



enforge

Digital Twins: A vehicle for digital transformation

Evangelos Drainas

Synopsis

- early stage startup founded in 2021 in Athens GR
- supported by EIT Digital & EIT Manufacturing (BoostUp RIs 2021, EVOR)
- cloud-based , product-aware Manufacturing Execution System built for mass-customization
- addressing the challenge of increased demand for customized products in the manufacturing sector such as furniture & sheet metal products, interior building materials etc.
- Customer: micro/small manufacturers (turnover<10M , 1-50 employees)

Team



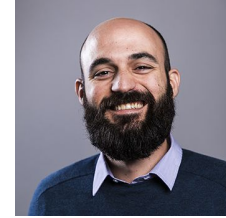
Evangelos Drainas | CEO

6 years aerospace consulting
knowledge based applications
Parametric CAD/FEA



Marios Vodas | CTO

6 years mining IoT data
scalable distributed systems
data modelling



Vasilis Hadjipanos | Advisor

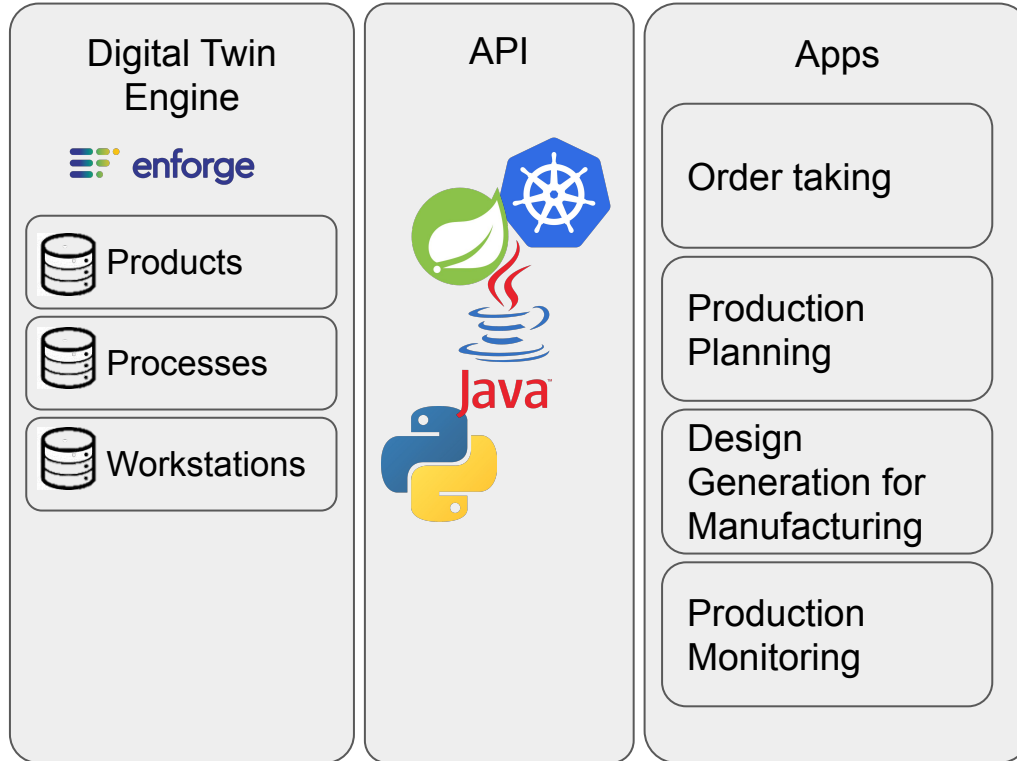
10 years solution architect
UX optimization
business intelligence advisor

Vision

Our vision is to build a digital transformation vehicle for the european SME manufacturers - a vehicle easy to use and drive.

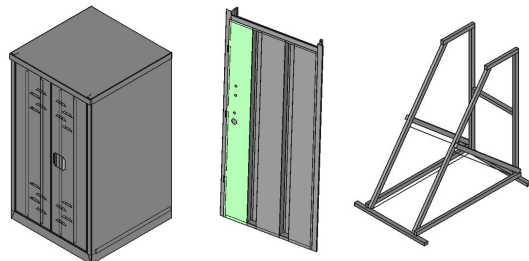
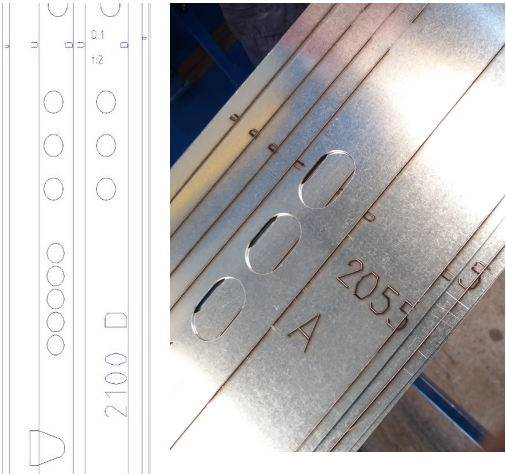
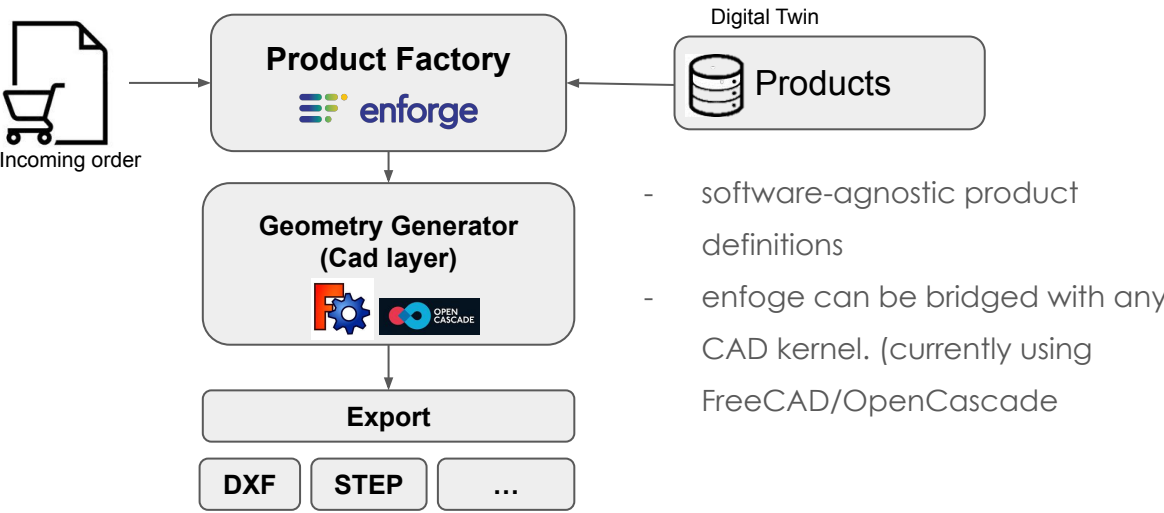
- built for adoption
- flexible and adaptable to changes
- accessible to SME manufacturers

