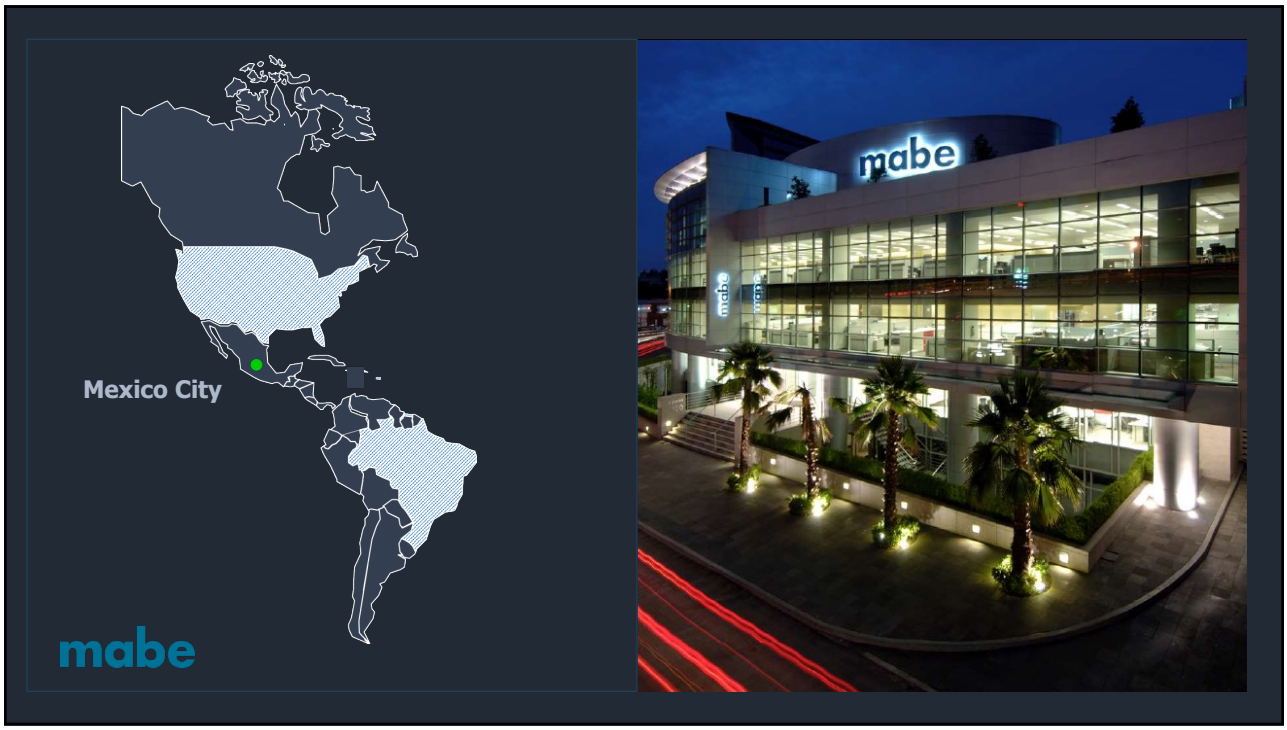


Revolutionizing Product Definition: How mabe Transformed Efficiency with Modularization and Digitalization

Author | G. Vargas /M. Mata, May 2024

- ✓ Why?
- ✓ The Return!
- ✓ How?
  - Modular Architecture
  - Digitalization
  - Integration
- ✓ Ending (lessons learned)
- ✓ Questions?

PLM Road Map™ & PDT North America 2024

Value Drivers for Digitalization of the Product Lifecycle

Insights for the PLM Professional—Why the investment, what are the returns, and how are they achieved?

