

BONAIR®

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review

> Awards for Bonair

The significant events of the last quarter concern the recognition of Bonair SA's work by two industry magazines.

[\[more on p.2\]](#)



Gold processor

We have been awarded by the Teleinfo magazine the "Gold processor" statuette in the category of management supporting applications for companies with up to 250 employees for the DeveloperPro system.

Top IT supplier for the manufacturing industry 2007

The MSI publishing house awarded Bonair the title of "Top IT supplier for the manufacturing industry" in the category of Business Intelligence.



Implementation

> More effectively and without stoppages



Browar Warka sells over 2.7 hectolitres of beer per annum. One of its current priorities is to increase the effectiveness of its bottling lines, which will be achieved with the help of MES (Manufacturing Execution System) – Proficy Plant Applications. – *Thanks to automatic registration of stoppages, we have a fuller picture than 3 or 4 months ago, we know the causes of stoppages and how much time they actually consume* - says Krzysztof Żyrek, production director at Browar Warka. [p. 3].

Implementation

> Credit decision in an hour



Bank Pocztowy decided to implement a scoring system to improve and increase sales of retail credits. This aim has been achieved and today, clients can receive their credit decisions quicker while the bank has been able to maintain a higher level of security of its assets. *The implementation of the scoring system has made the process of providing credits to the Bank's clients more efficient. Thanks to this implementation and effective organisation of work at the Retail Credit Department, our motto "credit decision in an hour" is a fact* – explains Mariusz Sowiński, director of the IT Department at Bank Pocztowy SA. [p. 6]

Ladies and Gentlemen,

The current edition of our quarterly magazine includes descriptions of GE Fanuc's system for management of effectiveness at Browar Warka as well as the implementation of a credit scoring system at Bank Pocztowy.

Proficy Plant Applications is a Manufacturing Execution System (MES) that serves to monitor production effectiveness and is a new addition to our offer for the manufacturing industry. In turn, the project for Bank Pocztowy concerned implementation of the latest version of the solutions created by Bonair to evaluate credit worthiness.

The significant events of the last quarter concern the recognition of Bonair SA's work by two industry magazines. Our company has been awarded the "Golden processor" statuette by the Teleinfo magazine for its building developer solution and also the title of "Top IT supplier for the manufacturing industry" in the category of Business Intelligence by the MSI publishing house. The latter award is particularly valuable since it is handed out on the basis of customer survey results.

We would like to express our deep gratitude to our clients for such a distinction, which is sure to motivate us to work even better. At the same time, we extend congratulations to the project teams whose talent and results led the jury to select Bonair for the awards.

Conferences, presentations

The latest conference in the cycle entitled **Manufacturing Execution System** was held on 26th - 27th February at Hotel Polonia in Warsaw. Bonair was a sponsor of the event and the presentation was made by: Paweł Głazek, Bonair SA and Paweł Czepiel, VIX Automation. The presentation topic focused on: **The implementation of GE Fanuc's Manufacturing Execution System based on the example of Browar Warka, Grupa Żywiec SA.**

The 10th **Forum of IT in Administration** will take place between 15th and 16th April 2008 at the Pan Tadeusz Hotel. Bonair will give a presentation on **Business Intelligence in public administration: planning, budget and analysis support systems.**

■ Awards for Bonair (cont. from p. 1)

The DeveloperPro system is dedicated to building developers; it facilitates management of the investment process spanning the investment planning phase, its execution and finally the customer service and sale stage. The system monitors the course of the construction with consideration of the adopted and actual costs and deadlines of the project. It also enables efficient management of price lists, the reservation process and sale of premises.

The MSI magazine once again awarded IT solution producers and suppliers the title of "Top IT supplier for the manufacturing industry" in various categories. Companies were asked to submit reference implementations following which, the magazine sent surveys to selected clients requesting evaluation of their supplier. The titles were then awarded on the basis of the submitted client surveys.

Jan Szymanowski
Vice-President
of Bonair S.A.



The past quarter was also a time of intensive works on the expansion of our Warsaw office and change of our office in Wrocław. Our company is continually growing and as such we must face up to the challenges.

