

#### ULTRA-FAST MICRO AND NANO 3D PRINTING

for serial production



## Management Summary



#### THE OPPORTUNITY

Micro & nano products: used across a wide range of industries.

#### THE PROBLEM

Creating new products is a timely and highly expensive process.

#### THE SOLUTION & OUR PATENTED TECHNOLOGY

1000x faster 3D printing process and less expensive.

#### **BUSINESS MODEL**

3 revenue streams: printers direct sales, maintenance and support.

#### GO TO MARKET PLAN

We target the academic users first, focus on industrial users

#### later. COMPETITORS ANALYSIS

Competitive Advantage: 3D printability, speed, cost, feature size.

#### OUR CORE TEAM

Ensures multidisciplinary Knowledge Sharing.

#### FINANCIAL PROJECTIONS

Positive Cash Flow starting 2023.

#### TIMELINE

2021: 3rd prototype; 2022: First sales of MVP.





## **Our Mission**

#### **Revolutionize Microfabrication**

Today, prototyping and developing a new micro product is a very slow and expensive process that makes use of tools originally designed for semiconductor industry.

#### **Our Patented Technology**

We use our patented technology to create a novel 3D printer for structures on the micro scale. Our method will be 1000x faster and less expensive that the existing micro-printers.

#### Team

Our interdisciplinary approach to 3D printing helped us break the boundaries and develop a new, cutting-edge manufacturing technology for microstructures.

#### THE OPPORTUNITY

## Micro & nano products: used across a wide range of industries

... with consistent & fast growth expected



Inertial sensors (MEMS) Optical fiber coupling

Micro-lens arrays

4.7% Advanced filters 1 billion 9,05% **Bio-scaffolds** 



#### THE PROBLEM

## Current European Union inefficient spending on new products



## **Existing process: lithography**



## **Existing process: micro-3D printing**





1000x faster and less expensive

## How it works?

How we do it:

We developed a <u>Volumetric Lithography</u> approach where an object is created in a liquid resin by a <u>million light beams</u> simultaneously.



How others do it: much slower, serial approach using only a single light beam.

#### **OUR PATENTED TECHNOLOGY**

First results with wide functionality

#### STEM-CELL BIO-SCAFFOLDS

Print upstanding walls and channels Used for stem cell research, bio scaffolds

#### FREE-FORM MICRO-LENSES

Print spheres Used for the micro optics production

MICROFLUIDICS Print spirals Used in microfluidics Our early prints



Next months: State of the art









Structures with features of ~5 microns

< 1 min/micro structure 1 hour/cm2



#### **ONGOING PROJECT**

## **Enabling direct printing of membranes**



FUJIFILM

#### **BUSINESS MODEL**

## Scenarios in 5 years

### BEST CASE ★

We become the new manufacturing standard for micro and nano scale objects Globally more than 1000 units sold.

BASE CASE 💼

We deliver what we currently estimate Market share 20% 40 units/year + peripherals

WORST CASE 📕

Sold only to universities 20 units/year + peripherals



## > €100M

Yearly Revenues

€12.5M

Yearly Revenues

€5M

Yearly Revenues

PHOTOSYNTHETIC

#### **BUSINESS MODEL**

## **3 Revenue Streams (Base Case)**



## €200k revenue/unit

~80% margin

#### PRINTERS DIRECT SALES 🚢

Key revenue source in the beginning years Early stage: include printing service, gather feedback

€2k revenue/unit

~80% margin

#### MATERIALS SALES 🔒

Sales of the consumables and accessories needed for printing Early stage: consulting services to support the customer's R&D activities in generating new IP

#### MAINTENANCE 🔀

Subscription fee for hardware maintenance & software updates



~50% margin

#### FINANCIAL PROJECTIONS & KEY METRICS



#### **GO TO MARKET PLAN**



### Universities

#### €10M\*

\*Total revenue generated 3 years after market introduction Introduction early 2022 1500+ universities active in relevant fields 30+ microfabrication foundries

### **Chromatography + membranes**

#### €50M+\*

\* Based on the first product we are currently exploring Introduction 2022 1.000.000 HPLC columns produced per year

### ...How to reach them



#### **COMPETITORS ANALYSIS**

## **Competitive Advantage**





## ...ensures multidisciplinary Knowledge Sharing

Alexander Kostenko

#### Aditya Narayanan

Laura Molina Torres

Tim Wanamarta



Optical

Engineering

Engineering

• 8 papers

• Optics, Fluid dynamics,

Chemistry, Mechanical





- PhD. Applied Physics, TU Delft
- Seismic R&D, Shell
- X-ray Imaging for the Rijksmuseum
- 9+ papers

CEO

#### Chemical Engineering

- PhD. Applied Physics, U. Twente MSc. Chemical Engineering (Cum laude)
  - Process optimization.
  - Chemical production units
  - and products.



#### Market Research

- BSc. Science Business & Innovation
- Candidate for MSc Strategy track of Business
- Administration at UvA

#### Mark Laagland



#### Electronic & Software Engineering

- BSc. Computer Science (Cum laude)
- Technician at the Biophotonics & Medical Imaging group, VU, Amsterdam

#### TIMELINE

## Achievements, Current Status, Next Steps



**Production** 

#### FINANCIAL PROJECTIONS & KEY METRICS





# Thank you!



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**Interested parties** 

## Contact initiated with:

