SMART APPLICATIONS: AN INTEGRAL PART OF BUSINESS OPERATIONS

BUILDING SMART SOLUTIONS THAT CREATE BUSINESS IMPACT

The demand for applications is growing along with the demand for different services during the development lifecycle.
AN INCREASED DEMAND FOR GROWTH

Smart applications are now an integral part of business operations. Industries such as manufacturing, high tech, automotive, aerospace, healthcare, and energy use smart applications to manage, maintain or automate certain activities. This automatically leads to an increased demand for growth when it comes to applications’ capabilities.

Smart applications are now bigger, more complex, and evolve continuously. The industry has moved from traditional desktop operating environments to the cloud. And with the current trends in mind, it is very difficult to determine where the application lifecycle ends.

The demand for applications is growing, and so is the demand for different services during or after the application development lifecycle. Based on our 10 years experience, working with various clients, requirements, and actual needs for software, Strypes offers an end-to-end smart applications services: development, management and modernisation. We offer an added value for our clients, taking responsibility and ownership not only of the software development process but also of the maintaining of excellent quality, performance, stability and user experience.

FOLLOWING PREDEFINED STANDARDS AND BEST PRACTICES

We cover the entire lifecycle after the software is released to production

This includes design, implementation, testing and integration, and release to production. On top of that, we have added services like bugs and issue management during development, version control, DevOps that includes continuous integration, continuous delivery, test automation, and application support activities following ITIL standards. We cover the entire lifecycle after the software is released to production.

Typically, the software development process has its predefined standards and best practices. When the development teams follow these standards, we can guarantee that the software solution will be of the highest quality.

Very often, clients start a project with a vision that’s not finalised. This is where we come in and help them. We use Agile Scrum so that we can plan and add new features and functionalities of the product.

There are six steps to follow during the software development process to release the product.
REQUIREMENT GATHERING

In this first stage, we listen to the client, assess their idea, and gather their requirements. Our architects and business analysts work together with the customer to turn their vision into a skeleton of technical requirements that are then turned into a design. During this process, we also involve a software consultant, a project manager and a product owner, to ensure that the proposed solution will match all business needs and client expectations.

DESIGN

Strypes software architects then design the best architecture as a base for the product to be developed. This includes all modules and features, describing them in detail with screen layouts, mockups, process and business diagrams, and workflows.

IMPLEMENTATION

When the design is ready, we create a work breakdown structure, together with the project manager, the scrum master, and the development team. Following the Agile Scrum methodology, we execute the work in planned sprints. A variety of additional services can be added here like DevOps, continuous integration, continuous delivery, parallel bug fixing during development, version control, and so on. We implement the product according to the client’s specifications and needs.

TESTING & VERIFICATION

In this stage, Strypes’ QA engineers prepare the test strategy for the project. The product is tested and verified so that it meets the defined requirements and reaches a certain level of quality standards such as the Software ISO standards and Software Quality Assurance. This includes unit testing, integration testing, regression testing, performance testing, system testing, acceptance testing, security testing, usability testing, and so on.
RELEASE TO PRODUCTION

After the testing is completed, the developed software feature or functionality is integrated within a certain environment (DEV, QA, UAT, PROD), depending on the agreed branching and release strategy with the client. Refactoring, version control and continuous integration/continuous delivery are also services that we offer as part of application management. When the software is in a production environment, it’s visible for our client’s user training or customers. This is where we also extend our portfolio, adding application support, application monitoring, handling of all users training, user experience, incidents and service requests, including 8x5 and 24x7 solutions.

BUG FIXING: NEW ADDITION TO OUR SERVICE

We recently introduced bug fixing that we do in parallel with the development activities. This is done by an additional team that works separately from the main development team. We have Maintenance and Main tracks. The Maintenance track covers all bugs, issues and small feature development, reported during the user acceptance testing stage. The Main track covers all planned development activities with agreed functionalities and features. The value for the client is that reported bugs get fixed, and new features and functionalities are released. This helps us perform the maintenance without interrupting the development. Both teams bring equal domain expertise when creating the product.