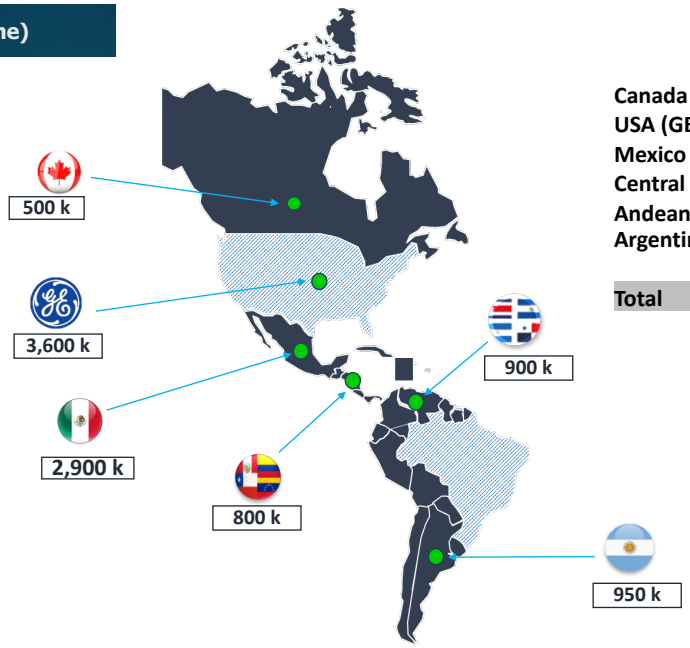
May 8 & 9

CIMdata

eurostep

mabe | Engineering Systems / R&D

Market´s Mabe (volume)

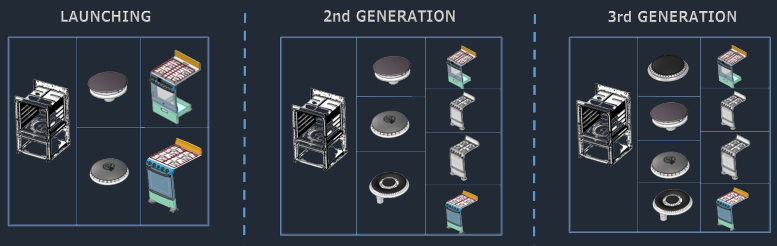


Canada	500 k
USA (GE)	3,600 k
Mexico	2,900 k
Central America	800 k
Andean Region	900 k
Argentina	950 k
Total	**9,700 k units**

Why ?

mabe

- Accelerate cadence of new products to the market
- Manage wider product families with improved performance
- Enable module design aimed to reduce business complexity
- Improve productivity in all business processes enabled by less complexity

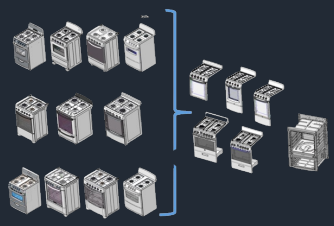


The return!

- ✓ Efficient Product Planning reduces effort to define a new SKU with 90%.
- ✓ Effort to create BOMs and fixing mistakes is reduced by 80%.
- ✓ Fast and accurate Cost Management by configuring cost bearing module variants to SKU's.
- ✓ Safer New Product Factory Start-up by a clear view of which parts are included in which SKU's across the entire product family.
- ✓ Predictable Supplier Management from a clear view of which parts are used across all product families and what volumes.

Modular Architecture Journey at Mabe

mabe



1Q 2017

FSR 20, 22 & 24 inch
Program: NAOS & GBB
Market: North America & Latam
+200 sku´s

