

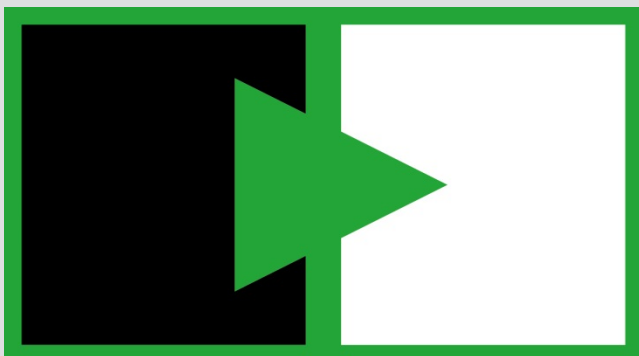
The Hermes Standard for "M-to-M" in SMT Assembly

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The Hermes Standard
for "M-to-M" in SMT Assembly

Enabling "real" Industry 4.0 in SMT Assembly
Introducing "The Hermes Standard"
for vendor independent
machine to machine communication

www.the-hermes-standard.info



Innovation in Communication "Every Day Life"

From manual switch boards...

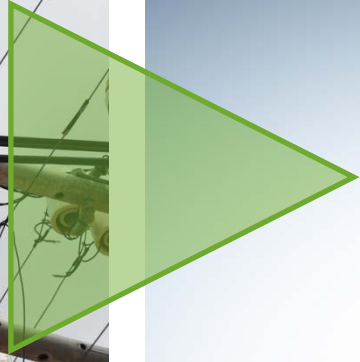
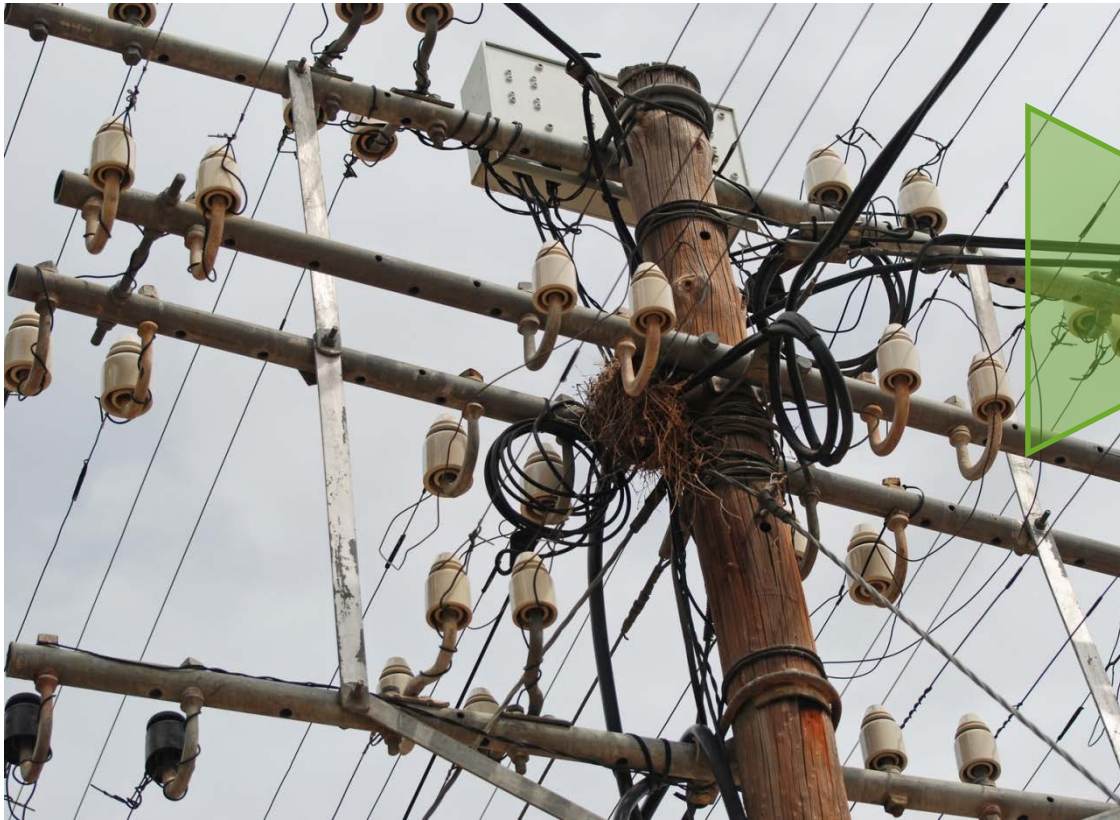


... to instant global connections.

