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The case of the Copyright Hub

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## **The temporal dynamics of technology promises in government and industry partnerships for digital innovation: the case of the Copyright Hub**

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**Abstract:** What is the expectation work required to ensure that technological innovation initially supported by government funding is subsequently taken up by market actors? This paper explores this question by applying a linked ecologies framework to the study of the Copyright Hub, a digital infrastructure for Intellectual Property trading developed in the UK. We draw our analysis from a five year long study, including forty-six interviews and six weeks of participant observation. We found that expectation work in policy-led infrastructural communities entails (1) leveraging technology to reshape the position of actors in the innovation space; (2) exploiting the different temporalities of expectation work in allied ecologies and (3)

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mobilising 'low' expectations to provide momentum to the newly arranged innovation space. Highlighting difference in temporal dynamics for the various partners involved as a 'hinging' factor, our analysis contributes to clarifying the complex temporal alignment of policy and innovation processes in technology projects.

**Keywords:** Expectations of technological change, Science & technology and innovation policy studies, Intellectual property rights, digital infrastructure

## 1. Introduction

This paper offers new insights into the complex temporal dynamics of government and industry partnerships for the development of new technologies. Based on the case of the Copyright Hub - a digital infrastructure for IP trading developed in the UK - it highlights the differing exigencies surrounding the mobilization of commitments and promises amongst policy communities, innovation communities and industrial players.

Though technological development is often described as a continuing evolutionary process (Geels and Shot, 2007), it is still assessed from a narrower instrumental perspective which focuses exclusively on whether the planned technical outcomes are achieved (Nelson, 2012; Whitley, 2016). Our paper examines how technological research and development of a digital infrastructure helped resolve government- industry relationships and served as a 'hinge' (Abbott, 2005) creating mutual hostage relationships between different institutional ecologies.

This paper presents a qualitative study of the development over five years of the Copyright Hub: a digital infrastructure for Intellectual Property trading being developed in the UK. The Copyright Hub is the culmination of a series of initiatives by which the UK government sought to resolve issues about its existing Intellectual

Property (IP) framework. Internet companies had been lobbying for the adoption of a US inspired legal doctrine of *fair use* that permits limited use of copyrighted material without acquiring permission from the rights holders. Players in the creative industries, in contrast, perceived the activities of the Internet companies such as YouTube as causing economic harm and pushed for stronger legal instruments to prevent the infringement of intellectual property rights. These tensions generated a hiatus, in which a number of attempts have been made to change the IP law, often in contrasting directions<sup>2</sup>. In the words of Richard Hooper, the leading advocate of the Copyright Hub and president of the Copyright Hub foundation, “in three short years the initiative of a digital infrastructure helped change the narrative in the UK about copyright and softened the copyright wars between tech companies and creative companies”. This paper explores the way in which the Copyright Hub, a government-industry partnership to develop a new IP infrastructure, emerged as a way of sidestepping sharp conflicts over the reform of the IP legal framework.

The paper is structured as follows. In the next section, we will explore how analyses of technology development, even those from perspectives such as the sociology of expectations that attend to the complex dynamics surrounding R&D projects, are tacitly structured around a linear narrative that views a project in terms of its ability to deliver on a technological solution and achieve change. We will suggest that the case of the Copyright Hub requires a different perspective that explores how linkages between different ecologies with their different temporal exigencies might not deliver transformatory change.

The empirical section will present the methodology adopted in our extended study of the Copyright Hub, including forty-six interviews with informants from the Creative Industries, the UK Government and research and innovation communities. The discussion will focus on how tolerance to failure to develop a solution that can reach the market might result where multiple ecologies with different temporalities are being linked and an initiative becomes subject to radically different tests of adequacy by the players involved.

## 2. Literature review

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<sup>2</sup> The political debate on IP issues went in two years from the Labour government granting the State the power to block access to websites infringing IP rules (DEA) to Cameron favouring the American model tolerating minor exceptions (i.e. ‘fair use’).

In this section, we introduce existing analyses of technology development which, even from perspectives that attend to the negotiability of outcomes, remain somehow driven by an instrumental view of technology research as a provider of change. Scholars in the sociology of expectations have sought to understand the role of expectations in the enactment and selection of emerging technologies (Bakker et al., 2011). In this literature, expectations are described as something that can help innovators mobilize support for emerging artefacts (van Lente, 1993:187). Expectations are of great importance for the development of technologies as they stimulate, steer and coordinate action of actors, especially in the early stages of the innovation process (Borup et al., 2006). Borup et al. (2006) define expectations as real time representations of future technological situations and capabilities. Much of this work has drawn attention on the ‘hyperbolic’ nature of expectations (Gregory, 2000; Borup et al. 2006), that overestimate expected achievement and underestimate the time and effort needed, arguing that “initial promises are set high in order to attract attention from (financial) sponsors, to stimulate agenda-setting processes (both technical and political) and to build “protected spaces” (Geels and Smit, 2000: 882).

Chance events play a fundamental role in such narratives (van den Belt and Rip, 1987). The evolutionary approach inspiring the sociology of expectations has been criticised for conveying a constrained notion of agency (Genus and Coles, 2008; Shove and Waler, 2007; Smith et al., 2005), reflected in a description of actors as placing their bets on different technologies, then waiting to see whether the trajectory they have invested in wins over the others, based on factors that are out of their control (Suarez, 2004). Applied to emerging technologies, these approaches tacitly focus on the ability of projects to deliver expected innovations rather than exploring how different interdependent actors may have different rhythms and priorities in constructing their visions (van Lente and Rip, 1998), using the future as well as the past to do so (Garud and Nyar, 1994) and using these different temporalities to their own advantage (Brown et al., 2000).

In this work we seek to extend existing perspectives from the sociology of expectations<sup>3</sup> to deal with protracted technological developments, not necessarily viewed as emerging (Rotolo, Hicks and Martin, 2015), where the use of temporality as a resource in vision-constructing work is not necessarily limited to the future. Furthermore, we seek to develop a richer account of agency whereby actors

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<sup>3</sup> Van Lente initially introduces the term expectations to explore the tolerance of innovation projects to the slow accumulation of evidence that they will deliver. In this paper we are extending this insight that has been overlooked in later developments of the perspective.

navigate paths in the making with a particular focus on the role of policy-makers and their expectation work.

### **3. Temporal demarcations in government and industry partnerships for the development of new technologies**

To begin to address the lacuna concerning temporal demarcations in how actors contribute to technology development, we refer to Schubert et al. (2013) elaboration of the concept of technological momentum (Schubert et al., 2013). The authors draw on the idea of 'technological momentum' coined by Hughes (1983: 140-174) and his observation that technological infrastructure can be seen as having the tendency 'to resist change in the direction of development' (Hughes, 1983: 140). This approach is particularly helpful as it offers a more nuanced account of the balance between structure and agency in innovation processes: innovation practices are continuously made and unmade as actors mindfully influence the course of technological innovation so that a new technological path remains in the process of being created. As well as putting agency and direction back at the core of a theory of technological development, Schubert et al. (2013) place emphasis on temporality as a resource for actors to navigate and manoeuvre technological development from within. Adopting a longitudinal analysis to the study of semiconductor manufacturing technologies, Schubert et al. (2013) reveal that socio-technical infrastructures grow through an incremental process of increasing stabilisation. A focus on 'means for managing momentum' is extremely helpful for analysing our case of the Copyright Hub, where an IT innovation was launched (the Copyright Hub) with the purpose of mobilising a community (the creative industries) and re-shaping institutional factors (e.g. the relative role of technological development and copyright law as resources to reform the IP framework).

