ETA-DIY-BIG printer

Project meeting 11/26

Agenda:

1. Build "big decision flow chart" for the project.
2. Talk about a project name (I hate this part - someone please just pick a cool name)
3. Take a first crack a writing down the project goals and objectives.

Project Goals

1. Create an ETA community project
2. Make an “industrial grade”, large capacity 3D printer for ETA studio users
    - Big enough for helmets/masks
    - High print quality and fast print speed
    - Easy to use
    - Easy to maintain
    - Well documented

Big decsion list – from proposal

- Design decisions
  - Build plate size
  - Max Z size
  - CoreXY belt layout (mostly pulley arrangement)
  - Idler pulley support (cantilever axles vs other, plate vs rails)
  - Motor mounting (direct vs coupler)
  - Motor selection (size)
  - Rail selection (linear vs something else) and placement.
  - Gantry design
  - Z-axis (single lead screw vs three)
  - Electronics (Duet 2 vs wait for Duet 3, UI)
  - Frame – anti-racking strength (hefty Al stock vs thinner stock with corner strengthening.
  - Manufactured mechanical pieces – 3D printed vs machined.
  - Power distribution and control.
  - Tool changer or permanent tool (and how many nozzles)
  - Extruder type (Bowden, direct drive)
  - Hot end selection
  - Enclosure design and thermal management.

Decision flow – Fundamentals

Printer Style == CoreXY

Printable materials?
(Max bed temp)
(Max extruder temp)

Max Print speed?

LEDs
Illumination?
Light show?

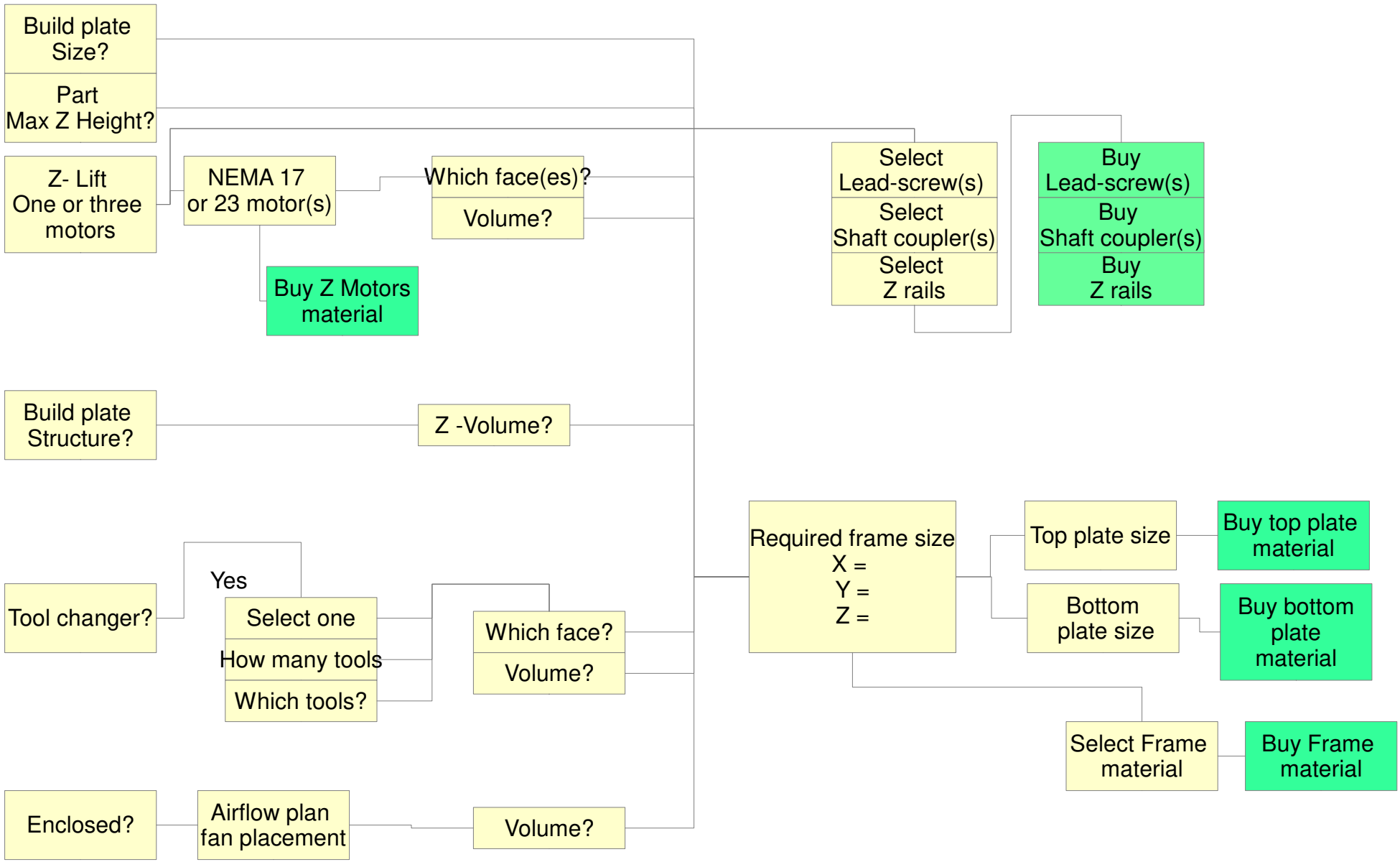
Video capture?

