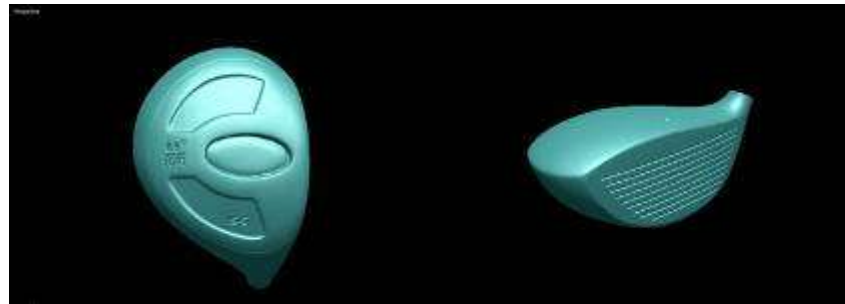


LPX-1200 and LPX-250 Laser Scanners



Contents

- **3D Scanning Technology**
- **3D Scanning Process**
- **Hardware Features**
- **Software Features**
- **User Examples**
- **ROI Example**
- **Conclusion**

3D Scanning technology

- 2D hardware and software have changed how documents are created and stored
- 3D hardware and software are *changing* how models are created, edited, and stored

2D



Scan

Design/Edit/Archive

Print

3D



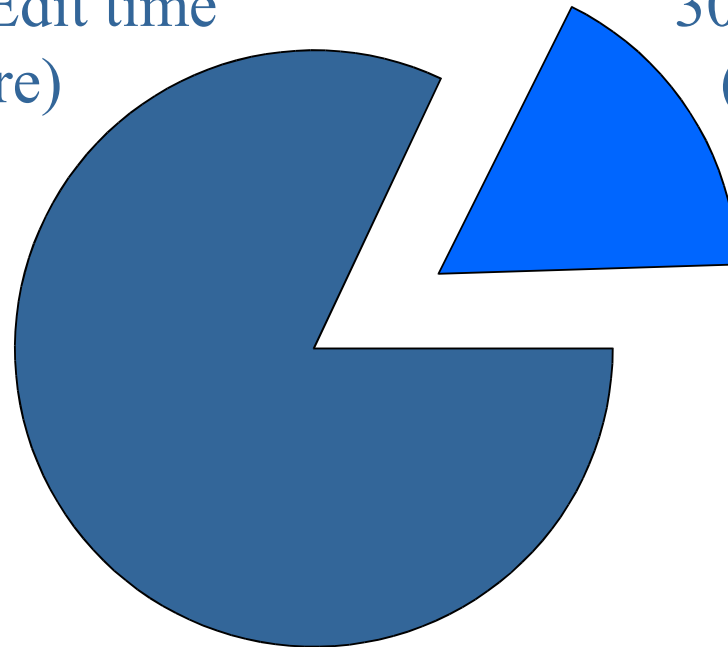
Scanning process

- **Scan model (hardware):**
 - Position in machine
 - Set up scan
 - Scan model
- **Basic scan data processing (software):**
 - Smooth model surface/delete spikes
 - Register/Merge scans into a single model
 - Close holes, refine model details
- **Advanced scan data editing (software):**
 - Decimate (reduce vertices/file size)
 - Modify faces
 - Sharpen edges
 - De-feature (remove unwanted items)
 - Define patches on faces

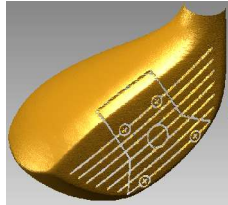
Scan process task/time

70% Process/Edit time
(Software)

30% Scan time
(Hardware)



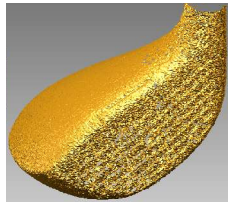
Product features



- **LPX-1200**
- **High productivity**
 - .004 scan resolution
 - Cleaner scan input, less processing time
 - Smooth / merge surfaces, decimate model
 - **Includes Pixform Pro** for advanced editing