While Schubert et al. (2013) helpfully flag the role of research actors at different points in the innovation process, their account remains limited to the relationship between technical and organisational dynamics in an industrial sector.

Understanding expectation work in the case of the Copyright Hub demands extending the focus to the role of policy actors and their temporal approach to managing momentum.

Research that addresses the different temporal profiles of policy, science and the market actors in conjunction is found in Pels (2003). Focusing on the micro-politics

of knowledge across this 'social triangle'<sup>4</sup>, the author points out that, while scientists are expected to concentrate on a few isolated topics for a long period of time, politicians need to switch between issues very rapidly. Their professional situation typically favours a broad but necessarily superficial sweep of knowledge about a plethora of subjects. In contrast scientists favour a deep acquaintance with a highly selective and narrow set of discipline-driven questions. One advantage of Pels' model of the social triangle is that it locates the specific nature of professional knowledge production in chrono-political terms (Adam, 2003), referring to a specific temporal profile which can be contrasted with that of 'faster' cultures for which time is money (and power) in a much more immediate and intensive way. In order to analyse how the different institutional timescapes interact, we refer to Andrew Abbott's linked ecologies framework (Abbott, 2005). The ecological argument is used in sociology to acknowledge an intermediate account between individualist and emergentist approaches to social processes. It recognises the agency of individual actors and also the influence of larger structures and relationships which pattern the choices available to individuals. In a linked ecologies approach, actors aren't only dependent upon the interaction with other actors in the same ecology. The outcome of actors' interaction within one ecology also triggers and becomes subject to events occurring in neighbouring ecologies. In a linked ecologies understanding, the outcome of, say, a technological project is not defined by a set of external, univocal or fixed criteria. To succeed in one ecology a technological development must provide results also to allies in adjacent ecologies, despite 'mismatches of the rhythms of interests between ecologies' (Abbott, 2005: 264). Strategies that provide these kinds of dual (or multiple) rewards, Abbott calls 'hinges'. A hinge is a strategy that works in both ecologies at once but it can be perceived in fundamentally different ways in the two (or more) ecologies that it links. A linked ecologies approach therefore provides tools for understanding contextual influences over the dynamics of development of technological innovations and their related promises. Describing technological innovations as 'hinges' helps us realise that the evolution of the Copyright Hub as a market actor should be understood also in relation with neighbouring professional ecologies and the political ecology of the UK government as well as a project which fosters the interest of the academic actors such as research institutions.

#### **4. Methodology**

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<sup>4</sup> Pels' (2003) conception of the 'social triangle' is closely affined to the 'triple helix' model (Etzkowitz and Leydesdorff, 1997).

In this paper, we develop an extended account of the Copyright Hub covering the period from November 2010 to November 2015, which we set in the historical context of previous and on-going initiatives, aimed at reforming the IP framework at UK- and European level. As a result, we draw our analysis and conclusion primarily from three empirical data sources: (1) documents; (2) semi- and unstructured interviews; and (3) observation. Forty-six semi-structured interviews have been undertaken in total including seventeen interviews with the management of the Copyright Hub and their development team. Twenty interviews were with informants from the Creative Industries, while others were with civil servants and IP experts and consultants. The methodology included six week-long field trips to London to observe the daily routines of collaboration in their settings of everyday activity. Facilitated by these acquaintances, snowball sampling (Patton, 2002) also allowed us to build a growing network of respondents thus reducing our dependence upon particular gatekeepers or single points of contact that might be committed to a particular view<sup>5</sup>.

Our analysis of this comprehensive set of data made apparent the importance of temporal dynamics in managing expectations across ecologies. Digital data sources and observation helped prepare the interviews, where we were able to ask respondents specific questions on the temporal evolution as well as the different perceptions about the project. The analytic process was initiated in the course of data collection during which the second author coded the accumulating interview data based on in vivo terms offered by the informants, according to principles of naturalistic inquiry (Lincoln and Guba, 1985). These were then clustered under recurring topics, including how informants could articulate the relationship between ecologies and the role of time, time pressure, speed of development, delays etc... Purposive sampling around key terms (Clarke, 2005) helped us refine various in vivo categories into a set of presentational categories that followed the informants' own classifications of their actions in managing expectations (see Table in Appendix 2). These were then further refined into research-induced categories cast at a more abstract level, and referring to the different temporal dynamics of expectations between the ecologies of policy-making, industry and research and their dis-alignment (see Table in Appendix 3).

Describing inter-ecology linkages requires adopting a long-term perspective on events. Methodologically, this demands striking a balance between use of local evidence (e.g. interview excerpts and observation) and an account of how the

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<sup>5</sup> For an overview of data sources see Appendix 1.



informant's vantage point relates with the wider context (as captured by digital data sources and policy documents). For this reason, we selected a subset of quotations that capture the thrust of data within a given presentational category and used a descriptive account to summarize findings from other sources to show links with the wider ecological landscape. Relevant quotations that for reasons of space cannot be included in the main empirical sections are included in Appendixes.

In the remainder of the paper, our narrative revolves around the interaction between the three ecologies of policy, industry and research with respect to the development of a digital infrastructure for IP trading. These ecologies are represented, respectively, by (1) the Copyright Hub as the expression of the UK Government's IP framework reform programme aimed at building a user-friendly digital infrastructure for IP trading; (2) the UK Creative Industries and their contraposition with global Internet giants over unlawful exploitation of copyrighted content and (3) a set of research actors along a continuum spanning from the extreme 'blue sky' research on data modelling for data interoperability to the Digital Catapult, as the UK expression of translational intermediaries, that is organisations aimed at putting commercial initiatives in touch with relevant research findings (Hauser, 2010: 1).

The presentational narrative is driven by the linked ecology argument that allows us to analyse the phenomenon we explore in terms of the operation of a web of actors and their influences across ecologies (Abbott, 2005: 249). Our presentational narrative focuses on how commitment from the creative industries was built (Section 5). We then present how linkages with research institutions were created (Section 6) and expectations of established market actors managed (Section 7). Our discussion develops around the notion of temporality and its implications for expectation work. As suggested by Abbott, the industry, academic and political ecologies exhibit somewhat differing levels of temporal stability (Abbott, 2005: 252). The industry ecology benefits from considerable stability. In the academic ecology, turnover occurs more quickly, whereas re-bundling of political issues takes place at an even more rapid rate. For each section, we will develop a particular aspect of the temporal dynamics of expectations, which will be later discussed as, respectively, durational, inter-temporal and slow.

