

# AM INTERACTION DAYS

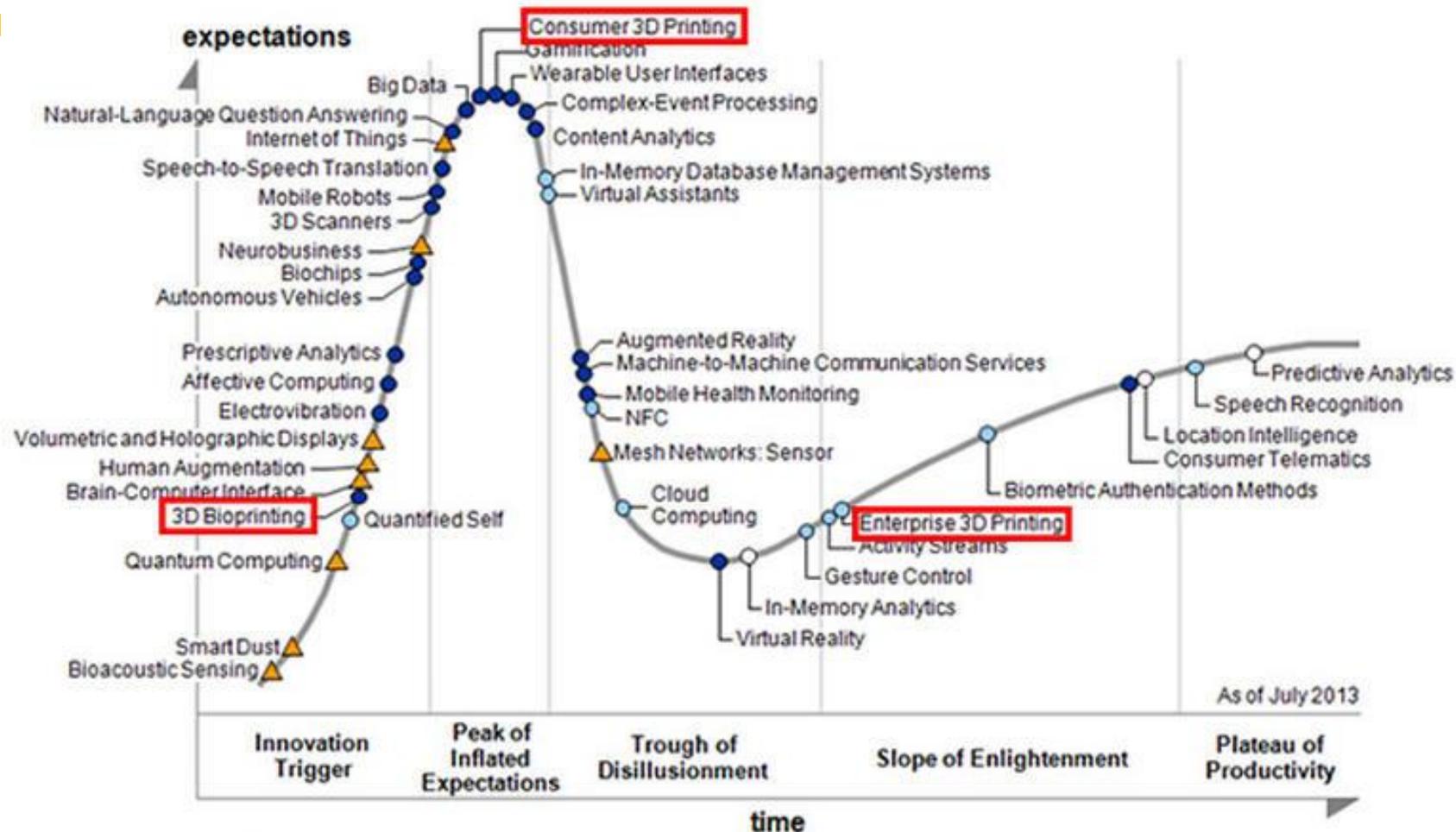
Eurico Assunção – EWF

*Additive Manufacturing: from using it to implementing it*



# Additive Manufacturing: from using it to implementing it

ARE YOU—  
**AM**  
— READY?



