

Services

The design, development and ensuing integration of robust applications is a process requiring a series of complex phases, whose poor management can result in a delayed project, considerable price increase, as well as a squandering of investment funds and human resources. Cleverlance offers a complete portfolio of services covering the entire life cycle of the application software, from the assessment of initial conditions and functional requirements to the design, development and testing, up through and including maintenance and ongoing support. With our specialists and services, you're never alone with your applications and aren't dependent on one supplier. We offer a wide range of services and our co-operation can take on many forms. We carry out comprehensive projects including the development and integration of applications as a supply of the entire project or only phases of the project selected by you; namely the analysis, design, development or project management- and everything in the form of a contract for work. Another option is utilising our specialists to flexibly supplement or replace long-term non-profitable human resources in your own team and provide valuable know-how in the form of a transfer of knowledge and experience to your current employees for any phase of development.

• Development and integration

The current development of the latest applications is based on the creation of specialised components and their mutual co-operation (in the most advanced form such as frameworks) in the various tiers of the information system, which are:

- data tier
- integrating applications tier
- shared application services tier
- application business logic tier
- presentation tier

Cleverlance draws from its vast experience both in the area of component development via proven technology it has implemented over the past years, as well as in the area of integrating existing parts of extensive application units. Our offer for the presentation tier includes own solution for an integrated platform, supporting a given client from a mobile phone through PDA to the web browser, or the "so-called fat client" with a locally constructed application logic.

Our experience proves that which the renowned IT analyst group Gartner Group confirms in its studies on Service Oriented Architecture and Service Oriented Application Development – "There is no application development without integration and no application integration without development".

At present we are intensively focusing on analysing the usability of the concept by employing Model Driven Architecture (MDA) approach in incorporating several leading suppliers into the solution. Another area in which we can offer our experience is in comparing the usability of application and technological frameworks in practice or the implementation of a software environment for supporting Business Process Management in the phase of designing the process, its automation and performance, monitoring, analysis and optimising.

o Custom-made development

Cleverlance offers its customers the potential of one of the most experienced development teams in the Czech Republic. Our programmers are prepared to undertake projects constructed on the highest-performance database systems and proven application platforms. J2EE and .NET architecture, which can be the very best base for your

infrastructure, ensures software work even in your company's extremely heterogeneous and complicated environment and, above all, represents a reliable base for flexible development and the most cost-effective operation of your information system in years to come. Thanks to this IT architecture, your IT projects will satisfy the requirements of business components for the time and price of realisation.

You can also rest assured that services or state-of-the-art architecture performed by Cleverlance are no longer just for "high-end" companies, but are fully affordable by mid-size companies. Information systems that are easily modified and integrated are your key to rising above the competition when operating on a market with demanding customers and partners.

o **Software package development**

On the basis of analysis of your business logics, we create applications for you that will be, thanks to the standard technologies and interfaces used, fully open and easily modified and upgraded. Their integration to your existing environment will enable you to fully utilise your hitherto investment to the IT.

If you come up with a good idea, offer valuable know-how, but lack a quality, time-tested team of developers, you can entrust us with the creation of a "package application" and focus on your business's most important activities, including the care of your end customers.

o **Service Oriented Architecture (SOA)**

The Cleverlance development team is one of the first on the Czech market to manage to offer a perfectly made solutions for the integration of application units on the level of web services co-operation whose principle is essentially derived from the bases of time-tested Internet services – in both technologies that web services currently use, J2EE and .NET. The architecture oriented on the mutual communication of programme parts via services defined as a standard, and to a certain extent universal, represents one of the best current solutions. It is based on proven technology and protocols, and currently represents the latest generation of development in the area of applications integration. It provides a quality starting point for future upgrading of functionality or connections to other units and their settings support practically all key suppliers of IT. One of the primary advantages of integration via the use of publicly released services is the good opportunity to co-operate with the existing network infrastructure, so our specialists can design for you needed solutions without the necessity of serious interventions to the networks structure and, above all, to its security. The IT standard of web services is an extremely dynamically growing area, and it is therefore necessary to constantly analyse the latest standard parts so that an obsolete standard is not implemented into your IS architecture.

