Integrating Digital Technology into Foundry Processes
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CNC machining of draftable patterns for two-piece sand molds:
- Software: Adobe Illustrator or Rhino
- Hardware: CNC router/mill
    - At Penn State we have a Precix and Techno CNC machine. Cristin Millett has a K2.

Creating Digital 3D Models for Lost Plastic Casting:
- Download a 3D Model (typically *.stl files)
    - www.thingiverse.com
    - www.turbosquid.com
    - www.3DVia.com
    - www.grabcad.com
    - www.netfabb.com (for repairing 3D models to prepare for printing)
- 123D Catch
    - http://apps.123dapp.com/catch/
- Three-Dimensional Scanner and Software
    - Hardware: three-dimensional scanner
    - Software: matched to three-dimensional scanner
        - At Penn State we have a Vivid 910 3D scanner and Geomagic Studio.
- Build a 3D Model
    - Software: Rhinoceros: www.rhino3d.com
        - Try a **full** version for 90 days. After 90 days saving and plug-ins stop working, unless you **buy** a license.
- Printing Options
    - Outsource to 3D printing services
        - http://www.123dapp.com/3d-printing-services
            - Companies affiliated with 123D Catch
    - Resources for 3D Printing
        - 3D Hubs http://www.3dhubs.com/
        - America Makes http://americamakes.us/
    - 3D printers at home/business/school
        - Lulzbot https://www.lulzbot.com/
        - MakerBot http://www.makerbot.com/
        - Ultimaker https://www.ultimaker.com/
        - Makergear http://www.makergear.com/
        - Printrbot http://printrbot.com/
    - Printing materials
        - Acrylonitrile Butadiene Styrene (ABS) thermoplastic
            - Melting point: 105° C (221° F) (glass transition temperature)
        - Polylactic Acid (PLA) thermoplastic
            - Melting point: 150-160° C (302-320° F)