

The E-dossier as a tool to optimize Civil Courts: the Cuneo Case

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Abstract: This article presents a framework to integrate Business Process Management and Simulation to Civil Court proceedings in order to support the telematization of the dossier, starting from the paper dossier. To speed up Civil proceedings while maintaining high level of efficiency of the Court, the introduction of the e-dossier has been fundamental in Italy. The article revolves around the virtuous case of the Court of Cuneo, analyzed through Process Analysis and Process Reorganization Models, to estimate which changes and improvements the telematization has brought.

1 INTRODUCTION


In recent years, both at European and national level there have been many laws, reforms and projects to improve the efficiency and productivity of judicial offices and courts. One of the latest and biggest projects in Italy, at a national level, is NGUPP¹. As a part of “the Unitary project for the dissemination of the Office for Trial and the implementation of innovative operating models in the judicial offices for the disposal of the back” promoted by the Ministry of Justice, the project aims at enabling the judicial offices of the Macro Area to acquire a more efficient method of handling litigation, in order to reduce the backlog.


The project proposes to test new collaborative schemes between universities and judicial offices in order to offer multidisciplinary skills to judicial offices employees, maintaining the efficient operation of the contemporary court system and offering sup-


port to the digitization and innovation process.


Despite all these efforts, the e-dossier is still a work in progress. In courts of many Italian cities the dossier is still on paper, or even half on paper and half telematic. In order to support this change management we will show the process the Court of Cuneo, a virtuous example of a court completely able to telematize, and sometimes dematerialize files of Civil Litigation and of Labour. The goal is to show the process beforehand and the current process to underline which activities allowed the telematization and the consequent savings of time, costs and resources. The final objective is to provide a model to be exported to support the change in other Italian, and maybe European, tribunals.


In order to analyse the business processes of the Courts, we exploit a Business Process Management (BPM) methodology (Dumas et al., 2018; Van der Aalst et al., 2010; Abo-Hamad and Arisha, 2013). One of the central issues of BPM (Dumas et al., 2018; Amantea et al., 2018; Van der Aalst et al., 2010; Abo-Hamad and Arisha, 2013) is change management (Amantea et al., 2020; Di Leva et al., 2020a; Amantea et al., 2022; Amantea et al., 2018). Using a process-centric approach, to describe the diagram of the process, we will adopt the Business Process Model and Notations (BPMN) standard language (Di Leva et al., 2020b; Allweyer, 2016). The adoption of a process-centric approach relying on a process-aware informa-

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tion system combining with a simulation tool (iGrafx LCC,) allows the redesign of business processes in an organization. This integration of techniques allows to analyze activities and related resources, time, and cost, and evaluate delay and bottleneck (Martinho et al., 2016; Mans et al., 2015; Fernández-Llatas et al., 2011); all based on real data stored in the information System (IS) (Amantea, 2022).

In the following section, we introduce our methodology. In the third chapter, we contextualize the Court of Cuneo, its processes activities on paper, its digitalized activities and the simulated process with the data analysis results. The two different business process will be discussed. In the last section, we provide our concluding remarks with some considerations about future work.

2 METHODOLOGY

The methodology is made of three different phases:

- **Context and Data Analysis:** the analysis of the context aims at understanding what the current situation is and what could be the needs for improvements at different levels: organizational, technological and legal level. This stage aims at setting the overall strategic scenario relevant to the company and determine the functional components related to the processes under analysis setting some KPI's (Key Performance Indicators), like cycle times, costs, resource allocation, etc., in order to measure the process performance (Van Looy and Shafagatova, 2016).
- **Process Analysis and As-Is model and simulation:** the goal is to create a visual model of process by determining the sequence of activities and the various crossroads (gateways), which lead to different routes depending on choices made. The process is then reconstructed as it is in the current situation, formalized in BPMN language and thus validated by Court officers. The process diagram is then integrated with information concerning resources (and their capabilities), execution time of the activities, costs, queue policy management, and other features that allow to build a virtual representation of reality that is as accurate as feasible. The model must be simulated with the real workload of the process extracted from the IS, thus obtaining an evaluation of the KPI to be compared with the current values of these indicators and allowing the model validation. The model obtained in this way is called the As-is model of the process under analysis.