Source: Gartner's 2013 Hype Cycle for Emerging Technologies



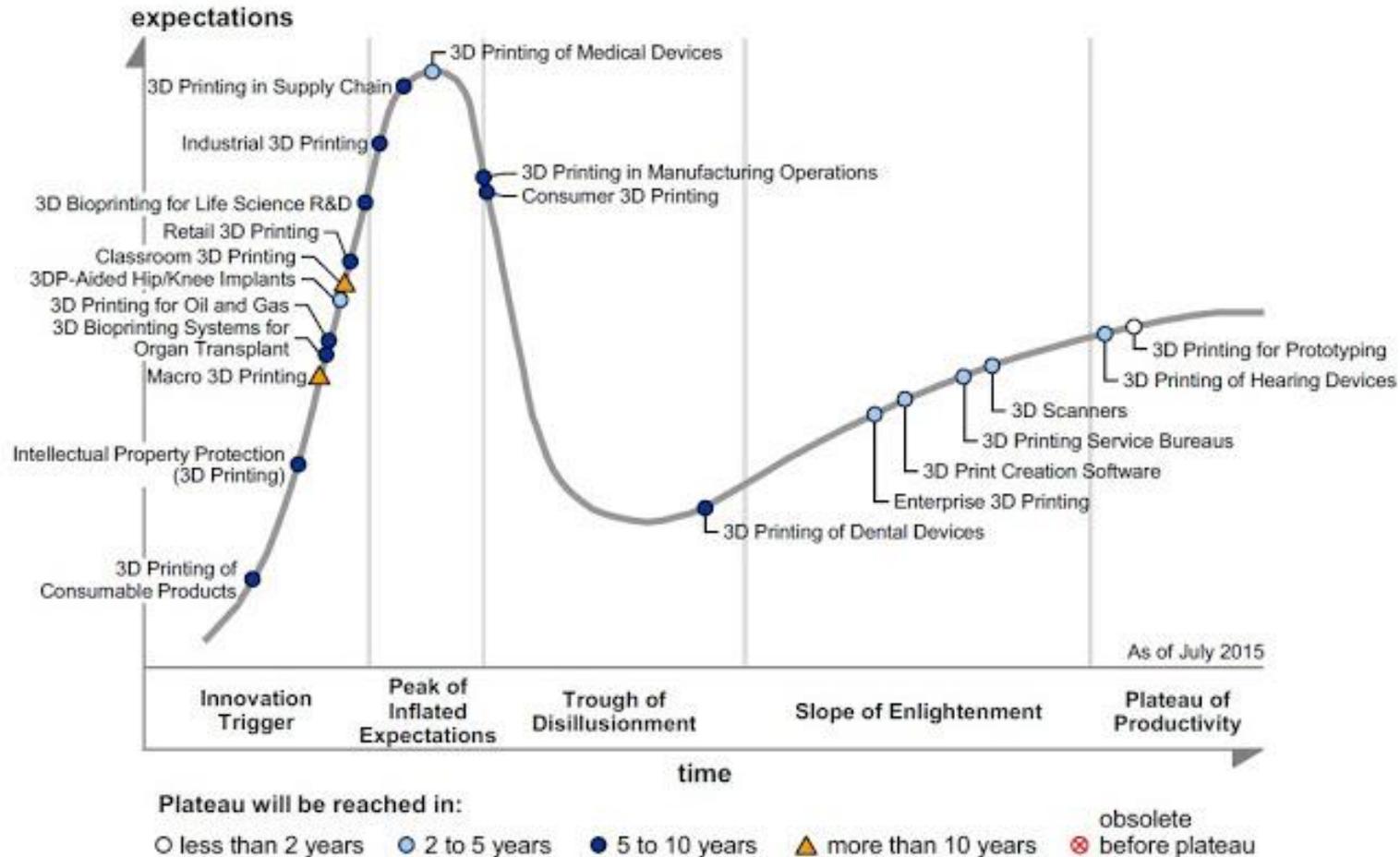
Plateau will be reached in:

○ less than 2 years   ● 2 to 5 years   ● 5 to 10 years   ▲ more than 10 years   ⊗ obsolete before plateau

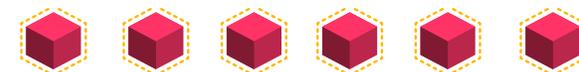
# Additive Manufacturing: from using it to implementing it

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Figure 1. Hype Cycle for 3D Printing, 2015



Source: Gartner (July 2015)



# Additive Manufacturing: from using it to implementing it

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Buying an AM<sup>\*</sup> machine is just the first step



