



# AUGMENTING SERVICE CONTENT TO CAPTURE YOUR PARTS BUSINESS

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PTC SLM Solution Management

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# AGENDA



- ❑ Understand - Digitally deliver existing service content. Gather asset information
- ❑ Advance – Improve technician workflow with contextual content delivery
- ❑ Outperform – Win parts business with outcome-based service models and new retail service offerings

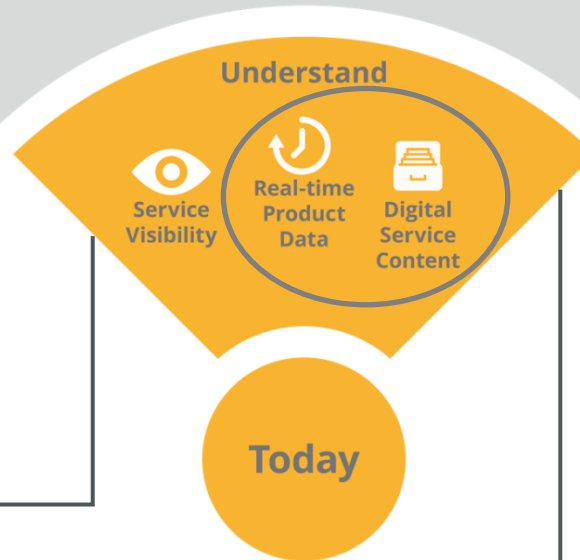
# UNDERSTAND – ENTRY AND EXIT STATES - SERVICE & PARTS INFORMATION



## Results

- Increased customer satisfaction
- Increased parts revenue for manufacturers
- Reduced time for service event resolution
- Service efficiency through improved visibility

- Disparately delivered parts and procedural content
- Few connected business systems or connected products to track fielded assets

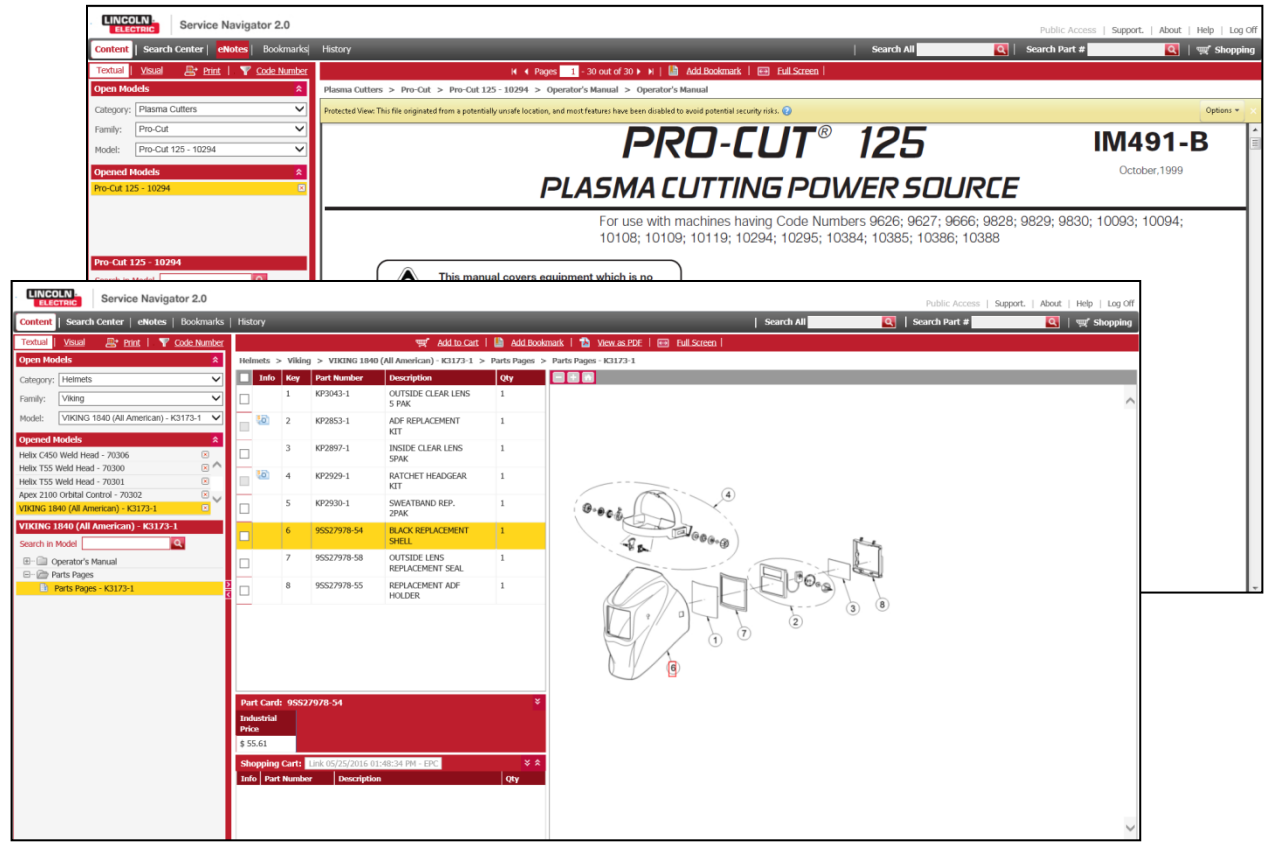


- Electronically delivered parts and procedural content
- Largely “book” based and “overloaded”
- Field asset configurations available, but separately from parts and procedural content

# UNDERSTAND – DIGITALLY DELIVER YOUR EXISTING CONTENT



- “Deliver First”
  - PDF’s
  - Parts data
  - Illustrations – raster, SVG, etc
- Consolidate access to existing content, and distribute it to the service points
- Typically accessed by product model
- Typically content is “overloaded” to account for all options/configs for a given model



# UNDERSTAND – GATHER YOUR ASSET INFORMATION



- Unconnected products – aggregate from business systems
- Connected products – supplement with sensor, alert, and other connected information
- To help with service content, aim to gather what's available for
  - Configuration (model, options, assemblies, ...)
  - State (sensor readings)
  - Condition (fault codes, alerts)

Drawing #	07-1436
Body Sales Option Description	Aerial, Sky-Boom 61'/55', Alum Body
Chassis Sales Option Description	Dash-2000 Chassis, Aerials, 31K Single Axle
Truck VIN	
Desc Cab	Cab_Dash-2000_67" w/10" Raised Roof
Desc Engine	
Desc Front Axle	
Desc Front Tire	
Desc Pump	
Desc Rear Axle	
Desc Rear Tire	
Desc Tank	
Desc Transmission	
Desc Foam System	
Desc Aerial	

Alert	Priority	Property	Message	AlertTime
Fault_FC003	1	FC003	TRUE	2016-01-12 14:11:30

Asset Name	PTC.CSLM.Demo.Assets.MRL_1
Is Connected	Yes
Last Connection	2016-01-14 13:47:02
Serial Number	300.10853
Model Number	Xaminer Standard 150
Owner	ACME Medical Equipment
Owner Contact	Mary Belle
Operator	ACME Hospital Services, Midwest
Operator Contact	Wiley Operator






# UNDERSTAND – SERVICE PARTS BUSINESS



- Retail assets
  - You're online and in the game
  - But you don't rule the game! Aftermarket competitors are likely on-par for Internet presence, and stronger on price
- Warranted assets
  - No change on parts revenue
  - But efficiencies from improved technician effectiveness help with margin

2007 Toyota Prius: "2007 prius water pump"

Showing most relevant results. See all results for 2007 prius water pump.