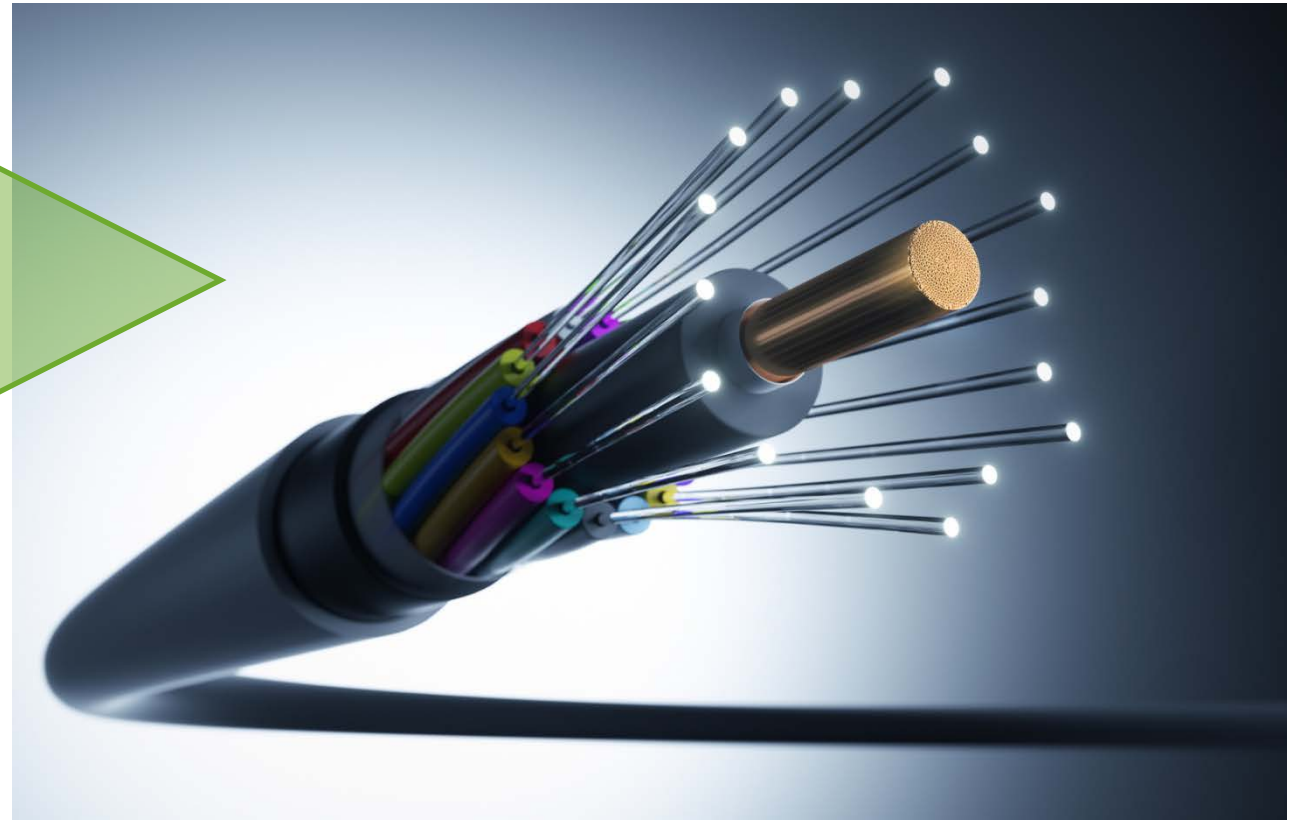


Innovation in Communication "Telecommunications Infrastructure"

From „One line – Two wires each“ ...



... to multi channel glass fibre.