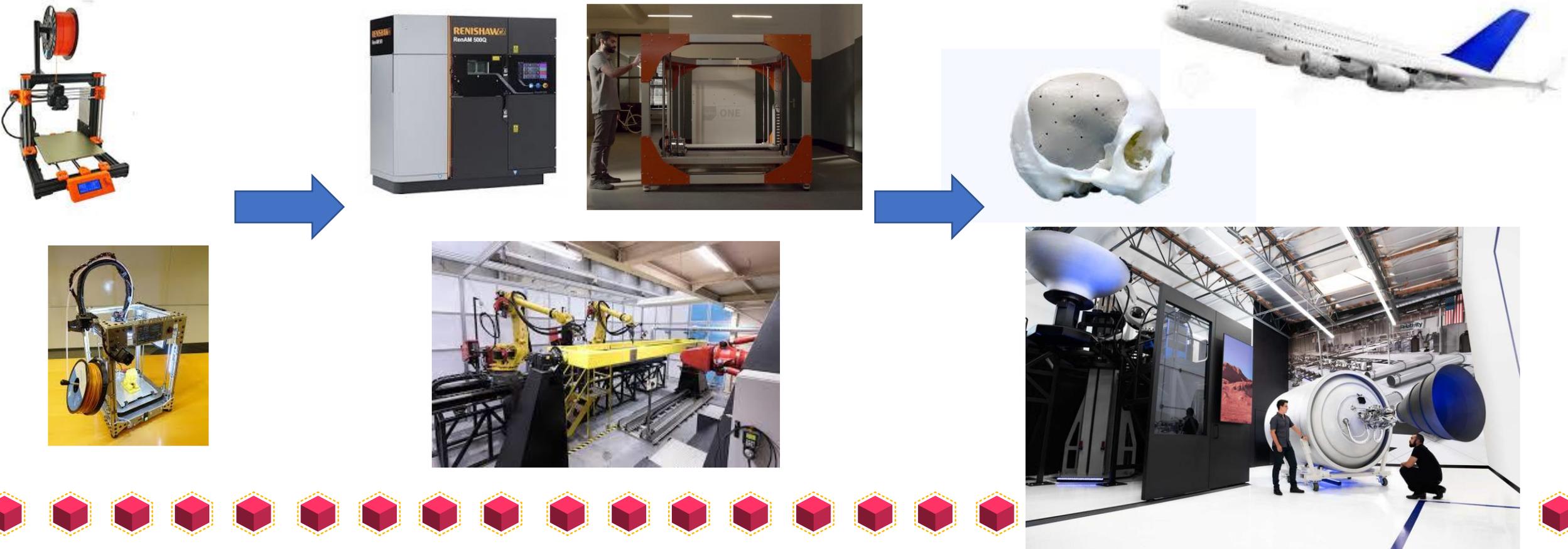
**\* and buying a machine is also not an easy process. Which AM process? Which size? How much? Which other equipments are necessary? .....**



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## The difference between using it and implementing it in industry



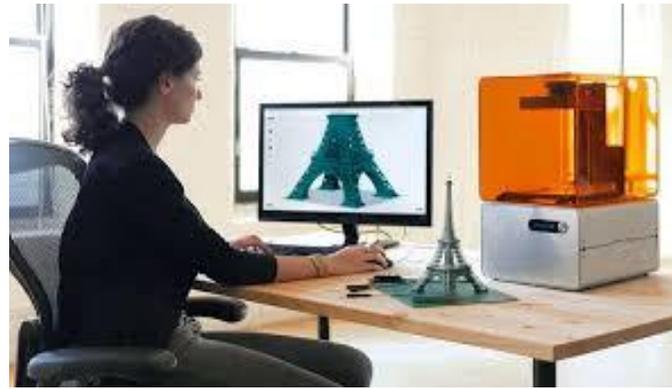
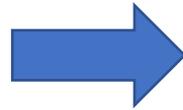
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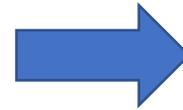
The difference between using it and implementing it in industry



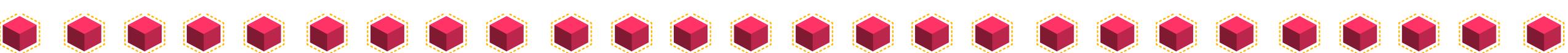
Download  
or design  
the part



Print



Final Part



# Additive Manufacturing: from using it to implementing it

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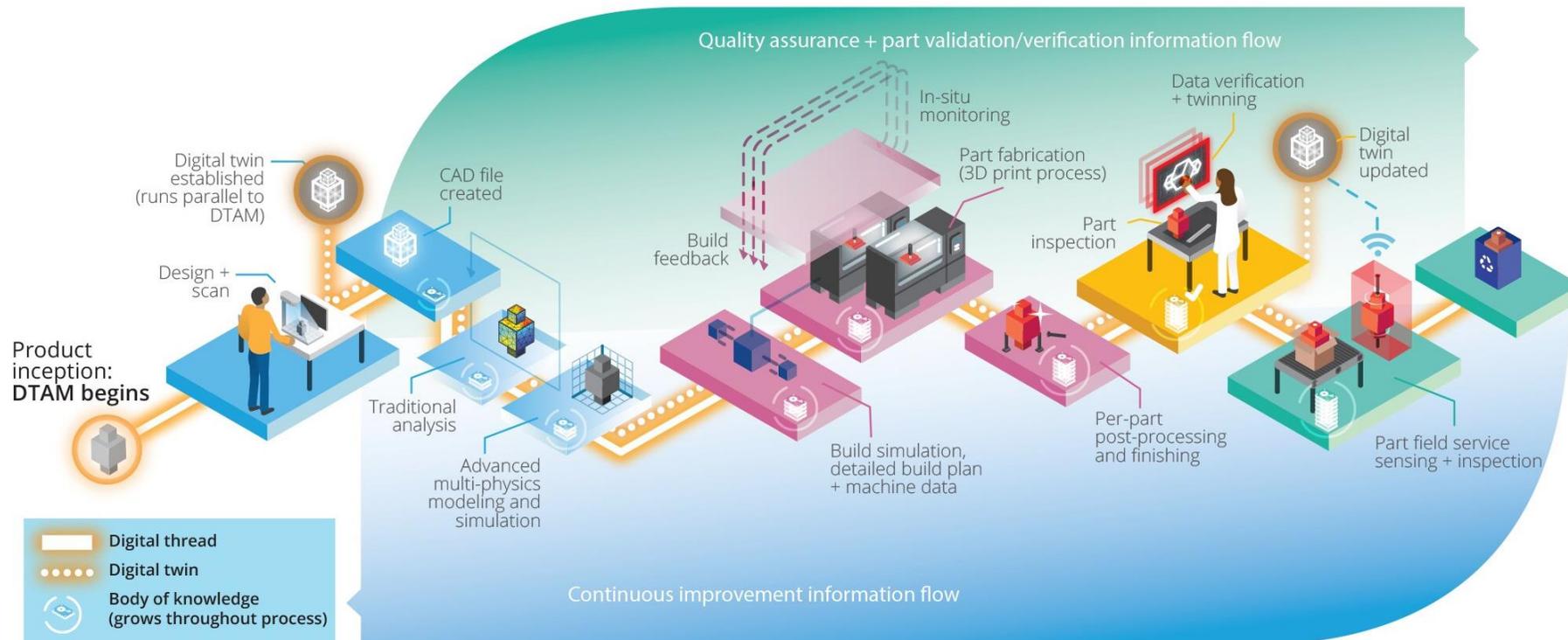
## The difference between using it and implementing it in industry

