

TNO innovation
for life

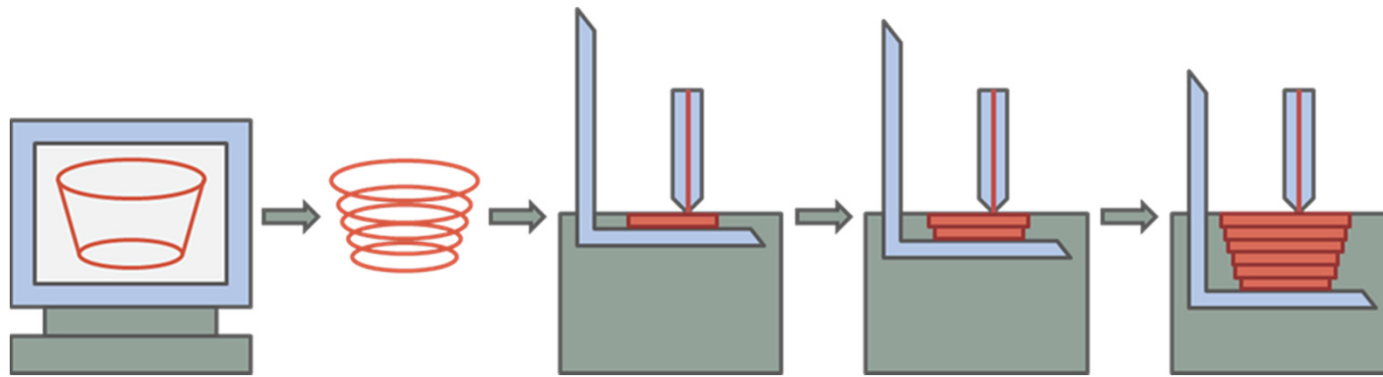


PERSONALIZED THERAPY BY 3DP MEDICATION
HEALTHCARE SOLUTIONS FOR HOMECARE SYMPOSIUM
DANIEL VAN DER LINDEN



WHAT IS 3D PRINTING?

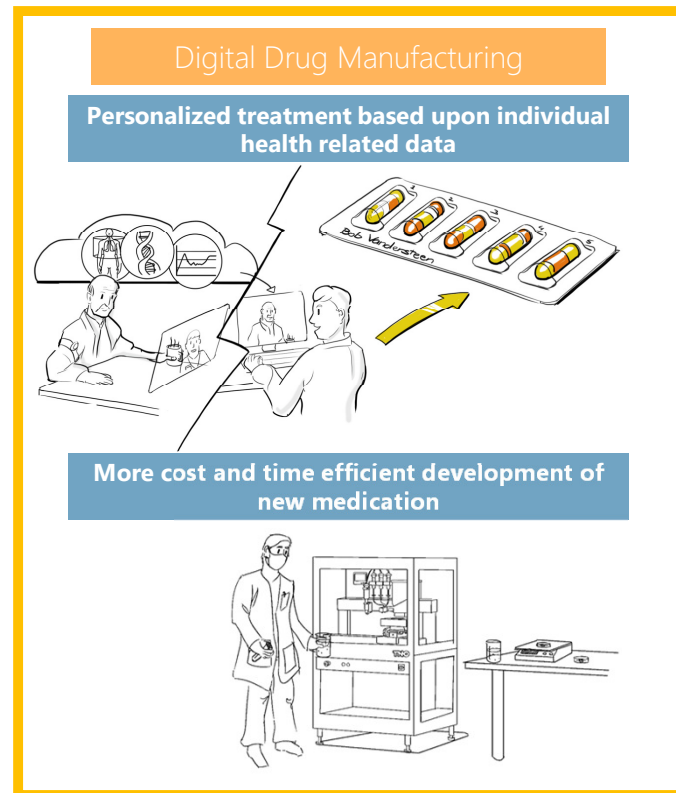
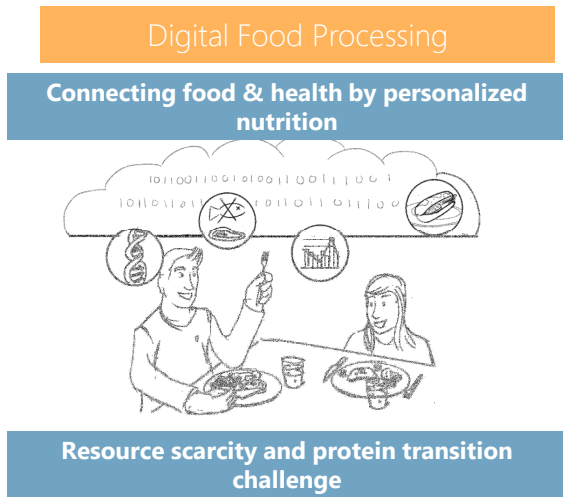
HOW IT IS BEING USED ALREADY.



