



Nel PreTech Corporation

3D & CT Scanning

Engineering & Metrology Value-Add Services

Creating the Value Add

The Great Differentiator



People



Process



Platform





People



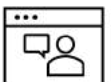
Metrology Expertise



Engineering Design



Physics



Software Expertise



Process

- Metrology
- Reverse Engineering
- Engineering design assist
- Print development
- GD&T consulting
- Datum structuring
- Fixture design





Process

The entire system is accredited.



Establishes:

- Competency of skill
- Adequacy of equipment
- Reliability of business process/quality management system
- Contract review & final inspection
- Proven measurement uncertainty

The Value-Add Customer Experience

- Rely on high-level engagements with top-tier engineering support
- Improve product quality, manufacturability, & production processes
- Access immediate online assist
- Changes/edits can occur on the fly
- Make informed decisions

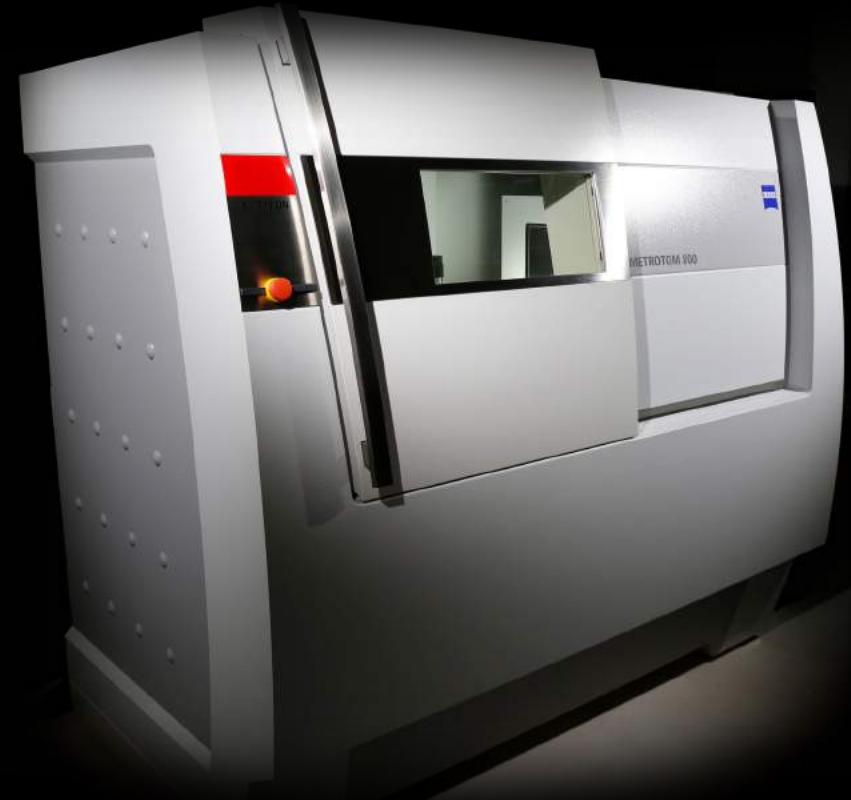




Platform



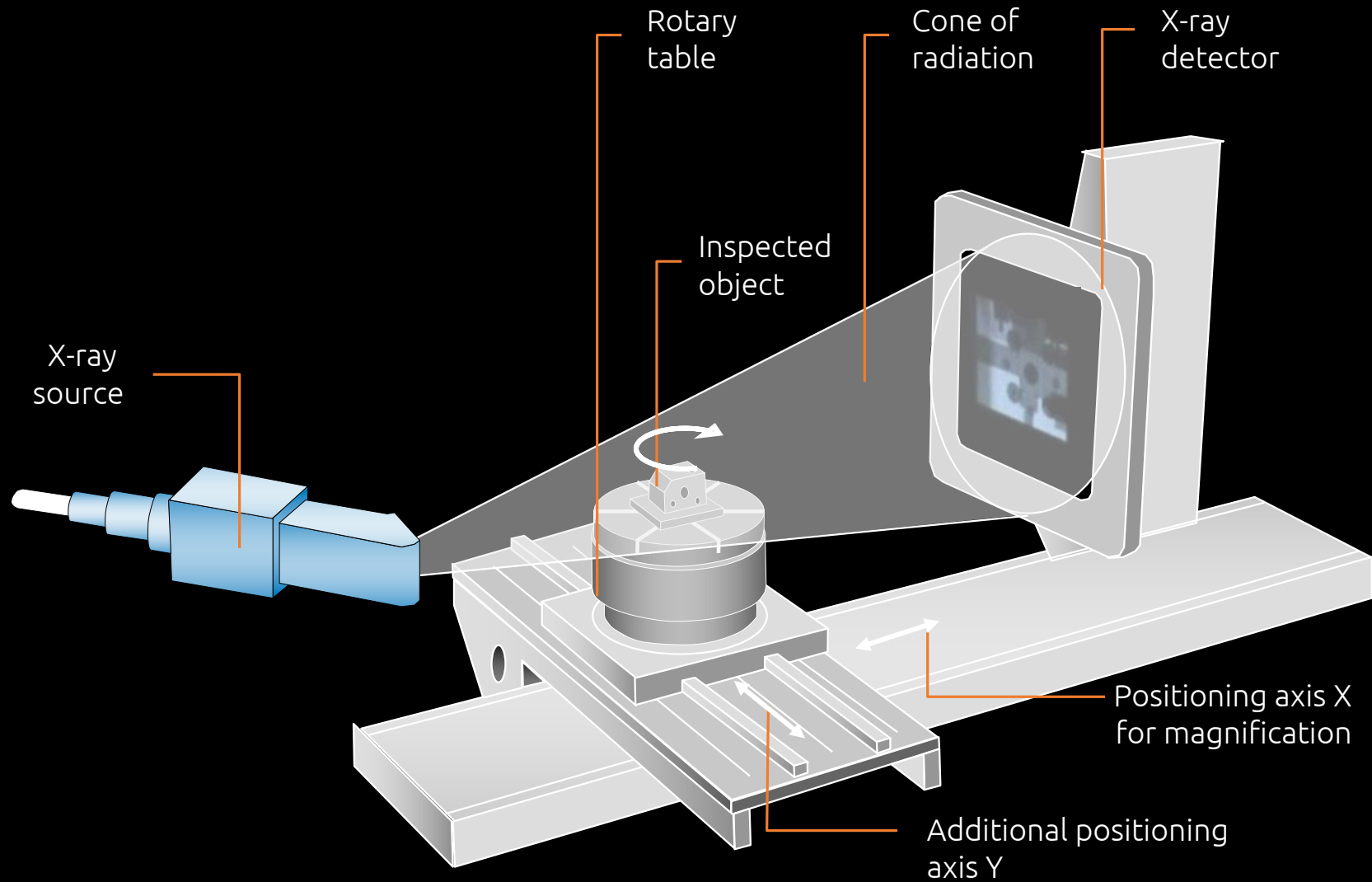
Zeiss Metrotom 1500



Zeiss Metrotom 800



MAIN COMPONENTS OF INDUSTRIAL CT

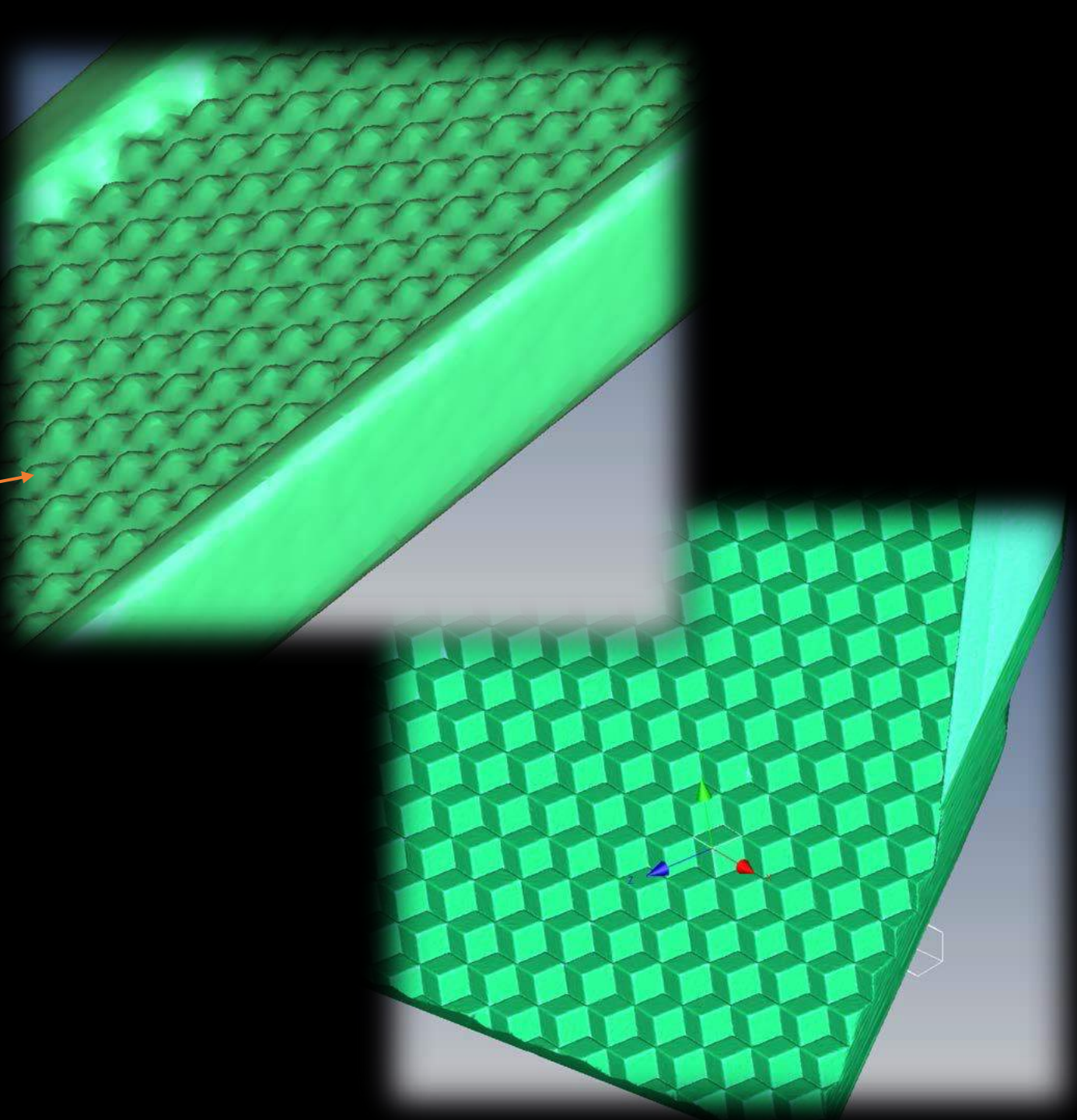


RESOLUTION: WHY IS IT IMPORTANT?