1 SCAN/DESIGN + ANALYZE

2 BUILD + MONITOR

3 TEST + VALIDATE

4 DELIVER + MANAGE



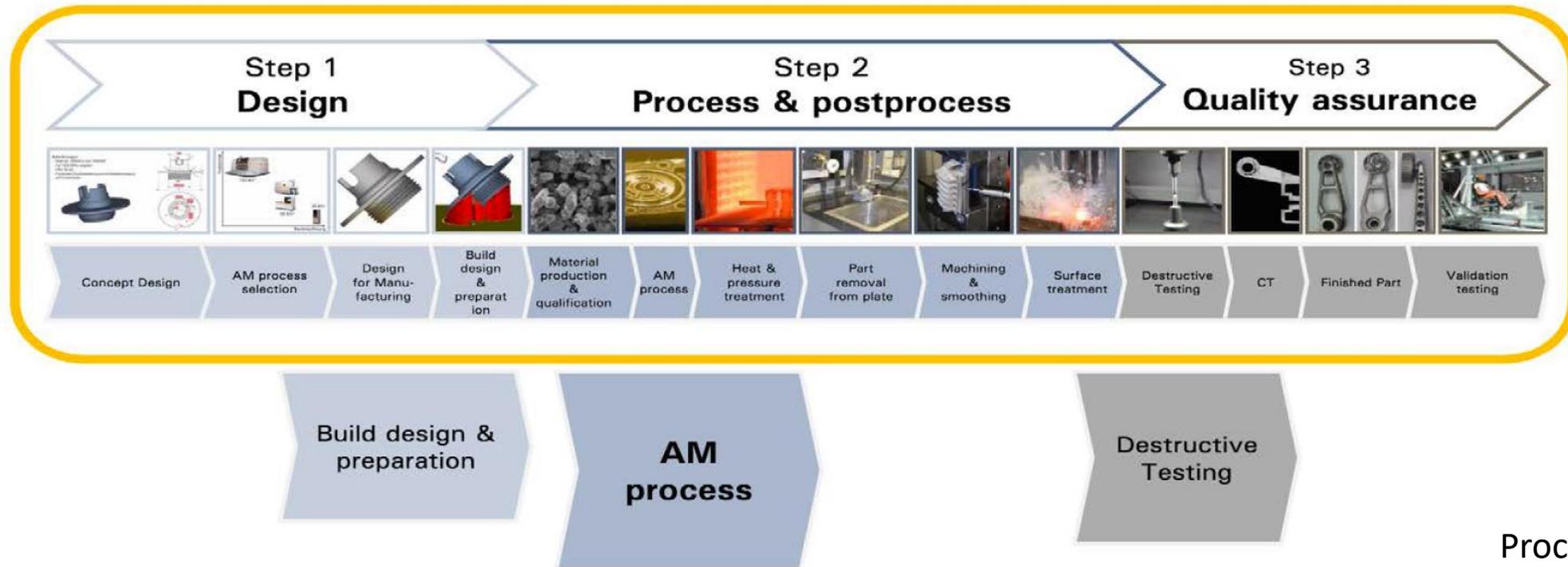
### Other considerations:

- Application
- Material used
- AM Process
- Mechanical requirements (validation of the modeling and simulation)
- etc

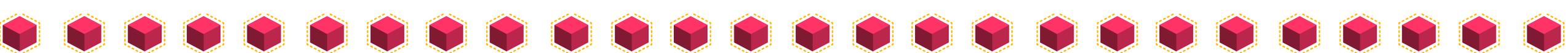
# Additive Manufacturing: from using it to implementing it

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## The difference between using it and implementing it in industry



Process plan at Brose



# Additive Manufacturing: from using it to implementing it

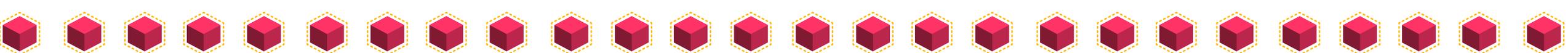
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## The difference between using it and implementing it in industry

