Value-based Certification for Distributed Design

Fab Lab Barcelona for the Distributed Design Platform, 2021

A roadmap towards valorisation and recognition of multiple forms of excellence of makers and designers in the emerging distributed design community of practice.

FAB LAB BCN

Iaac Institute for advanced architecture of Catalonia

Distributed Design

Co-funded by the Creative Europe Programme of the European Union

Table of Contents

Introduction

The Distributed Design Platform (DD) aims at promoting and improving the connection of makers and designers with the market through the development and recognition of the emerging field of Distributed Design. This is done by supporting creatives, their mobility and circulation of their work, providing them with international opportunities and highlighting the most outstanding talent. A recognised mechanism for highlighting creative talent is a label: a recognition that both certifies and promotes distributed design projects and their authors.

Within DD, one of the key goals is to develop a Europe-wide label that certifies and promotes talented makers and designers that represent Distributed Design principles in their work. In order to reach this goal, the DD project has dedicated a four-year study to explore potential criteria for selection, application, awarding and setting up a management structure sustainable over time. The label is intended to be an innovative approach to valorisation and recognition in response to the novelty of the field of Distributed Design.

The first section of this report looks at the tasks and activities undertaken by the platform in the last four years with respect to value-based certification. It covers the core values of DD: Open, Regenerative, Collaborative and Ecosystemic which have emerged from the Platform organically through the last four years, and have been defining principles defined by its members.

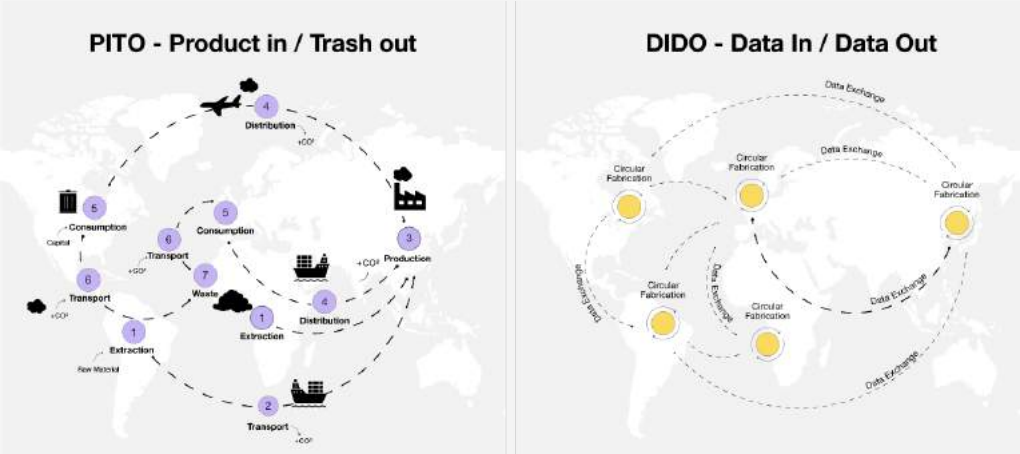
The following section looks at cases where value-based certification has been implemented in similar contexts including different technology choices. By studying these, and gathering views of various Platform members and industry experts, key learnings have been formulated. These guide the design of a potential implementation system for the DD Label.

The last and the most innovative section of this report is a roadmap, proposed by the research team that identified a potential avenue to develop a certification system to meet the needs of the Platform, and to incentivise designers to engage with DD’s principles. We aim for this report to be a step-by-step guide that aligns with resources available for development.

Context

What is Distributed Design?

Distributed Design provides a framework for designers, makers and creatives to innovate in the field of design towards more sustainable, inclusive and collaborative practices. As global challenges intensify, shifting the global paradigm to support global connectivity and local productivity where “bits travel globally, while atoms stay local” (PITO to DIDO) becomes urgent. Distributed Design is a proactive response for makers and designs to prefigure viable design alternatives to the current paradigm, designed for mass consumption, and transition to a context-aware and regenerative practice.



The shift to the Fab City model of PITO to DIDO is urgent. Image via Fab City Whitepaper.

