COOLPROFS

SDLC-Suite

June 2024

CoolProfs SDLC-Suite

- **The SDLC Suite consists of 7 solutions** to make software development with Low-Code OutSystems manageable, predictable and scalable.
- CoolProfs has further perfected the **CI/CD pipeline** for OutSystems into a **100% standardised and automated solution**.
- The standard functionality of the OutSystems platform is **supplemented** by other available technology.
- This takes into account the increasing need for more **risk management** by adding compliance and security measures.
- The risk of disruptions and unexpected work is thus drastically reduced. **Manageability, scalability and predictability** of software development increases while quality is maintained.

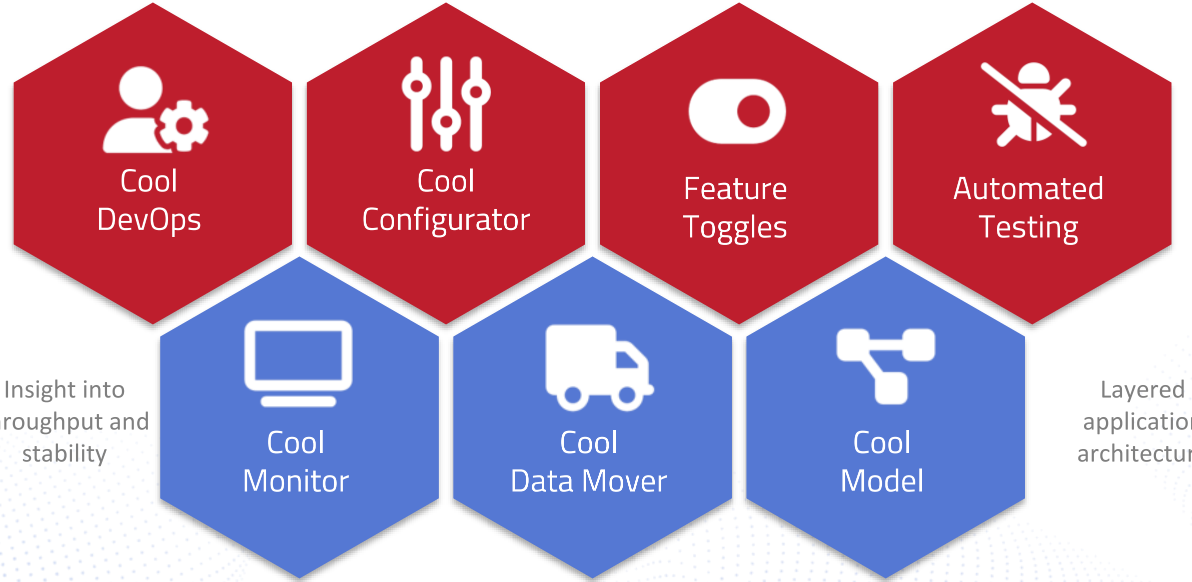
Built-In Quality	Frequent Deployment	Release on demand
• Quality control is built in as much as possible. • This prevents most errors from the start. • Automated testing and monitoring are integrated into the solution.	• Developers send code to the CI/CD pipeline on a daily basis. • The next morning, they see exactly what went right and wrong. • This allows them to act quickly to improve their code.	• Release on demand by applying feature toggles. • Deploy and release decisions of features are decoupled in the CI/CD pipeline. • This enables flexible and controllable software development.

