Building Interoperability for European Civil Proceedings Online

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BEYOND INTEROPERABILITY:
Designing Systems for European Civil Proceedings Online

Francesco Contini

IRSIG_CNR, Bologna, Italy

Giovan Francesco Lanzara

Department of Political Science, University of Bologna, Italy

Project coordinator

Research Institute on Judicial Systems, National Research Council of Italy (IRSIG-CNR)

In partnership with

Law Faculty, Central European University (CEU), Budapest

ICT Department, Italian Ministry of Justice, Rome

Institute of Law and Technology, (IDT) Autonomous University of Barcelona

Department of Political Science (DSP), University of Bologna

Interdepartmental Research Centre on European Law (CIRDE), University of Bologna

Centre for Social Studies (CES), University of Coimbra

IRSiG-CNR
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Designing Systems for European Civil Proceedings Online

Francesco Contini and Giovan Francesco Lanzara

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EXECUTIVE SUMMARY

In this report we have set the concept of interoperability on a new ground by connecting it to the broader issues of the design of complex systems and the cultivation of large-scale infrastructures. Our argument is that, in order to foster the circulation of judicial agency across EU Member States, systems for trans-border civil proceedings online must be designed so as to meet basic requirements of simplicity and ease of use. Circulation of agency and system interoperability must be supported by European-wide technical and institutional infrastructure that is at the same time robust and adaptable to future needs. In the report, first we have underlined the critical importance of infrastructures for building European interoperability, and then we have unpacked and analysed sources of complexity arising in the development of relatively simple judicial procedures as those described in the case studies. Finally we have proposed some design guidelines that should be followed to minimize complexity and enhance the circulation of legal agency in the development of European civil procedures online.

The report's major contributions can be summarized in the following points:

1. It develops a conceptual framework to analyse the complex issues involved in building European trans-border interoperability in the domain of Civil Justice.

2. It assesses the problem of the circulation of legal and administrative agency in European Civil Proceeding Online

3. It reframes and reassesses the idea of 'building interoperability' within the broader field of the development and cultivation of infrastructures

4. It focuses on the dynamics of the installed base as the crucial issue in designing complex systems for European e-justice and e-government

5. It spells out the critical importance of building institutional interoperability and developing institutional infrastructure in order to support trans-border e-service systems and at the same time allow systems evolvability and change.

6. It provides a broader understanding of the idea and implications of interoperability for the trans- border circulation of legal agency

7. it unpacks and analyses the major sources of complexity which may hinder the circulation of legal and administrative agency within national jurisdictions and across European trans-national borders.

8. It develops design guidelines for meeting minimal complexity requirements compatible with functionality and legal fairness.

9. Finally, based on the design criteria, it proposes and assesses alternative institutional architectures to support European interoperability and infrastructure in the domain of Civil Proceedings Online and, in general, to enhance the circulation

of agency in the domain of European Justice.

The report draws on the findings and the lessons provided by the two European case studies and the four national case studies that have been analysed in the Building European Interoperability project. The lessons learned from experiences of e-justice can be used to design online applications supporting trans-border proceedings like the European Payment Order and the European Small Claim Procedures. Also, they provide a platform to enlarge our views about building interoperability and infrastructure in the EU.

1.   Introduction

In this report we lay out a conceptual framework to analyse the complex issues involved in building European trans-border interoperability in the domain of Civil Justice. We propose design guidelines to tackle the dynamic complexity in building interoperable systems to enable and support the circulation of judicial agency across European trans-national borders. Agency is defined here as the capacity of an entity – human and nonhuman - to act and produce effects. By circulation of agency we mean the possibility for such capacity to be transmitted and be performative across different media, national borders, and functional domains. We set the problem of interoperability within the broader issue of the design of large-scale information systems and infrastructures that must enable the circulation of agency. Interoperability is a necessary requirement, among others, to support such agency.

Our analysis rests upon a set of basic concepts that have been recently developed in the research literatures on large scale information infrastructures (Bowker & Star 1999; Ciborra & al. 2002, Hanseth 1996; Monteiro 1998, Star 1999; Star & Bowker 2006), complex adaptive systems (Hanseth & Lyytinen 2010; Holland 1995), generativity (Zittrain 2006), and innovation (Contini & Lanzara 2009; Lanzara 2009; Tuomi 2002). We will show that a fuller and more articulate understanding of the relevance and, also, of the limitations of interoperability as a critical design feature, can be achieved by relating it to the ideas of infrastructure, flexibility, generativity, and dynamic complexity. Meeting interoperability requirements is a crucial aspect in enabling communication between systems, but such requirements must be gauged with the equally critical requirements of flexibility and evolvability. Workable, effective solutions to the problem of enabling and supporting trans-border European systems in the domain of justice and, for that matter, in other public service domains, critically depend on striking the right balance between sets of conflicting pressures and requirements.

The ultimate goal of the report is to provide tentative design guidelines for building European trans-border interoperable systems and procedures in the area of civil justice. The design guidelines are based upon the conceptual discussion and the lessons learned from the national and European case histories. Intendedly, our indications should complement, substantiate, and hopefully extend, at a more detailed and theoretical level, the broad principles and guidelines established by the European Interoperability Framework v2.0, which is currently under discussion.

Our aim is to enrich the concept of interoperability as it is defined in the EU documents by giving it a more generative, dynamic interpretation. In order to do that we identify the ways in which legal, technological and organizational conditions shape the circulation of agency in e-justice. As we will show in the following, both the digital medium and the trans-border dimension across the EU Member States (MS) add further levels of normative, semantic, organizational and technical complexity to the problem of the circulation of agency in the judiciary.

The conceptual framework is a distillation of our previous research work and of the experiences accumulated through the case studies we have undertaken in the present project. In turn, the case findings can be used as a first test of the framework, and will help to further refine the framework itself. Many of the ideas developed in the present study can be extended to the more general problem of designing effective systems for European trans-border public services in the perspective of pan-European integration.

The report is organized as follows: in sections 2 and 3 we provide a short reference to the European strategy for developing e-government services and the European Interoperability Framework (EIF). Then in sections 4 and 5, we develop our ideas about the circulation of judicial agency across different media and different jurisdictions within the European Union and, based on case materials, we spell out the sources of complexity (problems, bottlenecks and friction) that interfere with the smooth circulation of agency. In sections 6 and 7, we discuss the notion of interoperability by relating it to the general problem of designing infrastructures to support transborder public services and enable the circulation of agency. In section 8 we focus on interoperability across institutional frameworks, or institutional interoperability, as a critical aspect of designing EU trans-border systems in the judiciary and the public sector at large. Subsequently, in section 9 we discuss the major sources of complexity arising in the development of ICT-enabled trans-border judicial services, and, in section 10 we propose strategies for designing infrastructures and ICT-enabled procedures. Finally, in section 11, based on the former discussion, we design and assess a number of alternative institutional scenarios for organizing the European Small Claim Procedure online.

2. Developing e-Government services in the EU

During the last decade the Commission of the European Communities has made a strong commitment towards the development of European e-Government services, namely, public services that the administrations of the Member States have to deliver to any European citizen, administration or enterprise issuing a request, application or claim, without distinction of territory or nationality. The development of European Public Services is seen as a necessary component of the making of the common market and the empowerment of European democracy. The full support to the common market requires that MSs develop eGovernment services that must be open and seamlessly accessible throughout all Europe, so that European citizens and businesses are enabled to carry out transactions with public administrations other than their own (see European Interoperability Framework v.2). According to the European eGovernment policy, the implementation of

trans-border public services will require that MSs' public administrations and nation-based technical and legal systems be made interoperable, that is, able to communicate and exchange data, documents and information with one another. Such transactions must be given a legal form, that is, in order to be effective, they must meet the legal requirements established at European and national level. In addition, they must be understandable from a semantic point of view. At a more general level the effective implementation of the European eGovernment policy requires that both the EU and the MSs support the circulation of agency across national borders and public sectors. This rises the question of how such requirements may be fulfilled, that is, which alternative technical and institutional architectures should be designed in order to support pan-European interoperability. No matter which architectural solutions are envisaged or which technical systems are developed, in order to grant the trans-border circulation of administrative agency European Public Services and Information Systems must rely on a **common infrastructure** (see *Linking up Europe: the Importance of Interoperability for eGovernment Services*). Therefore, the design of technical and institutional architectures that may enable and support trans-border interoperability is at the core of the concerns of this report.

3. The European Interoperability Framework and the national justice systems

Two are the leading EU documents that offer directions for the development of e-justice in Europe: the ejustice action plan (http://eur-lex.europa.eu/LexUriServ/) and the European Interoperability Framework. The ejustice action plan (2009-2013) aims at developing the use of information and communication technologies (ICT) at European level in the field of justice. The European Interoperability Framework, in its most recent version (EIF v2.0, 2010), establishes the main principles and guidelines by which MSs should abide when they develop their National or Government Interoperability Frameworks (NIF or GIF). The EIF recommendations should be taken into account in order to deliver trans-border services for the European citizens, enterprises, and other MSs' public agencies and administrations. It is important to stress that in the vision of the European Commission the EIF does not replace the NIFs, but complements them according to the *principle of subsidiarity,* the first of the twelve principles listed in the EIFv.2 and one of the leading principles of European integration. This means, for example in the case of e-services in civil justice, that national courts and Ministries of Justice are responsible for delivering services across European borders when they receive trans-border claims. But in order to be able to do that they should adapt or update their technology, language, legal rules and procedures, and institutional and organizational structures according to the EIF guidelines. In other words, the national frameworks must become interoperable by means of the European Interoperability Framework. As it will be illustrated later, this is not an easy goal to attain, due to a variety of reasons. Trans-border interoperability puts high pressures on national administrations, and, most critically, inflates the overall procedural and architectural complexity. In addition, it is highly unlikely that all MSs could attain an interoperable connection with EIF with the same easiness and speed.

