

# Productivity Improvement Forum

## 2019

**Mechanization Working Group:  
Sharing of the Mechanization tools Database and  
Outreach activities**

**Presented by:**

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**SRC**

**(Mechanization WG)**

Jointly Organised by



# Outline

- 1) Development of the Mechanisation Tool Database
- 2) Workgroup Outreach Activities
- 3) Development of **Certification** Measurement Metrics
- 4) Path Forward

# Background

- 1) Increase the adoption rate of the 59 tools identified in phase-1 (from 29 in 2018 survey to 40 in 2019 survey)
- 2) Establish links with tools suppliers for understanding the technology and site trials.
- 3) Measure the rate of tool adoption in the field and develop a measurement metrics to certify the contractors.

# (1) Database with the new list of tools

The screenshot shows a website interface with a navigation bar at the top containing three buttons: "Home", "Process Construction Maintenance Management Committee", and "Productivity Council". The "Productivity Council" button is highlighted in blue and has a yellow drop-down menu open, listing four workgroups: "Pilot Project Workgroup", "Mechanisation Workgroup", "Certification Workgroup", and "Productivity Practices Workgroup". Below the navigation bar is a section titled "SLIDE SHOW WITH PICTURES/LINKS TO UP TO DATE ANNOUNCEMENTS". The main content area contains three paragraphs of text about the Productivity Council's formation and objectives. At the bottom, there are four icons representing the workgroups: "Pilot Projects" (with a clipboard icon), "Mechanization" (with a robot icon), "Certification" (with a certificate icon), and "Productivity Practices" (with a thumbs-up icon).

Home    Process Construction Maintenance Management Committee    **Productivity Council**

(Drop down bar)

- Pilot Project Workgroup
- Mechanisation Workgroup
- Certification Workgroup
- Productivity Practices Workgroup

SLIDE SHOW WITH PICTURES/LINKS TO UP TO DATE ANNOUNCEMENTS

The Productivity Council was formed in February 2015 with the objective of improving project productivity. The council is fully industry-led and consists of stakeholders from major plant owners as well as senior managers from contractor companies.

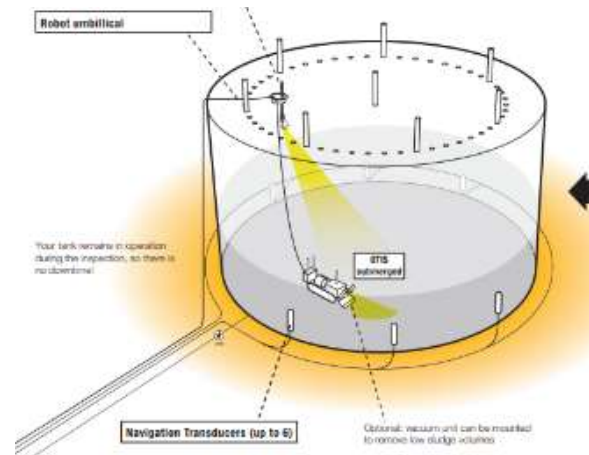
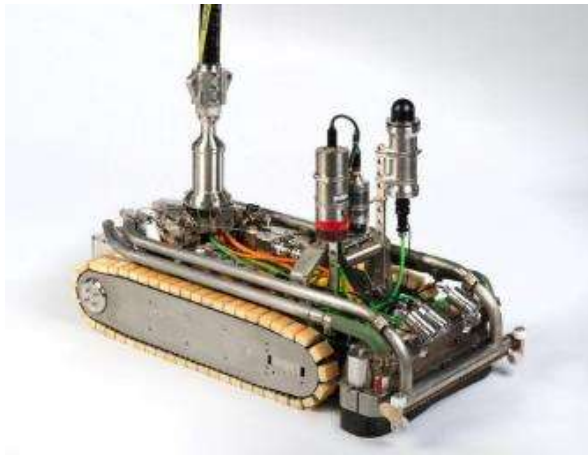
This 3 year initiative will allow the Productivity Council to work closely with the Construction Industry Institute (CII) for productivity measurement and improvement of management practices.

