

## Global Credit Management

Global Credit Management (GCM) is the integrated system of modular application solutions designed for the creation, evaluation, control and management of the credit portfolio of a financial institution.

The different proprietary solutions, which can be seamlessly connected to one another, support the different phases of the credit management process both from the operating and decisional aspects perspective, in full compliance with Basel II directives.

Operation Support		Solutions
Automated Underwriting	Ordinary Credit	<b>Credit On Web</b>
	Factoring	<b>Factoring on Web</b>
	Leasing	<b>Leasing on Web</b>
Automated Monitoring Form		<b>ACD</b>
Loan&Collateral Procedure		<b>FIDIGEST</b>
Centralized Financial Statement Management		<b>FSM Module</b>

Decision Support		Solutions	
Rating	Counterparty (Basel II)	<b>RATING PLUS</b>	
	Proposal	Ordinary Credit	<b>PER*FIDO</b>
		Factoring	<b>PER*FIDO Factoring</b>
		Leasing	<b>ALVIN</b>
	Monitoring		<b>SEAC - Serio</b>
	Reporting and distribution analysis		<b>RATING VIEW</b>
VAR portfolio model	Actuarial approach	<b>RISK PLUS</b>	
Positioning within the economic/industrial sector		<b>Competitive Positioning</b>	

These solutions can also be classified based on the different business processes they refer to, composing the Global Credit Management mosaic:

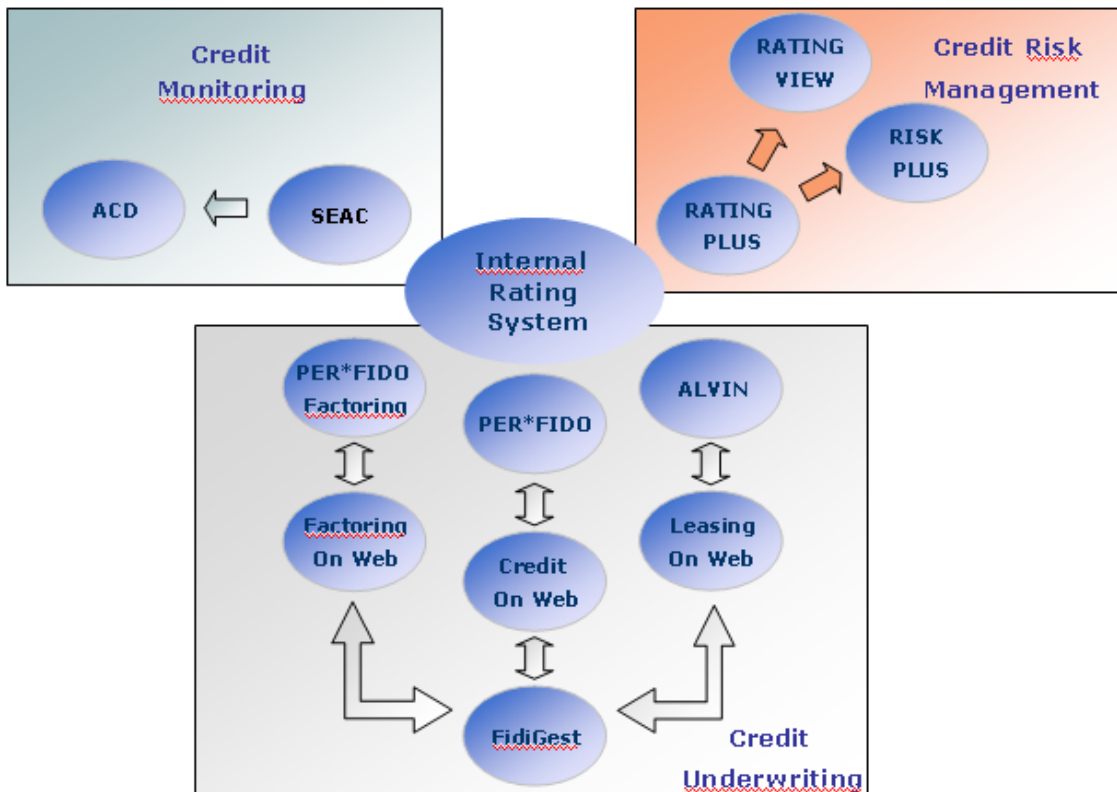


Such architecture covers the following activities:

<b>Credit Underwriting Solution</b>	<b>Origination, composition and evaluation of a credit request</b>
<b>Credit Risk Solution</b>	<b>Credit Risk Management</b>
<b>Monitoring Solution</b>	<b>Monitorino of granted credits</b>
<b>Marketing Solution</b>	<b>B2B e B2C transactions</b>

Placing the activities within the business process context allows a better comprehension of the interconnections among the different components of Global Credit management (GCM) system.