The EIF v.2 distinguishes four types of interoperability, which are of interest for the present project: technological, legal, semantic, and organizational/institutional. (We preferably use

the expression *institutional interoperability* rather than *organizational*, as it underlines the institutional features of public administrations).

For a trans-border e-service to be delivered the requirements of the four types of interoperability must be fulfilled. For administrations and agencies of the MSs full interoperability involves:

I. Cooperating partners with compatible visions, aligned priorities, and focused objectives (a shared political context).

- Aligned legislation so that exchanged data is accorded proper legal weight (some shared rules or agreements for establishing legal validity of actions and documents; entitlements and obligations)

- Coordinated processes in which different organizations achieve a previously agreed and mutually beneficial goal (alignment of bureaucratic procedures and routines)

- Precise meaning of exchanged information which is preserved and understood by all parties (meanings of data and legal acts must be kept stable across borders and sectors)

- Planning of technical issues involved in linking computer systems and services (based on shared protocols and standards)

Even if the principles and guidelines of the EIF have not a mandatory character and do not replace national frameworks, the conditions and requirements for trans-border interoperability are very demanding for most national governments. Several studies have shown that national justice systems in the EU MSs are very heterogeneous (Fabri and Contini, 2001; Contini and Lanzara 2009) and for most of them, in their present state, the attainment of an effective trans-border circulation of agency will require a great effort at redesign and restructuring.

Due to differences in the MSs' conditions, it is likely that the interactions between the EIF and each NIF will generate a broad range of different solutions and configurations, thus increasing complexity, for a number of reasons:

- Firstly, NIFs start out at different stages of development. Some countries, like UK and Finland have already established and tested their NIF, which is already operating; some are still in the process of building it, but lag behind, like Italy; some have not yet started to even think about the issue.

- Secondly, NIFs sit upon different installed bases and legacy systems, each with their own specific structural and functional features that will most likely generate path-dependence in their further developments. This amounts to saying that some developments and adaptations to harmonize the NIF with the EIF may be costly and difficult to realize.

- Thirdly, NIFs respond to different bureaucratic and legal requirements in each MS. It is likely that in some countries, like for instance Italy, the linkage and harmonization of the

NIF with the EIF will be accomplished by further legislation, thus injecting further legal complexity into the system.

All these elements will influence the path of transformation of the NIFs and will most likely increase the level of complexity of the whole system. In other words, we may be confronting the paradoxical outcome that the pressure to convergence and conformity to the EIF guidelines by the MSs will also generate heterogeneity, because it is likely that each single national administration or agency will find its own distinctive way to align its procedures and systems to EIF principles. At the same time, MSs with an already well-developed infrastructure and interoperability framework will lobby for extending their solutions to other countries. All this amounts to saying that the adoption and implementation of EIF guidelines by the MSs will most likely generate processes of destabilization in the national jurisdictions (in the legal code, in the administrative procedures, in the technical solutions, etc.).

The processes by which the MSs' justice systems change so as to become aligned with the guidelines of the EIF are critical; hence it is important to monitor them carefully, because ultimately it will depend on their outcomes whether a smooth and swift circulation of judicial agency can effectively be implemented across trans-national borders.

4.   The circulation of agency in judicial proceedings

If a major objective of European e-government policy is to improve accessibility and user friendliness of public services for European citizens it is obvious how the circulation of agency across media, functional domains and national jurisdictions is critical for extending the market and democratic rights. Agency is enabled, channelled, or hindered by technical, procedural and institutional arrangements which may influence the capacity to act in various ways, enhancing, guiding, or limiting it. Whoever engages in developing trans-border ICT-based judicial proceedings must necessarily aim at enabling some kind of legal agency, empowering individuals, businesses and administrations to produce legal effects through their actions. Indeed, ICT-based innovation in government, namely in justice, is often seen as the design of arrangements that should facilitate effective and seamless delivery of services, and in order to do that interoperability is a critical factor, albeit not the only one.

The term 'agency', as we use it here, does not exclusively refer to the purposeful activities of human actors, but is attributed to anything (actor, object, document, system, code, device, tool) that may produce effects, to anything that makes something happen, thus changing the state of affairs. Indeed, in complex technical and institutional environments it might be often difficult or even impossible to locate agency exclusively in the human agent, or in a group of human agents. It is often more rewarding to attribute it to systems and networks constituted of human and non-human components, which are both called 'actants' (Callon 1992; Latour 1992; Latour 2000). In other words, the human agent as such is not or needs not be the only locus of agency in a complex system. Agency is also shaped and channelled by a variety of non-human actants. To make some examples from

the judiciary, even the courtroom, through its spatial and procedural arrangements, is an 'active' component of the agency carried out in oral proceedings, because its procedures and decisions effect changes in the state of things and even produce new realities; or, at the smaller scale of single artifacts, the transcript or the video of the hearing works as an 'actant' inasmuch as it 'makes do', enabling the circulation of agency within a complex network of humans and artifacts. To further illustrate how different technical or legal arrangements can enable or hinder agency in judicial systems, we can take the case of digital signature and identification, that are required in order to grant an actor some form of legal agency: depending on the means of identification, which can be more or less constrictive, technically feasible or legally acceptable, the actor's capacity to act legally can be greatly enhanced or severely limited (Mohr and Contini 2011). Following from these considerations, it is important to stress here that judicial agency does not only amount to the exchange of bits and information, but produces changes of status, and in order to be effective it must be made itself 'legal'. Interoperability, therefore, must not just enable or facilitate exchange of bits and flows of data across systems, but must support the production and transmission of legal effects across different systems, domains and territories. It should be recalled that the legal connotation of agency is a substantive feature of all government and public administration activities, not just of the domain of justice.

In designing European civil proceedings online the issue of agency has both a qualitative and a quantitative aspect, and the two are related. First, the 'character' or kind of agency in judicial proceedings is affected in several ways. Agency must be able to travel across different national jurisdictions (legal, administrative and contractual environments), different functional domains (legal, technological, organizational, economic), and different media (oral, paper, digital) (Mohr and Contini 2011).

In the specific cases of European Small Claims Procedures and European Order for Payment the kind of agency that must circulate online is mainly, although not exclusively, legal. In order to effect smooth circulation of agency the interoperability framework must allow for the trans-border transmission of data, the recognition of the data's and documents' legal validity, the constancy of the meaning of data, documents and specific legal actions, and the administrative effectuality or performativity of judicial decisions across national jurisdictions. In judicial systems the circulation of agency is traditionally effected through conventional (paper-based) procedures and supported by material artefacts like case folders, printed documents, dockets, etc., or, as we have just mentioned, the spatial layout of the courtroom. We can refer here to a 'conventional configuration' (Mohr and Contini 2011), which impinges on a local or national jurisdiction. However, the development of European legal e-services entails a reconfiguration of agency across two major 'complexity leaps': one leap is due to the new mediation of agency brought in by the digital environment, the other is caused by 'boundary crossing' across different national jurisdictions.

Fig. 1 Complexity Leaps

		Jurisdiction	
		National	Trans border
Media	Conventional	Conventional paper based procedures	EPO and ESCP at present
	Digital	National ejustice case studies	EPO and ESCP digitally enabled

Agency in trans-border judicial proceedings cannot be carried by (and 'housed' within) the conventional configuration within a national jurisdiction, but it must be extended across multiple national borders and across different media through sequences and networks of *agencements,* which connect pre-existing and new components in emerging techno-institutional configurations (Contini and Lanzara 2009). To this purpose, national legal and administrative systems must learn to communicate with one another and engage in cooperative action; also, they must learn to operate in a new multimedia environment, where the digital media 'remediates' the legal practices, the procedures, the familiar tools, the meanings, that is, it remediates agency and the channels through which it circulates. The outcome of this reconfiguring process is an emerging assemblage of heterogeneous components, multi-media, multi-functional and multi-national, across which judicial and administrative agency should presumably be able to circulate through the channels, linkages, and gateways that provide for systems interoperability, traveling across multiple jurisdictions and across multiple media.

While the circulation of agency in the conventional configuration is relatively straightforward, it may not be so in the new conditions, due to the rising complexity generated by the interdependencies among systems and components that were not originally connected but must now be connected so as to deliver the intended performance. If complexity is not reduced or absorbed through appropriate strategies, several impediments may slow down, restrict or block the circulation of agency. Blocks may be of different nature: technological (data and documents are not exchanged due to technological malfunctioning), semantic (data are exchanged properly but actors don't use the appropriate language and the procedural requirement cannot be fulfilled), legal (a meaningful exchange of data occurs but the exchange is not performed accordingly to

relevant legal specifications). Repeated blocks will jeopardise the circulation of agency and divert people from using the online procedures.

This leads us to bring the quantitative aspect into the picture, which we deem critical. Financial investment and design efforts in building interoperability and infrastructure for trans-border civil proceedings can be justified and sustained if they support substantial agency circulating across borders, otherwise they will be pointless. The overall value added and the users' benefits of the new procedures depend on a critical mass of users that can enjoy increasing returns and positive externalities. However, so far the few statistical data available seem to point to a limited use of such procedure. Even when the linguistic barrier is not an issue and economies are tightly coupled as in the case of Austria and Germany the number of EPO is quite low: a total of 3.700 claims summing up the two countries (total value of 72 million Euro, and an opposition rate of 3 % in Austria)[1].

5. The circulation of agency in EPO and ESCP: Data from the simulation

As stated by the European Commissioner for Justice, the European Payment Oder and the European Small Claim Procedures are legal tools enacted *"to help individuals and businesses with cross-border litigation"* and "*for simplifying cross-border debt recovery"*. EPO and ESCP want to *"offer citizens and businesses the means for quicker, more efficient resolution of cross-border cases, by making it easier to enforce a claim against a defendant in another Member State"*. The Citizens guide prepared by the Commission (http://ec.europa.eu/civiljustice/publications/docs/guide_litiges_civils_transfrontaliers_en.p df) emphasizes that businesses and individuals can apply without the advice of a lawyer, and that procedures are easily accessible fast and streamlined.

