

Roland ASD 3D SRP and Scanning Solutions

Presenter:

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www.rolandasd.com



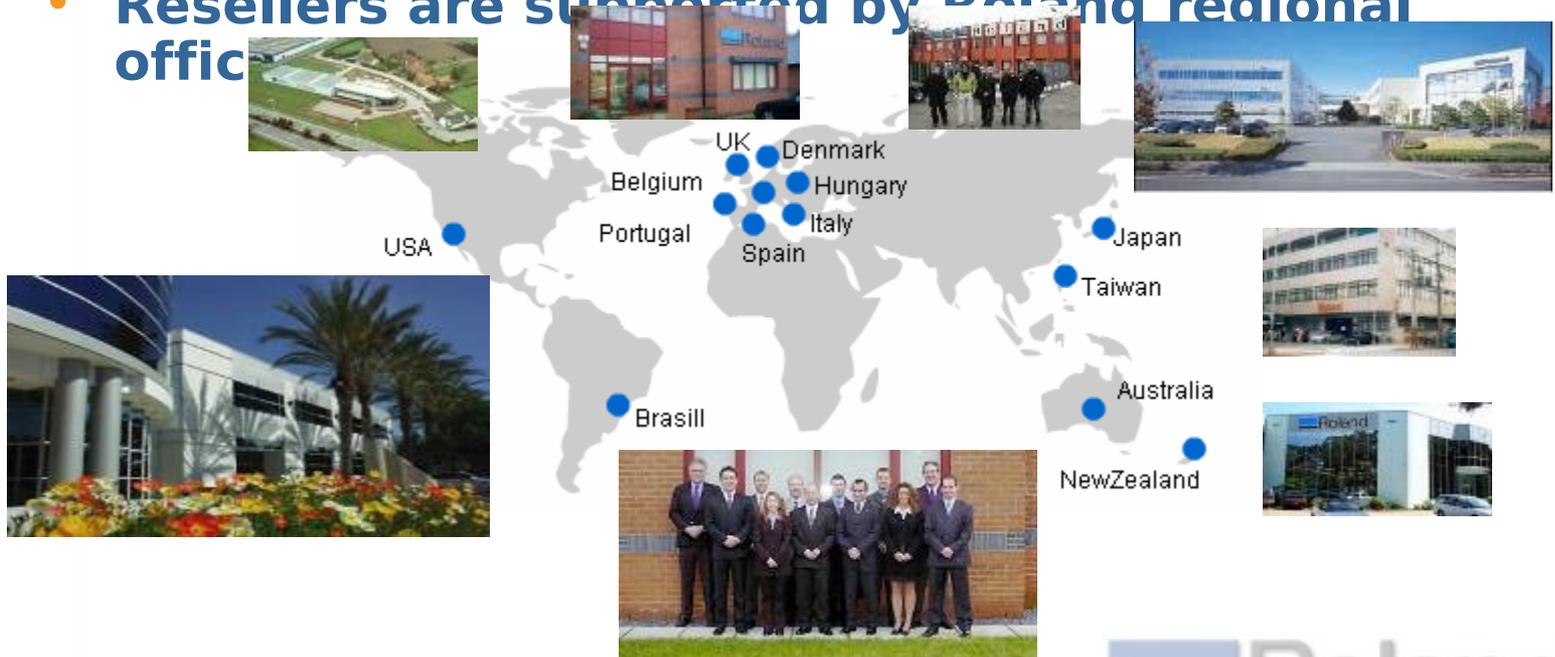
Presentation overview

- **Company introduction and background**
- **SRP introduction and products**
- **Scanning introduction and products**
- **Conclusion**



Roland DG Corporation

- Roland DG is a \$300 million worldwide leader in the graphic arts, engraving, 3D modeling and scanning industries.
- Products are only sold through authorized resellers
- Resellers are supported by Roland regional offices



