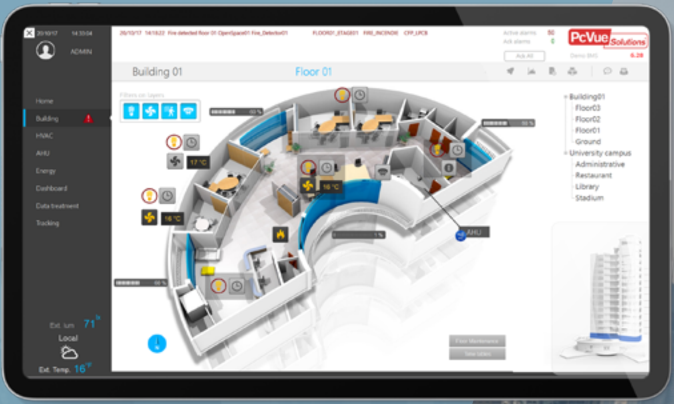
White Paper

The 6 questions to ask when choosing your supervisory platform

PcVue® Solutions



Questions aim to guide you in choosing the right SCADA platform for your needs

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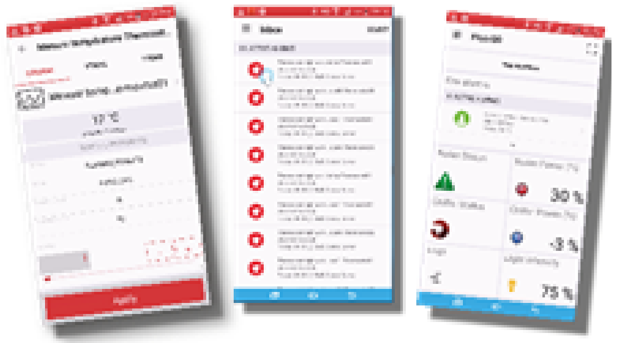
Does the software have the main features to create my application?

A user-friendly design interface

Starting with a **simple and user-friendly HMI creation** tool, this part of the development is usually the most time consuming for your project. Therefore, the creation of graphics and animations, even complex ones, must require the **minimum of scripting** and have a **user-friendly design interface.** This feature should allow f**aster development and easier maintenance.**

The possibility to switch from design mode to run mode in a click, or to be able to open the same mimic simultaneously in run mode and design mode is very handy to test animation without the need to restart the project.

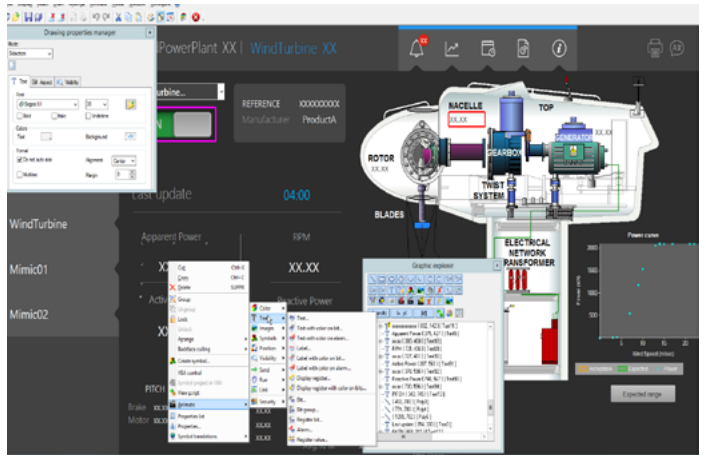
The software must also provide graphics object libraries for generic objects (pumps, valves, commands, displays,...) and markets related objects.



Objects should be customizable and modular so that you can create your own design based on libraries.

Object approach & templates modeling

Time is an important factor, many integrators have to speed up development as much as possible while reducing the risk of errors. An object-oriented approach avoids for example the creation of duplicate animations for each mimic and facilitates the implementation of changes during the test phases or later modifications.



This principle must be true to all kinds of objects (mimics, symbols, programs, expressions) to dramatically reduce the development time particularly for installations composed of highly repetitive elements.

An application modeling tool may also help you use high-level facilities to template and reuse of components. It will allow creating objects templates and instantiate it to build an application.

