

In Pursuit of Zero-Defect Manufacturing

The openZDM project approach



Open Platform for Realizing Zero Defects
in Cyber Physical Manufacturing

*Nikos Nikolakis
Research Engineer, LMS*

□ What is Zero Defect Manufacturing?



Make it right the first time

- ✓ A quality management philosophy
- ✓ The only way to eliminate defects
- ✓ Poor quality is a waste of total resources



<https://ophelia.sdsu.edu:8443/ford/09-03-2012/microsites/sustainability-report-2011-12/blueprint-governance-management-manufacturing.html>

□ How industry 4.0 relates to ZDM

- ✓ Helps in achieving agile production, adapting to changes within process, validation, monitoring.
- ✓ Data allows for increased production efficiency, throughput, acceleration, root cause analysis, ...
 - In short, **Data = Lower costs & higher yields**
- ✓ **Industry4.0** leverages cutting edge technologies targeting increased **efficiency**, improved **sustainability** and **ZDM**.

About openZDM



openZDM project aims to:

- deliver high-quality products, while
- minimizing waste and energy consumption.

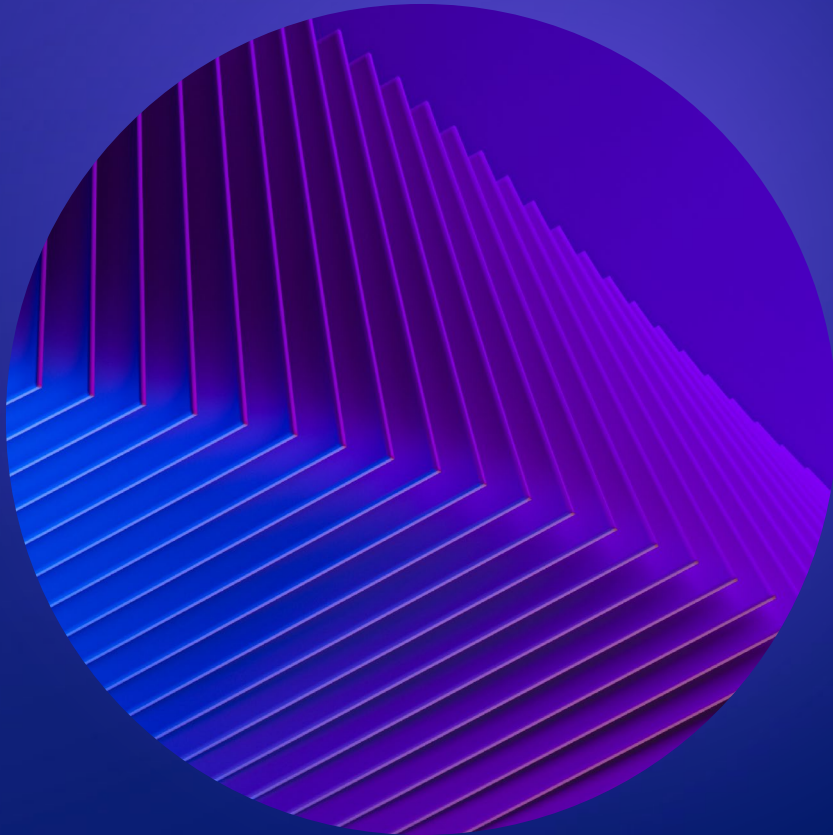
Through, an open platform that will combine

- ❑ advanced ICT solutions and
- ❑ innovative non-destructive testing,

to support production networks' zero-defect processes

towards **improving**:

- the capacity for cost savings and
- the production sustainability



Objectives

To develop and deploy an open platform based on RAMI4.0 and AAS standards.

