30 LET V ČESKU A NA SLOVENSKU

Whirlpool CORPORATION

Lean, Productivity or Industry 4.0 ?

HISTORY OF POPRAD FACTORY

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1845 | 1990 | 1992 | 2010 | 2022

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30 ROKOV 1992–2022
V ČESKU
A NA SLOVENSKU

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Key Factory Figures 2022

AREA 70 000 sqm (120 000)
- **Factory floor space = abt 55 000 sqm**

PEOPLE = 1202

- **Manufacturing**
- **GPO (Industrial Design, Laundry, Laboratories, Electronics)**
- **Operations Excellence, European Tool Shop, Central QC Pillar Leader, and Central Supply Chain**
- **GSS/Procurement**

VOLUME = 1.9 M pcs.

CAPACITY UTILIZATION: 84%

SKUs = TOP 432 + FRONT 350

Managed codes 5000+

Factory Structure

PRIMARY PROCESS

- STAMPING & FORMING – 16 lines
- PAINTSHOP – powder painting
- DECORATION – silk-screening & tampon printing

ASSY LINES (4x)

FRONT LOADER

- Code line
- Flex line

TOP LOADER

- High Range
- Low Range

LOGISTICS

- 46 vehicles (26x forklifts (9x receiving area, 7x warehouse, 5x line feeding, 5x primary processes), 14x tuggers, 2x battery change trolley, 4x el. stacker)
- Inbound 10 gates
- Outbound 7 gates

SYSTEMS & DATA

- SAP Hana
- MES, MII, RTLS, DIG. TWIN
- Internally developed tools (Appsheet, ORS)

CUSTOMER

- 227 customers worldwide
- Tested at customer condition 60k pcs/year
- AVG cycle time 24 sec / WM
- Lead Time avg 27,4 hrs / WM

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Our Portfolio

Whirlpool

Hotpoint

Bauknecht

INDESIT

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WHY WE DO BUSINESS ?

IPS Principles

*"The ideal production system is a conceptual **BUILD-IN QUALITY**, with **MINIMAL COST** and **SHORTEST LEAD TIME**.*
*IPS is the deployment of strategies, methods and tools to achieve **ZERO**."*

