2012 Jürgen Schönhut Memorial
CIP4 International Print Production Innovation Award

Imprimerie Rochelaise

Winner

Best cost/benefit realization and improvement in efficiency as a result of process automation implementation

Executive Summary

Imprimerie Rochelaise is a fifty-year-old company, privately owned, which employs 49 staff members and generates 8,35 million € turnover.
They print all types of folders, brochures, catalogs, posters, flyers…

Its management team is continuously searching for new ways to improve processes, quality and protect the environment: Imprimerie Rochelaise was certified Imprim'Vert in 2003, FSC and PEFC in 2008, PSO 12647-2 in 2010. Their goal is to be certified ISO 14001 in 2011 and ISO 9001 in 2014 (in progress).

Imprimerie Rochelaise has the following systems in place:

- Graphisoft for estimating, Production Management, Inventory Control and CRM (Rhapso)
- :Apogee Integrate as prepress workflow (Agfa)
- A ROLAND 704 offset printing press with Printnet network
- A ROLAND 505 offset printing press with Printnet network
- A KBA offset printing press with Logotronic

The integration project implied the following streams:

1. JDF connection between Graphisoft and :Apogee Integrate
2. JDF connection between Graphisoft and manroland presses
3. JDF connection between Graphisoft and KBA press
4. Print2B access for some customers (integration of customer within management flow)
5. Apogee Portal for some customers (integration of customer within production flow)

It was conducted in several steps, starting in 2006. Lessons were learnt after each connection in order to become more efficient in the next one. The main benefits of this project:

- Decrease labour tasks and costs for each job
- Give to Imprimerie Rochelaise the possibility to handle more jobs with the same staff
- Increase sales and profit
- Improve quality
- Decrease production delays

Imprimerie Rochelaise has still many ideas to move on and develop additional possibilities of process automation.

Section I. Background

The production and management tools at Imprimerie Rochelaise are the following prior to any JDF or customer integration, in 2006:

- Management Information System: Graphisoft
  - Estimating
  - Production Management, shop floor data collection
  - Inventory Control
  - Customer Relationship Management

- Prepress
  - Prepress workflow: Agfa Apogee Prepress 6
  - 2 CTP Agfa Avalon N8

- Offset printing presses:
  - KBA Rapida 106: 8 colours, 74x106 cm
  - ROLAND 704: 4 colours, 74x104 cm
  - ROLAND 505: 5 colours, 52x74 cm

- Finishing:
  - Folding
    - MBO T800
    - MBO T72
    - Horizon 546
    - Horizon 746
  - Binding
    - Saddle stitching: Hohner HSB 10000
    - Sheet gathering, folding, stitching: Horizon
    - Laminating: Evolution 76

Before the implementation of the integration, a lot of information was communicated via email, phone, or paper, for instance:

- Customer asks for a quote via email
- Estimators sends a quote letter via email
- Customers posts files on ftp
- Prepress operator reads the instructions on paper job ticket and creates job in prepress workflow
- Customer delivers files on ftp
- Customer receives soft proof via email, or paper proof via express shipping
- Printing operator reads the instructions on paper job ticket and enters them on the press
- Operator reports time spent on job on job sheet or workshop terminal…

Also, a number of non compulsory information was simply not transmitted, because it would have represented additional workload for Imprimerie Rochelaise's team.

Section II. Objectives

Imprimerie Rochelaise Management Team had the overall business objective to increase turn-over, without increasing staff. This meant the following objectives for the integration project:

- Improve productivity and decrease especially job fixed costs
- Enable increase in Sales

- Make the information flow more reliable, avoid mistakes
- Shorten lead time between customer request and job delivery
- Measure accurately actual margin per job and take consequent decisions to improve profitability

Section III. Methodology

The management team identified automation as the only way to reach their objectives without increasing staff. Since JDF was (is) the only standard in the printing industry, it came up as a compulsory feature for all new systems, software or equipment, that would be acquired in the future by Imprimerie Rochelaise. This way, they would become easily a part of the integrated process. Imprimerie Rochelaise studied also how existing systems could be JDF-enabled.

The first goal was to automatize internally, meaning between the production systems within the printing company. The second goal was to automatize externally, meaning with customers, at 2 levels: sales relationship / management and prepress.

Section IV. Implementation Story

Previously to this integration project, the Graphisoft MIS had been implemented, first with the estimating module in 1992, then with the Production Management and Inventory Control modules in 1998. CIP3 connections had been installed in 2004 between Agfa Apogee and manroland Printnet. The different integration steps were conducted taking into account Imprimerie Rochelaise's day-to-day priorities and existing systems possibilities.

Step 1: 2006 - JDF connection between Graphisoft and 2 manroland printing machines.

This was most probably the first JDF integration in a printing company in France.
It was lead jointly by manroland France technical team and Graphisoft technical team.

Previous to on-site implementation, extensive testing has been performed based on Imprimerie Rochelaise configuration; manroland presses have been upgraded and Printnet server has been installed. Then the JDF connection has been implemented in 2 main phases:

- Open JDF from Graphisoft to manroland Printnet
- Open JMF from manroland Printnet to Graphisoft.