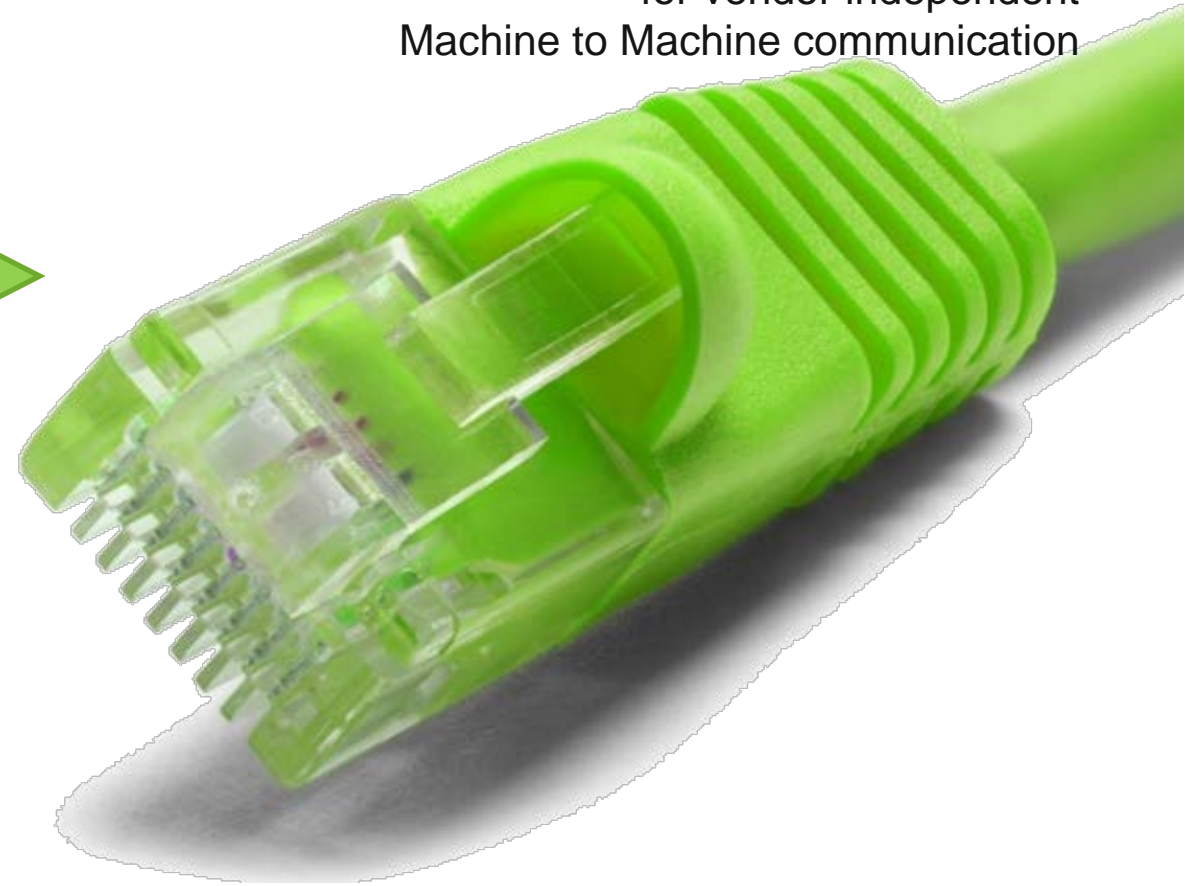
Innovation in Communication “Along the SMT Line”

From IPC-SMEMA 9851...