## Global Credit Management



The **composition and evaluation of the credit proposal** is supported by the proprietary solutions **PER\*FIDO, PER\*FIDO Factoring, ALVIN, Credit On Web, Factoring on Web, Leasing on Web e FidiGest** covering all aspects:

- **decision** – through on-line generation of counterparty rating and of proposal rating
- **operation** – with creation and workflow management of the proposal
- **accounting** and **back office** activities,

**Management of credit risk**, as shown in the diagram, is supported by appropriate tools to allow segmentation of the portfolio in homogenous risk classes (**Rating Plus**), analysis of the distribution of portfolio elements over risk classes (**Rating View**) and, finally, calculation of the portfolio's Value at Risk (**Risk Plus**).

Risk Monitoring of live credit positions is tracked, usually on a monthly basis, by the **SEAC** application; the results are channelled from the Credit Control department to the branch offices through the appropriate users, by the **ACD** solution.

The **e-Credit** solution allows the marketing department to decentralize with dealers the granting phase of approved credits, while maintaining a centralized and internal control over evaluation of credit worthiness processes.

The hub and core of the global architectural solution is the **Internal Rating** system which is accessed by all applications and to which all processes regarding the management of the credit portfolio of the institution refer to.

## Internal Rating: the methodological approach

The new Basel Accord, in the section dedicated to the rating system, defines the bi-dimensional nature of the rating as a measure of both the counterparty's credit worthiness and the acceptability of the proposed credit transactions (June 2006).

### **Basel II**

#### **June 2006**

396. A qualifying IRB rating system must have two separate and distinct dimensions: (i) the risk of borrower default, and (ii) transaction specific factors.

397. The first dimension must be oriented to the risk of borrower default. Separate exposures to the same borrower must be assigned to the same borrower grade, irrespective of any differences in the nature of each specific transaction...

The multidimensional nature of the rating is even more evident if, in addition to the two measures explicitly mentioned by Basel II, we consider other management requirements such as the periodical monitoring of the granted live positions.

In fact, if we interpret the rating as a synthetic representation, in a structured alphanumeric form, of a specific aspect of an economical subject (the obligor) or of a related granting transaction, it appears clear how also within the monitoring context the measure used is a rating. In this case it represents the soundness or level of anomaly present in the utilization phase of the granted credit (e.g. inelastic use of the current account, the presence of unpaid commitments, etc.)

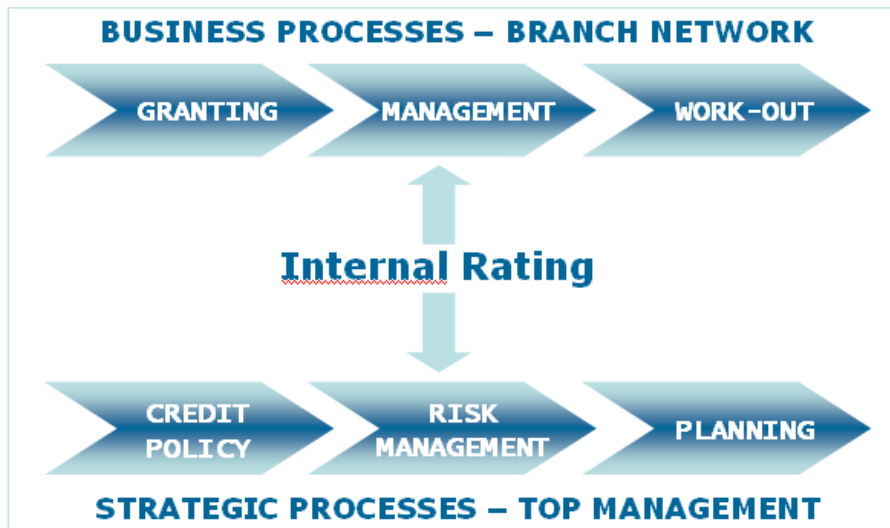
Actually though, while the standard counterparty rating is associated with a Probability of Default (PD) which must be stable over time, even though including information on the possible deterioration of the obligor's worthiness, the aim of the rating used in the periodical monitoring of the positions is the identification of early-warnings, which might trigger a revision process or at least raise the level of attention on the situation. In this respect the evaluation models underlying the monitoring rating must have a higher sensibility than the models behind the standard counterparty rating associated to the PD.