If a bug is critical and it impacts a functionality, it is then forwarded and handled by the main development team. This allows the main development team to focus on releasing features and functionalities to production, without delaying the initially agreed release plan. And as with the development team, the bug fixing team also follows a strict process. We aim to include the bug fixes from the previous versions in every new feature we release.

For our clients, Strypes is a trusted partner that has a proven track record and domain expertise in many areas of their business. We are flexible and fast when it comes to building new teams. Our customers come to us with a vision and a roadmap, and we help them develop their applications.
THE STRYPES TEAM

We develop products that are mostly web-based and globally used

We build teams and fulfil roles that are otherwise hard to fill if our clients have to do this in-house. For every step in the software development cycle, we can include additional team members with different technical competence to meet demands.

In the context of application management, the Strypes teams consist of:

**Technical design and architecture experts:**
software consultants, software and solution architects, and business analysts to build the roadmap.

**Professional project managers:**
managing the product planning, phases, and releases of functionalities and features.

**Scrum masters:**
planning the 2-week sprints and working with the development teams, and making sure that the work will be done on time.

**Software Engineers:**
managing the software development activities, using best practices, and up to date software technologies.

**Quality assurance engineers:**
testing the code quality and whether the product will pass the standards that are pre-defined by our clients in advance.

These experts use a diverse spectrum of technologies, depending on the specific project requirements. We develop products that are mostly web-based and globally used. This can be a single-page application or a complex product built on a microservice architecture. But if a client needs a very specific standalone application, we can offer domain expertise in this area and develop it.
During the 90s, an ISO/IEC 12207 standard was created that made sure all software development processes followed a specific set of best practices. It divided these processes into four subgroups – agreement, organisational project-enabling, technical management, and technical processes. This includes 22 processes for the project management and software development cycles.

The evolution of this service and the technologies behind it are driven by business needs. We now have new frameworks and evolving standards, and hybrid models. Today’s clients need more than just application development.

During the development phase, we spread the domain expertise across multiple teams, which reduces redundancy and lowers the levels of risk for our clients.

The technical stack that we use is extremely wide:

**Javascript** (React, Redux, Angular, Node.js, Vue.js, Nuxt, Meteor.js, Ember.js, Backbone.js, Aurelia, Polymer, Mithril) etc; **Java** (Spring, Struts, Hibernate, GWT, JSF, Dropwizard, Grails, Vert.X, Jersey, Play) etc; **Scala** (Play, Finch, Akka, Chaos, Lift, Blue Eyes) etc; **.NET Framework, Python** (Django, TurboGears, Flask, Pyramid) etc; **Redis, RabbitMQ, Kafka, Electron, ElasticSearch, Kibana, MariaDB, PostgreSQL, SQL, MySQL, MongoDB, C++, Embedded C, Ruby, Jenkins, Git, Docker, Kubernetes, Ansible, Puppet, Bamboo, Jest, Mocha, Jasmine, Chai, TestRail, Enzyme, Zephyr.**

**HOW APPLICATION MANAGEMENT EVOLVED IN TIME**

We now have new frameworks, evolving standards, and hybrid models. Today’s clients need more than just application development.
CASE STUDY

Our client (under NDA) involved us as a partner during the product design process and gave us ownership to build a new solution for them. Every year, we participate in the roadmap where they define the features and functionalities that need to be added. There is a large number of releases where our client needed to make sure that the main development team won’t be involved in the bug and issue fixing processes. Thanks to this project, we have introduced our maintenance service.

The project has been ongoing for two years and during that time, we made decisions together with the client on how to improve the service and how to add more value to the software development process so that we can have an end-to-end service.

Assessing that the lifecycle of the product will be long, we added continuous integration, continuous delivery, automation testing, and user support. We also introduced the Main Development and Maintenance tracks, where two separate teams work in parallel. This ensured that the predefined roadmap with releases will not be delayed and that all reported bugs and issues during the UAT phase will be fixed and delivered on time, without interfering with the main development activities.