This first step took some adjustment time because of limited experience from all parties. Also, different machines generations allowed various level of integration. The team work between Imprimerie Rochelaise, manroland and Rhapso allowed to end up with a functional connection.

Imprimerie Rochelaise gave a positive feedback after this first step: the life of operators was simpler, and in the same time the change in the way of working was limited. We could go to the next step.

Step 2: Mars 2006 - First customer online with Agfa Apogee Portal (previously Delano).

Agfa Portal allows to Imprimerie Rochelaise's customers to upload files, and validate proof online.

Progressive ramp up with new customers connected each year.
Step 3: January 2010 – first customer online with Graphisoft Print2B

Graphisoft Print2B allows Imprimerie Rochelaise's customers to calculate instant quotes and place orders online. Print2B was proposed to a first customer to validate the concept, then to a second one… taking into account their skills and affinities.
Step 4: October 2010 – New KBA offset printing press, JDF connection between Graphisoft, Apogee and KBA LogoTronic

Installation of KBA offset press Rapida 106 perfecting press 4/4 with:

- SIS - sidelay free infeed
- SPC - simultaneous plate change
- FAPC - fully automatic plate change
- LogoTronic professional v. 5.3
- CIP3 & JDF connection

This new integration greatly benefited from the experience acquired during step 1.

JDF connection between Graphisoft, Agfa and KBA:

- Previous testing had been performed at the occasion of interops and one-to-one testing
- One day ½ on site Graphisoft – Agfa – KBA. JDF experts teams
- Issue: KBA should be able to receive correctly the info coming from Agfa Apogee in CIP3 and from Graphisoft in JDF, both on the good sheet.
- Functional at the end of the intervention.
- Very quick implementation, because all parties with adequate skills were around the table at the same time. Communication between all partners involved was again a key success factor.
- More than training, communication to people regarding the information flow
- Change Management: some people were reluctant but had to see eventually that the new way of working was more efficient than before. Instead of 'doers' they were becoming 'controllers' and could contribute to improve quality.

The key success factor has been the very strong implication of the project Manager from Imprimerie Rochelaise:

- To communicate the company objectives to all vendors
- To facilitate vendors communication
- To promote internally the integration project and make the staff understand it was also their interest to have it work.

Next steps

- Connect JDF enabled finishing machines: Hohner saddle stitcher, possibly Horizon machines, in order to increase the finishing department productivity ;
- Enlarge use of Agfa Portal and Graphisoft Print2B to more customers, to keep increasing turnover without increasing prepress and administrative staff, and increase customer loyalty ;
- Smoothen even more integration between Graphisoft Print2B and Agfa Portal, to shorten even more order lead time.

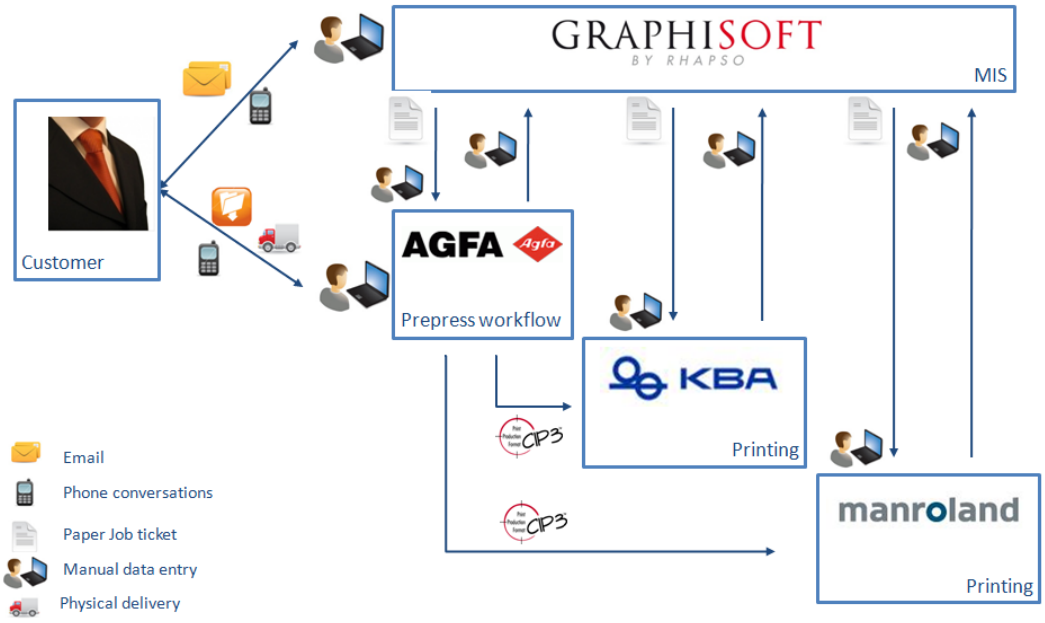
Section V. Resulting Workflow/Processes

Prior to the implementation:

- Customer calls or sends an email to express his requirements
- Estimator reads or listens, enters data in Graphisoft, prepares the quote
- Production Coordinator launches the job in Graphisoft and prints related job ticket
- The physical job ticket is passed on to the prepress department
- The prepress operator creates the job and its segments / sheets in Agfa Apogee Prepress. He selects the appropriate screens. He checks the ftp to see if the customer has submitted pages. If not, he calls the customer…

- The proof is delivered either by email (low resolution pdf), or physically (paper proof delivered express or onsite)
- While making proofs and plates, the operator has to write on the job ticket what he has completed.
- A person from administrative department collects all job tickets at the end of the day and enters actual production information into Graphisoft.