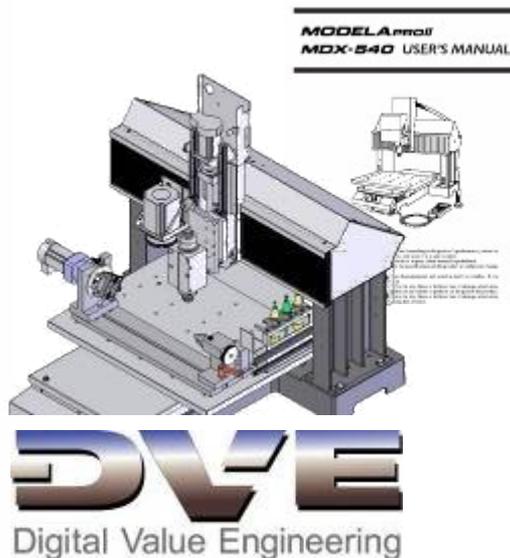
20 years of 3D innovation

- 1981 Established in Osaka as a manufacturer of computerized music peripherals and as a distributor of assembled electronic music instrument parts.
- 1986 Released CAMM-2 series SRP mill, PNC-2000.
- 1987 Released CAMM-3 series SRP mill, PNC-3000
- 1990 Roland DGA Corporation established in USA
- 1996 Released MDX-3 SRP mill.
- 1999 Received ISO 9001 certification.
- 2000 Released MDX-500 SRP mill. ISO 14001 certified.
- 2001 Released LPX-250 3D laser scanner
- 2002 Released MDX-15/20 SRP mill/scan.
- 2003 Released MDX-650 SRP mill
- 2004 Release LPX-1200 3D laser scanner.
- 2005 Released MDX-40 mill. Released JWX-10 mill
- 2006 Released LPX-600 3D laser scanner
- 2006 Released MDX-540 SRP mill
- 2007 Release LPX-60 3D laser scanner



Investment in quality & value

- **Quality products at competitive prices:**
 - Engineered in 3D CAD and FEA software
 - High volume tooling /modular assembly lines
 - Worldwide distribution, sales and service network
 - Professionally written and illustrated user documentation
- **All products backed by a 1yr factory warranty**
- **ISO 9001:2000 and ISO 14001 Certified**



3D Products/ Prices

- **MDX SRP Mills**

- MDX-15/ \$2995
- MDX-20/ \$4495
- MDX-40*/ \$6995
- MDX-40-K/ \$10,995
- MDX-540/ \$19,995
- MDX-540ATC/ \$29,995

- **LPX Laser Scanners**

- LPX-60/ \$7,995
- LPX-600/ \$11,995
- LPX-1200/ \$21,995

*Rotary 4th axis is included with MDX-40-K and can be added to MDX-40 at any time



Position in market

↑
Functionality
↓



Roland MDX-540 \$20K +



Milling Centers \$45K +



MDX-40-K \$11K

Roland MDX-40 \$7K



3D Printers \$25K +

→
Price
→

Corporate Growth

- Steady, continuous growth curve
- Tokyo Stock Exchange code 6789
- Company Stock listed on Tokyo Stock Exchange 2000

Innovation Quality Service



Our commercial customers include



Our education customers include:



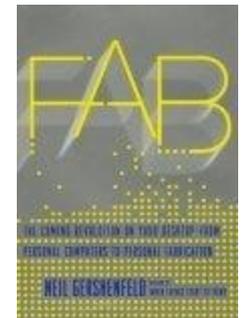
San Francisco State University



GIA
GEMOLOGICAL INSTITUTE OF AMERICA*



STANFORD UNIVERSITY



Roland ASD solutions

- **SRP- Subtractive Rapid Prototyping**

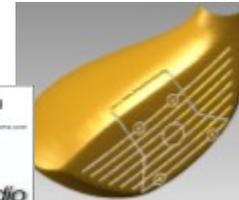
- Smooth surface finish
- $\pm.001$ " tolerance
- Choice of materials:
 - Plastics
 - Woods
 - Non-ferrous metals
- Includes hardware & CAM software