... to The Hermes Standard

for vendor independent
Machine to Machine communication

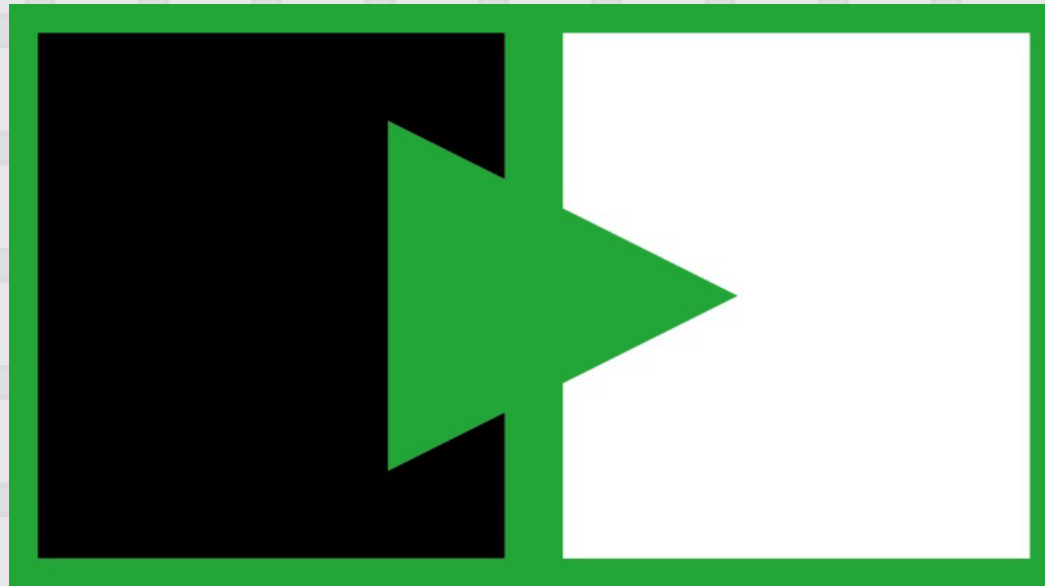




The Hermes Standard
for "M-to-M" in SMT Assembly

Innovation in Communication

"Welcome to The Hermes Standard"



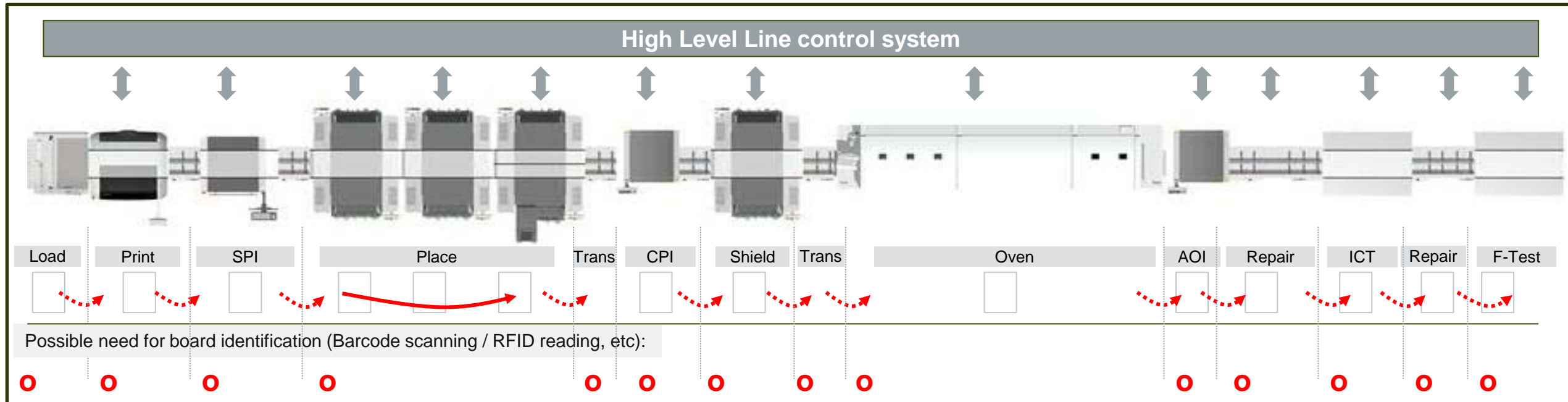
The Hermes Standard
for "M-to-M" in SMT Assembly



Challenges at SMT Line Level

Communication along the SMT Assembly line as per today

“The SMEMA World”: Limited Process data availability, Line throughput, Traceability & High investment



"Old" versus "New" SMEMA cannot meet the challenges

IPC-SMEMA-9851: Why do we think that it is a dead end solution?

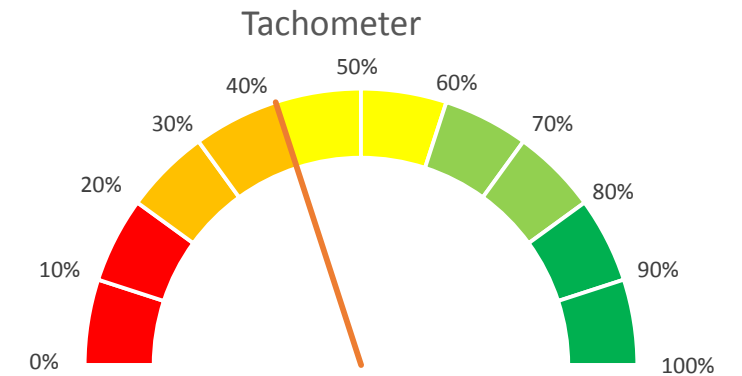
- Multiple cable types. At least 4 different types of cables:
 - Plug – pin
 - Plug – socket
 - Plug – plug
 - Pin – pin
- SMEMA is expensive.
- Need to check each machine to connect for getting the right cable
- Additional information needs to be modulated on the hardware signals
- There is no general system to keep additional information through several machines



