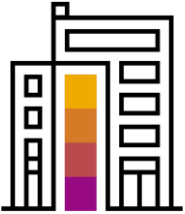




SAP® Innovation Awards 2020 Entry Pitch Deck

Augmenting Procurement through SAP Leonardo AI

Severstal



Company Information

Headquarters	Cherepovets, Russia
Industry	Mill products-metals
Web site	www.severstal.com

Severstal is a vertically integrated steel and steel-related mining business with its major assets located in Russia and some investments in other countries. As of 2018, Severstal is a \$8.58B company with 50K employees. Severstal has a broad product mix, self-sufficiency in raw materials and an extensive distribution network. The company supplies almost all of the iron ore and 60% hard coking coal to its steel business while selling to external customers as well. Cherepovets Steel mill is a core asset. This division has a broad product portfolio, comprising mostly of high value-added flat steel products and increasing volumes of long products for construction and downstream sales.

2018 Operational Results:

- 12M tons crude steel production
- 4.7M tons coal sales volumes
- 16.5M iron ore sales volumes

Severstal-Infocom (IT) sought a novel approach to support business users when they filled out a new material request (product type, model, manufacturer, etc.) as 21% of all new material requests were incorrect due to manual input of material class. Severstal-Infocom worked with SAP to co-innovate functionality to improve their procurement process with AI and machine learning using SAP Leonardo Machine Learning Foundation (MLF).

Co-innovation of Data Attribute Recommendation in SAP Leonardo MLF Hierarchy Matching Service for Intelligent Procurement Master Data

Severstal



With Data Attribute Recommendation, we reduced the effort for new material creation by approximately 20%. Hierarchy matching has provided us with the first step to enable intelligent master data governance throughout our enterprise.

**Evgeny Eliseev,
Head of Master Data –
Automization of
Procurement and
Logistics Operations,
Severstal-Infokom**

Challenge

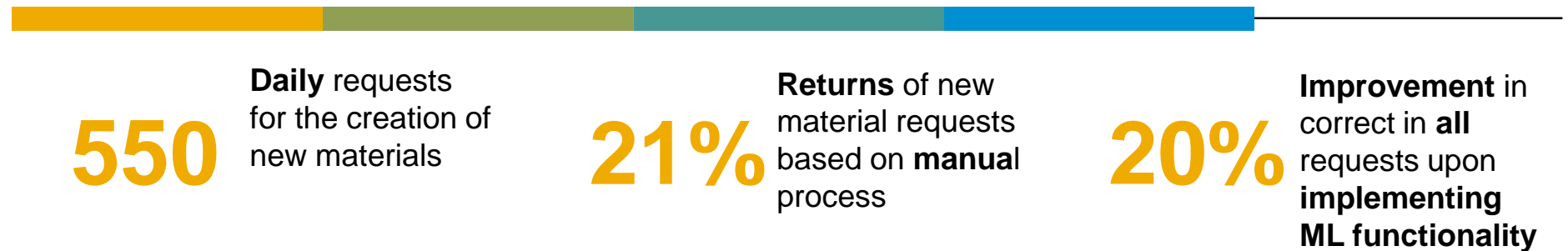
New material requests (product type, model, manufacturer, etc.) are manually entered and had a 21% return rate due to misclassification of material. This impacts procurement turnaround and consequently production and plant maintenance process time.

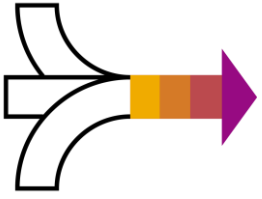
Solution

The SAP Leonardo Machine Learning Foundation, Hierarchy Matching, is a service that helps SAP Master Data Governance users correctly fill out an application for new material. The Data Attribute Recommendation functionality in this service was **co-innovated** by SAP and Severstal. SAP Development trained AI models on Severstal data and the Severstal IT customized SAP Data Services to provide material characteristics.

Outcome

The manual entry process is complimented by automatic determination of value class hierarchy based on material description and name. This service is seamlessly integrated into the SAP Master Data Governance (MDG) solution which automates the basic functions of maintaining Severstal procurement master data.