I hope you enjoy reading this quarter's issue.

Jan Szymanowski

■ Processing of credits with ARiMR subsidies

Bonair has introduced into its offer another functionality of the SI-OKP preferential credit processing system – the @BK module. SI-OKP@BK is an internet module that serves to process preferential credits with ARiMR subsidies and has been designed for crediting banks with internet access to the Central Database.

The system's capacities include:

- > registration of credits and changes
- > registration of borrowers
- > generation of capital and interest repayment schedules
- > browsing of the crediting bank's reports created in the central database
- > modification of request positions
- > verification and approval of given credit agreement requests
- > addition of positions to correction documents of the crediting bank
- > registration of systemic receivables from return of given credit agreement subsidies
- > verification of systemic receivables of a given credit agreement
- > browsing of files with errors from the crediting bank's reports and requests

Bonair's solution will enable reduction of the total maintenance costs of the preferential credit processing system in dispersed bank structures.

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BONAIR
BUSINESS IT SOLUTIONS

MES in Browar Warka

> More effectively and without stoppages

Browar Warka sells over 2.7 hectolitres of beer per annum. One of its current priorities is to increase the effectiveness of its bottling lines, which will be achieved with the help of MES (Manufacturing Execution System) – Proficy Plant Applications.

MES supports ongoing control of the production process; it provides information in real time which in turn enables quick reaction to the state and parameters of bottling lines. Such functionality is provided by GE Fanuc Automation's Proficy Plant Applications system, which is offered by Bonair. The system consists of four modules for management of efficiency, quality, production and batch processes. Browar Warka has implemented the Efficiency module for its KHS bottling line in order to improve effectiveness and also to eliminate stoppages and losses in the bottling process.

>> Why would a brewery need an MES?

Companies operating in the food industry face stiff competition and customer satisfaction is of utmost importance, which means constant improvement of production quality. To be able to remain ahead of their market competitors, companies have to shorten the time of launching new products onto the market and processing orders, i.e.: by increasing efficiency. *Increased effectiveness of bottling lines is one of the priorities for our brewery* – states Krzysztof Żyrek, production director at Browar Warka. *In order to attain this goal, we must be able to accurately describe all events that cause stoppages and slow*

Implementation facts

- > **What:**
Technical infrastructure for registration of data from production lines together with OPC INAT server; GE Fanuc's Historian 3.1 industrial database for 1,000 signals; GE Fanuc's Plant Application system – Efficiency Management Server 4.3 and Proficy Portal Enterprise v. 2.6; training for the management and bottling line operators.
- > **Where:**
Grupa Żywiec SA – Browar Warka (the second biggest brewery part of the Żywiec Group) employing over 300 people.
- > **When:**
21 May 2007 – signing of implementation agreement,
May – June 2007 – delivery of equipment and software,
June – October – stage I of the implementation: availability of basic functionality,
November – December 2007 – stage II of the implementation: configurations of reports required by Browar Warka, creation of additional application fragment enabling better reporting of events on lines, tests and launch of the system,
12 December 2007 – signing of acceptance protocol,
1 January 2007 – full production launch of the system.



downs in line production. Thanks to automatic online monitoring of our machines, MES is able to collect detailed data about the time and reason for each breakdown as well as to provide up to date information on line productivity to the management plus the line operators. It also enables analyses to be carried out, which help to eliminate causes of the stoppages and in effect aid technical employees in their every day work – explains Krzysztof Żyrek.

Prior to the implementation of Proficy Plant Applications, data on bottling line stoppages was entered manually into Access databases by operators. *The system was less accurate than the current one. It didn't register micro-breakdowns, i.e.: under five minutes and besides, it took too much of the line operators' time* – evaluates the production director.