It will enable you to create reusable objects to integrate not only graphics, symbols and tables but also all the frequent configuration elements such as variables, alarms and their associated behaviors: events, archiving, thresholds, commands, scripts etc. **This dramatically lessens the risk of errors by ensuring that the modification of an object will be reflected everywhere its instances are in use.**

Some SCADAs also offer predefined but customizable project templates that can be leveraged to speed up application creation. It's also a good way to be sure to use the latest UI and UX designs available. Using these templates you will be able to select the style and ergonomics depending on a specific use or markets (Industry, web, dashboard,...) and get as a result a full project including menus, standards mimics for trends, alarms, logs.

Data acquisition & interoperability

As supervision systems, by nature, connect with other systems, **data acquisition and interoperability is key.** The supervisor shall offer a high level of communication with field devices as well as great interoperability to exchange data with third party systems using open and standardized interfaces.

The use of OPC standard protocols was a major advance at first but supervision platforms that rely only on this technology are generally more functionally limited than those including OPC combined with native drivers such as Modbus and other industry standards like BACnet.

Built-in drivers allow a better optimization of flows. They also ensure a data processing that respects the standards of each driver, or even timestamping systems, with the high performance required according to the field of activity.

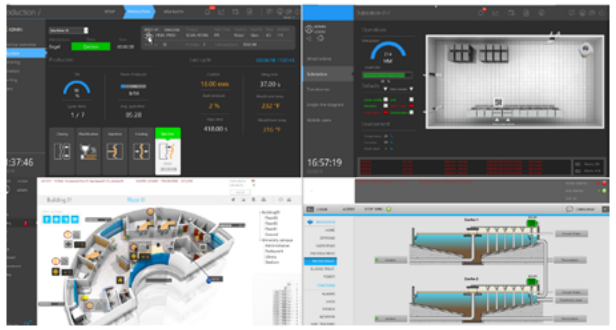
The software must also provide an open interface allowing integration to all the systems connected with the supervision, for example, MES, DBMS or ERP.

Real-time database

The real-time database is the core of a supervision platform. It is generally composed of a set of tags also called "variables" that contain the data to be supervised and displayed in mimics. Variables can also be used to trigger actions, be recorded and for various other behaviors.

The ability to build your real-time database in a smart way is essential in order to save time for the design and the maintenance of your project. It shall be structured in such a way that variables can be grouped in a logical way by type of device or by physical location (for the device they refer to).The object-oriented approach will make it possible to structure the database and allow it to evolve easily regardless of the size of the project.

Ideally, development tools should allow design by configuration wizard to facilitate conception.



Data processing features

Because of archiving and data display in various forms (curves, log, reporting, dashboards, etc) **operators will be able to understand how the supervised process evolves over time**. For example, an operator can recognize trends such as the drifting of key variables and correct parameters consequently. The impact can be observed in real-time or over the longer-term using the recorded data.

A supervision platform should offer the following features to analyze data in real time or long term to help operators to take the right decisions:
- Compared trends viewer
- Statistical and export to file
- Reporting tools
- Logs viewer for real time and recorded events

Be sure that the supervision platform comes with the necessary features to help you to analyze the evolution of your process and decide accordingly!

Optimized alarms management

When looking at an efficient platform, the alarm management system must be carefully checked.

The operator accesses a huge amount of information and should be able to filter it to:
- Prioritize events and actions
- React quickly
- Take the right decision with no errors

On site, it is important for operators to constantly analyze the supervision information for better decision making. To react quickly, they must be able for example to easily access the mimic related to any alarm, to filter and focus on a specific issue, to trigger actions on the appearance of an alarm ... i**n short an alarm is more than just regular information on the mimic**. It has global considerations and consequences that must be able to be triggered on the alarm.

Check all the features available for alarms management such as :
- The levels of alarms,
- Specific alarm counters
- Alarm display and filter
- Actions triggered on alarm (sms, email,...) and contextual action on an alarm list
- Acknowledgments

TO REMEMBER

The landscape of features coming with today's supervision platforms is wide.

