DOCUMENT TITLE:

SMART FACTORY SOLUTIONS

FROM AUSTRIA

Project: Improving RD and business policy conditions for transnational cooperation in the manufacturing industry

Acronym: Smart Factory Hub

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PU	Public	X
PP	Restricted to other Programme participants	
RE	Restricted to a group specified by the consortium	
CO	Confidential, only for members of the consortium	

Contents

1 EVOLARIS - Live-Video-Assistance-System called EVOCALL

Smart Factory solution provider profile

Organization:

EVOLARIS next level GmbH
Hugo-Wolf-Gasse 8-8a, A-8010 Graz
Austria

Website and social media:

Website: www.evolaris.net
Social media (Facebook): https://www.facebook.com/evolaris
Social media (Twitter): https://twitter.com/evolaris
Social media (LinkedIn): https://www.linkedin.com/company/eviti/
Social media (Youtube): https://www.youtube.com/user/evolarisTECLAB

Contact details:

Dr. Christian Kittl
Managing Director
+43 316 35 11 11
E-Mail: christian.kittl@evolaris.net

Type of organization:

R&D

Market sectors:

Aeronautics industries
Automotive industry
Electrical and electronic engineering industries
Mechanical engineering

Services provided:

Engineering
Research and development

Smart Factory solution

EVOCall

Product/Solution webpage:
www.abf.at/en/products/warehousing-solution-onebase-mft
Type of solution:
> Product

Smart Factory description:
By using the EVOLARIS Live-Video-Assistance-System named EVOCALL, the problem-solving process can be influenced positively. EVOCALL is able to replace non-effective communication channels. Besides, in combination with a "work-shadowing" approach, the on-site presence of experts as well as the repair times can be reduced.

eAWARD Winner 2017; https://evocall.evolaris.net/

Figure 1: EVO-Call Data googles
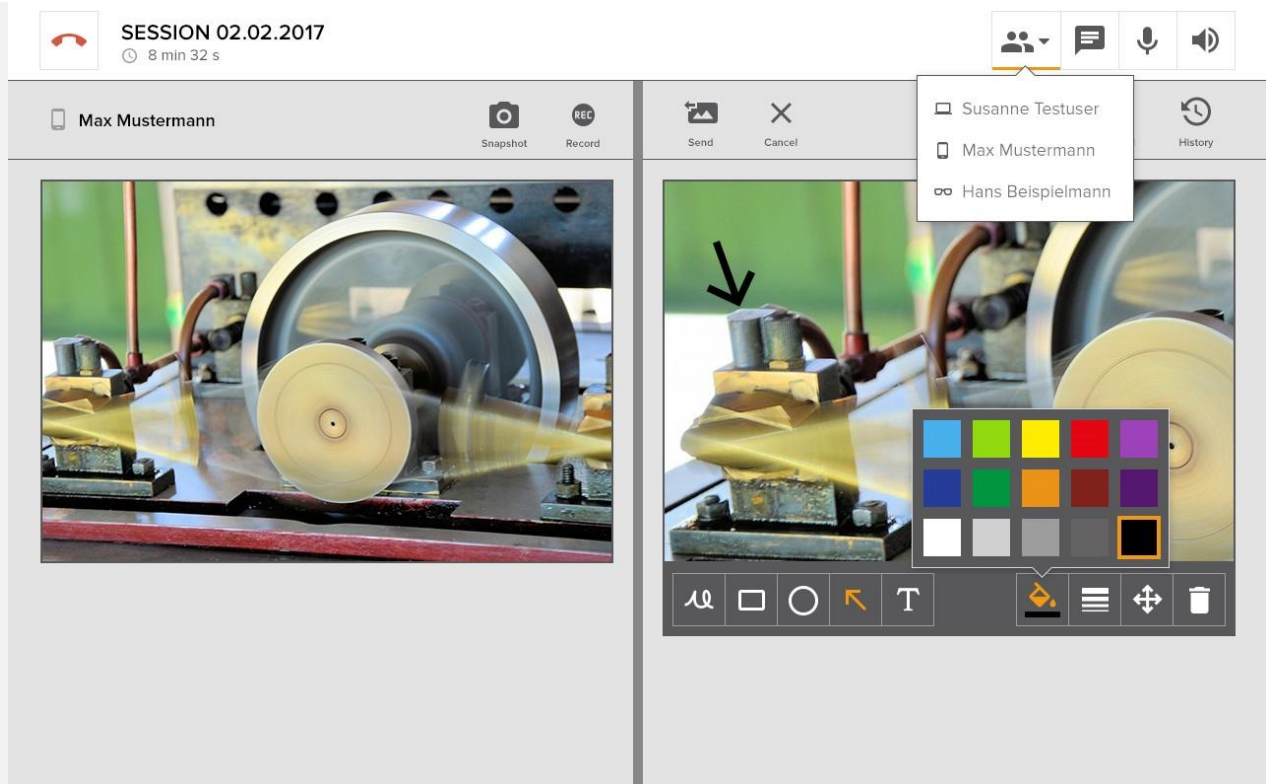
Figure 2: Visualisation of EVO-CALL Session

Keywords:
> WebRTC solution,
> Internet of Things
> audio-visual support,
> reduced repair time,
> reduced on-site presence,
> positive influenced problem-solving process

Example of Product/Service usage:
The starting point for the implementation of EVOCAll for a company interested would be a proof of concept with EVOLARIS consisting of: an initial workshop to identify the processes and stakeholders with the highest impact potential, training and hands-on experience of the smartglass-based solution; assistance for integrating the solution into the internal IT environment; 3 monthly test licenses

The solution was implemented with two lead customers, TGW logistics and AVL List. After a first trail with a single device at each site, a test phase with approx.. 10 devices took place, evaluating the solution regarding the stability and performance (e.g. by testing it in a live-like setting between AVL HQ in Graz, Austria, and a AVL subsidiary in the US) and regarding the acceptance of the solution by various employees, which was measured via qualitative interviews.

Improvement areas covered by the Product/Solution:

      Improved coordination with suppliers

      Increased speed of production operations

      Improved information for production decisions

      Improved agility and responsiveness in the production process

      Improved maintenance/uptime

      Developed visualization capabilities

Product/Solution is related to the following type of implementation:

      Implementation of the novel technology

Other relevant information about the product/service:

      Attachment1: Company logo

      Attachment 2: Product presentation

      Attachment 3: Video about SF solution

      (https://www.youtube.com/watch?v=XQIwruEjxj0)

Product/service technological focus:

      Information Processing & Systems, Workflow

      Plant Design and Maintenance

Market availability:

      Available on the market since 2017

Attachments

Presentation and Logos

EVOLΛRIS

01_SFH_EVOCALL_V
idoeAssistanceSolut

EVOCALL

2 ABF- OneBase – MFT (material flow control), intralogistics solution

Smart Factory solution provider profile

Organization:

ABF – Industrielle Automation GmbH
Deggendorfstrasse 6, 4030 Linz, Austria

Website and social media:

Website: http://www.abf.at/
Social media (Facebook): https://www.facebook.com/ABFIndustrielleAutomation/
Social media (Twitter): https://twitter.com/evolaris
Social media (LinkedIn): https://www.linkedin.com/company/abf---industrielle-automation-gmbh/
Social media (Youtube): https://www.youtube.com/c/AbfAt
Social media (Google+):: https://plus.google.com/+AbfAt

Contact details:

Christian Hiebl,
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E-Mail: christian.hiebl@abf.at

Type of organization:

Large company

Market sectors:

Aeronautics industries
Automotive industry
Electrical and electronic engineering industries
Construction
Mechanical engineering

Services provided:

Engineering

Smart Factory solution

OneBase

Product/Solution webpage:
www.abf.at/en/products/warehousing-solution-onebase-mft

Type of solution:
Product

Smart Factory description:
By this industry independent intralogistics solution integrates a high-performance warehouse management system with continual material tracking for the in-plant logistics processes. With a multitude of modules, this flexible, total solution forms the basis for modern logistics. The material movements are posted automatically and the products get continuously tracked through the warehouse. Hereby the operator has an exact and complete overview where each and every piece of material is in the logistics chain at any time.