**END
JRP**
SUBTRACTIVE
RAPID PROTOTYPING



- **3D Scanning**

- Digitize 3D objects
- Automated data processing
- Includes hardware & scan software

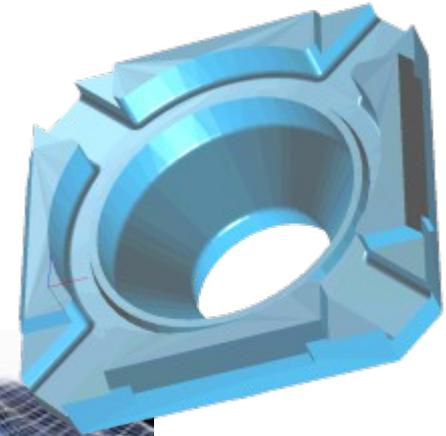


Dr. PICTAS

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Subtractive Rapid Prototyping

**CAD
JRP**™
SUBTRACTIVE
RAPID PROTOTYPING

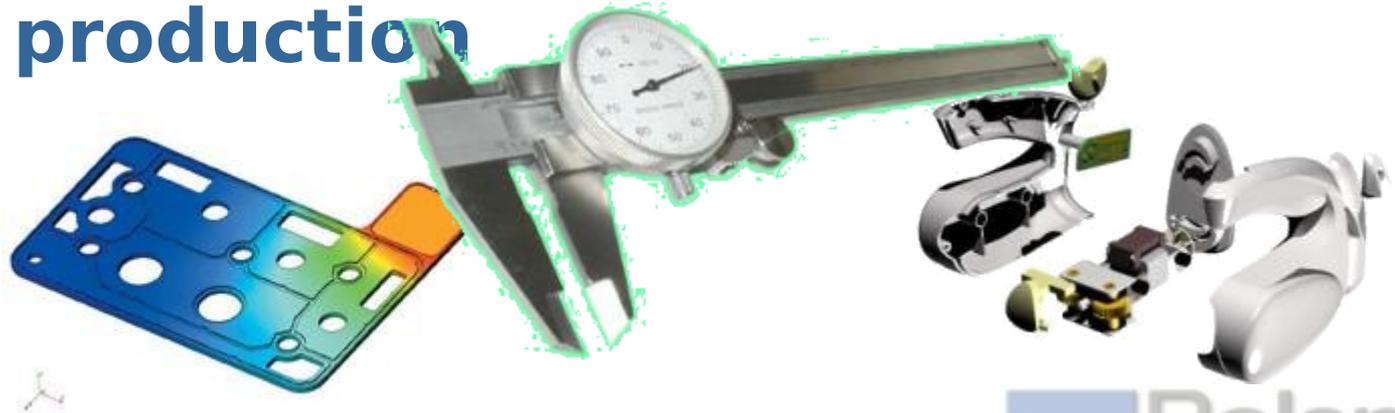


SRP Presentation overview

- **The problem we solve**
- **Product features**
- **How used**
- **Part creation process**
- **Your parts, your materials**
- **Summary**

Companies need prototypes!

- Designs don't go into production until functional prototypes are created and tested
- To provide accurate test results functional prototypes must be made from materials as close as possible to those used in production



Prototype Options and Issues

- **Option A:** Additive RP parts
- **Problem:** 3D printing, SLA, SLS, and FDM will not result in true functional prototype parts. These are visual, non functional models.
- **Option B:** In-house or outsourced machined parts.
- **Problem:** High cost, long turn around time, interrupts in-house production CNC, design information is exposed to outsourced vendors.



SRP vs. ARP

Subtractive Rapid Prototyping:

- ✓ Material selection results in true, functional prototype parts.
- ✓ Superior precision +/- .001"
- ✓ Better surface finish with little to no secondary hand finishing.
- ✓ Uses standard processes to create production ready parts

Additive Rapid Prototyping:

- ✗ Proprietary materials expensive, non-functional.
- ✗ Process varies precision.
- ✗ Requires secondary operations to finish parts.
- ✗ Building up parts is not a standard mfg. process.