The European regulations have attempted in various ways to simplify the procedure and reduce uncertainty. In theory, superimposing a unique pan-European procedure to the pre-existing multitude of heterogeneous national procedures offers to EU citizens and companies a unique standardised procedure working in each Member State. Also formal requirements have been kept as simple as possible: the simple hand written signature (not certified by a local authority nor supported by any additional document) is accepted as valid, while in many countries the defendant must certify or validate the authenticity of the signature; pro-se litigation is accepted, while in various countries legal patronage is needed; cases can be filed using normal postal services, while in several European judiciaries plaintiffs and defendants have to go to the court counter to file cases. Finally, the data to be entered into the various forms to be exchanged in the procedure are relatively simple, and standardised. Only in a few cases the parties have to provide relatively complex written statements (like the description of the claim). Even if the language barrier and the need to provide such statements in the language of the seized court may be problematic, efforts have been made to design a procedure accessible to citizens and businesses without the involvement of professional lawyers and without going to court.

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[1] http://www.justiz.gv.at/internet/file/8ab4ac8322985dd501229ce2e2d80091.en.0/folder_justiz-

With the purpose to test if EPO and ESCP could meet the EU objectives we conducted a practical experiment to simulate the procedures. A UK correspondent tried to file an EPO and an ESCP to an Italian court (see project report by Gar Yein Ng) following the instructions provided by the e-Justice portal (e-justice.europa.eu) and the European Judicial Atlas in Civil Matters (ec.europa.eu/justice_home/judicialatlascivil/html/index_en.htm). The experiment highlighted a number of problems affecting the circulation of agency that make it difficult for a generic user the handling of the procedure in practice.

The first obstacle we encountered was the identification of the jurisdiction and of the seized court. Users have to apply a complex set of regulations and if the seized court is not the one with the jurisdiction, the court will dismiss the case. Then, before filing a case, the claim has to be described, using the language of the seized court, and court fees have to be paid. More precisely, the exact amount of the fee has to be calculated, and a suitable means of payment identified. Here another problem emerged, since the Civil Justice Atlas (i.e. the official information provider for this kind of procedures) stated that in Italy online payments were not accepted. Therefore the claimant had to find out a way to pay the court fee without going to Italy: everything but easy. Even more interesting the discovery that differently from what stated in the Civil Justice Atlas, also in Italy it is possible to pay EPO and ESCP court fees with a normal bank order to a specific account: the information provided in the Atlas were not updated.

Finally, once the case was filed and the EPO issued, the registry did not serve the document to the plaintiff and the defendant, as it is supposed to do according to the European regulations. The court decided that in this case, instead of following the European rules, it was better to follow the national rules. Therefore the plaintiff had to find a way to get the EPO from the counter of the court, possibly without coming to Italy. The simulation has highlighted several other problems, but even these simple illustrations suffice to show how difficult it is to fulfil the goals established by the Commission. The circulation of agency from one jurisdiction to another is hampered not only by language barriers or procedural complexity, but also by a number of micro-issues of an administrative and procedural kind and by the difficult (or wrong, or contingent) interpretation of European regulation by national courts. Minimal as these procedural slips may be, still they produce the effect of interrupting the procedure and frustrating the user. The development of an effective e-justice system supporting the circulation of agency in trans-border procedures must provide a solution to this types of problems, otherwise people will not be attracted to use these new tools.

In this connection, it is reasonable to expect that in the initial stage of development of the digitally supported ESCP there will be a low frequency of legal transactions throughout the system. A critical issue then is how to create a mechanism to attract high numbers and bootstrap the system in order to generate a critical mass of users. For this to be obtained it is necessary to make the use of the system as accessible and simple as possible for the generic, naive user. This means that designers must find ways to hide complexity from the eyes and hands of the users as much as possible. Systems and procedures must be initially simple so that users find it convenient to use them, for example because they are

faster and less expensive than the conventional ones.

This line of reasoning leads us to the consideration that the European Interoperability Framework is likely to be successful if it allows for the design of low complexity and high accessibility procedures for final users. This is even more important if we consider that such European remedies are in competition with national payment orders and small claim procedures. A potential claimant, before filing an EPO, should consider the possibility to request a local payment order. Geographic and linguistic barriers can reduce access to justice for some players (for a normal citizen to hire a lawyer in a different country can be extremely difficult), but not for others, as many companies doing their business in Europe. Therefore EPO and ESCP, and the ICT systems designed to enable their use, must be designed in particular for the potential users that may have problems in accessing cross-border proceedings through the traditional national remedies.

At the same time, it should provide incentives for national jurisdictions (or national service providers) to invest in the development of such procedures. An external political pressure, as the one currently made by the EU financing e-Codex, could support the development, but also long-term incentives have to be identified. We surmise that one of the incentives for national jurisdiction could be to have a system simplifying the handling of such procedures at national level.

In addition, poorly interoperable systems create problems and bottlenecks to the circulation of agency, data, meaning, etc., generating unwanted complexities and a rough, impervious territory through which judicial agency will circulate with difficulty and be poorly performative. The question then is:

> *What kind of interoperability do we want? How should interoperability be conceived and implemented so that the complexity of the procedures and infrastructures can be effectively handled?*

The scope of interoperability, therefore, should reach beyond the simple exchange of electronic data and legal documents between systems. It should be encompass the whole legal procedure from facilitating the user's access to supporting the judges and judicial offices that receive the claim and issue a decision. Electronic data exchange and e-filing are certainly important aspects of the procedure, but do not, by themselves, grant the circulation of judicial agency.

In the light of the above considerations, in the following section we take our next step by examining and extending the concept of interoperability presented in the EIF documents.

6.   Interoperability and beyond

In the EIF documents interoperability stands up as a key concept in the European Commission's strategy for developing pan-European e-government solutions. It is defined as

> *"the ability of disparate and diverse organizations to interact toward mutually*

beneficial and agreed common goals, involving the sharing of information and knowledge between organizations via the business processes they support, by means of the exchange of data between their respective information and communication technology (ICT) systems" (EIF, p.2).

In other official documents interoperability is generically defined as *"the ability of organizations to work together to common goals"*, emphasizing the outcome of interoperability rather than the features and conditions that make it possible.

In an earlier version of the EIF the idea of interoperability is illustrated through the image of a chain:

> *"Interoperability is like a chain that allows information and computer systems to be joined up both within organizations and then across organizational boundaries with other organizations, administrations, enterprises or citizens".*

The image of the chain is at same time suggestive and misleading. On the one hand it suggests connectivity and linkages between the rings, the modular components of the chain, but on the other hand fails to reveal what makes the linkages possible, that is, some standard features that all the rings must share in order to be linked to one another. Similarly, another image often used (see e-Codex http://www.e-codex.eu/) is that of a train of gears: a series of toothed wheels that transmit, and eventually transform agency, force, movement from one element to another along a train of gears. This image is equally suggestive, but equally misleading: the mechanical representation tends to conflate agency and the supporting infrastructure into a tightly coupled system or mechanism. Firstly, what make the transmission of the action possible are not the gears as such, but the shared standard size of each tooth. The size of the wheel gears can change, but the size of the tooth must stay fixed in order for the gears to be coupled and transmit the movement. Secondly, such image keeps out all conceptions of flexibility and adaptability. Indeed, both the chain and the gear convey an image of interoperability as a static property, whilst the means by which interoperability is provided necessarily evolve as technological, legal and institutional conditions change.

It has been pointed out that interoperability is a concept that finds its origin in the field of computer-based communication and standardization:

> *" … (It) denotes usually what kind of communication and integration one wants to achieve between computer systems. The way to achieve interoperability is usually considered to be by reaching an agreement on a set of shared standards" (Hanseth, Comments April 12th,2011);*

> *"...interoperability is not really a theoretical concept that will help us when we want to understand the aspects and issues that matter when we try to develop and implement pan-European eGovernment solutions". (Hanseth, Comments April 12th, 2011)*

One might question whether this concept, in its current formulation, can help us to harness the full complexity of the problem-at-hand. For instance, one might reasonably doubt whether the original meaning and scope of the concept can be maintained when it is transposed to non-technical domains, such as the different national legal codes, the organizational settings, and the semantic domains, that must also be made 'interoperable' to enhance the circulation of agency. Secondly, one might wonder whether interoperability captures everything that needs to be taken into account when developing pan-European transborder procedures (in the judiciary or other domain). Thirdly, one is struck by the generally positive overtones aired in bringing the interoperability issue to the fore. It seems as if the more interoperability we are able to reach, the better solutions we will be able to provide to our pan-European design problems (Hanseth, comments Dec 2nd, 2011). To wit, one might question whether high or full system interoperability is always desirable, or whether too much interoperability at one specific level and a specific time might yield undesired consequences at a different level or at a later time. Obviously, the flip side of too much interoperability is the lack of flexibility. In the end, one might legitimately ask what degree of interoperability is desirable or necessary, and how interoperability, once built into the European eGovernment framework, can be maintained and adapted over time. Elements of a processual and evolutionary approach are absent in the current version of the EIF, but in our opinion they are critical and should not be left out of any design endeavour.

Indeed, if we delve more deeply into the meaning and scope of interoperability, we are led to reframe our ways of looking at interoperability as the main focus of the project. Though interoperability is a key issue in the development of e-government services across Europe, it is not the only one. Other, equally critical, issues are flexibility and adaptability over time. All designs, then, must keep a balance between interoperability and flexibility, and this puts limits as to the degree of interoperability that can or should be achieved. Building interoperability cannot be framed only as the one-shot design of interfaces and linkages between specific systems by the implementation of technical standards or by the alignment of administrative and legal systems, or by enforcing a semantic reduction of linguistic variety. More critically, interoperability should not be thought of as an intrinsic property of interacting computer systems, lest of the systems that are in place and operating *here and now*. It cannot be designed simply as a result of a convergence and homogenization among systems, procedures, and applications, whereby National Interoperability Frameworks must conform to the EIF guidelines in resetting their procedures, applications and organizational equipment. Firstly, this will most likely feed variety and inflate an unmanageable complexity (see Section 9 for detail); secondly, it will create conditions that might impede further systems adaptation and change as interoperability requirements change.