CoolProfs SDLC-Suite

Centrally configure application settings

Release on demand

Frequent deployment



Built-In Quality

Insight into throughput and stability

Layered application architecture

Integration into the CI/CD pipeline

Premium Technology Stack

CoolProfs SDLC-Suite

JOSF Test Automation

OutSystems Platform

Azure DevOps Platform

Elastic Platform

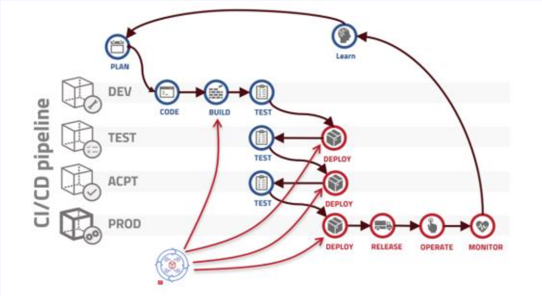
Cool DevOps

Frequent Deployment

Cool DevOps

WHY

With Low-Code OutSystems, you can develop software faster, better and more flexibly until a limit is reached at some point. What first seemed very fast and agile - iterations of two to three weeks - turns out not to be fast enough after all. Bug fixing takes a long time and requests from the business pile up. Seemingly minor adjustments take a long time, because major features hold up their go-live. Urgent issues are addressed with hot fixes, but this is not a structural solution.



For true flexibility, it is time for the next step: frequent deployment. Here, the CI/CD pipeline is fully optimised and there are no more roadblocks. At any time, you can bring software to production. You are a predictable partner for the business and the customer, you deliver quality and effortlessly keep promises made. Software Development Life Cycle (SDLC) runs like clockwork.

WHAT

Cool DevOps is the interface to an advanced and modular CI/CD pipeline in Azure DevOps for orchestrating the entire software delivery lifecycle. 100% automated and controlled daily deployments to production now become possible.

The OutSystems Platform Team (OPT)

- creates and manages automatic pipelines
- compiles own deployment plans for generic components required by Feature Teams
- checks the status of own deployments

OutSystems Feature teams can:

- design deployment plans for the continuous development, testing and acceptance of applications
- check deployment status daily and thus actively monitor the quality of their applications

EXPERTS

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HOW

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3. Training
4. Support

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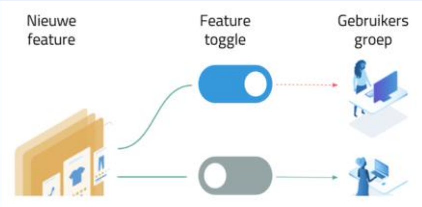
Feature Toggles

Release on demand

Feature Toggles

WHY

The implementation of Continuous Delivery aims to reduce costs, time and risks by delivering new application functionality to production on a daily basis via a fully automated CI/CD pipeline. The choice of when which functionality is released to end users is a business decision made by the Product Owner. However, this requires decoupling the functional release from the technical deployment of the software.



The first thing you need to do to transition to frequent deployments is to eliminate dependencies, both in terms of business acceptance and technical dependencies in the form of large features. On the technical side, feature toggling offers a solution. With feature toggling, a piece of code can be turned 'on' or 'off', allowing different functionalities to coexist safely without blocking or undermining each other. For each environment within the CI/CD pipeline, features can be individually activated or deactivated by authorized users. This way, the business can determine when specific functionalities are made available to which users in the production environment.

WHAT

Feature Toggles are based on:

- The OutSystems LifeTime plugin Feature Toggle Management (Forge) to centrally manage feature toggles across the entire CI/CD pipeline.
- The CoolProfs Way of Working in which feature toggles are agreed with the business to enable release on demand.
- A testing solution where feature toggles (on and off) are included in automatic testing as part of the test cases.

Feature Teams can submit software to the CI/CD Pipeline on a daily basis through Feature Toggling and therefore check the quality of their software on a daily basis. And the business thus has complete control over when new functionality is turned on in production and by which user group.

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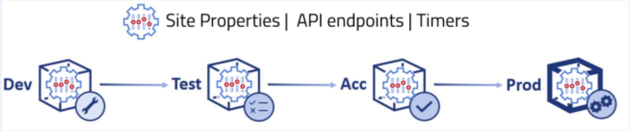
Cool Configurator

Centrally configure application settings

Cool Configurator

WHY

When deploying an application in the CI/CD pipeline, a number of settings must be set correctly in Service Center for each application. These include settings such as site properties, API endpoints and timers. Setting these up correctly is a manual activity, which is therefore prone to errors. As soon as the deployment frequency increases from once every 2-3 weeks to daily, the likelihood of errors increases, with the risk of unnecessary disruptions in production.