## **5. Building commitment from creative industries**

We start by presenting how the Copyright Hub attempted to build commitment in advance of the infrastructure being erected. In this section, we show how policy

actors managed the extendedness of technology promises to create pressure on creative industries. We also show how, reciprocally, creative industries saw demonstrating early commitment to build the Copyright Hub as a way to minimize the chance of additional legal changes in the direction of copyright exceptions.

The Cameron government's broad support for the fair use doctrine suggesting reform to the copyright framework posed an imminent threat of making inroads into the creative industries' commercial rights via the introduction of further exceptions into the UK's copyright laws. Consequently, at that time, the creative industries were brought together under increasing pressure to find a solution which was capable of warding off the government's statutory interventions. Such 'a glimmer of hope' was found in the Copyright Hub. As recalled by one interviewee who was involved with Hooper's feasibility study from the outset:

And he [Hooper, *ed.*] had a community, who is brought together largely by the pressure of the government, saying "if you don't improve your performance then we will take away rights". It's always been the pressure cause behind it. So people came somewhat unwillingly to the table but recognising that they had to be there. And also they had to be seen to be there, you know. Even if nothing was gonna happen, they had to, at least, be seen to be there themselves.

Therefore, the Copyright Hub, first and foremost, emerged from the political need of the UK's creative industries to create a defensible position around which they could resist attempts by the government to introduce copyright exceptions. As the chairman of a publishing association conceded:

I think they [the creative industries, *ed.*] understand that there's a political need for the copyright industries to work together even if there isn't a technical or a commercial need, the political need is just as critical and all of us got to be in the same place politically.

By showing commitment, the creative industries generated greater pressure on policy-makers to maintain copyright laws and court systems in their favour. This move also helped reduce the likelihood of new bills being 'rushed'<sup>6</sup> through

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<sup>6</sup> The concern about "rushed" responses was expressed by Richard Hooper in an interview in January 2015: "And before you rush off and change the law, you sort out and improve your licensing mechanism, processes and organisations. That is the story of this project. That is it. That's what we've done. And so now, before you rush and change the law, you have a go at processes. And actually

Parliament as a result of political expediency in the face of pressure to update copyright laws, as had occurred in the past<sup>7</sup>. As Hooper and Lynch (2012, p.37) argued:

If the creative industries ensure that they have done all they can to make licensing and copyright work easier for rights users and therefore consumers, then the ball is firmly at the feet of the politicians to ensure appropriate measures are in place to reduce the incidence of copyright infringement on the web.

This shows that a quid-pro-quo was proposed as a way to resolve the otherwise zero sum game between the Internet companies and creative industries. Policy actors sought commitment amongst SMEs in the creative industry as a proxy for eventual support to build the infrastructure - a strategy that will be later discussed as a component of the durational aspect of expectations (see Section 8.1 below).

However, building early commitment is only one component in our understanding of how actors manoeuvred the temporality of technological development. Our interviews show how creative industry players constantly refer to motives deriving from other ecologies to justify their involvement with the technological project. By describing how the Copyright Hub relates with neighbouring ecologies, in the following sections we will show how the defining temporal rhythm of technology research interacts with politics and business.

## **6. Links with research institutions**

Managing expectations about a technology that remains unproven, however, presents its challenges. Promises remained linked to the technology being built. Concerns about the technical feasibility of the Copyright Hub continued. Notably, creative industry players expressed concerns about the technical detail regarding the proposed solution:

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when you do that, there's less requirement to change the law. If there's less requirement to change the law, there are less copyright wars." (Transcript B1).

<sup>7</sup> Before the Hargreaves Review suggested the introduction of a digital infrastructure for copyright management, the government had made a number of statutory interventions into the UK's IP framework, ranging from the Creative Britain report in 2008, the Digital Britain report in 2009, and the Digital Economy Act (DEA) in 2010. These measures were met with angry denunciation and legal challenges from ISPs, Internet-based service companies and end-users. As a result, a large proportion of the DEA's original measures were either completely removed, significantly delayed or reserved without being actually implemented.

‘The proposal for a Digital Copyright Exchange is scant on detail and potentially fraught with problems.’ (Gwen Thomas, Association of Photographers - AOP).

In pursuit of the development of a technology platform for copyright licensing, the Hub went into partnership with Digital Catapult - which received government funding through Innovate UK for helping businesses turn their digital ideas into commercialisation. Forming partnership with the Digital Catapult was crucial for the next phase of the Copyright Hub’s development, as, for the first time, the Hub was provided with physical offices to collaborate with its stakeholders, as well as a dedicated team of five developers to examine closely how such an infrastructure could be implemented technically. By describing aspects of the partnership between the Hub and Digital Catapult, we want to extend our linked ecology understanding to the dynamics related to the mismatch of the rhythms of interests between ecologies. As well as providing a dedicated development team, partnership with the Digital Catapult helped identify an appropriate technology to implement the Copyright Hub. This was found in connection with the Linked Content Coalition (LCC). LCC was the final manifestation of a series of projects that had benefitted from a policy-led programme to establish a technology to support digital rights management<sup>8,9,10</sup>. Beginning in 2012, LCC was funded partly by the European Commission and partly by the industries to help promote legitimate use of content on the Internet through the effective use of interoperable identifiers and metadata<sup>11</sup>. The LCC framework was considered by its data architect as ‘[a] grown-up version of the <indecs> model from fifteen years ago, with formal definition’. By the time of its conclusion in April 2013, the LCC project had accumulated enormous political support from the creative industries and managed to turn itself into a permanent

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<sup>8</sup> The earliest project of this kind, <indecs>, was founded in 1998 to provide an analysis of requirements for metadata, which would enable e-commerce of IP in the networked environment. Available at: <http://cordis.europa.eu/econtent/mmracs/indecs.htm> [Accessed October 29, 2015].

<sup>9</sup> The <indecs> framework, which provides details on a number of principles necessary to achieve such interoperability, was then implemented in various sectors and industry standards, such as DDEX for messaging and data dictionary applications in music and ONIX for distributing digital metadata of products in publishing. Available at: [http://www.doi.org/factsheets/indecs\\_factsheet.html](http://www.doi.org/factsheets/indecs_factsheet.html) [Accessed July 8, 2015].

<sup>10</sup> The next important project of this kind was Automated Content Access Protocol (ACAP). Emerging from the feud between European publishers and Google over copyright infringement in 2006, ACAP was intended to provide a simple mechanism for machines to read and to unambiguously interpret copyright terms and permissions of right holders in the digital environment. Available at: <http://www.the-acap.org/> [Accessed October 29, 2015].

<sup>11</sup> A presentation of the Linked Content Coalition, sampled in October 2015, is available at: <http://www.linkedcontentcoalition.org/>

global consortium of standards bodies and registries<sup>12</sup>. As the chief data architect of the LCC project commented:

LCC has probably provided [the Copyright Hub with] two things... LCC provided some political support... through the LCC project getting together some consensus of view towards creating a better framework for trading. And then the actual technical work, which I led in LCC, which was the modelling. [...] It was simply because the Hub is taking a view that it will reuse everything it can. And the RDI stuff is built for this purpose. So, there's a great deal of synergy at a deep level, as it's using precisely the same model, not even a similar model, but a precisely the same data structure.