Information flow - *Before*



After the implementation:
Customers connected on Graphisoft Print2B make their quotes themselves, whenever they need. They can instantly adjust the desired printed product depending on their budget. They place their order online. The job is launched by the Production Coordinator in Graphisoft, simply by selecting the corresponding estimates. Instructions are sent to prepress and printing systems via JDF files:

Agfa Apogee Prepress, reads the JDF and creates the corresponding job:

- Customer info
- Job structure, segments (cover, signatures…)
- Printing information, colors
- Screen information. Indeed, for each paper grade (ISO) or even each paper category (user defined) and each grammage interval, it is possible to associate in Graphisoft settings a screen scheme.
- If the customer has a Portal access, the job is also created on the Portal, the customer is notified and can instantly submit pages

When imposition proofs and plates are being produced, for each sheet, Apogee informs Graphisoft in real time. Graphisoft reads the JMF and assigns the relevant information in Production Management:

- Imposition proofs received (for each sheet, front / back)
- Plates produced, per side and colour

- if rework, reason for rework, chargeable or not chargeable

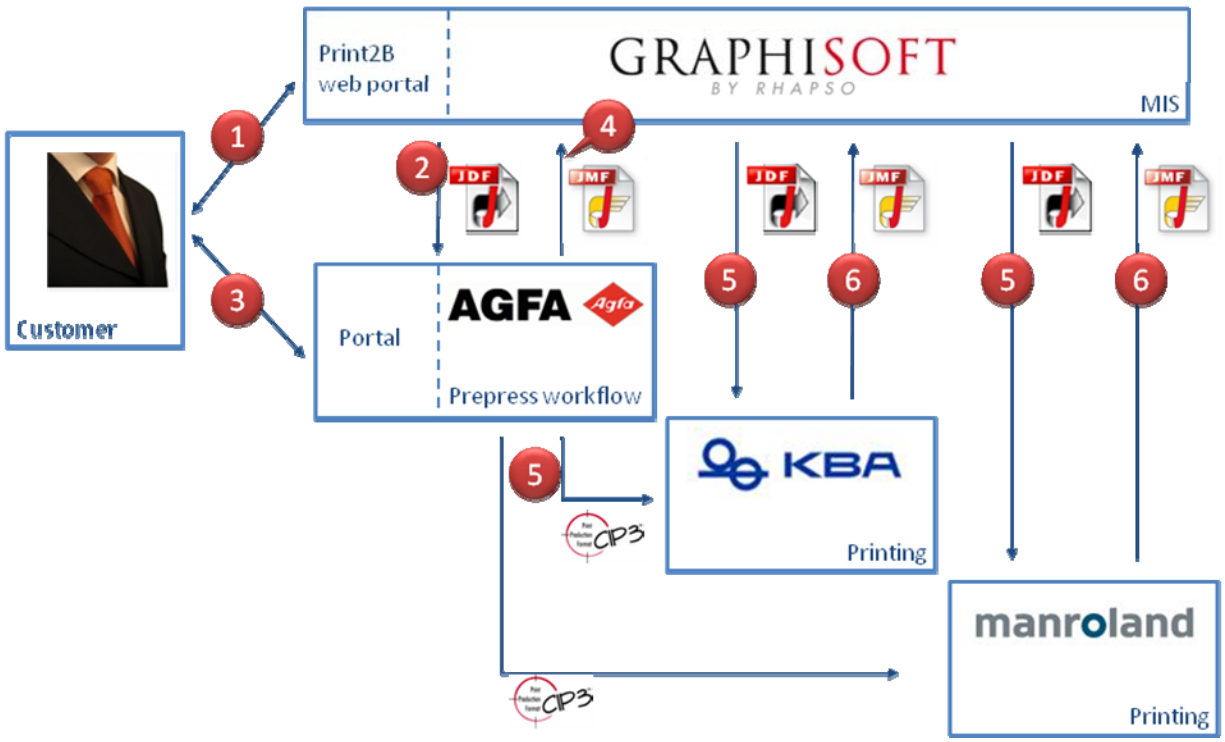
Printnet (manroland) and Logotronic (KBA) read the JDF sent by Graphisoft and create the corresponding job:

- Customer information
- Job structure, sheets
- Printing information
- Scheduling

