Introduction of the new 3D print laboratory and the 3DPrinterOS cloud

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ÚSTAV KONSTRUOVÁNÍ
Fakulta strojního inženýrství
VUT v Brně

Brno, 17.10.2018

ÚSTAV
KONSTRUOVÁNÍ

CONTENT

- Introduction
- Hardware equipment
- Software equipment
- 3D print manual
- Rules and principles
- Timeplan
- (Interactive presentation of the 3DPrinterOS cloud)

INTRODUCTION

Room:

A3/513

Access:

Student/Employee Card

Contact person:

Ing. Petr Krejčiřík, A3/501

HARDWARE EQUIPMENT

8x Ultimaker 3

Parameter	Value
Print head	Dual extrusion with swappable printcores
Build Volume	215 x 215 x 200 mm
Layer resolution	Up to 20 micron
Build speed	< 24 mm^3/s
Nozzle temperature	20 – 280 °C
Accuracy X; Y; Z	12,5; 12,5; 2,5 microns
Filament diameter	2,85 mm
Monitoring	Live camera
Build plate levelling	Active levelling

HARDWARE EQUIPMENT

Ultimaker 3 vs Prusa I3 MK3

Parameter	Ultimaker 3	Prusa I3 MK3
Print head	**Dual extrusion with swappable printcores**	Single extrusion printcore
Build Volume	215 x 215 x 200 mm	210 x 210 x 250 mm
Layer resolution	**Up to 20 micron**	Up to 50 microns
Build speed	< 24 mm^3/s	< 200 mm/s
Nozzle temperature	20 – 280 °C	20 – 280 °C
Accuracy X; Y; Z	12,5; 12,5; 2,5 microns	**10; 10; 5 microns**
Filament diameter	2,85 mm	1,75 mm
Monitoring	**Live camera**	-
Build plate levelling	Active leveling	Active leveling

HARDWARE EQUIPMENT

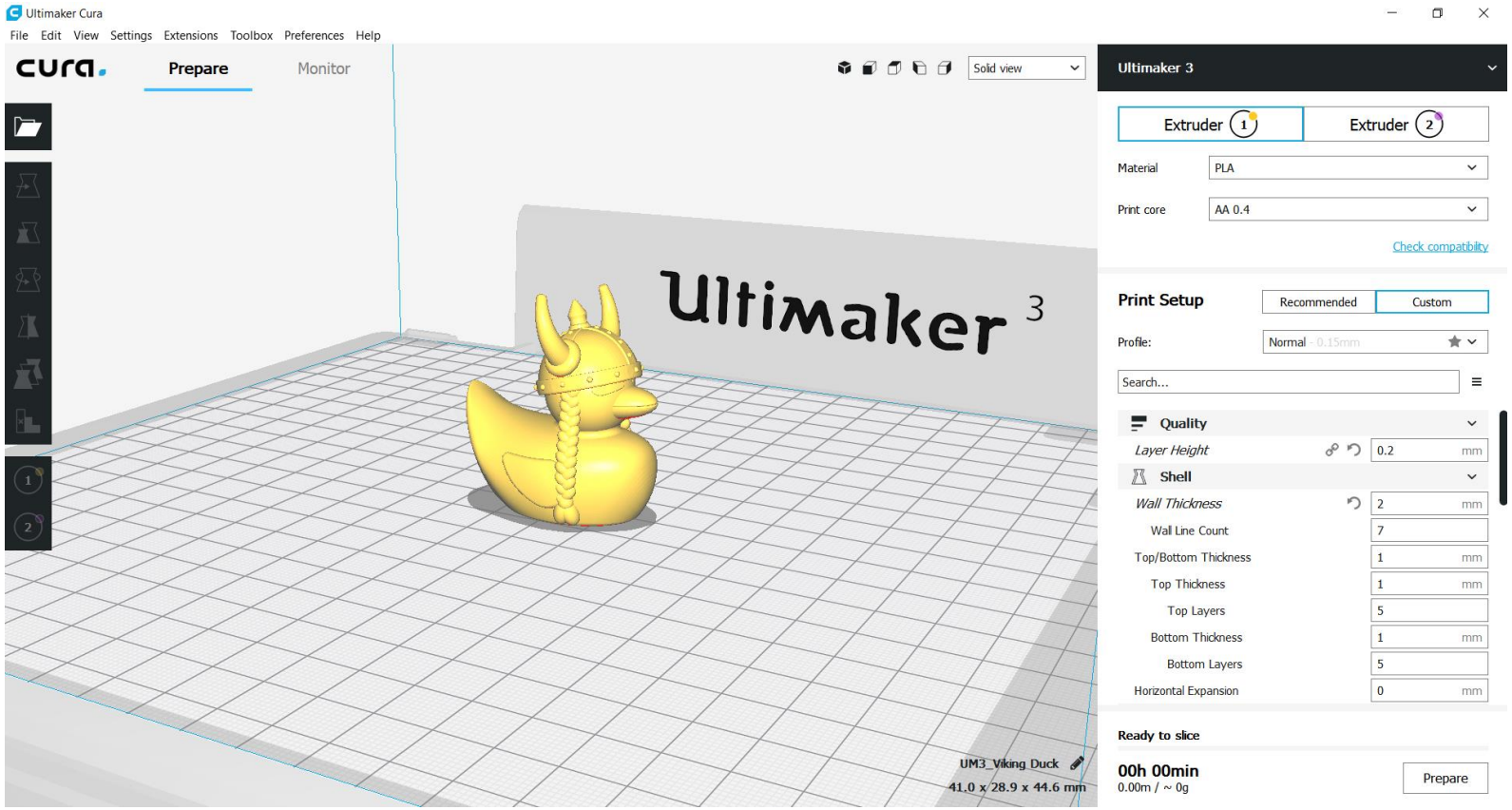
Supported materials:

- PLA, ABS, Nylon, CPE, CPE+, PC, TPU 95A, PP, PVA, Breakaway
- Filament diameter: 2,85 mm

SOFTWARE EQUIPMENT

Ultimaker CURA

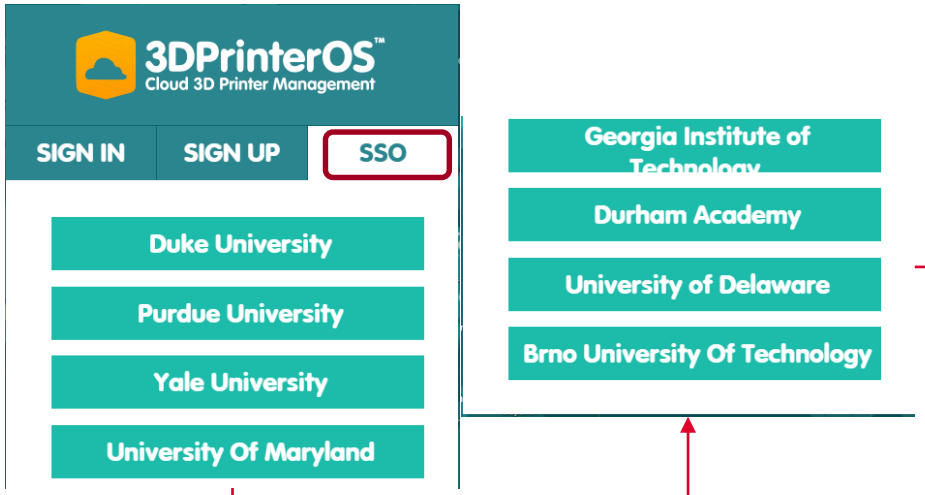
- Offline slicer
- Print setup
  - *Basic (Recommended)*
  - *Custom*
- Estimated print time
- Material consumption

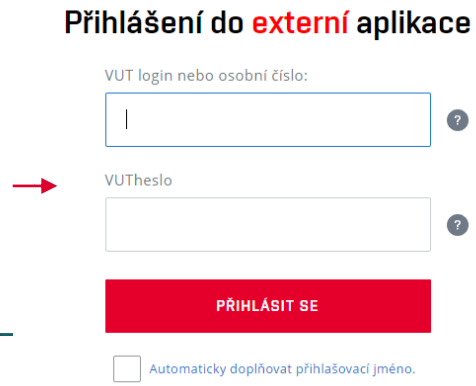


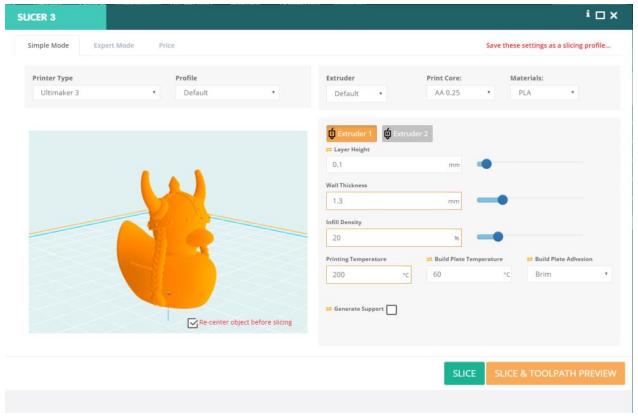
SOFTWARE EQUIPMENT

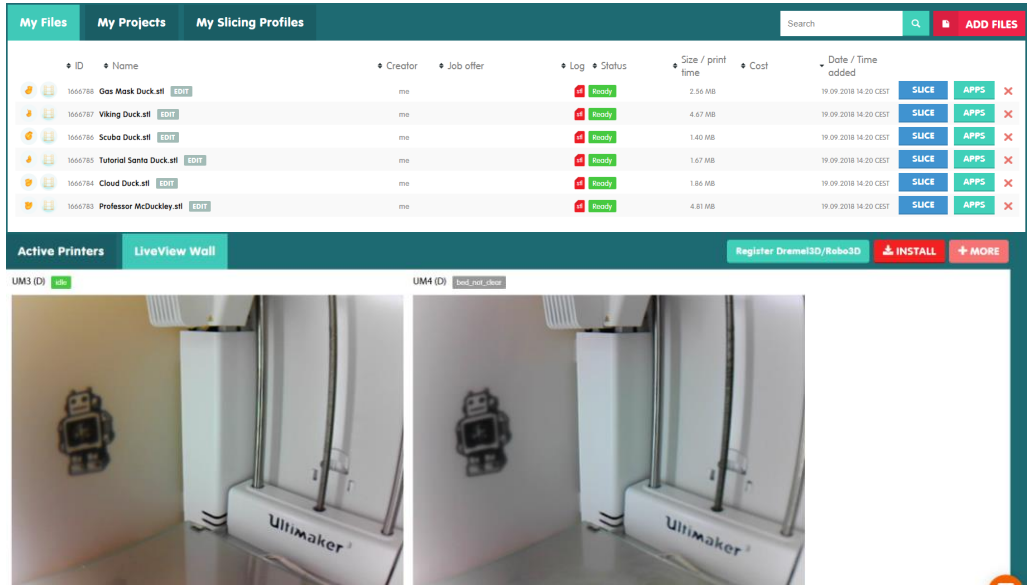
3DPrinterOS Cloud

- http://cloud.3dprinteros.com
- Several 3D print tools and applications in one cloud environment
- Sign-in with VUTlogin and VUTpassword

