Model Governance Suite

The one tool you need to govern
your model portfolio.

MGS
MODEL GOVERNANCE SUITE

Model Governance Suite

The Model Governance Suite (MGS) is an application enabling effective collaboration between teams and all stakeholders involved in the entire lifecycle of a firm's models. It serves as the single source of truth for all tasks connected to the effective model governance process as well as as an essential platform for model risk management framework implementation.

All types of models and their attributes can be registered in the system as soon as the idea comes to mind. It serves as a central place to store all the related documentation and data and track all workflows involving human tasks that could be distributed across the entire firm.

Automation features enable implementation of effective model operations (ModelOps) by strict definition, enforcing and measuring of a model life cycle.

MGS
MODEL GOVERNANCE SUITE
Senior management
reporting

MGS is modular and flexible

The Model Governance Suite is a browser-based, modular application.

Modular

The actual combination of modules can be adjusted to meet your current business needs, from the essential ones like model inventory or workflows to advanced modules including automation framework, data analytics environments, reporting, or model operations.

Flexible

Our team provides support in adoption of MGS according to each company's methodology, processes, naming conventions and technology. MGS will adapt to you, not the other way round.

Essentials - the core of MGS

It is the base application module providing all the core non-business functionalities of user management with connection to corporate directories, security, and more.

It also provides all the services of the flexible, fully customisable model inventory, powerful embedded workflow management system, validations, data & documentation management, and much more.

Model links

MGS captures configurable categories of model dependencies. These typically represent comparisons like:

- model predecessor vs successor,
- champion vs challenger,
- multi layer dependency interconnections.

The MGS link view offers a big picture view delivering a quick overview in the form of a complete dependency tree. Every dependency entry provides a condensed view on model attributes and workflows. The entire picture can be visualised by placing the selected model into a complete dependency graph.

Model layers

Models in the organisation are usually connected and heavily affect each other. The following use case shows how MGS leverages the information about relations in the entire interconnected model ecosystem.

1. Capture the model layers: Scorecard --> IRB model --> ALM model
2. After the IRB model is ready to be validated, model validator sees all the connected models, their issues, and other critical information in one place. She knows exactly if and how could the connected models affect the IRB model. Further, if the Scorecard is currently significantly under-performing, MGS will not allow that IRB model to proceed further in its lifecycle until the issue has been resolved.

Team collaboration

A model is not only a static entity but can be also described by its lifecycle, typically broken down into workflows. MGS visualises these workflows and ties them tightly to the model inventory and the rest of the application.

Each step of the workflow contains a detailed description of the work item and input form to be filled in by an expert in order to proceed further. These steps are defined entirely based on your organisation's specifications.

This way, the team know-how is preserved and shared, so experts always know exactly what to do next. The process knowledge is then driven not only by ad-hoc intuitive human decisions, but every defined process is preserved in MGS. The workload is efficiently spread among teams by the embedded system of tasks.

Model risk management by MGS

Existing model risk scoring routines defined by the MRM team are quickly implemented in Python or R and integrated into the automation framework. The MGS ecosystem guarantees regular, deterministic execution of model risk scoring by standardised access to quantitative (e.g. transactional data) and qualitative (model attributes like Currency, Validation date or Product) information.

The calculated risk score is then transmitted back to the inventory. All of that is done while maintaining high security standards and creating an audit trail. The advantage of leaving the risk scoring functions out of MGS core framework enables fast adoption to a firm's processes and can also involve alternative techniques like machine learning.

Entity filters

CURRENT SAVED

Filter by types

Scorecard | Probability of default | Loss given default | Macroeconomic

Filter by model usage types

IRB RWA | Provisioning | Risk-based pricing | Internal management | EC | Other

Filter by attributes

Match all

Attribute: Currency | Operator: Equal to | Value: EUR

ADD ATTRIBUTE

RUN SAVE

MGS MODEL GOVERNANCE SUITE — MODELS | VALIDATIONS | VALIDATION COMMITTEES | TASKS | DATA HUB

Home > Model catalogue > Model type: Probability of default > Model: Bank Micro Personal loan ProbOfDefault USD > Model revision: Revision 3

Security level: Bank USA

Attributes
Data hub
Documents
Validations
Workflows
Automation processes
Links
History