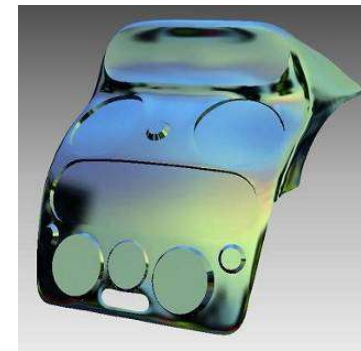
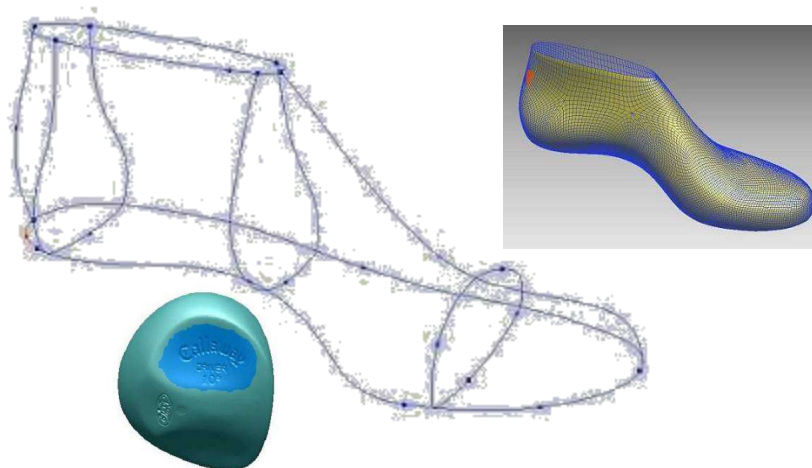
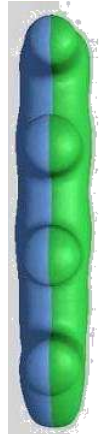
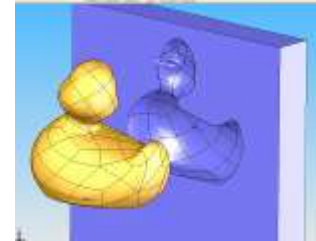
LPX-250



- **LPX-250**
- **High value**
 - .008 scan resolution
 - **Includes Pixform** software to smooth/merge surfaces and decimate model

Pixform Pro Software included with LPX-1200

- **Advanced editing tools include:**
 - Delete features from scan data
 - Sharpen edges of scanned model
 - Add thickness/create shell
 - Mirroring/copying to create symmetrical objects
 - Create curves and edges from surfaces
 - Manually edit auto-surfaced models
 - Manual sub-surface control

