Case Design Sheet

1. CASE DESCRIPTION

TITLE: Implementing a “Remote Assistance” service package

PARTNER	LOCATION	TIME/DURATION
Clextral	France	2015 - Present

2. DIGITAL TRANSFORMATION CHALLENGE

2.1. BUSINESS TRANSFORMATION

The company C sells equipment to the food industry in almost 100 countries and is regularly confronted to the question of equipment or process (equipment use) troubleshooting. Those machines are critical in the manufacturing line of the customers and any unexpected and unscheduled downtime is worth thousands of euros per hour in term of loss of production.

It is therefore essential to be able to diagnose rapidly the problem the customer is facing in order to propose the right course of action to alleviate the issue. Some difficulties are obvious when a mechanical failure occurs for instance. However, in many cases, we are not talking about dramatic breakdown but more about the inability to make the final product, which can be the consequence of raw material quality, equipment setup, wear, etc. or a mix of the above.

The traditional way of doing the diagnosis was by getting data from the customer by email and guide then over the phone to test different options; and then go on-site if nothing else works.
Even if it was often effective, this solution is very much limited for multiple reasons:

- Not well experienced staff at the customer location, leading to poor communication, and not the right feedback from what’s happening on the equipment
- Limited information sent to the hotline making difficult to properly diagnose the problem
- No ability to change the setup of the PLC of the equipment
- High cost of going on-site
- Etc.
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The request of being able to offer efficient remote assistance for complex troubleshooting has emerged. It is technically possible by having:
- a properly instrumented machine,
- an automation system that gathers all the data about setup and production mode,
- a connection to the PLC to be able to modify it, or fine tune the setup remotely,
- a direct access in real time to the equipment, while in operation and even the possibility to take over the control of the machine remotely to perform some maintenance operations on the PLC or operate the equipment.

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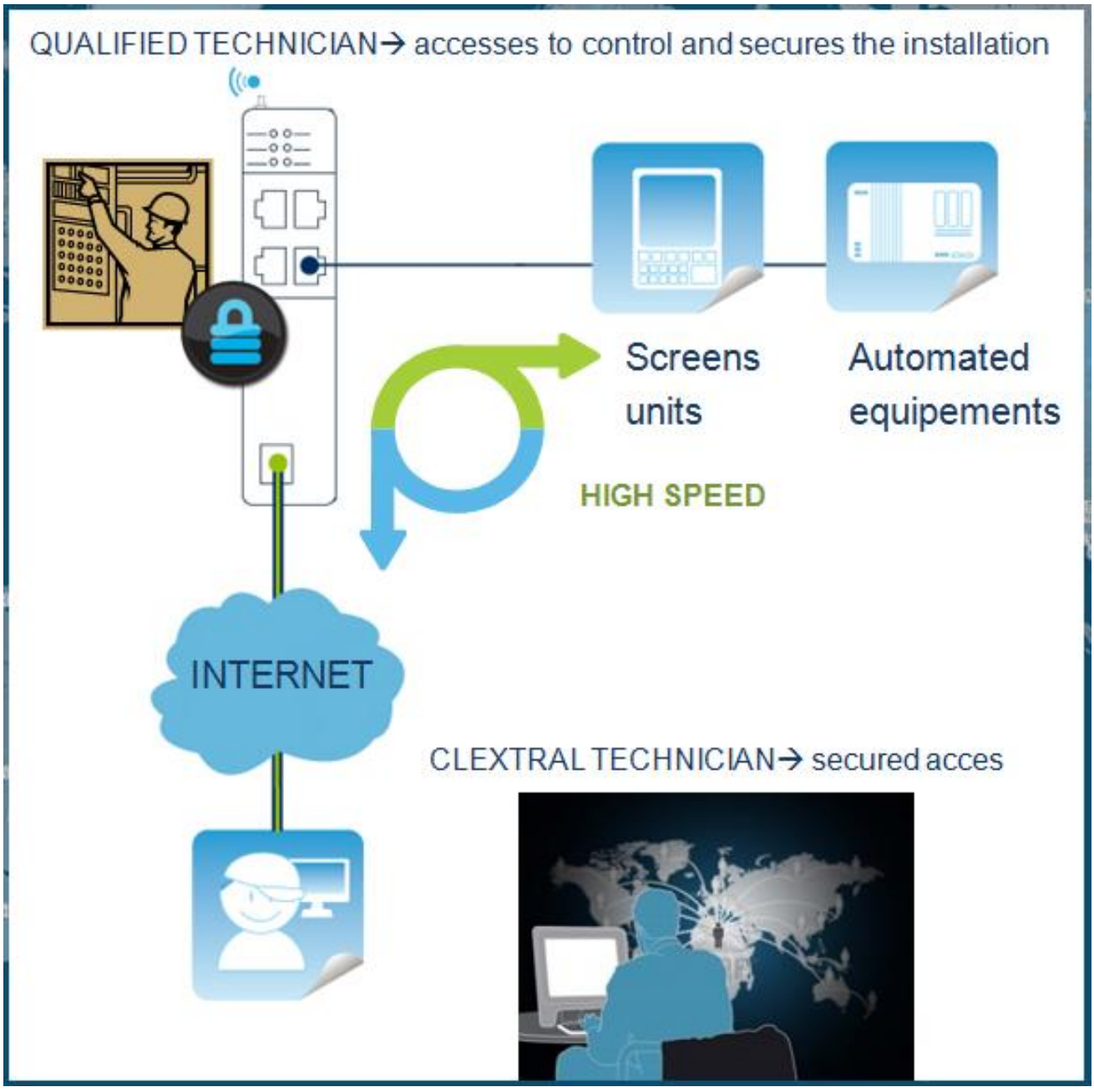

2.2. CONCEPTUAL TRANSFORMATION

Even though the operation people at the plant want to have a quick access to an efficient support, three major issues are raised and need to be addressed:

<u>Security of the data and the information</u>

The data security is the fear of the customer that his production data could become public or disseminated outside his organization. Even though the connection of the machine is switched on by the customer only, there is a lingering fear about data breach and network access.