 <p>Genuine Toyota (G8020-47031) Water Pump Assembly <b>\$92.25</b> <del>\$93.43</del> ✓Prime Only 1 left in stock - order soon. ★★★★★ 8</p>	 <p>Genuine Toyota 16100-29157-83 Water Pump Assembly <b>\$57.65</b> ✓Prime ★★★★★ 8</p>	 <p><b>AISIN</b> Geared up for the future Aisin AB1207B Engine Water Pump Gasket <b>\$13.74</b> ✓Prime ★★★★★ 1</p>	 <p>Aisin WPT-111 Engine Water Pump Gasket <b>\$43.78</b> <del>\$44.78</del> ✓Prime Only 8 left in stock - order soon. ★★★★☆ 19</p>	 <p>ACDelco 252-875 Professional Water Pump <b>\$31.47</b> ✓Prime Only 4 left in stock - order soon. ★★★★☆ 5</p>
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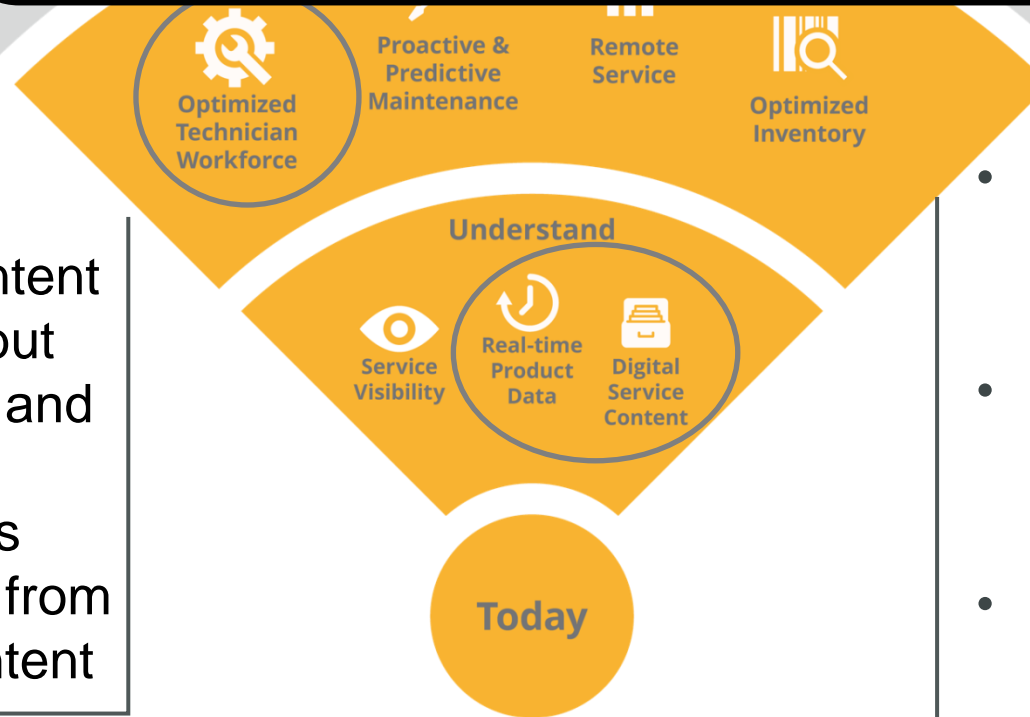
# ADVANCE - ENTRY AND EXIT STATES - SERVICE & PARTS INFORMATION



## Results

- Reduced cost of ownership for customers
- Increased product uptime and output
- Lowered total cost to serve and improved utilization of technicians

- Parts and procedural content delivered electronically, but still largely “book” based and overloaded
- Field asset configurations available, but separately from parts and procedural content



- Parts and procedural content are contextual, graphical, and associative
- Asset information automatically filters the service content for the task at hand
- Content improves service levels and efficiencies for the existing service models



# ADVANCE – CONTEXTUALIZING CONTENT WITH APPLICABILITY



## Author and Deliver contextual parts and procedural content

- Option Codes
- Operating Conditions
- Serial Numbers
- Date Effectivity
- VIN / PIN / Tail Number

Provide only the information needed for the specific asset and the task being worked on

☰ Synergy, OEM	i	
☰ 00001, RIM	i	Wheel Rims
☰ 00042, 15AW	i	15" Aluminium Wheels
☰ 00043, 17AW	i	17" Aluminium Wheels
☰ 00044, 16AW	i	16" Aluminium Wheels
☰ 00002, SEA	i	Seat Type
☰ 00017, SPS	i	Sports Seat
☰ 00018, NOS	i	Normal Seat
☰ 00003, MOD	i	Model Type
☰ 00005, GBX	i	Gearbox Type
☰ 00001, MGB	i	Manual Gearbox
☰ 00002, AGB	i	Automatic Gearbox
☰ 00006, ENT	i	Entertainment System
☰ 00007, DRV	i	Driveshaft
☰ 00008, NAV	i	Navigation System
☰ 00010, ENG	i	Engine Type
☰ 00035, PX2	i	Petrol X2 Engine
☰ 00036, DY1	i	Diesel Y1 Engine
☰ 00037, PX3	i	Petrol X3 Engine
☰ 00038, DY2	i	Diesel Y2 Engine
☰ 00039, PX1	i	Petrol X1 Engine

☑ INSERVICEROOT, INSERVICEROOT, OEM, A.5 (Service)
▶ ☑ 0000005440, Metro Transit, OEM, A.2 (Service)
▶ ☑ SYNERGY, Synergy Family, OEM, A.2 (Service)
▶ ☑ 0000001282, Cars, OEM, A.2 (Service)
☑ 0000001285, Coupe, OEM, A.2 (Service)
☑ 0000001286, DX, OEM, A.1 (Service)
☑ 0000001287, LX, OEM, A.1 (Service)
☑ 0000001288, Sport Convertible, OEM, A.1 (Service)
☑ 0000001289, Sport Coupe, OEM, A.1 (Service)
☑ 0000001283, Vans, OEM, A.1 (Service)
☑ 0000001284, Truck & Bus, OEM, A.1 (Service)

Effectivity Type	Value	Assignment
Date	1/1/2015 to 12/31/2015	All
Serial Number	1 to 5000	All



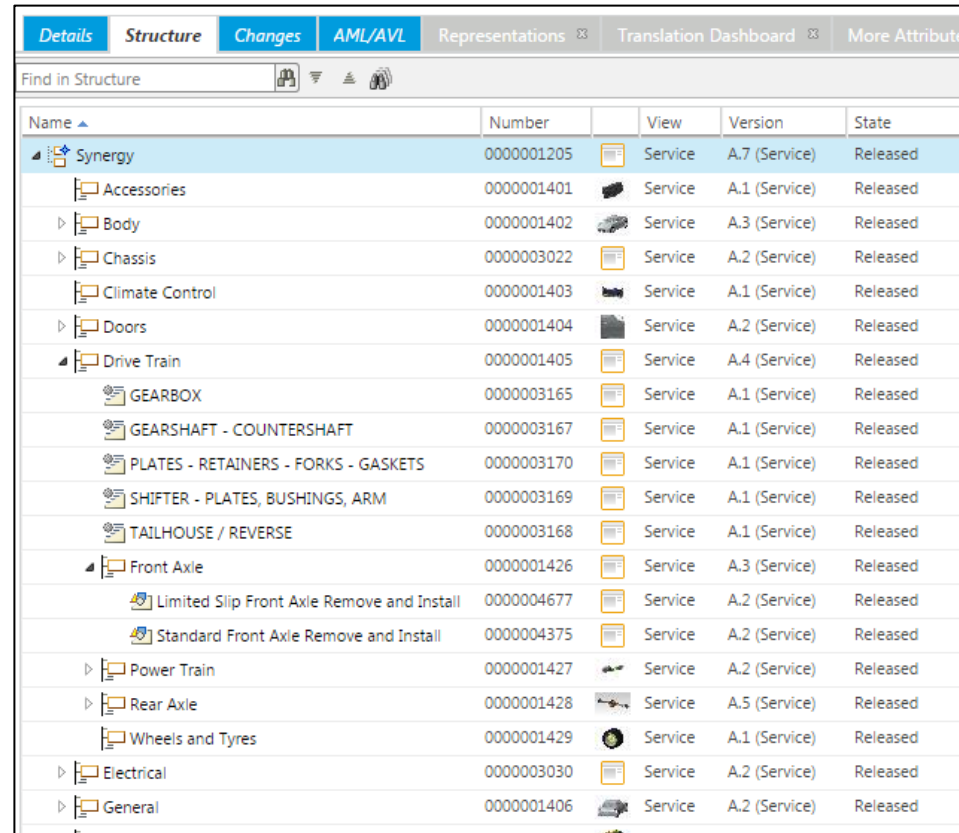


Manage and leverage configurations for contextual parts and procedural content delivery