Therefore we must move from a bi-dimensional logic (counterparty rating and proposal rating) to an n-dimensional logic, implying that each specific process is associated with the rating that better represents the details of the counterparty (or proposal) for that process.

All this implies the need for a generalized platform for rating generation, which relies not on a single one but on a suite of models. This in turn calls for a precise assessment of the correct choice of rating/process associations and the identification of the correlations among the different ratings generated by the platform. For example, it will be necessary to identify the relation between the counterparty rating associated with a PD and the monitoring rating, which for the same counterparty is related to the usage modes of the granted credit.

A further point which must be stressed regarding the design phase of a rating system is that **there must be a global consistency among the evaluation models employed in the creation, management and evaluation processes of the credit portfolio, both at the operation level and at the strategic/decision-making level.**

*The rating as a communication tool among business processes*



Such a rating generation platform allows for the rating to become a guarantor of consistency among internal commercial and credit processes and the main communication means between the General Management and the operational organization structure.

## Internal Rating: The application approach

The methodological approach is implemented through an application infrastructure named Internal Rating System.



The Internal Rating System can synthesize not one, but several viewpoints (ratings) on a single economic subject and/or an a credit transaction.

The Internal Rating System includes a meta-language for the definition of the evaluation models and of the evaluation engine, which interprets the single evaluation models, and applies them on the data of a specific subject and/or transaction.

An evaluation Model is a set of rules and criteria, which analysis of a particular aspect of an economical subject and/or credit transaction and defines its hierarchical relations.

The investigation criteria guiding the analysis of the Balance Sheet, of total indebtedness (e.g. from the central bank repository), of monitoring data (relationship with the bank), of counterparty rating, of acceptability of the credit transaction are all expressed with specific evaluation models.

The generation of the rating is based on Artificial Intelligence techniques which allow to express highly complex rules, to synthesize different kinds of data coming from diverse sources, qualitative and quantitative, to treat correctly incomplete and/or unreliable information.

All decision support solutions PER\*FIDO, ALVIN, Rating Plus, Risk Plus, SEAC and the suite of *underwriting* systems Credit On Web, Leasing on Web, Factoring on Web, all share this application infrastructure, each employing a different evaluation model.

## Credit Risk Solution

Triggered by Basel II directives and thanks to the opportunities provided by laws on securitization, the development of a new approach to Credit Control has taken place.

Credit Control, until not long ago, aimed mainly at the periodic verification of customer's behaviour and limited its focus on the single customer. Today, instead, the goal of the Risk manager is broader and more complex and is based on monitoring of the market value of the whole credit portfolio, and on measuring the probability of change in its value.

This objective is pursued by applying to the credit portfolio rigorous analysis methods, partially deriving from Treasury Management, which allow not only to determine the current market value of the assets, but also and especially, to estimate the its variation within a predefined horizon (Value at Risk – VaR).

The use of such methodologies implies the assessment of the credit worthiness of the obligor and ultimately of the whole credit portfolio, allowing finally a categorization of the customers in classes, characterized by synthetic key indicators named ratings.

In this context Exprivia provides Risk Managers with the following tools:

### ■ Rating Plus

System for the classification of customers within homogeneous rating risk classes and, in an extended version of the system, with the assignment of a recovery rate to each credit line. Rating Plus provides a rating exempt of commercial evaluations.

From an architectural point of view Rating Plus has been designed to process massive amounts of data. The data feeding is based on available homogeneous information stored internal and external data bases: Total Indebtedness repository, Balance Sheets, Central Bank risk databases (e.g. in Italy, ARS). In addition it produces risk related data required by Risk Plus for its VaR calculations.