Footer

MISSION

We connect people and knowledge to create high tech digital manufacturing innovations for food and pharma that boost the competitive strength of industry and the well-being of society.

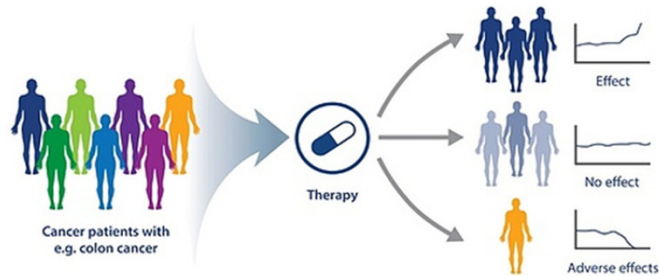


PERSONALIZED MEDICINE

3D PHARMA PRINTING

Current Medicine

One treatment fits all



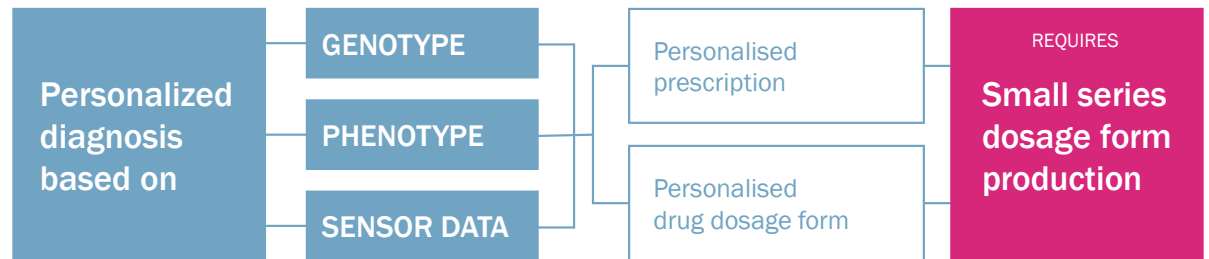
Future Medicine

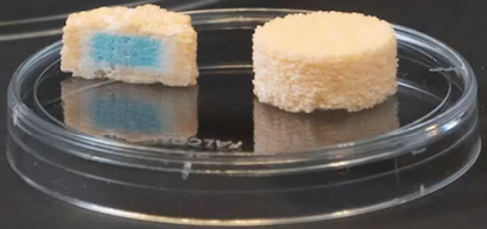
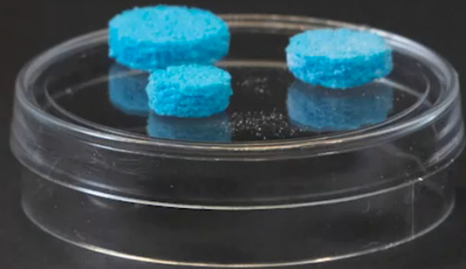
More personalized diagnostics