The Platform

The Distributed Design Platform was established in 2017, co-funded by the Creative Europe program of the European Union. It brings together a diverse member-base from cultural and creative institutions including Fab Labs, cultural organisations, universities and makerspaces. Over four years, the Platform has provided Europe-wide programming and opportunities to support emerging creatives working in the emerging field of Distributed Design. The development of the label is fundamental to the co-funding from the Creative Europe program and also helps to advance the novel field of Distributed Design, clarifying through practice, its standing as a framework for collaborative, open, ecosystemic, sustainable design.

18 Members **13** Countries **4** years

Platform Members 2021

- Pakhuis de Zwijger
- P2P Lab
- Re:Publica
- Happy Lab Vienna
- Danish Design Centre
- Knowledge Center of Vestmannaeyjar Iceland
- Maker
- Espacio Open
- POLITECNICO DI MILANO
- Ars Longa
- Other Today
- FabLab Budapest
- Politécnico de Lisboa
- OpenDot
- TalTech
- Museum Architecture and Design, Centre for Creativity
- Paved with Gold

The Platform is coordinated by Fab Lab Barcelona at Institute of Advanced Architecture of Catalonia

Our Approach to the Label

The idea of a Distributed Design Label is to promote works that follow a distributed design approach. Work that not only aligns with the values shared by the community, but is distributed in its conception, development and/or dissemination. It is not meant to be a quality compliance in the traditional sense but rather a label that recognises works that align with the approaches and ideology of distributed design. It is a label that recognises the innovative tasks and efforts that lead to ecosystemic collaboration. And so the creation of such a label needs to be innovative as well.

The objectives and research goals of creating a label include:

- Designing the label
- Formulating its criteria for selection
- Implementing application
- Procedure of awarding
- Setting up its management

Who is this report for?

This report is intended as a guide for makers, designers, policy makers, educators, and industry members in the field of distributed design and beyond. It is aimed to provide insights and recommendations as well as a series of potential actions which can work towards the implementation of a certification system for distributed design projects. It is non-exhaustive and is developed from the experiences of the Platform.

Defining value

In pursuit of the value-based certification, it was crucial to first establish what value means for a distributed network of design practice such as the Distributed Design Platform membership. The values below are agreed to by the Platform as definitive of their values, and emerged organically over the platform's existence. They have been published in two books by the Platform and inform the annual Distributed Design Awards.

Collaborative

- Value is added by multiple stakeholders being active in the process.
- Collaborative approaches to product development and commercialisation are used in which key actors are not always designers or makers but may also be users.
- Collaboration may include across product supply chain, design process or in the development of customisable designs.

Regenerative

- Made for the long term using low-km supply chains and a future of repurposing.
- Sustainable production and consumption with a focus on: product distribution and fabrication, the application of 'zero kilometre' in supply chains, open source distribution and the circular lifecycle of products.

Open

- Transparent and shared in the design, data, development, distribution and business models.
- Intent to open-up production and consumption behaviours, bringing transparency to the design and manufacture process, including by allowing access to processes through co-design and customisation as well as working with open design and innovative business models.

Ecosystemic

- Connecting stakeholders through both synchronous and asynchronous tools.
- Promoting an ecosystemic approach to both online and offline tools which can connect designers, makers, manufacturers, and markets. It promotes platforms and toolkits that help designers to go from idea to prototype, and from prototype to products and markets.

These are a set of values that have emerged in the Distributed Design community and recognised as the field evolves. 66.7% of respondents to the questionnaire (see below, 'Research Method') agreed that these values perfectly encapsulate what the Platform stands for.They both direct and make sense of the work being done by makers and designers in the emerging field of Distributed Design, and by extension, in the Platform itself. These can form the basis of an evaluating criteria for a label, which then becomes a representation of these values for the community.