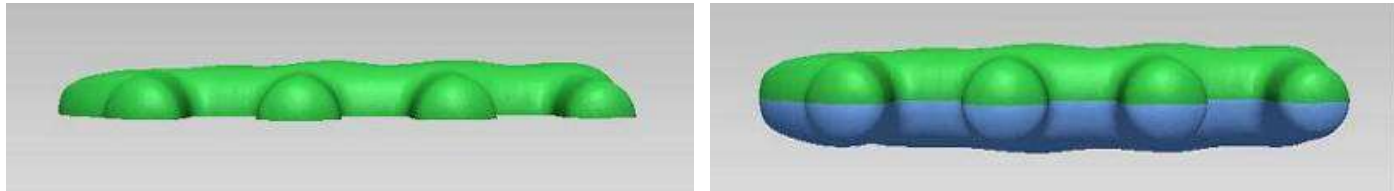


Pixform Pro/ LPX-1200 features

Delete features from scanned model

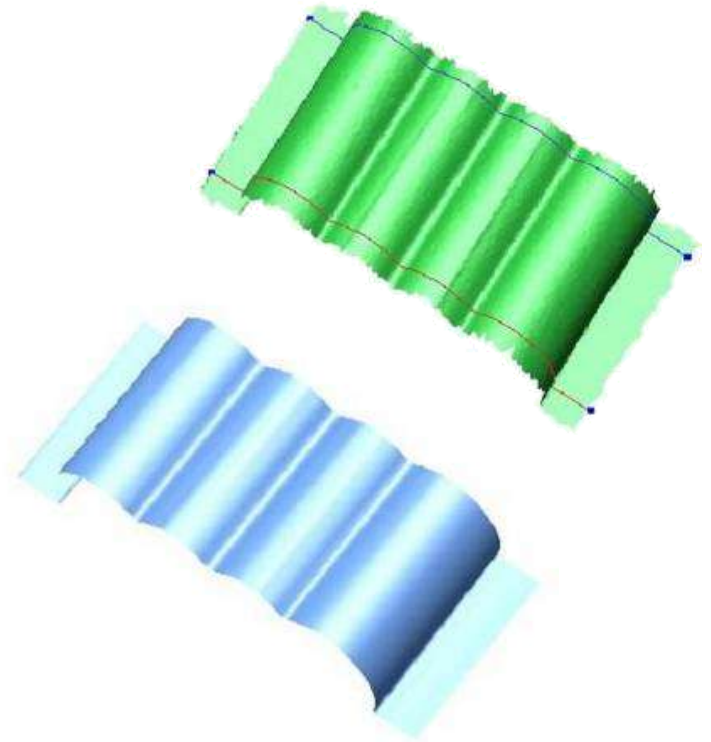
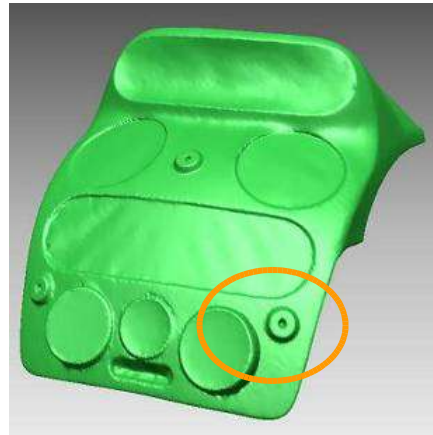


Mirroring/Copy to create symmetrical objects



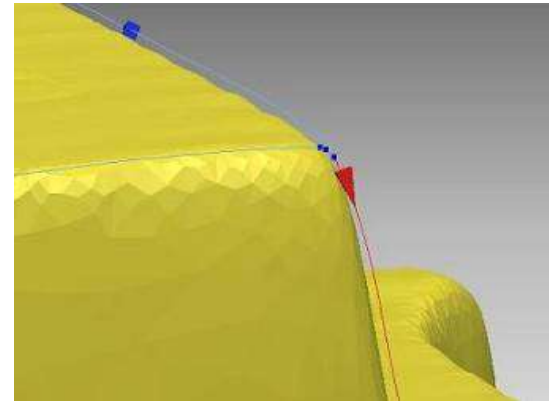
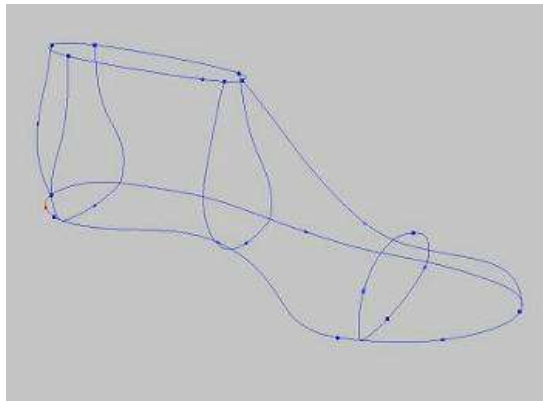
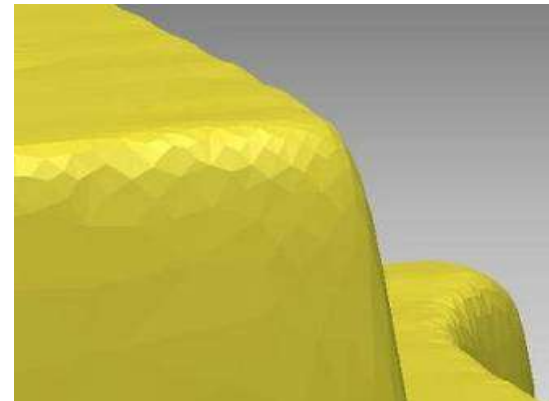
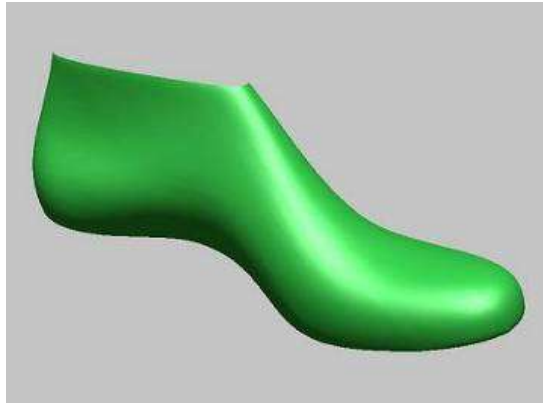
Pixform Pro/ LPX-1200 features