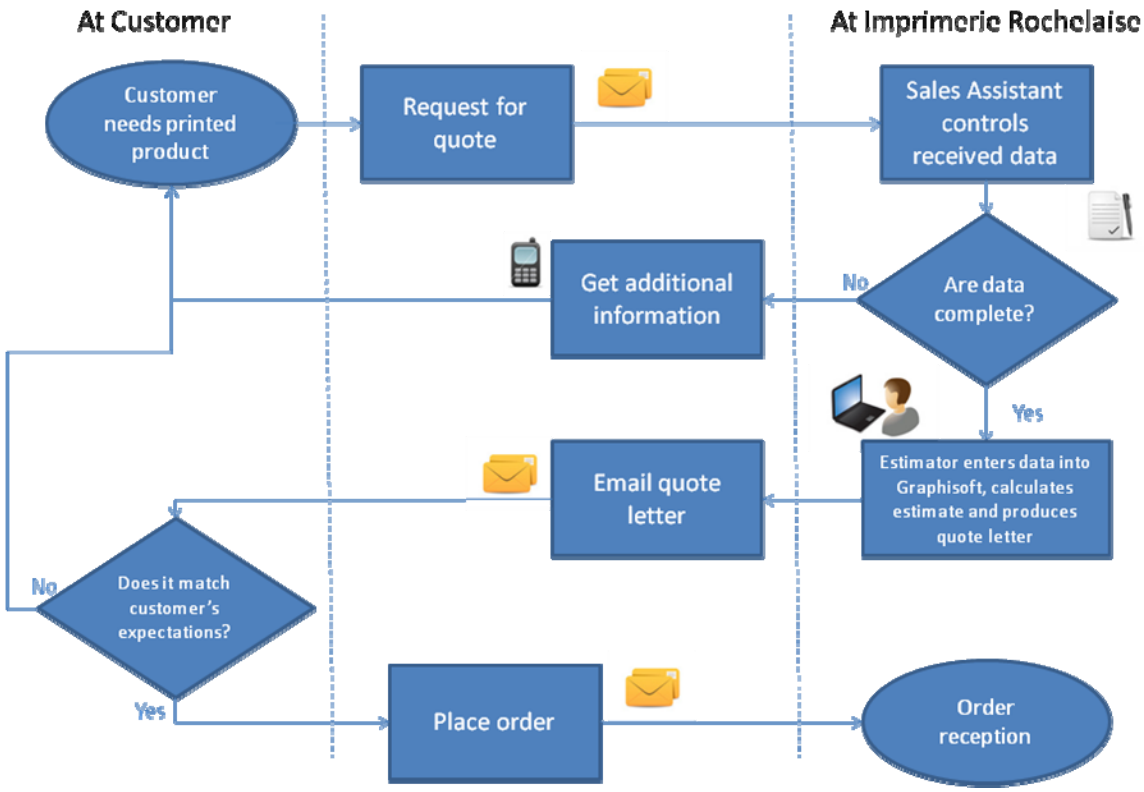
During printing, the presses inform Graphisoft back about real time status:

- Sheet
- Operation in progress
- Job phases time: production, idle, setup, cleanup…
- Number of good sheets, bad sheets…
- Operator

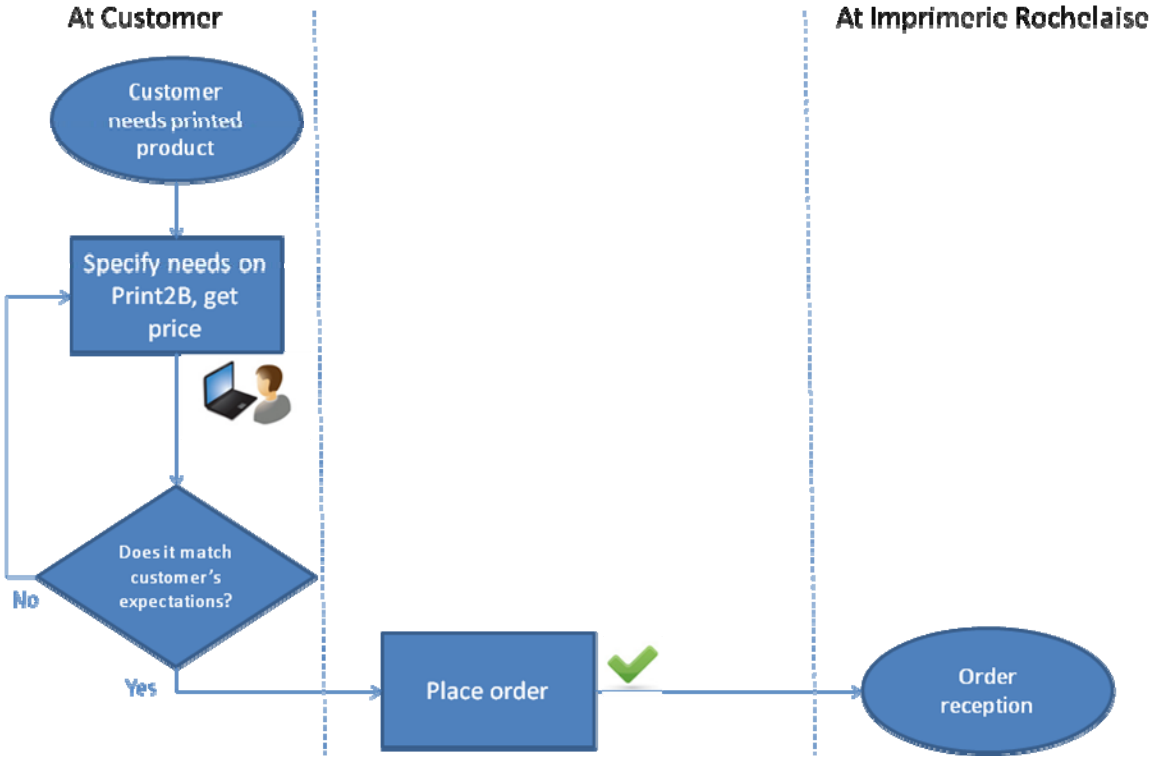
General system integration flow *after* – with sequence of communication