Challenges at SMT Line Level

Let's change the way we communicate

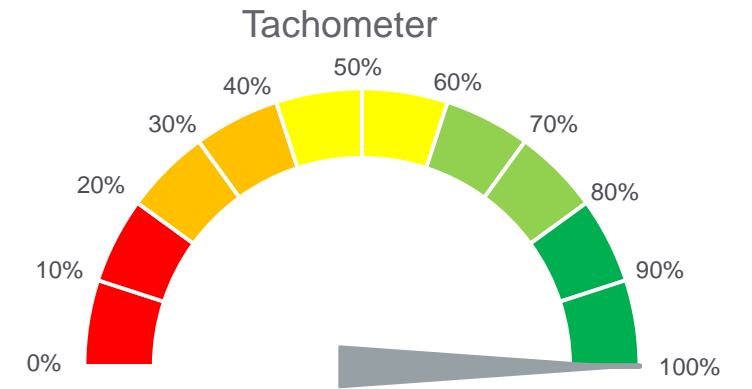
Existing solutions are outdated
and proprietary solutions are a dead end



Challenges at SMT Line Level

Let's change the way we communicate

Minimized effort and
maximized output

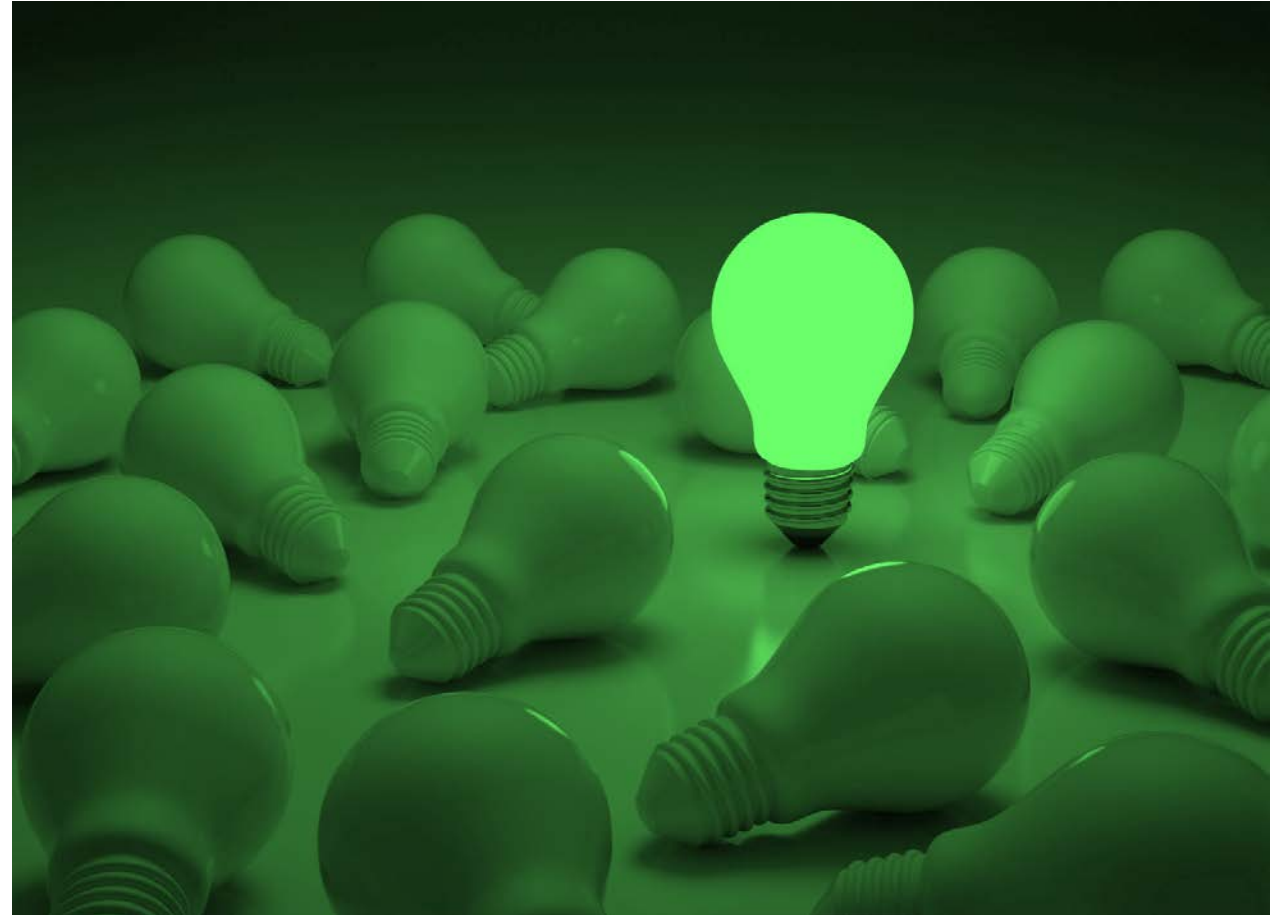


“Old” versus “New”

The Hermes Standard: Board flow communication for the Smart Factory

Why is The Hermes Standard the better solution?

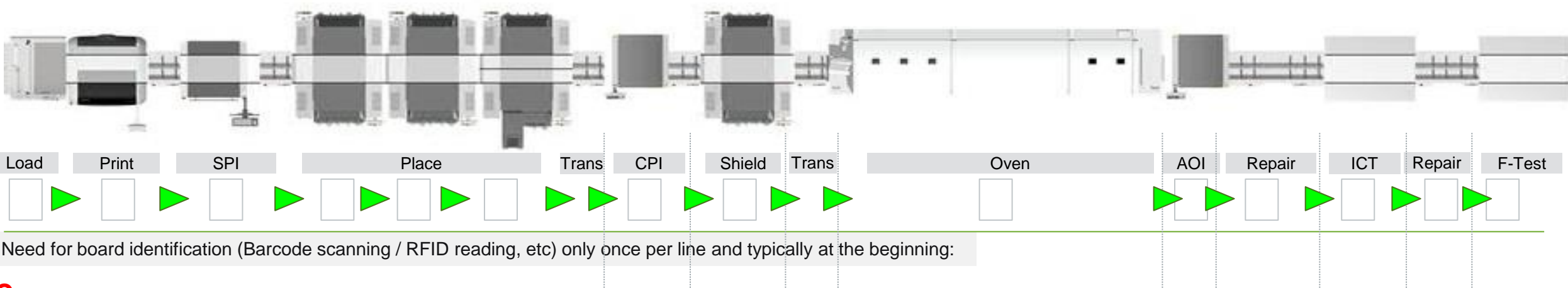
- **Protocol based** instead of “signal based”:
Easy to adjust and easy to expand for integrating further information.
- **Standard components** instead of “special needs”:
Cables, plugs and interfaces inexpensive and easily available .
- **Integrated data management** versus separation:
Consistent board and data assignment.



The Hermes Standard

More Value through smooth communication

The Hermes Standard: Full Process data availability, Maximum Line throughput & Traceability



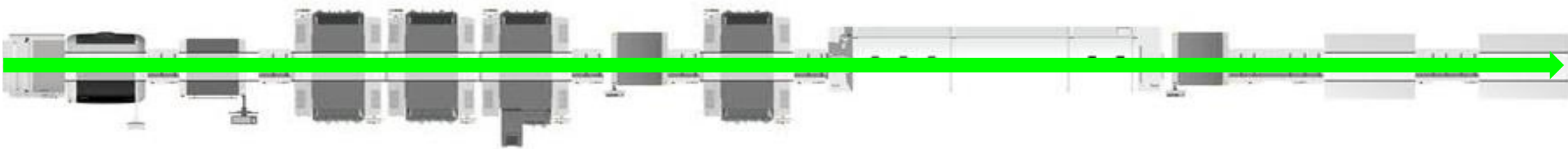
▶ Standardized M to M Interface
via The Hermes Standard

○ Board ID Scanning required



The Hermes Standard Designed to meet the requirements – today and in future

The Hermes Standard: Full Process data availability, Maximum Line throughput & Traceability



Generic communication back bone to work even in mixed-brand equipment lines.