- As Supported product views
- Product structures
- Service BOMs
- As-Invoiced / As-Shipped
- As-Maintained

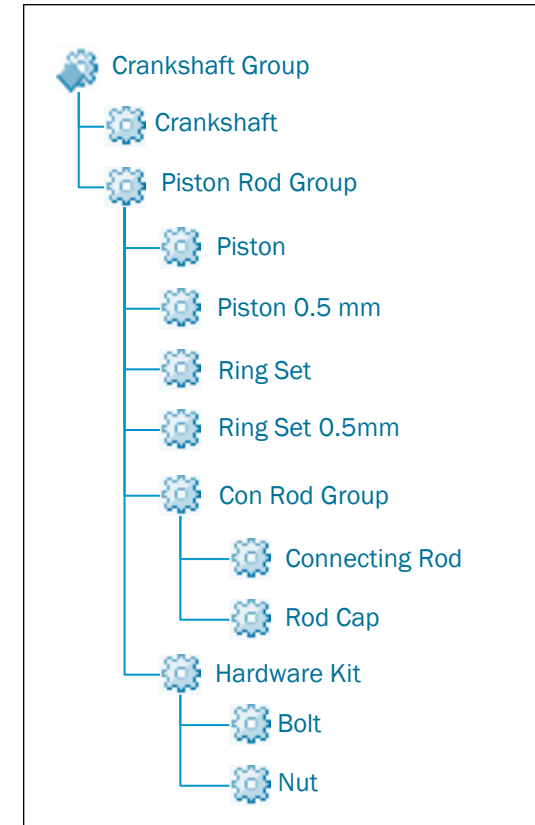
Provide only the information needed for the specific asset and the task being worked on

As Supported Service Information View

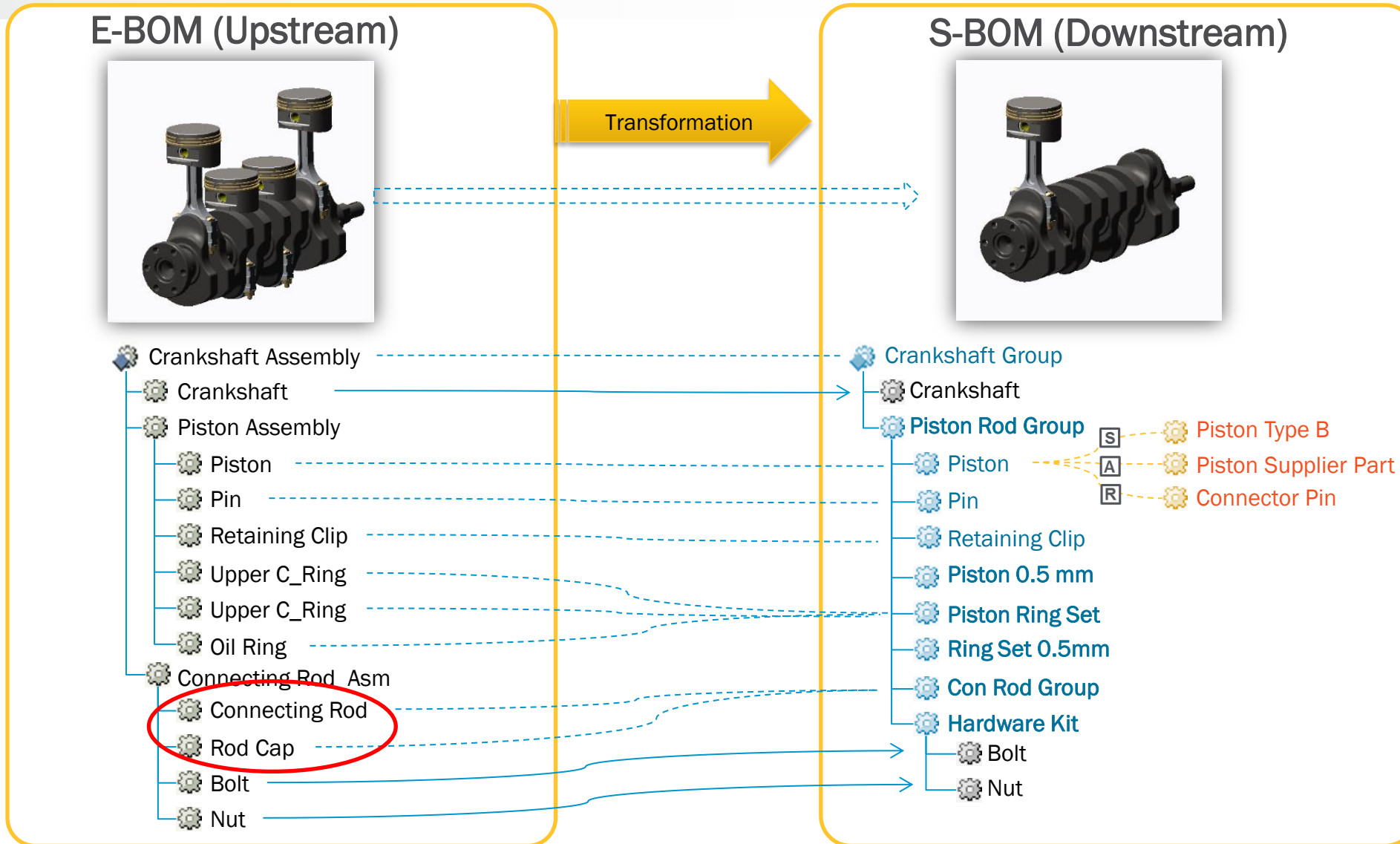


Name	Number	View	Version	State
▲ Synergy	0000001205	Service	A.7 (Service)	Released
▶ Accessories	0000001401	Service	A.1 (Service)	Released
▶ Body	0000001402	Service	A.3 (Service)	Released
▶ Chassis	0000003022	Service	A.2 (Service)	Released
▶ Climate Control	0000001403	Service	A.1 (Service)	Released
▶ Doors	0000001404	Service	A.2 (Service)	Released
▲ Drive Train	0000001405	Service	A.4 (Service)	Released
GEARBOX	0000003165	Service	A.1 (Service)	Released
GEARSHAFT - COUNTERSHAFT	0000003167	Service	A.1 (Service)	Released
PLATES - RETAINERS - FORKS - GASKETS	0000003170	Service	A.1 (Service)	Released
SHIFTER - PLATES, BUSHINGS, ARM	0000003169	Service	A.1 (Service)	Released
TAILHOUSE / REVERSE	0000003168	Service	A.1 (Service)	Released
▲ Front Axle	0000001426	Service	A.3 (Service)	Released
Limited Slip Front Axle Remove and Install	0000004677	Service	A.2 (Service)	Released
Standard Front Axle Remove and Install	0000004375	Service	A.2 (Service)	Released
▶ Power Train	0000001427	Service	A.2 (Service)	Released
▶ Rear Axle	0000001428	Service	A.5 (Service)	Released
Wheels and Tyres	0000001429	Service	A.1 (Service)	Released
▶ Electrical	0000003030	Service	A.2 (Service)	Released
▶ General	0000001406	Service	A.2 (Service)	Released

Service BOM



# ADVANCE – CREATE SERVICE BOM FROM SOURCE BOM



Define top level serviceable part

Add identified serviceable parts

Introduce new service units

Define service kits

Add aftermarket parts / options

Add Part Chains

Find in Structure

Current Filter: [Latest] **Design**, Working

Identity	
000005405, PARKING BRAKE, OEM, A.1 (Design)	✓
000005394, 844j_linkage_skel, OEM, A.1 (Design)	⚠
000005397, PARKING BRAKE, OEM, A.1 (Design)	⚠
000005398, CAP SCREW, OEM, A.1 (Design)	✓
000005400, ADAPTER W/ O-RING, OEM, A.1 (Design)	✓
000005402, WASHER, OEM, A.1 (Design)	✓
000005415, YOKE END, OEM, A.1 (Design)	✓
000005420, PLATE, OEM, A.1 (Design)	✓