Independent RP benchmark

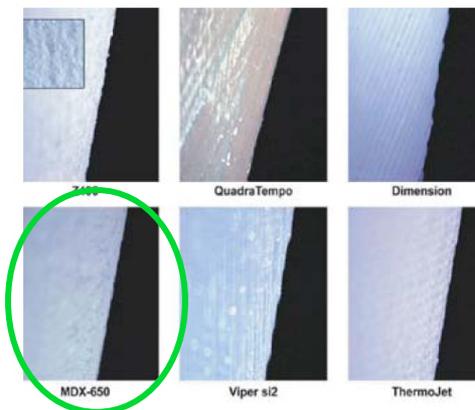
Todd Grimm, the man who wrote the book on rapid prototyping for the Society of Manufacturing Engineers, found that Roland SRP devices produce prototypes faster, better and cheaper than additive RP systems. Download a copy of the report: www.rolandasd.com



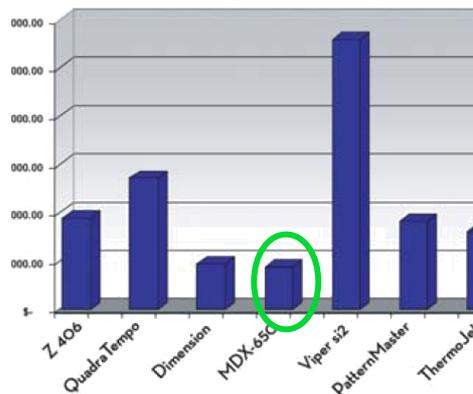
Master Level Certificate for Rapid Prototyping & Manufacturing.
Awarded by Society of Manufacturing Engineers.

Roland SRP solutions lead with:

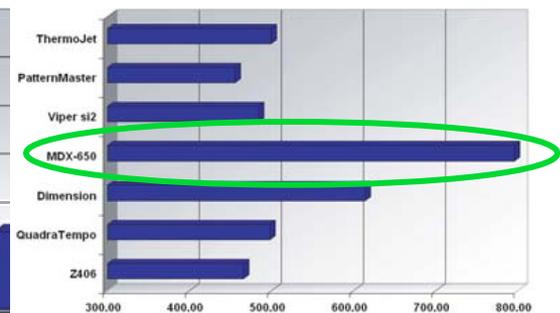
Finer Surface Finish



Lower Operating Cost



Better Functionality



Roland SRP Solutions

↑
Functionality



MDX-20 \$4,495

MDX-15 \$2,995



MDX-40-K \$10,995

MDX-40 \$6,995



MDX-540 \$19,995

MDX-540A \$29,995

→
Price

Position in market

↑
Functionality



Roland MDX-40 \$7K

MDX-40-K \$11K



Roland MDX-540 \$20K +



3D Printers \$25K +

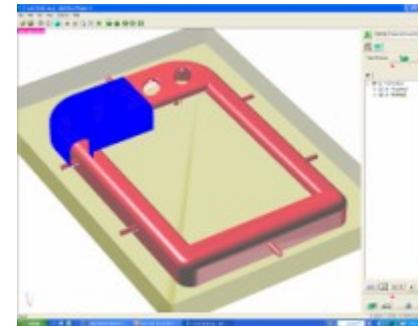
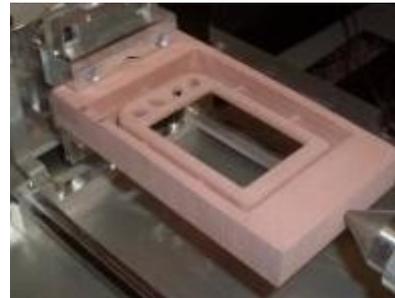
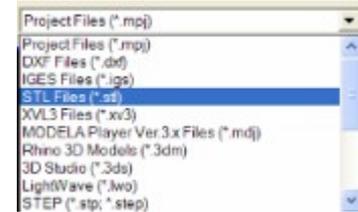