Revisions
Base entity
Revision 3 Implemented
Revision 2 Under implementation
Revision 1 Implemented

Usages

Built by CLOSE IT

Filter by name | Filter by type | CREATE A FOLDER | ADD ATTACHMENT

Root

Attachments

Icon	Name	Type	Upload on	Owner	Last update	Size	Validation
	my usage 1 data		-		-	-	
	Project documentation		-		-	-	
	BASE		-		-	-	
txt	file (5).txt	Source code	16/09/2019 15:08:33	Administrator	-	5 B	
gsheet	CRM.gsheet	Other	29/07/2019	Administrator	-	181 B	
DOCX							

Start review

Task
Business owner
History
Workflow diagram

RELEASE
SAVE
COMPLETE
DELEGATE
SUSPEND

Task has been started
a few seconds ago

Task has been claimed by "vojta"
a few seconds ago

Task has been added
5 hours ago

Task input variable "TaskName" was initialized with value "ReviewStart"
5 hours ago

Rows per page: 10 1-4 of 4

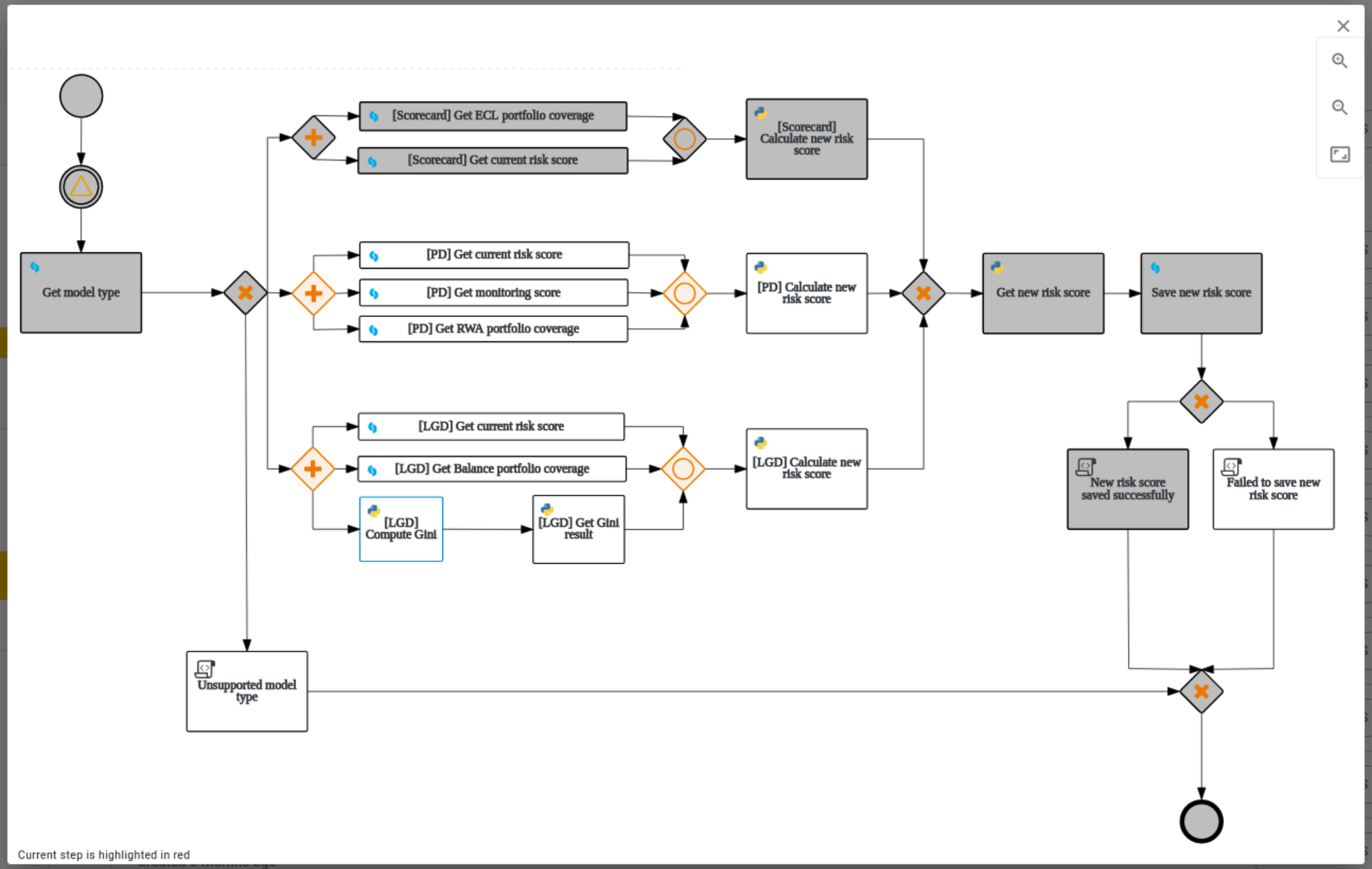
Automation module

The automation module enables automation of all repetitive, error-prone tasks related to a model lifecycle. Nearly all tasks that users perform through graphical user interface can be also automated via standard programming interface.

The automation module further provides connectivity to third-party systems and databases as well as framework to apply advanced business logic (rules) on the application to reflect a company's methodology.

Methodology spreading

In our standard validation process, MGS enforces the methodology across various departments and subsidiaries. Model developers are effectively obliged to provide data in sufficient quality (checked automatically in MGS), otherwise, MGS will not allow them to mark the model as "ready for validation". Moreover, this business rule is designed to reflect any future changes, either in the data quality check implementation itself, or its following business logic.