- **Process Reorganization and To-Be model:** the objective is to introduce in the As-Is model of one or more corrective actions in order to show different evolutionary scenarios (and the respective models). This stage includes solutions for restructuring the process, improving the detection and the understanding of inefficiencies, bottlenecks, constraints and risks (Mans et al., 2015). The simulation, with the same workload, of the different scenarios (What-if analysis) allows comparing the scenarios among themselves and with respect to the starting As-Is model. The comparison is made on the KPI of the scenarios and of the As-Is model until an acceptable solution is reached. In this way, a new model of the process (To-Be model) is obtained, and it should be therefore implemented.

In particular, we are interested in monitoring the business performance related to the throughput time and costs between the activities performed in the chancellor's office in the As-Is on paper process and the To-Be telematic model. Thanks to iGrafx simulator it is possible to use monitors. Monitors are elements that can be placed on certain activities, thus allowing the time from one activity to another to be measured. When during the simulation the token will pass through the activity with the monitor, the monitor will be activated and will detect the time traveled by the token from the starting monitor to the arrival monitor (including waiting for resources, bottlenecks and time for various activities). By inserting various monitors during the process, it will be possible to measure only the cross-sections of the process that involve all the administrative tribunal stuff activities, excluding the not-optimizable times foreseen by the complaint for the performance of specific activities or parts of the process.

3 THE CASE STUDY: COURT OF CUNEO

At European and at Italian level there have been many norms in order to improve the efficiency and productivity of judicial offices and courts. At a more practical level some rules have imposed the telematization of files of Civil Litigation and of Labour sections. Despite this, the e-dossier is still not implemented in the majority of the tribunals. A virtuous example of a Court that was able to telematize, and sometimes dematerialize all of these files is the Court of Cuneo. The process of telematization-dematerialization started in 2010/2012 and developed slowly until recent years (2021/2022).

In order to support these changes we will show the paper process used till 2010-2012 (in Figure 4) and the telematic process later developed, from 2012 to 2019 (in Figure 5).

In recent years, some reforms have also reduced staff and at the end of 2023 the latest reform will also eliminate the Clerk's figure.

There are some terms are set by law, such as the terms within which the Judge has to deliver the judgement or the terms to be awaited until the effective date. Furthermore, some waiting times are due to the interval needed for the release of documents or stamps (like the ones by Lawyers or Public Prosecutor (PP)).

For this reason, we are focusing on the activities from the perspective of the Chancellor's office, and in particular, we are focusing on proceeding about separation and divorce by mutual consent, since they are less subject to the whims of external parties.

Judgements related to the kind of proceedings, hanging between 2010 and 2012 and between 2021 and 2022, have been estimated on the average 800 per year: so this is our generator for both As-Is and To-Be processes.

Initially, the Chancellor's office had at its disposal: 1 Officer, 10 Chancellors and 2 Clerks. Currently, there are 1 Officer, 5 Chancellors and 1 Clerks (figure which is going to disappear).

Comparing the two processes of Figure 4 and Figure 5, is visible that the workflow of the Information System (IS) implemented in the telematic process allows to make all the communications at its inside. Therefore, all the dossier delivery activities to the different authorities are deleted, thus, the clerk's, the driver's and the UNEP's activities are expired (and the lanes related to these functions are deleted too in Figure 5). Also the PP stamps are done by the IS and not anymore by the Clerks.

In this way, the activities of the To-Be process are significantly reduced respect to the As-Is model, and the cycle times are generally reduced as shown in Table 1.

Table 1: Comparison of the input transactions and the average cycle time measured in weeks of the whole process by As-Is on paper and To-Be telematic.

	Transactions	Av Cycle Time (W)
Paper	800	67.98
E-Dossier	800	22.12

This has occurred thanks to the possibility through IS to have the archive of documents always available and the cancellation of paper communications or in presence. This has facilitated the cancellation of the waiting times between the happened communication and the reception of the notification of the same one.

Moreover, by eliminating the presence of the lawyers for the delivery/withdrawal of the documents, the job of the operators can be better organized, more flowing and without continuous interruption. Furthermore, these structural changes promotes smart working for operators.

As the number of the activities are reduced, the monitors of the two processes show a relevant difference in the average throughput time of the Chancellor's activities. In detail, we put the simulations monitors in order to exclude the time that is not directly related to the Chancellor's activities (such as the waiting for the PP stamps or the communication from the lawyers or from the municipalities).

