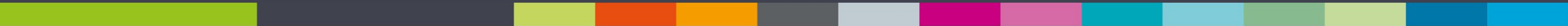




TURKU BUSINESS REGION



Networking with impact





ENABLING
SERVICES



Talents and
knowledge

Test beds & public
procurement

Operational
environment

Investments and
relocation



BUSINESS SERVICES CORE

- INCREASED COMPETITIVENESS
- NEW BUSINESS OPPORTUNITIES
- NEW COMPANIES CREATED

Business idea &
model coaching

Starting a
business

Running a
business

Acceleration &
growth programs

Funding
advisory

R&D&I
collaboration

Ownership
changes



BUSINESS GROWTH
SERVICES



Additive Manufacturing in Maritime Industry

Motivation:

- It is a joint advantage that companies in maritime industry keeps up the competitive advantage TBR has.
- Turku Science Park Ltd supports companies to adopt new technologies, like Additive Manufacturing.
- Engineering and management decisions are in major role to outline future products and manufacturing processes.
- Decisions should be based on up to date knowledge of today's manufacturing methods and possibilities.

Solution:

In order to achieve competitive advantage through AM, engineering and manufacturing companies need to understand:

- new degrees of freedom enabled by 3D printing technology.
- the restrictions which are as important as possibilities.

Training gives participants a holistic view to Additive Manufacturing as a new and rising manufacturing method and gives tools to design future parts and products.

Etteplan has experience in training engineers and managers for AM utilization.

Goal: Provide the best possible AM training for companies located in Turku area.



Additive Manufacturing Training

Turku Science Park Ltd

3D Printing / Additive Manufacturing training



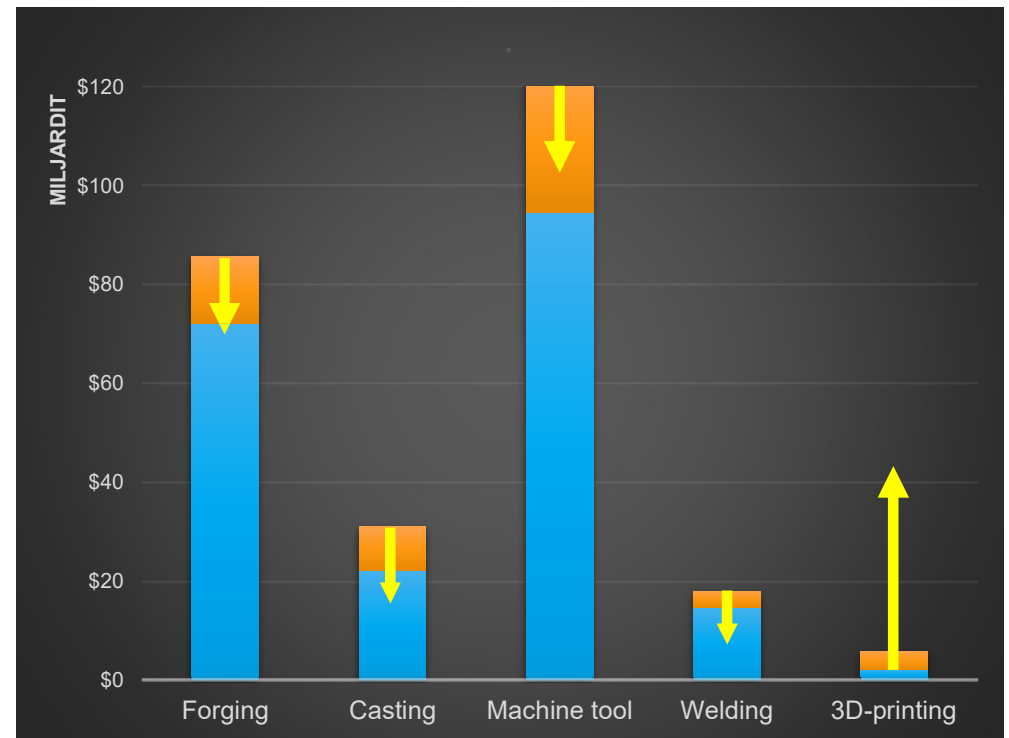
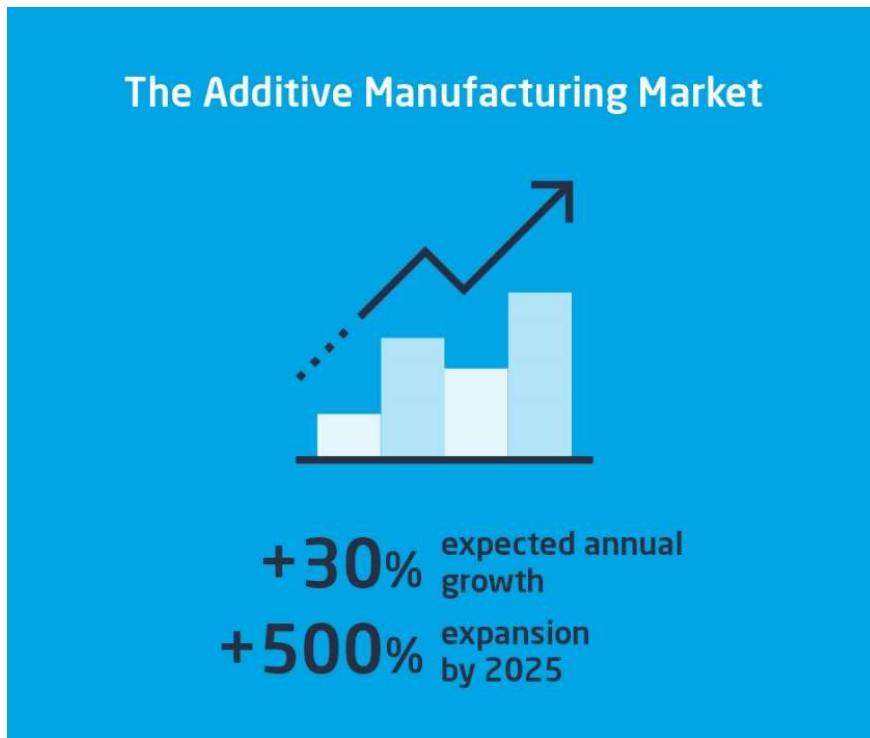
1. Why Additive Manufacturing