The Productivity Council oversees 4 workgroups, and more information can be found below.

Pilot Projects    Mechanization

Certification    Productivity Practices

# Database: Online Tank Inspection Systems



Locally tested and used by: *Royal Vopak*

Video: <https://www.youtube.com/watch?v=kpdRxCUHrhY>

Contact: *Intero Integrity Services*

Steenoven 2-6, 4196 HG Tricht, The Netherlands

T +31 (0)345 228 600, [info@intero-integrity.com](mailto:info@intero-integrity.com)

[djaffar.hadji@intero-integrity.com](mailto:djaffar.hadji@intero-integrity.com)

Videos

[https://www.youtube.com/watch?v=mRMYqa7m1Do&list=PLf7KshMpXp\\_c-ZSS2kApZ2O998igkWG1R&index=14&t=204s](https://www.youtube.com/watch?v=mRMYqa7m1Do&list=PLf7KshMpXp_c-ZSS2kApZ2O998igkWG1R&index=14&t=204s)

<https://player.vimeo.com/video/180701131>

- The Online Tank Inspection Systems (OTIS) from Intero can offer inspections according to API-653 standards, so that the owners can prevent the tank from going off-line.
- The autonomous tank bottom inspection device uses UT (Ultrasonic transducers) sensors to detect any variation in thickness of the bottom plate while your tank remains in service.
- The robot is equipped with a sonar system on board to detect objects in the tanks.

# Database: Automated Radiographic Testing (ART) *Crawler for CUI Inspection*



Contact:

MISTRAS' Automated RT Crawler system:

195 Clarksville Rd, Princeton Jct, NJ 08550

T: +1.609.716.4000, E-MAIL:

[sales@mistrasgroup.com](mailto:sales@mistrasgroup.com)

[https://www.mistrasgroup.com/how-we-help/field-inspections/advanced-](https://www.mistrasgroup.com/how-we-help/field-inspections/advanced-ndt/digital-radiography/)

[ndt/digital-radiography/](https://www.mistrasgroup.com/how-we-help/field-inspections/advanced-ndt/digital-radiography/)

Other CUI inspection Device:

<https://www.youtube.com/watch?v=Qae>

[ENO2CPnc](https://www.youtube.com/watch?v=Qae)

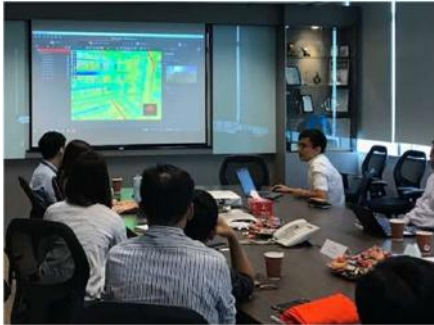
## BENEFITS

- Real-time data and condition monitoring
- Unlimited range, restricted only by obstacles on the pipeline itself
- Detection of easily missed inconsistencies, such as shallow pits or moisture content
- No insulation stripping or reinstallation
- Single X-ray can monitor large portion of pipeline

## FEATURES

- X-ray and Gamma ray utilization
- Various sensor options available
- Wireless and umbilical operation
- Tangential and through-wall corrosion inspecting
- Proprietary design adjustable to many situations

## (2) Outreach Activities with Various Vendors: Leica, Vertidrive, Mcnetiq, Peri, Gerotto etc.



**PERI Our Offering Includes**

- Full 3D BIM Solutions**
  - Inclusive of 3D Scans, animated construction sequencing & detailed inspections
- Product Related Training**
  - To all Contractors, certificates of PERI UP product training
- Documentation**
  - Instructions for assembly & use manuals
  - Material Certification & all components stamped
  - Detail Designs, Drawings & Statical Proof Calculations
  - Inspection Guides & Check-lists
- Project Engineering Assistance**
  - Qualified & Experienced Staff






- ATEX Zone 0 video camera
- Certified ATEX Zone 0 body
- Hydraulic operated
- Rubber tracks that is interchangeable to magnetic type
- Outlet for suction that connects directly to vacuum truck or pump
- Extendable arm
- 2 separate High pressure jetting nozzle (<7,000psi)
- High Flow nozzle
- Removable brass bucket to push or scope sludge
- Compact size with ability to enter manhole of 22 inches