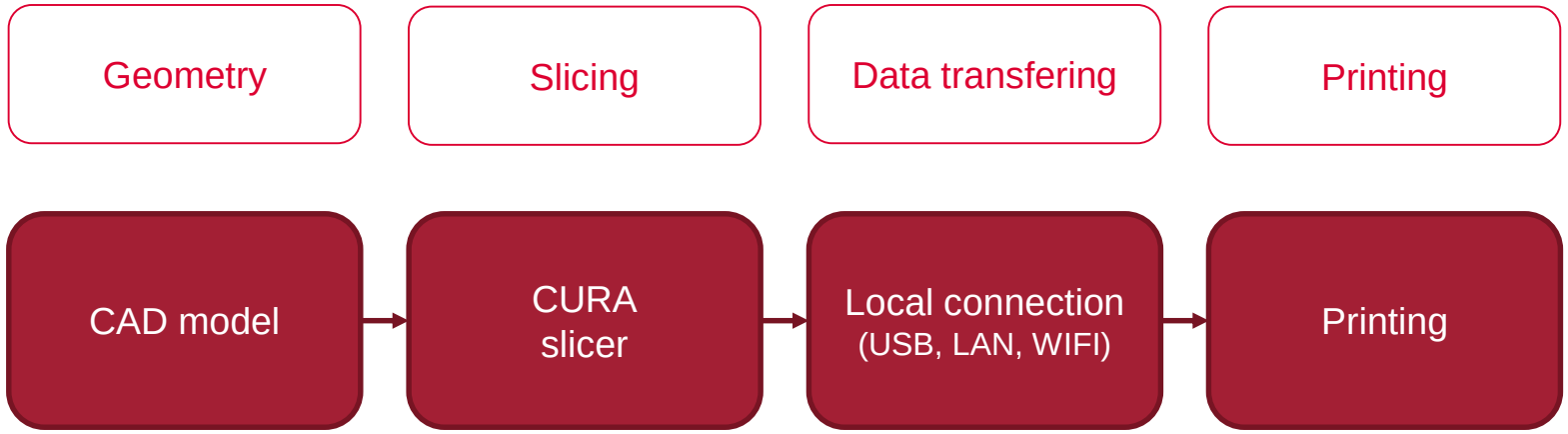








3D PRINT MANUAL – WITHOUT 3DPrinterOS



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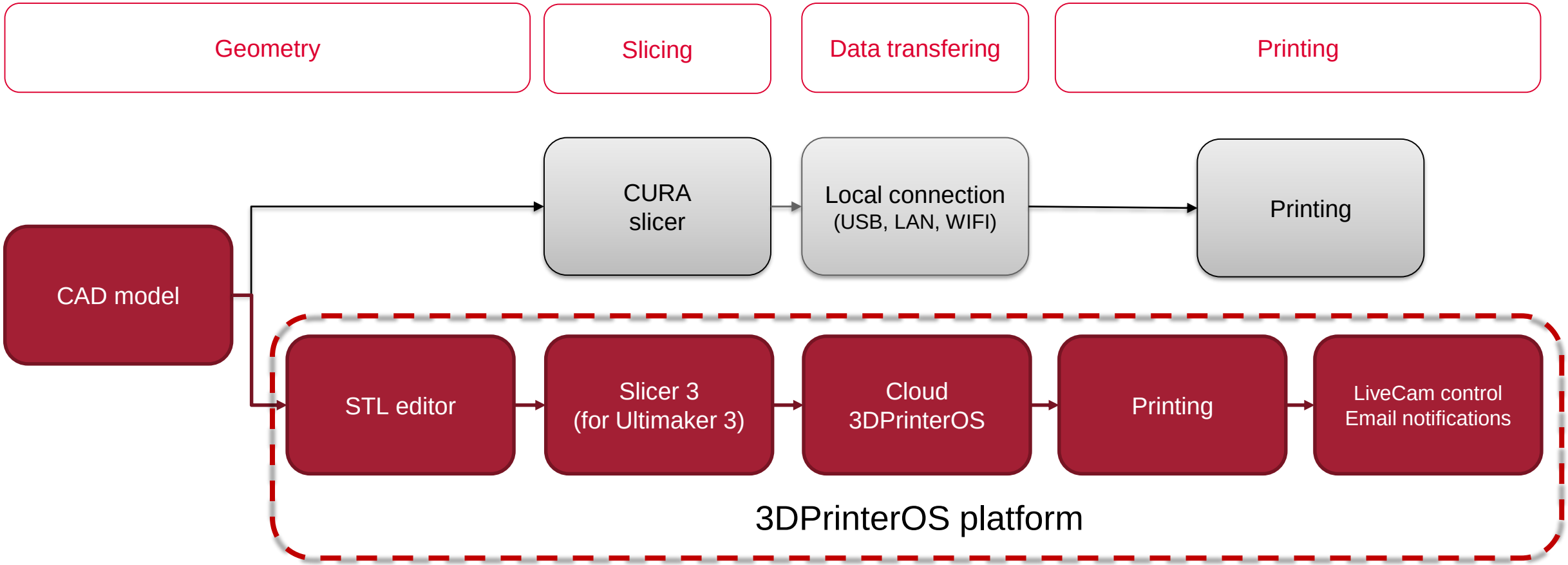