PART NUMBER COUNT			
BEFORE	AFTER	BENEFIT	
3172	1690	-1482	-47%

1Q 2019

FSR 30 inch (Low, Mid & High)
Program: APEX
Market: North America
98 sku´s

PART NUMBER COUNT			
BEFORE	AFTER	BENEFIT	
3478	1393	-2085	-60%

1Q 2020

FSR 30 inch (Low, Mid)
Program: FOCARIS
Market: Latam
98 sku´s

Time to market

Modular Architecture Journey at Mabe

mabe

1Q 2021

FSR 30 inch (High)
Program: HALIA 30
Market: Latam
+12 sku´s

Time to market

4Q 2022

SxS + BF
Program: SxS Lighthouse
Market: North America & Latam
tbd sku´s

PART NUMBER COUNT			
BEFORE	AFTER	BENEFIT	
933	541	-392	-42%

1Q 2023

FSR 56 cms
Program: Argentina 56
Market: Argentina/Mercosur
+12 sku´s

Time to market

Modular Architecture

Modular Architecture Journey at Mabe

mabe

2Q 2023

Top Mount
Program: Oasis
Market: Latam
tbd sku´s

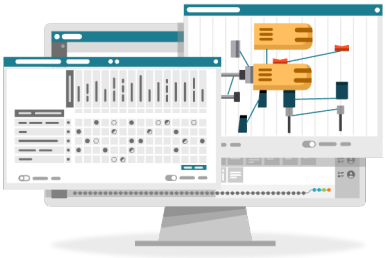
2Q 2024

Laundry
Program: tbd
Market: North America & Latam
tbd sku´s

In process

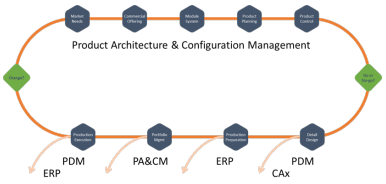
Modular Architecture

How?



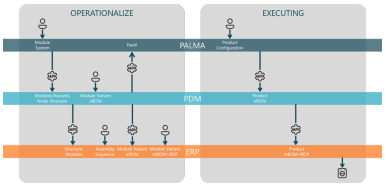
Modular Architecture

Modularizing product families using the PALMA tool, stepwise by product categories.



Digitalization

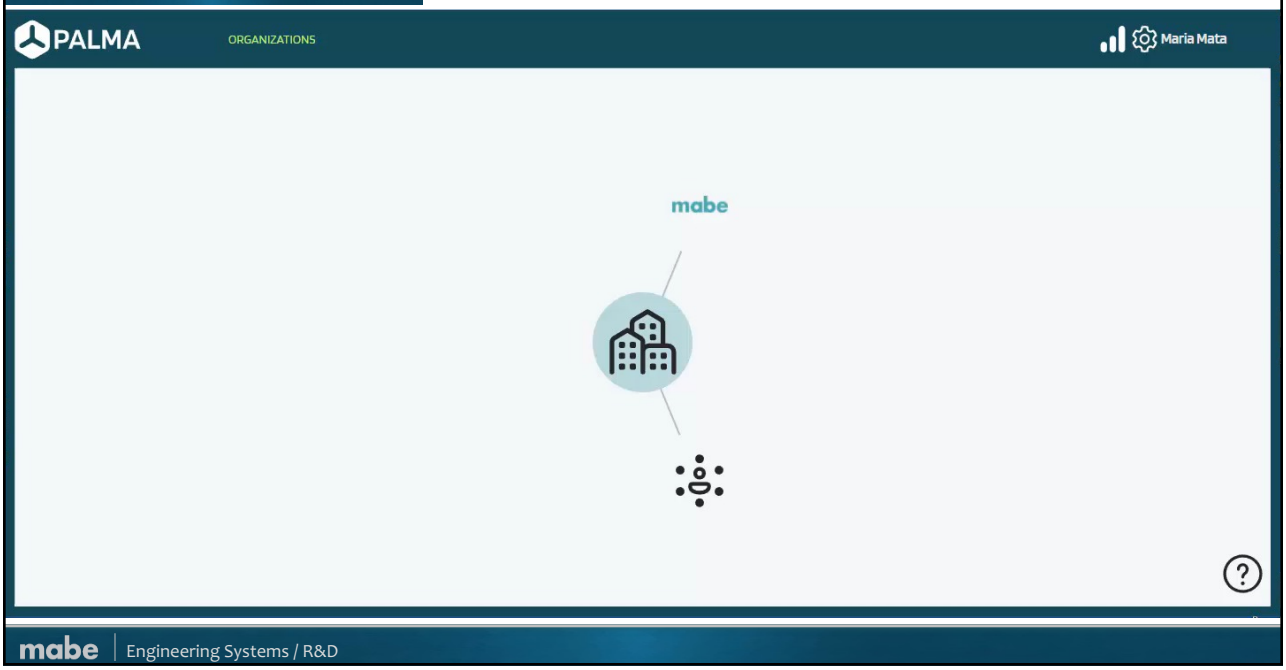
Using PALMA and the Unified Product Information Model as a vehicle in the Digitalization journey.