You may keep in mind some important points when looking more in details:

- ease of development and object oriented approach for better maintenance and scalability of the application,

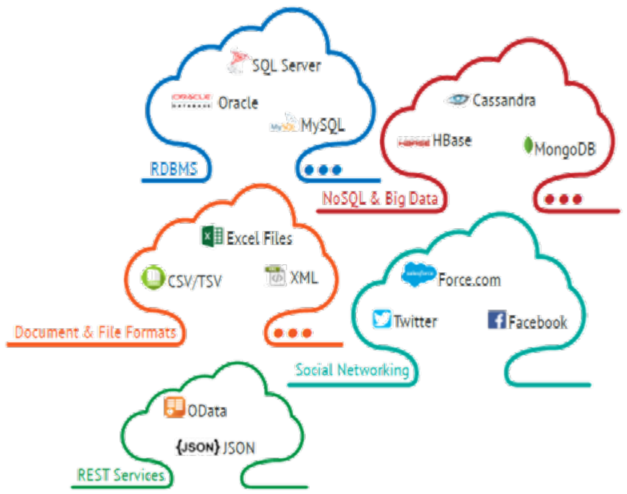
- connectivity to any kind of system with standard and built-in drivers

- data processing capabilities for real-time operations and long-term analysis.

My project will evolve and I don't know the functional requirements of the future application?

As most projects evolve over time, it is often a difficult task to make initial design when one does not fully know the functional requirements of the future evolution of the application.

We strongly advise to be very careful on this point. **Functional requirements of projects are often subject to changes between the initial needs analysis and the implementation phases of the project**, all the way through commissioning. It is therefore important to ensure that the supervision platform you choose will be able to absorb these drifts without requiring constant redesign and redevelopment. In this episode, we discuss the criteria to be considered.



Opening to 3rd party systems

The supervision software is by nature connected many different devices and systems. **As systems change over the time, it is very important that the supervision platform be open enough to adapt with systems changes.**

Does the supervision platform have open interfaces for exchanging data with other systems (ERP, CRM, CMMS, ….)?

We're talking about:

- Import of 3rd party software configuration such as PLCs configuration, autocad files or xml files
- Simple Read / Write transactions with different types of database (SQL, ORACLE, SQL Azure, Postgre, etc)
- Dynamic exchange of real-time data or alarms via WebServices, RestAPI or OPC Client / Server
- Communication with IoT type equipment (eg LPWAN, MQTT) allowing you to easily instrument using low cost data interfaces
- Generic import toolkit for third party configurations
- Built-in SNMP agent to share variables to an external network hypervisor
- Capability to behave as a Modbus slave device
- Capability to upload and download files from a FTP server using password and/or FTP status variable

TO REMEMBER

Considering right from the start that the system will evolve is very important. The platform you will select must be able to evolve with the system without constraints. It should be able to connect any new third-party system and allow adding new stations or tags with no redevelopment.

Script editors and software development kit

Despite the tools to make project design easier and faster, there are needs that will require special treatment.

It may be useful to be able to develop a specific function with a script editor. Most editors offer their own script editor that should be as simple as possible and very well documented. Non-standard drivers represent another element that should not be overlooked. They are often best managed through a development kit, it is then important to investigate whether your SCADA offers SDKs (Software Development Kits) and in what language it should be developed.

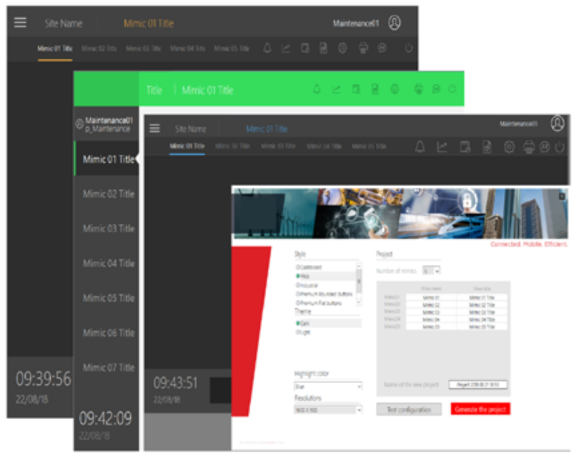
These kits generally allow you to relocate processes, to interface with third-party non-standard or even old systems that cannot be easily maintained. They can help to answer specific customer requirements like the Swiss knives of SCADA helping you solve non-standard issues in the SCADA environment. It's also important to check if these sdk are provided with additional costs or free of charge.