### ■ Risk Plus

Tool for the estimation of the credit risk of the portfolio based on the CreditRisk+ model by Credit Suisse First Boston. The system provide information related to Rating, Exposures, Expected Loss, Portfolio VaR, Marginal VaR and Raroc performance values.

The analysis of such information can be based on different confidence levels (percentiles) and on subsets of data selected by the user, thus allowing the splitting of the portfolio according to evaluation criteria more appropriate to the situation at hand. The results are presented in terms of performance indicators and loss distribution also in graphical form.

Moreover the solution allows what-if analysis sessions aimed at the identification of the proper diversification actions to alter the portfolio composition and attain a specific required risk objective.

### ■ Rating View

Tool for the navigation of tha data produced by Rating Plus, consolidating all information according to specific criteria and building specific views to support the investigation objectives of the General Management.

The rating classes can be viewed based on:

- ◆ Dimensional elements (turnover, granted amounts and utilization ranges)
- ◆ Industrial and economic sector of activity
- ◆ Classification in classes internally defined by the institution (e.g. Retail, Small Business, Corporate, etc.)
- ◆ The different entities in the organization structure of the institution (geographic area, branch office, etc.)

The information is presented in the form of (double-entry) tables and of graphs.



## Monitoring Solution

Risk Control is a complex and onerous task which involves the whole enterprise structure, from the commercial network to the central head offices services.

Il Controllo Rischi è un'attività complessa ed onerosa che coinvolge l'intera struttura aziendale, dalla rete commerciale ai Servizi Centrali di Direzione.

The process can be so divided:

- A **first phase**, generally performed centrally and mainly of assessment type, whose objective is the identification of the anomalous positions;
- A **second phase** of accounting type, which implies the identification of the appropriate action(s) to be undertaken to correct the anomaly

This two-fold decomposition allows for the identification of specific highly sophisticated timely and cost-efficient tools to support credit monitoring activities on one side and workflow management throughout the organization structure of the originated Credit Control proposal on the other side. derive

Exprivia covers these requirements with **SEAC** for credit monitoring, with the integrated tool **ACD** for management of the proposal workflow and, in addition, with a set of minor solutions providing added value to the performed analysis, allowing distribution of its results to the different entities at the different levels in the organization.

Within the portfolio of Exprivia products SEAC (Expert System for Client Monitoring) represents the solution for the first phase, automatically identifying the positions showing incorrect behavior, while ACD covers the second phase through the TP (Transaction Processing) presentation of SEAC's results and by managing of the communication process among the different actors: SEAC itself, the branch offices, the departments and central head office services.

All products are situated in a broad-scope comprehensive design for the automation of the Credit Control process, today usually well into being, but often not well supported by appropriate and efficient IT procedures, therefore implying consistent delays in the communication among the different agents involved.

## Credit Underwriting Solution

### *The assessment phase*

The assessment of the credit worthiness during the composition of the credit proposal plays a critical role in determining the characteristics of the entire credit portfolio of an institution.

The quality of a credit portfolio, in fact, is direct consequence of the choices made by the credit and commercial entities involved during the granting process.

In this context, the generation of the rating is aimed at establishing the correct grade of acceptability of the credit proposal.

Assessment of the customer (the counterparty) implies evaluation of structural and behavioral elements together with the customer's expected sensibility to possible commercial actions. On the other hand Assessment of the proposal depends on the specific kind of credit lines granted (type of transaction, duration, etc.) and on consistency and compatibility of these features with the customer's business approach.

Exprivia's solutions for generation of the proposal rating (which represents acceptability grade of the Credit Request defined in the proposal), which are **PER\*FIDO**, **PER\*FIDO Factoring** and **ALVIN**, operate in strict correlation with Credit On Web, Factoring on Web, Leasing on Web and FidiGest, the underwriting solutions for ordinary credit granting, for Factoring and Leasing transactions and for back-office Loan and Collateral management; nonetheless they can be integrated with the same ease with equivalent solutions already in use in the Client's environment.

The results are presented in detail with a report expressed in natural language. Such report serves not only the purpose of presenting results, but also as a valuable tool for training activities of human resources involved in the process, in the end allowing spreading and sharing of enterprise knowledge on credit assessment and credit granting and also uniform application of corporate regulations.