( 8 objects )

Attributes Uses **Equivalent** Visualization Documentation Replacements

**Downstream Equivalent Objects | Latest Non-Linked Iteration of Downstream Equivalent Objects Matching the Filter**

Downstream Equivalent Objects

Downstream Identity	Latest	Downstream Equ...	Upstream Equival
000005420, PLATE, OEM, A.1 (Design)	Yes	Service	Design

Displaying 1 - 1 of 1

**Latest Non-Linked Iteration of Downstream Equivalent Objects Matching the Filter**

Downstream Identity

Find in Structure

Current Filter: [Latest] **Service**, Working

Number	Name	View	Version
000005405	PARKING BRAKE	Service	A.3 (Servi...
000005382	INNER PISTON	Design	A.1 (Desi...
000005385	BRAKE DISKS	Design	A.1 (Desi...
000005386	BEARING	Design	A.1 (Desi...
000005387	WASHER	Design	A.1 (Desi...
000005396	BEARING BODY	Design	A.1 (Desi...
000005399	OUTER HOUSING	Design	A.1 (Desi...
000005400	ADAPTER W/ O-RING	Design	A.1 (Desi...
000005406	SEAL	Design	A.1 (Desi...
000005408	BLEEDER VALVE	Design	A.1 (Desi...
000005415	YOKE END	Design	A.1 (Desi...
000005419	MAIN SHAFT	Service	A.2 (Servi...

( 17 objects )

Attributes Uses **Equivalent** Visualization Documentation Replacements

**Upstream Equivalent Objects | Latest Non-Linked Iteration of Upstream Equivalent Objects Matching the Filter**

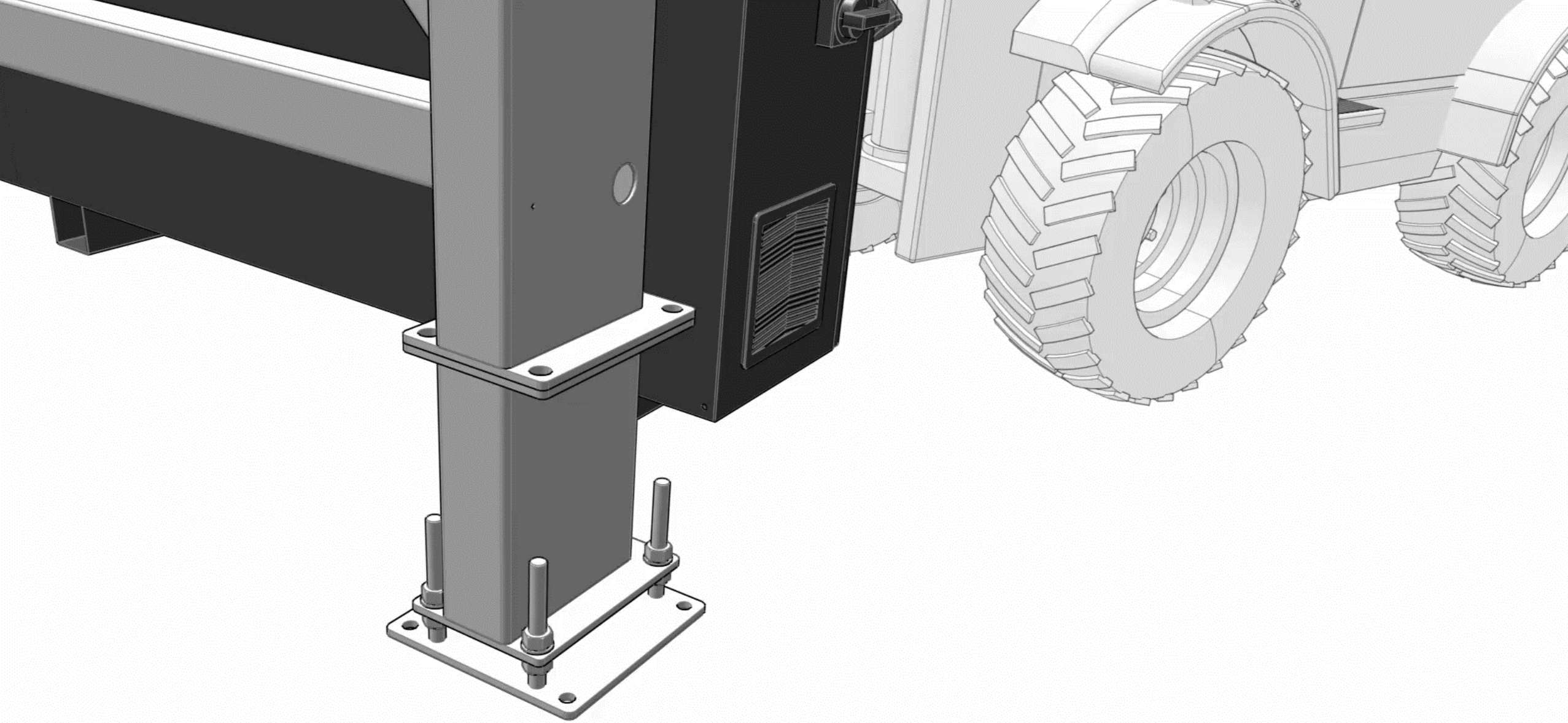
Upstream Equivalent Objects

Upstream Identity	Latest	Upstream Equival...	Downstream Equi...
000005405, PARKING BRAKE, OEM, A.1 (Design)	Yes	Design	Service

Displaying 1 - 1 of 1

**Latest Non-Linked Iteration of Upstream Equivalent Objects Matching the Filter**

Upstream Identity



## Favorite Products



VINB8609495 BUS 86  
PO805840 [City Bus - 88]



VINB2509549 BUS 25  
PO705840 [City Bus - 25]



VINB0693049 BUS 06  
06 [City Bus]

## General Content [...see more](#)

No items available.

## What's new?

557 updates since 05/27/2016 [...see more](#)

## Important Links

[PTC Product & Service Advantage](#)

[PTC Servigistics](#)