Resolution dictates the smallest feature you can see.

At a lower resolution, sharp edges may be rounded.

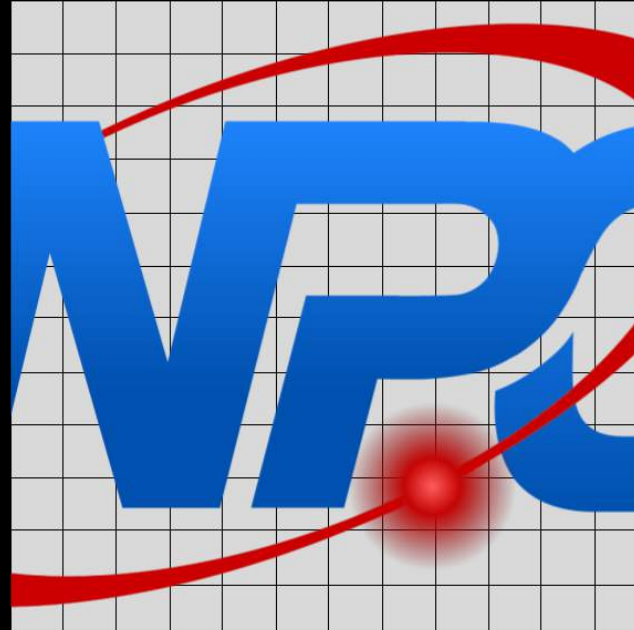
It's a trade off between the amount of part that can be scanned in one scan vs. higher resolution.



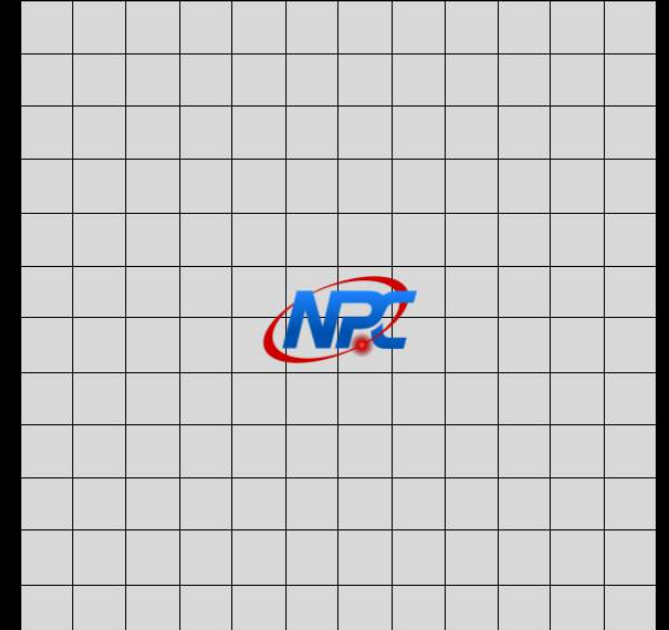
RESOLUTION: WHY IS IT IMPORTANT?

- Pixel size on the detector is fixed. To achieve higher resolutions, the object can be moved closer to the x-ray source. This will spread the same feature across more pixels, therefore increasing resolution.
- The trade-off with increasing resolution is limiting field of view.
- NPC takes a consultative approach to help the customer find the proper balance for their unique project.

