Control Room Project

Advanced Axcent Platform to Monitor and Manage trains and systems





Maintenance in the new industrial scenario

The Rolling stock market is changing

The Rolling stock operator was **the owner** of the train fleet. Now the operator becomes **user** of the train fleet.

Old Train OperatorNew Operator
approachPurchasing of train
Fleet Management
Preventive Maintenance Management
Trouble shooting
Corrective Maintenance Management
Ticket sellerPurchasing of train
Ticket seller



Maintenance in the new industrial scenario

Previous scenario - 2 Years Warranty



<u>The new industrial scenario</u> - Full service Maintenance is now an Outsourcing Service, and a BIG industrial opportunity



Car builder is selling the fleet TOGETHER with a **full service contract**



The New Maintenance: *efficiency* and *efficacy*

The same opportunities are available in the railway sector for the System suppliers

- To obtain valid results in the industrial company is necessary to improve *efficiency* and *efficacy* of the Maintenance
- Maintenance Services has a strategic role in this new industrial scenario.
- The approach to the IoT world and generally to the IT support that is now available on complex systems is changing the whole Maintenance process



Investment in efficiency

To obtain efficiency and efficacy is necessary to make **investments** that can increase costs in short period term but gives a **saving** in the long term period. Investments will be related to the deployment of a new way to provide a supervision management to the Maintenance Process (we will call it Control Room)



Efficiency and efficacy of maintenance

Control Room Project

Which support Axcent can provide to your Strategic Purposes



• Axcent Control Room approach has two main strategic purposes

I. *Industrialization* of Maintenance II. Increasing of *efficiency* and *efficacy* of Maintenance



Industrialization of maintenance

The approach MUST be changed





• Artisan

- High skills and very focused specializations
- Self management of the work
- $\circ~$ Self management of the process
- All the experience in one person
- Industry
 - Standardized process and workflow
 - Standards shared between Company Functions
 - Distribution of competences



Industrialization of maintenance

It is strictly necessary to industrialize the work flow.

Maintenance is a work \rightarrow Maintenance must be industrialized

Industrialized work is: **Standardized**, **Repeatable**, **Compliant to Quality requirements**

The effort that Axcent can provide is driven to support the activities on two pillars of its work:

Competences

- Enhance and Improve competences
- Assure the complete distribution of competences

Processes

- Define a standard process to work
- Define rules that make work compatible with Quality standards



Industrialization of maintenance



Strategic purposes of Control Room

To summarize, the strategic purposes of Control Room should be:

- Allow an easy management of the fleet/systems
- Assure and share internal work competences regarding Maintenance and troubleshooting
- Define a standard operations sheet (SOS) to perform the Service Orders (SO)
- Define the process to handle Service Orders (SO) to better understand which are the problem to solve

That's Axcent mission!



Standard Management

Home Benvenuto su Fleet Management			Ciao, Saverio Spatola - CXCENT
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Standard operations

Control Room: • Collect and manage diagnostic data from the systems operating on the field

- Performs the data mining process in order to define needs for maintenance actions
- Defines standard operations sheets (SOS) to perform Maintenance tasks
- Sends standardized Service Order to all the sites



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Change of perspective: from Maintenance «on demand»→

 Analysis and definitions of corrective procedure are defined just after the failure



Change of perspective: \rightarrow towards a new approach to data analysis

• The efficient process is made with a continuos analysis of the data. When the failure occours everything is ready. Failures can also be foreseen and avoided



Control Room Team

The Control Room Team in Axcent vision is composed by a core of three different roles:

- **Data Analyst**, the *data-expert*. He analyzes the diagnostic data, understands the conditions of the train. According to his evaluations he opens (or not) a Service Order.
- **System Engineer**: the *train expert*. He develops the troubleshooting, analyzes the possible root causes of a failure. He support the data analyst in order to evaluate the presence of a failure, according to the downloaded data.
- Service Order Manager: He manages the workflow in the depot. He receives the service order, he assigns the job to the skilled persons and he monitors if any kind of delay or problem occurs before completing the job.



DATA ANALYST



SYSTEM ENGINEER



SERVICE ORDER MANAGER



Workflow in the Control Room



System Engineer receives the *feedback* from the Depot Service Order Manager informs Control Room about possible improvement in Rules and Troubleshooting guides



Workflow in Control Room

Axcent is able to deliver and develop the following processes:

- *Continuous* monitoring of the train fleets
- Data *Analysis* of the diagnostic data
- Development of trouble shooting procedure, standard operation sheet (SOS)
- Dispatch of Service Order (SO) together with SOS to repair the train

Axcent capabilities include both dedicated SW <u>and</u> Service delivery



Improvement received from Axcent support

- *Industrialization* of Maintenance
- *Efficiency* in the maintenance tasks
- *Efficacy* in the maintenance tasks
- *Distribution* of the skills and competences
- *Acquisition of* experiences from the field (feedback from depot)



Control Room – Axcent References

<u>Alstom</u> – Control Room Project in Sesto San Giovanni

– Fleets Managed: Minuetto, Jazz, Malpensa Express, ETR600/610

<u>Alstom</u> – ATC Diagnostic Data Analysis and full Service Activity – Fleets Managed: MML1 ATM Milano

Siemens – Spares Management system

– System Managed: Vivalto Bogies

Private Railway operators – Fleet ECM Management System

- Fleets Managed: Freight Locomotives



Control Room – Axcent References

Categorico PS

562/199 562/200

562/201 562/202

562/203 562/204

562/205

562/206

560/120 560/121