Milling Centers \$45K +

→
Price

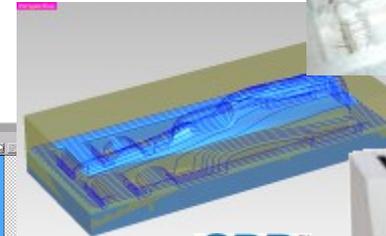
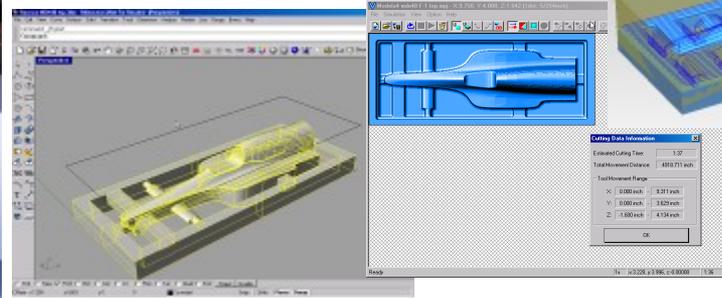
Part creation

- Select your material
- Load into the MDX...
- Open a CAD file...
- **Generate processes...**
- Create smooth, accurate SRP parts!



Education SRP Workflow

- Design in any CAD software
- Create tool paths using included Roland CAM software
- Generate parts in wood, plastics, machinable wax, foams, aluminum, brass, etc.



CAD
JMP
SUBSTRUCTIVE
RAPID PROTOTYPING

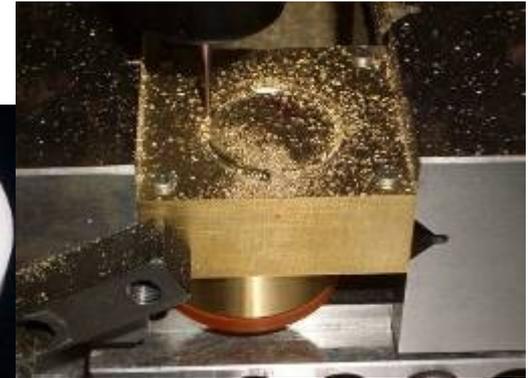


CAD >CAM> Production

Roland
Advanced Solutions Division

Your Parts, In Your Materials

The MDX works with:
Brass, Aluminum, ABS,
Delrin, Acrylic, Nylon,
Polycarbonate, Wood
Urethane Foam,
Polyester
Phenolic, MDF,
Machinable Wax
Plaster
and more...



MDX
SRP
SUBTRACTIVE
RAPID PROTOTYPING

Industry Standard Tooling

Collets:

- ZC-23-6 6mm Collet (Included with MDX-40)
- ZC-23-635 1/4" Collet (Included with MDX-40)
- ZC-23-3175 1/8" Collet
- ZC-23 3mm, 4mm, 5mm, 6mm Collet Set



Ball End Mills (Solid Micrograin Carbide)

- BM-250-2F-250 (1/4" Shank, 2 Flute, 1/4" Mill, 3" Overall Length)
- EMB-125-3F-125 (1/8" Shank, 3 Flute, 1/8" Mill, 2.5" Overall Length)
- EMB-125-3F-063 (1/8" Shank, 3 Flute, 1/16" Mill, 2.5" Overall Length)
- EMB-125-3F-031 (1/8" Shank, 3 Flute, 1/32" Mill, 2.5" Overall Length)
- EMB-125-3F-016 (1/8" Shank, 3 Flute, 1/64" Mill, 2.5" Overall Length)

Flat End Mills (Solid Micrograin Carbide)

