



... Farewell MONSOON!

Dear reader,

Along this 3 years we've been sharing with you our developments and news related to the MONSOON project and we thank you for having accompanied us for so long

These 6 months a lot of developments and refinements were performed to reach the goals of the Project – the MONSOON FRAMEWORK SOLUTION.

During this last period the team faced several challenges to adjust and refine the tools in order to achieve a stable platform for being used on an industrial environment. The consortium was supported by the project Stakeholders - the ESG Group, that helped to align the developed features to the market needs. Their feedback was very important to establish the missing improvements, leading to significant gains on the process's efficiency and ecologic footprint impacts, as one of the targets of the project - the reduction of the Green House Gases emissions, CO2.

Also during this period the consortium designed the MONSOON FRAMEWORK composed by 5 main bundles, where all the features and services that make up the MONSOON solution are based - described in detail in this newsletter.

The consortium also released several academic publications all tied to the developed tools and related results and gains, based on the study cases.

Reaching the last month of the Project, it was organized the Final Workshop in Turin - Italy, with the support of 3 other SPIRE projects. The event counted with the attendance of 64 participants, sharing their feedback and perspectives of the presented tools.

It were 3 challenging years, learning and facing new opportunities, culminating in a very rewarding job - the MONSOON Solution.

Upon reaching the end of this challenging project, we can only thank you for having followed us and for remaining connected to us in some way. It was a pleasure to keep you aboard with us and we hope to see you again. Who knows in a MONSOON version 2.0.

Farewell dear reader!

*Marco Dias [GLN]
Project Dissemination Manager*

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MONSOON SOLUTION

The MONSOON solution is a package of several services' end-users oriented, that are supported by 5 main bundles, depending on end-users demands and it has specific requirements for each scenario / application. The solution is not a standard/closed package and it can work as add-on customized associated to the real needs and the required functionalities: this solution is something that connects the end-user to root causes and based on a continuous involvement in the personalization of the tool, it will allow to reach long successful results, and significant gains in a short-medium term.

The MONSOON platform helps the industrials to have a big data approach with a minimal cost, lowering the financial cost and human implication associated.

MONSOON FRAMEWORK

Datalab Platform SAAS

The Datalab Platform is the tool for storing (Big Data Storage and Analytics Platform (BDSAP)) and collaboratively analyzing the data coming from the shop floor and serves as a development environment for the predictive functions that can be deployed seamlessly into the Runtime Container.

Runtime Container

The MONSOON Runtime Container component is very similar to the Datalab platform except that it doesn't contain the Data Scientists tools but offers a powerful Predictive Function Manager which manages the life-cycle of dockerized predictive functions ((un)deployment, scheduling, etc.)

System Integration Service

The MONSOON platform can combine the Integration of new components (new predictive functions, or new connectors), based on the need specification of the application to be used, and deliver solid methodology and tools to support the continuous integration.

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It follows different types of services in a Docker based infrastructure: the industrial Plant data are collected using specific connectors and ingested into the MONSOON Platform (Datalab and Runtime Container) by a NiFi data flow and a KairosDB databased and the automatic deployment of the platforms (Datalab and Runtime Container) is based on Ansible and Docker Swarm.

Data Analytics Service

The Data Analytics Services are key services that can be proposed to end-users. The aim of those services is to exploit the MONSOON DataLab platform's capabilities to collect, store and treat large volumes of data from several sources, as well as the possibilities to easily deploy functionalities in the plants using MONSOON's Runtime Container.

The Data Analytics Services consist in the development of specific functions, based on data science and artificial intelligence tools, for improving the performances of the plants. Such functions in the industrial domain can help for instance to anticipate equipment malfunction, to improve an industrial process by avoiding its deviations, or to better understand root causes of abnormal quality.

Life Cycle Assessment Service

Life Cycle Assessment (LCA) is adopted in the MONSOON solution as background methodology for the life-cycle-management plugin. LCA plays the role of the environmental sustainability assessor, ensuring a cross level approach to support a quantitative evaluation of the environmental impact of the investigated system. The main goal is to provide information about the environmental footprint of the investigated industrial process and the results of the LCA service are sent to a customized dashboard, where environmental effect of process optimization can be visualized by plant managers and HSE experts.



LINKS Foundation
at Torino, ITALY

Istituto Superiore Mario Boella (ISMB) is a research & innovation centre operating in the Information and Communication Technologies (ICT) domain. Founded in 2000 by Compagnia di San Paolo and Politecnico di Torino, today ISMB relies on technological and process competences of around 150 researchers working in close cooperation with companies, academia and Public Administration.

In January 2019 ISMB was involved in a process of merger by incorporation with a second associated research institute (SiTI) and was officially incorporated by the LINKS foundation. Nevertheless, ISMB's activities and mission are being pursued and promoted within LINKS.



LINKS brought to the MONSOON project the experience and the skills learned participating to several funded European projects, as partner or coordinator, also within the H2020 framework. It has already worked in research activities focused on the industrial environment, with particular focus on the improvement of the working experience in the plants (Satisfactory), on the development of middleware and context-aware applications for energy consumption monitoring (ebbits) and on the integration of sensors in the shopfloor (BEMO-COFR).