Personnel/operators and equipment safety

The personnel safety and equipment safety comes from the fact that the troubleshooter can control and operate the machine remotely. This creates a complete new set of liability issues and what ifs. If someone in the plant is hurt in the process, or if this or another equipment is damaged during the work, etc.

Contractual

It is more a question for the Equipment supplier, how to monetize this service, what pay per use or other invoicing system to put in place, who at the customer can call the hot line (and incur costs for his employers), etc.

2.2. TECHNICAL TRANSFORMATION

The technical transformation covers the following points:

- Have a secured access between the equipment in the plant, and the manufacturer: right tools and software to create a VPN when the hotline is 'on' ;
- Have the web connection segregated from the customer network to avoid any risk of breach through this channel ;
- Put in place the right CRM module, to monitor the use of the hotline and be in position to invoice the service.

3. SOLUTION

The solution to deploy this service was to demonstrate its need during the installation of the equipment.

Therefore all the machines come already equipped with the connection module so that the installation could be possible with a simple internet connection. Then during the start-up of the plant, under the control and supervision of the manufacturer engineers, the remote connection can be demonstrated in real life conditions.

A specific training to use the system safely is also done at that time, and a limited utilization of the hotline is offered free of charge during the warranty period of the equipment.

This remote access is also nicely complemented with the use of connected glasses, this allow the remote expert not only to have access to all the data of the equipment or possibly take control over it, but see and guide the local operator to perform some specific tasks.

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4. KEY SKILLS AND COMPETENCES

Specific competences have to be acquired both at the manufacturer and at the customer site.

- IT: to configure the connecting tools ;
- Legal: for drafting the contract, including the liability clauses;
- Service support: train the expert to communicate properly with the operator who is in a remote location, knowing that both the expert and the operator would probably communicate in English which may not be their mother language;
- Train: to implement the safety rules both at the customer and manufacturer site.

5. RESULTS

When this system is used, it is quite powerful. As a matter of fact the first measurable benefit of the hardware occur during the start-up phase of the machinery.

Before the systematic implementation of this device, it was generally necessary to send an automation engineer on-site for an extended period of time to test thoroughly the control program and then to fine tune its settings for this very factory / production. This second task was particularly time consulting with long periods of wait while the other start-up engineers work on other aspect of the project. Now, the automation engineer can perform this fine-tuning from his office as he has a real view of all the parameters of the equipment and can make the software updates in real time, all that under the local control of one of his colleagues.

Also, when used, this service cut the cost for on-site services dramatically, saving travel time, airplane, cars, hotels, etc. saving thousands of euros at a time.

6. CONCLUSIONS AND RECOMMENDATIONS

There is an expressed need for more connected equipment. The first need being for troubleshooting to limit downtime. The second to better schedule preventative maintenance by monitoring some key running parameters of the equipment or equipment response (vibration) over time. And one step further about ordering the right parts and service just when needed.
However, at the same time, in some industries that feel particularly sensitive about their production data (actual runtime, production parameters, etc.), there is still an aversion to let the OEM have access to some of this data.

This hampers the deployment of this type of service, but over time, with confidence in data protection and proper tools put in place to protect information (need to know basis close, etc.), this will be more and more used as the benefit are quite obvious.

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COVID-19

In 2020, we were all impacted by the COVID-10 pandemics and its terrible consequences: human losses of course, but also on business disruption. One direct business consequence was the impossibility to travel and for the technicians to perform on-site duties at customers' site, notably the initial start-up of the equipment.

Traditionally, the installation and start-up of complex machinery had to be performed by the OEM in order for the customer to take full benefit of product warranty. The general terms of contract stipulated that should the start-up (or commissioning) not be performed by the OEM, the warranty would be void. However, when the travel restrictions occurred, some plants were not yet commissioned and several projects were at different stages of completion. The customers being mostly in the food industry, their own production was deemed essential for their country, and solutions had to be found to start up the new plants.

Whence company C decided to use the embedded communication tools of the machines to help customer do remote initial commissioning. The urgency of the need led to fast tracking any legal issues so that C was in a position to help its customers.

Despite some initial concerns, several start-ups were made successful in Middle East and Northern Europe for instance, sometime for customers already using this very machinery, but also in a couple of case for new customers not at all accustomed to this technology. By combining the remote assistance module of the machine, video conferring and live streaming of trials performed in C's pilot plant to show to the customer what to do, the impossible became possible.

Being able to help customers in dire need of support was very satisfactory for everybody in this very tense period. We will see how it plays on the long run…

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