>> Experience decisive in system choice

Browar Warka had two solutions to choose from – the Proficy Plant Applications system offered by Bonair and produced by GE Fanuc Automation or the Bottlingteam! line monitoring system offered by the Spanish company Adbraintage. The decisive factor in the ultimate selection of Bonair was the wide functionality of Proficy Plant Applications as well as its architecture plus Bonair's customer-friendly implementation approach. Krzysztof Żyrek admits that one of the main strengths of the Proficy Plant Applications system is its producer – GE Fanuc's extensive experience in the design and implementation of MES systems. *However, a key role in the selection of this software played the possibility of working with a local integrator – Bonair, which has been able to adapt the solution to the needs of our brewery* – emphasizes Krzysztof Żyrek.

Mr Żyrek also pointed out other advantages such as the easy to use panels on production lines which enable operators to enter comments for each breakdown, convenient access to detailed reports that can be viewed on any computer by using an internet browser plus the system's flexibility enabling analysis of the collected data not just in the application created for this purpose (Proficy Portal) but also in Excel for example.

>> An Efficiency Module that measures and analyses

The Efficiency Module measures and analyses parameters of efficiency and the degree of use of production resources – tools, machines and people. Targets are set in production plans on how many thousands of bottles should be filled during an hour and hence over the whole 8-hour shift. In the

event of the targets not being met, the Efficiency module shows the reason for the lower productivity of the line – on the basis of analysis of micro stoppages and breakdowns on production lines, the module reveals if the problem was caused by planned stoppages, machine breakdowns or defects in containers or caps. It could also be a case of a given personnel's less efficient handling of the line or slow reaction to machine jams or stoppages or the fact that certain label types cause the machines to jam more frequently.

The Efficiency module's ongoing monitoring of the production line enables up to date verification of whether a given shift of employees has met their target, if the realisation of monthly plans is on track and if any of the parameters are threatened.

>> Implementation on time and within budget

At the beginning of the implementation process, technical infrastructure was installed and configured. Connections were made to interfaces of automation controllers on production lines, namely the necessary devices for data collection. This data are electrical signals picked up by sensors on bottling line machines that are recorded in the Historian industrial database in real time. The next stage of the implementation was the configuration of the Historian database and also analysis of the signals which are fed into it.

The key and most time-consuming task was modelling in the system of bottling lines, which include several machines used i.e.: for washing bottles, verification of their cleanliness, pasteurization, filling, verification of the amount of beer poured into each bottle, capping, labelling, unpacking and packing of crates. All of these machines had to be reproduced in the system together with a description of each state in which they could be in. A corresponding electrical signal from the Historian database was linked to each such description (stoppage, shortage, lowering/raising of forklift, etc.).

Thanks to this, the software can determine if at a given time a machine has stopped, it released a faulty product, performed its operation incorrectly or transferred to another machine a set number of items.

The biggest challenge was to link up MES to the original system of bottling line control (in this case the KHS line) without any difficulties and this aim was fully achieved. We were additionally interested in having an application that would be able to point out the single 'culprit' machine from amongst

Implementation benefits

- > Access to accurate information on breakdowns and stoppages necessary to undertake production management decisions.
- > Possibility of elimination of losses and stoppages in the process of beer bottling.
- > Support of the TPM (Total Productive Management) system in production management.
- > Increased availability of resources (machines, equipment, people).
- > Optimization of the quality of the beer bottling process.
- > Less paperwork for employees – manual preparation of reports.



Krzysztof Żyrek
production
director
at Browar Warka



„What is of greatest significance is that we now know what is wrong with the lines. Thanks to automatic registration of stoppages, we have a fuller picture than 3 or 4 months ago, we know the causes of stoppages and how much time they actually consume. It is now up to us what actions we'll take to improve productivity.”

a series of machines stopped at the same time. Next, it was also important for us to possess a tool that would enable operators to comment on given breakdowns and add planned stoppages (i.e.: breakfast breaks, refittings, overhauls) – lists Krzysztof Żyrek.

In order to meet the client's expectations, Bonair altered the conception during the implementation and created an additional application enabling machine operators to add more data on production line events. This required replacement of operator terminals and when stoppages now occur operators can choose the appropriate reason for the stoppage from a list shown on the terminal.

Despite all these modifications, Bonair was still able to meet all the objectives and carried out the full implementation within the specified time – emphasizes Krzysztof Żyrek.

