		3	0	5
07 Assets	0	0	8	2	10
Total "humanitarian specific" macro-processes	2	0	14	6	22
08 Support	5	3	2	0	10
09 Reporting	1	3	0	0	4
10 Donor follow-up	0	0	0	10	10
Total "enablers" macro processes	6	6	2	10	24
Grand Total	25	15	18	22	80

In practice :

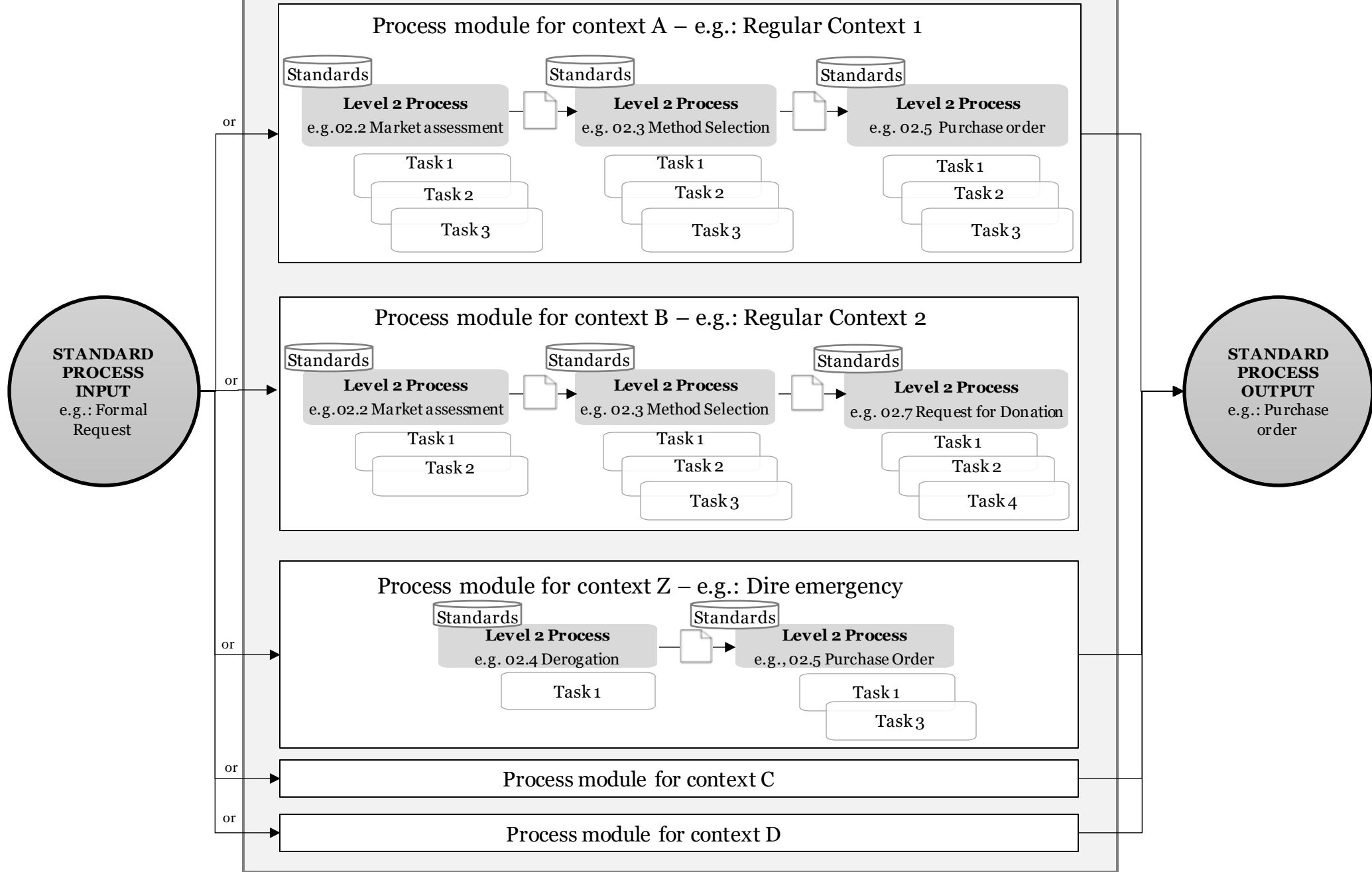
02a Procurement of goods or kits

Level 2 Processes: 3/7 Generic - 2/7 Tailored – 1/7 Specific 1/7 Unique

Generic	02.03 Procurement method selection	“If you want to help somebody and you can give them an NFI-kit or you can give them some cash vouchers or you can build a house for them. Right? First one is goods. The second one is the service and the third one is works.” It1_ParticipantE
	02.05 Purchase Order management for goods or kits	“Procurement is procurement, it only makes minor difference when we talk about items details.” It2_ParticipantS
	02.06 Invoice matching and payment	“I see procurement as procurement, it doesn’t matter what you buy, it should be the same principle, same modalities, same type of data that anywhere else.” It2_ParticipantJ
Tailored	02.01 Procurement planning of goods or kits	“Our purchases are potentially much, much more wide reaching than most commercial organizations. Like tomorrow I might build a school. The next day I’m buying a thousand tons of wheat flour, and the next day I’m buying a generator, and tomorrow I’m purchasing the services of someone to train on market surveys.” It3_ParticipantL
	02.02 Markets assessment of goods or kits	
Specific	02.04 Procurement derogation validation	“There is the national market, the regional market, the international market, which all have their own supply chain. And I think we create problems for ourselves if we imagine there is but one market, it is always, to my mind, always markets, which need different sorts of assessment.” It3_ParticipantE