o **Enterprise Application Integration**

From the company's very inception, Cleverlance and its team of developers have focused on both the development of entirely new applications as well as, to a large extent, the best possible integration of existing systems – of integration-ready applications, running databases and various set platforms. The developers' objective is therefore not the creation of an entirely new application replacing the existing one whose communication interface is not currently compatible with another required system. The result of the developers' work is, instead, an integral environment perfectly utilising existing structures: it makes database systems available for advanced processing, assesses hitherto amassed data via a new application logic and, above all, interconnects outputs and inputs of hitherto systems that you've implemented, whose direct co-operation is not momentarily possible.

The hitherto success of Cleverlance's team is based on the customer's proper decision that there is no need to re-invest into the development of already existing applications since the

path often leads elsewhere: through an extremely advanced integration via open, to a considerable extent universal and time-tested standards. Hitherto completed projects in the banking and telecommunications sectors confirm that, for current customers, maximum integration via modern methods is not only a good choice, but also an essential one.

o **Data Integration**

The integration of applications and the interconnection of components via their mutual communication does not always have to be the best possible or a sufficient solution for your situation. If the results of the analysis lead to the conclusion that integration should occur at the lowest level between the data sources themselves, or that its necessary to merge the various data models of applications into one and then to construct a central application logic over it, our specialists are prepared to carry out this conceptually and technologically demanding solution as well.

Our developers' experience includes work with the most extensive database platforms such as Oracle, MS SQL Server, IBM DB2, Informix and Sybase. We are prepared not only to interconnect your existing heterogeneous environments with regard to the technical aspects, but also to optimise operation, revise existing low-level structures to a new form and restrict, for instance, the uncontrolled creation of excessive data, which could lower the performance of your applications and cause inconsistencies. Cleverlance IT architects ensure that your database will be a reliable and optimally used source for all used applications.

Your conclusions and decisions will be of a similar quality as the high-quality and quickly available data you'll have at your disposal.

• **Consultation, Analyses, Processes**

A necessary prerequisite for any successful software project is a thorough analysis of the initial inter-office processes and an assessment of the current data flow and designed business logic, which means the **specific** technical design input. Before you decide to invest considerable funds into the development itself of applications and their integration, make use of the opportunity to assess the prepared plan. Cleverlance's specialists are prepared to set your project and business objectives in harmony with the technological and logistical possibilities offered by the current software industry.

One of the important criteria in software development is selecting the proper methodology in the phase of analysing and specifying software requirements. Therefore we always use universally proven processes defined by RUP (Rational Unified Process), and thanks to projects completed in accordance with our customers' methodologies, we also have sufficient experience in other processes (such as Select Perspective or Extreme Programming).

Essentially it can be said that the system's demands can be found on several levels and include business requirements, user requirements and system requirements. From another view, the requirements can be classified as functional and non-functional requirements. The characteristics of the requirements that arise are influenced by the level in which they are found. A document containing the vision and extent of the solution is drafted regarding business requirements on the basis of recommended processes. User requirements lead to the compilation of documents containing Use Case diagrams defining the integration of the users with the system and describing the system's basic function. System requirements specify the location of the proposed system with surrounding systems.

o **Consultancy services for SW engineering**

Cleverlance has conducted since the company's inception numerous significant projects – especially in the area of customer development and implementing applications for the banking and telecommunications sector. Our developers rank among the elite in the area of application development on J2EE and .NET platforms or in creating the most demanding database applications; they draw from vast experience in creating, optimising and securing source codes and in consolidating and integrating existing application units.

Before you make significant investments, speak with a Cleverlance specialist, who will help you assess and evaluate all phases of the prepared development or implementation of new applications. You can reveal potential risks in time, ascertain the extent of valorising invested money to the existing application infrastructure and better estimate the cost of planned projects. Our project management specialists will help you best draw up a schedule, formulate the requirements for human resources and best invest related funds. Our SW engineers then help you design the best possible environment for the design, development, testing and deployment of the developed application.