>> Reports – less paper work

It was determined at the modelling stage what type and form of reports the system was to generate. This request was facilitated by a specialized Manufacturing Intelligence tool included in Proficy Plant Applications which provides reports in real time. In contrast to Business Intelligence tools used for this purpose in other Manufacturing Execution Systems, this product consists of a homogenous environment that provides a ready package of over 20 out-of-the box reports, which in effect reduces the costs of implementation and also subsequent maintenance and development of the MES.

The management of Browar Warka and especially the production director have ongoing access to overall weekly and monthly statistics. On the basis of reports and analyses, they are able to check each shift's productivity, pinpoint machines where stoppages occur and verify the duration and causes of the stoppages.

Regular employees also benefit from automatically generated reports. *Previously, employees monitored machine productivity by manually entering data on stoppages, which provided information on line effectiveness and the*

>> More effectively and without stoppages

productivity of the whole team. Now, they are able to obtain this data automatically without any laborious paper work – basic percentage parameters, such as the set plan for each shift and the current state of the plan's realisation are all shown on a big screen located in the hall – tells us Krzysztof Żyrek.

>> Tests – system better than the eye

The system was launched in succession together with the implementation of subsequent functionalities. Thanks to the participation of Browar Warka's employees in the entire process (i.e.: the production director, chief process automation engineer and head of bottling operations) results could be verified on an ongoing basis and corrections could be made immediately.

One of the more important tests was verification whether and with what accuracy the system registers line stoppages. This was an untypical test. *The system was connected. We set a time at which we would start and as of that moment, the installation counted the stoppages as did people who stood next to each machine with paper sheets, a pencil and a stop-watch and noted all the breakdowns, stoppages and their duration. At the end, we compared the data from the paper sheets with data from the system and it turned out that people noted slightly fewer micro-stoppages – the system was more precise than the human eye!* – recounts Krzysztof Żyrek. There were also other divergences that necessitated changes in the system, after which the same test was repeated twice

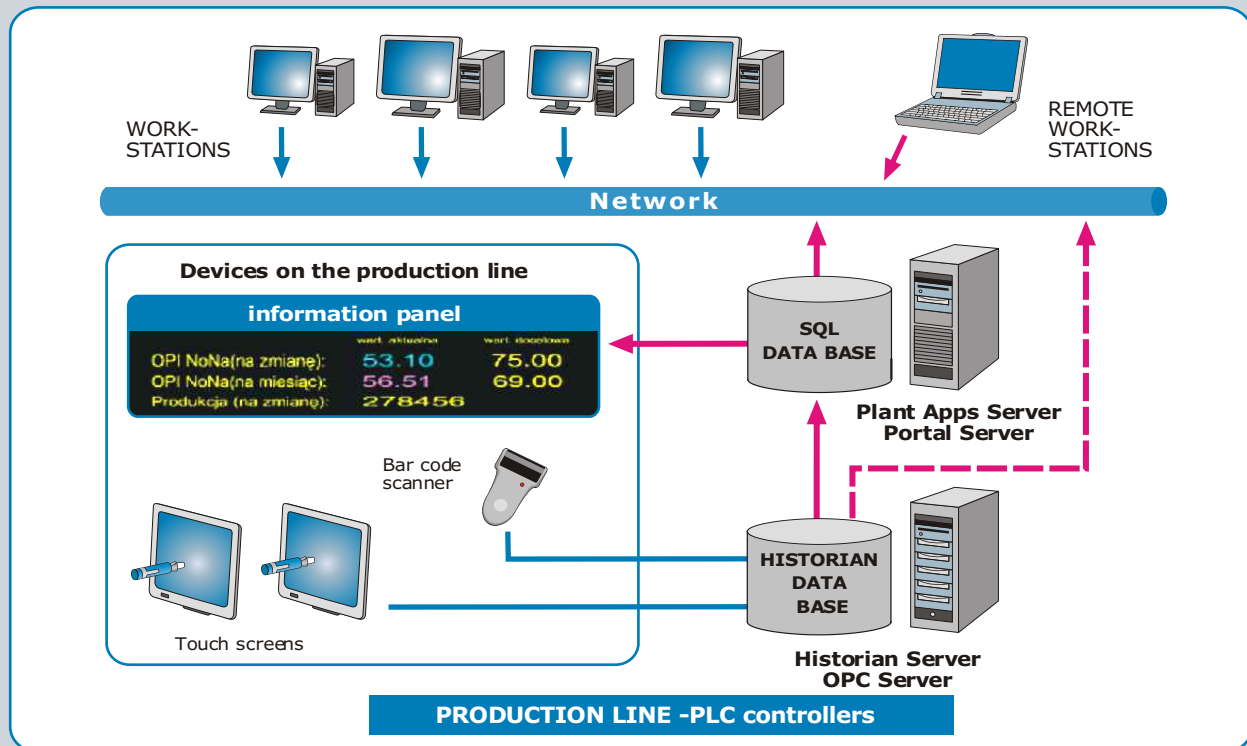
until full convergence was reached. In turn, the accuracy of the reports generated by the system came down to their comparison with earlier reports created on the basis of hand-written notes (although this could not be done for newly entered reports). This system however was not fail-proof as the company used to not register certain data.