The conditions for interoperability do not reside in the systems that happen to run at a specific point in time, but in the underlying infrastructure that supports systems operations and communications. Interoperability, then, is be more productively framed within the broader issue of the development of Information and Communication Infrastructures. The concrete possibility of attaining interoperability depends on the existence and the quality of the **underlying infrastructure -** technical, legal, organizational, and semantic and on the

features of the agency that such infrastructure enables. We believe that a more satisfactory conceptualization of interoperability requires a thorough analysis of the existing infrastructure at the European level. Establishing a connection between infrastructure and interoperability will enable us to track the multiple sources of complexity that affect the building of interoperability.

7   The critical role of infrastructure

Based on the previous considerations, we suggest that in order to face the complex challenges of European e-Government it is useful to shift our focus from interoperability to the conditions that make interoperability possible (or impossible), that is, to the underlying infrastructures that support the trans-border operations and communications of nation-based systems. Looking at infrastructures allows us to develop a broader view of the complexity involved in the making of European Small Claims Online Procedures and also construct a richer conceptualization of interoperability.

We will start from the idea of information infrastructure, around which a number of scholars have done substantive research in recent years (Broadbent & Weill 1999; Hanseth 1996; Hanseth & Lyytinen 2010; Monteiro & Hanseth 1999; Ciborra & al.2000; Contini & Lanzara 2009; Star 1999). An information infrastructure can be defined as *"a shared, open (and unbounded), heterogeneous and evolving installed base"* (Hanseth & Lyytinen 2010: 4). In turn, the installed base is "a set of ICT capabilities and their users, operations and design communities" (Hanseth & Lyytinen 2010: 4). Information infrastructures result from the convergence of Information Technologies and Systems and Telecommunication Technologies. Due to its elusive and ever shifting features, it's definitely not easy to grasp what an infrastructure is as a stable empirical object. An infrastructure is made of standards, protocols, gateways, converters, linkages, channels and other components that allow for certain functionalities to be implemented, connected and operated in a network. Said in a nutshell, an infrastructure is the underlying base and support for the circulation of agency. Infrastructures retain relational and ecological qualities (Star 1999). They are not 'things' or fixed entities that can be designed *ex ante*, by sticking to a blueprint, and eventually built into a finished state. Also, they evolve over time: they are built in a piecemeal fashion, grow in reach and range, and adapt to changes in user requirements and enabling technologies. Therefore infrastructures cannot be, literally, 'designed', nor can they be designed and managed by a single overarching actor. The only thing that can be done is cultivating and nurturing them along the way as they evolve and reconfigure (Ciborra et al. 2000; Dalhbom & Jalbert 1996; Hanseth & Lyytinen 2010; Lanzara 2009).

There are many examples of working technical infrastructures that enable 'connectedness' and 'interoperability', but the most appropriate analogy that can be made is perhaps that of the railway network allowing for the circulation of trains. Likewise, industrial economists and economic historians have studied electric and telephone networks (David & Bunn 1988; David & Wright 1999; Hughes 1987). Today the paramount infrastructure is the Internet. Recently, convergence between ICT and telephone network infrastructures enables access to a range of functionalities, services and systems by using the mobile

phone, which becomes itself a piece of infrastructure in our own pockets. In all these instances of infrastructure, standards and protocols are core elements (Hanseth & Nielsen 2010 ECIS).

In order to provide European interoperability in the domain of Civil Justice, as in any other public sector domain, an infrastructure must be assembled that is shared by all MSs and by the potential users (citizens, enterprises etc.) as a sort of common good. The European infrastructure can be here provisionally defined as a shared platform that allows some forms and levels of interoperability and communication among diverse domains, sectors, and territories. As one can distinguish different types of interoperability (see EIF v.2.0, 2010), so one can distinguish different types of infrastructure in different domains. Thus, an *information infrastructure* consists of a set of standards, protocols and gateways that link the running applications, programs and systems. It connects, supports and enables the exchanges of bits, data and information between different technological and human agents. A *legal* infrastructure is made by shared legal principles, rules and procedures that link the many national jurisdictions and help them communicate and inter-operate. In legal terms, this is mainly based on the EU principles of legal cooperation and mutual recognition. A *semantic* infrastructure provides mechanisms for inter-language communication and coding, including channels or converters between different languages, that is, human or automatic interpreters and translators. An *institutional* infrastructure consists of institutional and organizational structures that can carry out the relevant administrative and business processes across national borders.

More to the point, infrastructures make interoperability possible as a particular kind of agency. When the components of an infrastructure are well functioning or not obtrusive to human action they tend to be taken for granted by the users of the infrastructure. Indeed, the user perceives itself as handling an application or a tool, or interacting with a simple interface rather than using the underlying infrastructure that makes the application run and the use of the tool possible (ex. mobile phone or faucet). Agency can then be carried smoothly across systems, media and territories. When this happens, it means that the infrastructure has absorbed and hidden away from the user most of the complexity involved in the transactions. However, the infrastructure itself can reach high levels of complexity that might run against the maintenance and the smooth functioning of the infrastructure or cause the impossibility for the infrastructure to evolve over time. This is why it is so important to design infrastructures in modular components that 'unpack' and 'unbundle' complexity (Hanseth & Lyytinen 2010) (see section 9).

In the European Union, the Schengen Information System (SIS) represents a good illustration of the complexities involved in the development of infrastructures. SIS is the set of data bases, applications, and the underlying infrastructure used by the member states to collect and exchange data relevant for border control and law enforcement purposes (in particular the European Arrest Warrant). Since the nineties, SIS has evolved providing new services and progressively including new Member States. Firstly, the original system has been improved with the deployment of SIS 1+. Later on, thanks to a new evolution of the systems and of the underlying infrastructure called SISone4ALL, also Denmark, Sweden, Finland, Norway and Iceland could exchange and share data within the Schengen Information System an therefore join the Schengen area. Later on, with the

release of SISone4ALL Denmark, Sweden, Finland, Norway and Iceland could join the Schengen area. But the original design of SIS had limitations and its extension to a larger number of countries was considered impossible or unlikely. If the infrastructure proved to be able to evolve in order to generate new services and include new users, now it has reached a dead end. Its high complexity makes it impossible the addition of new modules so as to provide additional functions or the access to new member states. However, efforts to replace SIS and SISone4ALL with a new SIS II have been defeated by the features of the existing infrastructure. The decision to set up SIS II dates back to 1996. After 15 years and more than 130 million Euro spent, the new platform is still under development. The difficulties faced by SIS II - analysed in detail in one of our project case studies (see report by Marco Velicogna on EAW)- highlight a mix of technological failures at the development level, the difficult and risky migration from the old to the new data bases, and also entanglements between the legal framework (i.e. the regulations enacted to made legal and keep under control the use of SIS II) and the technological developments. Building a large information infrastructure from scratch while assuring at the same time the required compatibility with pre-existing infrastructural components soon reaches unmanageable levels of complexity.

In spite of the central role of infrastructures in constituting and supporting interoperability, in most of the documents of the European Commission there is only occasional mention of infrastructure. The infrastructural dimension is not analytically distinguished from the system dimension, that is, from the systems and applications that run *upon* and *thanks to* the infrastructure. Thus, for example, in the technological domain interoperability is often defined as a property of a stand-alone system connected to another stand-alone systems thanks to other technological systems placed in-between (gateways, interfaces, standard protocols, guidelines etc.). Yet, interoperability is not just that; rather, it is a consequence of the features and the dynamics of the infrastructure.

Accordingly, standards, protocol, formats, guidelines are indeed mentioned as critical elements for ensuring interoperability, but their infrastructural significance is insufficiently stressed. They are not regarded as critical infrastructural elements that have a dynamics of their own. This is not at all surprising, because an infrastructure is not a 'thing' defined by boundaries, and is often deeply entangled with the mundane artefacts and systems of everyday use. Illustrations of mundane artefacts holding infrastructural qualities are, for example, the laptop, the credit card, the mobile phone, the passport, the faucet: they all become parts of an infrastructure when they embody standards that make them connectable to other pieces of infrastructure to the purpose of the circulation of data, money, voice, water, humans, goods and services, agency, and other things.

Similarly, there is in our opinion, an insufficient consideration of the infrastructural dimension in the legal and institutional domains, where the conditions for interoperability are essentially associated to the issue of how to enforce **alignment** of MPs' legal systems and institutional structures and processes in order to do joint business. We believe that efforts at designing and aligning systems without consideration for the underlying, and at present rather thin, European institutional infrastructure may become a further source of complexity.

We submit that many of the phenomena and issues we encounter in the development of the European Payment Order and the European Small Claims Proceedings Online fall outside the scope of the concept of interoperability, that is, they cannot be reduced to the problem of obtaining straight 'linkability' and communication between systems. Rather, they involve the design and evolutionary change of complex infrastructures that are necessary for granting *interoperability-over-time.* The concept of interoperability must therefore be assessed within the broader field of infrastructure design, which is precisely what we should investigate if we want to provide sound indications for building interoperability in EU Civil Proceedings Online. Up to this point, however, we have discussed mainly the role of infrastructures in enabling the exchanges of bits and data. We have, therefore, mainly looked at specific features of information and communication technologies. But when technologies enter the public sector to support e-Government and e-Justice systems, the exchange of bits and data enabled by the infrastructure is useless if it is not made legal. Technologies and technology-enabled activities must be made legal to produce the expected results within legal or administrative proceedings. This is the only way by which agency can circulate and yield effects with legal validity. From an information systems perspective, judicial proceedings are regulated exchanges of data and documents required to inform the judge that will take the binding decision. The legal component is therefore no less important than the technological ones. Unfortunately, the present state of affairs in the EU is that, while an email can be adequate enough to stipulate a complex contract between private companies, in the judicial domain just one European judiciary (Finland) accepts simple emails as a legal means to file a lawsuit. Not only legal issues, but also administrative problems can hinder the circulation of agency. As we have discovered with a simple simulation of EPO and ESCP, local administrative oddities and questionable interpretation of the regulation could create bottlenecks and slow down and even interrupt the smooth execution of the procedure. Legal and Institutional interoperability are thus critical for the circulation of agency.