By adopting the LCC's data model, the Hub was able to tap into not only the political support and resources of the creative industries at the European level, but also the technical expertise in data modelling, which has been accumulated over approximately fifteen years since the beginning of the <indec> project. However, notwithstanding the benefits of its strong political support, the idea to simply reuse LCC's solutions to enable e-commerce of IP brought some challenges. While calming SMEs' concerns regarding technological implementation, it attracted criticisms from the Digital Catapult. With a focus on bridging the gap between technology and commercialisation, Catapult centre developers considered LCC solutions as dated standards. Concerns regarding the Linked Data Model were raised by a member of the technical development team at Digital Catapult:

'[T]he data model is a little bit... [long pause] conceptual and abstract since it's not necessarily that nice of a model to implement... It's a little idealistic. It's a bit lofty. It's trying to do too much and so we can simplify by making it not do as much. It tries to do everything... And so we may have to remove some of the purity in there - the theoretical side of it out and say let's get down to practical.'

Concerns voiced by the technical team seem to address the fact that the proposed data model is too complex or 'verbose'<sup>13</sup> for the early stage of a project, where take-up is key:

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<sup>12</sup> The background of the Linked Content Coalition as of July 2015 is available at: <http://www.linkedcontentcoalition.org/index.php/about-us/background>.

<sup>13</sup> In an interview a developer who was responsible for coding the LCC's data model for the Copyright Hub noted: " [...] the LCC really, the data exposes too much of that common knowledge that doesn't

[The development team] have found inconsistency in the LCC's model, a redundancy in it, and they're proposing a much lighter-weight one because the LCC's model was built for the utmost sophistication, which won't be required for the early stage of the project... [We] developed some visualisation tools there, it looks exceedingly complex with even just a few parameters in there. So, the practicality of working with it as a viable long-term model is unknown to me presently.

We have appreciated so far some of the challenges in the complex temporal dynamics of government and industry partnerships for the development of new technologies. We have identified them in (1) building early commitment about a technology that remains unproven and (2) partnering with intermediary research institutions with a different (more immediate) temporal perspective on commercialisation. A concurrent challenge relates to managing the expectations of existing market actors. In contrast with what described in the previous section, here the temporal work entails forging a perception that no sudden disruptions should be expected with the advent of the new platform.

## **7. Managing expectations of established market actors**

In its inception, the Hub was portrayed as the maker of a new market, which consists of a 'very high volume of low monetary value copyright licensing transactions' coming from 'the long tail of users' (Hooper & Lynch, 2012: 21-22). The Copyright Hub was proposed as an Internet-based portal, with the capacity for connecting to the ever-increasing networks of licensing databases and legacy systems, using cross-sectoral and interoperable open standards for communication and data building blocks:

Copyright licensing can be made more streamlined, easier and cheaper to use, especially for the small and medium-sized enterprises (SMEs) which make up 90% of the creative industries, without eroding the rights of rights owners. ('Rights and Wrongs - Is copyright licensing fit for purpose for the digital age?', Intellectual Property Office 2012, p.6)

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need to be stated again and again. Because of this verbosity, it [adds] a lots of extra work to extracting information 'cause it's all embedded in that structure. So that's the biggest problem, I think. " (Transcript C4).

This excerpt shows a remarkable aspect of how policy actors build linkages with market actors. Attempts to build commitment from SMEs are presented together with reassurances for existing market actors. The proposal of a technological intervention in the current processes of copyright licensing had to be posed without being perceived as a threat to the major players in the creative industry. This is aptly illustrated by a comment of the managing director of a picture library on his concerns over the idea of building a centrally-controlled licensing system:

There's always a concern there. Anything that's trying to bring everything under one umbrella, under one roof, everything into one place. There is a concern from our industry that someone is trying to create the biggest picture library in the world will take all the business away. One thing Richard Hooper said right from the start was that if the Hub develops new products or new licence schemes they will not cut across existing business. The idea is to create new opportunities, new rights models, new licensing opportunities that are different to what is already being done. If the Hub simply was to replicate things that were already out there it would not be doing its job and it would simply be cannibalising existing business from existing industry, and that's not its intention. That's why I've been supporting it because I think that is the right attitude.

Hooper and Lynch (2012, p.21) tackled this challenge by placing particular emphasis upon portraying the Copyright Hub as a maker of a new market, which focuses on 'the very high volume of low monetary value transactions coming mostly from the long tail of smaller users'. They reasoned that this is a new market, which has not yet been exploited by the creative industries due to the lack of an appropriate mechanism. Therefore, the implementation of the Copyright Hub will help in 'increasing the size of the overall pie [of licensing]' (ibid.). This reassuring portrayal was of utmost importance as it helped the Hub not being perceived as a threat for existing market actors.

## **8. Temporal dynamics of expectations in government and industry partnerships for technology development**

We now discuss how our study contributes to the understanding of the temporal dynamics of expectations in government and industry partnerships for technology

development. We will focus in particular on three aspects: (1) the *durational* aspect - how, by shifting the focus to the extended expectations linked to technological development, the digital infrastructure reshaped the position of actors in the innovation space; (2) the *inter-temporal* aspect - related to exploiting the different temporalities of expectation work in allied ecologies and (3) the *slow* aspect - how the delivery of 'slow' expectations provided ways of managing momentum in the newly arranged innovation space.

### **8.1 The durational aspect of expectations**

A linked ecologies approach highlights how difference in the temporal stability also affects the degree of separation between ecologies. The level of separation is remarkable in the high-tempo ecology of market actors where exclusive relationship is the model (i.e. one actor cannot operate in more than one ecology at the same time). While the extended temporality of the research ecology takes overlap and coincidence much more for granted, making it more 'porous' (Abbott, 2005: 252). Our study particularly highlights policy actors' agency in exploiting the 'porosity' of science & technology research to manoeuvre the innovation space and enrol the creative industries into the development project. In the early phases of the Copyright Hub when there were difficulties enrolling industrial users in the absence of a feasible technological solution (see Section 7), policy actors created a bond with digital infrastructure research communities exploiting the extendedness of their technological expectations (see Section 6). As shown by the case of the LCC's data model developed over approximately fifteen years through successive publicly funded projects without any technical implementation, researchers tend to maintain positive expectations as long as these provide them with a mandate to continue their activities. This contrasted to the more rigid requirements of the industrial users (i.e. the creative industries). When initially called upon to assess technology promises, creative industries considered the Hub as 'scant on detail and fraught with problems' (see Section 6, interview with representative of AOP). For industrial users, it seems that meeting expectations is more vital and hence they tend to compare and test expectations in different ways (Rappa & Debackere, 1992). Indeed, members of the Digital Catapult technical development team saw the LCC data model as too academic (i.e. 'conceptual and abstract', 'verbose' and 'idealistic').