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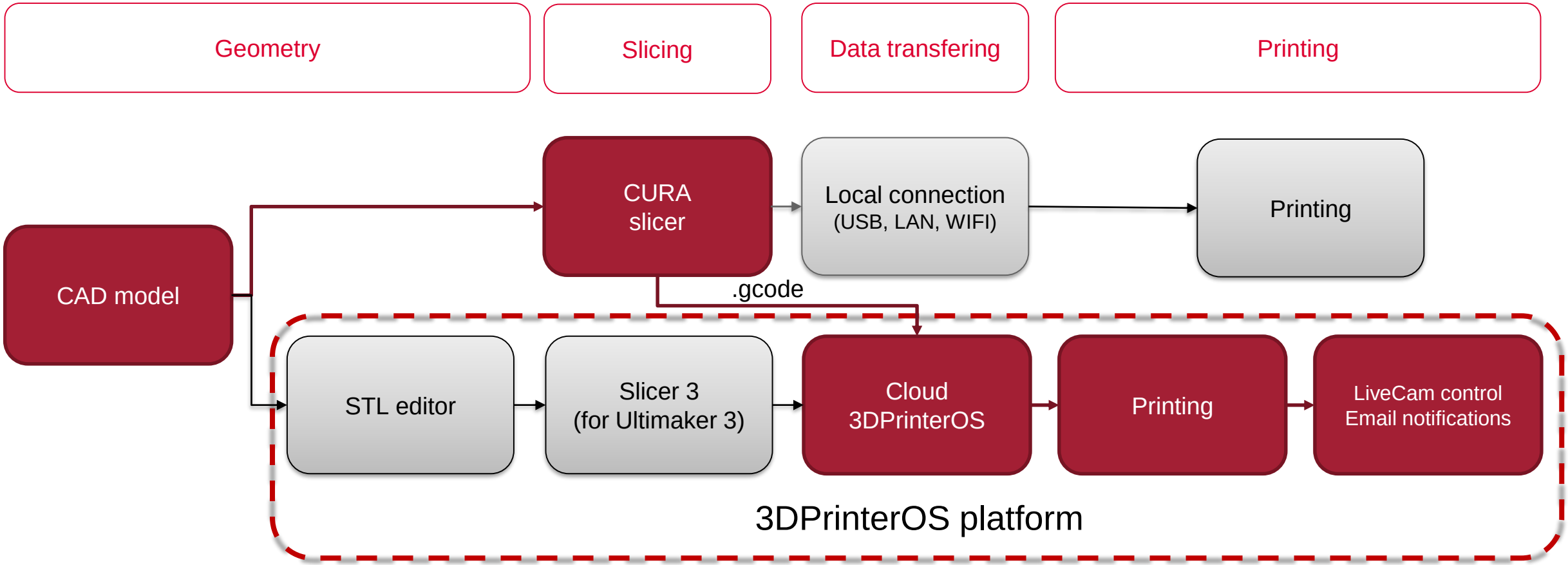

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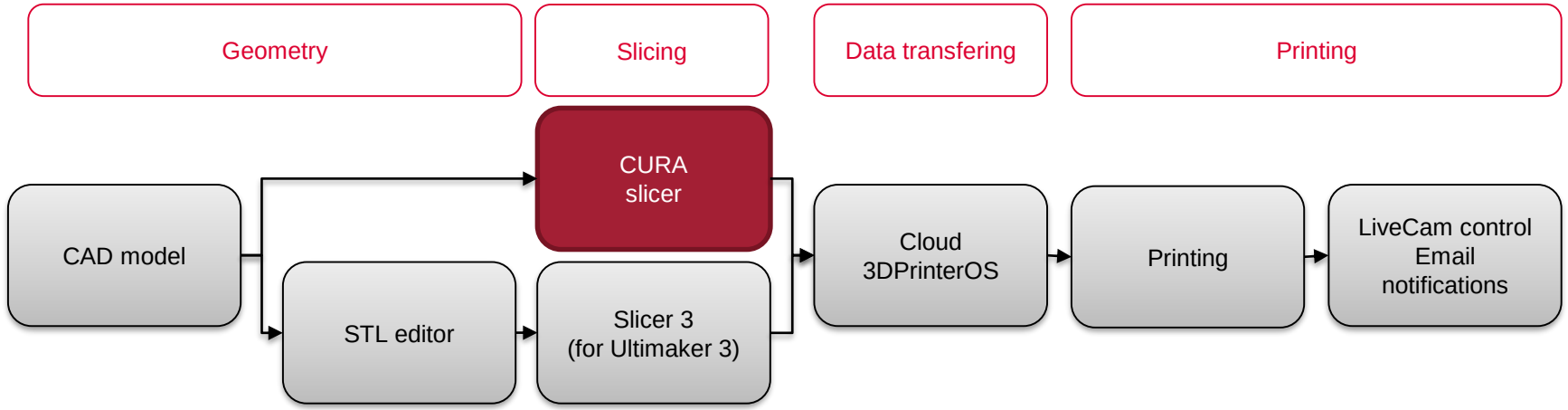