Construct a surface from polygon scan data.
Smooth faces, sharpen edges



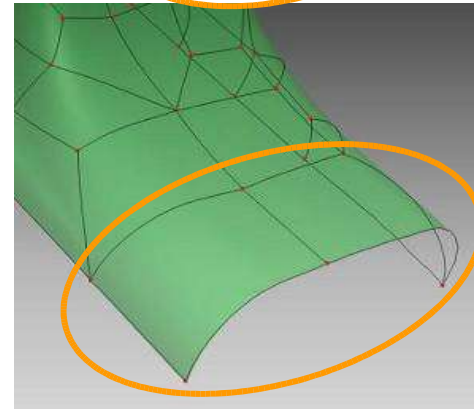
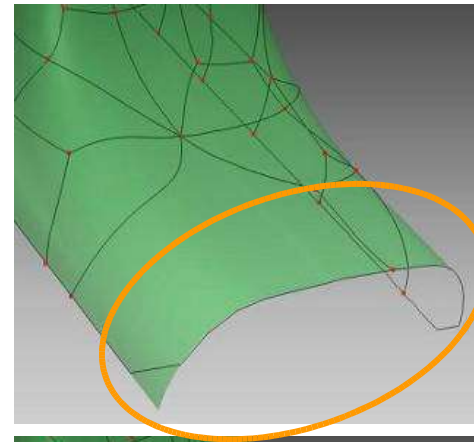
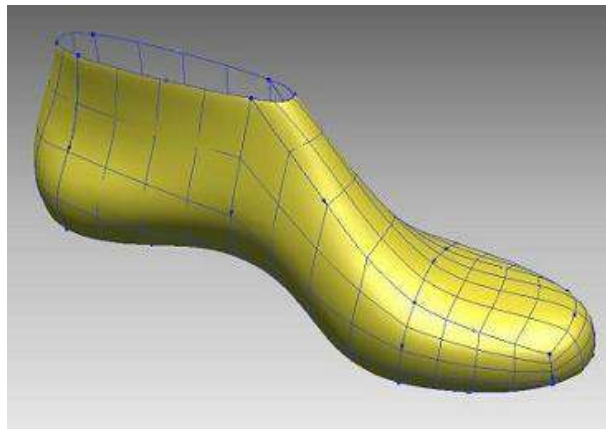
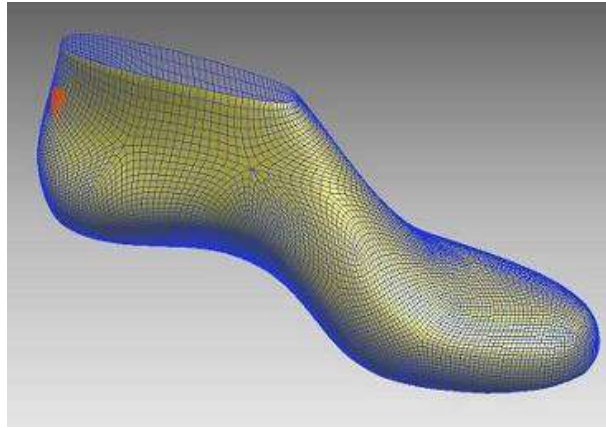
Pixform Pro/ LPX-1200 features