# SERVICE & PARTS INFORMATION

CREATE, MANAGE, DELIVER, AND ADVISE



## The Only End-to-End Solution on the Market

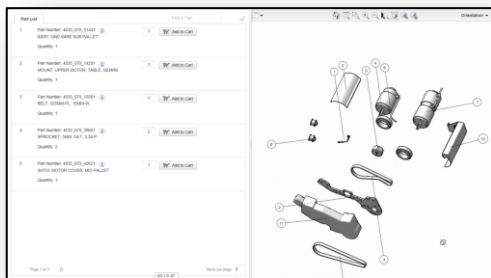


PTC Service & Parts Information

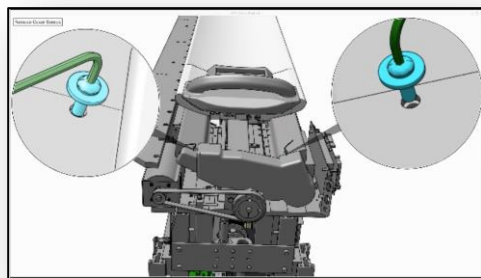


PTC Service Knowledge and Diagnostics

### 3D Parts Catalogs



### 3D Animated Procedures



### Create

Associative, structured and illustrated content

### Manage

Context-based content and integrated change process

### Deliver

Configuration specific, graphically-supplemented information

### Advise

Automate, coordinate & audit diagnostics across service organization

## BENEFITS

Increase Authoring Productivity

10 – 20%

Increase Service Parts Revenue

5 – 20%

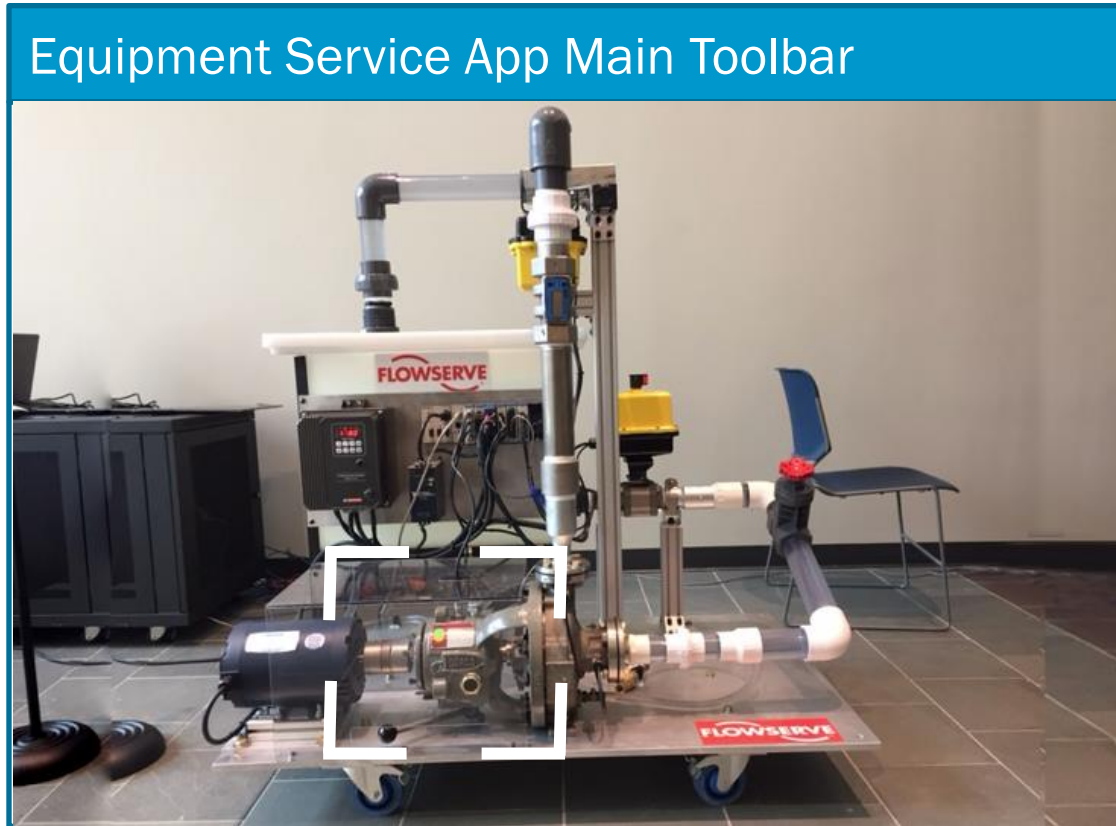
Increase Tech Productivity

7 – 15%

Dispatch Avoidance

8 – 30%

# ADVANCE – UNLOCKING THE VALUE OF CONNECTED ASSETS



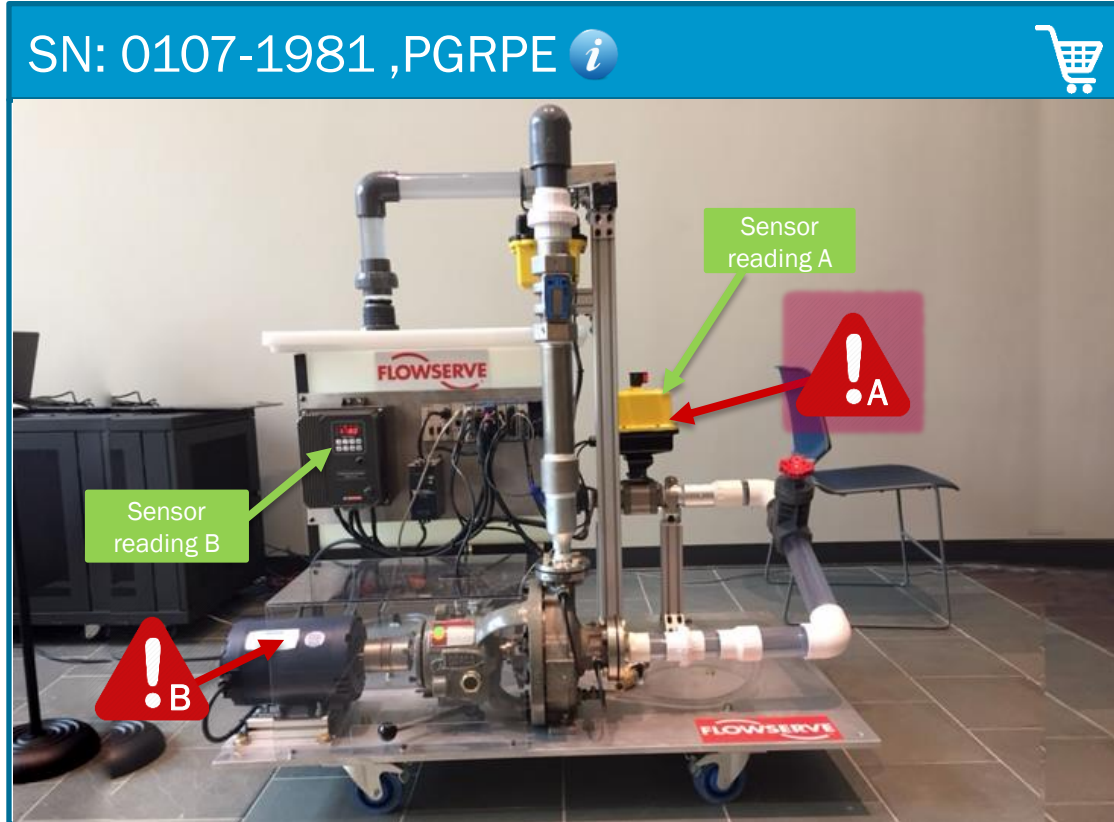
- Scanning Asset's Thing Code



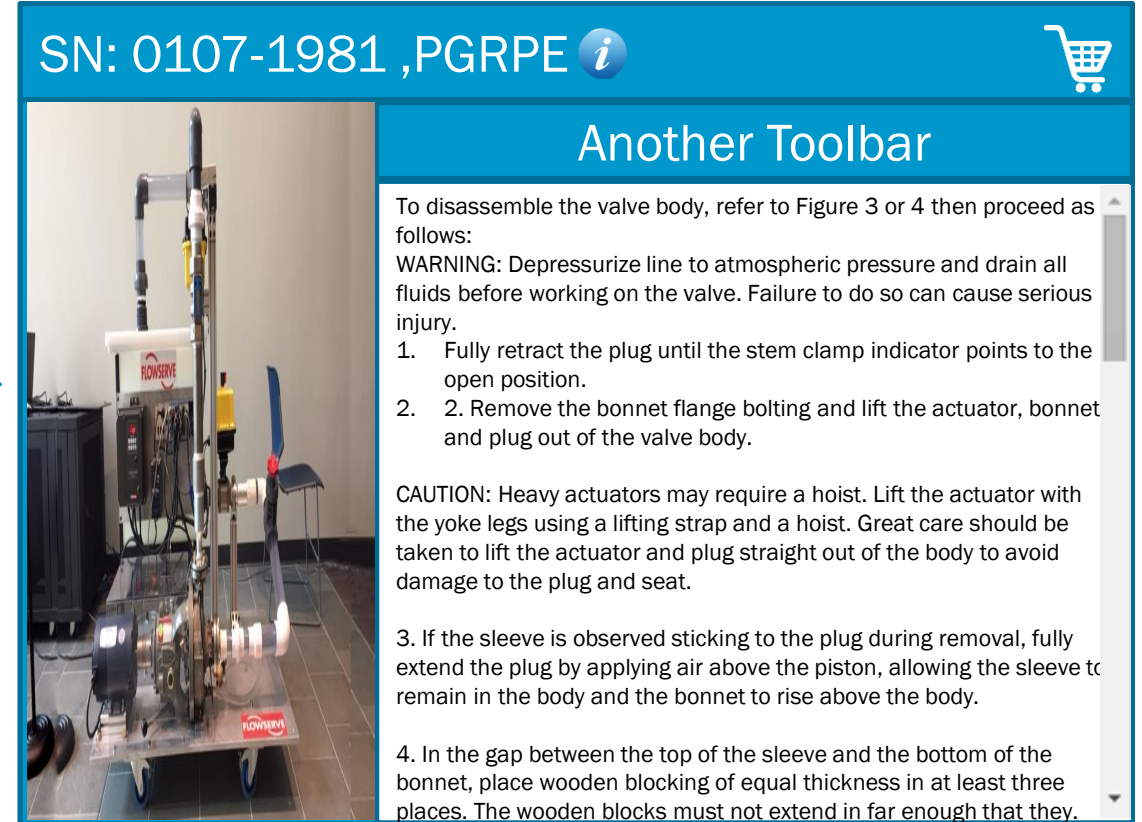
- Asset is recognized
- User can click on info icon to view additional info as: Size, Material, Warranty