8. Institutional infrastructure and institutional interoperability

The requirement of institutional interoperability originates from the peculiar nature of the emerging institutional configurations that unfold from the encounter of existing institutional frameworks with ICT infrastructures. Even a cursory look at the development of ICT infrastructures leads us to appreciate that achieving technical interoperability requires radical changes in the ways organizations work. In other words, as the existing organizations and administrative agencies increasingly come to share a technical infrastructure, they must change their procedures and routines, or must develop new ones in order to be able to communicate and inter-operate for the purpose of delivering public service. In this respect, new technology brings new organization. Also, new organizing capabilities must be developed, that are supported by the infrastructure. Public sector organizations become less and less self-contained systems, defined by their own in-house operations and technology, and more and more components 'hooked up' or 'plugged in' larger assemblages connected by interfaces, linkages and gateways of various kinds. As Dunleavy, Margetts, Bastow and Tinkler (2006) remark, they do not run their own

operations, at least not entirely, nor are fully in control of their own information resources. The classical Weberian model of formal bureaucratic organizations no longer seems adequate to account for their characteristics and behavior.

Even the relatively simple administrative actions contemplated by the delivery of e-services such as Money Claims On Line in England and Wales are never exclusively *owned* by a single actor, but require the coordinated and synchronized contributions of multiple actors, which must be able to map and acknowledge one another's procedures, so that issues of legitimacy, mutual recognition, accountability and validity are not raised all the time (Kallinikos 2009; Lupo, 2012).

For example, in the specific case of MCOL we notice that the overall functionality of the service is shared and operated by a number of agencies, both public and private, which share large bodies of data circulating across the assemblage:

- The accounting company must be able to connect to software companies and to the Country Court Bulk Centre in Northampton;
- The banks and the credit card companies must be made compatible with the legal requirements for access and identification by the software applications, and viceversa;
- Back up systems and offline/online interfaces must be designed in order to assure system redundancy and resistance in the case of breakdowns;
- Connections to other services and functions of the public sector must be devised, for example demographic files, bio-medical files, etc.

As a further illustration of the critical role of institutional interoperability, one of the major obstacles and design problems encountered in the implementation of e-services is the lack of understanding and coordination among the several public and private agents involved in the projects, which create serious problems both for the development of a sound technical infrastructure from available components and for the seamless functioning of the system. On the contrary, the technical issues involved in making the assemblage can in general be dealt with more easily. In other words, the technology is available and can be easily adapted, while formal legal procedures, established institutional frameworks and engrained organizational routines are less prepared to accept and accommodate the new systems and technical artefacts. They cannot be easily changed. We have reason to think that this kind of problems will arise in the development of European trans-border services.

In practice, the development of full institutional interoperability at the European level is a long and difficult endeavor, and the roadmap available to-date is just a rough sketch so far. It definitely involves integrating and enriching the various Government Interoperability Frameworks existing in the EU, but the grounds and the strategies by which that can be accomplished is a matter of discussion. Interoperability implies 'sharing' as opposed to 'owning' resources, it implies open technologies, systems and software applications as opposed to a proprietary approach, so that the European public agencies may generate

results that can be interconnected, re-used, and shared to the purpose of increased effectiveness. However, the dominant organizing logic of most national bureaucracies is still proprietary, based on owning and controlling resources. This logic hinders the development of effective institutional infrastructures and slows down the diffusion and sharing of platforms, frameworks, solutions, tools, and components. As a consequence, the novel institutional capabilities associated to 'sharing' an infrastructure do not consolidate and trans-border collaboration among agencies is difficult to achieve.

9. Sources of complexity

As we said above, critical challenges in building interoperability are, first, the control and reduction of complexity, and, second, the allocation of complexity to the different (human and non human) components of the infrastructure. Depending on what kind of infrastructure is designed, a likely consequence of bringing together European MSs to cooperate in the production of e-services could be a dramatic increase of the number of interactions among jurisdictions (interactive complexity). Also, the transition from conventional to digital services and the integration between multiple media require the mobilization and coordination of a complex mix of stakeholders, technologies, regulations, agencies, etc. The ICT infrastructure interacts with the legal and institutional infrastructures of the public sector generating complexly entangled configurations that we have called 'assemblages' (Contini & Lanzara 2009). Research has shown that one of the reasons why carefully designed and engineered systems do not meet expectations about their use or performance is because they are too complex, often beyond the possibilities of being effectively handled by single individuals or overarching management authorities. Complexity is the most serious obstacle that may affect the circulation of agency in European Small Claim Online Proceedings Online.

The sources of complexity are many. First of all, complexity originates from the interactions between different functional domains. Technology, the law, politics, language and the economy are such domains. Each domain is ruled by a specific code. Their interactions produce both intended and unintended effects, especially when they confront one another and claim rights of control or priority over specific issues. In other words, the different codes tend to generate competitive regimes, with tensions and frictions between them that must be resolved and streamlined.

For instance:

- Strategies for reducing complexity in the ICT domain may generate legal or bureaucratic complexity; for instance, specific technologies are not accepted because not considered compatible with legal or functional specification. This is the case of web-based access to procedural data that is often free and open in common law countries. The simple web-based connection is not legal in many European jurisdictions due to privacy concerns, and more complex technological applications have to be developed.

- Conversely, the normative requirements for the regulation of ICT solutions imposed by the law may induce unnecessary technological complexities and intricacies (such as the mandatory use of digital signature or the establishment of "access points" in Italy's Trial on Line).

- Technology can inscribe and absorb organizational and legal complexity. For instance, the identification of users, the transmission of documents, and the registration of case-related data can be totally or partially inscribed into and delegated to technological components. Of course delegation can be done at different extents depending on the different legal rules in each national jurisdiction, easier in UK and Finland, more difficult in Italy and Portugal.

- The delegation to technology may lead, in turn, to increased organisational and legal complexity. An increased number of regulations (therefore higher legal complexity) may be required to specify how technology must work or users should operate it. An increased number of public and private organisations may be involved in the electronic delivery of the services, thus increasing the overall organisational complexity.

- The adoption of simple shared solutions such as email (in Finland), debit/credit card (MCOL in UK), or open standards and open source software applications may speed up the growth of the infrastructure in terms of number of integrated components and number of users. Such solutions enlarge the potential number of users that can have easy and low-cost access to the system, and consequently facilitate the adoption of the procedure and the circulation of agency. However, these simple solutions are not acceptable to other MSs.

- Yet, the process of choice among competitive solutions may lead software development firms and vendors to heavy lobbying and to business strategies that turn e-government development into a political and market battleground (De Nardis 2010).

- A high level of political complexity may render the adoption of simple, cost-effective solutions unfeasible or make the law-making process overly time- and energy-consuming.

The relationships and the frictions between the diverse functional domains are to be resolved through smart *mediations* that make communication and inter-operation possible without paying a much too high price in terms of complexity. A whole set of interoperability problems rise from the fact that each one of these functional domains strives to work as an autonomous regulatory regime in its own right, but at the same time has to communicate with the other domains. As we will see in the cases, the efforts at making smart mediations have been unequally successful in the different countries. In many an instance the mediations themselves may become a source of complexity.

Secondly, further sources of complexity arise from the heterogeneity of the EU MSs, the different languages, legal frameworks and organizational routines, that may make trans-border communication and coordination problematic. For example, coming to the trans-

border scope of EPO and ESCP, multiple language translation services to make such procedures simpler and more accessible for any European citizen may generate high semantic ambiguity and/or high bureaucratic costs, while the simple solution of using one common language for all transactions will likely put the burden on the users who must pay the costs of learning the language.

Also the different legal and technological installed bases of the judiciaries of the MS contribute to the increase of complexity, and the search for a common standard solution of identification, and secure transmission of data and documents may be difficult. As large components of the installed bases are made up of national legislation and country-specific bureaucracy and technology, it is likely that pressures upon the national installed bases to adapt to the EIF guidelines will require changes that will make them larger and more complex. Each national judiciary will try to integrate with the EIF according to its own specific characteristics, by introducing changes compatible with its own specific installed base. In the end that might result in the development of an increasingly fragmented European infrastructure - indeed, an unintended effect with respect to the goal of developing common European systems in the judiciary.

The solutions adopted for identification and signature in the four national case studies illustrate the point. MCOL uses a combination of registration (providing user name and password) and use of credit or debit cards. In COVL identification is based on the registration on an *ad hoc* web portal (p.31), while TOL and CITIUS adopt digital signature and external certification authorities. The last two systems works just for professional lawyers, while MCOL and COVL identification is provided also to normal citizens. Each country has the legitimate interest to promote a European solution compatible with its own system: from a national perspective it is a matter of maximum feasible simplicity. It is unreasonable to ask the English or Slovenian judiciary to develop a PKI infrastructure for digital signature, and very difficult to convince the Italian Ministry of Justice to get rid of the current reliable infrastructure.

To find an acceptable technological mediation between these different installed bases may be extremely difficult. In addition, the problem is also legal since each national technological solution is consistent with a national legal framework. The identification of mediation between the legal and technological infrastructures of the 27 member states is the task currently faced by e-Codex, and it will be rather difficult to identify a viable solution without injecting complexity in the overall architecture.