3d printed baby Yoda



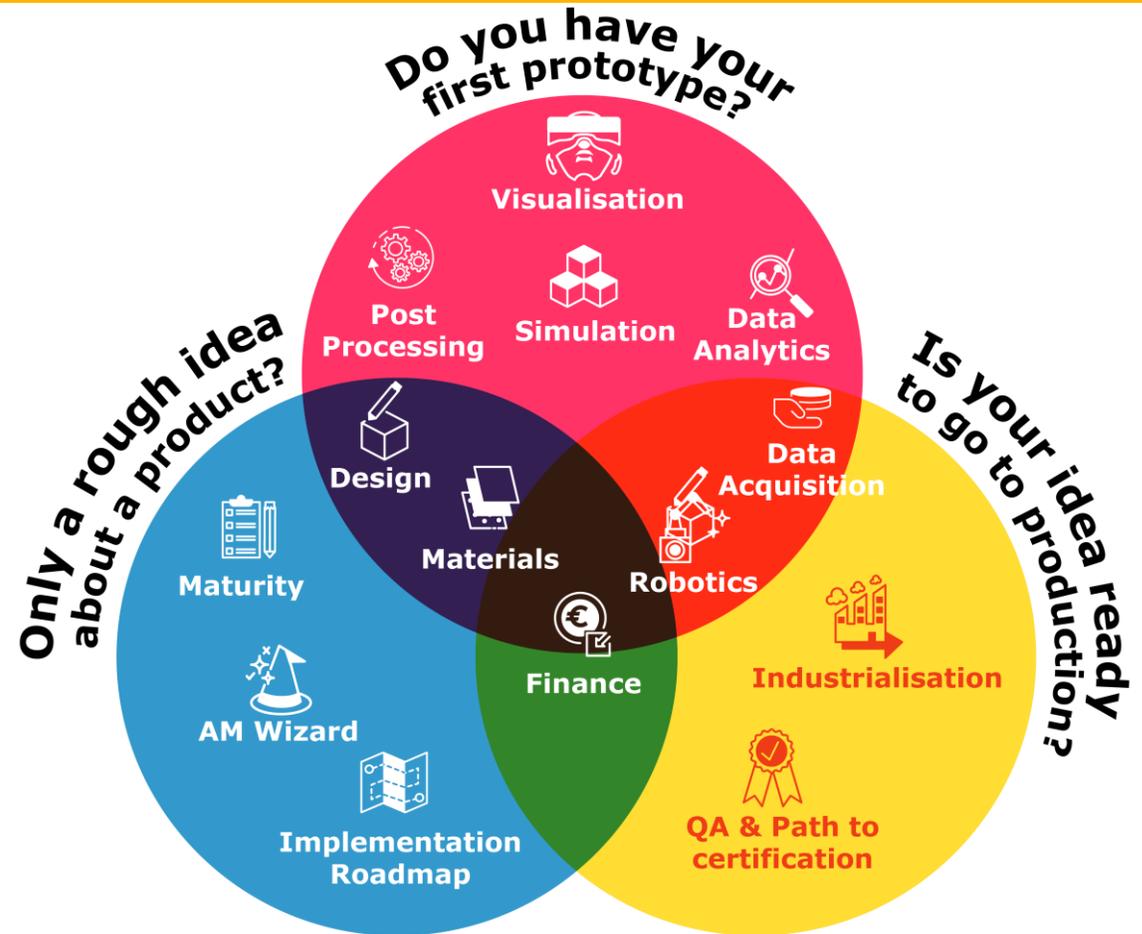
First approved, structural, titanium components for commercial flight



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The steps and the support a SME will take and need when looking at AM