# ADVANCE – LINKING THE ASSET TO THE SERVICE CONTENT



- User clicks on Alert A
- Send InService Asset and Alert code to perform search for procedures



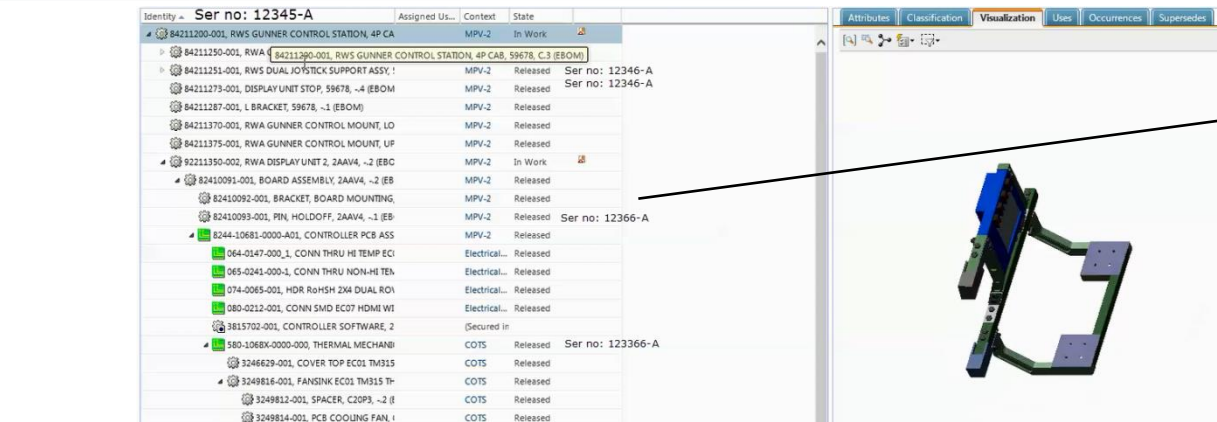
- Procedure document from InService is presented

# ASSET SPECIFIC SERVICE INFORMATION - TOMORROW

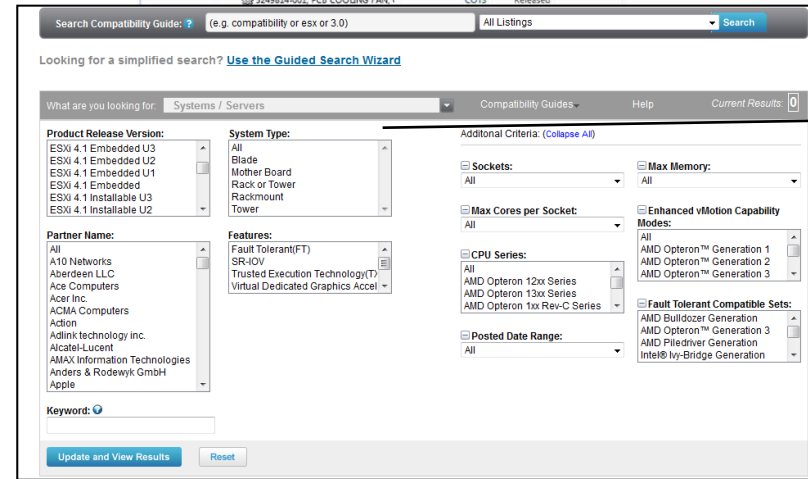
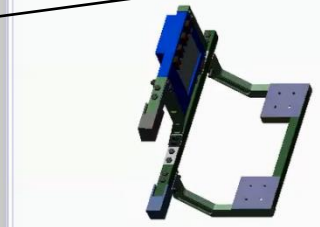


## CAPABILITIES

- Create and Track asset configurations, including connections to assets and business applications
- Track configuration history of hardware and software components resulting from maintenance activities
- Compare & reconcile configurations
- Perform impact analysis of planned configuration updates
- Search & analyze the configurations of fleets of assets
- Open API access to asset configuration information



Manage the as-is configuration of assets



Compare hardware and software "as-is" against compatibility matrix to discover discrepancies for safety, service and update opportunities



Digital Twin and Augmented Reality scaling for service. Provides configuration parameters to filter "overloaded" Thing Builder objects

## BENEFITS

Improved asset service efficiency reducing service cost and time

Reduced downtime by preventing configuration incompatibilities

Faster identification of impact of quality events

Optimized performance, security, legal and regulatory compliance

Improved asset upgrade and service offerings

# ADVANCE – SERVICE PARTS BUSINESS



- Retail assets
  - Your internet presence is differentiated with stronger content filtration
  - However, your retail buyers can still use your site to identify parts, and go to competitor sites to evaluate lower price alternatives
- Warranted assets
  - Technician effectiveness significantly improved
    - Accuracy of parts ordering
  - These efficiencies directly improve margin
  - These efficiencies also raise service level potential

# OUTPERFORM - ENTRY AND EXIT STATES - SERVICE & PARTS INFORMATION



## Results

- Increased customer equipment lifetime value and retention
- Increased revenue streams and growth from new offerings



- Parts and procedural content are contextual, graphical, and associative
- Asset information automatically filters the service content for the task at hand
- Content improves service levels and efficiencies for the existing service models

- New outcome-based contracts monetize the service level and efficiency gains from the “advance” stage
- New revenue streams for retail capture market share from less-connected competition