Nonetheless, the role of the LCC and the consensus it accumulated over time in the research community was key in absorbing initial concerns by providing a technological platform from which the Hub could operate to enrol further support. A second aspect of a linked ecology approach that helps analyse the contribution of extended expectations in reshaping the innovation space is the replacement of the 'audience' concept. In an ecological approach, it is not clear where an ecology ends and the audiences of the various claims within it begin (Abbott, 2005: 250). It is the process of constructing relations that constitutes and delimits the boundaries between ecologies.

In this case, the extended expectation work of the research ecology and the intrinsic collaborative nature of infrastructural projects such as the Hub gradually made room for the creative industries to become active participants. Once turned from outsiders into insiders (see Section 5 on how the creative industries became involved with the Hub), uncertainties are shared and the role of external adjudicators is taken away from them.

Our findings on the durational aspect of expectations complement Brown and Michael's (2003) view that assumes a clearly distinguishable audience which does not participate in technological development. What we see in the case of the Copyright Hub is that the extendedness of expectations linked to a digital infrastructure contributed to redistribute roles and responsibilities, creating new linkages between actors. We also saw how this generated a change in vocabularies: a shift in 'narrative infrastructure' (Deuten and Rip, 2000) from the threat of rushed regulatory reforms to a multi-user, multi-provider interoperable undertaking requiring technical expertise and an extended timeframe for its implementation. As reported by recent literature on expectations, the longer the expectation race is, the less dramatic the selection dynamics become (Bakker & Budde, 2012: 559).

## **8.2 The inter-temporal aspect of expectations**

One key puzzle posed by this study is: why would the Copyright Hub opt for a data model that is seen as too complex and 'verbose' for creating a new infrastructure for which up-take is key? If we only address the outcomes as evaluated by an external audience at the end of the development processes we cannot make sense of this.

To find an answer to this puzzle requires conceiving technological development in reciprocal terms, as suggested by a linked ecologies approach. What is the payoff

that the Copyright Hub provides not only to SMEs in creative industries, but also to established market actors, the UK government and the more or less academic 'movements' advancing digital rights management ideas?

As the most recent re-incarnation of a long-standing interest shared by academics and activists alike to identify viable solutions for digital right management, the application of the Linked Data Model to the Copyright Hub can be considered a successful 'hinge' action - despite its 'verbose' data model - in that it gave creative industries a way to coalesce that would not simply be discounted as a lobbying. Reciprocally, the Copyright Hub gave LCC advocates a new home to pursue their 'academic' programme of building interoperability standards and metadata for copyright exchange. While the clear advantage from the policy makers - who once described the IP framework "as a priesthood [...] enacted by these quite funny men of a certain age in legal chambers, dusty files all around them"<sup>14</sup> - was to delegate the solution of the IP framework controversy to technological innovation, as opposed to more legislation.

One key aspect of our linked ecologies theorization is that the exploitation of connections between ecologies is made possible by the misaligned temporalities of their expectation work. Our informants often refer to a direct linkage between "the political, the technical and the commercial need" in discussing the Copyright Hub (see Section 5, interview with chairman of a publishing association). They do so by assigning a distinctive temporal order to each of these different spheres. Showing commitment to a technological project despite slow progress ("even if nothing was gonna happen", *ibid.*) would help somewhere else in the policy arena to "generate greater pressure on policy-makers to maintain copyright law and court systems in their favour". In other words, managing momentum in one ecology might well accelerate change in another.

The inter-temporal element is referred to also when the initiative to develop a digital infrastructure is described as contributing to reducing the likelihood of new legislation being 'rushed' through the parliament (see Section 5, interview to R. Hopper).

These accounts invite us to address temporal dis-alignment as a determinant in the reciprocity of expectations that hinges different ecologies together. It is precisely because policy is organised differently from industry and from academia and with different rhythms that ecologies with their own diverging yet intertwined interests look for each other in search of alliances in the innovation space.

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<sup>14</sup> Source Becky Hogge interview with Andrew Gowers:  
[https://www.opendemocracy.net/media-copyrightlaw/gowers\\_4160.jsp](https://www.opendemocracy.net/media-copyrightlaw/gowers_4160.jsp)

Our findings respond to Brown and Michael's (2003) call to clarify variations in expectation work across sectors, with a focus on the ICT sector. The literature on expectations suggests that there are striking variations across sectors, although it is not quite clear yet what affects these contrasting differences and their dynamics. Here scholars of expectations studies conceive of ICTs as a highly volatile sector, characterized by highly impermanent forms of alliance and where uncertainties are very acute (Brown, Rip & Van Lente, 2003). Locating technological innovation within a linked ecologies understanding makes apparent that ICT (especially in the case of research-intensive technologies) is not necessarily such a volatile sector. On the contrary, in the case of Copyright Hub, policy is seen to rely on science and technology promises to make copyright policy more durable and counter-balance the rapid 're-bundling' of policy issues surrounding the IP framework.

### **8.3 Slow expectations**

Though in general one might presume that more is better in the world of promises our study has shown that, in policy-supported technology development, expectations can equally be set low - in this case to avoid being perceived as cannibalizing the interests of market actors in the same domain - and slow, to provide for stability in policy agenda-making. As our informants reminded, there are always concerns when a digital infrastructure is being proposed that there is 'someone who is trying to bring everything into one place and take all the other business away' (See Section 7, interview with the managing director of a picture library). As a proposal to use technology to intervene in the process of copyright licensing, the Copyright Hub was carefully presented as a niche development which will help 'increasing the size of the overall pie [of licensing]' rather than 'cannibalising existing business' (Hooper and Lynch (2012, p.21). This technology development was also presented as a move that, even if nothing was going to happen, would contribute to gradually reshaping the innovation space around the narrative of a better working digital infrastructure, thus providing a balancing influence as opposed to an over-reliance on legislation as a mean to intervene in IP management.

Our findings offer additional support to the nascent 'sociology of low expectations' argument (Gardner, Samuel & Williams, 2015). Authors in the field of sociology of low expectations recognize how less optimistic, uncertain, and modest visions can also provide innovative projects with momentum. Our case contributes to the sociology of low expectations by addressing how technological expectations can

also be used to resolve immediate problems confronting allied ecologies such as industry and policy-making, somewhat decoupling investments from an assessment of the ability of the technology to fulfil its promise.

Our findings on the role of policy actors in negotiating the temporality of technology trials in government and industry partnerships for technology development closely resonates with Parandian, Rip & Te Kulve's (2012) notion of 'waiting games', where the authors point out that "diffuse and open-ended promises are forceful in policy discourse, but may hinder the realisation of these promises. Innovation actors are reluctant to invest in concrete developments because the promises are open-ended, and eventual demand is not articulated. This is a structural issue, and leads to 'waiting games' in which actors are entangled' (Parandian, Rip & Te Kulve, 2012: 565). Using the linked ecology framework (Abbott, 2005), our study extends the 'waiting game' argument by conceiving technology development as an 'ecology of games': the creative industry game, the policy-makers' game and the research organisations' game. The relationships between policy discourse and innovation actors are much more intricate and multi-faceted than what existing analytical templates from the sociology of expectations would suggest.