>> What next? Toward automation

The system was launched in November yet due to the December stoppage related to the overhaul of the production line, it started proper functioning on 1st January 2008. The financial effects of the implementation will only become truly visible in several months. The system can point out "bottle-necks" but it won't be able to remove them. *Our investment in Proficy Plant Applications will not pay for itself if we don't undertake actions that will increase the bottling line's productivity – admits Krzysztof Żyrek. What is of greatest significance nonetheless is that we now know what is wrong with the line. Thanks to automatic registration of stoppages, we have a fuller picture than 3 or 4 months ago, we know the causes of stoppages and how much time they actually consume.*

Increased productivity is only the beginning. Browar Warka is considering implementing the remaining modules of MES – Proficy Plant Applications, including the quality and SPC modules. *We know which direction we are heading in. We know that we have to focus on more automatic and precise control of the production process – sums up Krzysztof Żyrek.*

Architecture of the Proficy Plant Applications solution



The solution is based on two servers. On one, there is the industrial base (Historian), which works around the clock and operates in real time. It collects information about electrical signals transferred by industrial automation controllers on the production line. Those signals testify to how the machine behaves in a given moment (e.g. it stops, begins to operate, moves the product, etc.). Additionally, when the signal does

not state unequivocally what is going on with the machine, that information is passed via the touch screen by the operator. The second server contains the proper application software and the SQL data base. Reports generated by the system are made available to authorized persons in the enterprise's internal network..

Scoring system at Bank Pocztowy SA

> Credit decision
in an hour

Bank Pocztowy decided to implement a scoring system to improve and increase sales of retail credits. This aim has been achieved and today, clients can receive their credit decisions quicker while the bank has been able to maintain a higher level of security of its assets.

The scoring system at Bank Pocztowy streamlines the credit decision making process. Firstly, it facilitates definition of algorithms used in the verification of applications. Secondly, it is employed in evaluation of whether a given application and applicant meet the conditions of obtaining a credit stipulated by the bank. To perform this task, the system uses a large amount of data, which are located in the database of Bank Pocztowy as well as the databases of external institutions such as the Credit Information Bureau (BIK) and the MIG-BR register of unreliable clients. *The main user of the scoring system in the operating part is the Retail Credit Department which makes decisions on the basis of the system's recommendations. In the strategic part, it is the Credit Risk Department that mostly relies on the system to design and implement scoring methods that enable effective management of credit risk at the Bank* – explains Mariusz Sowiński, director of the IT Department at Bank Pocztowy SA.

The implementation of the scoring system has made the process of providing credits to the Bank's clients more efficient. Thanks to this implementation and effective orga-



nisation of work at the Retail Credit Department, our motto "credit decision in an hour" is a fact – says proudly Mariusz Sowiński.