# OUTPERFORM – OUTCOME-BASE SERVICE MODELS



**Flight Hours...  
not just Jet Engines**



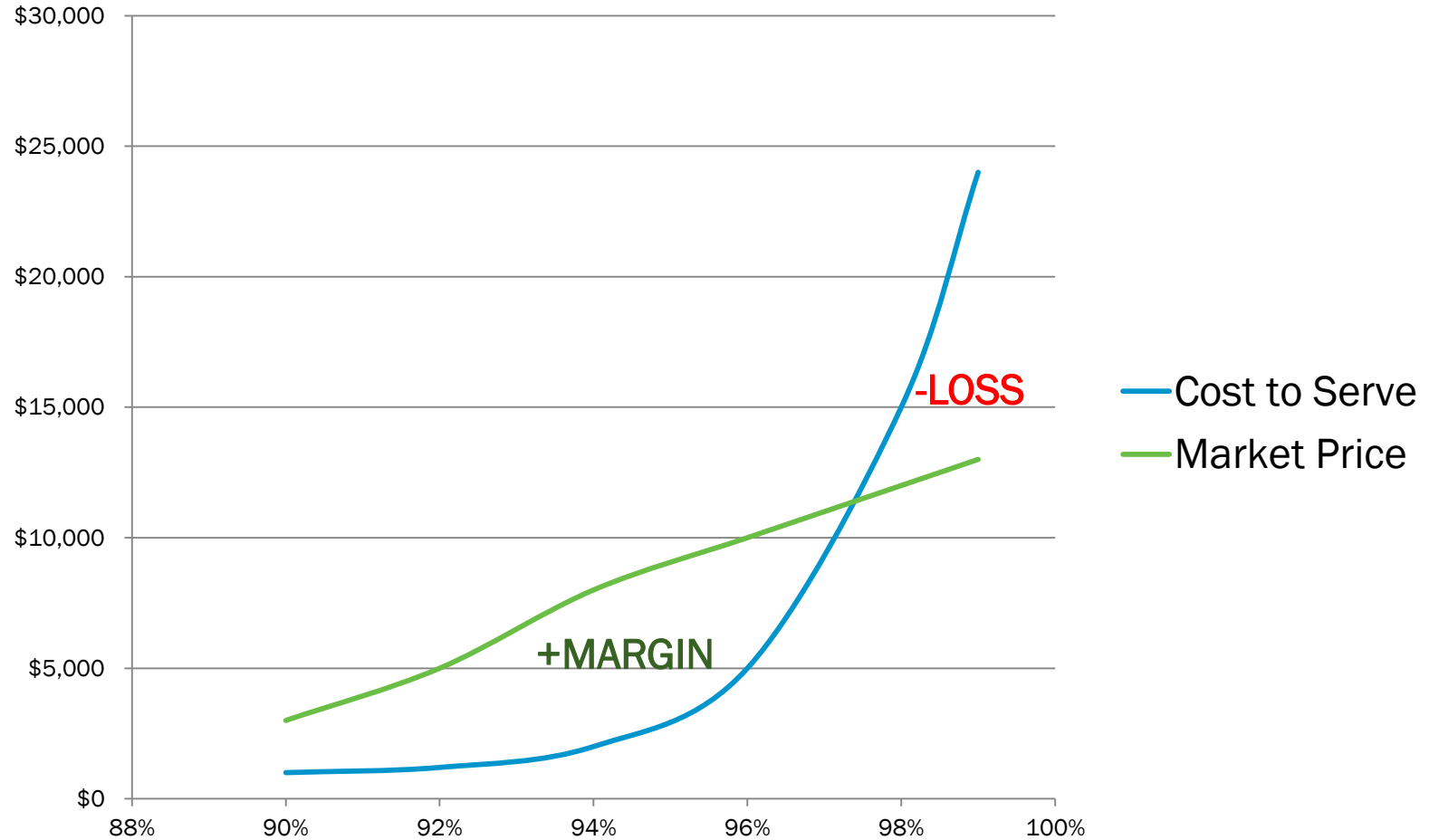
**Document Services...  
not just Printers**

- Includes extended service, performance-based, value-based, and more
- Customers will buy if the value is real (high service level and a competitive price)
- You've won your parts business! ...but you have all the risk too
- Your "advanced" results improved service levels, lowered costs, and reduced risk.

# OUTPERFORM – OUTCOME-BASED CONTINUED



- Monetize your “Advance” results
- Direct margin contribution from improved technician effectiveness (higher SLA’s and cost efficiency)

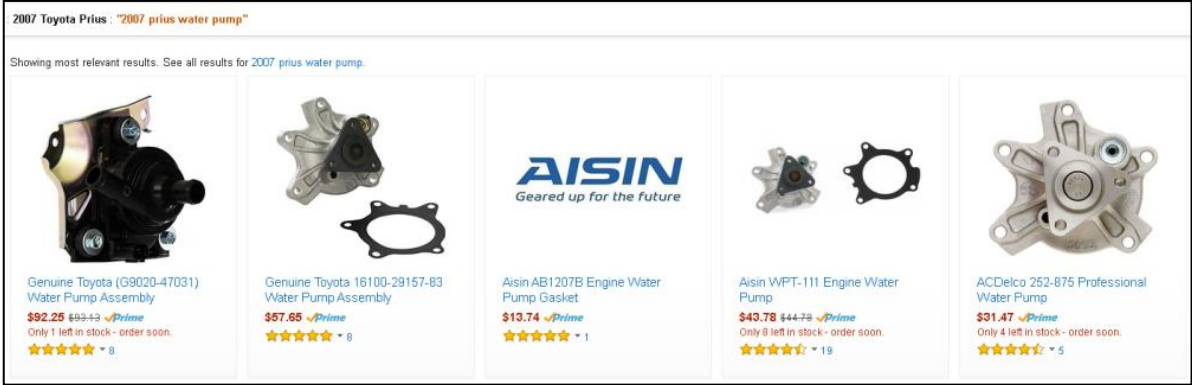




# OUTPERFORM – RETAIL PARTS BUSINESS



Internet competition still lurks...



Now offer higher value for your part purchases...



# OUTPERFORM – RETAIL PARTS BUSINESS – HIGHER VALUE



- Asset Tracking
  - Log service and parts
  - Recommend service
- Accurate logging of OEM-approved parts and service can increase asset resale value 10%-25%
- Benchmark: [mycarfax.com](http://mycarfax.com)

2007 TOYOTA PRIUS BASE

Is your mileage correct?

97,802

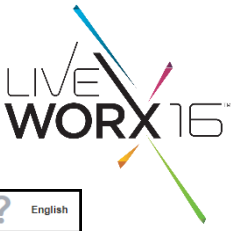
Today's Mileage

CAR FOX

Service History | Maint. Schedule | Dashboard | Repair Costs | Service Shops

Date	Mileage	Source	Details	<a href="#">+ Add Service</a>
03/13/2013	64,299	Midas	Vehicle serviced Emissions or safety inspection performed	
02/07/2013	63,332	Hoffman Toyota	Maintenance inspection completed Fluids checked Oil and filter changed Tire condition and pressure checked	

# OUTPERFORM – RETAIL PARTS BUSINESS – HIGHER VALUE



- Package related service content in your parts catalog
- Include repair procedures (text, sequences, and/or augmented reality) with the part purchases

PTC Account: Site, Administrator Cart: 27 Mar 16 14:35 (4)

All Products > Synergy Family > Cars > DX > ALL > Interior > Seats > CAM LOCK BUCKLE ASSEMBLY SPARES-PENDING STANDARD PART NAME

Search in DX (filtered) Advanced Search

### CAM LOCK BUCKLE ASSEMBLY SPARES-PENDI...

Details Documents Recommendations

Sheet: 0000001281\_PART\_SLIST\_0000000180.pvz

Quantity	Part Number	Part Name	Price	Order Status
5	0000001123	STANDARD CAM LOCK PIN	\$5.99	Ordered
1	0000001125	seat_lock.prt	\$5.99	Ordered
1	0000001129	HAND LEVER FOR CAM LOCK	\$5.99	Ordered
1	0000001141	CAM MAIN SPRING	\$5.99	Ordered

PTC Account: Site, Administrator Cart: 27 Mar 16 14:35 (4)

All Products > Synergy Family > Cars > DX > ALL > Drive Train > Rear Axle > Limited Slip Front Axle Remove and Install

Search in DX (filtered) Advanced Search

### Limited Slip Fron...

Details Documents

#### Limited Slip Front Axle Remove and Install

1. Park and prepare for service safely. See Park And Prepare For Service Safely > (Operator's Manual.)

Figure 1. Limited Slip Differential Housing

2. Raise front of machine. Install floor stands under loader frame.

Tool Name	Tool Number	Tool Usage
12-1/2 Ton Floor Stands		Used to support machine while removing axle and differential

Machine	Weight—Approximate
	(31 750 kg) (70 000 lb)

PTC Account: Site, Administrator Cart: 27 Mar 16 14:35 (4)

All Products > Synergy Family > Cars > DX > ALL > Chassis > Brake > Park Brake Theory of Operation (Topic)

Search in DX (filtered) Advanced Search

### Park Brake Theor...

Details Documents

which compresses the springs (5). This allows the disks to rotate with the shaft and the drive line is free to turn. The transmission control unit (TCU) and park brake solenoid valve manifold control the operation of the park brake. Park Brake Operation. (Group 9015-15.)

The park brake can be released manually in a machine-down situation. (Operator's Manual.)

#### Disk Brake Adjustment

1. Before attempting to adjust brake pedal, be certain that pedal returns to stop freely, is not binding on pedal shaft or in floor mat, and that pedal return spring has not lost its tension.
2. Depress pedal slightly and then return it against the stop, which will be indicated by a metallic click. At this point, the clearance between brake pedal and outboard should be 1".
3. If clearance is not correct, loosen the locknut and turn master cylinder inner push rod with pliers until correct clearance is obtained. Hold push rod while tightening lock nut.