Unique	02.07 Donation (Request for in kind donation)	“We need to look at derogations and how to handle those.” It2_ParticipantJ
		“I was going to say that we need to look at derogations and how to handle those.”
		“Because donations required pro-forma invoice. It’s a declaration that the goods are for humanitarian purposes, identify the consignee sites, that there is no financial transaction that could be sold before a free donation in a humanitarian response operation. And when you’re looking to clear through customs, they would look for that documentation.” It3_ParticipantR



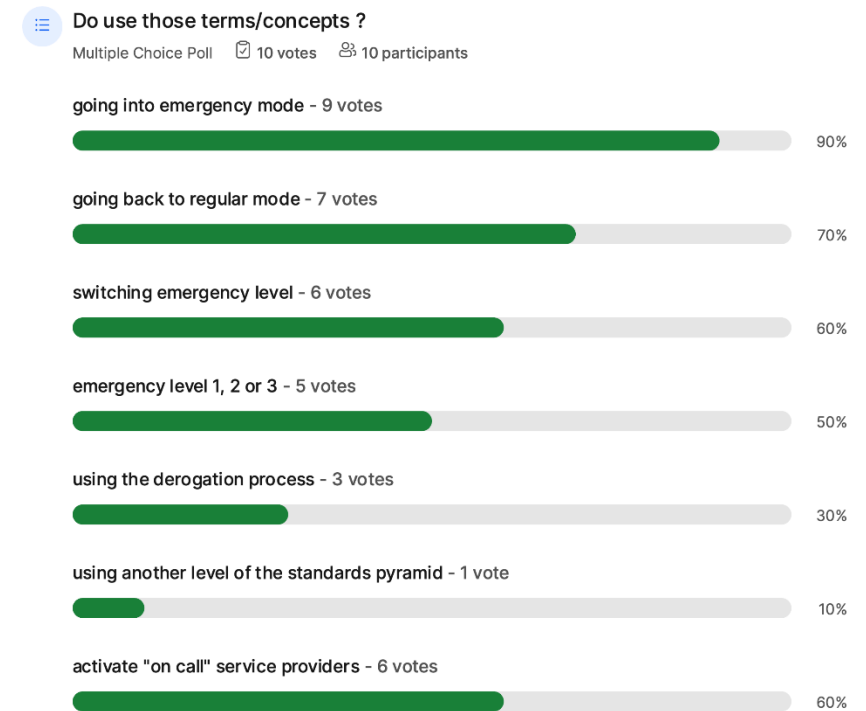
Level 1 Process
e.g.: 02a. Procurement of Goods and Services



Investigating the concept across IHOs

» All organization have some form of modularity under different terminology

- «going into emergency mode»
- «going back to regular mode»
- «switching emergency level»
- «emergency level 1, 2 or 3»
- «using the derogation process»
- «using another level of the standards pyramid»
- activating «on call» service providers



Investigating the concept across IHOs



- » Interviews 28 senior HSC managers with experience of working for 27 international humanitarian organizations (IHOs)
- » Panel discussion at HNPW 2023
- » Represented IHOs :



Next steps : modular supply chains

- » A modular supply chain is one where the members of the chain are highly dispersed geographically and culturally, with few close organizational ties and modest electronic connectivity (Fine, 1998, p. 136).
- » As a result, many would-be first-tier suppliers must now position themselves as value-added second-tier suppliers to fit with the more flexible characteristics of the emerging modular supply chains. (...) The modular design is usually based on economic considerations such as cost and time-to market. (Fine 2005)
- » Plug and play between IHOs for collaboration
- » Plug and play between IHOs and suppliers



Want to take part?