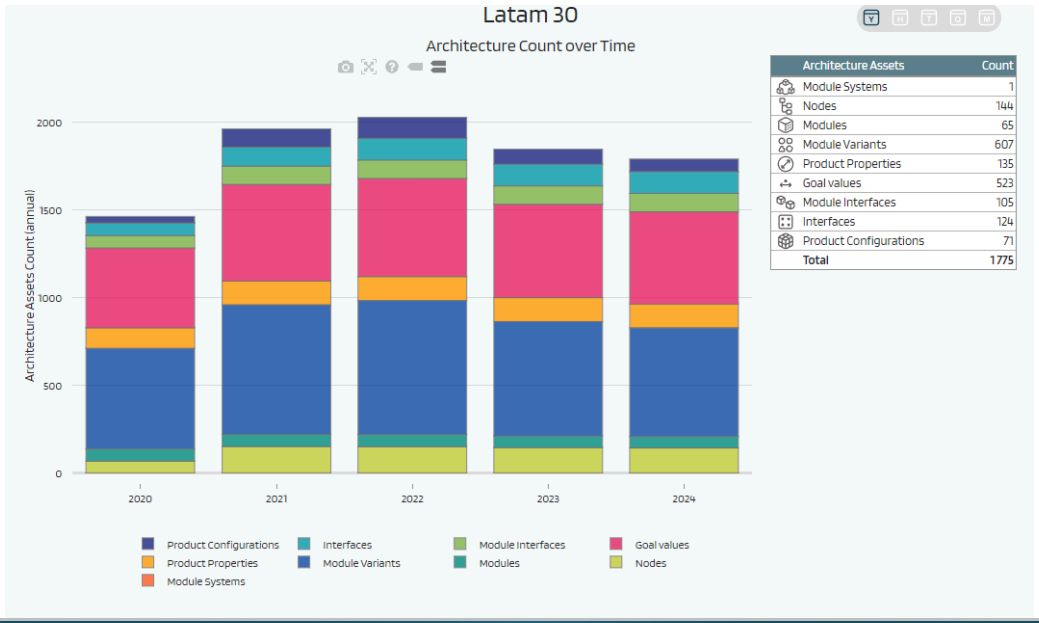
Integration

PALMA – Windchill –SAP information exchange and automated xBOM creation.