APPLICATION MANAGEMENT > MAINTENANCE > SUPPORT

As part of the overall application management service, application maintenance was invaluable for our client. They had a large number of users in different time zones and they provided constant feedback on specific functionalities or required new features. As part of the application maintenance, we also added support and integrated monitoring to solve any problems that may arise.

The software we worked on was a complex system for diagnostics and monitoring of the factory equipment used by different sites around the globe in the semiconductor industry. They had a legacy standalone toolkit that field engineers could install and use on-site. However, this way of work had certain limitations over the data consistency that was collected, analysed, and used efficiently.

To collect any data for analysing purposes, field engineers had to travel to the corresponding country where the manufacturing plant was, and do this physically. Imagine the amount of time and work an engineer from the US needs to do to collect data from a certain machine located in Asia. And when that engineer comes back to the EU to analyse this data, it will already be outdated and unusable.
In the case of our client, they came to us with the idea to operate with this software remotely, to make it available globally, and to provide this solution to their clients. This included adding new features and functionalities, extending the used data types, and the data collection models. The client had already decided to start collecting all the data in a virtual private cloud owned by them.

**Phase one:** make the software web-based, build a new micro-service oriented architecture, design data collection and data visualisation models

**Phase two:** implement a data fetching model, and a visualisation and monitoring system, based on the thousands of used parameters

**Phase three:** design and implement a prediction model that analyses the data and creates reports about the hardware components’ health status, possible failures, and functionality to schedule machine maintenance based on trigger conditions, increasing the predictability of the factory.

The factory equipment generates thousands of completely different data parameters that are sent to the client’s cloud. This data is generated by the different components of the machine. Our role was to take the data, analyse it, and segment it, sending it to the relevant API that visualised it and made it available for different global users.

We can call this health monitoring and failure prediction for the hundreds of machines that operate 24/7 around the world. This allowed engineers to access any machine and monitor its health status, but also to observe if some of the hardware components were not operating properly, to avoid an unplanned downtime of the manufacturing process.

For phase three, we created a prediction model that analysed the data from the equipment and created a report. The report predicted if the machine was working normally. If a component wasn’t working, the engineers could use this data to change it and order the relevant module. It allowed our client to plan the schedule and the logistics within a certain timeframe. This way, there was no unexpected downtime or business interruption, which was of crucial importance.

The client wanted to create a platform and a framework to diagnose and maintain the hardware. We needed to make sure that it won’t stall operation.
NEXT STEPS

The project is ongoing and we now need to work with the client to define the roadmap for the next year. We continue to scale up the software and its features, focusing on improvements, performance, and UI/UX, as the product enters a new phase. We also plan integration with the machine instructions management system that’s also developed by Strypes, scaling the whole project to another level of complexity and adding additional added value for our client.

THE STRYPES TEAM

We started working on this project with a team of three people during the first requirement gathering phase – an architect, a project manager, and a business analyst. Later on, we added a development team that we scaled up during the past two years. We now have fifteen people working on this project. At this stage, the client expects us to keep scaling the team as the demand grows, and as we add new functionalities and releases.

The Strypes team had many challenges and this project helped us gain more domain expertise when it comes to diagnostics and maintenance. In the beginning, the client expected that the software was going to visualise around 500 dashboards. Today, we have around 1800 dashboards. Thanks to creating a scalable architecture based on micro-services, data fetching, and visualisation models, we managed to create the right solution that gave the client a lot of added value.

We have a very strong team with a proven track record and skills that managed to deliver the product on time and passed the stringent QA requirements. Today, the product is used globally and across multiple locations, helping maintenance engineers manage the factory equipment uptime.
REQUEST A CONSULTATION

The examples that we reviewed showcase a small fraction of our Application Management service.

The best way to show what we can do for your company is to offer a free consultation so that we can discuss your needs and show you what solutions we can build.

To request a demo, reach out to us at business@strypes.eu or call us to discuss your project needs.

Visit our website
Visit https://strypes.eu to read more about our services.

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