# Site Trial: Vertidrive (Robotic Blasting)

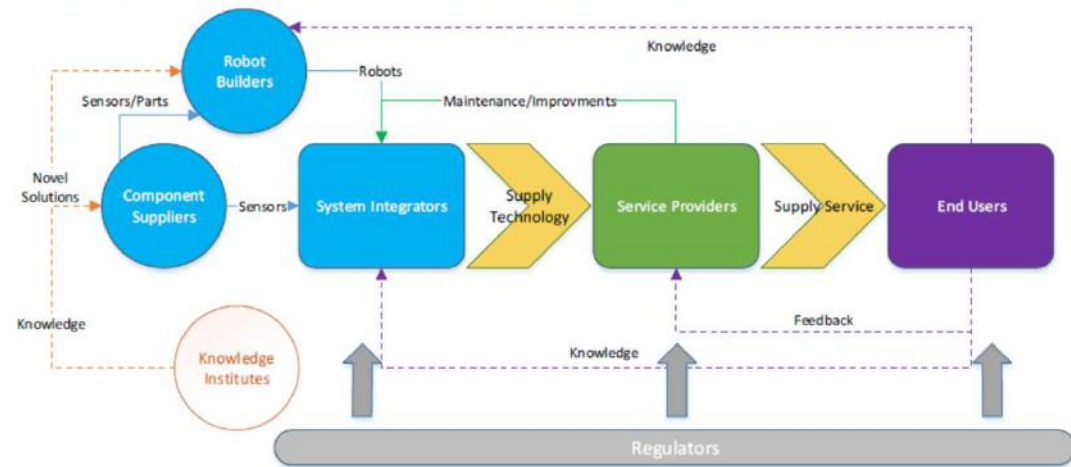




# Sprint Robotics

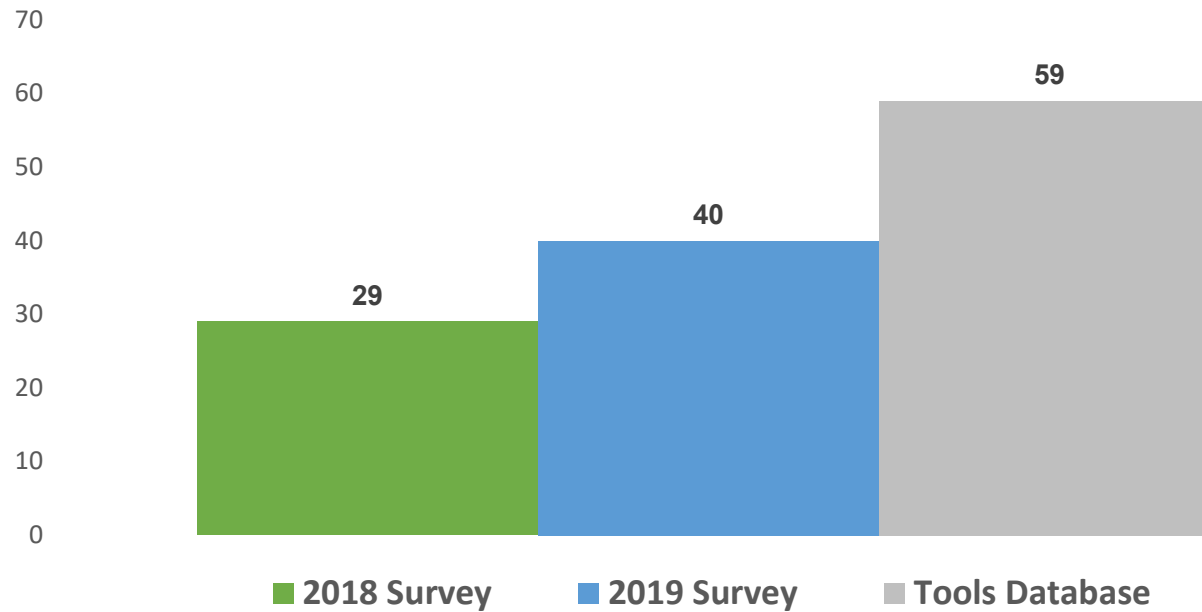


## Collaboration in the value chain



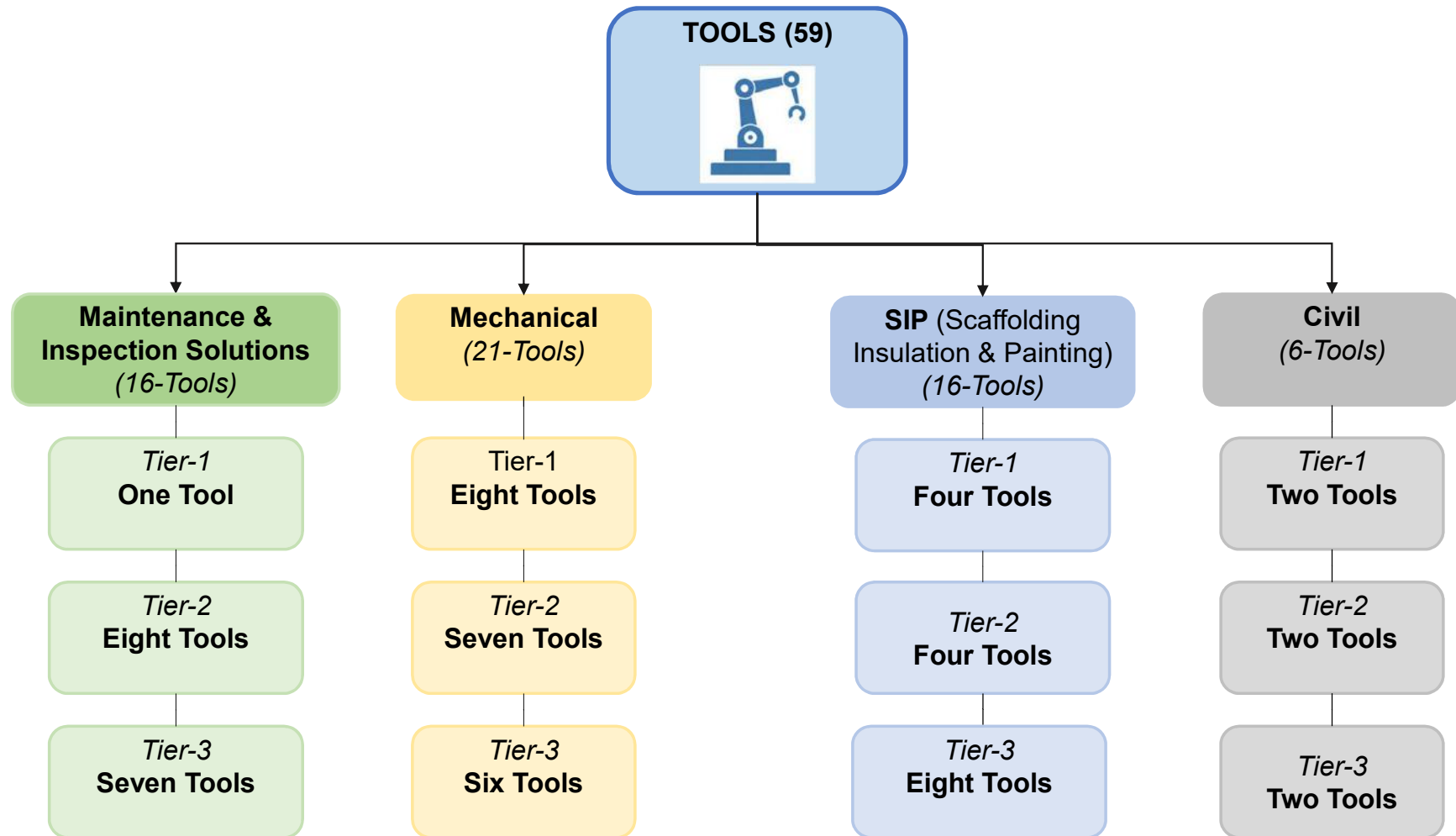
- SPRINT Robotics Collaborative promotes the development, availability, application and commercialization of robotics techniques in technical inspections and maintenance.
- As a result of the outreach SPRINT will be conducting their **roadshow with trials at the ASPRI IPI training skid on Nov 28<sup>th</sup> 2019, to demonstrate various technologies.**