Thirdly, an additional source of complexity is **time**. As we said above, interoperability is not just a matter for today, it cannot be built once and for all by fixing a final, 'closed' solution, but must be maintained and adjusted over time. Conditions for interoperability change over time: new user needs emerge, the underlying infrastructure shifts and drifts, standards and requirements vary, legislation is modified, and new technical solutions and ICT innovations pop up in the market. All the components (legal, institutional, technological, etc.) evolve over time and the inter-temporal interactions among them generate dynamic complexity. The problem of inter-temporal harmonization affects both the different types of infrastructure at the national level and the trans-border interactions between the different national jurisdictions. What must be achieved, then, is system coordination and

communication over time.

Even this cursory description shows how the growth of complexity can affect the development of European trans-border judicial systems and lead to a range of interconnected consequences, some of which unintended and not necessarily predictable. We want to stress here the highly interactive and interdependent character of the complexity effects we have described. Particularly, one may notice how an excessively high legal-procedural density, which may be called for by the adoption of leading edge ICT applications in the legal proceedings, might itself call for more organizational and administrative complexity. This might lead to the paradoxical consequence that ICT-based innovations, originally designed to the purpose of procedural and bureaucratic simplification, bring instead more bureaucratization (as it has been the case of Trial On Line in Italy, Fabri 2009).

All the sources of complexity described above have an influence on building interoperability and on the agents' capability to undertake effective action in order to issue a claim or obtain whatever service online. In other words, ineffective reduction of complexity may create conditions that seriously impair the circulation of agency across different national jurisdictions and functional domains. For example, non-ambiguous personal identification may be difficult, access to service may be problematic, the procedure may be too complex and time-consuming, etc. In this connection, our case studies show that one of the critical 'complexity' issues is the identification and the access of the user to the e-service system. As Kari Kujanen has remarked (Report on the First Research Seminar. February 23-26, 2011),

> if *"the e-services are built to meet the requirements for written form and signature instead of considering whether the same requirements are necessary in e-service (or even in a paper-based procedure)"*

then the law is not fulfilling its primary task, that is, *"enabling the citizens to have good service from the courts".*

The growth of complexity may generate problems both at the *level of the procedure* and at the *level of the infrastructure*, and the two levels are closely interrelated. Firstly, complexity may affect the interfaces and procedures available to the users of e-services. For example, the enforced adoption of highly demanding and not widely diffused technological components or unfriendly interfaces and procedures makes the use of the e-justice applications difficult and keeps down the number of users. In turn, the small number of users may hinder or slow down the growth of the infrastructure, thus negatively affecting the development and deployment of the application. This was the case of digital signature ten years ago in Italy's Trial On Line, and it could also be the case of the European Small Claims Procedure Online, as our simulated experiment of ESCP suggests. Ideally, in order to effectively bootstrap the system, access to the new EU judicial procedures should be made possible with technological components already available to potential users - citizens, lawyers, court staff and judges. It is the approach followed by e-Curia, MCOL and COVL, all easy accessible from users.

Secondly, complexity may affect the infrastructure underpinning the e-service system. The

development of the system requires the creation of a large number of technological and normative components, often leading to a growing number of actors in the delivery of the service. Even the simple MCOL works thanks to the operations of a number of private and public organizations, that normally are not involved in the conventional configuration of the justice systems. These actors, individual or organisational, public or private, are often connected through a network of contractual relations that further increases the complexity of the architecture. As a result, frictions between market requirements and public values, conflicts of interests, or contractual ambiguities may slow down the development of the system. Situations like vendor locks in may inject high levels of complexity into the system.

Indeed, there is an ambiguous relationship between procedural and infrastructural complexity. If we wish to design simple and easy to use interfaces and procedures so that the EU Civil Justice system becomes largely and concretely accessible to the mass of European citizens (this is a basic requirement of the EU policy and a critical element for success), then the infrastructure must be designed so as to absorb and black-box complexity away from the user. However, this will likely create a complexly entangled infrastructure, technological and organizational, that is hard to maintain and adapt when needed. On the other hand a much too simple infrastructure risks overloading the user with complexity that she can't practically handle, thus shunning system adoption and the further expansion of the infrastructure. The design problem then can be formulated as one of dynamic balance: at each stage of the system development process how complexity should be allocated so as to achieve an effective balance, that is, how much complexity should go in the procedure without hindering adoption and use, and how much complexity should go into the infrastructure without hindering its adaptation and change and keeping the system sustainable from a financial perspective. As the balance shifts over time, it is reasonable to begin with simple procedural solutions, that will attract the users, who then can learn to use the system, which can then be further developed with richer functionalities, that in turn will attract more users, in a positive self-amplifying feedback.

This is precisely what happened with MCOL: the web forms have been made more complex to allow a better description of the cases, and the identification engine has been moved from an *ad hoc* to a general purpose solution taking advantage of concurrent infrastructural developments. Also TOL, after a long development process, went online with simple payment order and is currently extending its functionalities to include the digital handling of more complex cases as civil executions and bankruptcy. A concurrent dynamic could be the development of the infrastructure to make system access and use easier. MCOL switched from the *ad hoc* identification described above to the multipurpose identification provided by the DirectGov portal. Slovenia's COVL too has been for easy user access and use. It also provides additional functionalities, like the search of attackable assets, that make debt recovery easier, and therefore contribute to attract users. Even e-Curia, enabling digital procedures at the European Court of Justice, has been designed to be easily accessible and support the complex litigation handled by the court. Here one of the design principles was to have a system open to the lawyers working in most peripheral areas of the Union, not just to big law firms specialised in EU law.

10. Design questions and strategies

In proposing design strategies that respond to the critical requirement of reducing systems' complexity we must draw a clear analytical distinction between the complexity of the infrastructure and the complexity of the ICT-enabled procedure – a distinction that we have introduced in the previous section. However, they are related, in the sense that a fragmented or complexly entangled infrastructure, or a lack of it, will create problems for the design and adoption of simple procedures and applications that can support the circulation of agency. Inversely, high complexity of user interfaces and judicial procedures will hinder access to the system and the extended use of it. As a consequence the system will never take off, the underlying infrastructure will never develop, and increasing returns will not be generated. A positive, self-reinforcing learning process will not begin. Therefore both the procedural and the infrastructural complexity will affect the users.

10.1. Design of infrastructure

In building interoperability for European Civil Proceedings Online, and more specifically in the development of a platform supporting EPO and ESCP, the design focus should be on the infrastructure. The critical design problems reside in the development and 'cultivation' of the infrastructure in the different domains: technological, legal, institutional and semantic. Design action should then be taken in all of these domains simultaneously.

A number of questions can be posed:

> *How should the infrastructure be designed in order to reduce or at least prevent the rise of complexity?*

> *What is a viable infrastructural architecture that will enhance systems' interoperability and support low-complexity legal procedures?*

> *How does the complexity of the infrastructures bear on the EU Small Claims Online Procedure?*

We know from the research literature that infrastructures are successful when they support the agents' everyday routines without being perceived as obtrusive. Some design strategies will be sketched here according to the minimalist imperative:

Design system architectures that have minimal complexity (or maximum simplicity) compatible with function.

Modularity

Modularity is recognized as the basic strategy to reduce complexity and enhance flexibility (Simon 1969). We generally understand modularity as a principle for decomposing a system or product into a fixed number of component modules that, once assembled, make up for the entire (bounded) system. Modularity reduces complexity by disconnecting

complexity from size. Modular infrastructures are assembled with components that can be independently added to or disconnected from the whole without great loss for the functionality and the functioning of the whole. However it must be pointed out that in the case of information infrastructures modularity cannot be assumed as a principle that covers the whole of a system. Infrastructures and large-scale heterogeneous systems have no fixed boundaries, they are expanding, open ended, and multi-layered, they accrue and release components in their development. Therefore we confront a sort of *layered modular architecture* (Yoo, Henfridsson & Lyytinen 2010), where modules from different domains happen to be assembled and connected in a sort of open-ended, evolving architecture. Also, modularity becomes a critical feature for system development and change.

Piecemeal development

Large-scale infrastructures cannot be created or changed as a whole, but local, modular components are always up for grabs. Piecemeal development is greatly facilitated by modular structure. Tight and dense entanglements impede piecemeal development and make system change very difficult. Therefore in building infrastructure for the European judiciary the first questions we should ask are the following:

> *- Which is the first piece of infrastructure that facilitates the connection between the different components? Is it a set of gateways between national systems or, alternatively, a (centralized) EU case management system for EPO and ESCP?*

> *-Which is the killer application that may bring a growing number of users interested in using the system?*

> *-What makes judicial agency circulate? A digital channel for docs transmission or a system providing an effective workflow (CMS)?*

Agency must be able to circulate precisely because it is the very use of the system that allows the debugging and the fine-tuning of the system (system learning), and because just in this way users will be able to learn to use the system (user learning). Infrastructures become unobtrusive and generate value only when are regularly used by a large mass of users. And regular monitoring of the use of the available components has to be carried out. At present we don't even know how many EPO and ESCP are requested each year, but we suspect they are still a much too small number to bootstrap the system.

To speed up the bootstrapping we should start with designing a procedure/interface similar as much as possible to other digital experiences of potential users such as paying taxes on line, buying a flight ticket, applying for an administrative service to a local or central authority. The idea of online forms currently available seems to follow this approach but, as emerged in the simulation of EPO and ESCP, there are still too many sources of ambiguity. The guidance provided to both external users and court people is still too weak and can definitely be improved.

Generativity

Infrastructures should have generative properties, that is, they should be able to evolve through multiple extensions and ramifications that connect and integrate existing and new components.

> *How can interoperability solutions be found that are at the same time robust and effective today, but also flexible and adaptable to incoming requirements at a reasonably low cost?*

Flexibility and evolvability of systems and infrastructures are further design requirements that might be at odds with standardization, reliability and robustness. The tension between standardization and flexibility may be addressed through the concept of generativity (Zittrain 2006). Generativity is the essential quality that characterizes the dynamics of information infrastructures and technological innovation. A generative infrastructure is an infrastructure that can generate novel configurations by leveraging emerging opportunities and adapting to new requirements. It is easily transformable through the application of simple rules, that is, capable of extending into new patterns. Obviously, in the case of e-government applications for delivering e-services to citizens generativity is necessarily limited by the requirements of standardization, security and reliability of the procedures.