### *The underwriting phase*

L'insieme di soluzioni per la gestione del processo di delibera ed erogazione del credito sono una sostanziale componente della architettura del Global Credit Management in termini di ampiezza di dominio rispetto all'operatività ed alla *governance* dell'istituto.

The set of solutions for the management of the approval process represents a substantial component of the Global Credit Management architecture in terms of size of domain covered, regarding both business and governance activities.

The approval process in fact involves a number of entities, roles and skills throughout the entire organization, including both operational and strategic functions of the institution: from the *Relationship Manager* to the specialized analyst, from the Branch Director to the regional Commercial manager, up to the headquarter offices such as Credit dept., Risk Management dept., Credit Committee, Board of Directors and/or Supervisory Board.

The complexity of the decision workflow up to the final approval characterizes this suite of solutions related to the Corporate portion of the credit portfolio of the institution.

The other main feature is the collection of information and composition of the electronic application form representing the proposal. This task is implemented through integration of internal, external, qualitative, quantitative, automatic and manually entered information related to the enterprise under evaluation such as: financial and economic situation, management experience and capabilities, relationship with credit institutions (ours and the whole banking system), suppliers and customers, relationship with other companies in the same enterprise group, trend and relative positioning within the reference market(s), and finally information related to the type of credit lines requested and of guarantees offered.

All information collected and stored in the credit proposal can be originated by components of Exprivia's Global Credit Management system or by third party products or solutions running on the Client's Information System or also deriving from external services (e.g. providers of geo-industrial data on sector of activity of the enterprise).

Among the main components of the GCM system is the **Financial Statement Module** which provides quantitative analysis and evaluation reports and includes functions for compiling, analysing, reclassifying statement data producing financial and economic ratios for the enterprise and comparison with the enterprise economic sector ratios (relative positioning).

Other components which can be natively integrated are the Counterparty and Proposal Rating systems described in the sections "Internal Rating" and "The assessment phase", which guarantee consistency with the evaluation models applied in the different business and decision and areas regarding the creation, management and evaluation of the credit portfolio, as indicated in the directives by the Basel Supervisory Committee.

An additional module which can be integrated in the solution is the Loan&Collateral procedure **Fidigest** offered by Exprivia as a proprietary component for the back-office handling of all the different credit line types and guarantee types requested and offered by the Clients.

The underwriting systems included in the GCM system differ in the type of credit products considered implying distinct granting processes: **Credit on Web** for ordinary credit transactions and **Leasing on Web** and **Factoring on Web** for the respective domains.

Such solutions can be accessed by users within the institution through the Intranet, but can also be used as B2B solutions, for instance to provide information on the counterparty or the proposal, by the enterprise itself through a specific portal (see marketing Solution) or also through an extranet web service.

## Marketing Solution

Le recenti dinamiche di mercato ed il consolidamento delle nuove tecnologie consentono al sistema bancario italiano di attivare servizi innovativi nell'ambito dell'Internet Banking.

The recent evolutions in the market and the new consolidated technologies available allow the banking system to offer innovative services in the Internate banking context.

Until recently the attention of the banks was dedicated mainly to remote banking services – home and corporate banking and on-line trading solutions – for the capital market, neglecting credit services, even though these are the main type of products and services requested.

In this context Exprivia has defined and implemented an internet banking solution, named **e-Credit**, for the marketing and sale of credit products and services.

e-Credit is web-based application which can be included in the Bank's Portal to allow the provision of on-line financial services in accordance with the institution's strategic and operational objectives.

The tool which represents a valid means for the acquisition of a potentially extremely wide set of customers, can be viewed as an outsourced underwriting function. As a matter of fact the solution is not limited to the communication to the credit institution of data and information regarding the credit request by the enterprise, but also determines a rating for such proposal, representing the grade of acceptability of the requests therein contained, based on the size and creditworthiness of the requestor.

Such rating allows not only a grading of the acceptability of the proposal, but also allows to identify, also automatically if required, an optimal pricing related to the profile of the Client and to the type of product/service requested.

e-Credit allows banks to offer directly on-line to end users a vast array of information and operational services related to the following banking products:

- personal credit
- mortgage loans
- financing
- leasing

The solution is directed both to Consumer and Small Business Clients.