>> Scoring system a must

Prior to the implementation of Bonair's ScoreEngine solution, a system with a similar functionality simply did not exist at Bank Pocztowy. *The bank relied on its own tools to evaluate credit applications, which meant that the application analysis process was time-consuming and rather expensive* – tells us Mariusz Sowiński. *In order to increase retail credit sales, to improve the credit decision making process and mostly, to shorten the waiting time of our clients for a decision while maintaining a high level of security of the Bank's assets, the implementation of a scoring system was a must.*

Bank Pocztowy considered a few different scoring solution providers. However, in the end Bonair's offer was judged as the best by the tender commission. *The selection of Bonair for the job was based on its fulfilment of functional requirements, its potential ensuring correct product implementation, references for the offered solution as well as good price and conditions for the development and maintenance of software* – sums up Mariusz Sowiński.

The technical requirements of individual systems constituted another important criterion. *We preferred solutions which would not cause a revolution in the Bank's technical infrastructure but would relatively easily "blend" into it. Selection of Bonair's system enabled us to avoid introducing changes in the technical part of the Bank's IT infrastructure as well as in the entire organisational area of services responsible for system administration and its efficient functioning* – adds Mariusz Sowiński.

>> The implementation – it is hard work
being an integrator

Bank Pocztowy carried out many tasks at various stages of the implementation. Altogether, 12 employees participated in the project and the tasks which they performed are proof of their high skills.

At the beginning, the employees' role was to define what the system should evaluate, what group of data it should be based on, which other systems it should connect to and where it should draw the data from. They also had to define what the credit application should look like, what scope of data it should include as well as the products (credits) which the system would service. Moreover, they prepared the technical structure for the system.

Implementation facts

> What:

Bonair's ScoreEngine system together with three applications for application processing, definition of scoring algorithms and evaluation of decision quality; training.

> Where:

Bank Pocztowy S.A., headquarters in Bydgoszcz, www.pocztowy.pl.

> When:

February – March 2006 – preparation works, definition of needs, analysis stage,

April – May 2006 – adjustment of the system to the bank's needs,

June 2006 – test installation of the scoring system, without implemented communication with external systems, training,

July – August 2006 – preparation of test scenarios and testing of the basic system,

September 2006 – implementation of communication with external systems,

October – December 2006 – tests, alteration of strategy, reorganisation of applications adjusted to the ScoreEngine's interface for the credit application processing system,

December 2006 – January 2007 – integration tests related to adaptation of the ScoreEngine to the credit application processing system,

February 2007 – production installation of the scoring system and configuration,

March 2007 – production launch of the system.



> Credit decision in an hour

Once the bank's requirements as well as means of the scoring system's communication with external systems were determined, Bonair could commence the implementation in its own system of specific requirements, which went beyond the scope of the ready-made product. Next, Bonair installed a version of the system in the bank's network and a test environment, without any communication channels connecting to other bank systems or outside the bank. As of that moment, Bank Pocztowy's employees could start working with the scoring system and in particular with the module enabling definition of algorithms and strategy of evaluation of credit applications. *The implemented solution's advantages include its flexibility and possibility to introduce almost any kind of credit policy in the scoring algorithm. The price for such a solution is the enormous involvement of the recipient in the process of setting the system's parameters, which requires particular expertise in the area of scoring together with knowledge of the methods of designing algorithms in IT systems. The creation of scoring algorithms for given credit products in the scoring system was a time of intensive work by the Bank's specialists – admits Mariusz Sowiński.*

At the same time, the Bank integrated the scoring system with specific external systems as well as its own internal systems. *The Bank assumed the difficult role of the integrator in the project highlights Mariusz Sowiński. Our task was to ensure that production launch could take place of the scoring system, which was integrated with solutions that were already functioning at the Bank and came from different providers. This was by far the biggest challenge of the entire implementation project.*

The basic entrance application for the scoring system is the E-applications module created by Bank Pocztowy. The module includes implemented credit application forms as well as the workflow process for such application. *Thanks to the universal interface provided by Bonair and based on WebServices, integration of the scoring engine with the application for processing credit applications did not pose any major problems in the project – says Mariusz Sowiński.*

The system was launched in the production version after a year of intensive works and numerous tests.