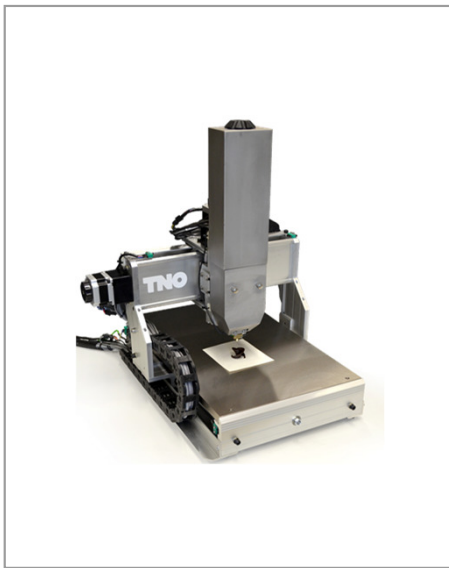
Source: crownbio.com

FROM:
ONE SIZE FITS ALL
 TO:
TAILORED APPROACH





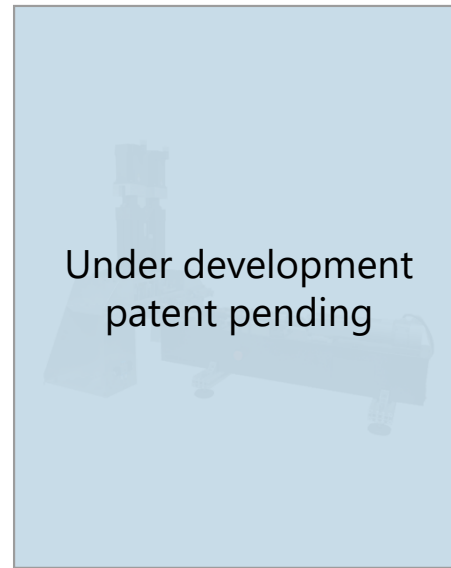
› IN HOUSE DEVELOPED TECHNOLOGY PLATFORMS



Extrusion printing & fused
deposition modelling



High speed dual material
extrusion printing



Under development
patent pending

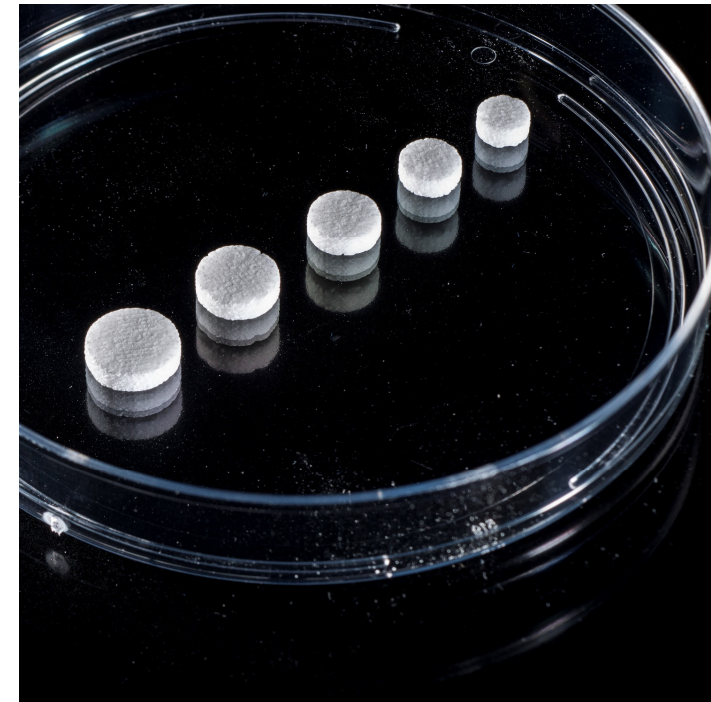
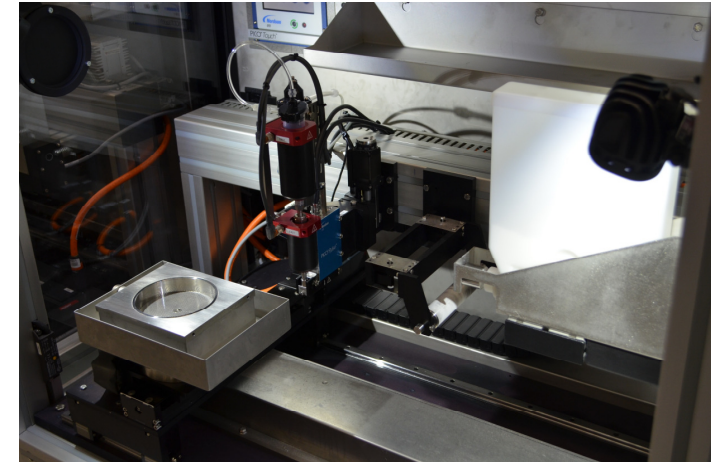
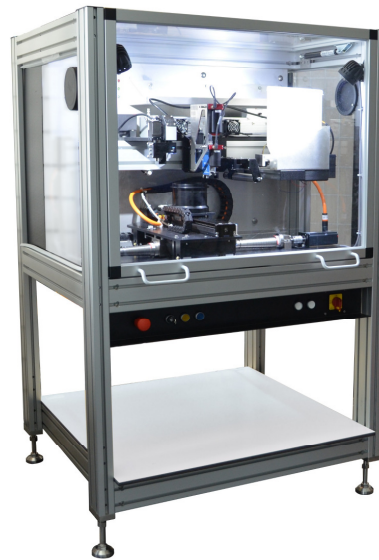
Upscaled continuous
hot-melt printing