Scalability of the platform

As a project grows, the number of points may expand proportionally. So you must question beforehand:

Can the number of I/O tags in the SCADA easily evolve without constraint?

- **It must be possible to start with a basic application and develop along the needs of expanding the I/O without technical restrictions.** Even if the majority of supervision vendors base their prices according to the number of tags, the platform should remain the same and not require expensive redevelopment. For example, if the project needs more client stations, the addition of a client station should be configured seamlessly into the existing project with a minimum impact on the deployment (variables, features, mimic, and so on)
- **The system must offer, in each I/O range, a margin in its calculation of number of tags,** in order to avoid delays in each phase of project implementation and commissioning on site.
- **Any "internal" tags which are not connected to devices must not be counted in the I/O limitations**. If not, you risk the pain of seeing the cost of the application exploding during the project development. Only points from external sources (PLC, other software, etc.) should be taken into account.



Is the editor able to bring appropriate technical support at the right level?

Having a good understanding of the platform with appropriate training is a must if you need to develop your application. The question to ask is, will you be supported later?

Why a good technical support is important ?

The success of a project is mainly a good mastery of the product you choose. After the necessary training phase, it is mandatory to get advice and relevant support from the provider.

Incomplete mastery of a product sometimes associated with the unavailability of the vendors' technical support can cause serious issues when carrying out your project.

Starting with the foundation of an application, its architectures: the wrong choice of architectures may lead to system malfunction and poor performance among others.

During development phases, the lack of knowledge in "best practices" can generate significant time loss and delicate application maintenance.

The questions to ask about technical support

It is therefore the experience of the technical support engineers of the vendor that makes the difference to avoid known pitfalls and to make the right design choices during your development.

Here are some of the top questions to ask to help you avoid the classic pitfalls:

Is local technical support available and can it react quickly?

This will reduce intervention times and costs in case technical assistance is needed. It also creates a special relationship based on trust that does not exist with impersonal centralized technical support. This can makes a big difference when you are facing issues and you know that you'll got covered by someone you can trust.

Is the vendor's technical support experienced and is it working closely with products R&D team in case of advanced questions?

The possibility to quickly reach the relevant expert to answer complex issue is an important point regarding technical support. It will save a lot of time and energy. It will also allow improving the product in accordance with the field needs.

Can the vendor provide guidance during critical phases of the project to analyze if my development is going in the right direction?

Can they assist me in optimizing my project?

Does the vendor offer online resources that allow me to be as autonomous as possible? (FAQ, sample projects, knowledge base, tutorials, etc).

TO REMEMBER

Choose a supplier that will be able to provide support wherever you are, with enough experience to understand your requirements, and able to involve R&D in case of advanced questions. The success of your project does not only rely on your choice of solution but also on the quality of customer services throughout its lifecycle!

We advise to conduct a thorough review of your vendor's experiences in past projects of the same scale as yours, and make sure that the company you choose understands what you really do.

Does the vendor have references in my market and why it can be a deal breaker?

A vendor may deliver the most innovative and powerful product on the market, it will not replace the experience gained in other projects that are identical or very similar to yours. It is often by working on business use cases that the vendor develops the features of its product and comprehends how to best meet your requirements and expectations.

Expertise and experience

Understanding the business of the 'customer' goes beyond the functional product, it is also essential to cover all the fields coming into play.

Knowledge of the context

Knowledge in the regulatory, administrative, budgetary, security and other constraints of a market. Obviously, an international airport does not operate the same way as an agro-food factory, or a small wastewater treatment plant managed by the municipality.

Mastering specificities

Good mastery of the business vocabulary and the meaning of industry specific acronyms and abbreviations to engage with the project more quickly and comprehensively. This business expertise translates into functions or dedicated object libraries that a publisher integrates into its solutions.