Besides, in the research activities LINKS dealt with the topics of design and development of the communications framework in a production environment, tackling real-time networking, QoS support and process modelling, among different scenarios and heterogeneous technology, also the factory environment.

LINKS is the coordinator of the MONSOON project and is leading the management workpackages, as well as conducting all project activities and work, coordinating all functions, roles and resources, and guaranteeing the delivery of the project on time and on budget and ensures a high quality of the work and of the reports.

MONSOON FINAL WORKSHOP

On 20th of September, the MONSOON consortium organized his final workshop. With the support of 3 other SPIRE projects – FUDIPO, COPRO and COCOP, a full agenda entitled to the “Digitized Operations for Sustainable Process Industries – Pathway Towards Industry 4.0” was performed, along with a participation of 64 experts and data-scientists from different industries segments.

The Workshop was designed in a perspective of sharing the results of MONSOON project and interact with the other similar projects, highlighting the matching gains and profits to the industries of the future.

Despite the continuous evolution of the technology, part of the Industries still work under conventional methodologies unknowing the potentialities of the tools available on the market. In fact, their major concerns is to subsists in a very competitive world market, avoiding unnecessary cost, which justifies their retraction to new investments on Industry 4.0 tools. In this perspective, MONSOON project offers a new way of seeing production, through the predictive culture. The developed MONSOON solution interacts with installed working flow (from a industrial environment) and creates the bridges between methods and process improvements, offering significant gains in short-medium-term.

During the Final Workshop, the consortium team presented the solution functionalities supported by reliable results, based on the two industrial domains studied during the project – Aluminium and Plastics. These results were compared to the approaches investigated and developed in the other SPIRE projects, such as the “ICT architecture for real-time plant operations, predictive control function development and life-cycle assessment”, “Communication architecture for plant wide optimization”, “Advanced control of digesters with “machine learning system” and “Rapid integration of real time model based applications into heterogeneous IT system environments”.

The event ended with a round table entitle to the “Full digitalization of process operations - chances and challenges”, where the audience shared their vision about the values of the presented tools and potential enrichments to the Process Industries.

With this event, the MONSOON consortium thus ends its project, thanking all stakeholders for the support and positive feedback that has been shared over these three years.

The poster features a dark blue background with a gear icon at the top left containing the text "DIGITIZED OPERATIONS for SUSTAINABLE PROCESS INDUSTRIES" and "PATHWAY TOWARDS INDUSTRY 4.0". The central logo reads "MONSOON FINAL WORKSHOP". Below this, the date "20th September 2019" and location "TURIN, ITALY" are prominently displayed. A central graphic shows a cluster of interconnected hexagons labeled with various industrial and digital concepts: "MONSOON SOLUTION", "INSIGHTS", "1010 0101", "DATA MINING", "REAL TIME COMMUNICATIONS", "DECISION MAKING", "TECHNOLOGY", "ANALYTICS AS A SERVICE", and "PREDICTIVE MODELING". At the bottom, logos for "SUPPORTED BY FUDIPO", "COPRO", and "COCOP" are shown, along with the "SPIRE" logo and the European Union flag. A footer text states: "The projects leading to this application have received funding from the European Union's Horizon 2020 research and innovation programme".

PROJECT MEETINGS



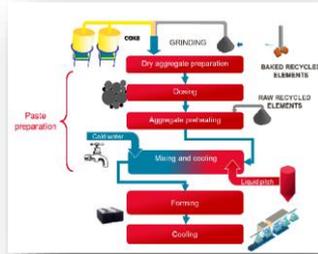
Consortium Meeting in Torino - ITALY
[14-17 MAY 2019]



Consortium Meeting in Torino - ITALY
[16-12 SEPTEMBER 2019]



Optimizing industrial processes through MONSOON
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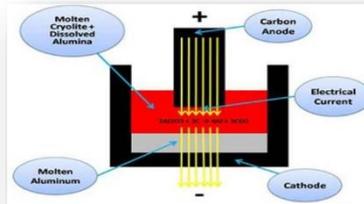


Forecasting faults of industrial equipment using machine and deep learning classifiers
[KOLOKAS Nikolaos, VAFEIADIS, Thanasis, IOANNIDIS, Dimosthenis & TZOVARAS, Dimitrios]
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internal system	operation		fault of type X	operation
stop annotators	operation	fault	operation	operation
algorithm's consideration	operation	fault of unknown type	operation	operation

time →

Anomaly detection in aluminum production with unsupervised machine learning classifiers
[KOLOKAS Nikolaos, VAFEIADIS, Thanasis, IOANNIDIS, Dimosthenis & TZOVARAS, Dimitrios]
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Forecasting bath and metal height features in electrolysis process
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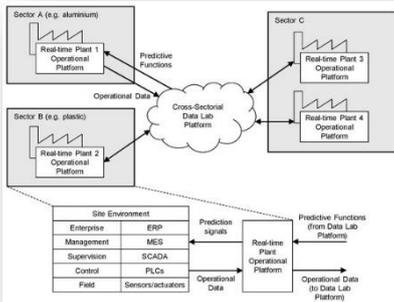
MONSOON SOCIAL COMMUNICATION