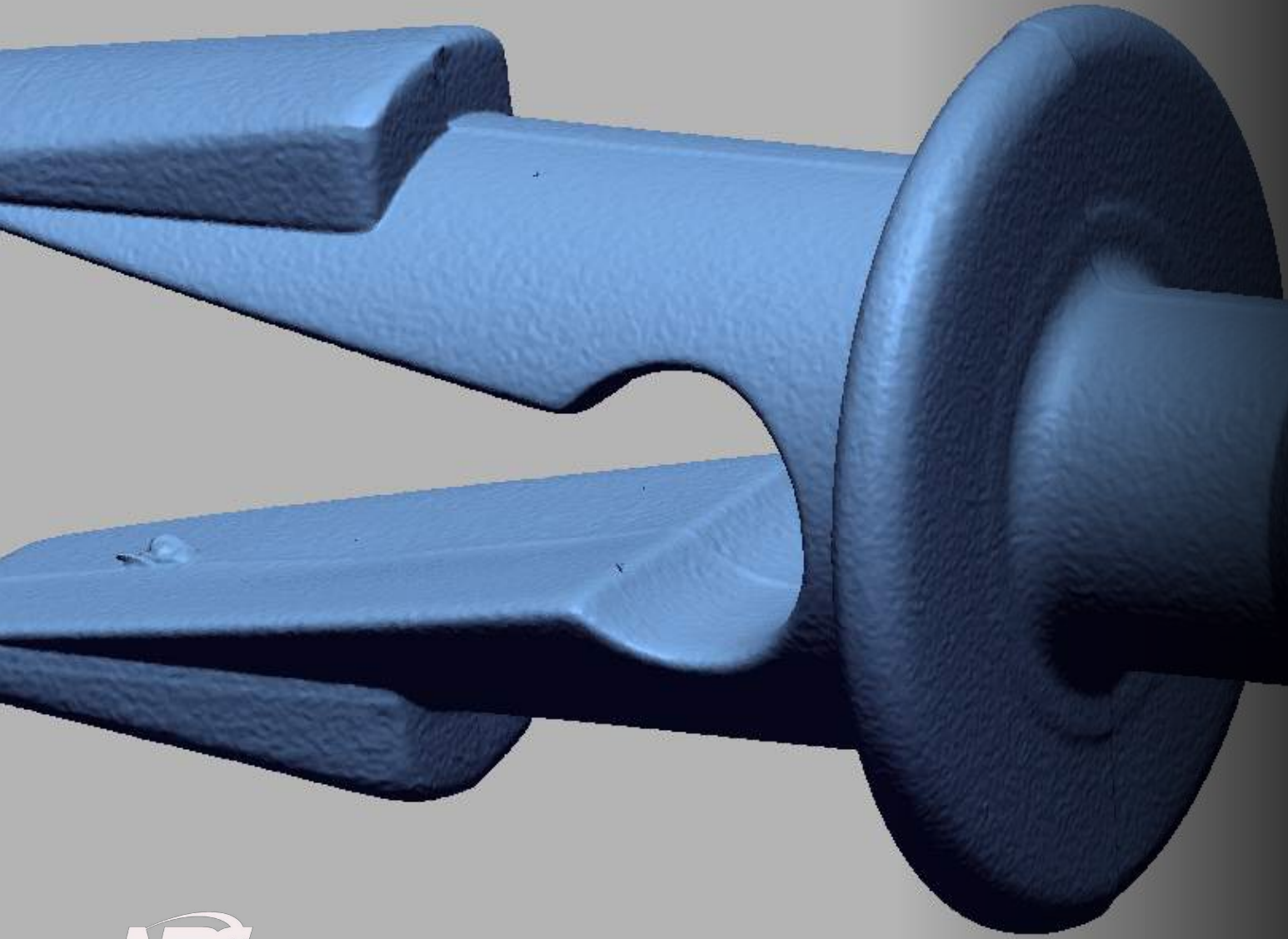
Each square represents a pixel



High Magnification

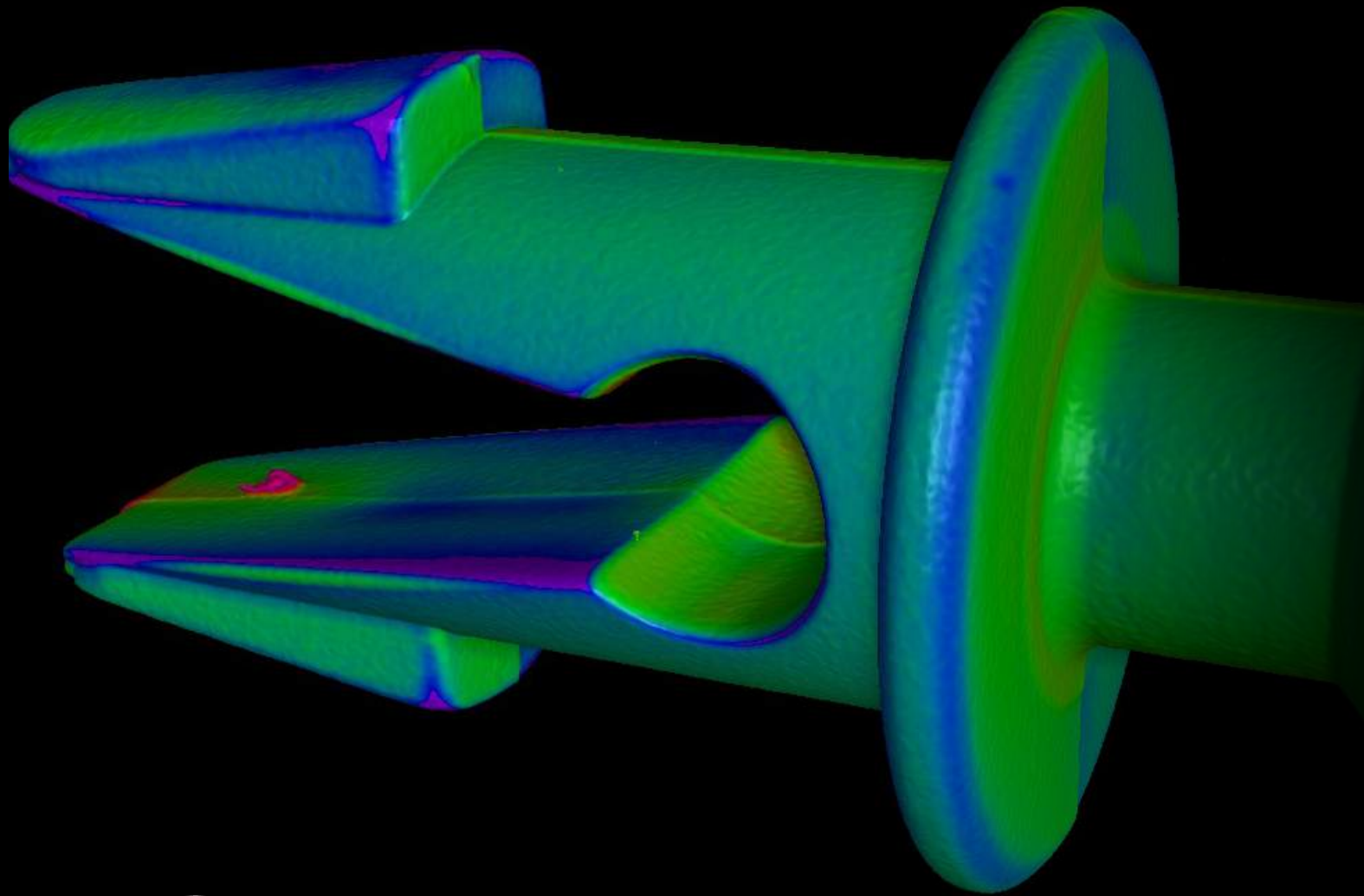


Low Magnification



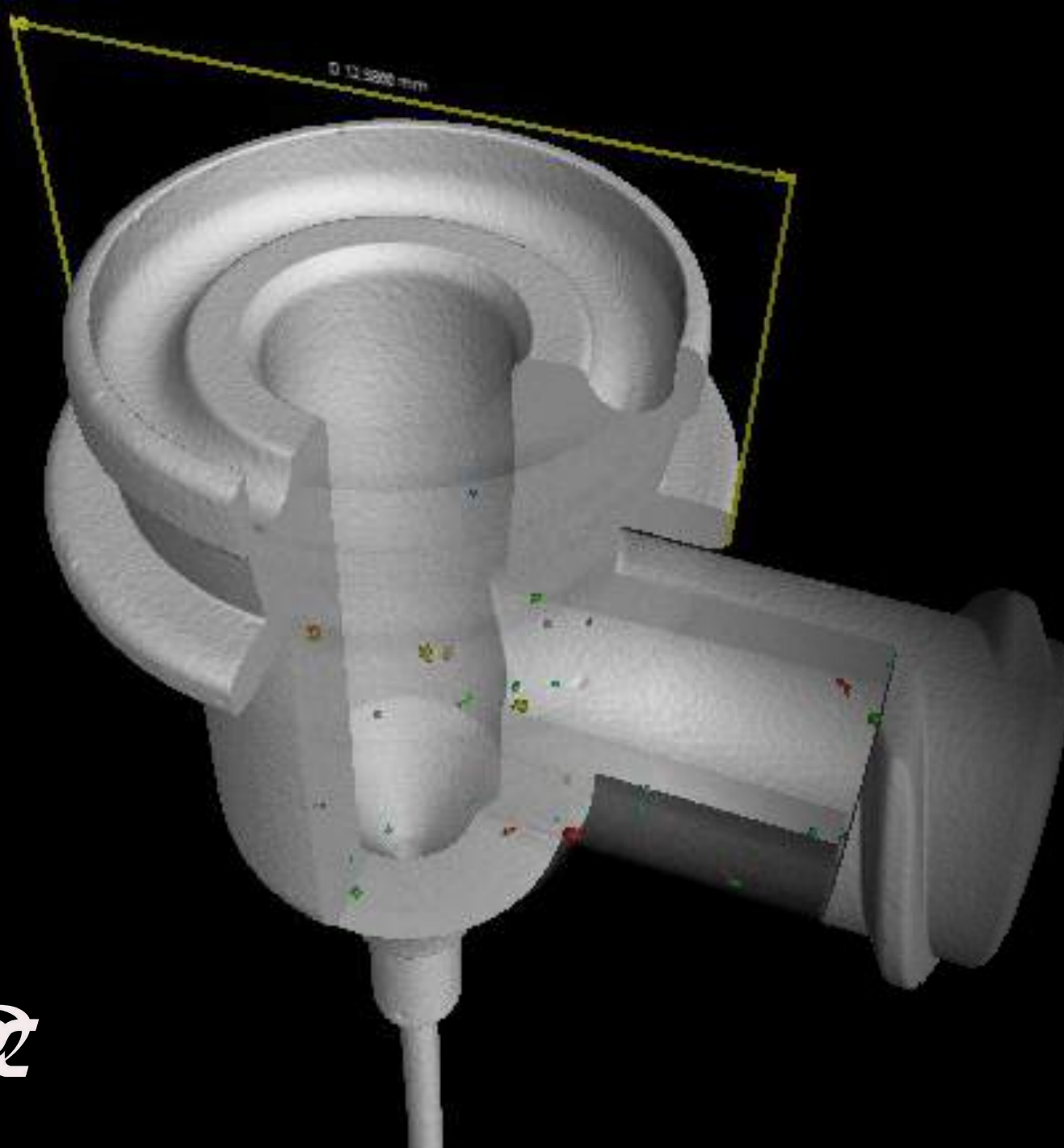
Deliverables

- STL
- Reverse Engineering
- Layout
- Color Map
- Porosity Analysis
- Wall Thickness Analysis
- Assembly/Failure Analysis



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05/03/2016

ABC Company, Inc.