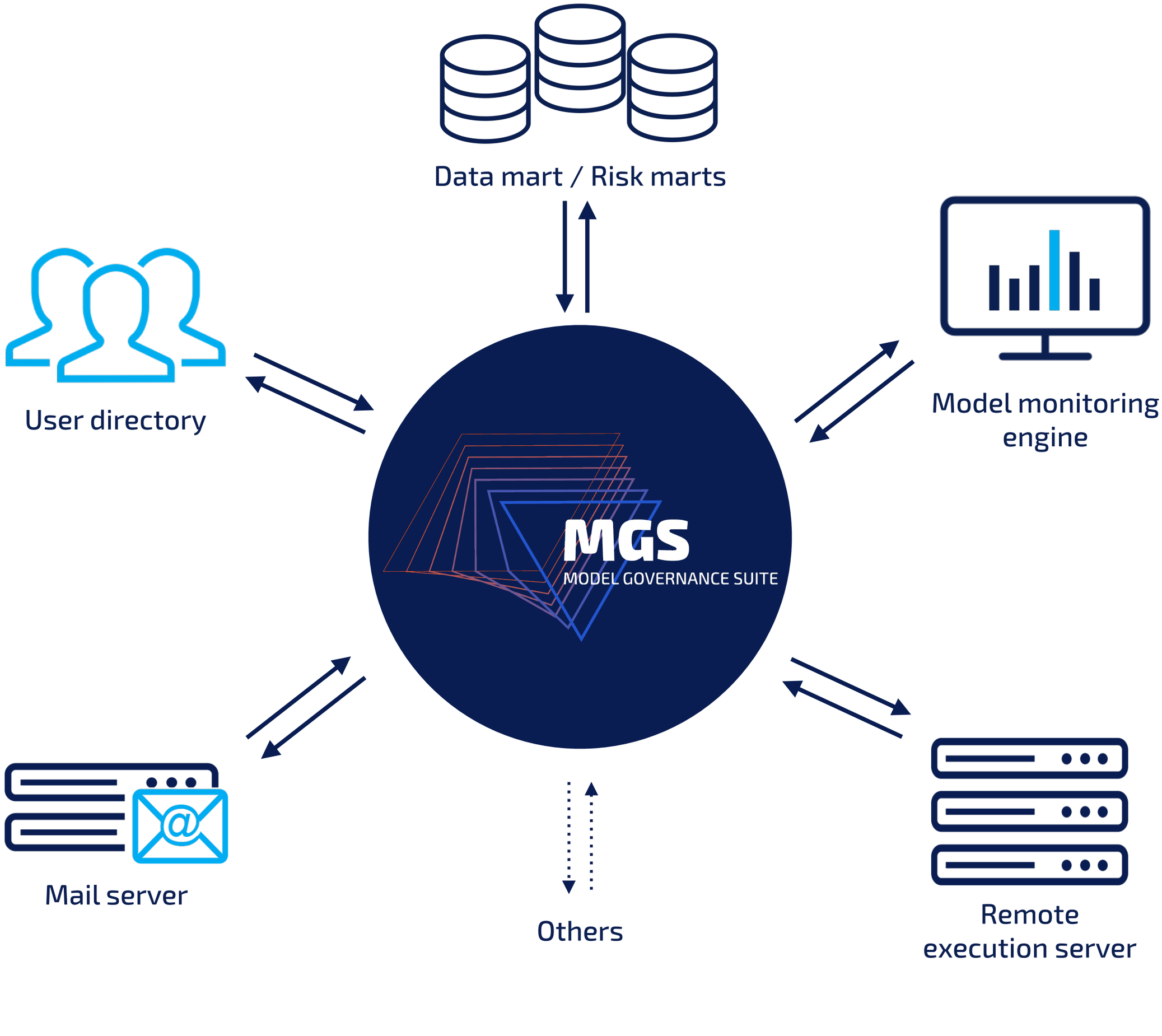

Get model type
[Scorecard] Get ECL portfolio coverage
[Scorecard] Get current risk score
[Scorecard] Calculate new risk score
[PD] Get current risk score
[PD] Get monitoring score
[PD] Get RWA portfolio coverage
[PD] Calculate new risk score
[LGD] Get current risk score
[LGD] Get Balance portfolio coverage
[LGD] Compute Gini
[LGD] Get Gini result
[LGD] Calculate new risk score
Unsupported model type
Get new risk score
Save new risk score
New risk score saved successfully
Failed to save new risk score
Current step is highlighted in red

DataLab module

The Data Lab module introduces the management of virtual analytical environments (RStudio and Jupyter) available for users right at their fingertips.

Instances of these virtual environments automatically contain all the data attached to selected models and other files shared between users (e.g. script libraries, guidelines or datasets). Direct connection to data marts or other corporate data sources can be also provided.

Due to its virtual nature, DataLab module guarantees an efficient utilisation of server resources. These virtual environments also play well with the Automation module where they provide Python or R execution sandbox for processing any sort of data.

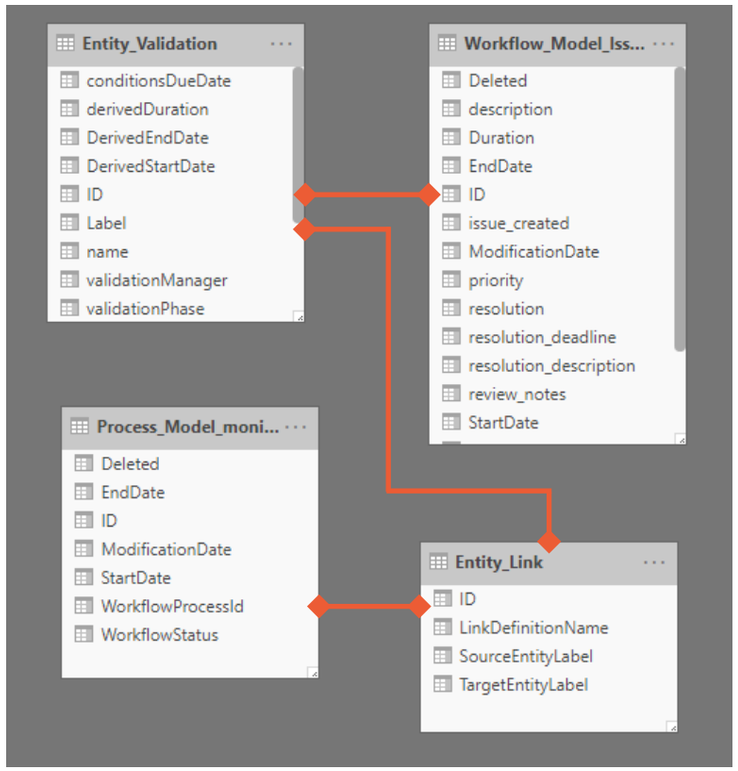

Data mart / Risk marts
User directory
MGS
MODEL GOVERNANCE SUITE
Model monitoring engine
Mail server
Others
Remote execution server