Product centric approach, keeping complexity under control.

Board tracking along the entire line with single board ID reading possible.



Open protocol, adaptable to further and future requirements.

Standard Interfaces (Ethernet) reduce cost and effort for installation.

Integrated management of board data and handover process.

Giving Evidence of current advantages

Old “SMEMA problems” versus The Hermes Standard solutions

The Issue	 At SMEMA	 At The Hermes Standard (Version 1.0)
1) Scenario definitions in the protocol	<ul style="list-style-type: none"> Several error scenarios undefined: e.g. PCB is signalled to be handed over but has not arrived because the signal “PCB arrived” is missing 	<ul style="list-style-type: none"> Most error scenarios already defined Easily expandable in future versions
2) Dealing with defective Cables	<ul style="list-style-type: none"> Variety of specified cable set makes it hard to bring the exact replacement to the site or requires broad stock. 	<ul style="list-style-type: none"> Only one standard cable type, which is easily and inexpensively available: Ethernet cables.
3) Hardware installation effort	<ul style="list-style-type: none"> Cables are “hand made” w/o standard lengths. Installation of SMEMA box & adapter Separate cables for LAN and SMEMA “Dual Lane” requires second set of entire hardware 	<ul style="list-style-type: none"> Only Ethernet port necessary No separate SMEMA cable necessary “Dual lane” required no (!) additional hardware, it is fully covered by the protocol
4) Synchronizing PCB data and hand-over message	<ul style="list-style-type: none"> Data is transfer requires separate Ethernet interface Data must be synchronized with SMEMA signals assigned to PCB Timing must match all vendors to ensure correct assignment 	<ul style="list-style-type: none"> No synchronization is necessary and no timing issues exist as data is transferred together with handover message. Implementation of transferring data between different vendors very easy.
5) Flexibility at changing line configurations	<ul style="list-style-type: none"> Specific cable length is necessary, therefore any change in the line configuration leads to new cabling 	<ul style="list-style-type: none"> Standard Ethernet cables: Easily available and specific length is not required.



The Hermes Standard "Experts' opinions"

With **The Hermes Standard** we can automatically adjust the conveyor width according to the product



The Hermes Standard can simplify board flow management

With **The Hermes Standard** we can adapt to the transport speed if weight increases along the line





The Hermes Standard
for "M-to-M" in SMT Assembly

The Hermes Standard initiative Open for all manufacturers of electronics assembly equipment !



Status in March 2017

- The Hermes Standard Initiative' meeting on March 22nd and 23rd in Munich.
- Specification 1.0 released, further expansions in process.
- First product implementations under development.
- 16 leading suppliers committed to The Hermes Standard, with many inquiries from a growing number of companies interested in joining the initiative.
- Every equipment vendor is invited to join.
- Media information campaign ongoing.