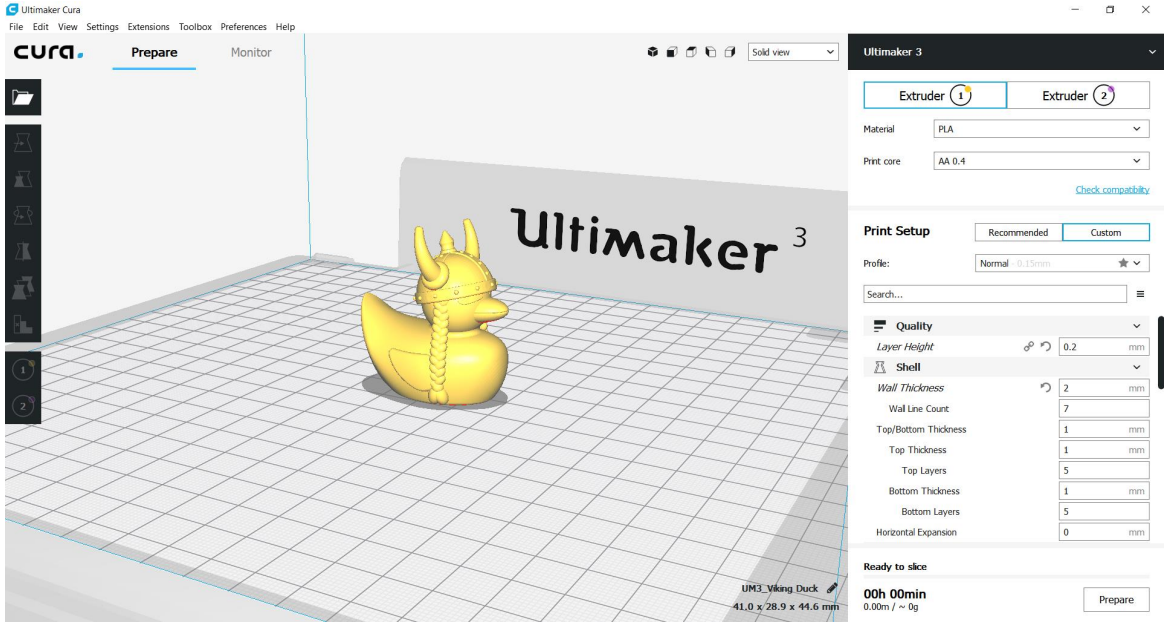

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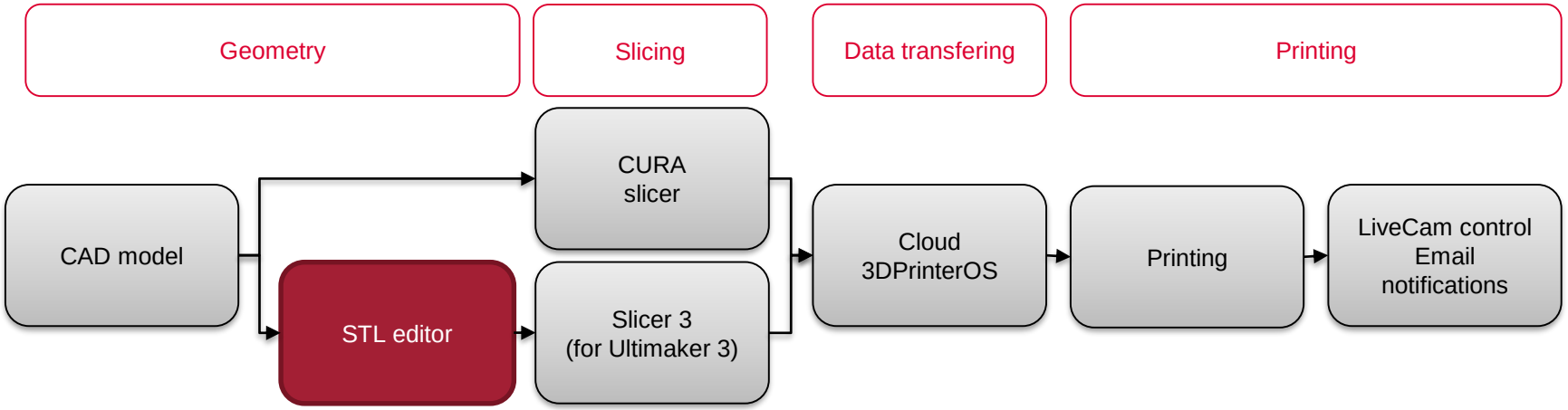