Our 'slow expectations' conceptualization also contributes to Pollock & Williams (2010) typology of promissory behaviour, which highlighted the different levels of accountability to which promises are subject in the business context. They found that the degree of performativity of promises is linked to their degree of scrutiny. With the Copyright Hub case we found that as long as policy actors and research actors are involved, the forcefulness and performativity of a promise is not necessarily directly proportional to the degree of accountability: where expectations are more amorphous and ambiguous this enlarges the room to manoeuvre for local players to moderate promises to meet local exigencies.

## **9. Conclusions**

The temporal alignment of policy and innovation processes in technology projects is complex. Our current understanding of the dynamics surrounding R&D projects, even those from perspectives - such as the sociology of expectations - that attend to the negotiability of outcomes, is structured around a narrative that views a project in terms of its ability to deliver on a technological solution. Adopting a linked ecologies approach, our analysis goes beyond normative views of innovation projects that presume all participants are equally committed to the rate and success of technological innovation. Focusing on the case of the Copyright Hub project, we

discussed three aspects of the temporal dynamics of expectations in government and industry partnerships for technology development. The first is the durational aspect. By shifting the focus to the extended expectations linked to technological development, the Copyright Hub reshaped the position of actions in the innovation space. By displacing issues of copyright management from the legal to the technical domain, it gradually made room for the creative industries to become active participants. Translating a policy agenda to a technological project also helped policing the innovation space by excluding the non-technology savvy actors (e.g. IP lawyers, in our case).

The second is the inter-temporal aspect. Another temporal device in government and industry partnerships for technological innovation is that differences in the strength and temporality of orientation between constituent ecologies could be mitigated across ecology boundaries. If when examined by industrial users, technological innovation can run the risk of being promptly discarded, actors within the research ecology can easily resurrect it, ready to give innovation a second chance under other conditions (Wilmoth, 1999: 51). This was apparent in our case when, in search of a technology to implement their vision, the Copyright Hub tapped into the fifteen year long trajectory of academic research on digital right management. In the case of the Copyright Hub, policy-makers are seen to rely on science and technology promises to counter-balance the rapid 're-bundling' of policy issues surrounding the IP framework.

Finally, low expectations with policy-supported technology development can be helpful for example in helping avoid a new service from being perceived as cannibalizing interests of market actors in the same domain - and provide for continuity in political action. Scholars of infrastructure remind us that infrastructures can also disable relations and actions (Star & Ruhleder, 1996). Understanding the temporal dynamics of government and industry partnerships for the development of digital infrastructures requires an appreciation of the additional affordance of sinking organisational functions - or policies - into technology and its effects of altering the visibility of issues and bogging down relations.

In this paper we wanted to investigate the shaping effects of delegation of policy issues to digital infrastructures, with a particular focus on the possibility to alter the temporality of technological promises when linked to public funding and policy support. Policies for infrastructure are difficult because political and innovation processes have different dynamics and exigencies. Their temporal alignment is complex and should be conceived also in terms of conflict-avoidance and postponement.

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## Data Source Table

<b>An overview of the empirical resources</b>		
<b>Digital data sources</b>	Government's archives and reports	Interested government's bills and reviews include: (1) Gowers Review in 2006; (2) Creative Britain report in 2008; (3) Digital Britain report in 2009; (4) Digital Economy Act 2010
	Projects' reports and outputs	Interested projects and organisations include: (1) the Copyright Hub; (2) the Digital Catapult; (3) Copyright Hub Launch Group (CHLG); (4) the Copyright Licensing Steering Group (CLSG); (5) Linked Content Coalition (LCC); (6) Rights Data Integration (RDI) project; (7) Automated Control Access Protocol (ACAP); (8) <indec> project The range of collected documents include: (1) project proposals; (2) meeting minutes; (3) technical blueprints; (4) policies and governance documents; (5) official documents and reports
	Internet-based sources	Official information of the Copyright Hub and related organisations on the Internet.
<b>Semi- &amp; Unstructured interviews</b>	46 interviews	<ul style="list-style-type: none"> <li>❖ 11 interviews with the management of the Copyright Hub and Digital Catapult.</li> <li>❖ 6 interviews with the development team of the Copyright Hub project.</li> <li>❖ 20 interviews with the creative industries</li> <li>❖ 5 interviews with civil servants</li> <li>❖ 4 interviews with IP experts and consultants</li> </ul>
<b>Observation</b>	6 week-long fieldwork trips	<ul style="list-style-type: none"> <li>❖ Observing the daily routine and collaboration between the Copyright Hub and Digital Catapult in their workplace. Five days a week, for a total of six weeks over a period of ten months.</li> <li>❖ Attending a number of the Copyright Hub's press conferences, informal lunch meetings and networking events.</li> <li>❖ One author has been allowed to wander about and make appointments with outside stakeholders, who are also located in London. This has allowed us to build a growing network of important respondents (44 so far), from whom we can select, and thus reduced our dependence on gatekeepers or a single point of contact.</li> </ul>

## Presentational Categories Table

Presentational Categories	Type of Data	Description	Excerpt
<b>How commitment from the creative industries was built</b>	Document	GOV.UK, 2010b	We understand where previous governments have gone wrong. They believed that they could design and create a technology cluster from on-high. But the lessons from Silicon Valley are instructive. There was no grand centralised plan... This teaches government some simple things. Go with the grain of what is already there. Don't interfere so much that you smother. But do help out wherever you can.
	Interview	Professor Ian Hargreaves, author of the independent review of the UK's IP framework	It was clear that they were looking to me to make judgement, but I was looking to them to reassure me about the quality of the evidences. They looked to me for ideas about gathering evidences and places where we didn't have good evidence. For example, among smaller technology companies who everybody talked about a lot but nobody seemed to talk to [...] There was also an advisory group, which was an important part of the process. They were largely pre-selected. Not chosen by me. They were not people that I knew personally... I hoped that they would prove to be a group that would give good advice, and they did.
	Interview	copyright lawyer/ amateur creator	I've been trying to get a synchronisation licence to put music with these [animations] for the last ten years, he said. I'm an IP lawyer, I have to be compliant. I can't even get the music societies to reply to my question. None of them will even answer.
	Interview	copyright lawyer/ amateur creator	My view is that for as long as we, as an industry, leave people who want to be compliant unable to be compliant, we have only ourselves to blame for the lack of, for anybody using stuff, and also for the threat of exceptions. Because if we don't make it possible for people to license then they deserve to have exceptions. We can't say we're going to have these rights and we're going to sit on them and we're not going to let anybody else have them because it's inconvenient to us to do it. So from my point of view, the user point of view is really strong and it's all about saying we've got to make it simple for people like me, [...] to get the permissions that they need. We've got to make it really simple.
	Interview	CEO of a major society representing publishers in the UK	[The Hargreaves Review was perceived] not very well [by the creative industries]. Because we felt that it started from the wrong premise. And it started on the basis that copyright was a problem and it was obstructive. And in

fact, you know, we didn't agree with that view. But it seemed to be a Google's view that David Cameron was adopting[HTN1] ... [Hargreaves] started off very hostile towards copyright and so, when we read his report that, you know, said we need a lot of exceptions to copyright, we didn't really agree with that. Didn't agree with his reasoning. He didn't provide any evidence to support what he was saying. And we didn't really think that the problems he was trying to solve existed.