>> Test after test

After installation of the test version of the scoring system and integration of the scoring system with each successive internal and external bank system, tests could take place: firstly approval tests and then integration tests. *The scope of the tests*

Implementation benefits

- > Improved quality of customer service through faster processing of credit applications and shortening of the waiting time for a credit decision.
- > Increase in the number of granted credits coupled with lower credit risk and improvement of the Bank's credit portfolio quality.
- > Centralization of the credit decision unit at the Bank and significant improvement of its work.
- > Acquisition of a flexible system enabling implementation of almost any credit policy in the scoring algorithm without additional costs.



Mariusz Sowiński
director of the
IT Department,
Bank Pocztowy SA



” Implementation of the scoring system has made the process of providing credits to the Bank's clients more efficient. Thanks to this implementation and effective organisation of work at the Retail Credit Department, our motto "credit decision in an hour" is a fact. ”

and their scenarios were jointly prepared by Bonair and Bank Pocztowy, following which they were consequently carried out. Thanks to the high quality of the software provided by Bonair, the system approval tests went smoothly, which enabled us to finish the project on time – recounts Mariusz Sowiński.

The first testing phase necessitated Bonair's participation however tests verifying the properties and legitimacy of defined strategies were performed by Bank Pocztowy since they required the knowledge of a credit analyst and knowledge of the bank's policy. At this stage, strategies for application evaluation were defined in the system by using as many scoring system possibilities as possible, after which applications containing various amount of data concerning various products would be sent to the system. The generated recommendations acted as the basis for verification of the strategy as well as the scoring engine's behaviour – if it responds to inquiries, if it correctly refers to rules and if it correctly interpreted the application data.

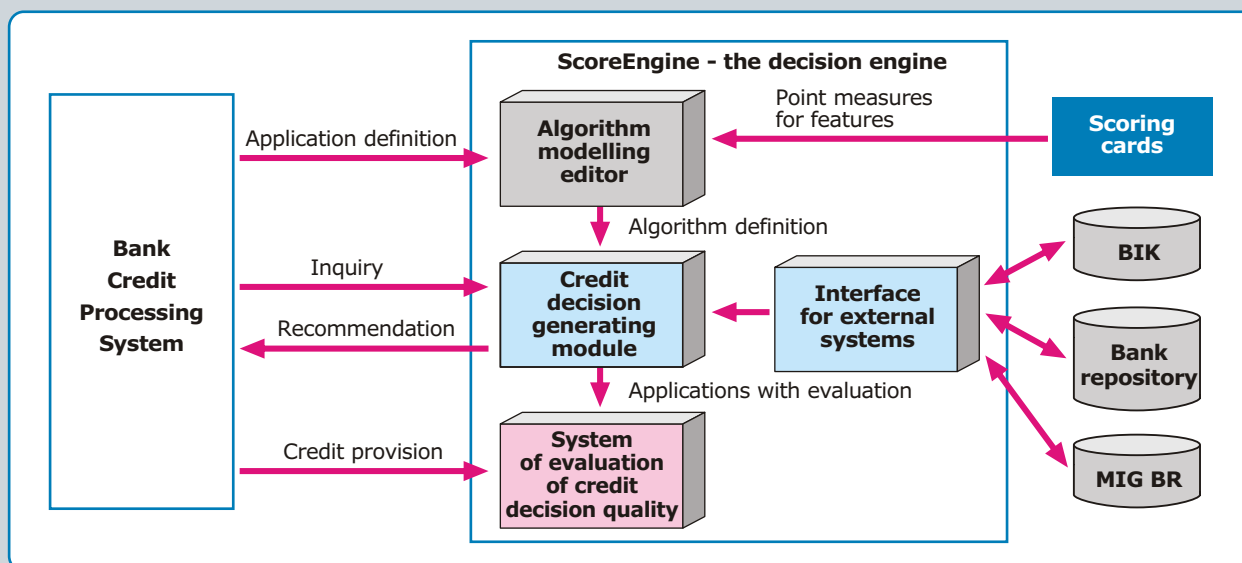
As further external systems were added, tests were expanded to also verify the communication's correctness. In the final part of the implementation, an integration test was carried out which verified the scoring engine's communication with bank systems, including: the system responsible for sending inquiries to the scoring system, receipt of responses, their interpretation and presentation to a defined group of users.