Metal additive manufacturing is reaching the industrialization stage. While established additive manufacturing technologies are starting to come up against technology-inherent cost boundaries, new additive production concepts are shaking up the market.

Companies must stay on top of the latest developments and actively include those in the creation and maintenance of their technology roadmaps. A structured approach that gives tools for engineers and managers to understand the space of additive manufacturing is therefore needed.



Additive Market Outlook



2. AM training - Engineer 5 days

- 1) **Added value comes from design and AM technologies** – What is happening in 3D printing?
- 2) **AM design** – Basic design rules for AM
- 3) **Production tooling & AM softwares**
- 4) **Hands-on:** Metal printing (LPBF), plastic printing and post-processing
- 5) **AM production & training conclusion** – mass production in AM and results from self-learning exercises

All participants will receive 3D printing handbook and 3D printed parts (metal & plastic)

2.1 Self-learning exercise

- Learning by doing is an essential part of training
- All participants will receive a topology optimization design task
 - Trial licence for topology optimization software
 - Detailed starting data and requirement list
 - Design task will take approximately 30 hours if you have a mechanical engineering background
- Design fulfilling the design requirements will be 3D printed (plastic) for the participant
- All participants will receive individual feedback about the final design

Commercial terms – 5 days training

5 day Engineer training– Theory and exercises

- **Price per person: 2200€ (VAT 0)**
 - Minimum number of participants: 20
 - Location: Turku, TBD
 - Facilities: Meeting room, lunch and refreshments included
 - Training language: English or Finnish
 - Price includes, traveling and accommodation costs of the trainers

• Terms

- 14 days net
- Invoicing
 - 50 % after 1st training day
 - 50 % after last training day

<https://www.etteplan.com/digitalization/additive-manufacturing>

2.2 AM training - Manager 2 days

- 1) **Added value comes from design and AM technologies** – What is happening in 3D printing?
- 2) **Changes in value chains** – How AM will change traditional value chains and how this affects on your business?