ZERO concept

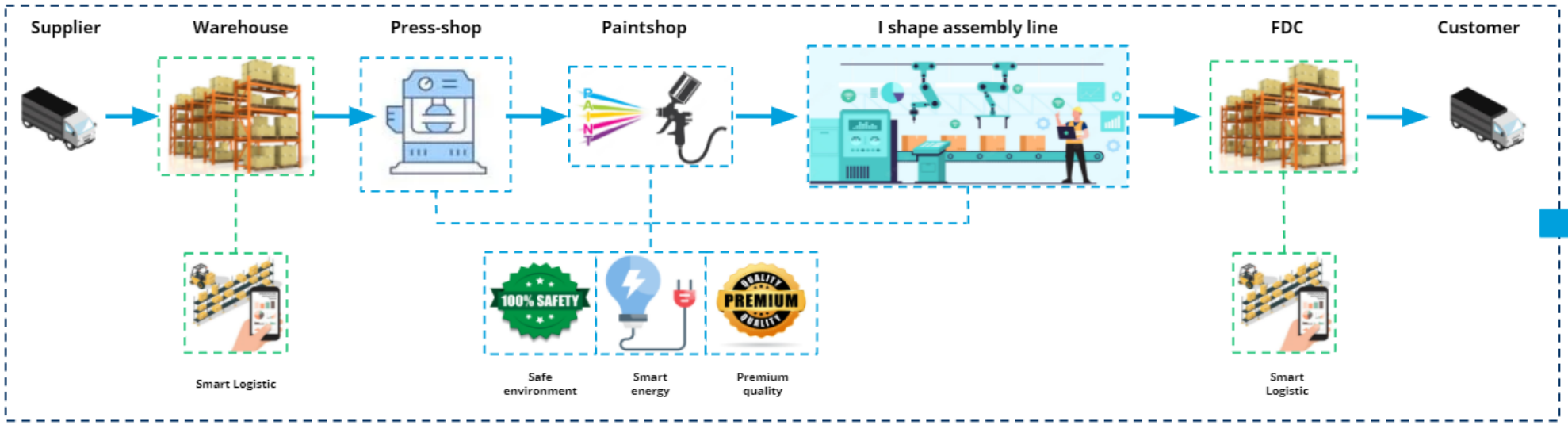
SAFETY
ZERO accidents

ENERGY
ZERO consumption

QUALITY
ZERO defects

LOSSES
ZERO breakdowns, NVAA, waste

Ideal Factory



OUTCOME

- Production Efficiency
- Manpower optimization
- Mix Flexibility
- Processes Automations
- Productivity
- Quality defects reduction
- Effective Logistic flow
- Safety risk reduction
- Efficient Energy consumption
- Factory OEE increase
- Maintenance cost reduction

PERFECT PRODUCTION SYSTEM, CHALLENGING HIGH QUALITY PRODUCT WITH MINIMUM PROCESSING COST AND MINIMUM LEAD TIME

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Business Strategy & Prioritisation

COMPANY STRATEGY

PEOPLE

CUSTOMER

COST BASE

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POPRAD STRATEGY 2022-2025

VNOT/SWOT analysis input	Factory focus	Actions
• CUSTOMER	• coping of demand volatility to assure products availability on time • flexibility in mix change towards demand • improvement of craftsmanship and design to improve customers quality perception	• automatic measurement systems & process stabilization • fast access to all data to speedup predictive actions • improve visualisation to gain involvement • reduction of response time to customer need & lead time reduction • optimise and automatise logistic flows (limit touch points)
• PEOPLE	• NET ZERO strategy 2030 • Safe place creation (Zero concept) • New tools & methods implementation • Talent development plan based on 5YCD need	• New engineers creation & development • Utilisation of IDX as competitive advantage • Increase cross functional involvement • Clear logic for tools utilisation on all levels - continuous deployment of knowledge on the line level • SMART automation introduction
• COST BASE	• Data collection support immediate reaction to problem solving & loss attack • Budgetary focus based on loss stratification to maximise B/C ratio	• Digital transformation and online data collection & evaluation • Agile self learning system introduction to online loss stratification and immediate attack • Automation introduction to increase flexibility and process stability

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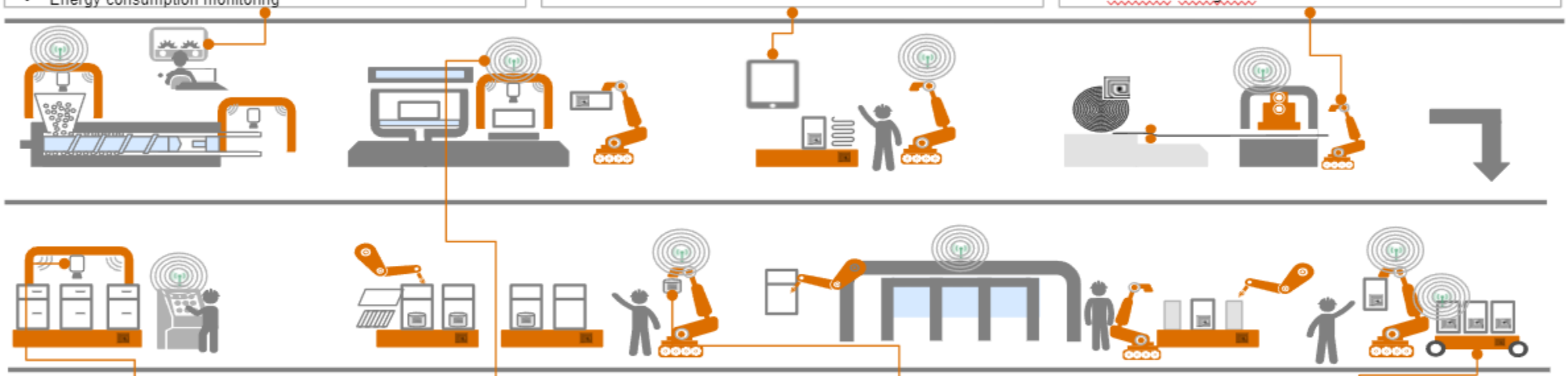
Elements Factory of the Future - Poprad