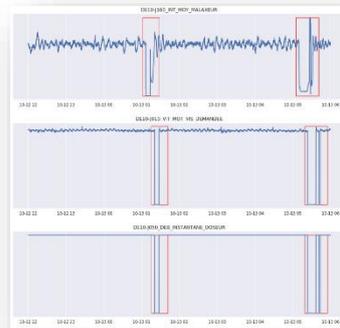
Annual T-Systems Technology and Innovation Conference [KOSICE] September 2019



MONSOON FINAL WORKSHOP [TURIN] September 2019



Cross-Sectoral Semantic Model for Support of Data Analytics in Process Industries
[SARNOVSKY, Martin, BEDNAR, Peter & SMATANA, Miroslav]
[\[read more\]](#)



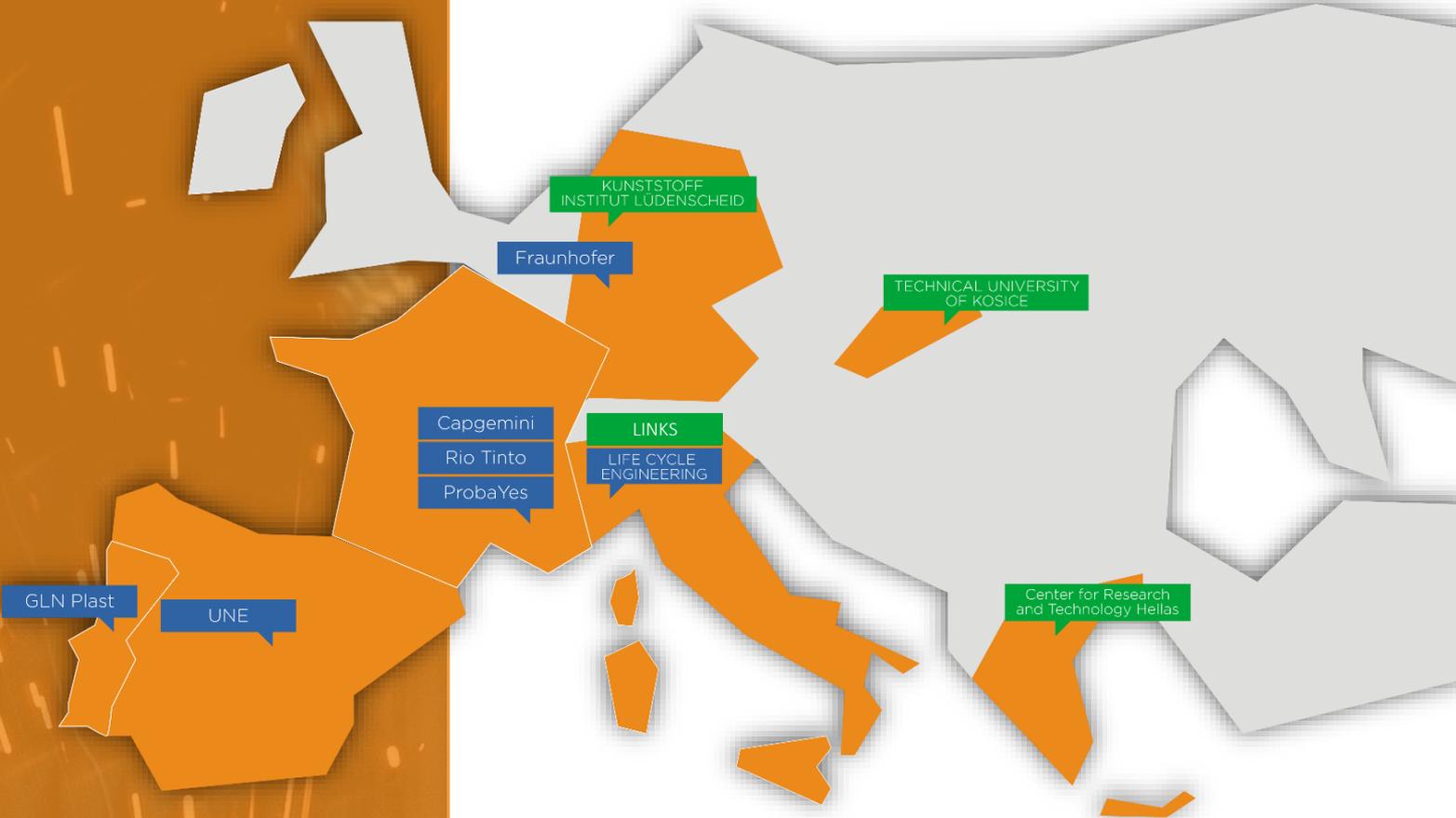
Anode Quality Monitoring Using Advanced Data Analytics
[AZENNOUD, Bilal, BERNARD Ameline, BONNIVARD Vincent & PEDROLI Hervé]
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K FAIR [DUSSELDORF] October 2019

Check out our new Leaflet, at
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Companies ■
Research Institutes / University ■

SPRE This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 723650



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