# Additive Manufacturing: from using it to implementing it

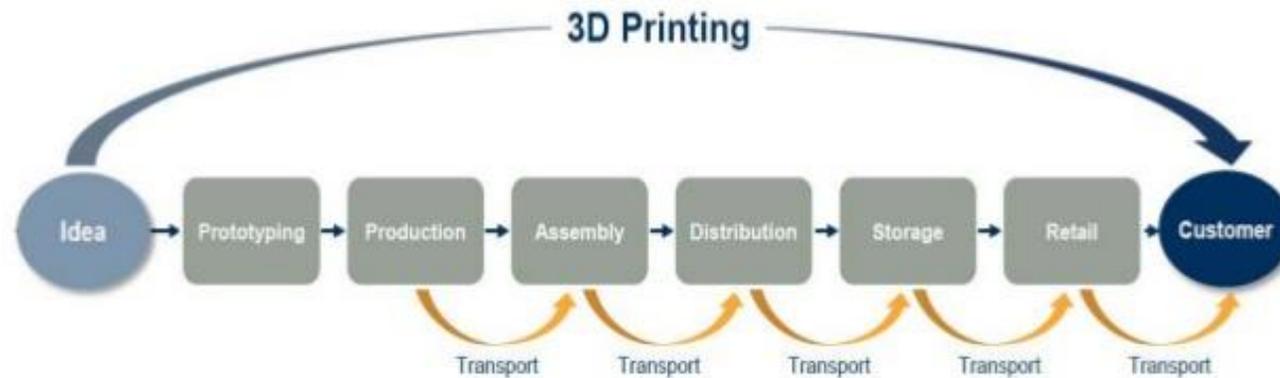


Some examples of the analysis needed when deciding to implement AM



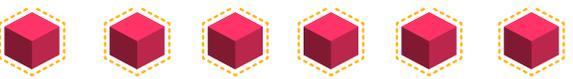
# Practical example

## AM in the spare part supply chain



Additive manufacturing offers

**Production on demand**  
**Production on location**



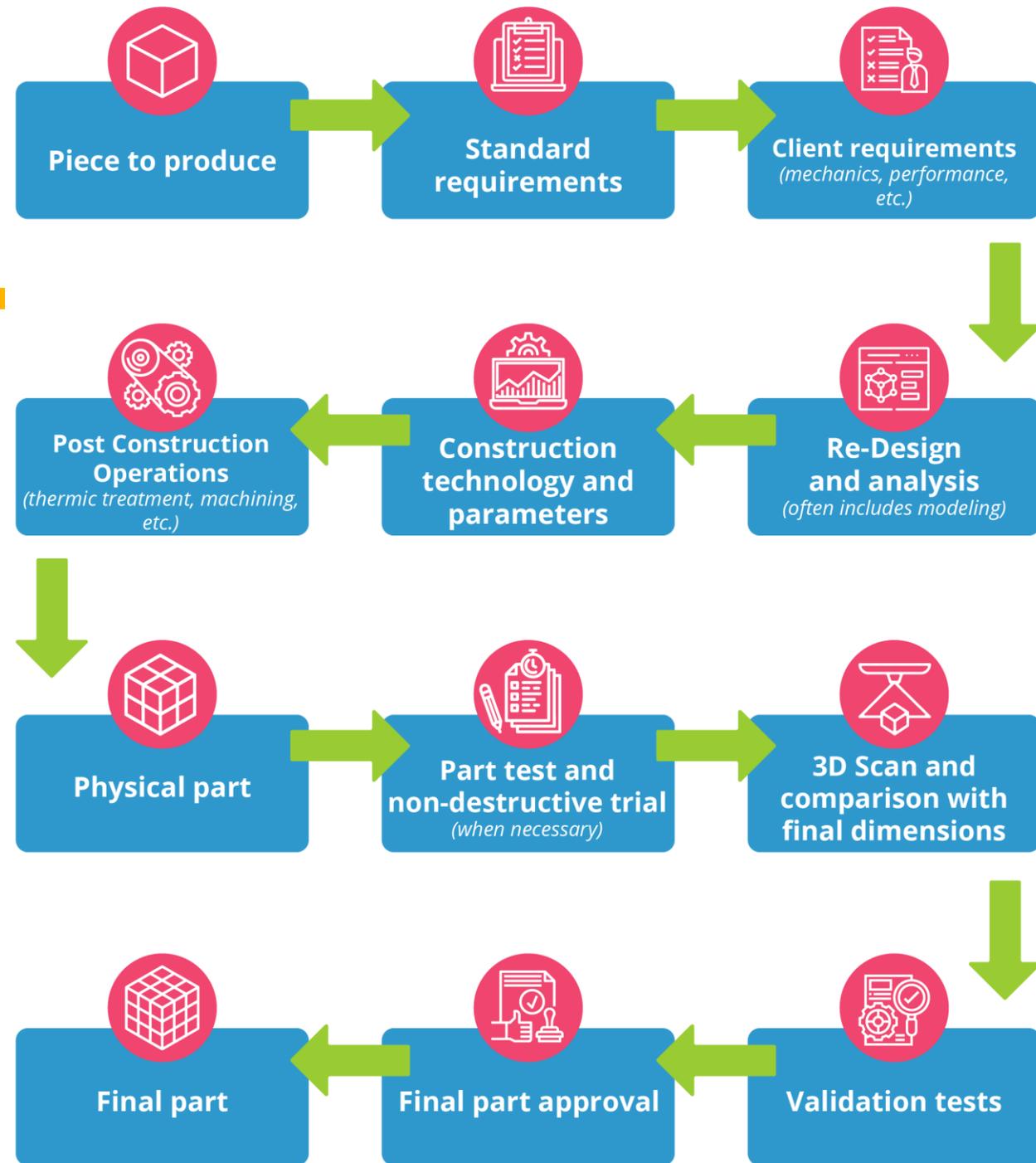
# Practical example

## Practical example:

- Company wants to use AM instead of having stock of spare parts
- Be allowed to print on demand
- Some parts are used in critical (and expensive) equipment
- Some parts only need to be replaced once a year
- The range of parts covers metal as well as polymer parts

Just on more thing:

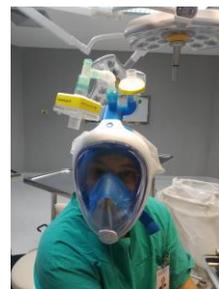
We have close to 200.000 spare parts !!!!!!!!!!!!!