Powder bed printing &
selective laser sintering
(separate or combined)

› HIGHLIGHTS MERCK – PHARMA R&D SETUP

- › Dedicated powderbed-printing setup built for Merck so allow them to further research their proprietary powder formulas and APIs.
- › Using powderbed, printing tablets for preclinical development and screening of APIs can be made more efficiently and with higher accuracy.
- › ‘...we decided to look for a partner with a solid track record in innovation and 3D printing. Furthermore, TNO has without a doubt a strong reputation of translating new technology into feasible applications..’ *Simon Geissler, Director Drug Delivery and Innovation*

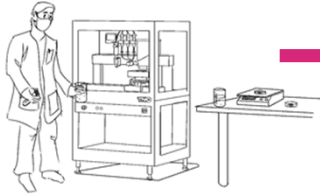


DIGITAL DRUG MANUFACTURING

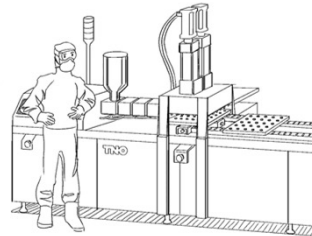
TIME LINE



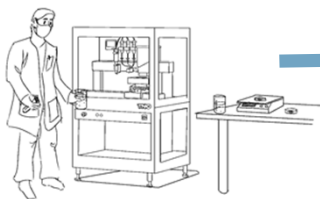