Interview	Ros Lynch - co-author of the feasibility study on the Digital Copyright Exchange (DCE)	From the stakeholders' point of view - the creative industries' point of view - they didn't feel that they had the same kind of open, honest conversation with professor Hargreaves. They felt that [Hargreaves] came to meetings with fixed ideas already of what he wanted to see happen and irrespective of what they said.
Interview	CEO of a collective management organisation representing British publishers	And then when [Hooper] published his second report, he said "Right, you know, now it's over to the industries. They need to fund this Hub. They need to lead it". And I looked around and nothing was happening. No one was doing anything. I thought "This is terrible! He's given us this solution. And we have to show [the] government that we can do something for ourselves. We can make life easier for everyone.
	Founding member of the Copyright Hub Launch Group	It's been very important in the development of the Hub that it was nothing to do with government and government policies, but it was an industry-led and industry-funded project, which it remains today although it's now getting a lot bigger and the funding basis may move on. But in order to get industries' buy-in, putting their materials into the Hub, it was absolutely essential that the project was an industry project, and not something imposed from outside by government... We have buy-in from all four sectors and we expect materials to be available from all four sectors.

**How linkages with research institutions were built**

Interview	Neil Crockett - CEO of the Digital Catapult	So, the interesting position for us was we have the creative sector - digital creatives - and we have the ICT sector... And our engagement has been designed not to be sector-engagement, to be horizontal engagement... So it was set up in a way that was creating us as a layer in all sectors, including the digital creatives, not being a digital creative, if that makes sense.
Document	Briefing paper to the creative industries in October 2011, EPC	We have tentatively called this alliance of interests the Linked Content Coalition. Our aim is to encourage existing standards organisations to work together to create interoperability and commonality in the area of rights management on the internet. We are not proposing the creation of a new standards organisation; rather we are seeking to harness and coordinate the energies of existing standards initiatives in the media - driven primarily by

		sectoral trade standards organisations.
Document	Briefing paper to the creative industries in October 2011, EPC	Standards creation is not in itself the answer to any of these questions [of how to build an open, cost-effective, and user-appealing environment for IP trading] - it is the implementation of the standards within a comprehensive technical and commercial environment which matters.
Interview	Senior Manager of EPC	And he was absolutely fascinated and he said 'How does this work? How would it work?'... And he really took this up and we had several conversations and several exchanges of emails and he put it into his report. I mean he didn't call it, what we were calling it. And it was before the Linked Content Coalition has been founded. But he put the whole thing in there, called the Digital Copyright Exchange.
Document	Briefing paper to the creative industries in October 2011, EPC	The Hargreaves vision of the DCE is best captured in Section 4.31 of his report: "The aim is to establish a network of interoperable databases to provide a common platform for licensing transactions." The report stresses the need for standardisation "to facilitate open competition between services based on different technologies". It also stresses that this should not be seen as a Government IT Project. "That way lies a nightmare of IT procurement followed by the birth of a white elephant. The task for Government is to use its convening power, to show leadership to achieve an outcome which others have not been able to manage." We agree with this entirely.
Document	Briefing paper to the creative industries in October 2011, EPC	However, the [Hargreaves] report goes on to talk about the DCE as "a service". This we find considerably more worrying. There is a considerable difference between a DCE as a distributed standards based market infrastructure (open, voluntary and non-proprietary) and a specific market place. It is clear that this distinction has been lost.
Interview	IP lawyer serving on the advisory boards of CHLG and Digital Catapult	Having got the sort of political buy in from the industries and acceptance about what [the Copyright Hub] should be doing in general terms, there came a point at which it needs to turn technical development. And I was also closely involved with the creation and formation of the Digital Catapult. And so, I knew that the Digital Catapult, which was intended to bring together the creators and digital industries and stimulate innovation there, was in my view a natural home for doing the [technical] development for the Copyright Hub. I introduced the two to each other and eventually they agreed that they would develop it jointly, which was happening for the last couple of years.
Interview	Neil Crockett - CEO of the Digital Catapult	It was through a lady [who] was on our advisory board. And she was very keen that we looked at/ following up on the Hargreaves' and Hooper's reports. [They were], in her view, one of the big things that the industry couldn't fix and we

	Interview	Data Architect, Author of the LCC data model	<p>could maybe help fix by being neutral. And then she connected us to another organisation that she knew [i.e. the CHLG], because she was also in their advisory board. And then we met together.</p> <p>So, LCC had moved forward and it had some success in terms of gaining support and then moving into the RDI project - the Rights Data Integration project - which is, of course, very much like a prototype of the Hub. RDI and the Hub are, as I would -- as I describe them, the Hub is the production version of RDI.</p>
<b>How expectations of established market actors were managed</b>	Document	Hooper Report (2012)	Copyright licensing can be made more streamlined, easier and cheaper to use, especially for the small and medium-sized enterprises (SMEs) which make up 90% of the creative industries, without eroding the rights of rights owners. (ibid. p.6)
	Document	Hargreaves report	This does not mean, however, that we must put our hugely important creative industries at risk... In order to grow these creative businesses further globally, they need efficient, open and effective digital markets at home, where rights can be speedily licensed and effectively protected... [The] review proposes that Government brings together rights holders and other business interests to create in the UK the world's first Digital Copyright Exchange.
	Interview	Champion of the LCC initiative	But I think the Copyright Hub, as an outcome, is something that UK government should be really proud of. And the copyright reform that they've finally instituted are pretty minor in the grand scale of things. You know, something on education, something on text and data mining but it's non-commercial. You know, they've kind of kept the copyright framework up-to-date without revolutionising it.
	Document	Briefing paper to the creative industries in October 2011, EPC	However, the [Hargreaves] report goes on to talk about the DCE as "a service". This we find considerably more worrying. There is a considerable difference between a DCE as a distributed standards based market infrastructure (open, voluntary and non-proprietary) and a specific market place. It is clear that this distinction has been lost.

## Analytical Categories Table

Analytical Categories	Type of Data	Description	Excerpts
<b>The Durational Aspect</b>	Document	EPC (2010) 'The answer to the machine is in the machine': A Big Idea for the Digital Agenda submitted by the European Publishers Council. (pp.1-2), <b>about reshaping the IP space with law enforcement as a thing of the past and technology as future</b>	Our thesis is straightforward. Copyright as law is entirely fit for the new environment of networks and digital dissemination. But traditional practice for the management of copyright - individually lawyer- crafted licences, communication on paper, people- heavy processes - is a thing of the past. [...] We need to find ways of managing copyright that go with the grain of technology rather than falling back on cross- grained attempts to maintain a vanishing status quo...
<u>how, by shifting the focus to the extended expectations linked to technological development, the digital infrastructure reshaped the position of actors in the innovation space</u>	Interview	Professor Ian Hargreaves, author of the independent review of the UK's IP framework, <b>on how existing perceptions were linked to using more enforcement</b>	And this was the period when the official music industries, film industries, to a slightly less extent publishing industries, and television industries' stand on copyrights was: "The only thing that matter is more intense enforcement"; "Don't talk to us about anything, other than how you are going to increase the resources [into] enforce with and the penalties attached to breaches of the law". That was what these lobbyist industries spoke people have been employed to say and to argue.