Telemetry?

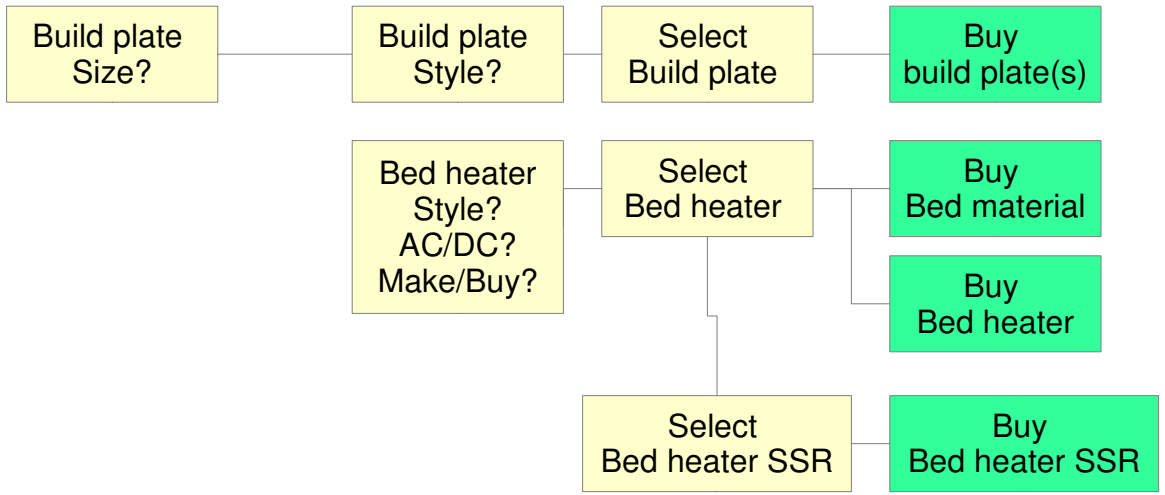
Design Leverage points

- Overall Layout == Mark Mccomsey's Design
- Tool changer (if used) == Jubilee (E3D variant)
- Belt Layout
- Other?