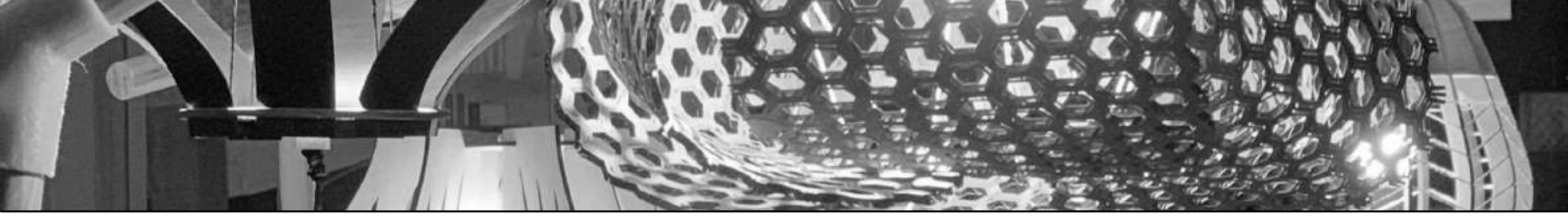
Research Methodology

This report documents and synthesizes a four-year process into an easy-to-read guide to value-based certification for Distributed Design practitioners and managers.
To compile it, three phases of research were undertaken: an interview and collation phase including preliminary questions to key actors, case study development and one-on-one interviews with experts; an analytical and synthesis phase; and finally, a phase in which recommendations were developed based on findings.

A qualitative and quantitative approach was implemented in order to:

- Collate and synthesize four-years of research around the value-based certification developed by the Platform. This includes analysis of:
  - Conference on Blockchain for Industry 4.0 and Distributed Design in 2018
  - Articles published in the annual Platform publications: Design, Remix, Share Repeat, 2019 and and Viral Design, 2020
  - Article presented at the Making Futures: 2020 International Research Conference: ‘Distributed Design, a platform approach’, 2020
  - Strategic Roadmap of the Distributed Design Platform
- Gather quantitative data from Platform members to reflect Preliminary Questions of the research conducted through a survey.
- Gather sentiments and experiences via one-on-one interviews with current members of the Distributed Design Platform.
- Gather sentiments and experiences via one-on-one interviews with experts working in fields relevant to the research, who are also collaborators of the Platform.

The findings from the collation phase were analysed and synthesised into key characteristics required to appropriately create the label. Studying potential technological avenues and implementation workflows, the last phase proposes a roadmap to guide development for creation and integration of the label.

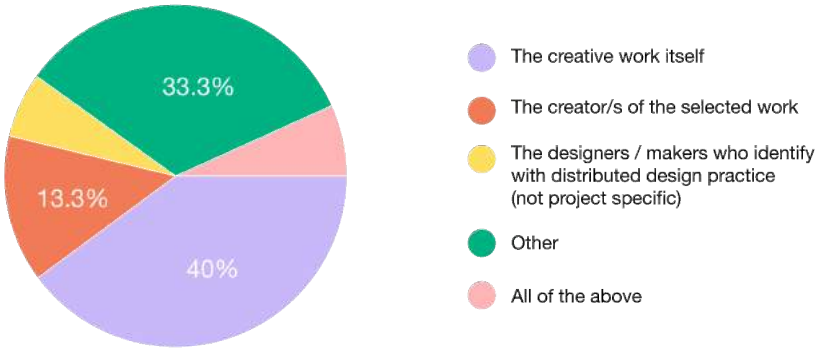


Preliminary Questions

Some initial questions underpinned the first and subsequent phases of the research. To address these questions the research team collected the Platform members' thoughts, suggestions of collective expertise and experience in distributed design practice through interviews, conversations and a questionnaire. The aim was to understand why, how, and what exactly this label should become from the perspective of the Platform members and experts. The questions and answers are below.

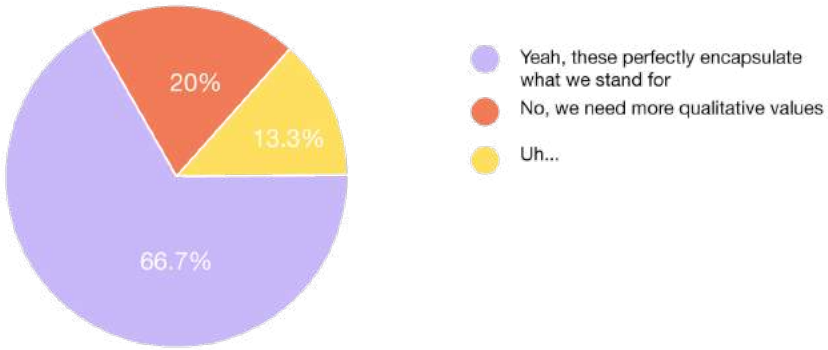
1.What exactly should be certified?