# Practical example

Understanding the requirements for AM implementation

- Reduced risks
- Identification of which parts can be made with AM
  - Identification of the requirements of the part
    - Selection of the material and process
- Definition of the Quality assurance procedures



Just print

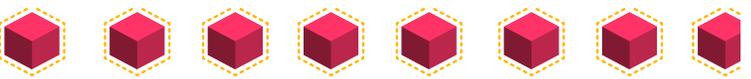
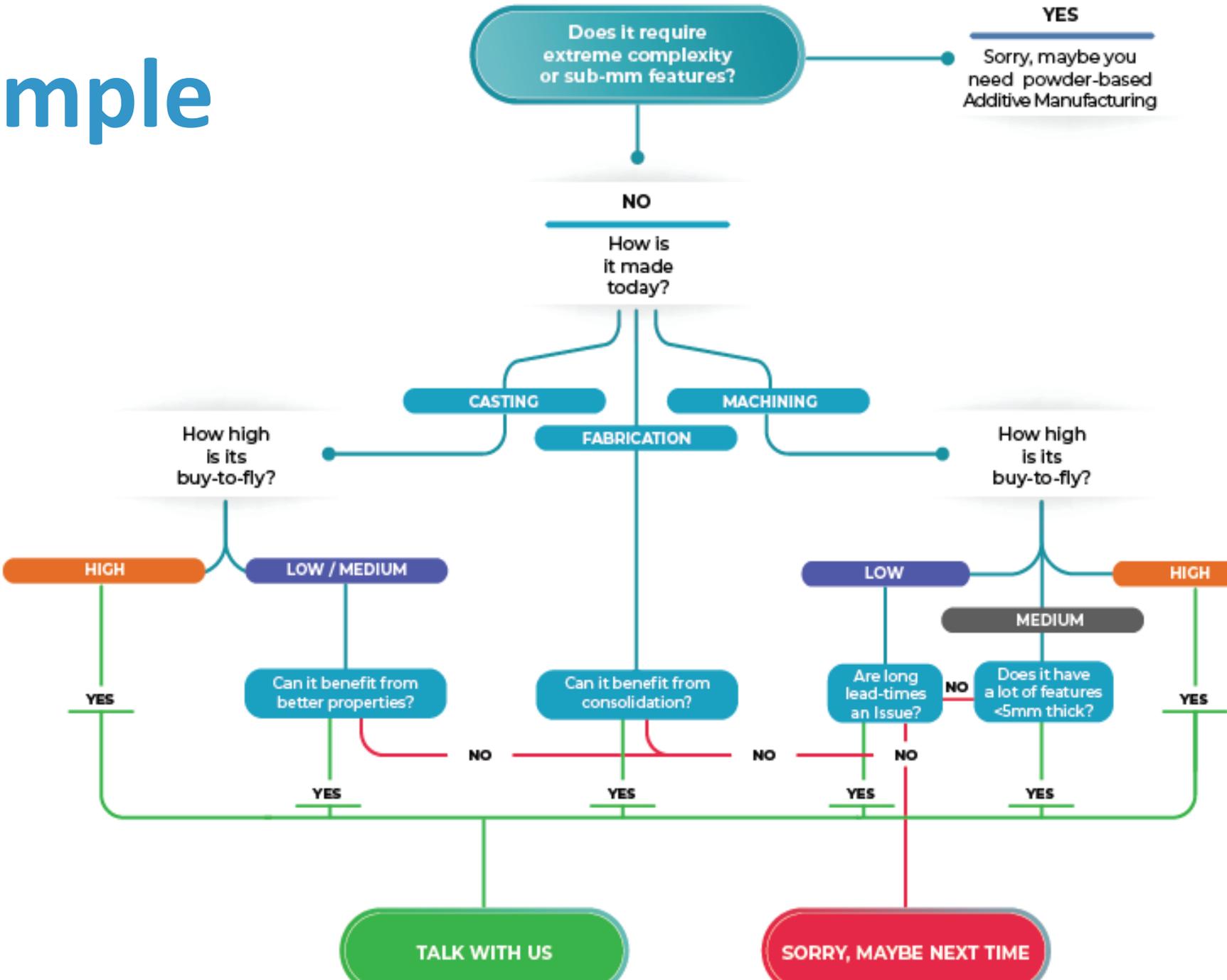
- Higher risks
- Only focused on the geometry of the part