Optimization algorithms and a dynamic, adaptive set of rules automatically ensure the ongoing calculation of the necessary transport orders for quick processing of all the required in-plant material transports. This optimized real-time procedure leads to efficient usage of the available warehousing and transport capacities and assures the efficient material flow.

The ABF intralogistics solution is probably the most modern RTLS material tracking solution including a highly optimized warehouse management system.

In comparison to warehousing solutions based on barcodes or RFID technology the RTLS based OneBase – MFT solution can be realized with very high accuracy (X, Y, Z coordinate within the warehouse) and offers by this the highest possible grade of digitalization and automation of the customer's intralogistics processes.
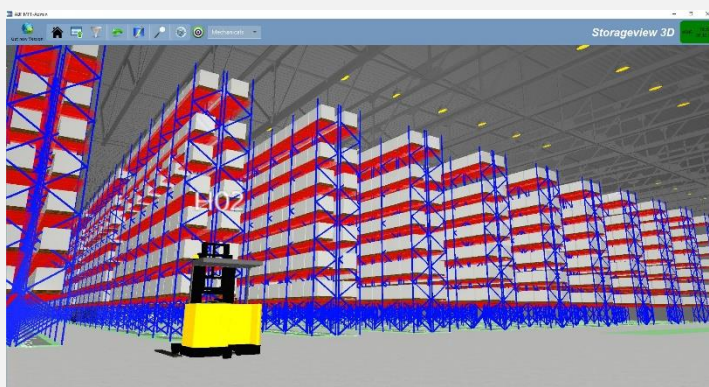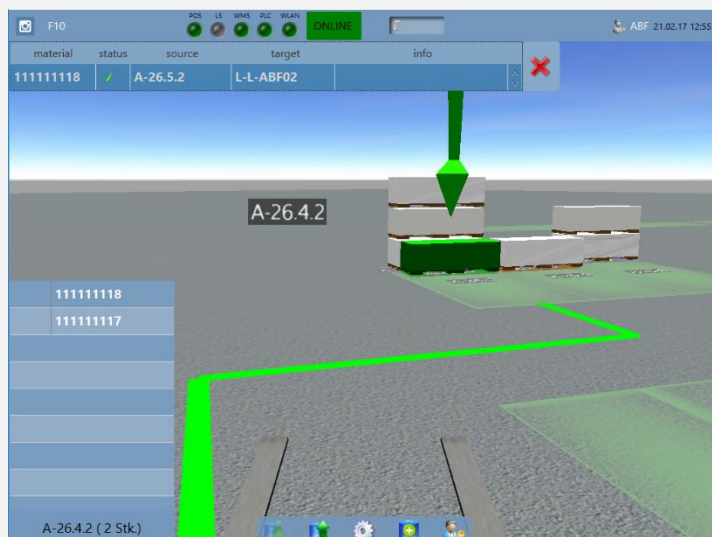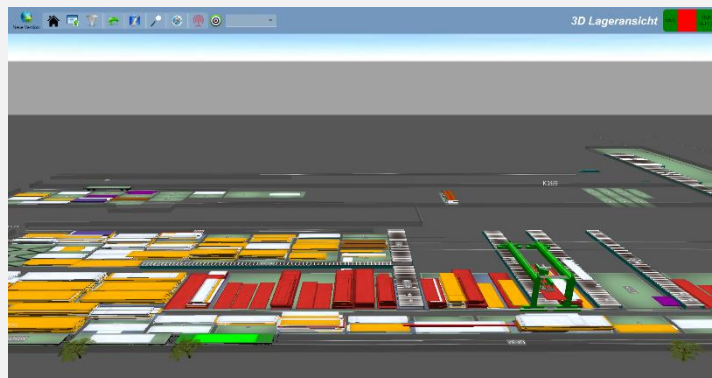
Keywords:

WebRTC solution,
Internet of Things
audio-visual support,
reduced repair time,
reduced on-site presence,
positive influenced problem-solving process

Example of Product/Service usage:

The solution can be useful for any industrial production facilities and logistic centres that are handling big material units (e.g. steel coils or steel heavy plates, wood products) or storing products in pallets, containers, lattice boxes. The high grade of standardization allows to use the solution in different kind of industries. It also applies to different means of transports no matter if manually or automatically operated.

The solution has very good scalability features. Roll-out to the customer's other facilities as well as internationalization is supported.

The solution was implemented e.g in a steel wire rod production or crane warehouse.

MFT in a crane warehouse:
https://www.youtube.com/watch?v=qCnguzsHqwM

MFT in a steel wire rod production:
https://www.youtube.com/watch?v=xkJG1aGwkxc

Improvement areas covered by the Product/Solution:

Improved coordination with suppliers

Increased speed of production operations

Improved information for production decisions

Improved agility and responsiveness in the production process

Developed visualization capabilities

Improved safety

Lower energy costs

Decreased manufacturing costs

Product/Solution is related to the following type of implementation:
Implementation of the novel technology

Other relevant information about the product/service:
Attachment1: Company logo
Attachment 2: Product presentation
Attachment 3: Video about SF solution
(https://www.youtube.com/watch?v=qCnquzsHqwM)

Product/service technological focus:
Process control and logistics
Packaging / Handling
Energy efficiency
Transport Infrastructure

Market availability:
Available on the market since 2014

Attachments

SFH_presentation_
ABF Intralogistics.pc

OneBase - MFT
Product description.

Product
Folder_Englisch.pdf

3 Tablet Solution – Work Held Voice Assistant

Smart Factory solution provider profile

Organization:

Tablet Solutions GmbH
Rotensterngasse 5, 1020 Vienna,
Austria

Website and social media:

Website: www.workheld.com
Social media (Facebook): https://www.facebook.com/teamtabletsolutions/
Social media (LinkedIn): https://www.linkedin.com/company/tablet-solutions/

Contact details:

Benjamin Schwärzler, MSc
Chief Executive Officer, Tablet Solutions GmbH
T. +43 1 992 90 28 | M. +43 650 466 466 2
W. www.workheld.com
benjamin.schwaerzler@tabletsolutions.at

Type of organization:

SME

Market sectors:

Aeronautics industries
Automotive industry
Construction
Digital economy
Electrical and electronic engineering industries
Mechanical engineering

Services provided:

Engineering
Manufacturing

Smart Factory solution

WorkHeld

Product/Solution webpage:
www.workheld.com

Type of solution:
Product

Smart Factory description:
WorkHeld seamlessly connects field technicians with their project coordinators in the head office. Construction plans, checklists and work orders are continuously updated and defects can be reported immediately. WorkHeld enables all involved parties to always be up to date on the project progress.

Keywords:

AI, Artificial Intelligence,

Voice Assistant,

NLP natural language processing

NLU natural language understanding

Speech Recognition.

Example of Product/Service usage:

We developed a new form of interaction for workers and technicians with low IT skills. WorkHeld seamlessly connects field technicians with their project coordinators in the head office. Construction plans, checklists and work orders are continuously updated and defects can be reported immediately. WorkHeld enables all involved parties to always be up to date on the project progress.

Novel Technology: AI based voice assistant similar to Amazon Alexa or Apple Siri build with NLP (natural language processing) and Speech to Text Technologies.

Voice Assistant that runs on smartphones and tablets and can be connected to headsets.