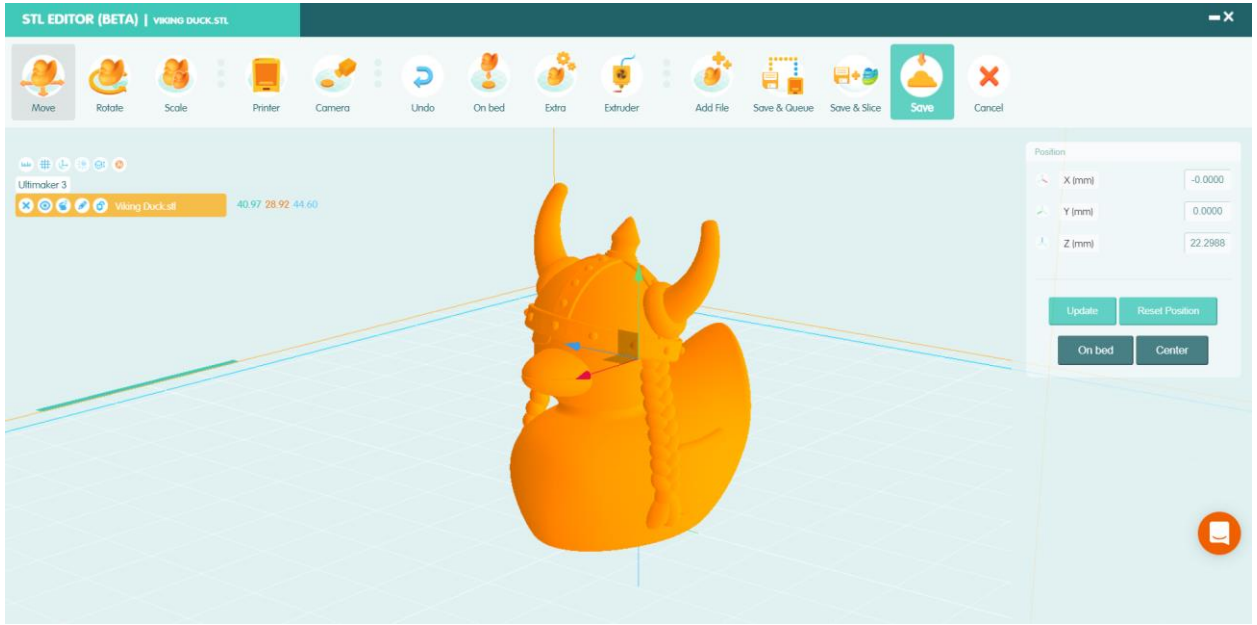

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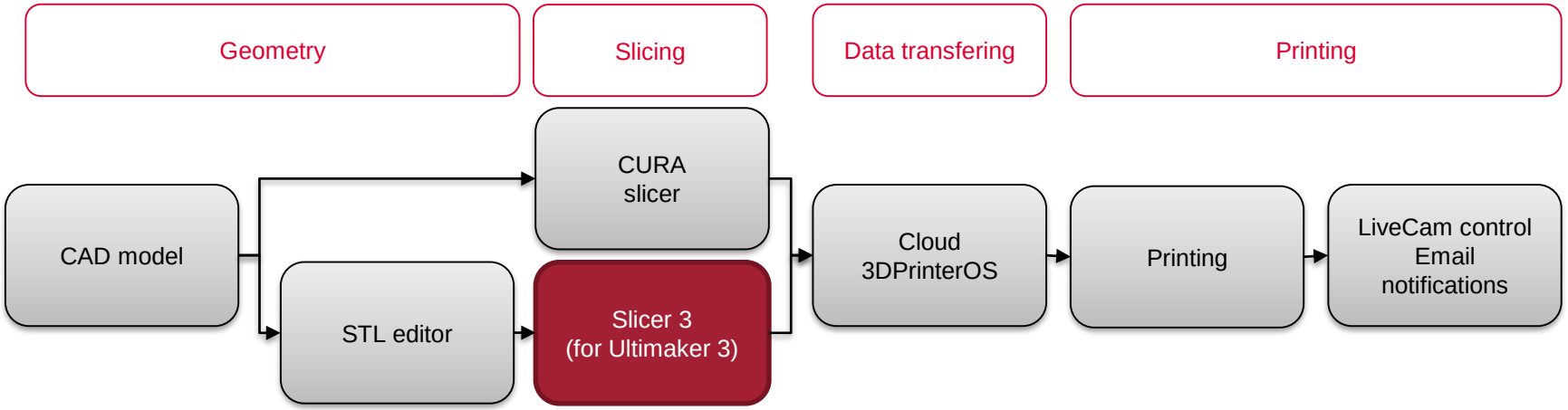

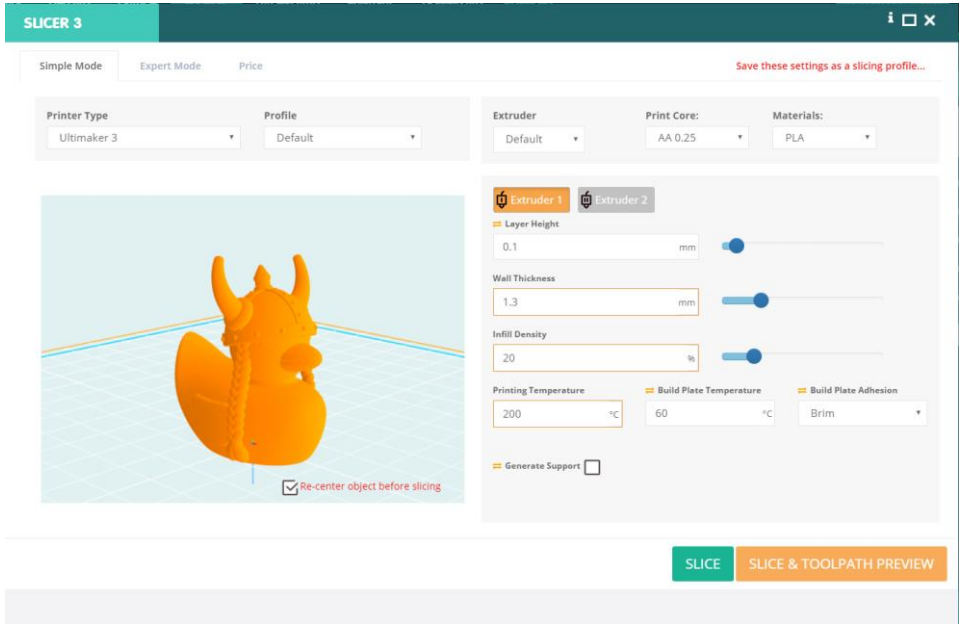

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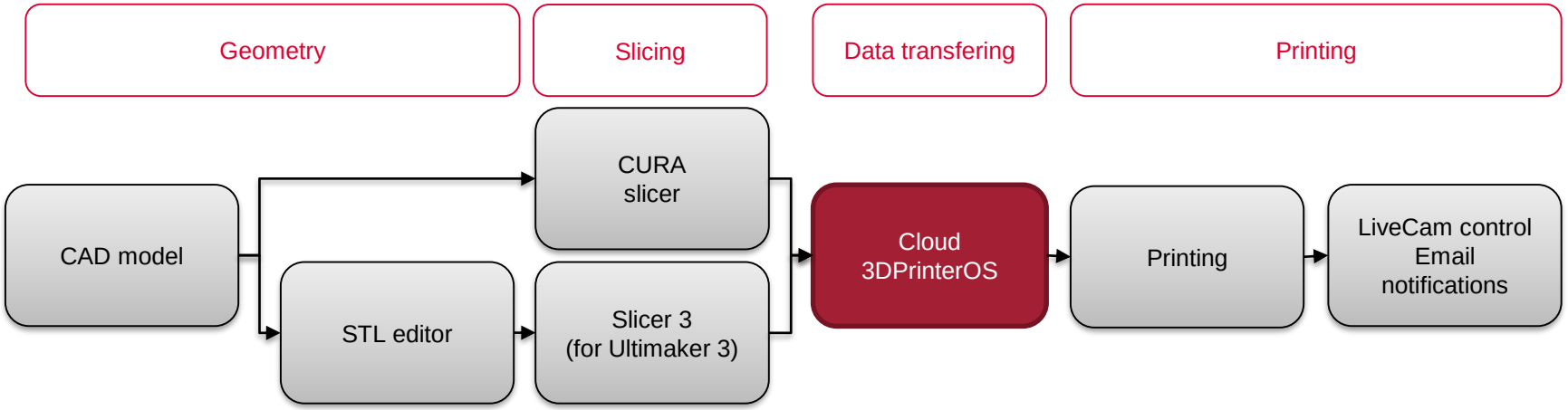