Before entering untested waters, talk with those who have already found the right way ahead and have proven the validity and effectiveness of their conclusions in practice on a day-to-day basis. You'll appreciate the real added value and benefits of speaking with our consultants on two closely related levels. The first consists of valuable know-how that was obtained by a professional approach, the many years of and vast experience of our staff whose training is ongoing and intensive. The other level is represented by the special sector experience of our individual consultants, enabling our company to offer real experts. As our customer, you benefit from the combination of both factors in our employees.

o **Analyses of business processes, services and products**

One of the basis services offered by Cleverlance specialists is a detailed analysis of business processes with regard to your company's objectives. Only in thoroughly managing this initial phase can accurate gauges for newly designed processes and a quality application solution for supporting these processes be designed and created, thanks to which supplied software will work in accordance with your needs and goals. Thanks to our team's vast experience, all your company's processes will be properly recognised and incorporated to the context of created solutions so that their importance for the functioning of the whole is appreciated.

Don't hesitate to contact Cleverlance if you are uncertain of how to formulate the requirements for your information systems and applications. An errant step in this phase can lead to a major error, and result in a critical increase in costs and delays in launching the solution into real operation, and which will necessitate a possible major correction of the errors.

The initial document for the ensuing analysis then becomes the Software Requirements Specification, which specifies in detail the requirements for the designed system and includes the aforementioned requirements. The certified format of the document is given by recommendation IEEE Std 830-1998.

o **Business Process Management**

In the event that you've decided to provide more room for your company's process-managed activities, you need to set and optimise the life cycle of processes from their design and implementation to the IT environment (related to IT sources – applications, data, users), to the monitoring of their performance, analysis and ensuing optimisation. Ask us which processes should be automated and which should be left for your employees to interactively control. Let us recommend the best SW support for your specific requirements within the entire BPM life cycle.

§ **Business processes**

Neither quality design and optimisation, nor the best software can truly ensure the faultless functioning and maintenance of business processes. Even if you're properly prepared for your business and circumstances such as the growth of customer base or changes in staff or of partner companies, you can be caught off guard.

If you decide to solve all your business processes through outsourcing (such as issuing and sending invoices, sales of services and products on the Internet or through the telephone centre or normal provision of technical support to your network users and IT applications including the operation of an email server, calendar, project management and other applications for co-operation with the team),

Cleverlance's specialists are prepared to take over the administration of your business processes so that they comply with your plans as best as possible, even if initial conditions are changed. We will oversee that they are thoroughly applied and will ensure that they will be carried out in the required accordance with the used software solution. With our assistance, an extraordinary event does not necessarily have to result in serious problems in the operation of your company.

§ **IT Governance**

The term IT governance is used with increasing frequency for managing and administrating the IT department. One of the ways to better control this activity is to implement the Business Technology Optimization (BTO) methodology. Today's IT managers are under increasing pressure to achieve higher goals and results at lower costs and risks in the IT department. It is now known that these goals can be achieved primarily by optimising existing IT processes and resources. IT Governance is a set of software tools that help in the management and financing of IT priorities, processes, staff and other resources. It is the only work in optimising IT strategies and practices. Today's abundantly used tools that can be considered Governance include projects portfolio management, project management, resource management, financial management, time management, etc. What's more, IT Governance is able to fully respect a company's methodology, whether it be Six-Sigma, CMMI (Capability Maturity Model Integration), ITIL (IT Infrastructure Library), ISO-9000, CobiT (Control objectives for information and related Technologies), etc.

○ **Project management**

The findings of qualified agencies confirm that only every fourth software project is conducted faultlessly and ends with at least roughly obtaining the planned objective. The absence of quality project management causes harsh losses in the form of increased development prices, delayed completion deadlines, as well as the creation of conditions for future problems or attempts to update the application or connect it to another infrastructure. The influence of incompetent or improper management of development is apparent throughout the entire future life cycle, for mistakes made in the early phase of problem analysis lead to additional costs during the further period of development, implementation and operation. Making the decision in time for quality project management means observing the budget, not exceeding planned deadlines and achieving expected results.