123 Street
Naperville, IL 60565

Attn: Ron Smith

Technician: Wm. Aldridge

NPC File ID: 11026

Part Name: CASE ASM

Part #: 28480000

Print rev.: 002

of Parts: 3



Set Up: The parts were set up on a Brown & Sharpe Xcel 9-15-9 CMM. Parts were held in customer-supplied holding fixture.

Alignment: Parts were leveled on the appropriate datum structure using features measured per the Metrology Plan.
The JBC datum structure was the default alignment used if an explicit alignment was not specified or implied.



Comments:

- Parts are numbered 1-3 with blue marker.
- Basic dimensions were numbered on the print, but were only reported with their associated true positions.
- Dimensions that went to the centerline of the suppressor were reported to both the suppressor and the plastic sleeve, as noted.
- The angled features in dimensions 26-28 were present but exhibited poor form and were not reliably measurable.



Sample Test Report

Sample Test Report

		8420 183rd Place		
		Tinley Park, IL 60487-9268		
		Ph. (708) 429-4887		
		Fx. (708) 429-5807		
		www.nelpretech.com		Mechanical Certificate No.: 2140.01
CUSTOMER:	ABC Company, Inc.		PART NAME:	CASE ASM
	123 Street		PART #:	28480000
	Naperville, IL 60565		PRINT REVISION:	002
CONTACT:	Ron Smith		UNITS:	MM
DATE RECEIVED:	4/26/2016	PROCEDURE:	Proc-03	LAB TEMPERATURE: 68 ± 1°
DATE COMPLETED:	5/3/2016	CONDITION:	NEW	LAB HUMIDITY: < 50%
INSPECTED BY:	Wm. Aldridge	bill@nelpretech.com	MATERIAL:	Plastic
<p align="center">**Measurement results relate only to the items inspected or tested**</p> <p align="center">**Measured values outside the listed tolerances are highlighted yellow in the measurement columns**</p> <p align="center">**The uncertainty is estimated using a coverage factor (k) of 2, providing a confidence level of approximately 95%**</p> <p align="center">**In the statement of best uncertainty, A is the numerical value of the shortest distance of the leg defining the angle in meters**</p> <p align="center">**This report is traceable to the international system of units (SI) through standards calibrated by accredited laboratories, or through standards calibrated at NIST.**</p>				
All uncertainty values are in μm (10^{-6} meters) and Arc Seconds (L is measured value in meters / A is shortest leg in meters)				
Inspection Equipment And Estimated Uncertainty	<u>Equipment</u>		<u>Length μm (10^{-6} meters)</u>	<u>Angle (Arc Seconds)</u>
	CMM1	- Brown & Sharpe Xcel 9-15-9	± (22 + (33.0 * L))	± (6.8 + (4.5 / A))
	CMM2	- Mycrona Altera S/L 4-4-3	± (3.5 + (32.9 * L))	± (6.6 + (0.7 / A))
	CMM3	- Brown & Sharpe Global Image 7-10-7	± (9.2 + (34.0 * L))	± (7.0 + (1.9 / A))
	CMM4	- Brown & Sharpe Micro Xcel 7-10-5	± (15 + (30.0 * L))	± (6.1 + (3.1 / A))
	VIDEO1	- ROI Omis III	± (14 + (20.0 * L))	± (4.2 + (3.0 / A))
	VIDEO2	- ROI Omis II	± (14 + (20.0 * L))	± (4.2 + (3.0 / A))
	VIDEO3	- MicroVu	± (100 + (5.3 * L))	± (1.1 + (21 / A))
	CT1	- Zeiss Metrotom 800 CT Scanner	± (9.7 + (12.0 * L))	± (.0 + (3.0 / A))
	CAL1, 2, 3	- Caliper	± 3.56	N/A
	PIN	- Pin Gage	± 2.54	N/A
	MIC	- Micrometer	± .254	N/A
	RAD	- Radius Gage	± 500	N/A
VISUAL	- Visual			
Measurements performed by: <i>Wm. Aldridge</i>		Reviewed by: <i>Greg Nelson</i>		
Title: Project Engineer		Title: Operations Manager		
INSPECTION REPORT				FILE ID#: 11026