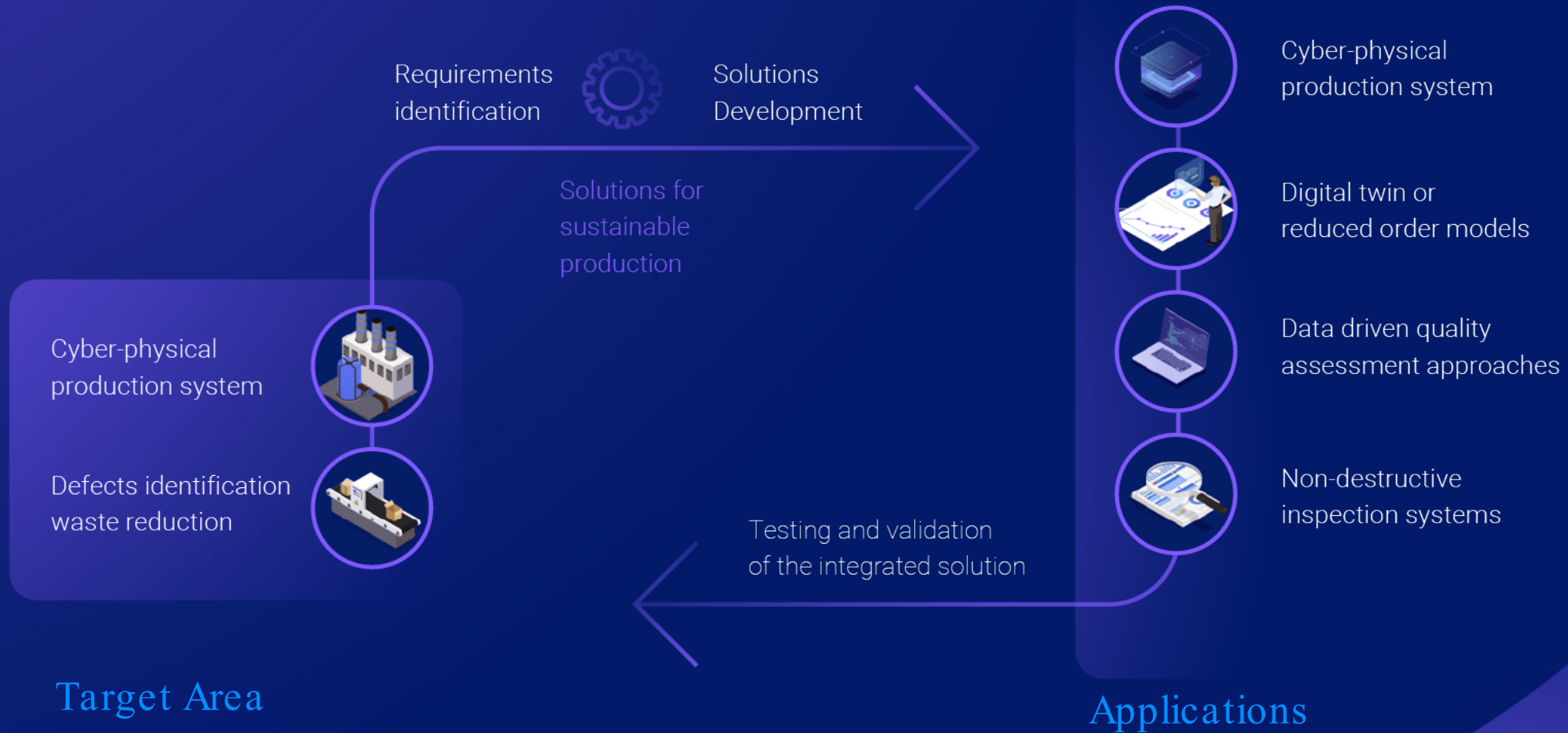
To develop and deploy Digital Twins for online process evaluation and adaptation.

To define AI-based data-driven quality assessment approaches.

To develop and integrate NDIs for zero defects.

To test and validate the integrated solution to the five industrial pilot cases.

Integrated solution



Pilots



VDL Weweler
Trailing arm
production
process
demonstrator



Volkswagen
Autoeuropa
Vehicle body
shop and final
assembly
demonstrator



Vidrala
Bottle
manufacturing
demonstrator



Sonae Arauco
Decorative
panels
manufacturing
demonstrator



Aptiv
EV battery
production
demonstrator

How openZDM is different?



Defects are not free

- Defects can be a managerial responsibility
- It is important to differentiate between normal and abnormal variation

openZDM targets process control for :

- Increased productivity
- Increased quality
- Reduced unit costs

*by differentiating normal from abnormal variation
at a process or system level*

The impact of the openZDM solution



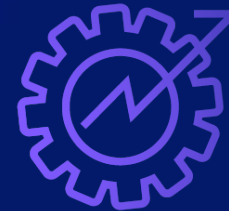
Promotion
of production
sustainability



Increase
the quality
control and
the flexibility
of an
organisation



Increase the
capacity for
cost savings
through waste
reduction



Improve
production
quality and
increase
efficiency



Increase
productivity
and
competitive
leverage

Stay tuned to the openZDM digital world to follow our journey and discover the latest insights from the manufacturing ecosystem!



www.openzdm.eu



www.linkedin.com/company/openzdm




www.twitter.com/open_zdm

Stay tuned!



Nikos Nikolakis
LMS – University of Patras

 nikolakis@lms.mech.upatras.gr

 [nikolas-nikolakis](https://www.linkedin.com/in/nikolas-nikolakis)

Contact information



If you have any doubts or questions,
please feel free to reach out at:



openzdm@f6s.com

openzdm@lms.mech.upatras.gr

Thank you!