Advisory capacity

Confronted day by day with various business issues allows the editor to have an experience that he can share with his clients. Beyond the fact that it's reassuring, the possibility from the software editor of sharing "lessons learned" and provide advice to clients in specific markets based on past projects can save a lot of time.

Hence before selecting a product, ask the vendor about:

- Examples of projects like yours, in terms of market or architecture
- The opportunity to visit reference client to see firsthand the application of the supervision platform, ideally, to be able to question the client on their satisfaction and experience during complex issues or pain points encountered during the implementation of their system
- Ask also about the availability of the vendor in case of issues requiring technical support and the vendor's support policy.

What if something's wrong?

The cost of keeping the system in operational conditions

Too often solutions are sold at competitive prices initially, but once the installation is done, the price of maintaining the system in operational condition (maintenance, training, and assistance) becomes exorbitant.

Are the provider and its product certified?

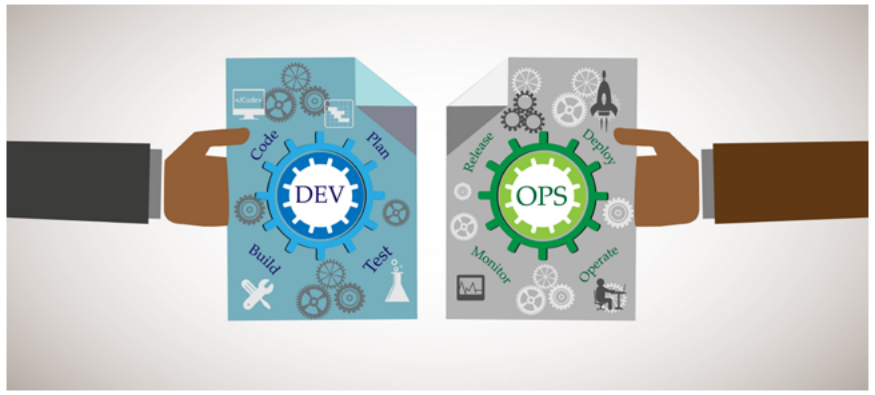
Why certification is important?

Don't be fooled by vendors that only highlight countless features, you will probably want to have a closer look behind the scenes ... Checking certifications is the first step to gain confidence in the company and its products.

Check your provider

How long has this company been working in this market?
Startup companies may propose innovative and interesting products but they don't necessarily have a track record. The sustainability of a solution should not be overlooked because a SCADA project, once installed, can live for ten years and more...

Is the company certified for quality management system (QMS), ISO90001 for instance, and why is this certification particularly relevant?
This type of certification sets the standard for customer satisfaction and guarantees an organized commitment from an institution. It is also a clear sign the vendor is dedicated to the reliability of the platform in the future.



Certifications demand specialized skills that are necessary to perform with a high degree of competence in a perimeter. It is a token of a robust understanding and knowledge of a product or a field.

Innovation and product certification

Has the company, and the product, obtained technical certifications around the product you have selected? In many markets (Buildings, Energy, etc.), independent organizations make sure products comply with a standard. If in your field a standard exists, it is relevant to check the main certifications of the product.

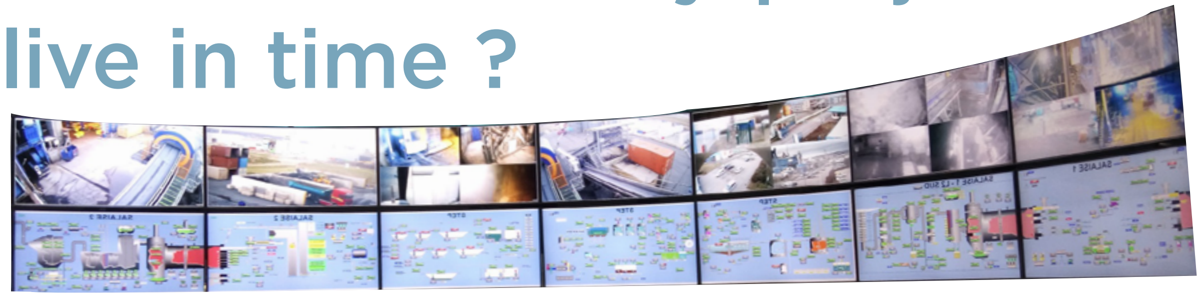
Beyond accolades, it is interesting to observe the dynamism and innovation at the heart of the platform developer. Vendors involved in research projects and in business associations are naturally more attentive to the market and are potentially able to reduce their time-to-market, providing you with continuous evolutions.