- EM-250-2F-250 (1/4" Shank, 2 Flute, 1/4" Mill, 3" Overall Length)
- EMF-125-3F-125 (1/8" Shank, 3 Flute, 1/8" Mill, 2.5" Overall Length)
- EMF-125-3F-063 (1/8" Shank, 3 Flute, 1/16" Mill, 2.5" Overall Length)
- EMF-125-3F-031 (1/8" Shank, 3 Flute, 1/32" Mill, 2.5" Overall Length)
- EMF-125-3F-016 (1/8" Shank, 3 Flute, 1/64" Mill, 2.5" Overall Length)



SRP Summary

- Choice of materials
- Smooth surface finish
- Precision tolerance ($\pm.001''$)
- Complete hardware/software solutions
- Award winning Roland quality
- Exceptional value



MDX-15 \$2,995

• 4 x 6 x 2" work area

MDX-20 \$4,495

• 6 x 8 x 2" work area



MDX-40 \$10,995

• 12 x 12 x 4 work area

• 4th axis with 3" dia x 5" work area included

• 15,000 rpm spindle



MDX-540 \$29,995

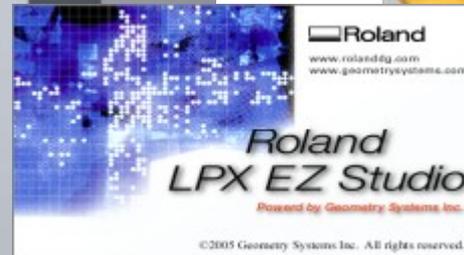
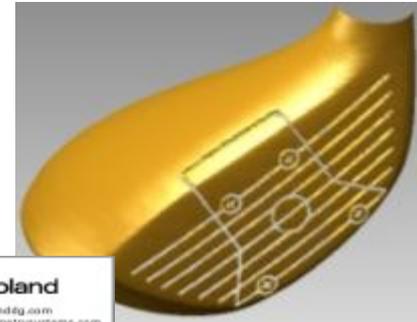
• 21 x 16.5 x 6 work area

• 295 in/min feed

• Options: cover, 4th axis, Automatic Tool Changer

SRPTM
SRP
SUBTRACTIVE
RAPID PROTOTYPING

3D Scanning



Contents

- **3D Scanning Technology**
- **3D Scanning Process**
- **Hardware Features**
- **Software Features**
- **Scan Examples**
- **Conclusion**

Scanning Process

Hardware



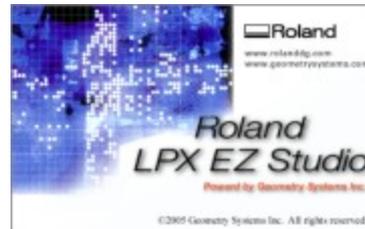
Object is positioned and scanned



Software



Point cloud data is automatically cleaned and converted to polygon data



Polygon Data



Export as STL, 3dm, GSF or PIX file for use in downstream applications

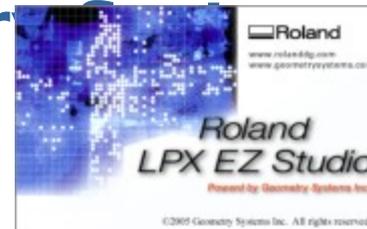
Hardware Features

- Large 16" height x 10" dia. scanning area.
- Rigid chassis and smooth mechanism creates high quality scan data.
- Completely enclosed design with safety interlock.
- Window in door enables users to monitor and safely view scanning process.
- Clean, quiet operation.
- USB interface.



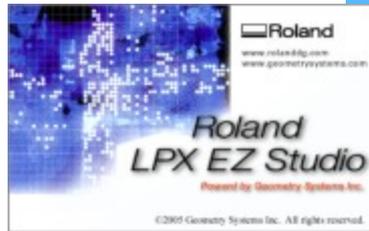
Software Features

- Simple one-touch operation.
 - Easy to set up and easy to use.
 - Consistent quality results from any user.
 - Automatically fills holes, deletes spikes and generates polygonal models from scanner.
 - Export options include .stl, .3dm, .pix and many other file formats.
- software for Roland LPX EZ Studio