Interview	Former business analyst and product owner of the Copyright Hub, <b>on aspects that may extend the duration of technology work</b>	[A]s all projects should proceed, it should go to idea, to features to requirements to blueprint. That project didn't go that way. When I arrived, the Blueprint was already done and so we had to reverse engineer requirements and features from there. And, you know, a lot of early decisions were made in that Blueprint, which perhaps would have been taken differently if requirements had been done first.
Interview	Former business analyst of the Digital Catapult, <b>also referring to aspects impeding speedy resolution of technical problems</b>	[The development team] have found inconsistency in the LCC's model, a redundancy in it, and they're proposing a much lighter-weight one because the LCC's model was built for the utmost sophistication, which won't be required for the early stage of the project... [We] developed some visualisation tools there, it looks exceedingly complex with even just a few parameters in there. So, the practicality of working with it as a viable long-term model situations unknown to me presently.
Interview	Principal Data Architect, <b>providing further details of what might hinder uptake of the proposed technology</b>	[T]he model by definition, in computing terms, is a verbose. It's very detailed so where in a simpler model, you might only have two or three roles. In this model, you might have fifteen or twenty, you know, to describe the data... [A]part from its verbosity, it's a rather strange model... At the moment, there's not a wide spread acceptance of linked data or use of linked data... And the modelling approach we take makes that even worst, if you like, because the modelling approach, which is a very granular modular approach, is not something that most developers are familiar with at all, or comfortable with at all.
Document	Hooper, R. (2013) Charles Clark Memorial Lecture 2013, <b>on how reallocating resources away from changing the law</b>	We have spent years first with the Gowers Review and then the Hargreaves Review discussing and debating changes to copyright law... The time has come to move on. Let us now reallocate the immense resources of energy and time and money away from lobbying and into making copyright licensing processes and organisations more and more fit for purpose for the digital age... No more time needs to be spent on the legislative dimension. Legislative indecision only prolongs the wars of attrition.

## The inter-temporal aspect

related to exploiting the different temporalities of

Interview	Professor Ian Hargreaves, author of the independent review of the UK's IP framework, <b>on adapting promises for a policy-maker audience</b>	It's fair to add as well that in terms of what came before prime minister Cameron called for the review that I conducted, the outgoing Labour-led government had itself conducted a review of Intellectual Property issues. It was so called Gowers Review, named after Andrew Gowers. And it had led to proposals for change. And those proposals had pretty much imploded just before the general election in the parliamentary queries... So that was quite important precedent, even though it was largely a precedent of undelivered promises because it's all got broken up in the election... And I think the other important thing that you had was
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expectation work in allied ecologies

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Document	HM Government (2011) <i>The Government Response to the Hargreaves Review of Intellectual Property and Growth</i> . (p.1), <b>on how digital opportunities should mean no more work for the parliament</b>	<p>Our overall goal is to have measures in place by the end of this Parliament that will do justice to the Review’s vision and will already be delivering real value to the UK economy and to the creators and lawful users of IP. We have committed to no further major review of the IP system in this Parliament.</p>
Document	Copyright Hub (2014) <i>The Copyright Hub Blueprint for development</i> . (p.11), <b>on how technology remains viable by working across application domains</b>	<p>In implementing this data architecture, a set of development principles espoused by Digital Catapult will be applied to all aspects of the Copyright Hub technology to ensure that its technology is not only future-proof (in terms of its scalability and flexibility to deal with new challenges and requirements) but is also transferable to implementations in other fields of endeavour beyond the management of copyright.</p>
Interview	Richard Hooper - the champion of the Copyright Hub “movement”, <b>on how technology can resolve copyright wars</b>	<p>This is the story of my life. Three years ago, the narrative was the problems with copyright - the digital world - change the law. That’s it. Almost all Hargreaves [Review] was [about] that.. We came along and we said “Wait a minute! This is not as simple as that. [...] Before you rush off and change the law, you sort out and improve your licensing mechanism, processes and organisations. That is the story of this project. That is it. That’s what we’ve done. And so now, before you rush and change the law, you have a go at processes. And actually when you do that, there’s less requirement to change the law. If there’s less requirement to change the law, there are less copyright wars.</p>
Interview	Data Architect, Author of the LCC data model, <b>on the extended biography of LCC</b>	<p>So, LCC had moved forward and it had some success in terms of gaining support and then moving into the RDI project - the Rights Data Integration project - which is, of course, very much like a prototype of the Hub. RDI and the Hub are, as I would - as I describe them, the Hub is the production version of RDI.</p>
Interview	Neil Crockett - CEO of the Digital Catapult, <b>on difference in temporality between them and the</b>	<p>And then at times, we [the Digital Catapult] were probably trying to look at the longer term platform and they [the Copyright Hub] were looking at the shorter</p>



		<b>Hub</b>	term use cases... I think there's been some disputes. I think this thing about "Let's just develop for the short-term" versus "Let's develop for something which can be scalable later on". So I think there's a bit of a tension about that philosophy.
	Interview	Neil Crockett - CEO of the Digital Catapult, <b>on the Hub as experiment: 'an act of good faith'</b>	[The Digital Catapult and the Copyright Hub] both wanted to take part in this experiment. Just for this. It's a problem of expenses. It's an act of good faith: hoping that when people see it [i.e. the infrastructure], they will actually then start realising that it should be taken up. It's the breakthrough experiment to try and see if we can kick-start this.
<b>The slow aspect</b>	Interview	A senior civil servant and IP lawyer, on	So the previous reports were written by people who had a much greater knowledge of what it was that they were writing about and what the law was and how it worked in practice. Whereas Hargreaves just has a very limited knowledge of a very small area of copyright. And he was only given six months to produce a report, which I think was a tour for anybody and indeed it was very ambitious of him to accept it... So he produced a report in which he said that copyright was not working in the 21st century. That's the view with which I am, most practitioners, and indeed most copyright owners disagree.
<u>how the delivery of 'slow' expectations provided ways of managing momentum in the newly arranged innovation space</u>	Interview	Professor Ian Hargreaves, author of the independent review of the UK's IP framework,	I didn't try to imagine in details what it would be because, I thought, if I did that it would be likely to be an obstacle to the idea being developed. The idea needed to be developed in real life, in real time by interested parties.
	Document	EPC (2011b, p.3)	We believe that this project is now timely and needs to move ahead with due urgency in the light of the current political and commercial climate. It will take a considerable period of time for implementation to become widespread, so early development is essential.
	Interview	CEO of a collective management organisation representing British publishers	And then [the creative industries]'ve got to the end of the first year and we realised that we need another year, but we decided to restructure [the Copyright Hub project]. By then, the steering group has served its purpose. And we rode it into the main organisation and Richard [Hooper] became the main chairman. And we raised £200,000 in the second year. Same way, I went around begging with the cap.