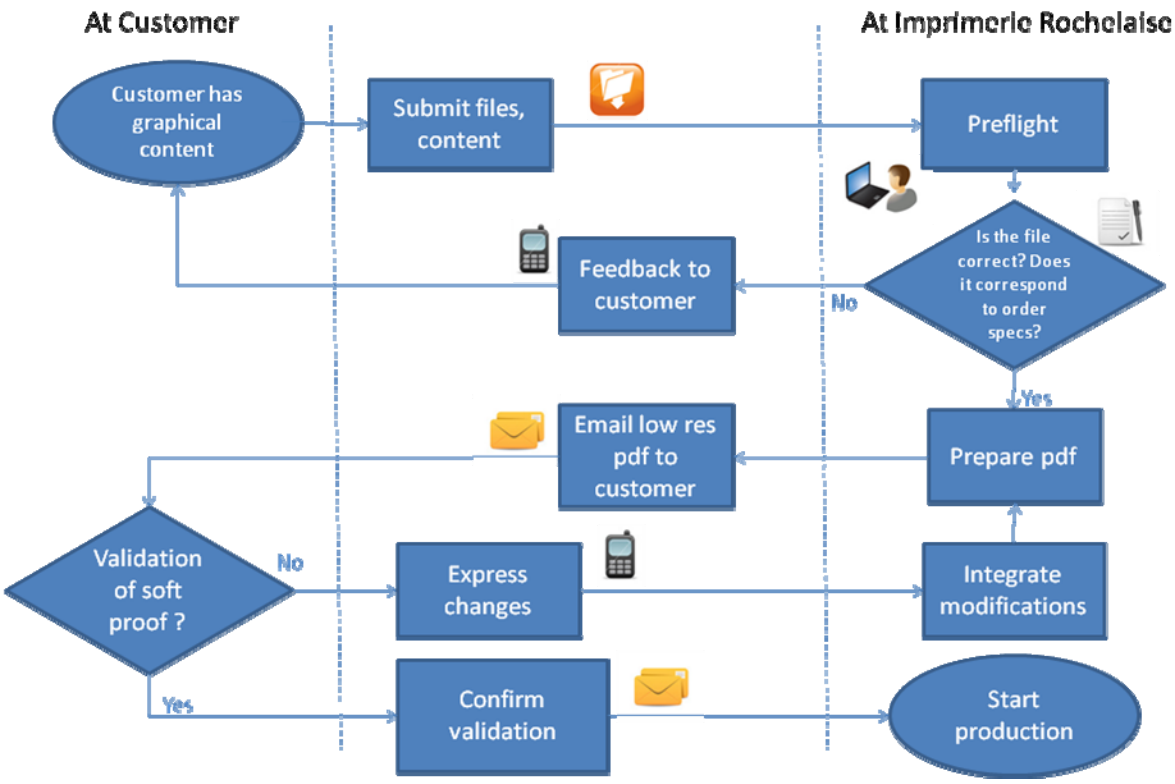
Print2B - *before*



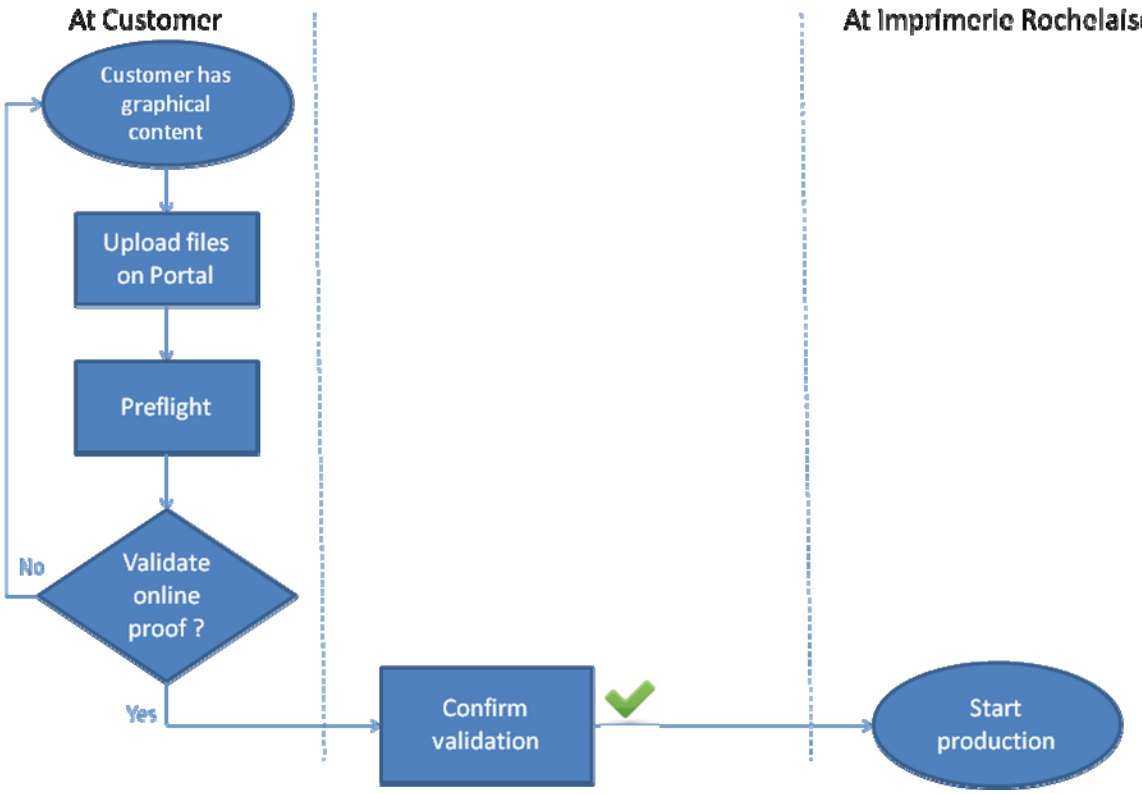
Print2B - *after*



Portal – *before*



Portal – *after*



Section VI. Optional Detail

- **ROI**

We have analyzed in details benefits strictly related to the integration project, and also corresponding costs. We interviewed prepress and printing operators to estimate time savings, double checked with global time figures.

Overall, the time saved on each station was re-used to handle more jobs with the same staff. Indeed, the number of jobs made at imprimerie Rochelaise has been increasing of 9% on average per year for the past 3 years, without any additional staff.

Customers' names have been sanitized to keep confidentiality.

JDF Prepress: Graphisoft -> Agfa

Time saving		393.2	h/year
The workload increase has been absorbed without increasing staff			
Without JDF, it would have been necessary to hire new staff			
Value of time saving obtained thanks to JDF prepress Graphisoft -> Agfa	**€**	**15,728**	**per year**

JDF Printing: Graphisoft -> manroland, Graphisoft -> KBA

Graphisoft <-> manroland			
Time saving on manroland 505 and 704		97	h/year
Value of time saving on manroland 505 and 704		**12,886 €**	**per year**
Graphisoft <-> KBA			
Time saving on KBA		140	h/year
Value of time saving on KBA		**41,940 €**	**per year**
Value of time saving obtained thanks to JDF Printing: Graphisoft -> manroland, Graphisoft -> KBA		**54,826 €**	**per year**

Graphisoft P2B

Print2B implemented for 2 customers : D. and T.

Better reactivity to customer requests, improvement of customer service allowing increase in turnover, reduction in estimating workload

The benefits have been quantified on 2 customers for which we have enough distance to measure benefits.

Increase in yearly turnover thanks to Print2B on these 2 customers		**402,615 €**	**per year**
Increase in net margin thanks to Print2B (based on average profitability 2010)		**15,422 €**	**per year**