10.2 Design of ICT-enabled procedure

Assuming the basic EIF principle of user-centricity for the design of the European Small Claims Procedure and European Payment Order, and keeping in mind our requirement of complexity absorption, we might approach the design problem at the micro-level beginning with the following question:

> *How should the European Small Claims Procedure and European Payment Order be designed in order to be practically and swiftly used by the generic user, individual citizen, business company as expected by EU policy makers?*

To answer this question we propose here two 'dual' design requirements for the effective absorption of complexity: maximum feasible simplicity and maximum handleable complexity.

We move our steps from John Maeda (2006), who has synthetically condensed the critical design space that we are confronting by asking the dual questions:

How simple can you make it? <<<< >>>> How complex does it have to be?

Duality here means that the design problem can be expressed with two distinct and related formulations, where in either formulation the design objective becomes the constraint in the other one. That is to say that the pursuit of simplicity is subject to the requirement of

variety and the pursuit of variety is subject to the requirement of simplicity. Both too much simplicity and too much variety are bad, and a well-designed procedure and system must strike a dynamic balance between the two.

Maximum Feasible Simplicity (or Minimal Feasible Complexity)

Whoever sets up to design judicial procedures online should start with the following question:

> What is the **Maximum Feasible Simplicity** for an online procedure compatible with functionality and with fair legal and administrative procedure?

In other words, how far can functional simplification of legal and administrative procedure go without jeopardising or nullifying the legal validity and fairness of a procedure? How much functionality (controls and safeguards) can be 'safely' removed from the procedure without detracting effectiveness and meaning from it? The questions hide a dilemma:

On the one hand, if we want to follow the user-centricity principle and also trigger a self-reinforcing positive feedback leading to a critical mass of users fast enough, we must design small claims online procedures that users find easy and convenient to use. But, on the other hand, simplicity of the procedure cannot go below a minimal threshold, beyond which the range of functionalities and actions available to users will become too narrow, and the procedure will not match the variety of the users' needs and demands. In that case the procedure will fail to generate substantial value for the user, and the user will not find the procedure attractive or useful. As a result, a critical mass will not be generated and the system will not take off but most likely choke. Consequently, the system will not have a chance to learn from the user.

The threshold for maximum simplicity is ultimately decided or discovered by the users themselves on the basis of their experience with the procedure. If users don't feel at ease with a procedure and don't use it because they experience it as too complex for them, that will call for further simplification. In the opposite case, the users might be unsatisfied with a much too simple procedure that does not allow important functions (to the users), and in this case they will push the threshold of simplicity upwards so as to incorporate more complex functionalities.

Maximum Manageable Complexity

The dual question deals instead with the problem of excessive variety, that is *Maximum Manageable Complexity.* The threshold for 'manageability' depends both upon the user's competence and upon the technology's or the organization's capabilities to handle the complexity.

> What is the **maximum manageable complexity** of a procedure that a user can handle, compatible with his or her limits of rationality, attention, and time?

> By the same token, what is the **maximum manageable complexity** that available technology and organization can accommodate?

In other words, how much real-life variety should be kept and embodied in the procedure without risking to overwhelm the user's capability to use it or the ICT functional capabilities, and consequently jeopardise the system's overall capability to support the circulation of agency? How much complexity can be 'safely' retained and embodied in the procedure without turning into a hindrance for the circulation of agency?

In principle, the requirement of embodying a certain degree of complexity in the online procedure to better serve a wider range of potential demands (present or future) is sound. One could for example imagine that online procedures should be able to encompass and respond to litigations that involve reasonably high values and are complex enough, but still within a maximum threshold of complexity beyond which procedures, interfaces and transactions become too complex to be handled effectively. Too much complexity may then be incompatible with the smooth and timely circulation of agency. If the maximum threshold of complexity is trespassed, agency doesn't flow smoothly or is blocked, and in order to restore circulation specific agency components must be delegated to agents that come into play to handle the complexity, like for instance expert mediators (lawyers, consultants, interpreters, etc.). But that would also increase the number of transactions needed to manage the procedure and the system, which will generate higher transaction costs. The more agency is delegated, the more principal-agent chains of delegation are set up, the larger the complexity of the system. For the users an alternative to delegation could be to engage in learning so as to bridge the gap and handle the complexity, but even this option is problematic, as most users are unwilling to pay the learning costs. This is particularly true for EPO and ESCP since for many users it will be a once-in-a-lifetime experience, therefore the learning effort will not generate a consistent flow of future benefits.

In this connection, the expected results of the simulated experiment on the UK/Italy Small Claim procedure (see project report by Marco Mellone and Gar Yein Ng) should give us further indications as to the levels of complexity involved in the European Small Claims Proceedings. One of the points highlighted by the experiment is that the procedural and semantic complexity that a pro-se litigant must face is too high in relation to the very low value of the case. This calls for the support of other actors like lawyers, translators and other officers, that take over the complexity faced by the litigant, but in turn increase the complexity of the transactions, rising the cost of the procedure - a solution that would be viable if the value of the case is substantial or the frequency of the transactions is high, which does not seem to be the case for the large majority of the European courts.

At the present stage of development the national and European case studies that have been studied in the Building Interoperability project meet the design imperative of minimal complexity compatible with function to different degrees. In general, while UK's MCOL and Slovenia's COVL strike a good balance between complexity and functionality both at the procedural and infrastructural level, Italy's TOL and Portugal's CITIUS still present a number of problems.

Both the national case studies and the simulated experiment of EPO and ESCP have been carried out within the existing architectures and the legal frameworks of the Civil Proceedings (national and European). However, the case findings and the previous

discussion of sources and complexity and design criteria put us in a better position to design and assess alternative institutional architectures for European Small Claims Online. In the next section we lay out possible institutional architectures.

11. Designing alternative architectures for European Civil Proceedings Online

In this final section we propose some alternative institutional architectures or scenarios and synthetically assess to what extent each of them meets the design criteria discussed in the previous section. Each architecture has different implications for reducing the overall complexity of the system.

A first set of scenarios is based on the establishment of new organisational arrangements; a second set is based on the development of technological artefacts. However, technological developments are not possible without the establishment of some organisational structure supporting their functioning. Therefore the new architectures always comprise an assemblage of organisational and technological components. Technology and organization always entertain ambiguous relationships: sometimes they elide, sometimes they reinforce each other. So, it may happen that technological artefacts inscribe and absorb critical organizational functionalities, thus curbing organizational complexity, but it may also happen that new organizational components are required in order to manage technology, thus adding to organizational complexity.

Some of the scenarios can be implemented within the current normative frameworks, while others would require legal changes at national or European level. Each one of these institutional architectures entails distinct designs for the infrastructures and the procedures. They require different institutional infrastructures and different degrees of interoperability. The architectures can be variously evaluated in terms of the infrastructures' architectural complexity, in terms of the efforts expected to assemble and engineer the infrastructure, and in terms of the complexity of the legal and administrative procedures involved.

The main goal of the architectures envisaged in the following is to keep procedural and architectural complexity below the threshold of maximum manageable complexity. As we have seen in the EPO and ESCP simulated experiment reported in section 5, in many cases the complexity to be handled by citizens or companies to file a case and carry out a procedure becomes too high (in spite of deliberate efforts at simplification). As a consequence the plaintiff may make various mistakes, like for instance filing the case to the wrong court or failing to fill the form with the correct information, or else it may incur in great difficulties in paying the court fees or in getting the Court Order. These and other obstacles of various kinds interrupt the circulation of legal agency (that is, the capacity of a plaintiff resident in one country to file a case to a court of another country, or else the capacity of a court to effectively respond to citizens of a different country). Hiring a lawyer could help to solve the problem, but EPO and ESCP have been designed for empowering

citizens and business, not for making them more dependent on legal intermediaries.

Also in the case of courts the procedure may reach the upper threshold of maximum manageable complexity: for example, we observed that the court involved in the simulation did not respect what is established in the EU regulations and emphasised in the EC pamphlets the promotion of legal tools to citizens and companies. If the court does not transmit the EPO to the plaintiff, agency does not circulate and the procedure is blocked. As a further example, if the court does not contemplate the acceptance of payment by credit or debit cards or wire transfer from European citizens, again agency will not be able to circulate.

Another strategy would be to further simplify the procedure, thus lowering down the threshold of maximum feasible simplicity, but this would require some radical procedural changes and will not be discussed here.

11.1 Development of specialised organisational units

As it has been anticipated above, a first set of scenarios concern the development of organisational units in charge of offloading the excessive amount of complexity to be handled by external users and national courts.

a. Unified national jurisdictions

A first option would be to establish **unified national jurisdictions for EPO and ESCP**. In several European countries EPO and ESCP have to be handled by the "normal" court with "local" territorial jurisdiction. This institutional arrangement could be improved by identifying one (or few) specific national court with jurisdiction on trans-border cases. This solution has been successfully implemented in various countries. For instance in Slovenia a central department has been established to deal in a centralized manner with the debt recovery and enforcement procedures previously handled by 44 courts. This change in the current architecture has the effect of reducing the general level of complexity without increasing costs. It simplifies the identification of the jurisdiction, since all the EPO or ESCP must be filed at one national court and not to local courts, helping to solve one of the problems of the plaintiffs and increasing the simplicity of the system.