Modular Architecture

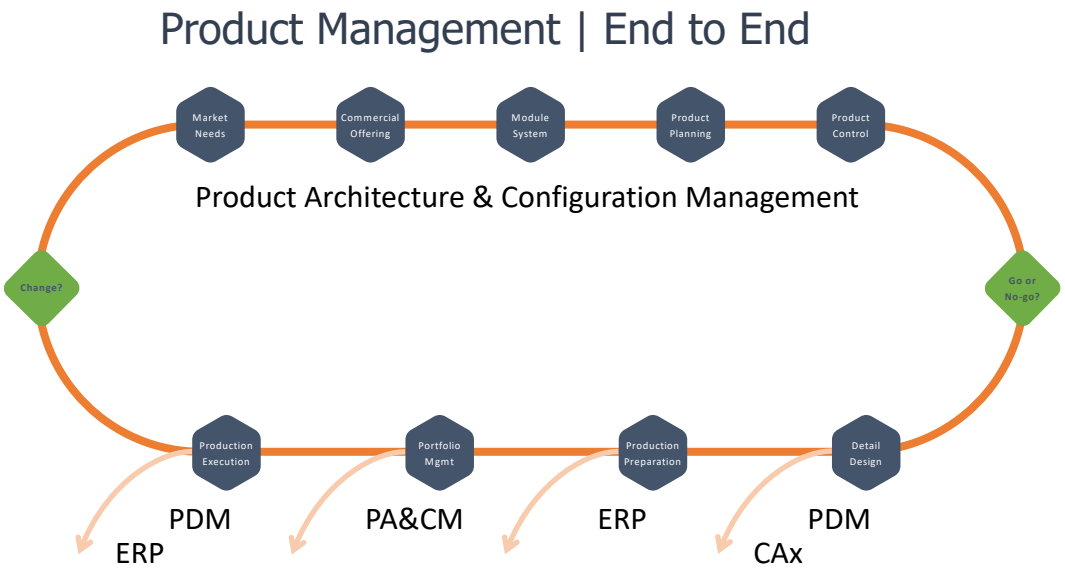


Modular Architecture

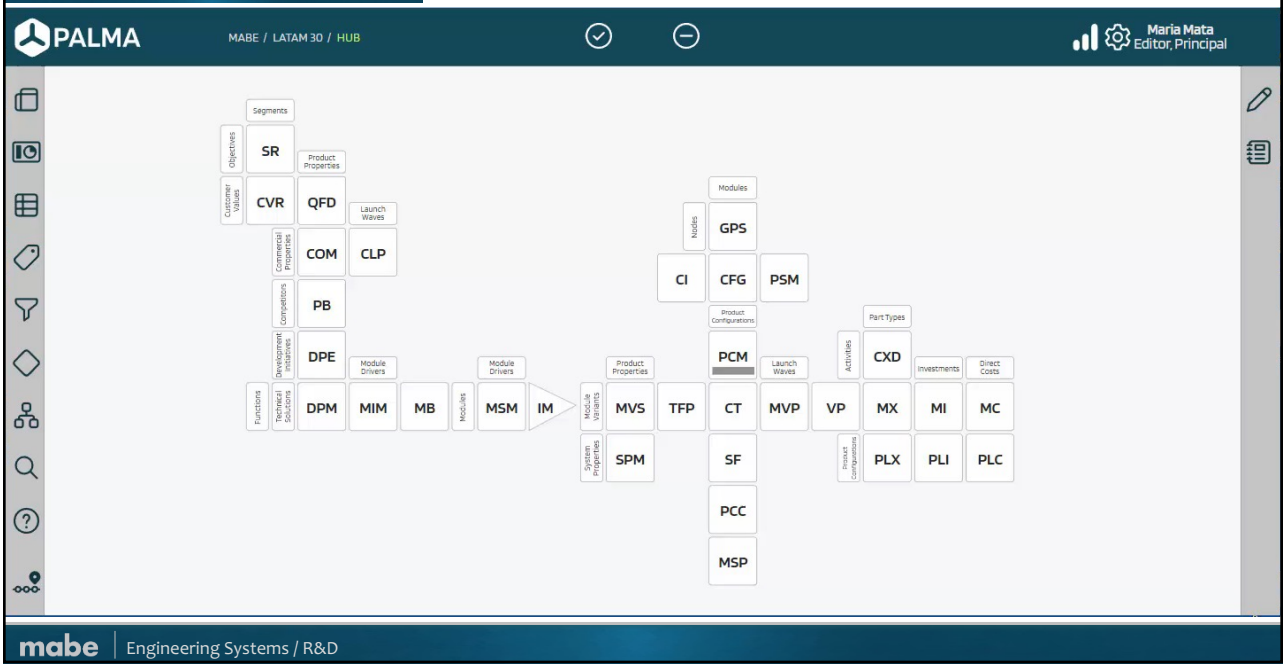


Architecture Assets	Count
Module Systems	1
Nodes	144
Modules	65
Module Variants	607
Product Properties	135
Goal values	523
Module Interfaces	105
Interfaces	124
Product Configurations	71
Total	**1775**