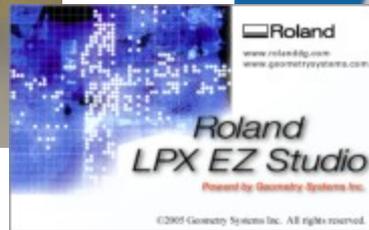
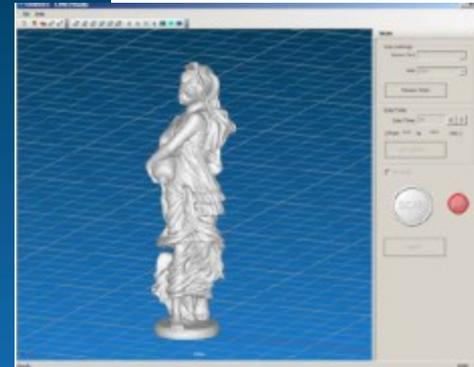
Scan sample: Packaging

- Scan Parameters: Object painted flat white
- 4 Plane Scan, 0.016" XY Scan Pitch, 88 Minute Scan Time
- Results:
- Closed manifold surface file automatically generated in EZ-Scan and ready to export as a



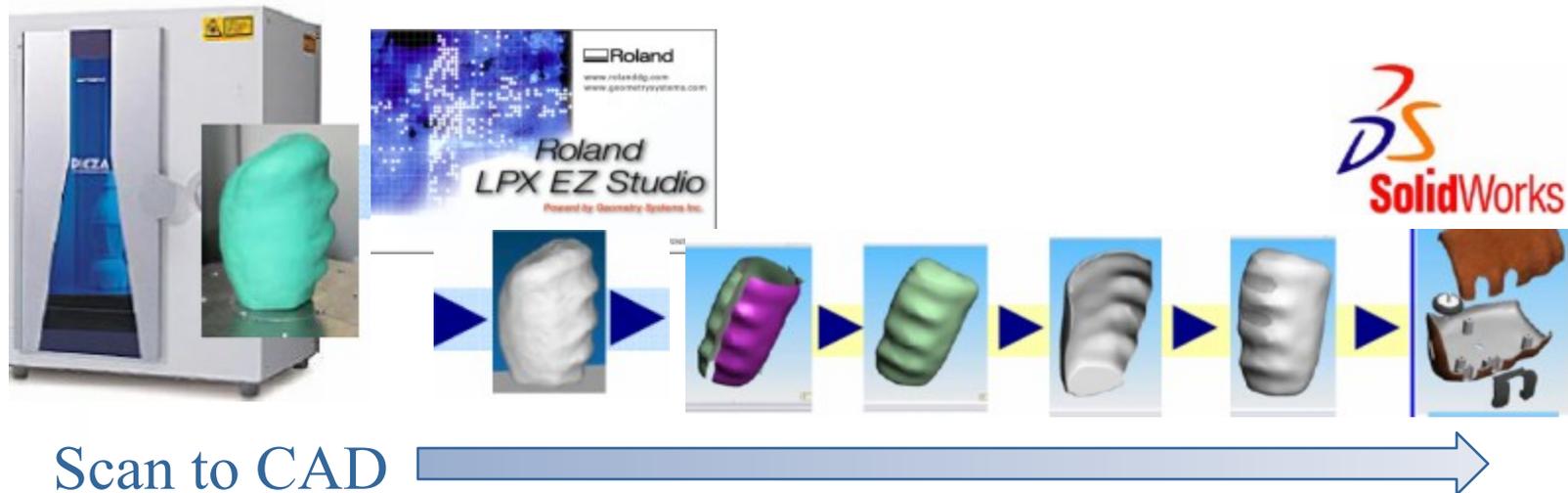
Scan sample: Sculpture

- Scan Parameters: Object 14" tall
- Scan Parameters:
- 6 Plane Scan, 0.016" XY Scan Pitch, 190 Minute Scan Time
- Results: Closed manifold surface file automatically generated in EZ-Scan and ready to export as a .stl file.
- Patterns scaled and printed in multiple sizes for g.