1 Shop floor transparency
- Digital cockpit (process monit., connected assets)
- Intelligent production and logistics scheduling
- Process understanding / Cost deployment
- Energy consumption monitoring

2 Quality data visibility and analytics
- Defect collection system
- Mobile devices with detailed work instructions
- Poka-yoke solution, human error avoidance

3 Automated material flow
- Robots, e.g. for loading/ unloading
- Routing of autonomous guided vehicles
- Artificoial Inteligence



7 Test automation
- Vision systems for quality testing
- Automation of test parts

6 Predictive maintenance
- Conditions base maintenance
- Predictive maintenance

5 Automation
- Apply for quality/craftsmanship requirements
- Load/Unload line with components, e.g. maintain
- 60° zone for highest efficiency

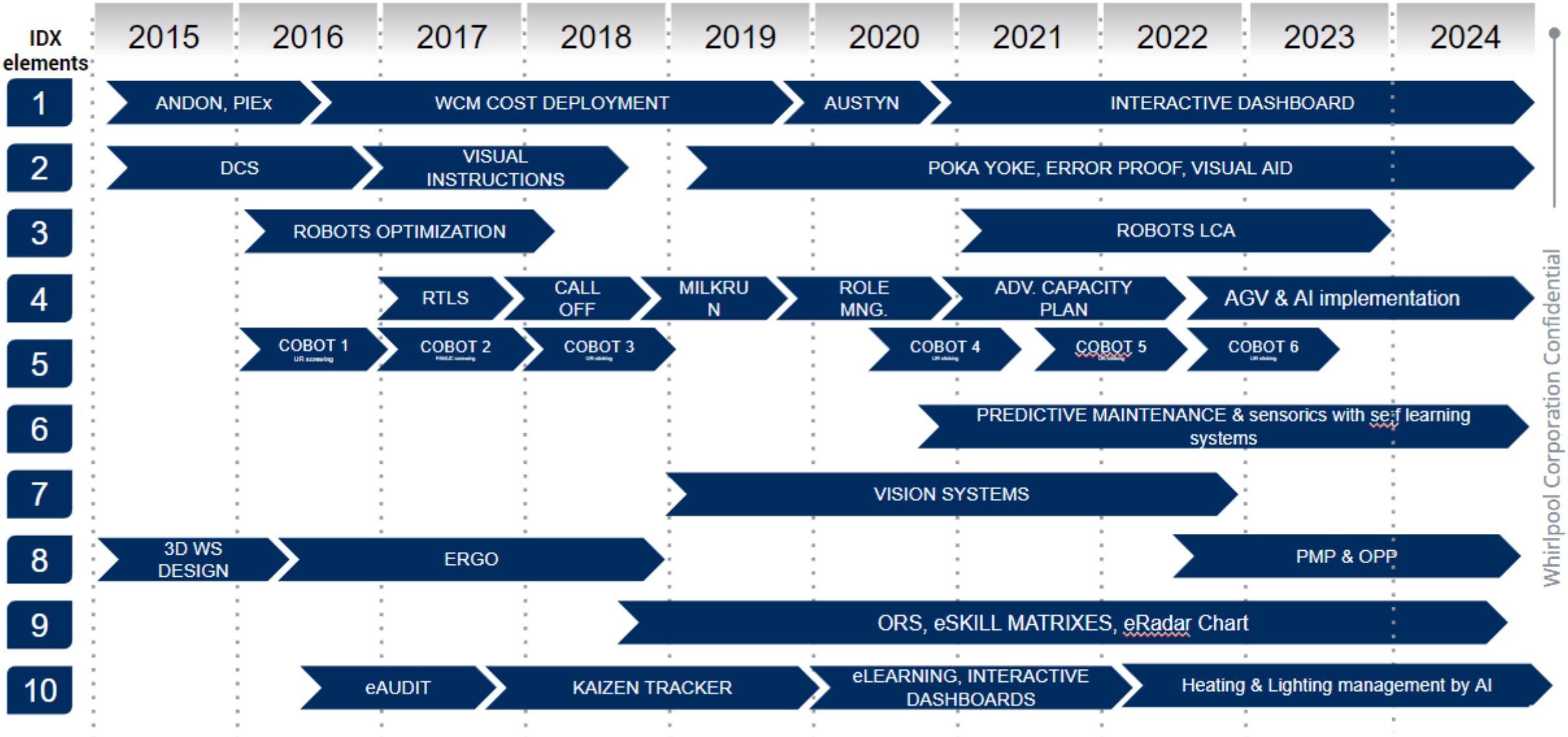
4 Material flow transparency
- Traceability and visibility of workflow
- Call of system
- RTLS system