PHARMA R&D



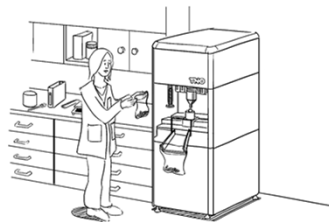
PHARMA FLEXIBLE PRODUCTION



HOSPITAL PHARMACY R&D



HOSPITAL PHARMACY PERSONALIZED MEDICINE



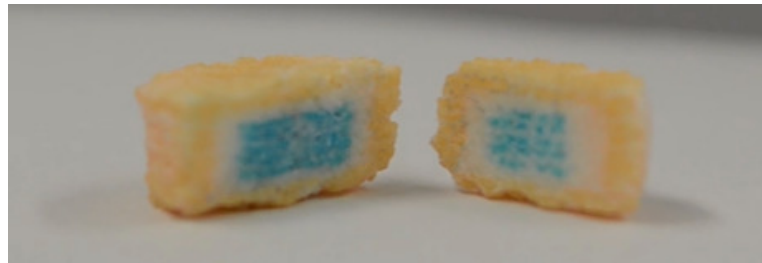
GENERAL PHARMACY PERSONALIZED MEDICINE



TIME




Source: TNO

› VALIDATION OF SEGMENTED TABLET CONCEPT

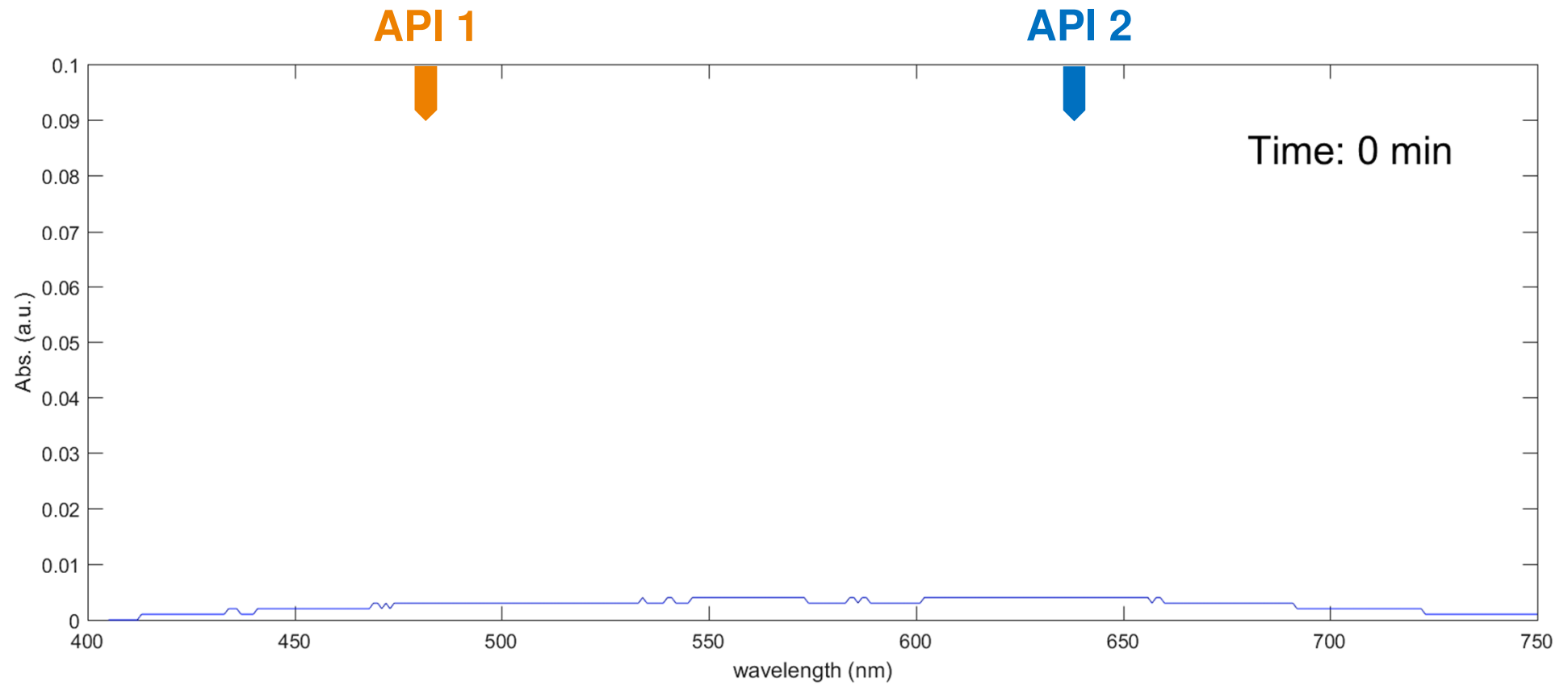


3-TONE VARIATION

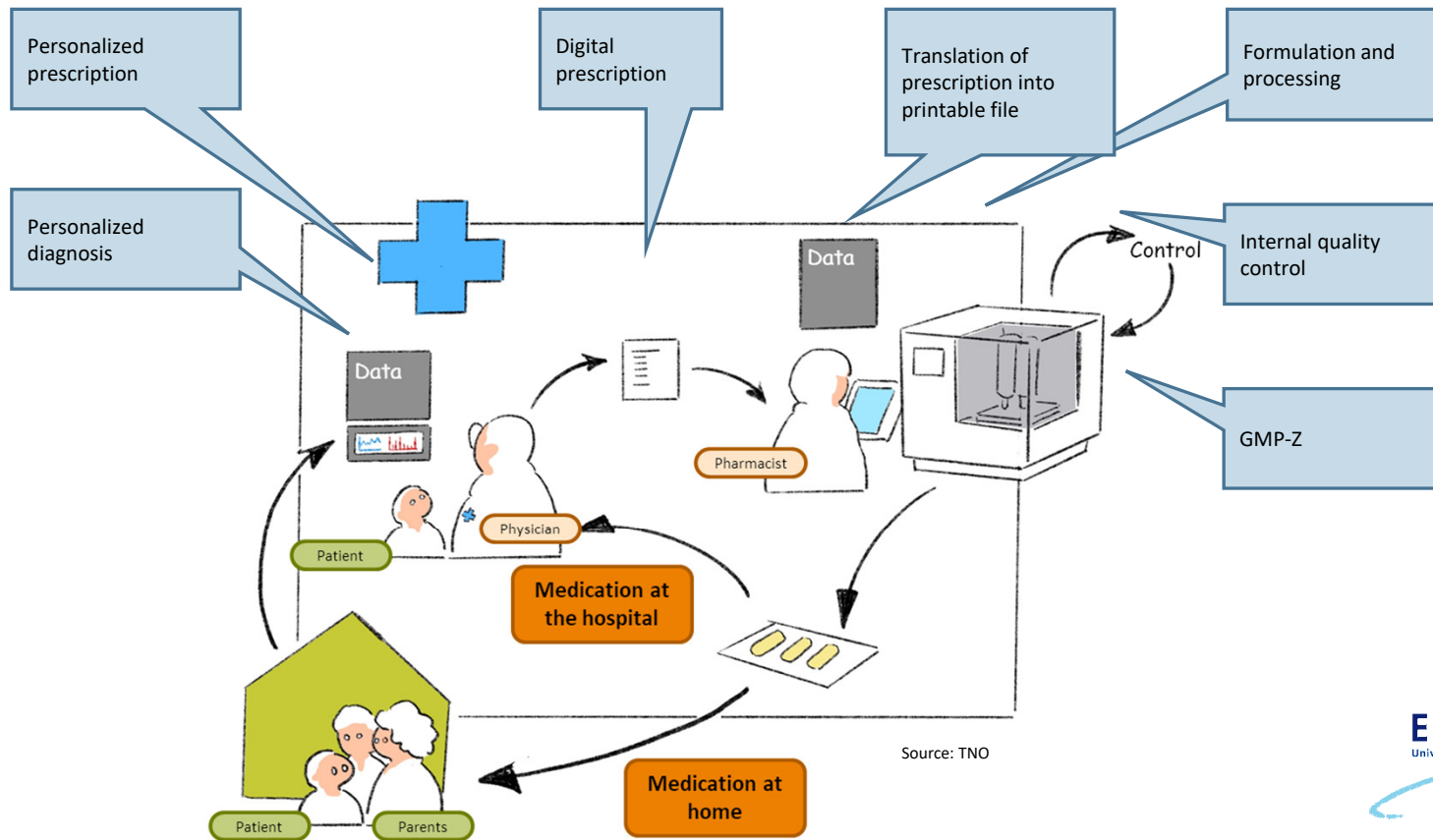
Complex geometry:

-  Fast dissolving + API 1
-  Slow dissolving
-  Fast dissolving + API 2

COMPLEX RELEASE PROFILES

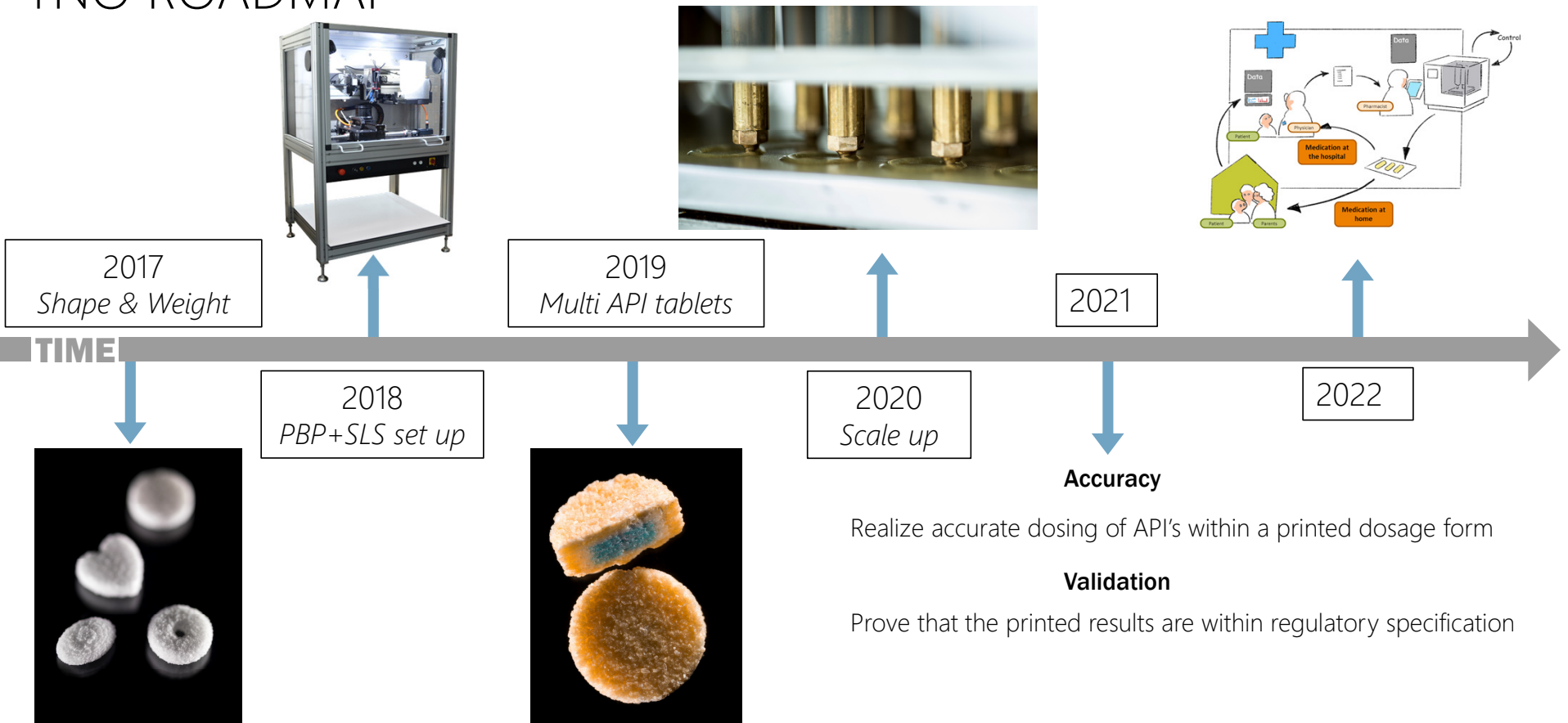


PERSONALIZED MEDICINE HOSPITAL PHARMACY



DIGITAL DRUG MANUFACTURING

TNO ROADMAP



Source: TNO

WHAT WOULD
YOU LIKE TO
PRINT?

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for life