Reporting module

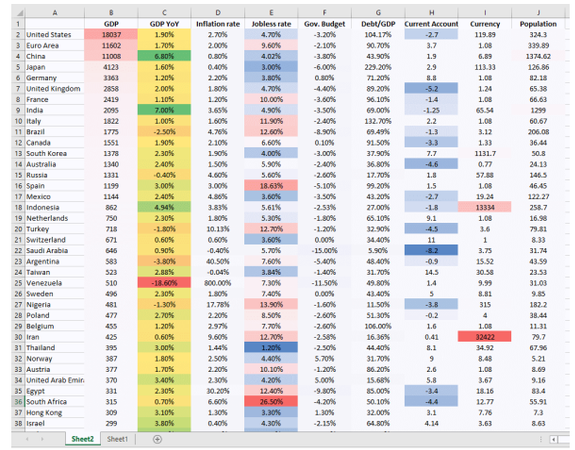
Instead of investing time into learning yet another BI tool, use the real time connector to tools like MS Power BI or Tableau and use the experiences of your analysts to quickly prepare reports according to your requirements. MGS appears in these tools as a remote, real-time data source, so all your reports are always up to date.

Frequently used metrics can also be custom-defined and visualized on the in-app dashboards in the format of charts or tables to provide a quick management overview.

Power BI



Excel



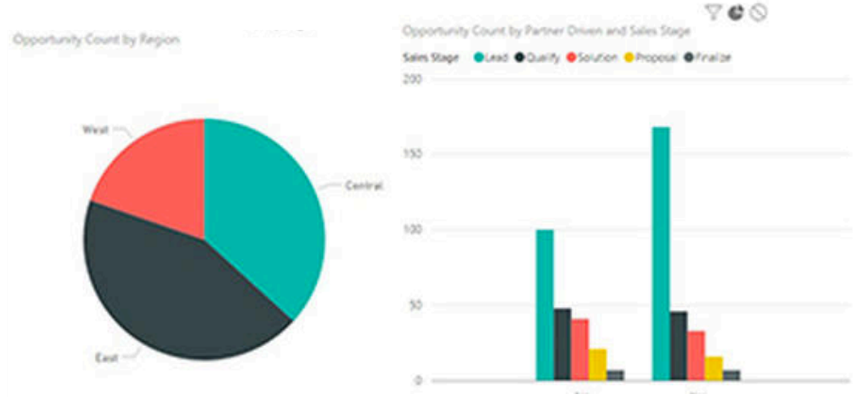
	A	B	C	D	E	F	G	H	I	J
1		GDP	GDP YoY	Inflation rate	Jobless rate	Gov. Budget	Debt/GDP	Current Account	Currency	Population
2	United States	18037	1.90%	2.70%	4.70%	-3.20%	104.17%	-2.7	119.89	324.1
3	Euro Area	11602	1.70%	2.00%	9.60%	-2.10%	90.70%	3.7	1.08	339.89
4	China	11008	6.80%	0.80%	4.02%	-3.80%	43.90%	1.9	6.89	1374.62
5	Japan	4123	1.60%	0.40%	3.00%	-6.00%	229.20%	2.9	113.33	126.86
6	Germany	3363	1.20%	2.20%	3.80%	0.80%	71.20%	8.8	1.08	82.18
7	United Kingdom	2858	2.00%	1.80%	4.70%	-4.40%	89.20%	-5.2	1.24	65.38
8	France	2419	1.10%	1.20%	10.00%	-3.60%	96.10%	-1.4	1.08	66.63
9	India	2095	7.00%	3.65%	4.90%	-3.50%	69.00%	-1.25	65.54	1299
10	Italy	1822	1.00%	1.60%	11.90%	-2.40%	132.70%	2.2	1.08	60.67
11	Brazil	1775	-2.50%	4.76%	12.60%	-8.90%	69.49%	-1.3	3.12	206.08
12	Canada	1551	1.90%	2.10%	6.60%	0.10%	91.50%	-3.3	1.33	36.44
13	South Korea	1378	2.30%	1.90%	4.00%	-3.00%	37.90%	7.7	1131.7	50.8
14	Australia	1340	2.40%	1.50%	5.90%	-2.40%	36.80%	-4.6	0.77	24.13