TO REMEMBER

A project does not stop when it is installed, it will evolve and live over time. The durability of an installation depends on its maintenance in operational conditions and for this the software editor must be able to help you anticipate and evolve your system at best through the following means:

- Traceability
- Updates
- Maintenance contract
- Information

How to make my project live in time ?



Evolution, maintenance, innovation ... a project is an environment in perpetual motion! Once a project has been approved, validated and commissioned, a new era begins: operational maintenance of the system...the journey has just begun!

Good operational maintenance requires conditions that follow main principles:

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Traceability

Set up beforehand a precise methodology for the traceability of your project and its evolution over time. To simplify the implementation of this method, some products offer 'project version management'. If subcontractors are involved in the project, consider writing a “best practices” guide.

Versions updates and compatibility

Make sure patches and other security packs proposed by the vendor are updated, both on the product and on the operating systems (OS) as well as computers or virtual machines hosting the application. For this purpose, the vendor must be transparent about the validation and support of the OS/machine. The vendor should ensure new versions of the platform support previous versions seamlessly. This point is crucial over time, because **any lack of compatibility may require you to redevelop your project** just because the enterprise IT requires that you update your OS!

Maintenance contracts

Favor maintenance contracts, subscriptions, or a rental agreement on the product in order to say informed on new versions, and to be able to migrate or make updates easily.

Stay tuned

Take advantage of online resources by subscribing to information channels the vendor may offer to keep abreast of product trends and developments.

Get other customers feedback by participating in events organized by the vendor. Ideally in person on an annual basis because it is during these meetings that you will be able to exchange ideas and experience with users. These type of reverts may help you in managing your project effectively and efficiently.

Do not hesitate to solicit the sales force of the vendor to be introduced to the latest innovations of a version in advance. This will allow you to better organize your budget and manage your expenses to benefit from upcoming releases.

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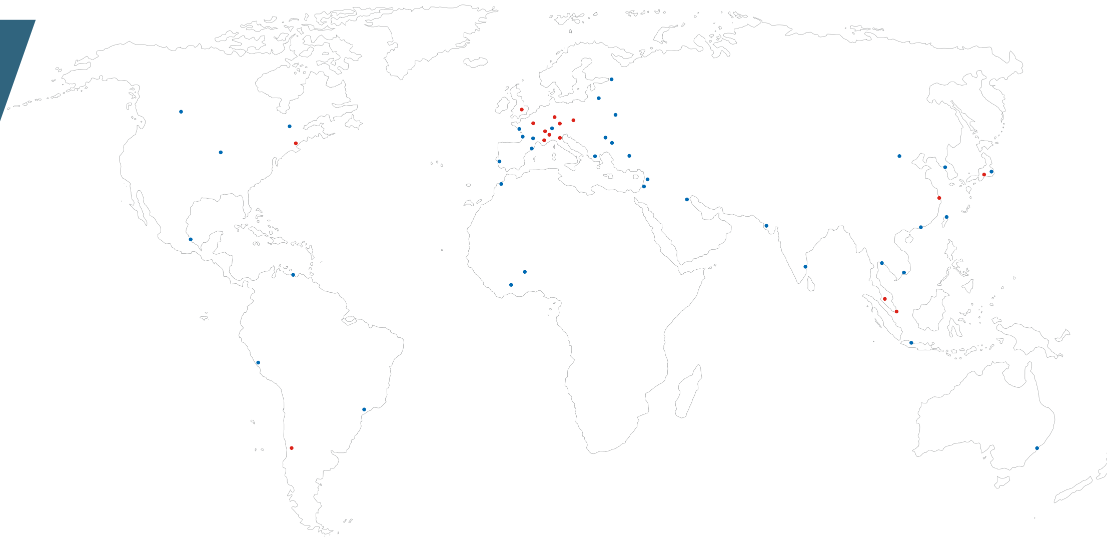

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