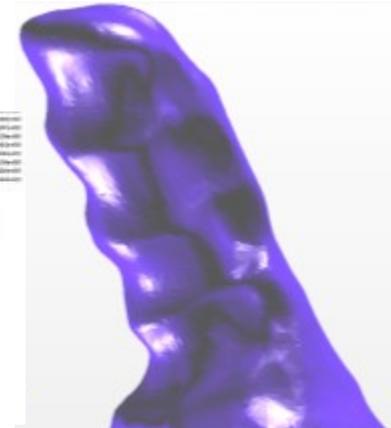
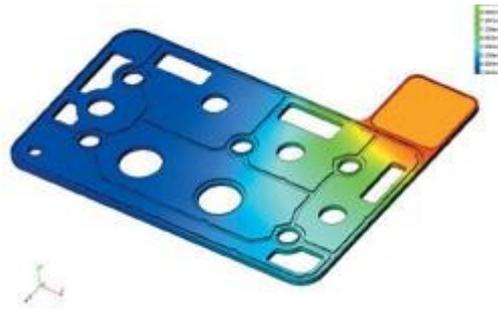
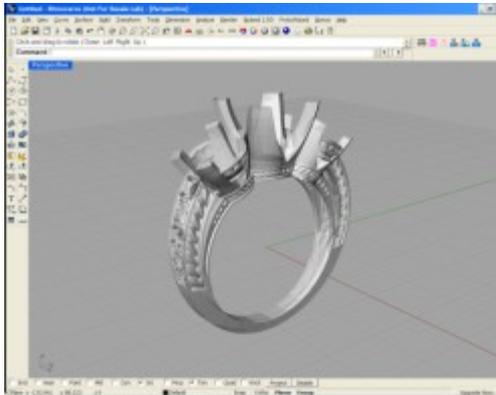
Scan sample: Scan to CAD

- Scan physical object
- Open .stl file in SolidWorks Office Premium or Scan directly to Rhino Software
- In Rhino or SolidWorks generate NURBS surfaces

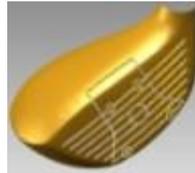


Scan data uses

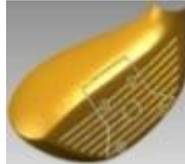
- **Rendering/Animations**
- **FEA study of existing designs**
- **Industrial design**
- **Ergonomics**
- **Overlay/design comparisons**



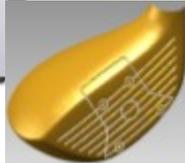
Scanner Summary



- LPX-1200 MSRP: \$21,995
- Highest quality scan data and resolution
 - .004 scan resolution scan area: 5" dia. x 8" tall
 - Smooth / merge surfaces, decimate model
 - Includes Pixform Pro for advanced editing



- LPX-600 MSRP: \$11,995
- High quality scan data large scanning area
 - .008 scan resolution
 - Scan area 10" dia. x 16" tall
 - Includes LPX EX Studio for automated editing



- LPX-60 MSRP: \$7,995
- High quality scan data at a value price
 - .008 scan resolution
 - Scan area 8" dia. x 12" tall
 - Includes LPX EX Studio for automated editing

Education: Skills learned

- **Planning**
- **Creativity**
- **Teamwork**
- **Math skills**
- **Problem solving**
- **Abstract thinking**
- **Rapid prototyping**
- **Reverse engineering**
- **3D spatial relationships**
- **Manufacturing concepts**



Conclusion

- **A strong history of innovation in SRP and Scanning**
- **Legendary Roland quality backed by your local dealer**
- **SRP provides speed, accuracy and material choices**
- **LPX scanning provides unprecedented ease of use**
- **All products are complete software/hardware solutions**
- **More information: www.rolandasd.com**



MDX-15/20

MDX-40

MDX-540A

LPX-60/600

LPX-1200