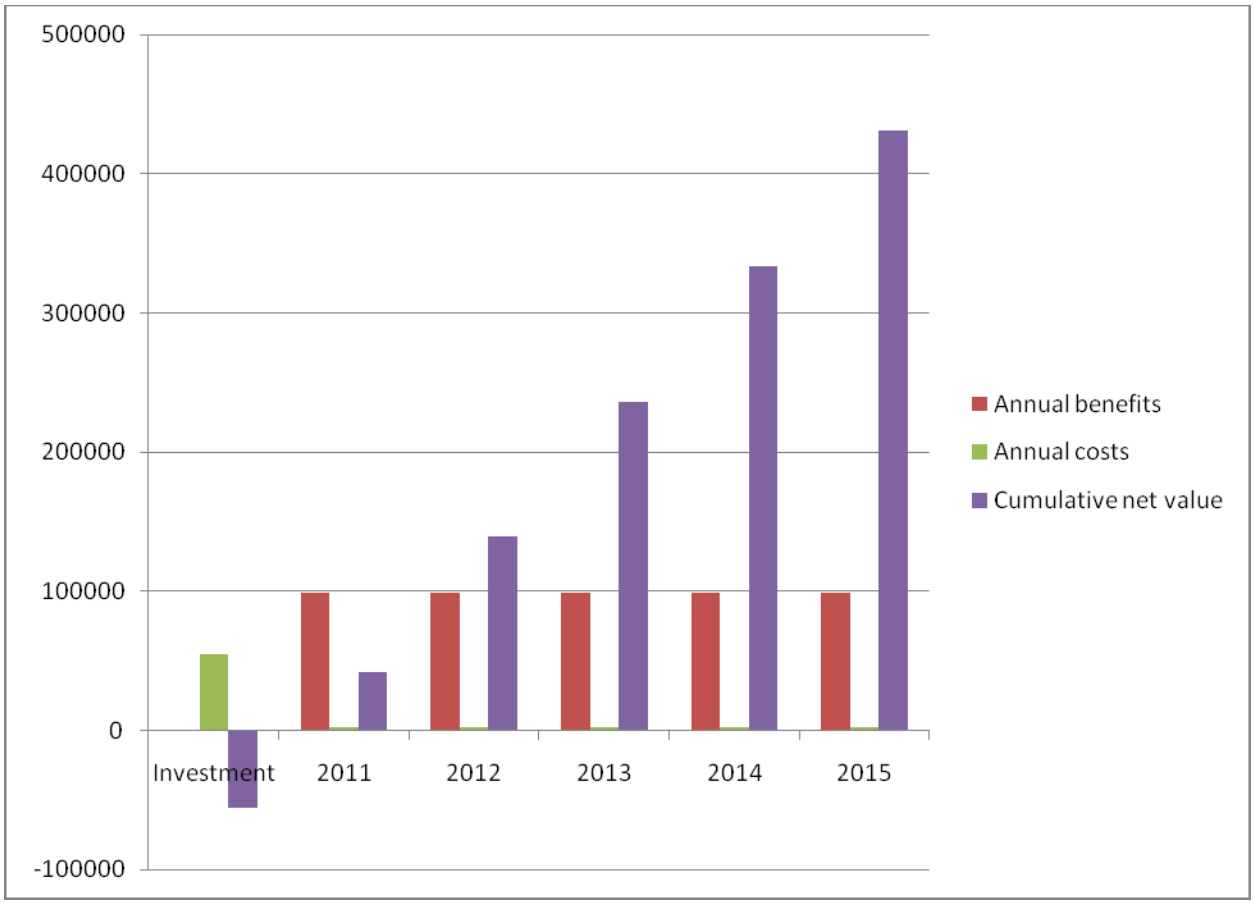
Without Print2B, these jobs would have implied workload in estimating department:			
Number of quotes that these additional jobs would have meant		1,162	
Additional working time that would have been spent for these additional quotes		181	h/year
Value of time saving thanks to Graphisoft Print2B	**€**	**7,230**	**per year**

Agfa Portal

Preflight			
Preflight time saving		149	h/year
Hourly rate preflight		40 €	/h
Value of time saving thanks to Agfa Portal		**5,974 €**	**per year**

Additional net margin generated per year	**€**	**15,422**
Recurring cost saving per year	**€**	**83,758**

ROI of integration project at Imprimerie Rochelaise							
		Investment	2011	2012	2013	2014	2015
Discount rate	5%						
Benefits							
Additional net margin			€ 15,422	€ 15,422	€ 15,422	€ 15,422	€ 15,422
Recurring cost savings			€ 83,758	€ 83,758	€ 83,758	€ 83,758	€ 83,758
Annual benefits			**€ 99,180**	**€ 99,180**	**€ 99,180**	**€ 99,180**	**€ 99,180**
Discounted annual benefits			**€ 94,457**	**€ 89,959**	**€ 85,675**	**€ 81,596**	**€ 77,710**
Costs							
Investments							
License Graphisoft - JDF		€ 7,300					
Services Graphisoft - JDF		€ 3,000					
License Graphisoft - Print2B		€ 2,500					
Services Graphisoft - Print2B		€ -					
Licence Agfa - JDF		€ -					
Services Agfa - JDF		€ 5,000					
Licence Agfa - Portal		€ 25,000					
Services Agfa - Portal		€ 5,000					
Licence manroland		€ -					
Services manroland		€ 1,678					
Licences KBA		€ -					
Services KBA		€ 5,630					
Recurring costs							
Maintenance Graphisoft - JDF			€ 1,241	€ 1,241	€ 1,241	€ 1,241	€ 1,241
Maintenance Graphisoft - Print2B			€ 425	€ 425	€ 425	€ 425	€ 425
Maintenance Agfa - JDF			€ -	€ -	€ -	€ -	€ -
Maintenance Agfa - Portal			€ 300	€ 300	€ 300	€ 300	€ 300
Maintenance manroland JDF			€ -	€ -	€ -	€ -	€ -
Maintenance KBA JDF			€ -	€ -	€ -	€ -	€ -
Annual costs		**€ 55,108**	**€ 1,966**	**€ 1,966**	**€ 1,966**	**€ 1,966**	**€ 1,966**
Discounted annual costs		**€ 55,108**	**€ 1,872**	**€ 1,872**	**€ 1,872**	**€ 1,872**	**€ 1,872**
Net value							
Annual net value		-€ 55,108	€ 97,214	€ 97,214	€ 97,214	€ 97,214	€ 97,214
Cumulative net value		-€ 55,108	€ 42,106	€ 139,320	€ 236,534	€ 333,748	€ 430,962
Discounted annual net value		-€ 55,108	€ 92,585	€ 88,087	€ 83,803	€ 79,723	€ 75,838
ROI per year		0%	5045%	5045%	5045%	5045%	5045%
ROI present value		**666%**					
Net present value		**€ 364,928**					
Pay back (years)		**0.75**					