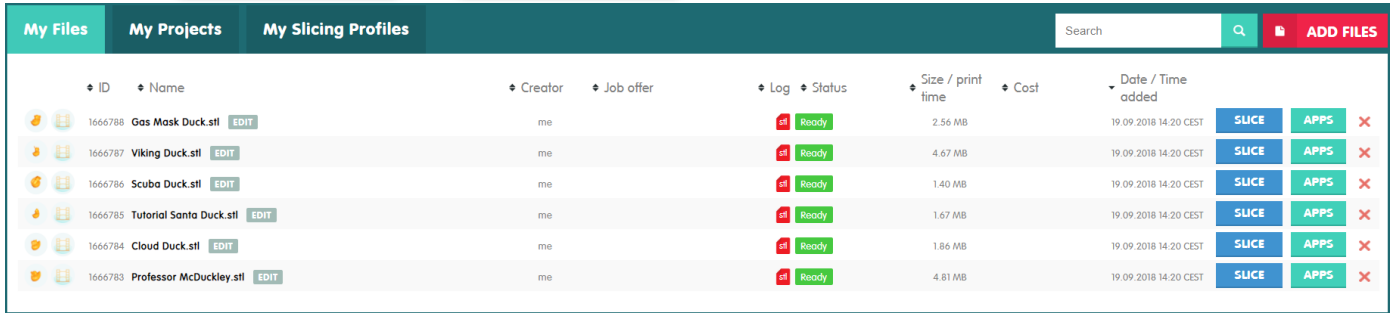

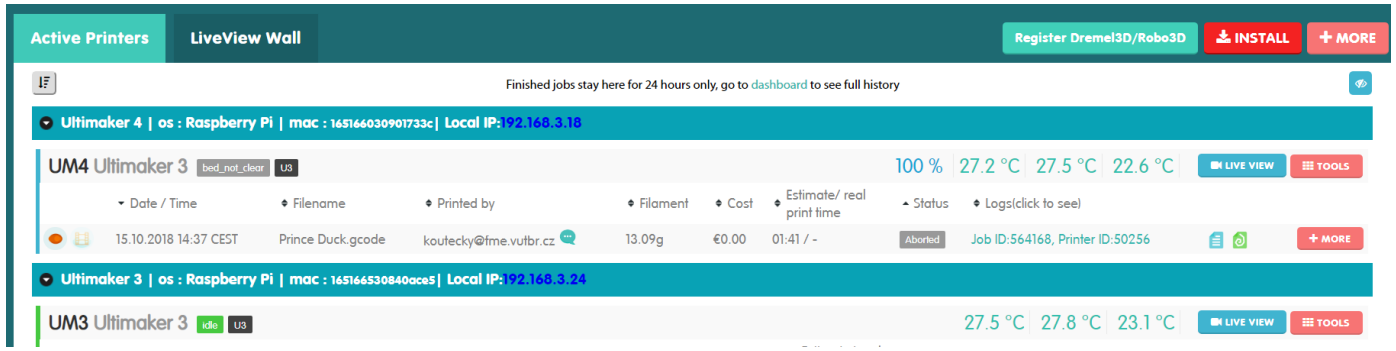

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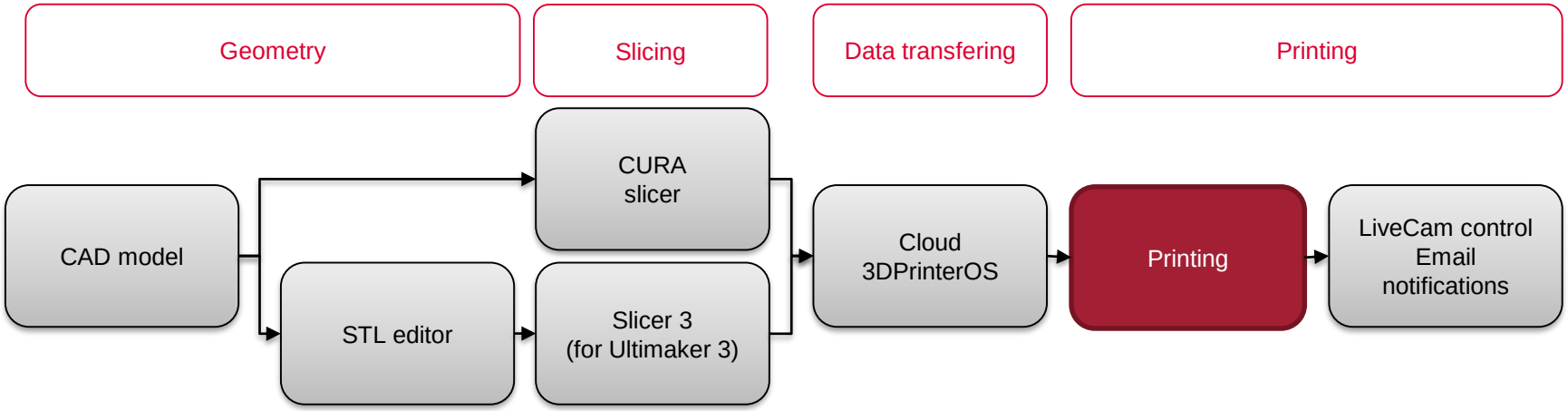
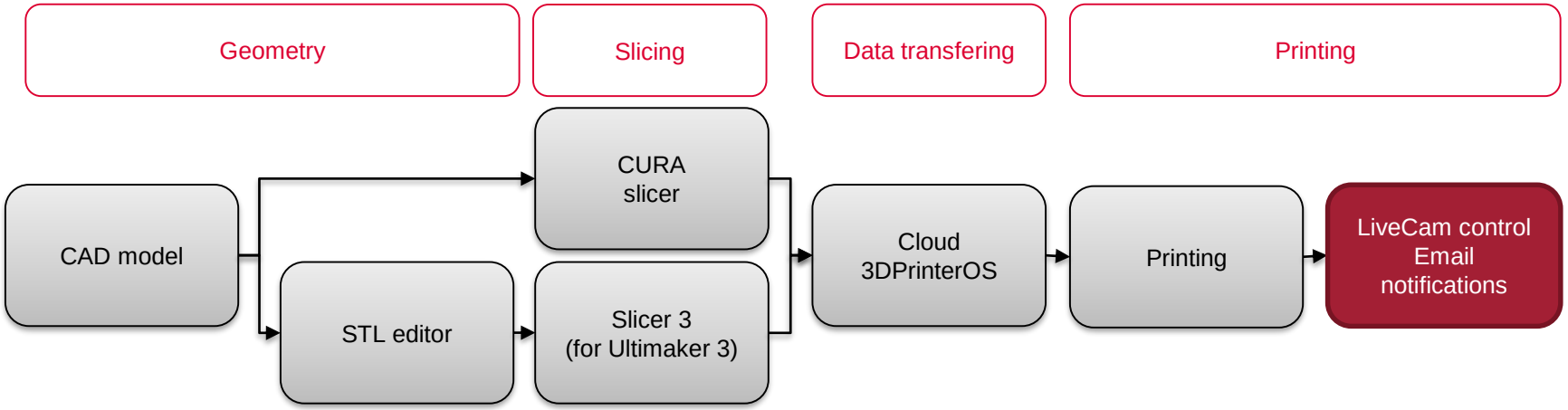
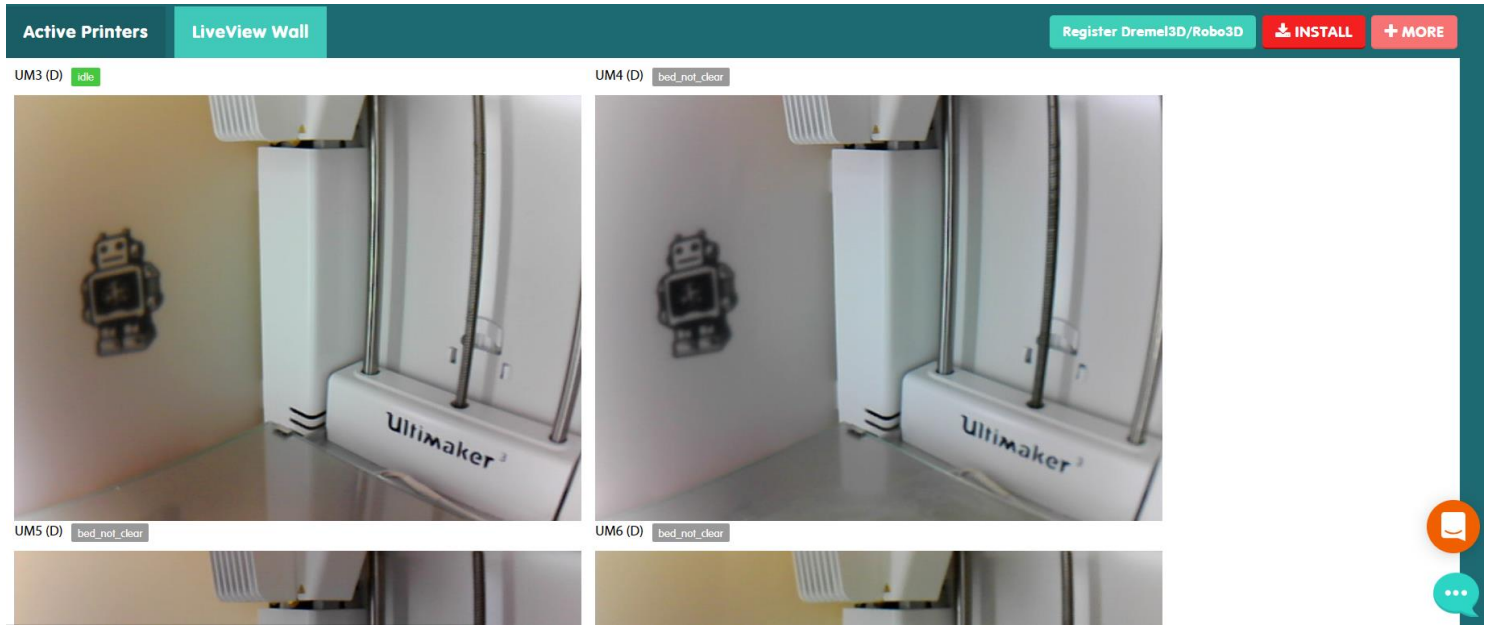


Parameter	ABS	PLA
Nozzle temperature	220 °C – 275 °C	185 °C – 235 °C
Bed temperature	80 °C – 120 °C	20 °C – 60 °C
Build plate preparation *(Cleaning + ..)*	ABS Juice Dimafix spray	Glue stick Without preparation
First layer adhesion	Warping	Without problems

3D PRINT MANUAL – WITH 3DPrinterOS





RULES AND PRINCIPLES

- **ÚK Employees, Doctoral students, Master students (M-KSI, M-PDS)**
- Workgroups by Institute departments
- Students assigned to departments by diploma theses.
- Printed files for student projects (except Diploma thesis) must be named according to the template:

DEPT_FILENAME.SUFFIX

(e.g. RIAT_KONZOLA.gcode)

NECESSARY FOR FILTERING

RIAT
TRIBO
DIAG
PD

RULES AND PRINCIPLES

- **Printing tutorial almost completed and will be:**
  - Published on the Institute's website
  - Sent to all employees and students via email
  - Printed and placed in the 3D print laboratory
- **Operating rules will be placed in the lab**
- Distribution and labelling printers for a given type of material (ABS / PLA)
- Necessary to control start of the printing (especially with ABS filament)
- Laboratory equipped with laptop for managing printing parameters

TIMEPLAN

- **Laboratory testing process**
  - From 17.10.2018 (limited amount of material)
  - Until December 2018 / January 2019
  - Reporting bugs and problems
- **Fully-featured operation**
  - From January 2019 (Summer semester)

THANK YOU FOR YOUR ATTENTION

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