- The creative work itself?
- The creator/s of a selected work?
- The designers / makers who identify with distributed design practice, irrespective of their projects?
- Other
- All of the Above



2. Shared value as Criteria

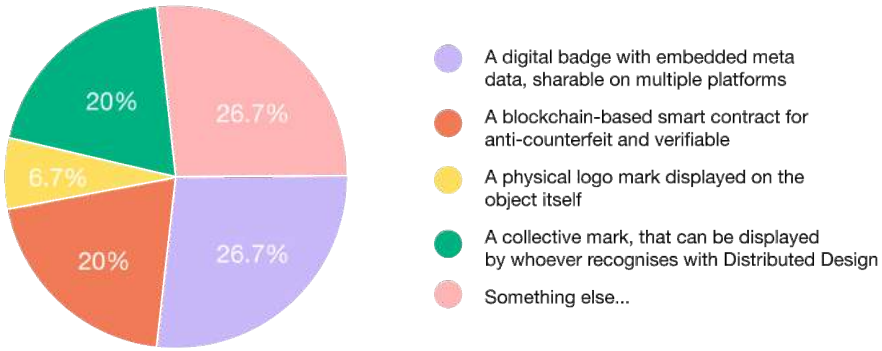
Can the defined shared values (Collaborative, Regenerative, Open, Ecosystemic) be considered parameters or selection criteria for certifying distributed works of makers and designers? Might we use these as guiding principles as well as what the label represents?



3. How should a label be applied to the work of makers / designers?

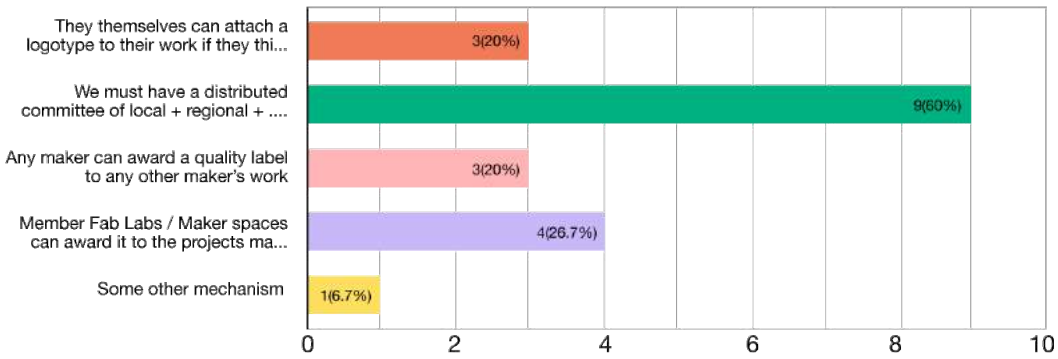
There are many potential avenues in practice and theory that aid or obstruct the application of a label in respect to distributed design. All these avenues are analysed in the next section, based on the technological, social and integrative aspects for the label. These can be applied in parts of the process or in combination as suitable.

- A digital badge with embedded metadata, shareable on multiple platforms.
- A blockchain-based smart contract for anti-counterfeit and verifiable certification.
- A physical logo mark displayed on the object itself.
- A collective mark that can be displayed by whoever recognizes themselves with Distributed Design practice. What is the ideal mechanism
- Something else



4. How should a quality label be awarded to a distributed work?

- Can designers / makers themselves attach a logotype to their work if they think it aligns with the values of distributed design? (like a Creative Commons license)
- Must we have a distributed committee of local + regional + global experts that approve applications of work submitted for certification from the makers / designers?
- Or can any maker award a quality label to any other maker's work to keep the system open and democratic?
- Should member FabLabs / Maker spaces award it to the projects made in their local communities and make the process more decentralised?
- Other Mechanism



Mapping the domain

Existing value-certifications in practice

Primary research 2017-2020

This preliminary research was undertaken through the activities of the Platform between 2017 and 2020. It critically approached the task to design a European Label, a stipulation of the 2017-2021 funding framework set by the European Commission, and questioned what the Quality Label could be.