The greater advantage of a unified national jurisdiction is to have a specialised court handling the procedures on a regular base, thus avoiding that local courts handle a few cases per year and improving the capacity of the central court to manage complexity. Indeed, this centralised solution would ease the establishment of standard procedures, and the debugging of problems and misapplications of the regulation as those identified by the simulation. It may also make the linguistic barriers less critical since it is easier to concentrate the staff with foreign languages speaking skills in the central unit, provide multilingual documentation services and more generally support learning processes.

b. Central service unit at the European level

A more ambitious and radical solution would be to establish **units providing services at European central level**. Here various options can be considered:

    i.   a European Agency for trans-border civil litigation,
   ii.   a virtual European court,
  iii.   a real European Court.

i) The mission of the <u>European Agency</u> could be the handling of selected administrative or quasi-judicial activities that could be better managed in a centralized European body. It would not provide any judicial function and the competent courts would remain those established by the legislation of each Member State. The primary function of the Agency would be to facilitate the identification of the competent court and the routing of the case to the competent court. It may also provide various kinds of support to the procedure, such as advising both case parties and local (or national) courts about the steps to be followed. The Agency could also be responsible for the maintenance of the technological system (case management or e-filing application) that supports the EPO and the ESCP and that is at present being designed by e-Codex. With such functions, the agency would absorb a relevant share of the complexity currently handled by courts, plaintiffs and defendants, enabling pro-se litigation for citizens and businesses and reducing the costs of litigation.

ii) The <u>Virtual European Court</u> is a court composed by national judges appointed and trained to deal with trans-border civil litigation such as EPO and ESCP. These judges would work in their own national courts, keeping their position, status and wage, but would operate as a European court. They would handle EPO and ESCP as part of their judicial duties, but they would work in a coordinated way with colleagues handling the same cases in other countries supported by ICT. This solution, therefore, would not amount to establish a new European court with European judges, but it would be a light organisational arrangement, network-based, intendendly designed to create a community of practices and a common standard procedure. The virtual court could be supported by the European agency described above that would operate as the registry of the virtual court. This arrangement would not lead to relevant additional costs, since judges would receive their salary by member states, and would buffer national courts from the complexity involved in handling the EPO and ESCP. A more important, and positive consequence of this organisational arrangement would be the enhancement of the capacity of organisational actors to manage the complexity associated with such procedures. In addition, effective procedural standardisation would reduce the uncertainty associated with EPO and ESCP and would therefore meet the requirement the maximum feasible simplicity more effectively.

iii) The third step in such exercise would be the establishment of a <u>"Real" European Court</u> for trans-border civil proceedings, with European judges and clerks handling trans-border cases. The advantages of this architectural solution in terms of procedural simplification and capacity to manage the complexity are clear, but given the high costs associated with it and the strong political will needed to set it up, we think at present it is not a viable solution.

11.2 Development of ICT applications

The second set of scenarios concern the development of technological artefacts and infrastructures that may absorb some of the complexity to be handled.

a) Open national e-justice services

Here, a first scenario is the possibility to open the existing **national e-justice services for small claims** (such as MCOL, COVL, TOL, CITIUS) to all the European citizens, business and lawyers. This is currently allowed only by Slovenia's COVL, while the other systems are open only either to citizens or to lawyers of the respective Member States. Since these applications in most cases, are already providing good services at the national level, the possibility to extend their accessibility should be explored. With this scenario, any EU citizen could file a case in any of the e-justice services provided by the national jurisdictions. However, since this option bypasses EPO and ESCP, it will not be discussed in detail.

b) Web-based application supporting the European procedures

A second option, most relevant for the purposes of the project, is to identify at general level the functions and features of a **Web-based application supporting EPO and ESCP**. In this case too we should identify a solution considering the twin design principles of maximum manageable complexity and maximum feasible simplicity.

At present this is done by the forms available in the e-Justice portal and by the information provided by the European Judicial Atlas in Civil Matters. As it was shown by the experiment, they provide inadequate support to the users; consequently the circulation of agency is hindered in various ways. For instance, it is difficult, if not impossible, to pay for the court fee, to get a copy of the payment order, or to serve the sentence to the defendant through the bailiffs of another country. At the same time, the simulation has shown that the agency circulates smoothly in critical areas as the identification of the parties (the simple hand signature is accepted without any problem even in Italy) and the transmission of the form to the court through normal postal service. Therefore, as in all the case studies, the new technological components must flexibly exploit the advantages of the smart interplay between online (or digitally enabled) agency and offline agency, and pursue the goal of letting agency circulate across national borders and across different media. Indeed, in some cases agency circulates more smoothly offline than online.

Like MCOL or COVL, the new system should work as a web-based interface for both courts (judges and clerks) and external users (plaintiffs and defendants) providing strict procedural guidance and support, as well as additional services (see below). In particular, the system should provide digital channels for communication between all the actors involved, but also support offline paper-based procedures to by-pass problems emerging in the digital domain, like for instance digital signature or digital identification.

We envision that, from a functional perspective, the system could work in this way:

- Users register their credentials into the web-application supporting EPO and ESCP, and accept the terms of use of the system;
- Once they have received username and password, users can log in to the system, and through a secure web site enter the data into a web form, similar to those already developed in the new release of the "e-justice portal";
- The web-based system should offer strict procedural guidance, support users in critical areas like the identification of the competent court and the payment of the court fee. The solution developed by e-Curia to avoid changes to the procedural document as unique identification number and hash tag can be used also in this case;
- At this stage the form must be delivered to the competent court. If users have a digital identity acceptable by EU regulation and supported by the system currently developed by e-Codex, they should be entitled to sign the form and send it digitally to the competent court. In this case, electronic filing has to be considered adequate. Eventually, the lack of this functional requirement can be bypassed by an offline procedure. The users can print the form, sign it and deliver it to the competent court through normal post. As in the previous case, a unique ID number and the hash tag are attached to the form to grant authenticity. The data entered in the form are submitted to the competent court also in digital format, but the filing can be considered completed only at the time the court receives the paper copy. In this way, also with paper filing the court has uploaded the digital file, and can take advantage of these data for its operation. All the data are saved into a web-based system;
- In both cases, the competent court receives an alert that a case has been filed with a communication that can be send by the official e-mail address of the court;
- The court should work using the web-based application. Therefore court users, too, should have user names and passwords. Using the web-based application should ease data entry in the forms to be completed by the court, and should allow procedural checks, like the control of the court fees. As we have seen, it is critical to provide strict procedural support to the courts to avoid mistakes;
- The system should offer the possibility to print the payment order. Following the MCOL experience the court should send not just the court order but rather a "claim pack" with all the data and information required to reply through the web-based application or through paper. The documentation should be served by post, but also delivered digitally for the parties that have accepted the terms of use (as in e-Curia);
- The parties could also use the web-based application as a tool to stay informed about procedural developments;
- Since the use of the forms provided by the e-justice portal is mandatory, it should be equally mandatory the use of the web-application. This would provide several advantages, such as a better and more standardised handling of the procedures, and less mistakes.

More generally the idea is to create a system that is not limited to the digital transmission

of procedural data and documents but that also provides an effective procedural support to users and courts. It will provide case and workflow management functions as well as document exchange and repository facilities. This will likely increase the maximum manageable simplicity for expected users, since it requires some efforts at functional simplification, closure and reduction of alternative courses of action, and would enforce a standard procedure across European jurisdictions.

Not less important, the web-based application does not need to be interoperable with other national applications. It is simply a web-based application designed to work as a self-contained system, even if in its development the possibility to build gateways and interfaces with national systems should also be considered. The decoupling between the web-application and the national e-justice systems keeps infrastructural complexity low enough without reducing the level of service provided to users. Indeed, we guess that the threshold of maximum manageable complexity would be quickly reached if the judiciaries of the member states would have to build and maintain gateways between their own systems and the European one. The decoupling also facilitates the evolvability of the system: the web-application could evolve without imposing changes to national systems, and vice versa.

Finally this, like any other technological solution, needs the support of dedicated organisational actors as those outlined above and in particular of the European agency.

Concluding remarks

In this report we have set the concept of interoperability on a new ground by connecting it to the broader issues of the design of complex systems and the cultivation of large-scale infrastructures. Our argument is that, in order to foster the circulation of judicial agency across EU Member States, systems for trans-border civil proceedings online must be designed so as to meet basic requirements of simplicity and ease of use. Circulation of agency and system interoperability must be supported by European-wide technical and institutional infrastructure that is at the same time robust and adaptable to future needs. In the report, first we have underlined the critical importance of infrastructures for building European interoperability, and then we have unpacked and analysed sources of complexity arising in the development of relatively simple judicial procedures as those described in the case studies. Finally, we have proposed some design guidelines that should be followed to minimize complexity and enhance the circulation of legal agency in the development of European civil procedures online.

The report's major contributions can be summarized in the following points:

1. It develops a conceptual framework to analyse the complex issues involved in building European trans-border interoperability in the domain of Civil Justice.

2. It assesses the problem of the circulation of legal and administrative agency in European Civil Proceeding Online.

3. It reframes and reassesses the idea of 'building interoperability' within the broader field of the development and cultivation of infrastructures.

4. It focuses on the dynamics of the installed base as the crucial issue in designing complex systems for European e-justice and e-government.

5. It spells out the critical importance of building institutional interoperability and developing institutional infrastructure in order to support trans-border e-service systems and at the same time allow systems evolvability and change.

6. It provides a broader understanding of the idea and implications of interoperability for the trans- border circulation of legal agency.

7. It unpacks and analyses the major sources of complexity which may hinder the circulation of legal and administrative agency within national jurisdictions and across European trans-national borders.

8. It develops design guidelines for meeting minimal complexity requirements compatible with functionality and legal fairness.

9. Finally, based on the design criteria, it proposes and assesses alternative institutional architectures to support European interoperability and infrastructure in the domain of Civil Proceedings Online and, in general, to enhance the circulation of agency in the domain of European Justice.

The report draws on the findings and the lessons provided by the two European case studies and the four national case studies that have been analysed in the Building European Interoperability project. The lessons learned from experiences of e-justice can be used to design online applications supporting trans-border proceedings like the European Payment Order and the European Small Claim Procedures. Also, they provide a platform to enlarge our views about building interoperability and infrastructure in the EU.

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