- » Constantly looking for interested partners to continue our research
 - » Organizations: Possibility to increase your SC responsiveness
 - » Networks: Possibility to support pooling, resilience and agility of your SCs
- » Current studies:
 - » Increasing and formalization of process modularity at MSF
 - » Assessing the compliance of different SC frameworks with FHL



Academic publications on the topic



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SPECIAL ISSUE ARTICLE



Process modularity, supply chain responsiveness, and moderators: The Médecins Sans Frontières response to the Covid-19 pandemic

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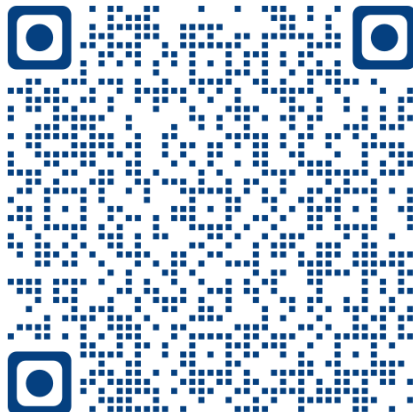
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Abstract

The unprecedented scale of the Covid-19 pandemic has been a challenge for health supply chains around the world. Many international humanitarian organizations have had to ensure the continuity of their already complex development programs, while addressing their supply chain disruptions linked to the pandemic. Process modularity has frequently been advocated as a strategy to mitigate such disruptions, although empirical evidence regarding its impact on supply chain responsiveness and what moderates this impact is scarce. This exploratory research uses supply chain data analysis, qualitative content analysis, interviews, and a three-round Delphi study to investigate how Doctors without Borders (Médecins Sans Frontières; MSF) and its 151 missions employed process modularity during the Covid-19 pandemic. Our results show that despite severe disruptions, process modularity—based on a modular architecture, interfaces, and standards—has helped MSF maintain supply chain responsiveness. Specifically, it (1) enabled time-consuming, nonessential tasks to be skipped, (2) relieved internal and external bottlenecks, and (3) facilitated better allocation and



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Toward a common humanitarian supply chain process model: the Frontline Humanitarian Logistics Initiative

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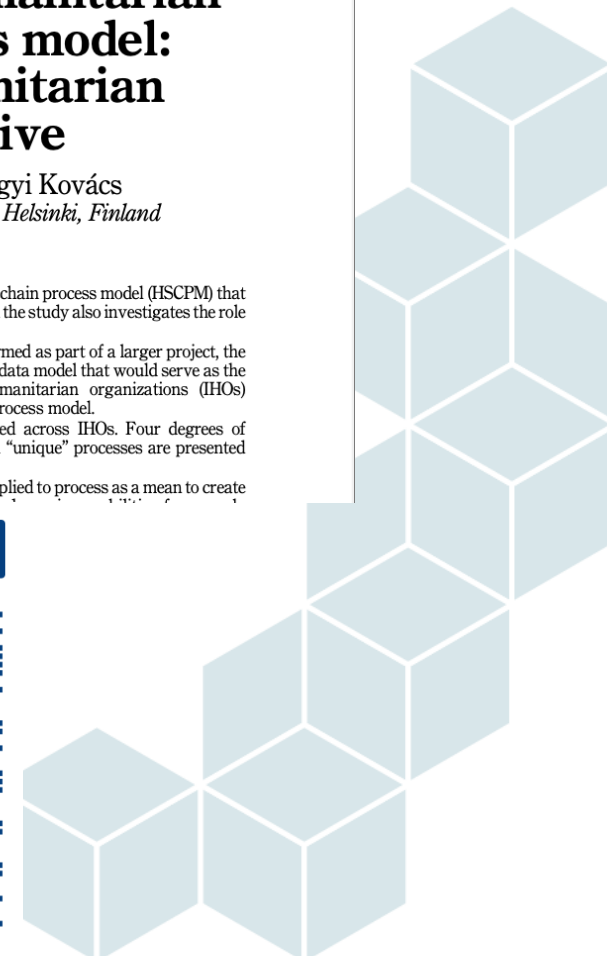
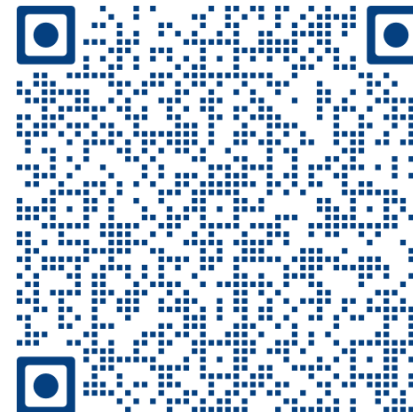
Abstract

Purpose – This study focuses to develop a common humanitarian supply chain process model (HSCPM) that enables effective enterprise resource planning (ERP) systems for NGOs, and the study also investigates the role of modularity as a dynamic capability that supports creating such model.

Design/methodology/approach – A multifocus group study was performed as part of a larger project, the Frontline Humanitarian Logistics Initiative, aiming to establish a common data model that would serve as the backbone of humanitarian ERP systems. Fourteen international humanitarian organizations (IHOs) participated in the process, reaching a consensus on the structure of the process model.

Findings – An HSCPM was proposed based on the consensus reached across IHOs. Four degrees of customization differentiating between “generic,” “tailored,” “specific,” and “unique” processes are presented and discussed.

Research limitations/implications – The findings show modularity applied to process as a mean to create



Thank you for joining us today

The HUMLOG Institute is on a continuous lookout for collaboration with researchers and practitioners interested in the area of humanitarian logistics and supply chain management, we work better together!

Join our community!

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