Thanks to our vast experience and numerous completed projects in creating demanding applications in financial, telecommunication and public spheres, Cleverlance is able to offer a comprehensive group of controlling staff in the area of software development and implementation. Our specialists ensure quality control for you in all stages, from the initial analysis of the problem through the implementation phase to surveillance and run support. Our experience with today's most frequently used technology and platforms guarantees correct estimates of time demands and related work load for, above all, human resources. Our knowledge brings you savings, for Cleverlance knows the course development takes

and can accurately estimate timeframes for individual development phases so that their deceleration or delay does not cause damage from delay.

- **QA, Support, Architecture, Audit**

Not even the best possible analysis of business processes or high-quality designed architecture of applications necessarily translates into a desirable and reliable functionality. On the other hand, not all software or older programming code is necessarily useless just because it does not satisfy new requirements. Cleverlance's specialists are at your disposal at any point in the life cycle of the applications. They reveal faults in the initial phases of design, test the resulting application, revise and rework the existing source codes and reveal security weakness of newly created software. The prompt use of our support means fast, cost-effective and quality development.

- **Quality Assurance**

The development or integration of applications itself yields a series of expected and unexpected problems. Although many difficulties (to a certain extent expected) can be solved through thorough testing and other procedures, various unexpected situations can be confronted through ongoing quality assessments from as early as the proposal stage.

The Cleverlance team is prepared to assist you in the early developmental phase by way of a thorough analysis of the emerging parts of the processes and applications and thus to keep the potential for creating unexpected mistakes to a minimum. Therefore for the entire period of development work, the process will be constantly checked to make sure that the practical implementation of the work does not deviate dramatically from the planned prerequisites, that an errant interpretation did not occur within the framework of describing business processes and that the creation of software is conducted in accordance with the expected functionality. In performing this task, we draw predominantly from results in the analytical phase and comparisons with similar projects in which the key measuring stick is actually our team's valuable experience, related to existing, generally used standards. Our experts thus prevent a situation from arising that would delay or increase costs due to the need to conduct a complex revision. You don't have to waste money exploring dead ends that have already been tested by those who know the right path.

- **Testing**

The speed of setting new, consolidated and newly integrated applications very much depends on the concept and thoroughness of the test procedures. Not even a perfectly managed analysis, development or implementation is a guarantee for a smooth setting and profitably invested funds. Testing of extensive applications requires strictly defined procedures, quality documentation and co-operation of an experienced team. The necessary prerequisite for obtaining results with a high predicative ability is experience with projects corresponding to a level possessed by top-notch specialists.

No matter whether you are testing newly integrated applications or original, currently developed software, don't rely on improvisation or quickly assembled teams. Cleverlance offers you proven specialists, whose work has already led to the successful testing and launching of numerous complex and critically important applications. We are prepared to test both ordered, newly created software, as well as ready-applications that have gone through a consolidation process or that are to perform new tasks within a developing infrastructure. A strictly methodical and documented approach is an absolute given. This approach reliably ensures the precise repeatability of all test phases for the purpose of objectively verifying whether new interventions, modifications or patches really solve the problems or just bring more. Our experience from implementing demanding applications in banking and the management of intra-corporate processes and telecommunications has provided us with vast experience that can help you, too.

- **Security audit of source codes**

Even though your application works well and reliably at first glance, are you sure it will continue to do so? Have you tested the resistance of your software against potential aggressors, for whom, in discovering a weakness, each mistake by a designer or programmer is a game to be misused? Do you rely on your existing solution to be secure and do you guarantee a similar privacy and security for your customers?

According to recent studies, a high percentage of sophisticated attacks against applications were not carried out only by taking advantage of known weaknesses in protocols or operations systems, but often there were found many weak spots in the application's own source code. If these programming errors are found, the attackers' ensuing steps will always lead to the database system, followed by the theft or misuse of your data. A thorough testing of the source code of applications with regard to security is not an added luxury, but a given.