Use Cases:

- For industrial services
- For maintenance
- For installation & initiation
- For production

Improvement areas covered by the Product/Solution:

Improved coordination with suppliers

Increased speed of production operations

Improved information for production decisions

Improved agility and responsiveness in the production process

Improved maintenance/uptime

Developed visualization capabilities

Product/Solution is related to the following type of implementation:

Implementation of the novel technology

Other relevant information about the product/service:

Attachment1: Company logo

Attachment 2: Product presentation

Attachment 3: Video about SF solution (

)

Product/service technological focus:

Information Processing & Systems, Workflow

Plant Design and Maintenance

Market availability:

Available on the market since 2014

Attachments

WorkHeld

Smart Factory
Hub_WorkHeld _pre

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https://www.xitrust.com/en/

Type of solution:

Product

Smart Factory description:

The sQR features another level of security and offers new possibilities regarding the use of QR codes with respect to authentication. Basically, the sQR contains information such as the ID, name of a person or machine, respectively. This information is electronically signed to ensure data integrity. An APP which is able to check the validity of this signature has been developed. Additionally, it is also possible to encrypt the information of the QR Code and to decrypt it with the corresponding public key within the APP. After the information is decrypted and the signature is validated, the APP provides a possibility to verify the real identity of a person or a machine. In case of a person, there is the additional possibility to compare a photo and in case of a machine, additional information regarding the location of the machine can be provided.
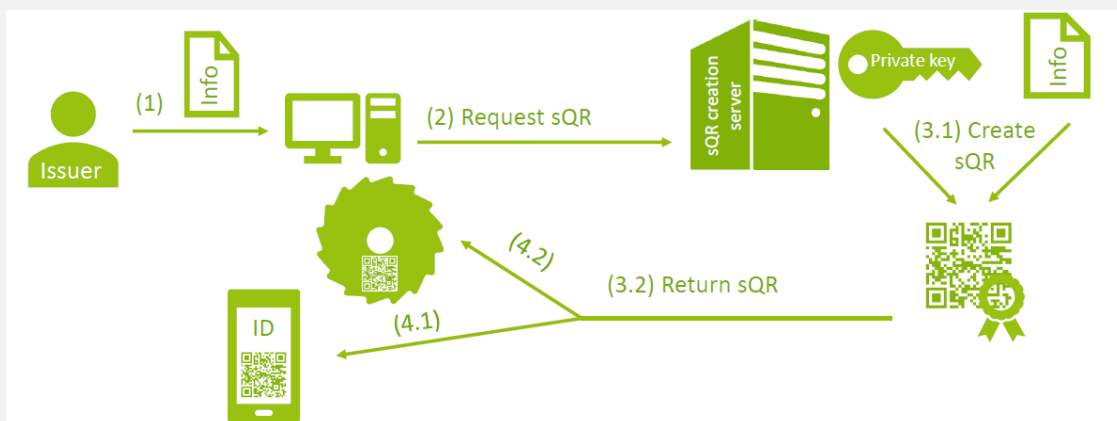
Simplified demonstration:

- Issuer enters information into the client application and sends a new sQR Code generation request (2)
- (3.1) Creation server computes signature with private key for the given data and creates and returns the sQR code (3.2)
- sQR code is embedded into software (4.1) or applied to physical objects (4.2)

Keywords:

Signed and encrypted QR code
Remote qualified signature

Example of Product/Service usage:

The Austrian research project Assist 4.0 gives a Insight into the smart factory of the future. Complex maintenance work are coordinated irrespective of location and equipped with mobile devices. The maintenance of an industrial on the other end of the world is possible immediately, without the need for only a highly trained service technician on board the aircraft

to have to bet on. The transmission of the required Data is reliably secured. In the research project Assist 4.0 we will work out how the Smart Factory of the future is already working.

The project, in which AVL List, Infineon Technologies and leading KNAPP are involved, is testing all those technologies that production staff on site with support from of digital assistance systems such as mobile terminals and data glasses will in future be able to cope with malfunctions, maintenance and remote maintenance. For the safety of the data transmission, XiTrust Secure Technologies is integrated.

Improvement areas covered by the Product/Solution:
> Improved coordination with suppliers
> Increased speed of production operations
> Improved information for production decisions
> Improved agility and responsiveness in the production process
> Improved maintenance/uptime
> Developed visualization capabilities

Product/Solution is related to the following type of implementation:
> Implementation of the novel technology

Other relevant information about the product/service:
> Attachment1: Company logo
> Attachment 2: Product presentation

Product/service technological focus:
> Information Processing & Systems, Workflow
> IT and Telematics Applications
> Telecommunications, Networking

Market availability:
> Available on the market since 2002

Attachments

SFH_Presentation_S
QR-Code-v1.0.pdf

5 Plasmo - Quality Assurance Solutions for automated production processes and additive manufacturing applications

Smart Factory solution provider profile

Organization:

PLASMO
Dresdner Straße 81 – 85, 1200 Vienna
Austria

Website and social media:

Website: http://www.plasmo.eu/
Social media (Facebook):
https://www.facebook.com/plasmo.Industrietechnik.GmbH/
Social media (Twitter): https://twitter.com/plasmoVienna
Social media (LinkedIn): https://www.linkedin.com/company/plasmo-industrietechnik-gmbh/
Social media (Youtube):
https://www.youtube.com/channel/UCQIbT_SQd6zEKY2x9PiXSjg

Contact details:

Sabine Seidl

Type of organization:

R&D

Market sectors:

Aeronautics industries
Automotive industry
Electrical and electronic engineering industries
Mechanical engineering

Services provided:

Engineering

Smart Factory solution

Quality Assurance Solutions for automated production processes and additive manufacturing applications

Product/Solution webpage:

www.abf.at/en/products/warehousing-solution-onebase-mft

Type of solution:

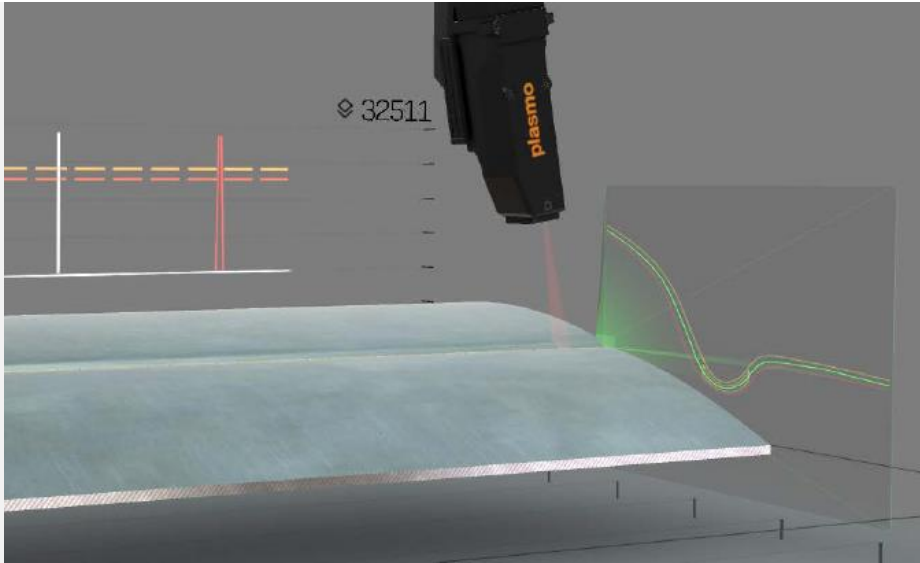Product

Smart Factory description:

plasmo offers quality assurance solutions that enable our customers to implement a secure, efficient and cost-optimized production mainly in automated metal working industry. plasmo has a large clientele of top global companies established in different industries (automotive, steel, mobility, aerospace industry, suppliers etc.).

The plasmo portfolio ranges from monitoring of welding and laser brazing processes, control of weld seams, geometric shapes and surfaces up to tailored solutions in the field of machine vision and analysis software. Plasmo has an own business field for AM monitoring activities.