Received parts were not used

# Practical example

AM might not be the best solution

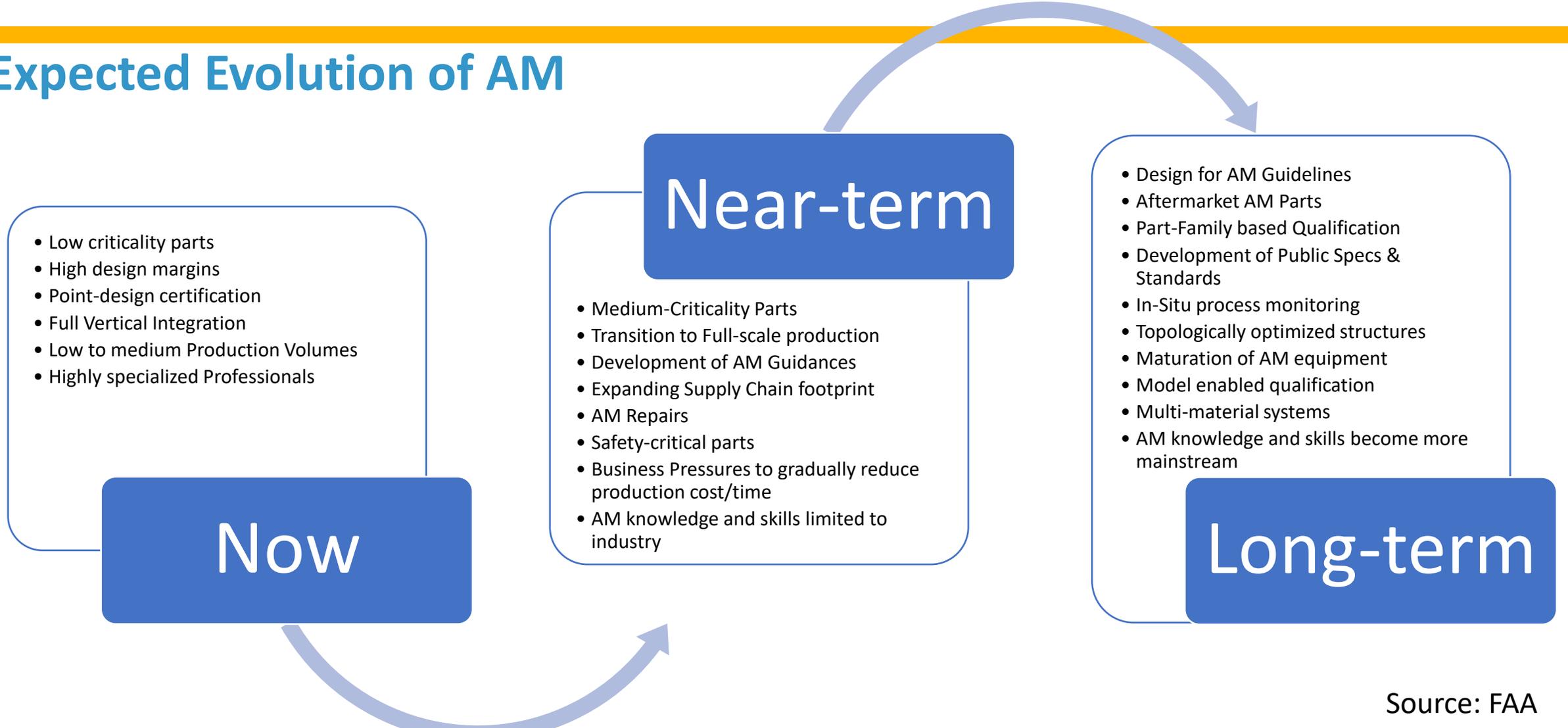
Source: WAAM3D and LASIMM Projetc



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## Expected Evolution of AM



# Additive Manufacturing: from using it to implementing it



It is important to define the requirements of the part being manufactured (can it just be printed or does it need more control?)

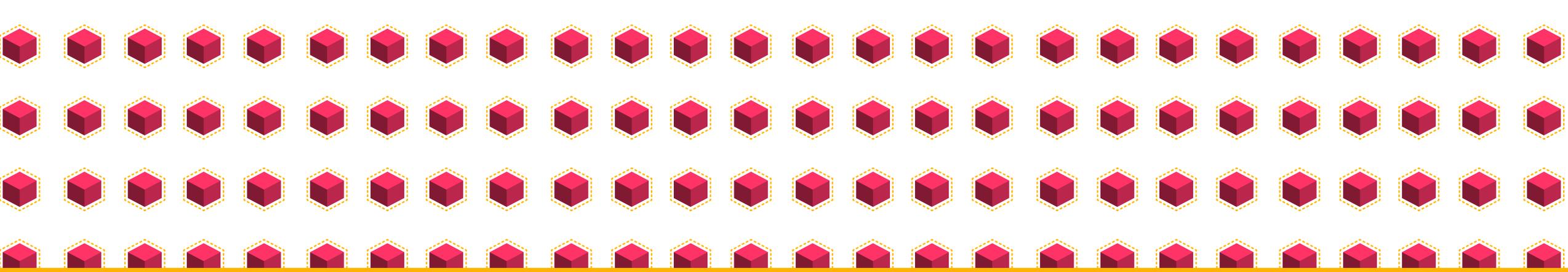
Understand that there is a difference between printing and providing “industry ready” parts

AM is “just” another manufacturing process, that needs to be integrated in the manufacturing chain

AM is a revolutionary process, but it is important to understand its capabilities and limitations

Knowledgeable and skilled Professionals, but not only, are a must





# Thank you!

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European Commission



**EU Industry Week**  
2021  
#EUIndustryWeek