To properly manage the Service Center settings per application in the CI/CD pipeline, a clear central registration of the settings per application per environment is needed. Important here is an automatic check whether the effective values of the settings on Service Center per environment match the centrally configured values.

In addition, the application of these settings should be included in the CI/CD pipeline in Azure DevOps in a fully automated manner, not just manually. For compliancy reasons, the settings can be stored separately in a log file. Of course, only authorized users can manage these settings per application.

WHAT

Cool Configurator is a centralised solution for managing Service Centre settings per application across OutSystems' entire CI/CD pipeline.

Per application and environment (development, test, acceptance, production), the following settings are configured centrally and automatically forwarded to Service Center in the different environments:

- Site properties
- REST endpoints
- SOAP endpoints
- Timers

The configured application settings are recorded in an unambiguous fixed location for the entire CI/CD pipeline. This prevents errors when deploying applications and unnecessary disruptions in production.

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Automated Testing

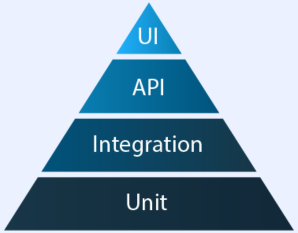
Built-In Quality

CoolProfs IP

Automated Testing

WHY

As a part of Continuous Delivery, automated tests must be written to ensure that the new features meet the established acceptance criteria and to ensure that all existing functionality of the application also continues to work properly. New versions of the software must therefore pass numerous automated tests before they can be put into production.



Testing ensures the quality of a software release. Testing consists of unit testing, integration/system testing, regression testing, acceptance testing, performance and security (penetration) testing. For Continuous Delivery, these tests should be automated as much as possible. For the unit tests, integration/system tests and regression tests, standard test cases should be created that should be successfully executed daily within the CI/CD pipeline.

Developers thus get daily feedback from the tests so that they always fix bugs before developing new features.

WHAT

Automated Testing is the solution for testing within a system of continuous delivery. Without full-fledged testing of APIs, business logic and applications interface, software does not go to production.

Automated Testing is based on:

- The CoolProfs approach to automated unit, system, and regression and progress testing of OutSystems applications.
- JOSF Test Automation software from our testing partner Valori, designed specifically for Feature Teams using Low-Code platforms.
- The Cool DevOps solution for orchestrating testing throughout the Software Delivery Life Cycle.
- Azure DevOps as central repository for test cases and test data management.

EXPERTS

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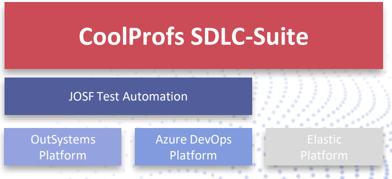

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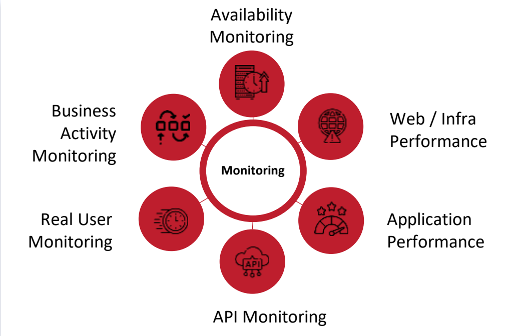
Cool Monitor

Insight into throughput and stability

Cool Monitor

WHY

System monitoring is about visualising the functioning and performance of IT systems. Making sure everything is functioning optimally to support the business processes. How the systems behave and what the performance is forms an important component of the overall usability of the system and its customer satisfaction.



With Continuous Delivery, this system monitoring is extended to monitoring throughput (implementation frequency, change lead time) and stability (change failure rate and average recovery time). The more effort is put into monitoring systems, the faster an organization grows towards the goal: ensuring that the OutSystems application landscape meets the requirements.