In addition plasmo plasmo builds on know-how including the following disciplines: hardware development, software development, optical sensors, laser technique, machine and computer vision, mechatronics, physics and mathematical algorithms as well as deep learning. All solutions and customisation procedures are implemented at plasmo. For all solutions plasmo provides a global service and training network.
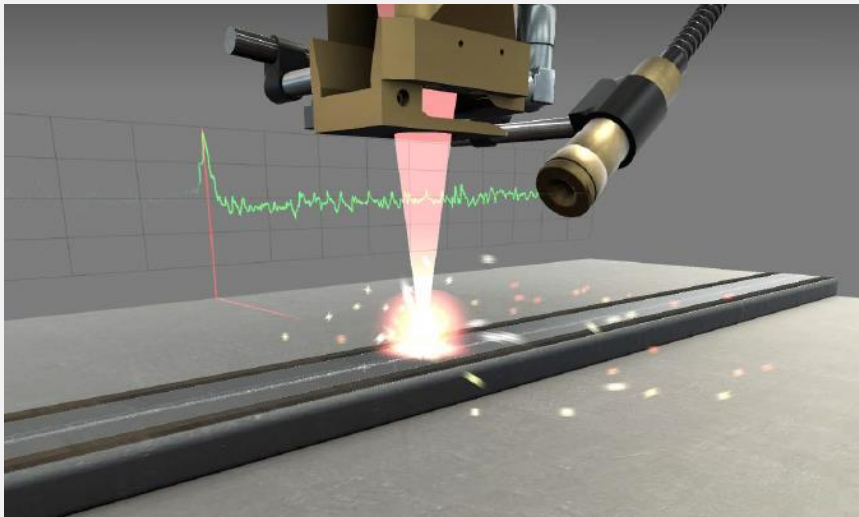
Monitoring of automated welding

Seam inspection

Keywords:
Quality Assurance
Process Control
Process Monitoring
AM

Example of Product/Service usage:

THE VOLKSWAGEN PLANT in Emden has successfully installed the plasmo profileobserver compact image processing system for the series monitoring of the rear and roof seams and the water channel in the production line of the Passat B8 model.

Worldwide, the Kendrion Group develops and manufactures high-quality precision electromagnetic and mechatronic components for automotive and industrial applications and integrated into the laser welding process for several components of the processobserver. The processobserver non-destructively monitors the process in order in real time to show possible deviations from the normal range.

Improvement areas covered by the Product/Solution:
Improved coordination with suppliers
Increased speed of production operations
Improved information for production decisions
Improved agility and responsiveness in the production process
Improved maintenance/uptime
Developed visualization capabilities

Product/Solution is related to the following type of implementation:
Implementation of the novel technology

Other relevant information about the product/service:
Attachment1: Company logo
Attachment 2: Product presentation
Attachment 3: Use Cases
Attachment 3: Video about SF solution
(https://www.youtube.com/watch?v=1TAoDoKoPvI)

Product/service technological focus:
Food quality and safety
Technologies for the food industry

Market availability:
Available on the market since 2014

Attachments

SFH_presentation_Plasmo.pdf

Use Case: online process monitoring

20180130Kendion_Casestudy_final_E.pdf

Use Case: seam inspection

2017-case-VW-Emden_plasmo-EN-1.pdf

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6 PROFACTOR – X Rob - easy robot configuration

Smart Factory solution provider profile

Organization:

PROFACTOR GmbH
Im Stadtgut A2, 4407 Steyr-Gleink
Austria

Website and social media:

Website: www.profactor.at
Social media (Facebook): https://www.facebook.com/Profactor-Gmbh-140420182701782
Social media (LinkedIn): https://www.linkedin.com/company/profactor/
Social media (Youtube): https://www.youtube.com/user/profactorgroup

Contact details:

Dr. Wolfgang Heidl
Head of Business Development
+43 7252 885 252
E-Mail: wolfgang.heidl@profactor.at

Type of organization:

R&D

Market sectors:

Aeronautics industries
Automotive industry
Electrical and electronic engineering industries
Mechanical engineering
Medical devices

Services provided:

Engineering
Research and development

Smart Factory solution

XRob

Product/Solution webpage:

www.abf.at/en/products/warehousing-solution-onebase-mft

Type of solution:
> Product

Smart Factory description:
XRob enables users with minimal training experiences to create robotic processes in a new and effective way. XRob assists the user by simple, recipe-based programming with a single user interface. Robotic applications therefore are economically viable even with small batch sizes and a wide variety of variants.

The integrated features offer simple operation and fast creation of a robot process, even for non-experts. The user interface of XRob is customized for each user and allows a simple and intuitive use for both, classic and collaborative robot systems.
Robot sensors and tools are configured together. All this saves time during product changeover, creation of variants and trainings. Besides industrial applications, XRob is also used in the engineering environment, where high flexibility is particularly important.

The benefits are:
»» Easy & fast configuration – no programming skills required
»» Fast retooling for a high number of variants
»» Intuitive process creation within a few minutes
»» Easy integration into existing workflows and processes
»» Versatile and expandable
»» Supports popular robot systems of various brands
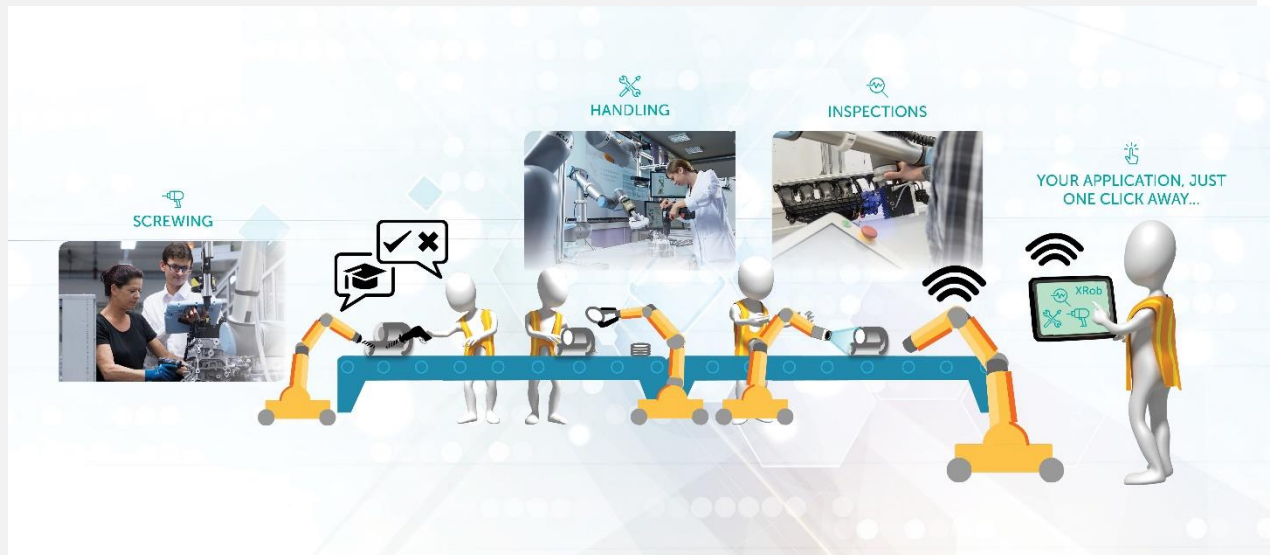
Keywords:

      Flexible robotics
      Human machine interaction
      One interface
      Easy-to-use features
      Automatic path planning
      Fast configuration of complex processes

Example of Product/Service usage:

The systems developed by PROFACTOR enable a co-operation between the human operator and the robot e.g. during a screwing process.

The flexibility of the system also makes it possible to be used for smaller batch sizes, which only need robotic support during e.g. the screwing process, as a low-cost automation solution. In the XRob system, it is possible to teach new screwing tasks in less than a minute.