The Hermes Standard initiative

Creating a foundation protocol for Smart SMT Factories

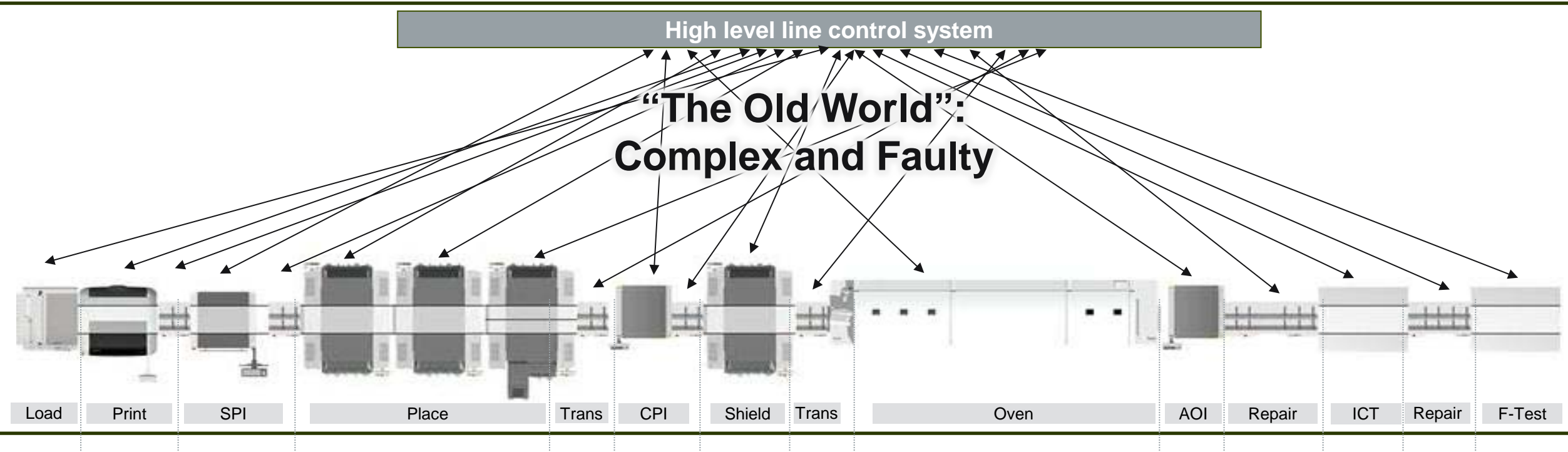
- Existing members (product brands)
- Joining November 2017

<i>Board Handling</i>	ASYS	NUTEK	YJ LINK	ACHAT5	
<i>Printing</i>	DEK	EKRA			
<i>Placement</i>	SIPLACE	MYCRONIC	Kulicke & Soffa		
<i>Inspection</i>	VISCOM	CYBEROPTICS	SAKI	OMRON	PARMI
	KOH YOUNG	MIRTEC	ViTrox	GÖPEL	Vi Technology
<i>Testing</i>	SPEA				
<i>Reflow</i>	REHM	ERSA	SMT	KIC	HELLER

More information available at: www.The-Hermes-Standard.info

Challenges: The Current Situation

SMEMA has no answers to today's challenges



Inflexible & prone to errors.

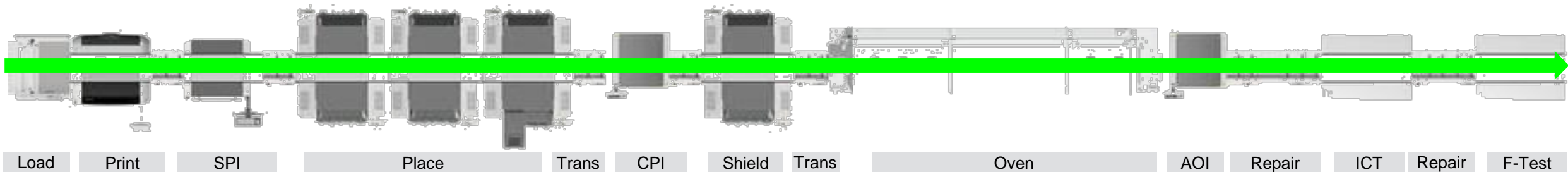


Solutions: From now on forward

The Hermes Standard for “M-to-M” in SMT Assembly?

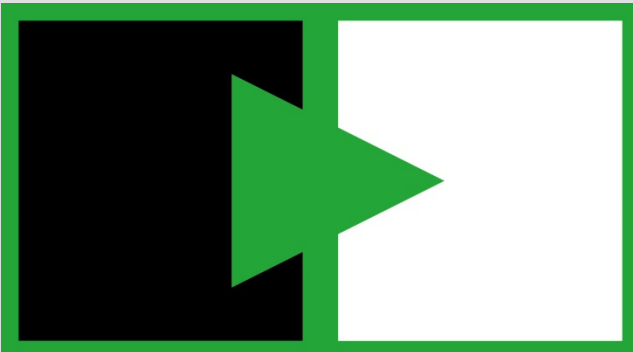
Machine to Machine Communication 4.0

**The Hermes Standard:
Open, innovative, flexible and straight forward.**



**The Hermes Standard:
Providing the Foundation Protocol for Smart SMT Factories**





The Hermes Standard
for "M-to-M" in SMT Assembly

„The Hermes Standard:
Providing the Foundation Protocol
for Smart SMT Factories“

www.the-hermes-standard.info

The Hermes Standard for vendor independent machine-to-machine communication in SMT Assembly.