Business Challenges and Objectives

The Severstal Master Data Management Team handles more than 550 daily requests for the creation of new materials (product type, model, manufacturer, etc.) from different Lines of Business (LOBs). 21% of all new material requests had manual errors from LOB requestors. Accurate and complete classification data provides the information required to make a correct purchase. Incorrect classification data entries negatively impact procurement turnaround and consequently production and plant maintenance process time as required material is delayed.

Severstal-Infocom, the company's IT arm, sought a novel approach to support business users when they filled out a new material request. IT decided on machine learning to improve the process of entering new materials into the material master data in an intelligent and automated way.

Specifically, autoclassification based on machine learning improves the accuracy of new material requests and meets Procurement KPIs based on material turnaround time, order accuracy, etc.



Project or Use Case Details

SAP implemented an SAP Master Data Governance (MDG) solution two years ago at Severstal. Severstal required more functionality to address their procurement needs. The SAP Development created a custom algorithm based on neural networks (machine learning technique) and trained the neural networks with Severstal data. This co-innovated functionality is now incorporated into SAP Leonardo Machine Learning Foundation, Hierarchy Matching. SAP Digital Business Services helped with the design and implementation on SAP Cloud Platform. The initial use case was scoped out in Q3'2018, development-testing Q1-Q2'2019, and went into production Q3'2019.

Severstal used the Data Attribute Recommendation service, one of the SAP solutions for enterprise information management and expertise from the SAP Digital Business Services organization to:

- Build an AI-enabled software landscape that uses machine learning to help reduce business user errors by automating a new material request (product type, model, manufacturer, etc.) to include appropriate content, such as the correct material class, characteristics, and other information based on the users' input
- Decrease the time needed to create a new material master data request
- Reduce manual master data management efforts by applying machine learning to match hierarchies
- Automate key process steps in master data management as well as master data governance functions for purchased materials
- Futures include excluding material master data duplicates and proposing analogous materials based on machine learning matching functionality



Benefits and Outcomes

Business or Social

Automation creates more time to focus on value-add tasks for support end-users with requests for Master Data processing.

The processes of creating, modifying, expanding, blocking and releasing material master data is simplified.

IT

Increased classification accuracy in new material orders. SAP MLF Application Scenarios for MDG auto classification is around 95% accuracy.

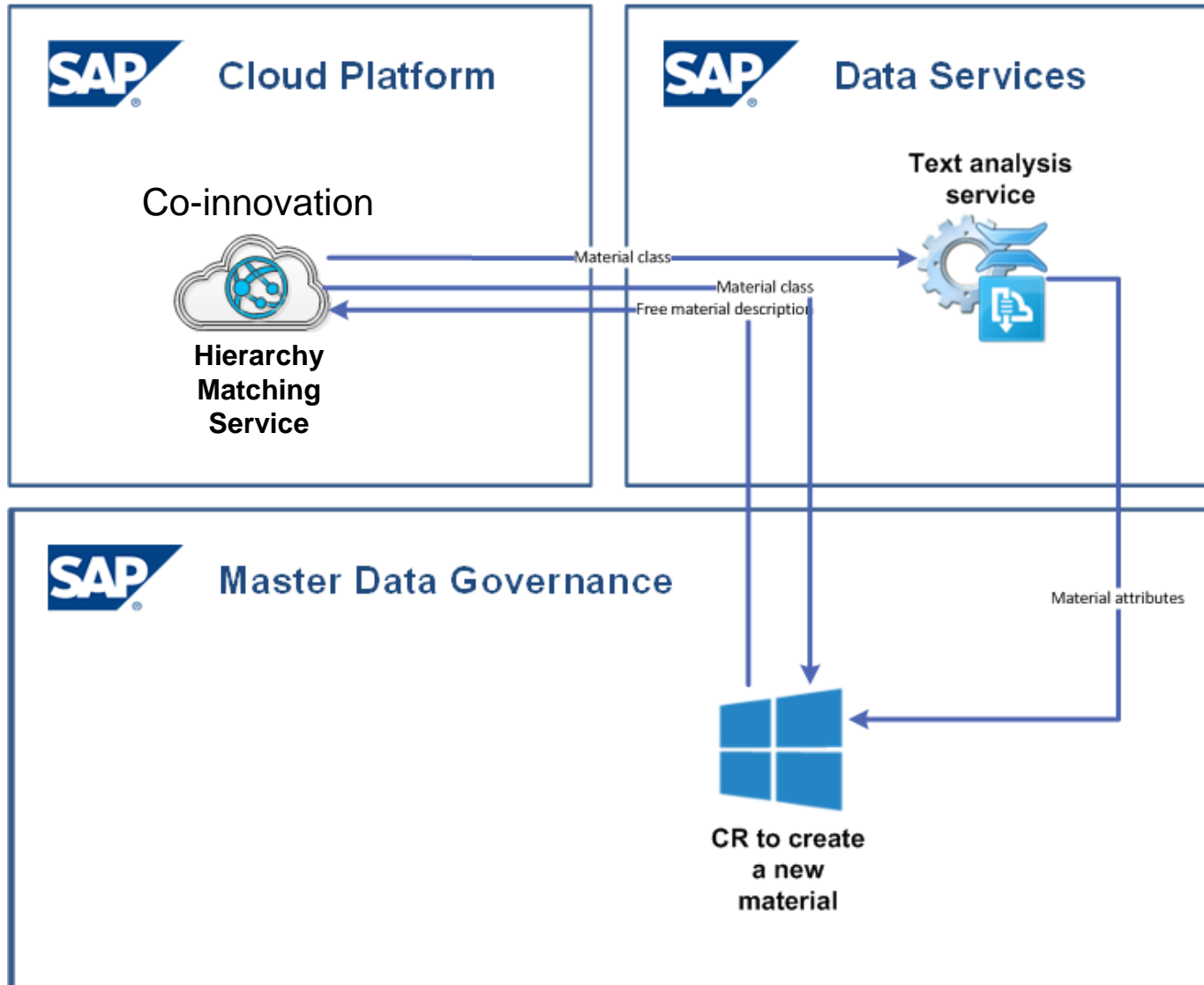
Collected statistics on master data management processes in SAP MDG helped to exclude obsolete records and correctly train AI algorithms.