For clarity, we have split the processes into three parts related to the three main part of the process: Investigation stage, Introductory stage and Decision-making stage in order to better allow the time comparison. Watching at Figures 4 and 5 there are two colored activities. The investigation stage starts from the beginning of the process and ends to the activity "First hearing + Minutes", the Introductory stage starts from the activity "First hearing + Minutes" and ends to the activity "Publication", finally, the Decision-making stage starts from the activity "Publication" and ends to the end of the process.

In particular, related to the Investigation stage, in Figure 1 is shown the average working time express in hours of the Paper dossier a) (Figure 4) and of the e-dossier b) (Figure 5). In particular, Monitor 2 measured the first part of the inscription of the dossier from the beginning of the process until before the communication at the judge, while Monitor 4 misread from when the dossier retourn in charge of the chauncellor until the end of the chancellor's activities before the dossier arrive again to the judge.

Statistiche del monitor (Ore)		Statistiche del monitor (Ore)	
	Media Ciclo		Media Ciclo
Monitor2	133,47	Monitor2	76,67
Monitor4	197,58	Monitor4	107,03

Figure 1: Comparison monitor average cycle time measured in hours of the Investigation stage between the As-Is on paper process a) and the To-Be E-Dossier process b).

Respectively, in Figure 2 is shown the average working time express in hours related to the Investigation stage of the Paper dossier process a) and of the e-dossier process b). In particular, Monitor 6, 8 and 10 are related to the activities before the judge decision and avoiding the steps related with entities out of the administrative staff. Monitor 12 measured the activities from the judge decision to the publication.

Finally, Figure 3 shows the average working time express in hours related to the Decision-Making stage

Statistiche del monitor (Ore)		Statistiche del monitor (Ore)	
	Media Ciclo		Media Ciclo
Monitor6	42,99	Monitor6	13,69
Monitor8	0,95	Monitor8	0,03
Monitor10	949,47	Monitor10	15,79
Monitor12	5,92	Monitor12	0,02

Figure 2: Comparison monitor average cycle time measured in hours of the Introductory stage between the As-Is on paper process a) and the To-Be E-Dossier process b).

of the Paper dossier process a) and of the e-dossier process b). In particular, Monitor 13 start from the receiving of the judge decision and represent the time of the publication and the starting point of the notification to every interested part. But while with the IS is possible to send all the communication together and it is not necessary to note the receiving notification, in the paper process there are a lot of steps for different communications sending and receiving. Thus, while for the e-dossier the instant communication is included in Monitor 13, the different communications activities in the paper model are indicated in Monitor 15, 17 and 19. At the end of the legal waiting time for the prescription, Monitor 21 a) and Monitor 15 b) show the average time necessary for archiving file.

Statistiche del monitor (Ore)		Statistiche del monitor (Ore)	
	Media Ciclo		Media Ciclo
Monitor13	0,41	Monitor13	0,01
Monitor15	1352,68	Monitor15	3142,77
Monitor17	1277,85		
Monitor19	1400,17		
Monitor21	3434,78		

Figure 3: Comparison monitor average cycle time measured in hours of the Decision-Making stage between As-Is on paper process a) and To-Be E-Dossier process b).

It is important to underline the drastic reduction of communication activities, besides a saving of working times, has carried to a considerable cost reduction. Although it has not yet been possible to estimate the reduction in the number of printed copies of each official document and accompanying documents, it has been possible to verify a reduction of approximately 5,000 euros for every year regarding the year precedence from 2019 to 2022 only for the postal expenses.

Nevertheless, when in January 2024 the reform that will abolish the figures of the clerks comes into force, this model will allow the continuation of the normal duties of the court avoiding bottlenecks for lack of staff.

4 CONCLUSIONS AND FUTURE WORKS

This paper draws the threads of the process implemented at the Court of Cuneo, so as to capture its up-standing practices, mainly where it has been possible to fully telematize (and in some cases dematerialize) the dossier of the Civil Litigation sector. To highlight the actions that permitted telematization and the time, money, and resource savings that resulted, the work's goal is to depict how the operation was done in the past and how it is done today, in order to export the model.