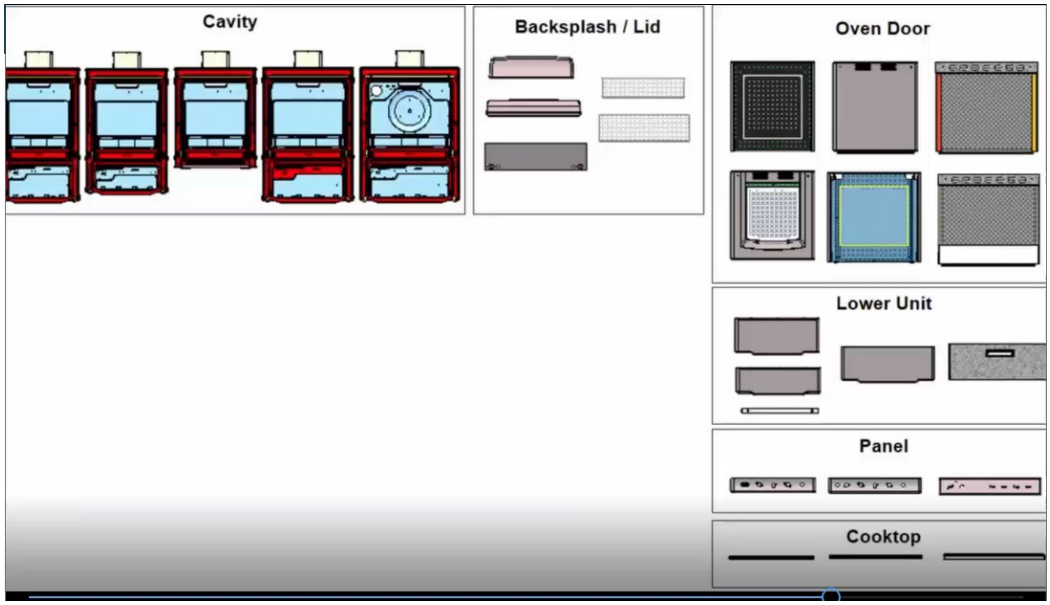
Digitalization



Digitalization

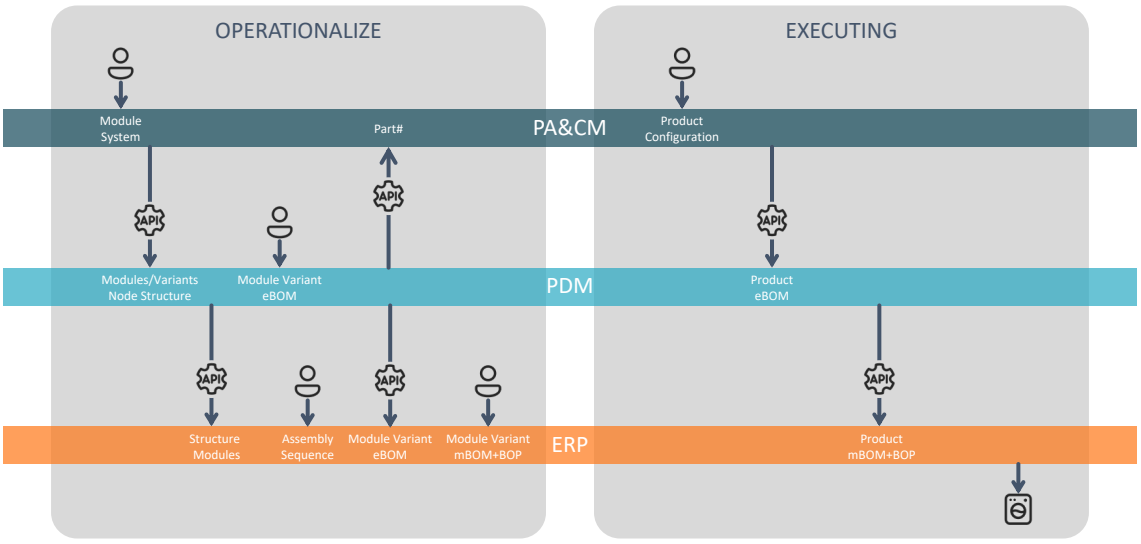


Digitalization

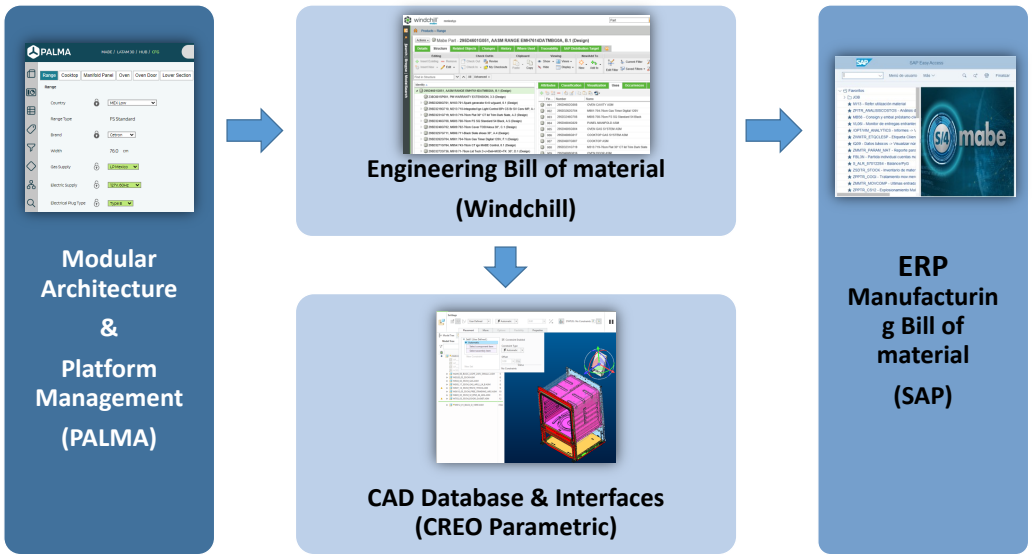


Integration

Interactions | Catalogue

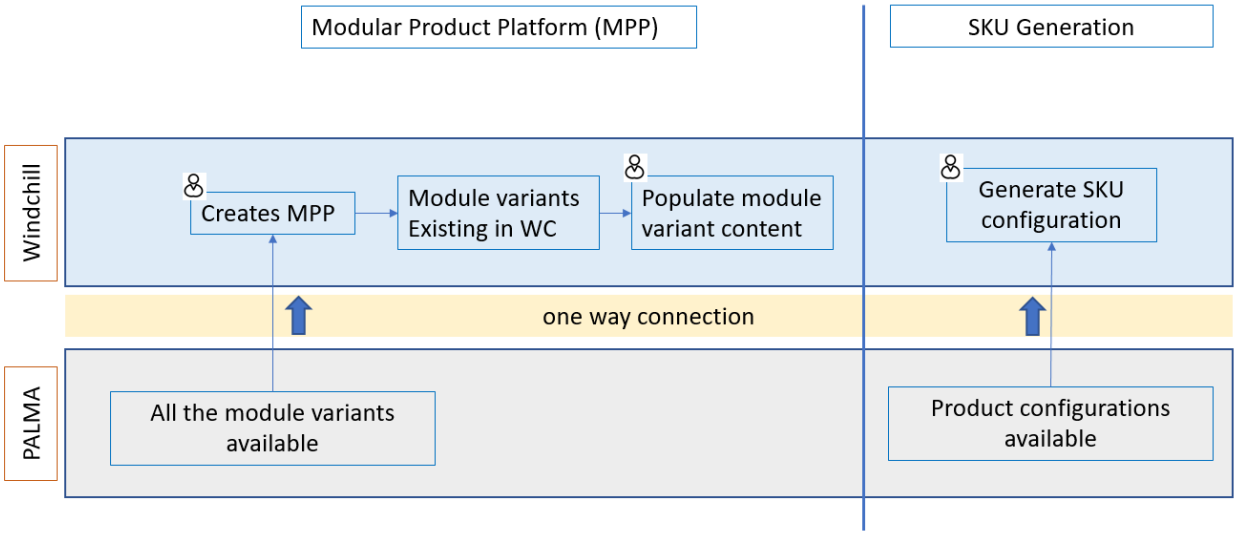


Integration

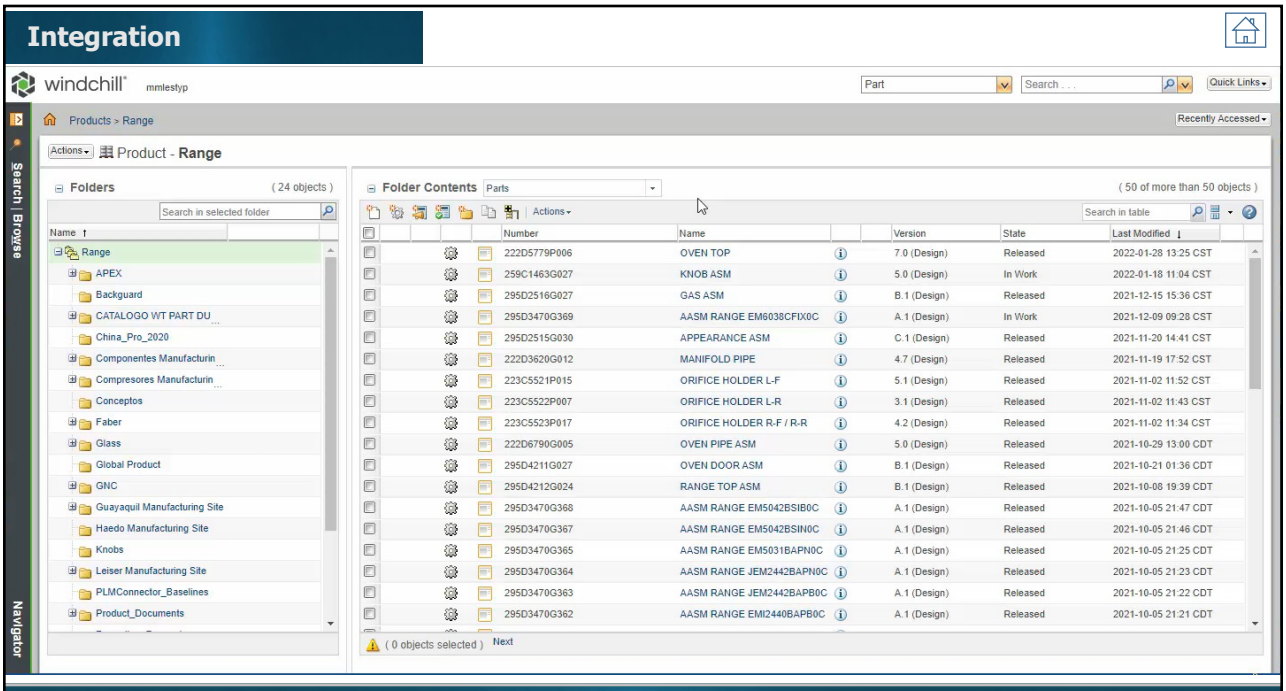


Integration

Integration Flow PALMA - Windchill



Integration



Lessons Learned

- New skills required
  - ✓To adopt a new way of working people need to be open to learn and go out of their comfort zone while learning
  - ✓Step-wise approach to build trust and avoid overwhelming the organization
- Importance of data quality
  - ✓In a digitalized process manual interpretation and judgement of data is not possible
  - ✓Data need to be accurate as automated processes will act on it.

Summary & Conclusion

We had a tough challenge!
But with the proper mindset and tools to support us, we managed deliver on all of them, far better then we would ever imagine.

Challenges

- Accelerate new products to the market
- Extend and improve product families
- Reduce business complexity
- Improve productivity across business

Outcome

- ✓SKU-definition reduced by **90%**
- ✓BOM-management reduced by **80%**
- ✓**Fast** and **accurate** Cost Management
- ✓**Precise** new product Factory Start-up
- ✓**Predictable** Supplier Management

Fact:
- NPD and introduction from 32 to 4 days
- Existing product update from 13 to 1.5 days
- 8 Production Plants, 1 Modular team

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