Key references are:
- 3D inspection of castings
- Crankshaft handling
- Acoustic inspection
- Inline 3D inspection stations for motors
- Screwing assistants for engines and transmission parts

Main application fields are:
- Machine Tending
- Bin Picking
- Assembly
- Screwing
- Sorting

- Coating
- Inspection

With its partners, PROFACTOR develops customized pilot plants and prototypical plants for the evaluation of the latest robotic technologies.

PROFACTOR Solution Competence
- Feasibility studies and concept design
- Customized software development and licensing
- OEM software/hardware packages for system integrators
- General contractor for pilot and special applications

Improvement areas covered by the Product/Solution:
Increased speed of production operations
Decreased manufacturing costs
Improved agility and responsiveness in the production process
Improved product quality
Improved maintenance/uptime
Improved safety
Developed visualization capabilities

Product/Solution is related to the following type of implementation:
Implementation of the novel technology

Other relevant information about the product/service:
Attachment1: Company logo
Attachment 2: Product presentation
Attachment 3: Video about SF solution
(https://www.youtube.com/watch?v=RnLznMFj5Y8&t=1s)

Product/service technological focus:
Industrial Manufacture
Plant Design and Maintenance
Packaging / Handling
Other Industrial Technologies

Market availability:
Available on the market since 2013

Attachments

PROFACTOR

XROB

EMPOWERING ROBOTS

SFH_presentation_P
ROFACTOR_Xrob.pd

Product Folder

PROFACTOR_Xrob_
web.pdf

7 Business Upper Austria - Industry 4.0 Maturity Model

Smart Factory solution provider profile

Organization:

       FH OÖ
       Franz-Fritsch-Straße 11 4600 Wels Austria
       Austria

Website and social media:

       Website: https://forschung.fh-ooe.at/institut-fuer-intelligente-produktion/center-of-excellence-for-smart-production/
       Social media (Facebook): https://www.facebook.com/fhooe.at
       Social media (Youtube): https://www.youtube.com/user/fhooeat

Contact details:

       Manuel Brunner, MSc.
       +43 664 80484 33293
       E-Mail: Manuel.Brunner@fh-steyr.at

Type of organization:

       R&D

Market sectors:

       Digital economy
       Electrical and electronic engineering industries
       Mechanical engineering

Services provided:

       Research and development

Smart Factory solution

Industry 4.0 Maturity Model

Product/Solution webpage:

https://www.reifegradmodell.at

Type of solution:
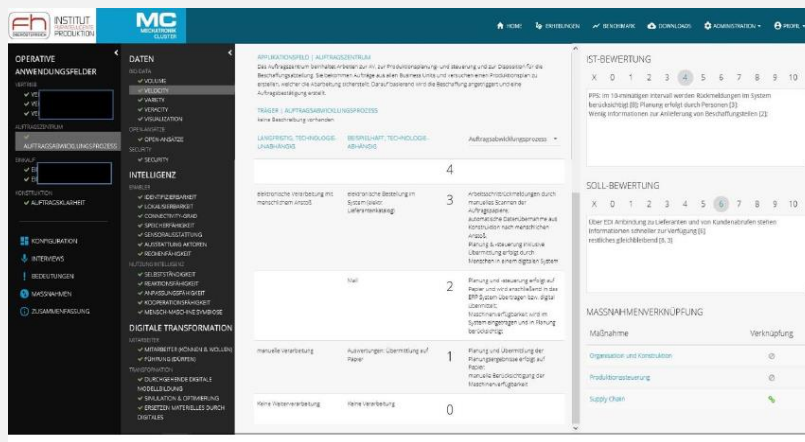
Service

Smart Factory description:

The Maturity Model is a structured methodology to evaluate the Industry 4.0 status quo of a company, create a tailor-made vision and derive an individual road map to get from status quo to the vision.

This model is a new approach to structure the technological change process through Industry 4.0 in a company and realized as a software cloud application on license. Production processes, organizational processes, machines, software applications can be investigated with the model and the outcome will lead to cost efficiency and process optimization. Enclosed to the software tool is a benchmark database where all investigations are saved anonymous.

The maturity model is the first known approach to describe the Industry 4.0 status of an entity with 24 criteria including a derivation of a road map for implementation.

The Maturity Model process
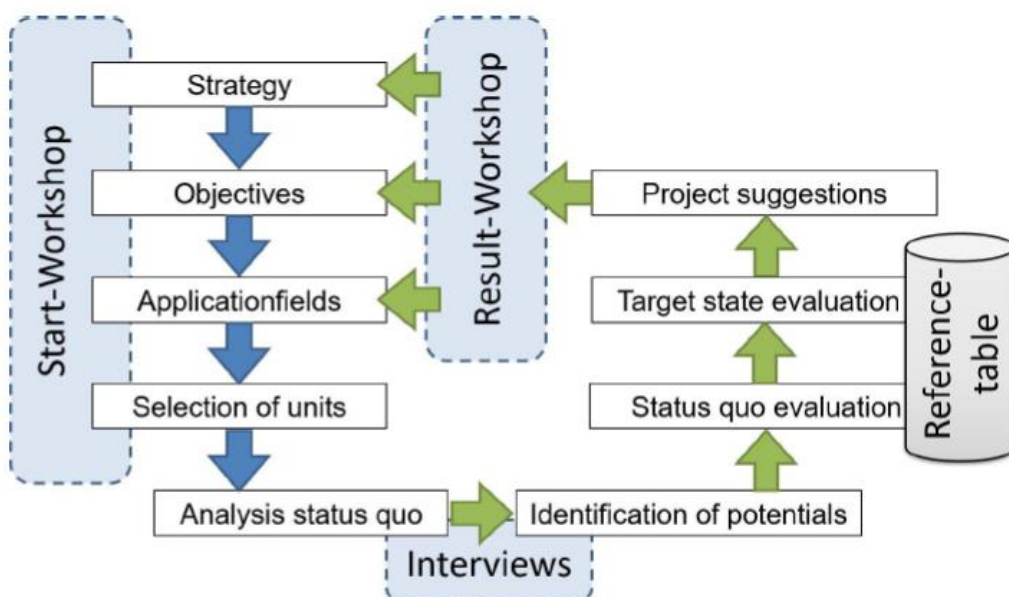
Software interface

Keywords:

Industry 4.0,
Internet of Things
Strategy
Target state evalution
Project suggestions

Example of Product/Service usage:

Since the launch of the Model (01/2017) it was used in 16 companies.
The beneficiaries get a detailed road map for implementation of Industry 4.0. Thus save money, be more flexible and getting ideas of new business models.

References are:

Improvement areas covered by the Product/Solution:

Increased speed of production operations
Improved information for production decisions
Improved agility and responsiveness in the production process
Developed visualization capabilities

Product/Solution is related to the following type of implementation:

Implementation in the production processes

Other relevant information about the product/service:

Attachment1: Company logo
Attachment 2: Product presentation

Product/service technological focus:

Information Processing & Systems, Workflow
- IT and Telematics Applications

Industrial Manufacture

Market availability:

Available on the market since 2017

Attachments

SFH_Presentation_
Maturity Model_I4.0

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8 LCM - Digital Platform - SyMSpace

Smart Factory solution provider profile

Organization:

Linz Center of Mechatronics
Altenbergerstraße 69, 4040 Linz
Austria

Website and social media:

Website: www.evolaris.net
Social media (Facebook): https://www.facebook.com/linzcenterofmechatronics
Social media (LinkedIn): https://www.linkedin.com/company/linz-center-of-mechatronics/
Social media (Youtube):
https://www.youtube.com/channel/UCIVrvyklWdGkGtKiuqv4f3g

Contact details:

Johann Hoffelner
E-Mail: Johann.Hoffelner@lcm.at

Type of organization:

R&D

Market sectors:

Electrical and electronic engineering industries
Mechanical engineering

Services provided:

Engineering
Research and development

Smart Factory solution

Digital Platform – SyMSpace

Product/Solution webpage:
https://www.lcm.at/project/symspace-der-system-model-space-von-lcm /

Type of solution:
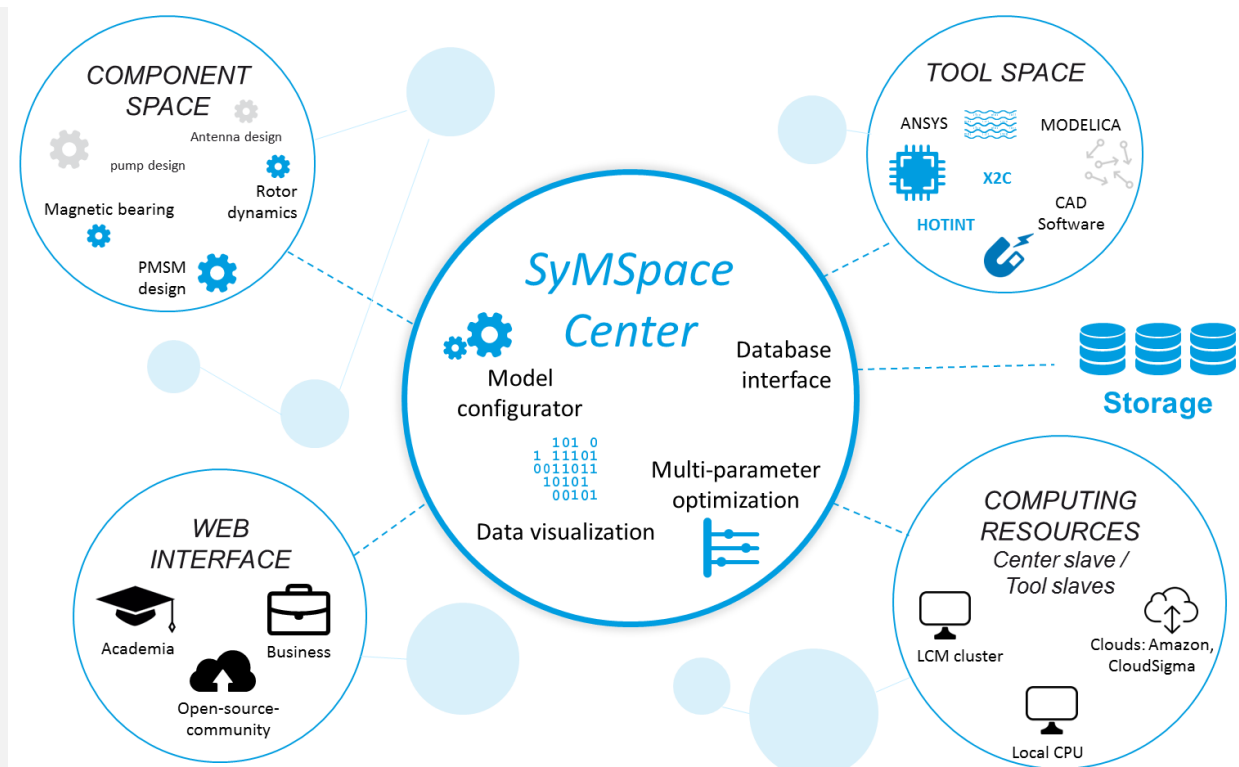> Product

Smart Factory description:
SyMSpace is an easy-to-use software platform for the digital development and optimization of mechatronic components and systems. For different technical challenges, SyMSpace allows setting up an automated workflow consisting of construction – simulation – optimization. SyMSpace is cloud-based and thus available to the user at a pay-per-use basis at any time without own expensive infrastructure. With only a few clicks, computing resources can be easily allocated and individually customized.

All consumed services are centralized in one single account, clearly arranged and simple.
Applications

- Development of mechatronic components and systems
- Optimization of mechatronic components and systems
- What's the benefit?
- Reduction of expensive development time
- Reduction of costs in the prototype phase
- Reduced „time-to-market"
- Recalculation of performance data
- Optimized design for production
- Demand-oriented product development
- Attractive pricing models „Pay per Use"
- Modular design – extend functionality step by step
- Easy integration of existing software tools
- Direct result transfer (digital twin) into a finished product
- Cloud or local - no expensive hardware required.

Keywords:

      digital development
      optimization of mechatronic components and systems
      automated workflow

Example of Product/Service usage:

Intensive computation? Our Cloud Space has got that covered.

SyMSpace is available for both worlds: local installation or, for computing-intensive optimization, or simply for getting a fresh, performant environment each time, LCM offers the Cloud Space. Once registered, create your cloud cluster with three clicks. Log on to your fresh installation of SyMSpace and start working on a cost-efficient pay-per-use basis. No local installation, no hardware invest, no software maintenance. You will receive one centralized bill from LCM, holding all your expenses – from licenses to cloud fees.

Improvement areas covered by the Product/Solution:

      Increased speed of production operations
      Decreased manufacturing costs
      Improved information for production decisions
      Improved agility and responsiveness in the production process
      Improved product quality
      Improved maintenance/uptime
      Improved information for business analytics

Developed visualization capabilities

Product/Solution is related to the following type of implementation:
Implementation of the novel technology

Other relevant information about the product/service:
Attachment1: Company logo
Attachment 2: Product presentation
Attachment 3: Video about SF solution
(https://www.youtube.com/watch?v=XfLYqrVnzz8&t=31s)

Product/service technological focus:
Information Processing & Systems, Workflow

Market availability:
Available on the market since 2015

Attachments

LINZ
CENTER OF
MECHATRONICS
GMBH

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Product information

broschuere_develo
pment_en_korr5.pdf

9 RHP - 4M System - Direct Metal Deposition

Smart Factory solution provider profile

Organization:

RHP-Technology GmbH
2444 Seibersdorf,
Austria

Website and social media:

Website: ww.rhp-technology.com
Social media (LinkedIn): https://www.linkedin.com/company/rhp-technology

Contact details:

DI Michael Kitzmantel
+43 2255 20600
E-Mail: michael.kitzmantel@rhp-technology.com

Type of organization:

R&D

Market sectors:

Automotive industry
Construction
Electrical and electronic engineering industries
Mechanical engineering

Services provided:

Engineering
Research and development

Smart Factory solution

4M System

Product/Solution webpage:
http://www.think-additive.at/4m-system.html

Type of solution:

Product

Smart Factory description:
In space industry large structures like struts, housings, kinematic mounts, suspension arms for rovers, thruster elements made from different materials are usually manufactured by conventional machining leading to 90% scrap to get the final part

"4M-SYSTEM" (Machine for Multi-Material Manufacturing) aims to develop an industrial "plug&play" capable machine with which 3D components in the order of one to several meters can be manufactured from aerospace relevant materials such as titanium, aluminium and their alloys.

... Plasma arc as energy source
Our system is based on a plasma-arc process, with which we manufacture individual 3D components using CAD-controlled 5-axis handling.
Special features are the generation of multi-material materials and gradient structures as well as fast build-up rates.
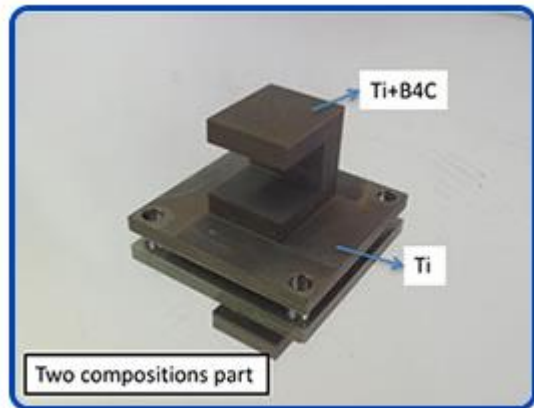
Keywords:

> 3d printing
> Metal
> Serveal meters
> Plug&play capable machine
> Material
> 4M
> mould
> manufacturers,
> metallic powder,
> plasma torch, European Space Agency,
> hydropower

Example of Product/Service usage:

Indeed, space has been a key driver of this technology. Components used in space generally need to be lightweight and not very large, which means that the additive manufacturing concept is very interesting in terms of cost savings and lead time reduction. Starting with a big block of metal for example means that the amount of material that sometimes needs to be subtracted by machining to produce the part you need can be up to 90 %.