Commercial terms – 2 days Manager training

2 day Manager training

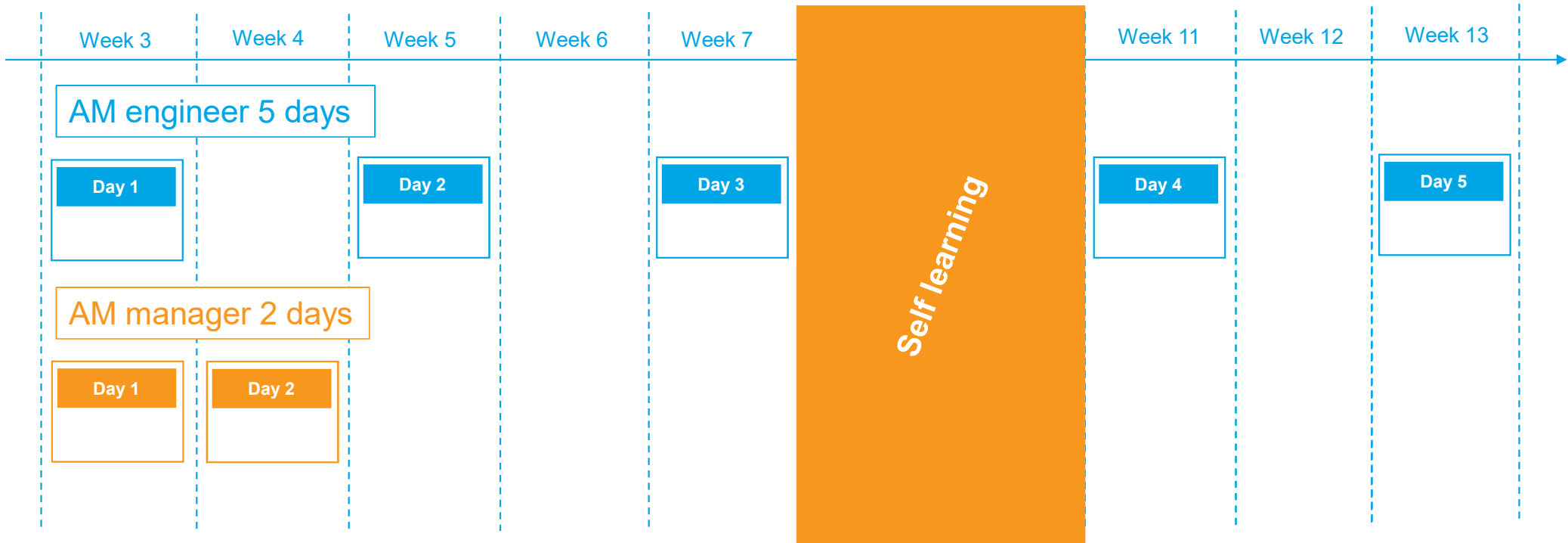
Price per person: 1500€ (VAT 0)

- Minimum number of participants: 15
- Location: Turku, TBD
- Facilities: Meeting room, lunch and refreshments included
- Training language: English or Finnish
- Price includes, traveling and accommodation costs of the trainers

- Terms
 - 14 days net
 - Invoicing
 - 50 % after 1st training day
 - 50 % after last training day

<https://www.etteplan.com/digitalization/additive-manufacturing>

3. Preliminary schedule 2020



4. Etteplan Additive Manufacturing

- Etteplan is one of the forerunners in Additive manufacturing. As AM technology provides plenty of new opportunities for different industry segments. We can educate you and your engineers to utilizing new design freedoms to **improve the performance** of the components and **reduce the manufacturing cost** at the same time.
- We provide **common sense and uncommon creativity**. In our teams talented engineers work together challenging each other to exceed your expectations. As experienced designers we see the necessary big picture for success: understanding the whole product design process and product management, understanding the potential of the technology as well as its limitations. **We design feasible concepts and real products**. And we are good at it.
- Etteplan has the competence and skill to educate new AM experts and design a state of the art products by AM. By combining our substance knowledge from design to Additive Manufacturing (DfAM) and current FEA & CFD competencies to optimize components we can help your company to gain the biggest benefits from AM technology.
- Our team has trained over 15 companies and over 100 engineers for Additive Manufacturing.

CORE FACTS



TEAM SKILL SET







TURKU BUSINESS REGION



Vaikuttavaa verkostoitumista