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Sample Test Report

Part Name: CASE ASM													
Part Number: 28480000													
INSPECTION REPORT													
FILE ID#: 11026													
Blueprint dimensions		Tolerance		Inspection Results									
and descriptions	Nominal	(+)	(-)	Part 1	Part 2	Part 3							
1	57.210	0.300	0.300	57.488	57.495	57.491							
2A BASIC	34.670			35.062	35.007	35.032							
B BASIC	34.670			35.124	35.146	35.122							
3 BASIC	5.65°			6.00°	6.13°	6.13°							
4	33.990	0.300	0.300	34.064	34.027	34.032							
5 BASIC	14.450			14.450	14.450	14.450							
6 BASIC	5.65°			5.65°	5.65°	5.65°							
7 BASIC	26.420			26.420	26.420	26.420							
8 R	7.840	0.150	0.150	7.749	7.755	7.757							
9 Ø 0.2 B	0.000	0.200	0.000	0.146	0.076	0.129							
X BASIC	0.000			-0.069	-0.038	-0.064							
Y BASIC	0.000			0.024	0.000	-0.006							
10A	29.450	0.300	0.300	29.768	29.733	29.704							
B	29.450	0.300	0.300	29.750	29.685	29.622							
C	29.450	0.300	0.300	29.679	29.609	29.594							
11	17.800	0.100	0.100	17.860	17.890	17.871							
12 Ø 0.2m JBC	0.000	0.200	0.000	0.034	0.066	0.030							
BONUS				0.160	0.190	0.171							
X BASIC	0.960			0.977	0.927	0.945							
11	17.800	0.100	0.100	17.892	17.890	17.860							
12 Ø 0.2 JGH	0.000	0.200	0.000	0.187	0.200	0.198	TO TOOLING ALIGNMENT						
BONUS				0.192	0.190	0.160							
X BASIC	0.000			-0.093	-0.100	-0.099							
13 BASIC	2.000			2.000	2.000	2.000							
14 BASIC	12.000			12.000	12.000	12.000							
15	18.250	0.100	0.100	18.235	18.248	18.254							
16 FLATNESS	0.000	0.200		0.040	0.026	0.035							
17 Ø	15.400	0.150	0.150	15.403	15.405	15.403							

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Approved by: Daniel Demski 2007-05-01
G:\MASTERMASTER\rev19.4s
Revision 19
FOR-04



Major Consumer Product Company:

Multiple high-level cavitation molds for high-volume production & global distribution

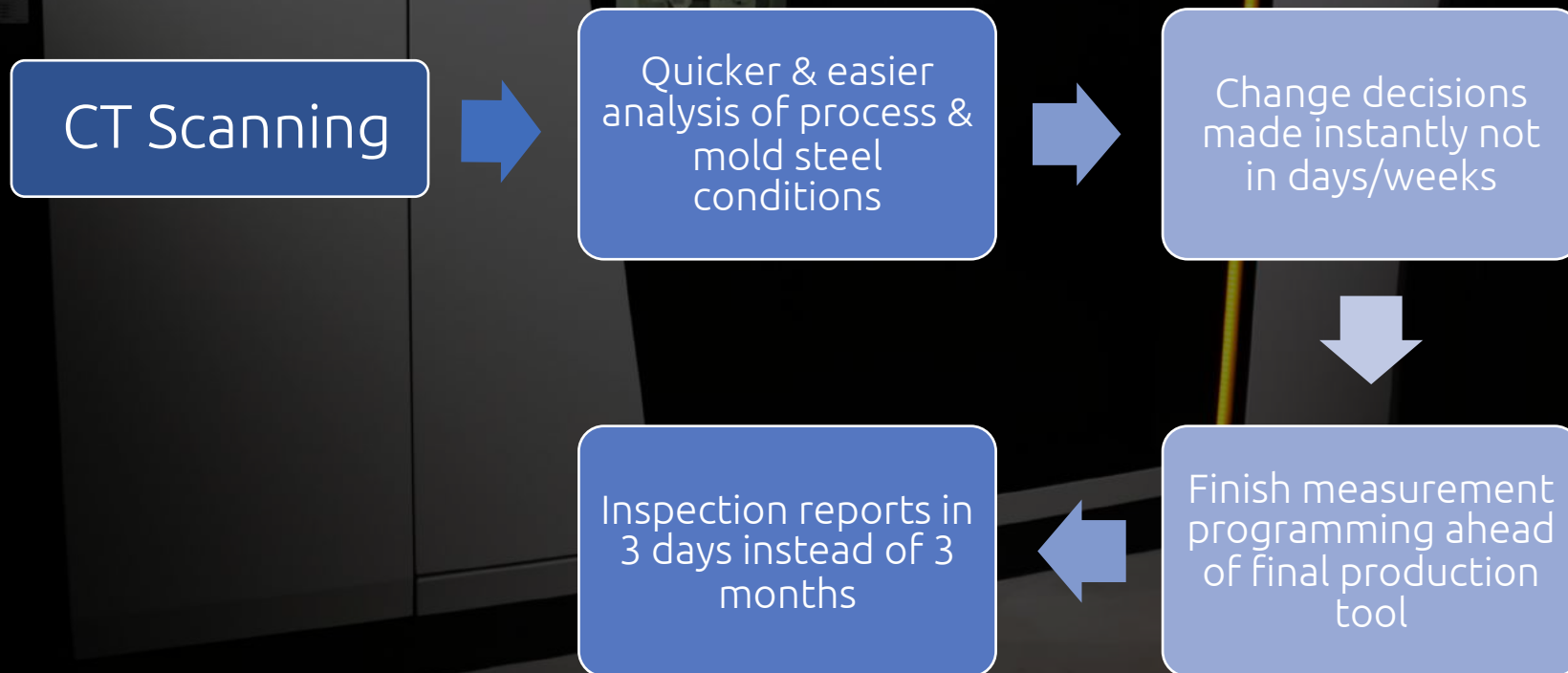
Problem: Struggling to develop, approve, & launch new tooling