8 Workstation design
- 3D workstation design
- Advanced ergonomic analyses

9 Operators development
- Electronic skills matrix
- Mandatory job rotation

10 Lean administration
- eAudits
- eLearning
- Meetings and reporting

BUILDING ON GATHERED KNOWLEDGE



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GROUPS OF IDX INTEREST

MAIN ATTRIBUTES FOR IMPLEMENTATION

LONG TERM SUSTAINABILITY	SPEED & PRODUCTIVITY	RESPONSIVENESS TO DEMAND

Focus on Losses ---> definition use cases into 4M

MAN	- People management & development (skill matrix, trainings, certification, legal…) - MTM 4.0 + Digital Operator - Virtual & Augmented reality
MACHINE	- Collaborative automation - Process & Product Parameters (monitoring, control, simulations) - Visibility & Parameters (OEE, …)
METHOD	- Vision systems - inspections - Process Control (focus on quality & process stability) - Derogation management
MATERIAL	- Automation in Logistics (material delivery, storing, ..) - Smart warehousing solution (signal navigation) - E-kanban & production leveling

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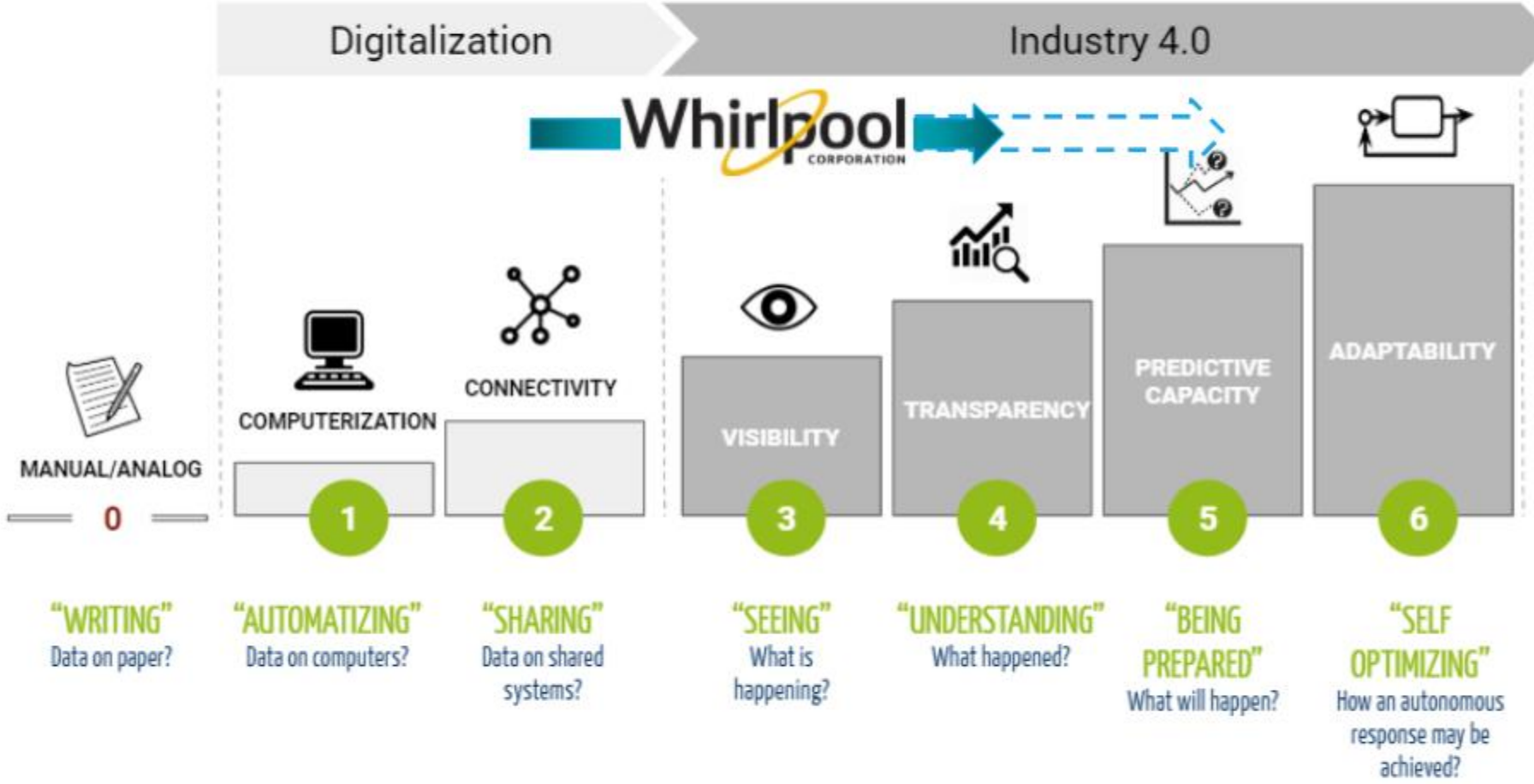
Global IdX Ideal State| Acatech Reference Model