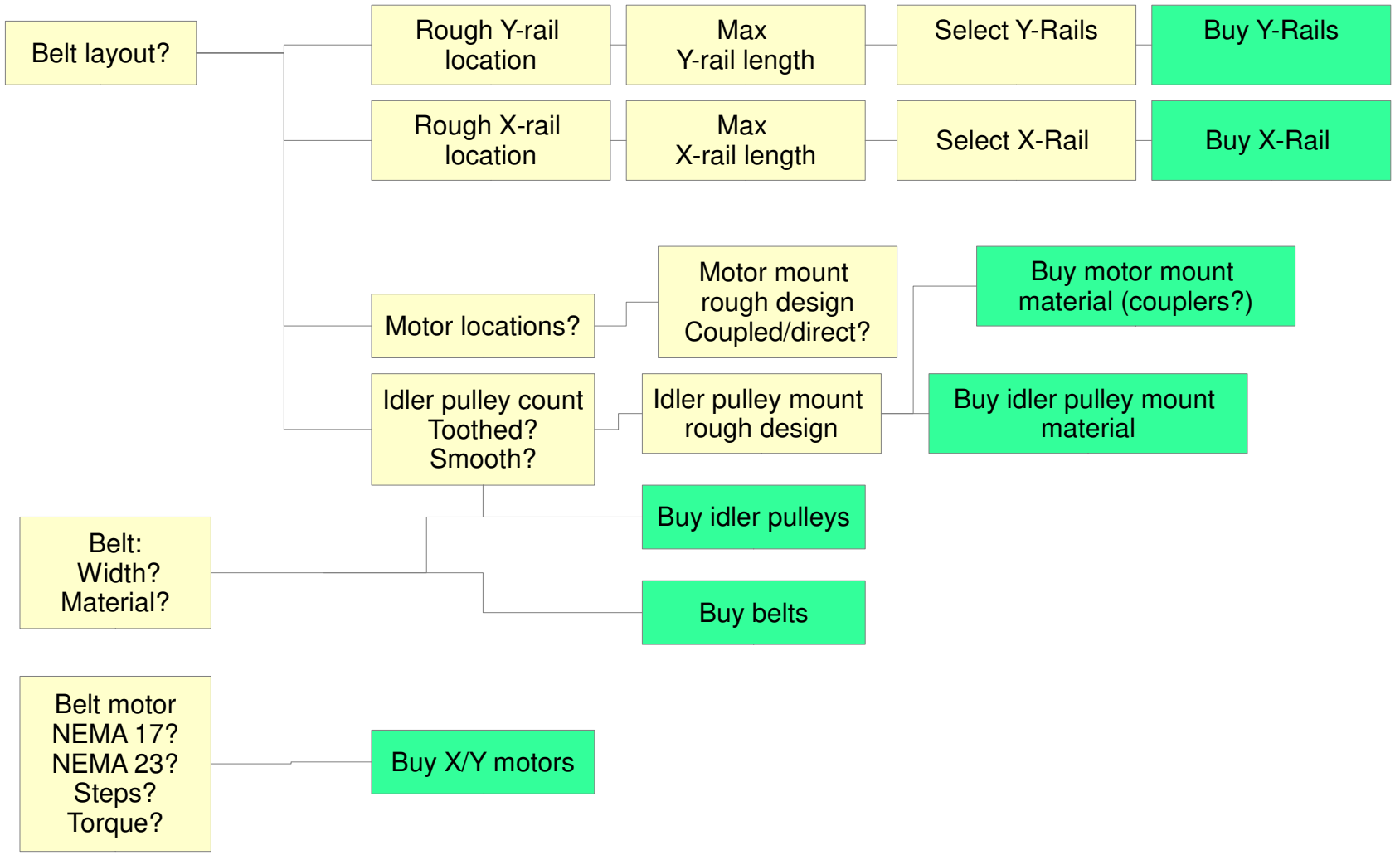
Decision flow – frame size



Decision flow – Build plate



Decision flow – XY mechanics



Decision flow – Electronics

HW control board
8 vs 32 bit?

Select
controller board

Buy
controller board

Select
User Interface

Buy
User interface

Power budget
- Control board
- Bed heater
- XY motors
- Zmotor(s)
- Extruder(s)
- Hot end(s)
- LEDs
- (Enclosure cooling fan)
- PSU efficiency

Select
Power supply

Buy
Power supply

Decision flow – X Gantry