# Survey Results

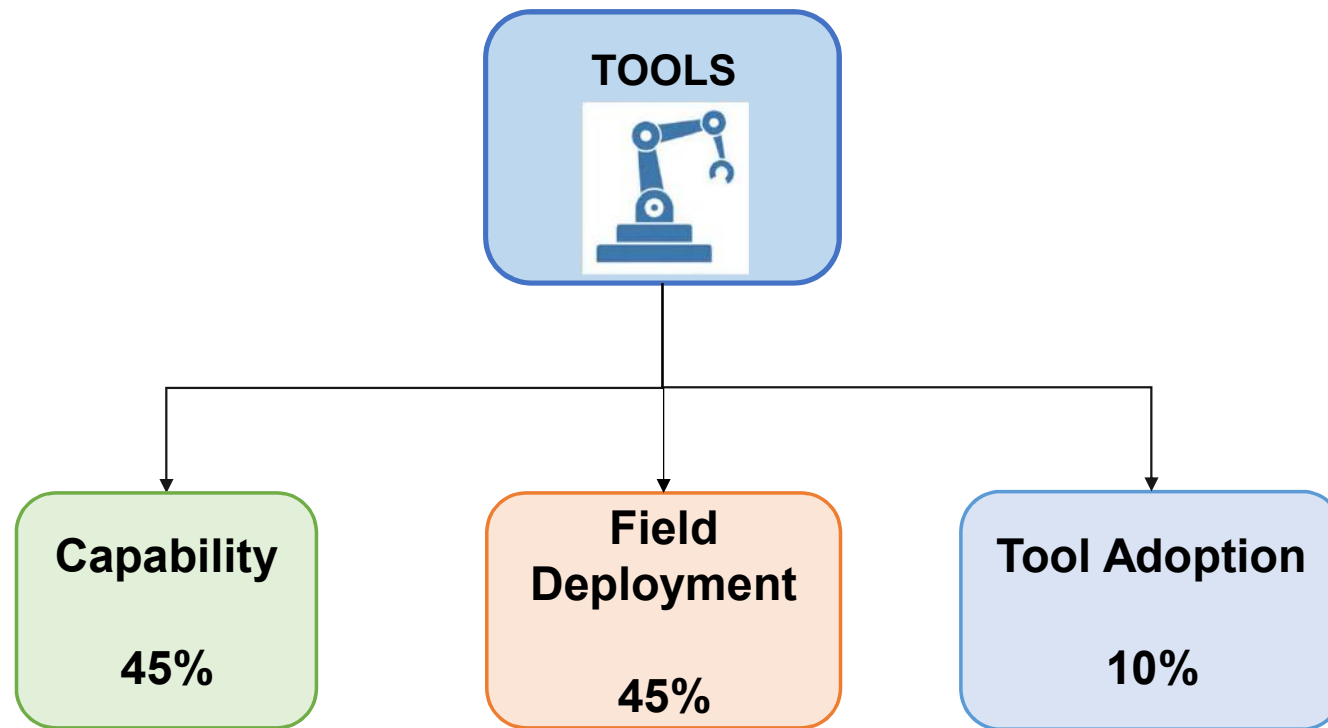


- **In 2019, the WG achieved a leap of improvement in terms of tools accessibility. Previously contractor companies had access to only 29 tools (based on the survey conducted in 2017-2018).**

### (3) Certification (Tools): Structure of the Framework



# Certification (Tools) Structure of the Framework



## (4) Path forward

- 1) Expand the mechanisation tools data base.
- 2) Identify new tools for the Civil works category.
- 3) Conduct the certification for the tools category in the 1<sup>st</sup> Pilot Certification exercise.
- 4) Conduct more targeted outreach activities to promote mechanisation and tools adoption rate.