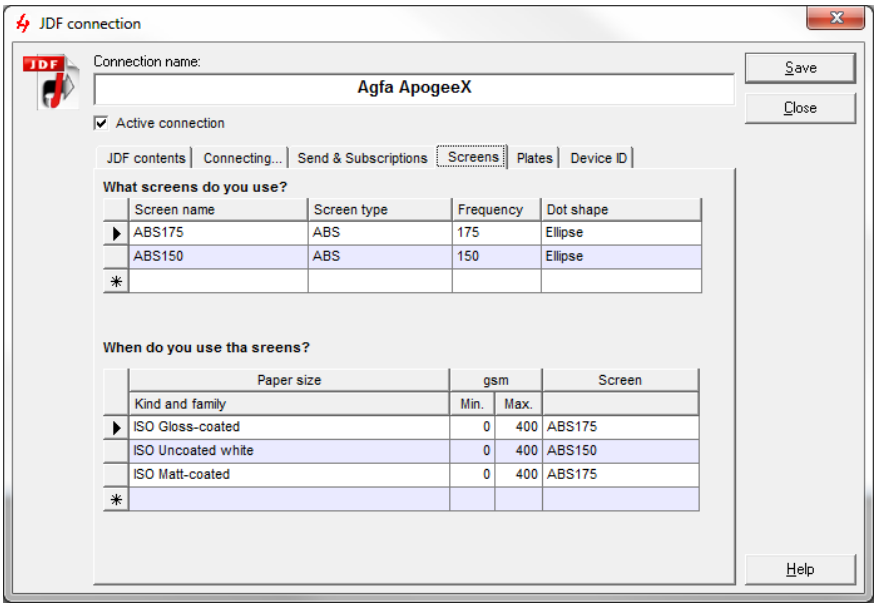
The ROI has been calculated based on conservative hypothesis especially regarding integration towards customers. Indeed, Agfa Portal and Graphisoft Print2B are being implemented at new customers, still we only took into account customers with whom we had enough history to quantify benefits.

- **Improvement in Quality and Customer Service**

Quality

Imprimerie Rochelaise has been certified PSO in June 2010. This certification implied to increase overall printing quality and in particular use more accurately and specifically screens and dot gain curves. For instance, before JDF, Imprimerie Rochelaise was using a single dot gain curve whatever the paper used.

Being certified implied differentiating dot gain curves per paper type. This dot gain curve selection, if completed manually, would have meant increased manual work and increased opportunities for errors. Thanks to the JDF connection between Graphisoft and Agfa :Apogee Integrate the screen and dot gain curve selection has been completely automated.



Graphisoft JDF setting enabling the automatic screen selection depending on paper

Customer Service

Delivery lead time has been greatly reduced thanks to both JDF integration and Agfa Portal for content delivery.

We have measured the delivery lead time as the elapsed time between “Date of content delivery” and “Delivery date”.

Evolution of average delivery lead time (number of days) for all jobs:

2010	9.8
2011	8.4

Agfa Portal contributed greatly to lowering the delivery delay, mainly at two stages:

1. Content delivery: As soon as the job has been launched by Production Coordinator, the Customer can start uploading files. Without the Portal, the prepress operator must first create manually the job in :Apogee Integrate before the customer can contribute.
2. Proof validation: there are still a number of proofs that require physical delivery to the customer or physical presence of the customer at Imprimerie Rochelaise, generating obviously consequent delays. Even when a pdf is sent to the customer, this requires a manual intervention from the prepress operator and implies delays that do not exist with the Portal.

Average delivery lead time (number of days) depending on proof type:

Paper proof delivered express	12.7
Paper proof onsite	9.7
Internal validation	8
Low res pdf	7.3
Portal	**4.6**

Also JDF contributed to lowering the delivery delay thanks to process automation. Indeed, jobs with traditional proofs also had their delivery lead time decreased:

Evolution of average delivery lead time (number of days) with proof type other than 'Portal'

2010	9.9
2011	8.7

Graphisoft-Print2B contributes also to lower delays, this concerns the elapsed time between the first time the customer expresses his requirements, and the order date, which we are not able to measure today at Imprimerie Rochelaise.

The elapsed time between estimate request and quote is decreased from 3h (during working hours) to 0h.

- **Innovation** — Please Provide a description of the innovative aspect of the process and an argument for why this is unique and new, with a comparison to traditional alternatives and a description of the primary benefit the innovative aspect of the new process.

The combination of JDF integration and customer integration makes the case of Imprimerie Rochelaise particularly innovative. Indeed, the benefits of JDF between Graphisoft MIS and Agfa :Apogee Integrate prepress workflow is especially enhanced because in fact the customer is the source of the information and also the recipient. Customer has a request and places the corresponding order, and virtually without intervention from any production staff from Imprimerie Rochelaise, he can start contributing on the job by delivering graphic content.

Agfa and Graphisoft will increase their level of integration in the short term, giving the possibility to Imprimerie Rochelaise's customer to access seamlessly his quotes, his jobs and his files, depending on his needs.

The customer web access is particularly attractive for the customer who needs a very short term delivery and for the customer who can take care of his print jobs only after normal day of work (when the production coordinator at Imprimerie Rochelaise is already back home). It contributes greatly to increase customer loyalty.