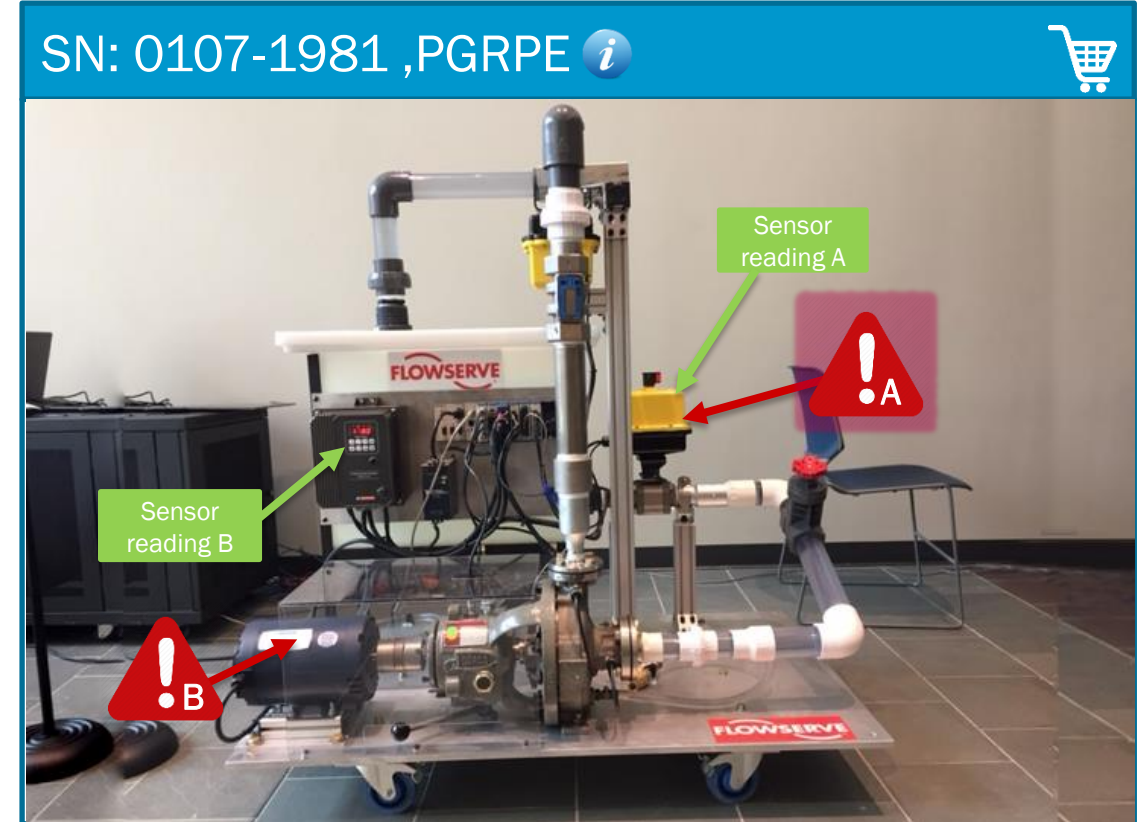
#### FAILURE MODES

Now that we've examined the guts of the caliper, we have the background to consider

# OUTPERFORM – RETAIL PARTS BUSINESS – HIGHER VALUE

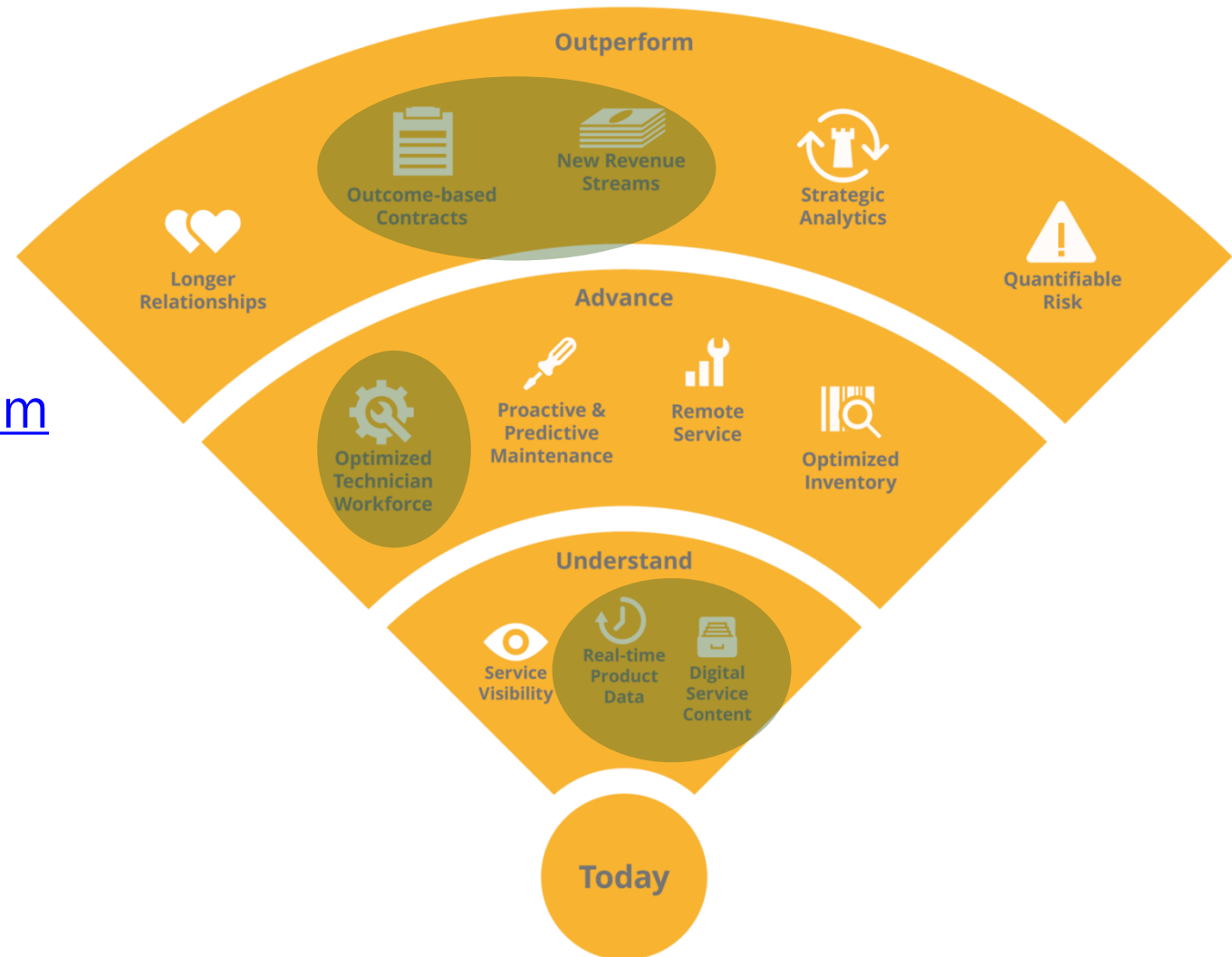


- Sensor key parts, and integrate them into your OEM operator applications
- Value: automated alerting, inspection, and verification
- This value only persists if replacement parts are compatible to the OEM operator applications



## Service and Parts Information Solution Management

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- Dave Duncan, [dduncan@ptc.com](mailto:dduncan@ptc.com)
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- Ian Boulton, [iboulton@ptc.com](mailto:iboulton@ptc.com)
- Jeff Coon, [jcoon@ptc.com](mailto:jcoon@ptc.com)
- Nir Even, [neven@ptc.com](mailto:neven@ptc.com)
- Pushpinder Toor, [ptoor@ptc.com](mailto:ptoor@ptc.com)



The image features several colorful geometric shapes, primarily triangles and lines, scattered across the white background. A large, multi-colored triangular shape is prominent on the right side, composed of various shades of blue, green, yellow, orange, pink, and purple. Several thin, colored lines (blue, pink, green, orange) radiate from the center of the text area. The text 'LIVE WORX 16™' is the central focus, with 'LIVE' in a thin, outlined font and 'WORX 16™' in a bold, solid black font.

LIVE  
WORX 16™

TAKE A FRESH LOOK AT THINGS

[liveworx.com](http://liveworx.com)