level 0: no computerization, manual activities

1. **Computerization**: isolated technologies
2. **Connectivity**: connecting technologies
3. **Visibility**: data collecting technologies
4. **Transparency**: data analysis technologies
5. **Predictive Capacity**: simulation of future scenarios
6. **Adaptability**: self-adjustment of the system, automation of the decisional process



Global IdX Core Strategy & North Star

Connectivity from the Plant Floor
Connect equipment and processes to provide real data

Track the Product & the Process
Data should be connected to specific products and process parameters

Visualize & Use the Data
Data needs to be captured and presented visually for easy consumption and use on the floor

Combine & Analyze Data
Data needs to be integrated from multiple sources and analyzed to provide insights and opportunities

Pursue the Opportunities
Regional priorities define what projects need to be implemented. Leverage new technologies to solve difficult problems.

Develop the Digital Culture
Upskilling the workforce, make systems user friendly, make the date easy to consume

IdX North Star is the ideal state of 84 different items across 27 areas of the enterprise

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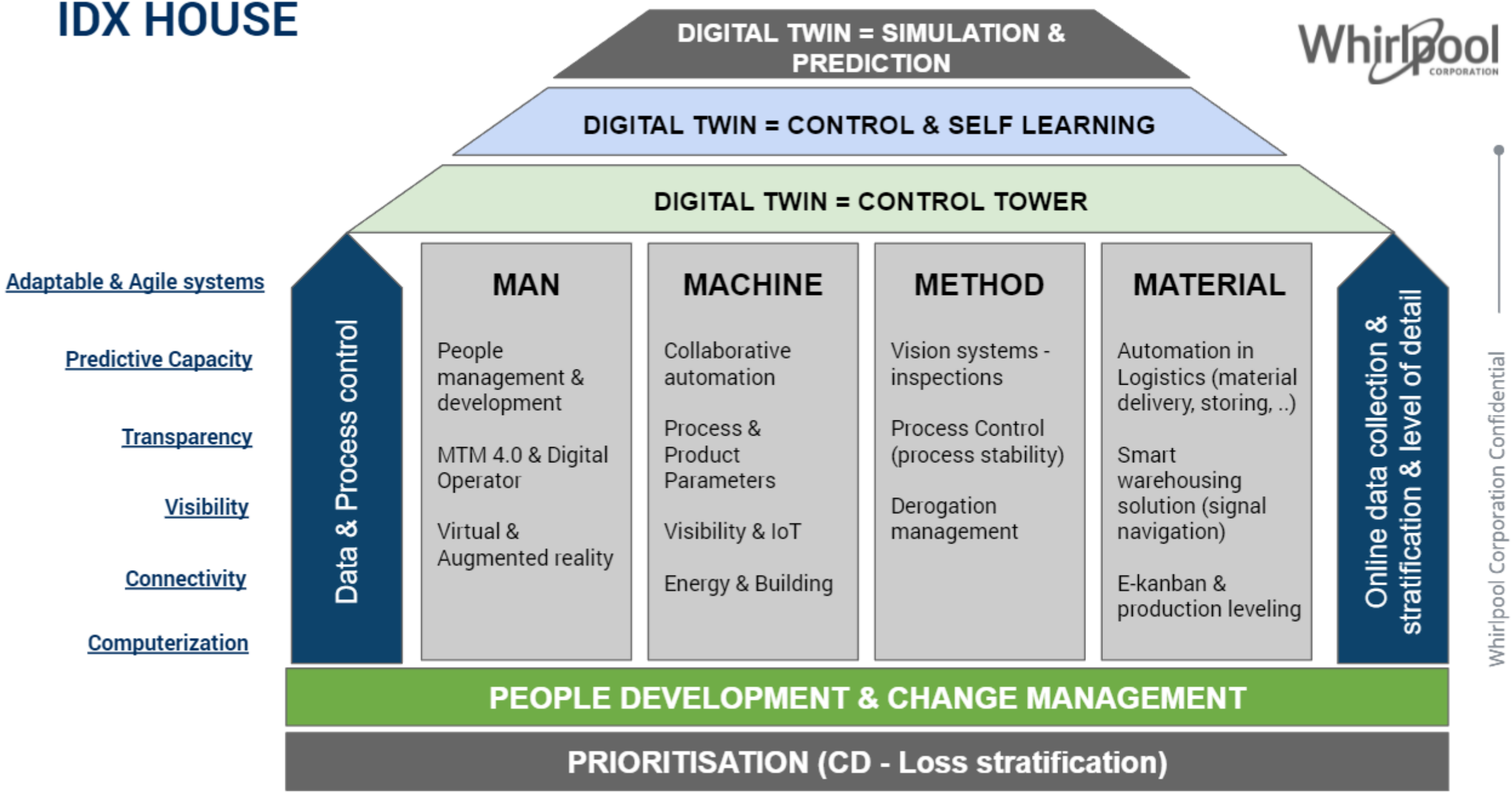
IDX HOUSE



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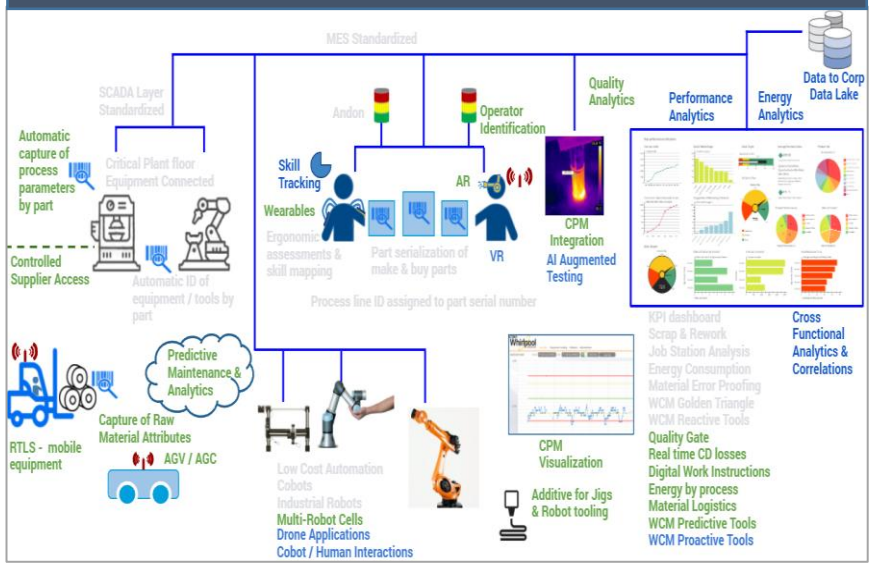
WHERE WE GO !?

MANAGERIAL PROCESS UPDATE

LEAN TRANSFORMATION EXPANSION

DATA COLLECTION & PROCESSING



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LEAN

PRODUCTIVITY

or

INDUSTRY 4.0 ???

THANK YOU FOR YOUR ATTENTION

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