The additive manufacturing concept pioneered by the 4M project by contrast only uses the amount of metallic powder needed to build up the object required and only a residual amount of material needs to be finally taken off through subsequent machining.

The 4M System can create parts for space missions, manufacturing tools and industrial moulds.

The results are currently being analysed at the feasibility level by the European Space Agency, and the process could have potential in the manufacture of turbine parts for hydropower generation.

Improvement areas covered by the Product/Solution:
Increased speed of production operations
Decreased manufacturing costs
Lower energy costs

Product/Solution is related to the following type of implementation:
Implementation of the novel technology

Other relevant information about the product/service:
Attachment1: Company logo
Attachment 2: Product presentation

Product/service technological focus:
Aerospace Technology
Construction Technology
Industrial Manufacture

Market availability:
Available on the market since 2017

Attachments

PDF
4M additive_lr.pdf

10 SCCH - Predictive Analytics Message Board

Smart Factory solution provider profile

Organization:

Software Competence Center Hagenberg
Softwarepark 21, 4232 Hagenberg im Mühlkreis
Austria

Website and social media:

Website: https://www.scch.at
Social media (Facebook):
https://www.facebook.com/SoftwareCompetenceCenterHagenberg/
Social media (LinkedIn): https://www.linkedin.com/company/software-competence-center-hagenberg-gmbh
Youtube: https://www.youtube.com/watch?v=7ZSRGxQrcKg

Contact details:

Natschläger Thomas
E-Mail: <Thomas.Natschlaeger@scch.at

Type of organization:

R&D

Market sectors:

Electrical and electronic engineering industries
Aerospace Technology
Construction Technology
Industrial Manufacture

Services provided:

Engineering
Research and development
(Choose from the Legend)

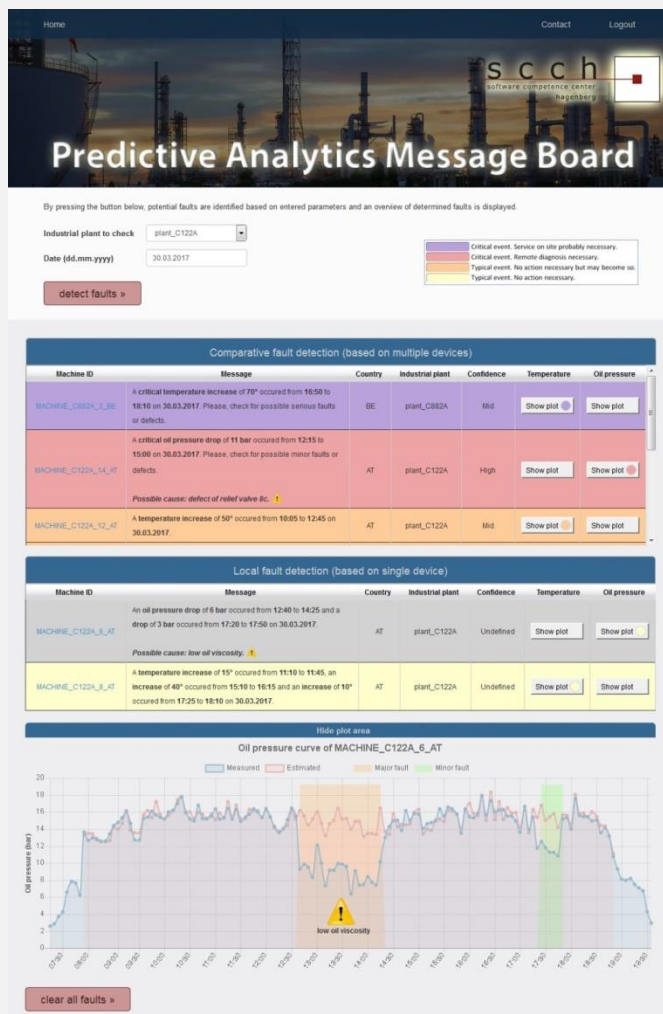## Smart Factory solution

Predictive Analytics Message Board

Product/Solution webpage:
www.abf.at/en/products/warehousing-solution-onebase-mft

Type of solution:
> Product

Smart Factory description:

Keywords:
> Predictive Maintenance

Fault Detection,
Fault Diagnosis,
Fault Prediction
Benefits: Increased plant availability, early detection of damages, reduced downtimes, reduced material costs, improved planability of maintenance

Example of Product/Service usage:

Improvement areas covered by the Product/Solution:
Improved maintenance/uptime
Decreased manufacturing costs
Improved information for production decisions
Increased speed of production operations

Product/Solution is related to the following type of implementation:
Implementation of the novel technology

Other relevant information about the product/service:
Attachment1: Company logo
Attachment 2: Product presentation

Product/service technological focus:

Market availability:
Available on the market since 2014

Attachments

11 Pro²Future: Modular Production

Smart Factory solution provider profile

Organization:

Pro2Future GmbH
Altenberger Straße 69, 4040 Linz
Austria

Website and social media:

Website: www.pro2future.at
Social media (LinkedIn): https://www.linkedin.com/company/pro2future

Contact details:

Dr. Georg Weichhart
Area Manager **Cognitive Robotics and Shopfloors**
+43 664 60 885-355
E-Mail: Georg.Weichhart@Pro2Future.at

Type of organization:

R&D

Market sectors:

Aeronautics industries
Automotive industry
Digital economy
Electrical and electronic engineering industries
Mechanical engineering

Services provided:

Engineering
Research and development

Smart Factory solution

Modular Production

Product/Solution webpage:
http://www.pro2future.at/research-en/areas-en/area-2-en/

Type of solution:

Product

Smart Factory description:

anufacturing enterprises of the future are networked and built around sensor-networks und algorithms of artificial intelligence. Sustainable decisions are made by teams of human and artificial actors in order to adapt to changing environmental conditions. The enterprise is a complex adaptive system where actors share work and tasks and communicate. In this context, cognitive robotic systems collaborating with humans are of importance.

The solution is a middleware based approach to support communication of modular and autonomous, intelligent mechatronic systems.
To do so a message based approach for a scalable system of networked shopfloor systems and software systems is taken. Modularity and loose coupling is required to support adaptation of these systems.