If you are not certain that your applications possess the highest possible security, Cleverlance's knowledge in conducting in-depth audits and evaluating source code quality is at your disposal. You can also subject your application equipment to a thorough revision before a potential attacker, who would certainly not inform you in a prompt and qualified manner of found security weaknesses.

- **Re-engineering source codes**

Hitherto investment to the development of custom-made applications represents certain value; don't lose it. Previously invested funds can easily go to waste if you don't recognise in time the high value and potential of the previously created programme code.

Cleverlance's experts specialising in analysing the usability of previously created applications, the re-use of their existing programme code and the components and connections of the existing application parts to the newer systems with the aim to make the utmost use of their possibilities, even in an environment with higher performance and security demands.

Our specialists valorise as much as possible your former investments to development, and even enable the updating of applications that no longer comply with the latest demands. Thanks to our thorough analysis, your hitherto application environments will be thoroughly made use of and the latest processes will be set to ensure their future universal expandability.

- **Design and revision of architecture**

The preparation or the architecture of extensive applications is one of the fundamental phases of their design and ensuing development. Thanks to our experience with completed complex projects, Cleverlance offers you specialists for designing, revising and valorising application architecture, especially by using the processes of object-oriented programming. In accordance with the analysis of your business processes, we will prepare application architecture for you so that further development affects not only the planned functionality, but also covers the potential for further expansion and communication with other systems.

The aim is to create the best possible architecture for your information system with respect to business and IT requirements that comprise the balanced whole. It's not always possible to achieve ideal values in all directions, and it's necessary to optimise, for instance, the re-usability of the individual components of the architecture with regard to its scalability and performance.

- **Maintenance, technical support and administration**

Even though many managers and ITC specialists believe that an application platform itself is completed with the end of development, successful implementation and culminated

testing, the fact of the matter is that the life cycle of an application introduced to routine use is not completed, but merely continuing. Not even the best design and development guarantees that the software won't have to be carefully maintained. Complicated systems that are to ensure demanding service in constant operation cannot just be left to their own fate.

Cleverlance's specialist will act as a reliable pillar for the life of the application software, offering not only their vast experience in development, but also in caring for the faultless operation of applications. If difficulties should arise, you will appreciate their ability to quickly analyse the situation, reveal the root of the problem and propose or conduct the remedy, followed by re-introduction into operation. If a successful long-term setting requires the planning of a major revision, our company's developers will be near at hand to propose, in connection to the prior provided support, the best process for consolidation, which will lead, among other things, to the highest savings.

• Outsourcing

One option for conducting the needed processes within company structures is entrusting external specialists with complete responsibility for a certain part. This approach allows for the utmost use of knowledge and experience of professionals who have been dealing with similar problems for a long time and manage to comprehensively care for the entrusted area. Your company can thus lower costs in these areas and to concentrate fully on the areas most important for your company.

If finding, training and managing specialists whose profiles correspond to our specialists are not profitable for your company, Cleverlance is prepared to offer its teams in the form of outsourcing. Our developers, project managers and other specialists are prepared to join forces as closely as possible with your team, to be at your disposal with its experience and to fully devote itself to managing entrusted matters. We are able to assume responsibility for the most demanding management of internal processes, including co-operation of applications so that your employees can focus on matters essential for you. An obvious prerequisite for successfully undertaking this co-operation is our willingness to subject the work of our specialists to an independent controlling mechanism, such as in the form of an audit.

• Training and transfer of Know-How

Cleverlance's specialists are among the most experienced in their fields with regard to completed projects. Our company offers the easiest way to access this knowledge and experience, and make the utmost use of the corresponding technology.

Cleverlance offers services of its own training centre, which conducts numerous basic and highly specialised courses in programming, database work and the design and creation of object-oriented applications. Our instructors are Cleverlance's own experts, who themselves have taken part in the most demanding projects and can pass on their valuable experience.

If necessary, your specialists can become acquainted at our facilities with the basics of J2EE architecture or .NET, modern programming languages such as Java or C#, design and modelling of database structures or the integration of applications via web services. The Cleverlance training centre offers state-of-the-art equipment and enables immediate practical application of newly acquired knowledge with the support and consultation of top-notch experts.