WHAT

Cool Monitor is a centralised, auto-diagnostic IT performance monitor for the OutSystems platform:

- Application, infra, OutSystems, DevOps performance data CI/CD pipeline, alerts, diagnostics and reports in one central location.
- Direct access to log & trace information for detection and root cause analysis from OutSystems Service Center & LifeTime and Azure DevOps.
- Based on the Elastic Platform (observability & analytics) with machine learning and integration for notifications and actions in channels such as Teams, Jira, ServiceNow.
- Trend data over a longer period using a clear and informative dashboard made for DevOps teams, Product Owners and IT management.
- Scalable and expandable with customised dashboards to suit your information needs.

EXPERTS

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Cool Data Mover

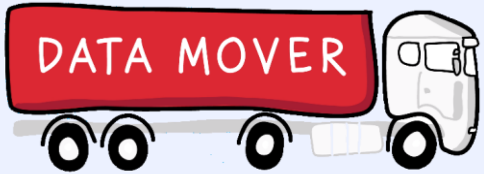
Integration with Azure DevOps

CoolProfs IP

Cool Data Mover

WHY

To run system tests, reproduce production errors, demonstrate new Outsystems applications and train end users, you need appropriate data in each environment of your CI/CD pipeline. Unfortunately, the 'right' data is often missing in non-production environments. Therefore, testers and users often have to manually re-enter lots of data, over and over again. How can you structurally solve this problem while improving the productivity of rapid application development?



Some organisations use production data for development and maintenance. A full backup of the production database is then created and placed in a different environment. This requires in-depth knowledge of the OutSystems platform. Moreover, restoring a full production database is labour intensive and error-prone. And using production data in non-production environments is trivial because of the large number of database records and possible conflicts with privacy laws. As the OutSystems application portfolio grows over time, it becomes increasingly challenging to ensure data consistency in the CI/CD pipeline. So how do we solve the data hurdle?

WHAT

Based on extensive knowledge of system development with the OutSystem platform and database management systems, we have developed a unique solution for staging application data. With Cool Data Mover, you can easily automate data export and import between environments on any OutSystems platform variant (PaaS, On Premise and others).

The benefits are:

- Closely integrated with the OutSystems metamodel.
- Move data between all databases supported by OutSystems.
- Easily define application datasets to transfer between environments.
- Export, delete and import data with a single click.
- Fully GDPR compliant.

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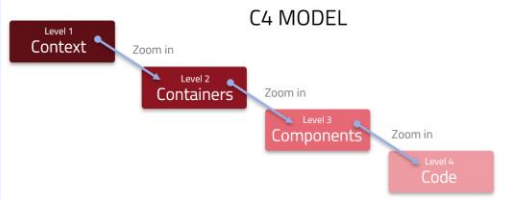
Cool Model

Layered application architecture

Cool Model

WHY

Many organizations have been using the OutSystems platform for years. They build on and extend the original software architecture, but sometimes the common thread is lost in the process. Over time, sensible and less sensible things are added. It is important to regularly take a critical look at the software landscape. What is being used, why is it being used, and is all this still contributing to the business as it was once intended? A software architecture visualization must be readable and up-to-date.



The C4 model shows the architecture of a software system by displaying multiple overview levels as a decomposition of a system. It is a simple visualization that does suit different user groups, from architect to business stakeholder. Cool Model has the ability to directly read the OutSystems software landscape and convert it to a C4 model. It generates fully automated, completely up-to-date visual overviews for monitoring the software architecture. Make timely adjustments whenever required for Continuous Delivery.

WHAT

Cool Model is the solution for real-time insight into your layered architecture in the OutSystems platform. Where are potential bottlenecks? Does the release still comply with the agreed architecture principles? How is the target architecture progressing?

The Cool Model solution is based on:

- The C4 model* for software architecture visualization in 4 layers (Context, Containers, Components, Code).
- Deep integration with the OutSystems Platform to directly read metamodel information.
- A solution for adding and managing specific Context and Container information.
- Visualization of the application architecture (level 1 Context and level 2 Containers) based on our own visualization tool.

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* See c4model.com

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