Human Empowerment

Reduce procurement time and associated impact on production and plant maintenance time.



Architecture





Deployment

Deployment status LIVE

Date Q3'2019

Number of users 6500

SAP technologies used:

	SAP product	Deployment status (live or proof of concept [POC])	Contribution to project
1	SAP Cloud Platform	Live	Platform which provides machine learning services
2	SAP Data Services	Live	Auto-fulfilment of material characteristics in request based on results of machine learning algorithms
3	SAP Master Data Governance	Live	Centralized material master data maintenance
4	SAP Leonardo AI	Live	Machine learning algorithms for Data Attribution Recommendation, one of services – core functionality of scenario

If you have used one of the services or support offerings from SAP Digital Business Services during the implementation or deployment phase, please select with ☒ one or more of the following offerings:

☒ SAP MaxAttention™

☐ SAP ActiveAttention™

☐ SAP Advanced Deployment

☐ SAP Value Assurance

☐ SAP Model Company

☒ Others: SAP Digital Business Services

☒ SAP Innovation Services

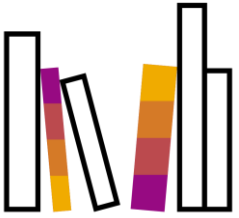
☐ SAP Innovative Business Solutions



Advanced Technologies

The following **advanced technologies** were part of the project.

	Technology or use case	Yes or No	Contribution to project
1	3D printing		
2	Blockchain		
3	Internet of Things (IoT)		
4	Machine learning or AI	Yes	SAP Leonardo MLF
5	Conversational AI		
6	Robotic process automation		
7	Data anonymization		
8	Augmented analytics		

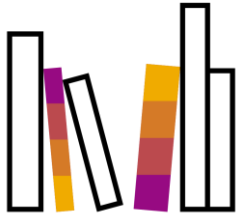


Additional Information

Severstal:How Did the World's Most Profitable Steel Company Improve Procurement with AI and Machine Learning? <https://www.sap.com/documents/2019/09/f26b76c5-657d-0010-87a3-c30de2ffd8ff.html?infl=4460c04b-b919-4c80-99e9-831442e56543>

Slides:

- Screen Shot
- SAP ML and SAP MDG
- Request for material flow
- Master data management



Additional Information

Материал: новый, \$162559 - Internet Explorer

Материал: новый, \$162559

Сохранить | Запросить | Отменить изменения | Обработать | Развернуть все | Свернуть все | Проверить

Блок присвоения: Базовые данные 2

Материал: \$162559

* Базисная единица измерения: ШТ Штука

Вид материала: ZGCS Материалы

Отрасль: M Машиностроение

Группа материалов: 4200000000 С-ва автом.технол.