15	Russia	1331	-0.40%	4.60%	5.60%	-2.60%	17.70%	1.8	57.88	146.5
16	Spain	1199	3.00%	3.00%	18.63%	-5.10%	99.20%	1.5	1.08	46.45
17	Mexico	1144	2.40%	4.86%	3.60%	-3.50%	43.20%	-2.7	19.24	122.27
18	Indonesia	862	4.94%	3.83%	5.61%	-2.53%	27.00%	-1.8	13334	258.7
19	Netherlands	750	2.30%	1.80%	5.30%	-1.80%	65.10%	9.1	1.08	16.98
20	Turkey	718	-1.80%	10.11%	12.70%	-1.20%	32.90%	-4.5	3.6	79.81
21	Switzerland	671	0.60%	0.60%	3.60%	0.00%	34.40%	11	1	8.33
22	Saudi Arabia	646	0.90%	-0.40%	5.70%	-15.00%	5.90%	-8.2	3.75	31.74
23	Argentina	583	-3.80%	40.50%	7.60%	-5.40%	48.40%	-0.9	15.52	43.59
24	Taiwan	523	2.88%	-0.04%	3.84%	-1.40%	31.70%	14.5	30.58	23.53
25	Venezuela	510	-18.60%	800.00%	7.30%	-11.50%	49.80%	1.4	9.99	31.03
26	Sweden	496	2.30%	1.80%	7.40%	0.00%	43.40%	5	8.81	9.85
27	Nigeria	481	-1.30%	17.78%	13.90%	-1.60%	11.50%	-3.8	315	182.2
28	Poland	477	2.70%	2.20%	8.50%	-2.60%	51.30%	-0.2	4	38.44
29	Belgium	455	1.20%	2.97%	7.70%	-2.60%	106.00%	1.6	1.08	11.31
30	Iran	425	0.60%	9.60%	12.70%	-2.58%	16.36%	0.41	32422	79.7
31	Thailand	395	3.00%	1.44%	1.20%	-2.50%	44.40%	8.1	34.92	67.96
32	Norway	387	1.80%	2.50%	4.40%	5.70%	31.70%	9	8.48	5.21
33	Austria	377	1.70%	2.20%	10.10%	-1.20%	86.20%	2.6	1.08	8.69
34	United Arab Emir.	370	3.40%	2.30%	4.20%	5.00%	15.68%	5.8	3.67	9.16
35	Egypt	331	2.30%	30.20%	12.40%	-9.80%	85.00%	-3.4	18.16	83.4
36	South Africa	315	0.70%	6.60%	26.50%	-4.20%	50.10%	-4.4	12.77	55.91
37	Hong Kong	309	3.10%	1.30%	3.30%	1.30%	32.00%	3.1	7.76	7.3
38	Israel	299	3.80%	0.40%	4.30%	-2.15%	64.80%	4.14	3.63	8.63