Overall, model based approaches to support artificial intelligence and communication as cognitive function are researched.
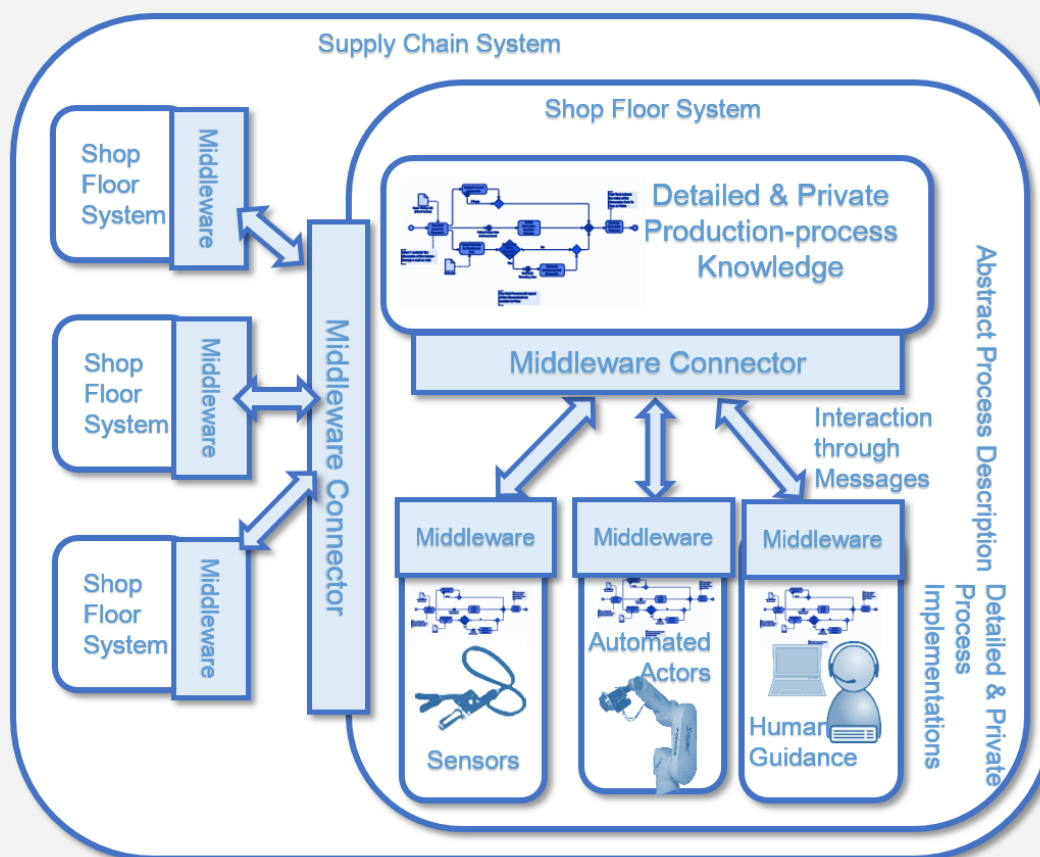
PRO2Future Middleware

The presented demonstrator shows an approach for detailed production planning by means of distributed artificial intelligence. Software agents arrange the cheapest possible time slots for the orders on the required production machines and optimise the punctuality of the orders.

Keywords:

Internet of Things
Interoperabily
Shop scheduling
combinatorial optimisation problems
Automated Production Process planning integrated with Process Modelling
Semi-automized process planing

Example of Product/Service usage:

The competitiveness of manufacturing companies is increasingly determined by the availability of plants and systems. For this reason the importance of an efficient and high quality maintenance grows rapidly. For both, breakdowns (unplanned) as well as for preventive maintenance activities (planned), downtimes must be kept short by rapid and perfect response. In other words, the right measures must be implemented at the right time using the right resources and without causing additional rework. Due to an increasing system complexity, it becomes more and more difficult to detect signs for the need of preventive maintenance as well as to derive the best possible time-slot and the ideal scope of maintenance. Subsequently, maintenance must be scheduled considering the availability of all required skills, the adherence to constraints and objectives (e. g. costs) and further executed within the given time-budget meeting all planned deadlines. Upon detection of deviations to the plan (e. g. additional tasks,

longer durations, problems during recovery), affected maintenance tasks have to be altered and re-scheduled

Improvement areas covered by the Product/Solution:

       Increased speed of production operations

       Improved agility and responsiveness in the production process

       Improved product quality

Product/Solution is related to the following type of implementation:

       Implementation of the novel technology

Other relevant information about the product/service:

       Attachment1: Company logo

       Attachment 2: Product presentation

       Attachment 3: Video about SF solution

       (https://www.youtube.com/watch?v=hYF8rieUYi0)

Product/service technological focus:

       Aerospace Technology

       Automotive industry

       Construction Technology

       Digital economy

       Industrial Manufacture

       Mechanical engineering

Market availability:

       Available on the market since 2014

Attachments

SHF_Presentation_PRo2future.pdf

LEGEND (PLEASE DELETE FOR THE FINAL VERSION):

Type of organization	Select one from the following:
	• Business support organization • Development agency • Large company • Ministry/Government/State agency • R&D • SME • University • University incubator • OTHER (Please specify)
Market sectors	Select one or more sectors the organization is focusing to:
	• Aeronautics industries • Automotive industry • Biotechnology • Chemicals • Construction • Cosmetics • Defense industries • Digital economy • Electrical and electronic engineering industries • Food industry • Gambling • Healthcare industries • Maritime industries • Mechanical engineering • Medical devices • Postal services • Pressure equipment and gas appliances • Raw materials, metals, minerals and forest-based industries • Social economy • Space • Textiles, Fashion and creative industries • Tourism • Toys • OTHER (Please specify)
Services provided	Select one or more services provided by the Organization:
	• Consulting • Education/Training • Engineering • Manufacturing • Policy • Research and development • Services • OTHER (Please specify)

Type of Smart Factory solution	Select the type of a Smart Factory: • Product • Service
Product/Solution is related to the following type of implementation	Select one or more areas improved by the Product/Service implementation: • Improved coordination with suppliers • Increased speed of production operations • Decreased manufacturing costs • Lower energy costs • Improved information for production decisions • Improved agility and responsiveness in the production process • Improved product quality • Improved coordination with customers • Improved compliance with customer specs or regulatory requirements • Improved maintenance/uptime • Improved information for business analytics • Improved remote monitoring capabilities • Improved safety • Developed visualization capabilities
Improvement areas covered by the Product/Solution	Select the improvement area: • Implementation of the novel technology • Implementation in the production processes • Implementation of the human resource management systems
Product/service technological focus	Select one or more technologies that the product/service is addressing: AGRICULTURE AND MARINE RESOURCES • Agriculture • Resources of the Sea, Fisheries • Silviculture, Forestry, Forest technology AGROFOOD INDUSTRY • Food quality and safety • Micro- and Nanotechnology related to agrofood • Technologies for the food industry BIOLOGICAL SCIENCES • Biology / Biotechnology • E-Health • Genome Research • Industrial Biotechnology • Medicine, Human Health • Micro- and Nanotechnology related to Biological sciences ELECTRONICS, IT AND TELECOMMS • Electronic circuits, components and equipment • Electronics, Microelectronics • Information Processing & Systems, Workflow • IT and Telematics Applications • Multimedia • Telecommunications, Networking ENERGY • Biogas and anaerobic digestion (AD) • Carbon capture and energy • Energy efficiency

	- Energy production, transmission and conversion - Energy storage and transport - Fossil Energy Sources - Nuclear Fission / Nuclear Fusion - Other Energy Topics - Renewable Sources of Energy **INDUSTRIAL MANUFACTURING, MATERIAL AND TRANSPORT** - Aerospace Technology - Construction Technology - Design and Modelling / Prototypes - Industrial Manufacture - Materials Technology - Packaging / Handling - Plant Design and Maintenance - Process control and logistics - Traffic, mobility - Transport and Shipping Technologies - Transport Infrastructure **MEASUREMENTS AND STANDARDS** - Amplifier, A/D Transducer - Electronic measurement systems - Measurement Tools - Recording Devices - Reference Materials - Standards **OTHER INDUSTRIAL TECHNOLOGIES** - Other Industrial Technologies **PHYSICAL AND EXACT SCIENCES** - Chemistry - Meteorology / Climatology - Micro- and Nanotechnology - Physics - Separation Technologies **PROTECTING MAN AND ENVIRONMENT** - Environment - Safety - Waste Management - Water Management **SOCIAL AND ECONOMICS CONCERNS** - Citizens participation - Creative products - Creative services - Education and Training - Information and media, society - Infrastructures for social sciences and humanities - Socio-economic models, economic aspects - Sports and Leisure

	• Technology, Society and Employment