Solution



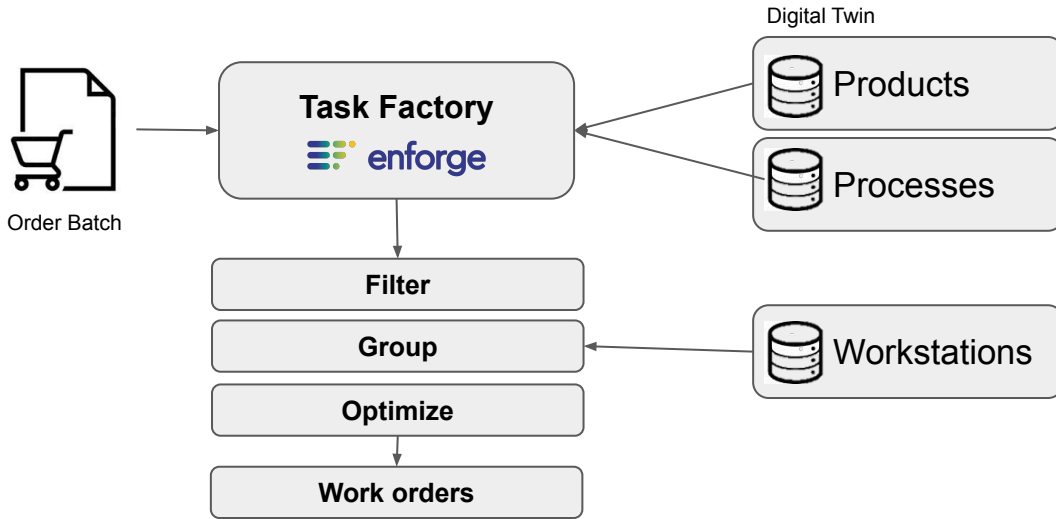
- Digital Twin as a Service
- Industrial grade infrastructure based on kubernetes
- Cloud-based web & mobile apps for manufacturing

Digital Twin for Design generation

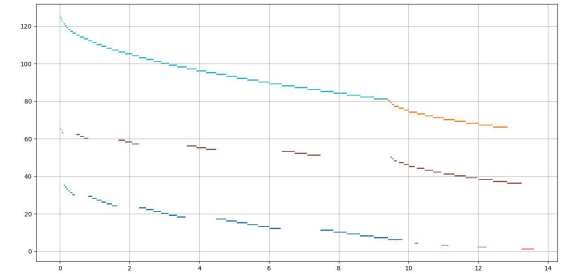


The Product Digital Twin is the authoritative source of information for any activity. It can be used to instantiate multiple geometry types or “views” for a given specification. “Views” can be developed for any use-case: from Design-For-Manufacturing to Finite Element Analysis.

Digital Twin for Production Planning



#	Code	Item	Product	Process	Qty	OK
1	M27T75		ΠΡΟΚΑΣΑ	VETA_CUTNBEN14		true
2	M27T74	E27.3	ΒΑΣΗ ΚΛΕΙΔ ΠANTHER	VETA_CUTNBEN12		true
3	M27T72	E27.2	ΒΑΣΗ ΙΣΕΟ 70	VETA_CUTNBEN12		true
4	M27T70	E27.1	ΒΑΣΗ ΙΣΕΟ 60	VETA_CUTNBEN12		true
5	M27T68	E26.1	ΠΡΟΚΑΣΑ	VETA_CUTNBEN11		true
6	M27T66	E26.1	ΠΡΟΚΑΣΑ	VETA_CUTNBEN12		true
7	M27T64	E26.1	PLAINO_KATW	VETA_CUTNBEN11		true



Product, Process & Workstation digital twins are combined to generate detailed work orders (tasks) & production schedules. Work order data can be exported to any form or accessed by shop-floor terminals. Enforce's API based approach enables power users to automate tasks, perform multiple generations for testing different factory configurations etc.

Capabilities

- Enforge can manage unlimited product variations
- Work orders can be calculated in minutes, for any number of items
- Product and process changes can be implemented at no cost
- Automatic design generation for sheet metal products
- Every part can be traced back to the order using DPM

Next steps

- Use enforce as a platform to easily productize PoC applications (AI, analytics, blockchain etc)
- Looking for industrial pilots
- Looking for co-founders
- Open internship positions!

Thank you!



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