Sheet2 Sheet1

Qlik® Sense

& other BI tools

+ a b | e a u ®
S O F T W A R E



Managed code repository

The managed code repository module acts as a single source of truth for source code of models and other relevant scripts (e.g. used for backtesting, model monitoring, or data quality checks). It is based on standard git protocol and is therefore accessible from any git-compatible tool.

Security setup of the repository reflects the access to the model itself in order to prevent unauthorized access to potentially sensitive information.

Licensing and pricing

The Model Governance Suite pricing is based on a combination of MGS application modules and number of active models registered in the inventory.

Standard delivery of MGS is under a yearly subscription which includes license to use the software, access to latest versions, bugfixes and the CloseIT support service.

Information about alternative licensing options (perpetual) or cloud-based operation mode (hosted by CloseIT) can be provided on request.

Support service and initial configuration

Support service is optional and includes technical support and access to the latest versions of the application: updates, upgrades (including new features) and bug fixes.

Initial setup service is provided, so MGS is ready to be used from day one, reflecting the banks own methodologies, processes, and naming conventions.

Software as a service

MGS can also be provided as Software as a Service (cloud-based), i.e. maintained by CloseIT on Amazon Web Services (AWS) infrastructure.

This alternative is highly flexible and allows the customer to pay only for the actual usage of the tool (based on the number of models) with no effort related to maintaining and running the application.

Administration & operations

The application is truly administration-friendly, maximally simplifying installations of new versions.

MGS is also designed to be efficiently customised to its very core (e.g. adding a new workflows, model types, model attributes, validation types, user roles, or security levels). Customisation is done “on-the-fly”, without the need to install a new version.