>> Intensive training for the chosen

The scoring system is invisible to analysts making credit decisions. Analysts automatically receive answers from the system in the form of a report - a credit decision in the application processing the credit application. Training is unnecessary. However, use of the part of the system responsible for implementation of scoring algorithms requires specialist knowledge as well as training which was assured by the provider – relates Mariusz Sowiński.

The training on definition of scoring strategies in the new system took three days and was organised in the form of intensive workshops. Learning how to work with the application is not easy because the scoring system has its own way of registering rules and interpreting data. The training ended with

Operation of the scoring system in the environment of Bank Pocztowy SA



Bonair's ScoreEngine system is a central system at the bank's headquarters in Bydgoszcz. It consists of three elements. The first one is the editor for modelling credit application processing algorithms (also called the scoring strategy modeller). Its departure point is definition of the application form; it also takes into consideration point measures for various features of the application and borrowers. The second element is the credit decision generating module, which processes inquiries from the Bank Credit Processing System (BCPS) in accordance with the defined algorithm and by relying on additional data from external systems such as that of the Credit Infor-

mation Bureau, the MIG-BR register of unreliable clients as well as the bank repository. On this basis, the module generates a recommendation for a given credit application which is automatically transferred to BCPS.

The third module evaluates credit decision quality and enables verification of the scoring system's decision as well as the bank's decision (this information is received from BCPS) in relation to the actual situation of the credit (i.e.: its repayment). The module also facilitates comparison of the current group of clients with the target client group specified by the bank in the definition of the specific scoring strategies.

the task for the participants to define a fragment of a scoring strategy in the system and then test it. Tests which almost constantly took place at successive stages of the implementation also served as good learning ground. *After completion of the training on implementation of scoring algorithms carried out by Bonair, Bank employees took full control over this part of the system* – adds Mariusz Sowiński.

Bonair organised another training session on system administration, which focused on conveying information on what administrative functions the system contains, what should be monitored in the system, how to interpret the system's messages and what type of system behaviours should be a source of concern for the administrator.

>> Evaluation of decision quality

The scoring system not only evaluates applications but also collects information about the Bank's borrowers and the decisions taken regarding their applications. This information is also used by the additional module - Evaluation of Decision Quality (EDQ). *The module helps to evaluate the quality of taken credit decisions and what follows, the effectiveness of the credit policies implemented in the system* – states Mariusz Sowiński.

The EDQ module enables verification if for example the recipients of the bank's products comprise the group of clients for whom the strategy of application examination was created, if these are people within the target age bracket, with the given occupations and given income. The module also analyses the scoring system's recommendations in terms of the number of positive recommendations, the number of refusals, the

number of cases when the bank did not grant a credit despite a positive recommendation and how many credits are lost and how many are being repaid. On the basis of EDQ analyses, the bank may take different actions such as change strategy or create new products.

>> Trouble-free use and cost-free development

Bonair provides after-implementation maintenance services. If there are no inquiries from the bank, Bonair simply verifies the logs to ensure that nothing unusual is happening and also that the application processing time is correct. The bank has set relatively strict requirements and Bonair is doing its best to fully meet them. *We experience no problems in use of the system and Bonair resolves small incidents professionally and on time* – notes Mariusz Sowiński.

However, the bank must be always developing new strategies, changing credit conditions and creating new products in order to adjust to the needs of the market, its clients or the changing law. How does the ScoreEngine respond to this?

The system is a flexible tool that enables independent creation and implementation of scoring algorithms. As a result, its development does not generate additional costs related to code modifications, which is a huge plus. There haven't been any large changes in the system that required the provider's intervention after completion of the project. The Bank can independently develop the system by using the system's parameter setting mechanisms – concludes Mariusz Sowiński. For example, the bank has connected its own internet service that also communicates with the scoring system, sends applications and receives and interprets recommendations.