Create curves from surfaces for use in CAD software



Pixform Pro/ LPX-1200 features

Auto Surfacing & Manual Sub-Surface editing



User examples

- **Blister packaging**
- **Scanned data imported into CAD software**
- **3D data archiving**
- **Create 3D data from scanned objects**

User example: Blister Packaging

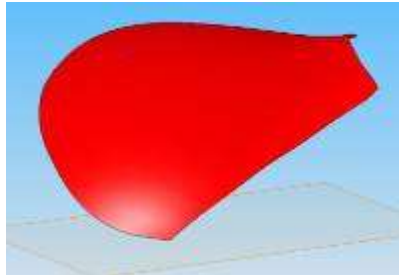
- Products are scanned with LPX-250
- Scan of product used to create mold for blister pack
- Reduces turn around time and quotation costs
- Scanned data is electronically archived to use again in future projects



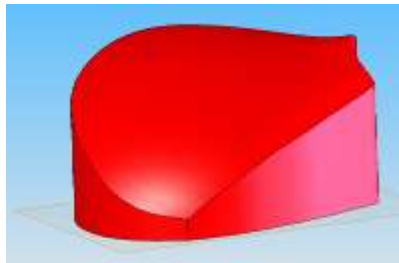
User example: Scan to CAD

- Requires clean, high resolution model data
- Advanced editing tools used to sharpen edges, define model faces and create curves from surfaces to use in CAD application
- Scanned/edited surfaces and 3D models import into CAD application using IGES format

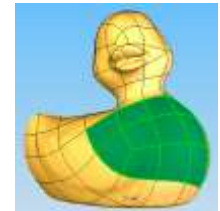
Example One:
Scanned surface imported into CAD software as an IGES file.



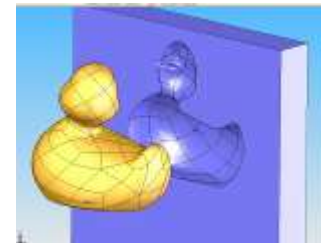
Using CAD software, surface edges copied to new sketch and extruded into a model feature



Example two:
Scanned toy surfaces merged and edited in Pixform Pro



IGES file imported into CAD software. Solid model used to create mold cavity



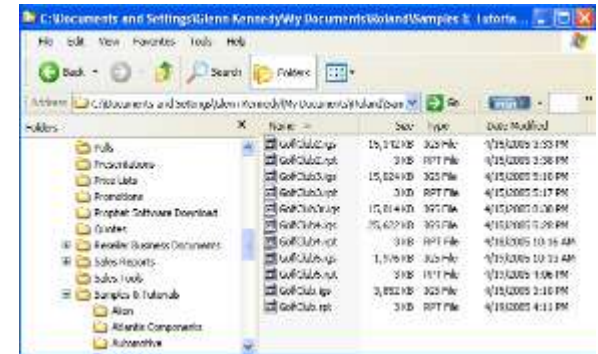
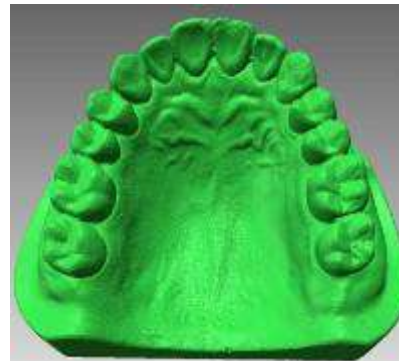
User example: Dental Archive

- **Dental offices and service bureaus**
 - Scan plaster models and archive electronically
 - Saves records electronically for future reference
 - Eliminates warehouse space for plaster castings
 - Fast throughput supports large daily volume of models