- 16 weeks : produce, run, evaluate & test, modify as needed
- 3 months: product inspection using traditional measuring tools to approve mold for production

Major Consumer Product Company:

Multiple high-level cavitation molds for
high-volume production & global distribution

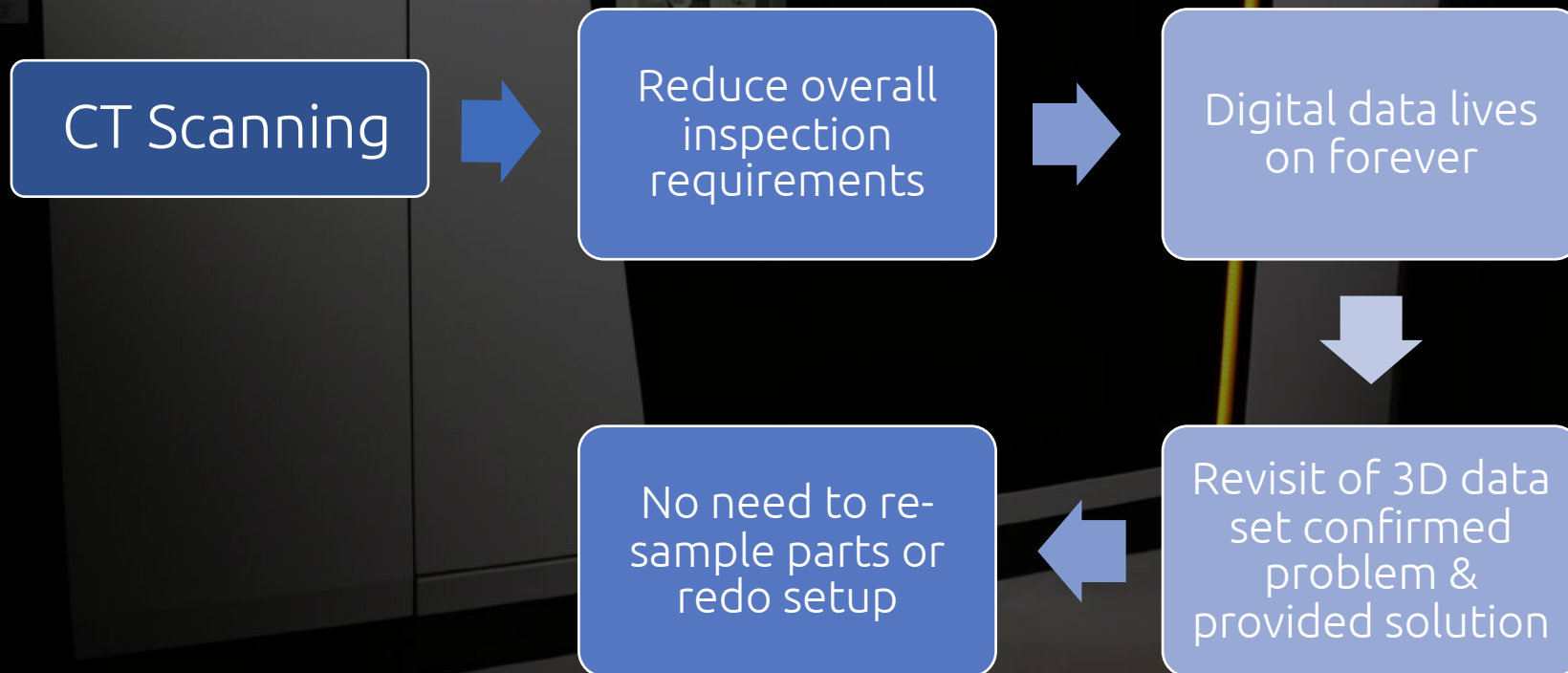
Solution:



Major Consumer Product Company:

Multiple high-level cavitation molds for
high-volume production & global distribution

Solution:



Major Consumer Product Company:

Multiple high-level cavitation molds for
high-volume production & global distribution

Results:



Client saves
\$1 million in direct
cost!



\$60 million in cash
flow
4 months sooner!



Major/Global OEM Medical Device Company :

Product development & launch capabilities
Drug delivery pumps

20 molded components of the device

- Engineering product design
- Metrology
- Fixturing
- Assist with design prints
- Establish datum schemes & proper GD&T
- Design production test fixtures



Major/Global OEM Medical Device Company :

Product development & launch capabilities

Drug delivery pumps

CT scans & inspection data: quick mold evaluation & final production approval

Design & certify production measurement & test fixtures

Installation of fixtures at manufacturing plant

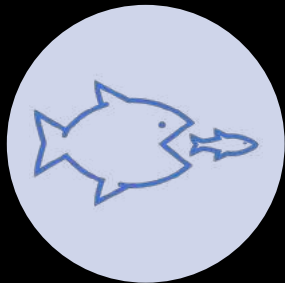
Provide all necessary use & certification documentation



Major/Global OEM Medical Device Company :

Product development & launch capabilities
Drug delivery pumps

Results:



Competitive
advantage



20 new tools
in 20 weeks



SEEING IS BETTER THAN BELIEVING