Select the setup that suits you best

	Essentials	Automation	Reporting	DataLab	Managed code repository
Model inventory	✔				
Validation inventory	✔				
Workflow engine	✔				
Data Hub	✔				
Documentation	✔				
Audit trail	✔				
Process automation		✔			
Integration interface		✔			
Business rules engine		✔			
Connector to Business Intelligence tools			✔		
Data export to CSV			✔		
Embedded Python and R collaborative tools				✔	
Virtual R and Python execution environments				✔	
Integrated git repository					✔

Typical Essentials implementation timeline

	Business analysis	Customisation and implementation	Final UAT	Migration	Go-live
Scope	**Define and formalise** • model types and their attributes • all maintained workflows • user roles, groups and security configuration • document types • connection to corporate LDAP • other minor parameters Prepare additional requirements summary.	Preparation of customised MGS by the CloseIT team, **iteratively work with the customer** on a weekly review base by presenting current progress. The current status is continuously deployed to a dedicated staging environment. At later stages deploy the latest version and customer specific configuration to staging / production environment.	User acceptance provided by the end users - risk team. Registering sample models, validations and testing the entire system.	Register historical models and validations. Train users, provide access.	Switching to the new system.
Requirements and dependencies	Availability of the Model oversight team / Risk team representatives . Availability of the IT infrastructure and IT security team representative for alignment on specific requirements for the target environment.	Readiness of the involved team for regular review meetings and providing feedback. Staging/production IT infrastructure. *note:* Initial configuration could be also presented on the cloud infrastructure prepared by CloseIT.	Final tests by the team cooperating in the previous stage. Register models, test the team cooperation, roles definition, security setup. Final IT/security check of the system.	All users for trainings. Involved team for registering the current model portfolio. IT infrastructure granting access.	Internal approval.
Objectives	Mutually agreed, formally defined configuration which can be configured in MGS by the CloseIT team. Alignment on the migration strategy from the previous system(s).	Running target configuration continuously verified by the customer's team. All that at least in staging environment.	The system is tested and accepted by customer. The acceptance protocol is signed and potential conditions are listed.	All potential end users are familiar with the tools, ready to go.	Use MGS as intended.
	2-3 weeks	2-3 weeks	1-2 weeks	2 weeks	1 week

Note: Timeline of the automation process implementation and integration into target environment is very difficult to predict due to unique status quo and scope of automation objectives of each particular customer. The sample timeline is representing the implementation of Essentials and Reporting modules.

Let’s stay in touch

MARTIN PODOLINSKY
MANAGING DIRECTOR

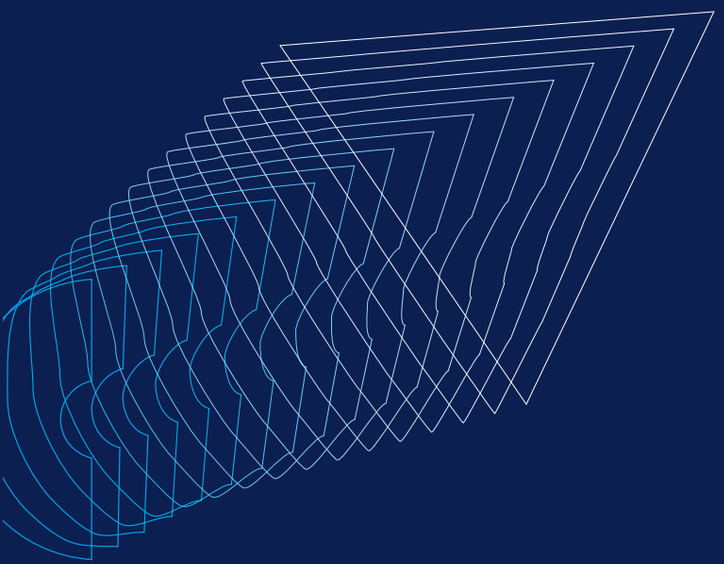
martin.podolinsky@closeit.co
+420 603 209 330

About CloseIT

CloseIT is a software development studio founded in 2013.

We create software and business solutions for international banks and other institutions in the areas of model governance, risk management, regulatory reporting, stress testing, processes digitalisation as well as others.

CloseIT s.r.o. is based in the Czech Republic in Europe with internationally operating consultants.



www.closeit.co/mgs

CLOSEIT