Scan plaster model



3D model archived electronically



User example: Rapid prototype users and service bureaus

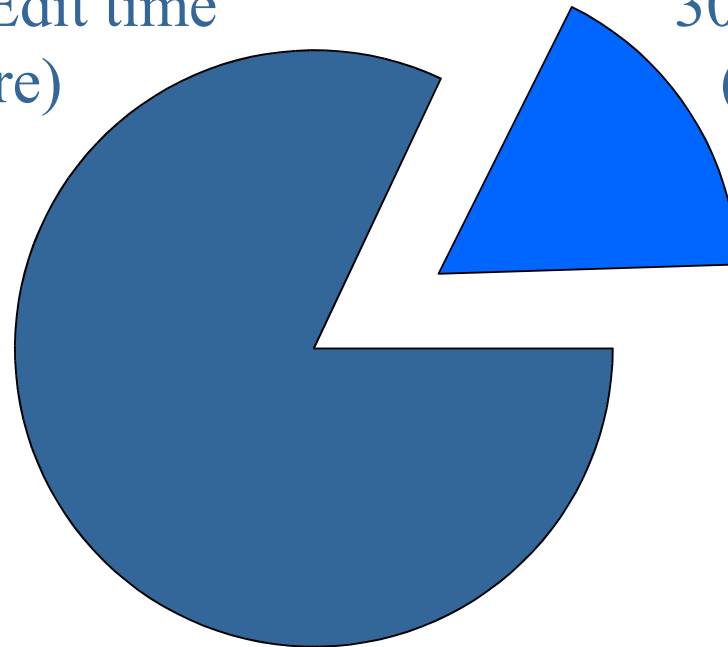
- 3D data required to produce 3D parts but 3D CAD models are not always available
- Why model an item when you can scan and print to 3D?
- Scan existing geometry, modify (scale, mirror, delete/add features) then create RP parts



Scan process task/time

70% Process/Edit time
(Software)

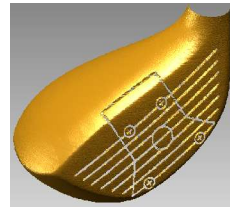
30% Scan time
(Hardware)



Scan process time vs. labor cost

Scan Model + Process Data = Total Time Labor Cost*

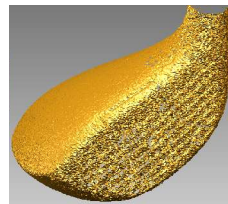
LPX-1200



1.5 hr + 1.75 hrs = 3.35 hrs

\$90

LPX-250



1.5 hr + 3.5 hrs = 5.00 hrs

\$160

*Assume .5 hr set up time plus software process time at \$40/hr burdened labor cost

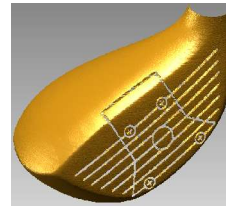
Processing time vs. productivity

Scan Model + Process Data = Total Time Scans/Day*

LPX-1200



1.5 hr +



1.75 hrs

= 3.35 hrs

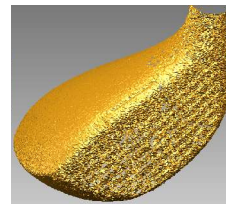


2.4

LPX-250



1.5 hr +



3.5 hrs

= 5.00 hrs



1.6

*Assume 8 hour work day

Return on investment

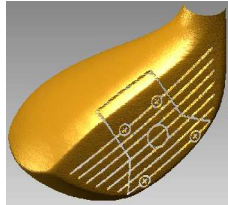
Model	Cost	Scan time/hrs	Labor cost/hr	Labor cost/scan
LPX-1200	\$21,995	2.35	\$40.00	\$94.00
LPX-250	\$9,995	4.00	\$40.00	\$160.00
	\$12,000			\$66.00 savings/scan

- **\$66.00 labor savings per scan project**
- **$\$12,000/66=181$ scan projects to break even**
- **2.4 scan projects per day= 75 days to recover extra cost of LPX-1200**

Conclusion



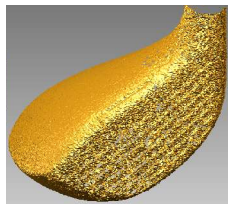
LPX-1200



- **LPX-1200**
- **MSRP: \$21,995**
- **High productivity**
 - .004 scan resolution
 - Cleaner scan input, less processing time
 - Smooth / merge surfaces, decimate model
 - **Includes Pixform Pro** for advanced editing



LPX-250



- **LPX-250**
- **MSRP: \$9,995**
- **High value**
 - .008 scan resolution
 - Smooth / merge surfaces, decimate model