Измерение

История продуктов: 2050018 Сетевое оборудование (активное)

Родовая категория групп позиций:

Название стандарта:

* Вес нетто: 1.000 КГ Килограмм

* Вес брутто: 1.000 КГ

Статус материала для нескольких заводов:

Причина блокировки:

Управление партиями: Да

Сектор: 00 Все сектора

Базовые данные 2

Описания Обработать

Удалить

Код языка	Язык	Описание материала
RU	Русский	Конвертер Moxa UPort 1130

Единицы измерения

Закупки, Сбыт

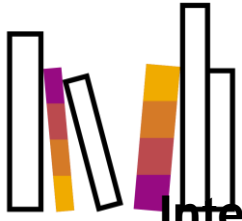
Основной текст Обработать

Удалить

Код языка	Язык
RU	Русский

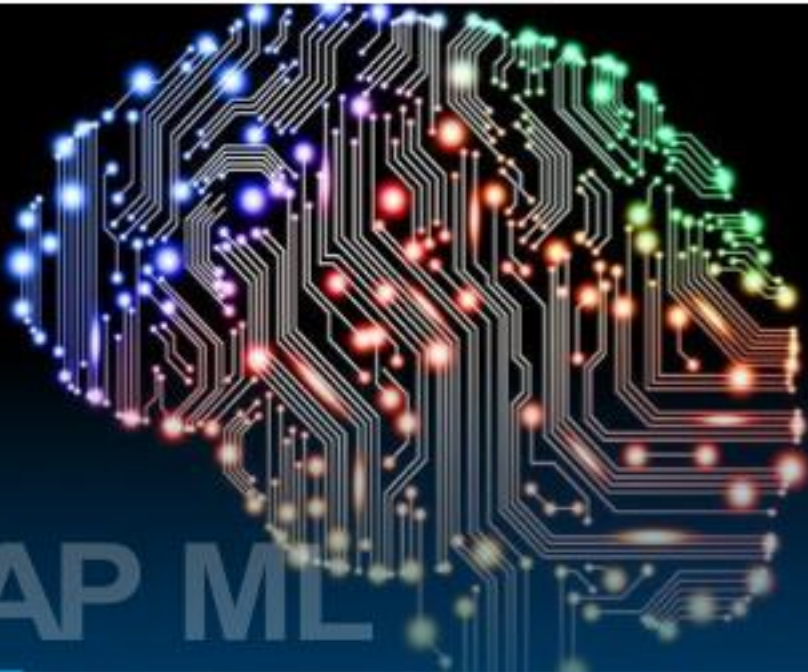
Конвертер Moxa Inc. UPort 1130 USB RS422/485

**Master data record attributes
are suggested automatically
based on filled in
characteristics (v. manual)**



Additional Information

Intelligent material master data governance with SAP Leonardo MLF Hierarchy Matching & SAP MDG



SAP ML

SAP Leonardo Machine Learning Foundation Hierarchy Matching service enables SAP MDG users to correctly fill in a new material request. Based on key material characteristics and material name, the system suggests material class



SAP MDG

SAP Master Data Governance solution in Severstal automates key master data governance functions for purchased materials.



NEW: Request for new material creation in SAP MDG with SAP Leonardo MLF Hierarchy Matching service

SAP MDG



Request to add new material to material master

SAP Leonardo MLF Hierarchy Matching



**Material class suggested
based on free-text
material description**

SAP Data Services



**Material
characteristics
filled in
automatically**

SAP MDG



Organizational details added to the request

SAP MDG

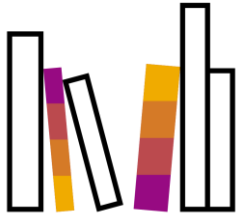


Rules and checks

SAP MDG



**Request sent
for handling**



Additional Information

Master data management

SAP Leonardo Machine Learning Foundation Hierarchy Matching Automate master data management tasks



Reduce manual master data management efforts by applying machine learning to match hierarchies



Automate and speed up master data creation and maintenance



Gain easier and faster master data insights



Reduce errors and manual efforts when maintaining master data