These relevant outcomes can be taken as a model for all the other courts from Italy, which will encounter the same issues in telematizing proceedings and dematerializing dossiers. As a matter of facts, the legislative decree d.l. n. 13/2023, approved by the Council of Ministers on February 21st, has established the obligation of telematic deposit, the obligation of using PCT for the judge and the public prosecutor, for decisions and the minutes of the hearing. On this note, it is fundamental for Italian Courts to update their current proceedings and switch from paper proceedings to telematic proceedings. Therefore, the features and results presented in this paper have to create an archetype of an Italian telematic civil court that can be sustained, transplanted and reproducible in other courts, to enable the same cost-efficiency gains.

As future works, we would like to apply these current optimization firstly, to the several other sections in the Civil Court and in the Criminal Court of Cuneo, and secondarily to other Italian Courts as desired by the Ministry with the creation of this project. Furthermore, to evaluate different aspects and for a higher and more complete vision, experiments of integrated techniques of BPM and Process Mining (Aalst et al., 2015) will be conducted in order to extract more useful information for further process optimizations.

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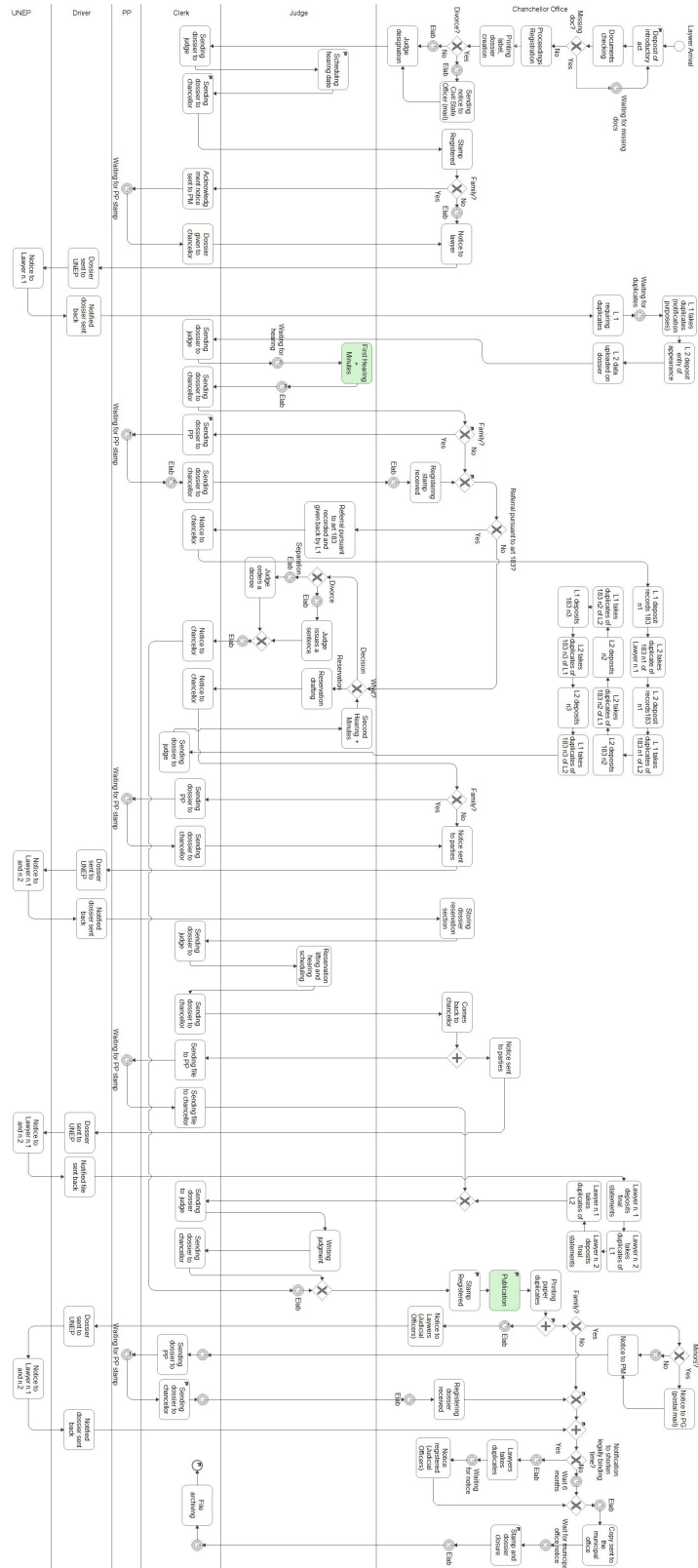


Figure 4: Paper process. As-Is process.

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