What to certify

As a starting point it covered that a label can certify, protect and promote a product or a service, the preliminary research highlighted that it could therefore be applied to:

- an Emerging Creative Talent through one of her projects;
- a space or service of/for an Emerging Creative Talent (a Fab Lab, a makerspace, but even a design consultancy).
- It could therefore be awarded in the following ways:
- the label is certified or licensed by an organisation;
- It is self-certified by an Emerging Creative Talent that applies the label autonomously.

Trademarks

Trademarks were also highlighted in the research (published on the project blog), which can also be registered or unregistered.

This first research explored the legal and governance aspects of such labels models such as:

- EU trademark. These marks allow the owner to discretionary license it to third parties with specific agreements with each third party. This is the most traditional approach, it is simpler but requires a specific agreement with each third party (which can thus be customised, but it requires more work). Such agreement could be made transparent and shared with all the third parties, acting thus as a document governing the rule of use.

- EU collective mark. This kind of mark can be used only by the members of an association which is the proprietor of the mark, and that can apply it to their goods and services. Only authorised members can use it, and it is based on:
  - a formal organisation,
  - a common agreement that details how to use the brand,
  - a common agreement that describes the governing rules for the use of the brand and its governance; this must be provided at the registration of the label, and any changes must be reported.
- EU certification mark. This kind of mark distinguishes goods or services which are certified by the proprietor of the mark in respect of material, mode of manufacture of goods or performance of services, quality, accuracy or other characteristics. The proprietor of the mark cannot carry on a business involving the supply of goods or services of the kind certified in order to avoid any conflict of interest. Only certified third parties can use it following specific governing rules.

Since a lot of these do not offer the openness and distributed-ness needed in DD practice, the platform also studied various project cases of the Creative Europe Programme, which employed other kinds of labelling systems. Some of these are highlighted below.

Liveurope, a platform that works as a quality label awarded to live music venues committing to European diversity. Liveurope is an initiative supported by Creative Europe, the European Union's framework programme for support to the culture and audiovisual sectors.

Future Architecture, which adopts a European Quality label, recognises organisers who work with aspiring emerging talents and show their commitment to the platform objectives. Future Architecture Platform is co-funded by the Creative Europe Platform of the European Union.

The Open Source Hardware Association Certification, created in response to overwhelming demand for a clearer and more transparent method of identifying and marketing open source hardware products.

The Open Hardware and Design Alliance (OHANDA) that aimed at encouraging the sharing of open hardware and designs. The purpose of this certification is to provide an easy and straightforward way for producers to indicate that their products meet a uniform and well-defined standard for open-source compliance, benefiting both creators and consumers of these products.

Other (alternative) labelling systems
Some alternative labelling systems to learn from which were also included in the primary research:

- Self-certification mark , whose application means that the manufacturer or importer affirms the good's conformity with European health, safety, and environmental protection standards. It is not a quality indicator or a certification mark, but a self certification mark that is not generally verified.
- EU labels like Ecolabel, a label of environmental excellence that is awarded to products and services meeting high environmental standards throughout their life-cycle: from raw material extraction, to production, distribution and disposal.
- The EU organic label, the organic logo can only be used on products that have been certified as organic by an authorised control agency or body when they have fulfilled strict conditions on how they must be produced, processed, transported and stored.

Comments
This primary research provides context in terms of simplicity and transparency, defining the regulations governing its use, designing the brand, and establishing its documentation and registration. Importantly, it does not however provide space for the innovative nor digital nature of the DD practice and platform.

Conference

In 2018, DD hosted the Conference for Blockchain for Industry 4.0 and Distributed Design. It discussed the place of Distributed Ledger Technologies in Distributed Design practices and the potential these emerging technologies can provide makers, designers and manufacturers. It included introductory talks about FabChain, Distributed Design Platform and Panel discussions.The conference invited experts including Primavera di Filipi (Harvard Berkman Center and CSNR), Jamie Bourke (Outlier Ventures) and Tom Salfield (WikiFactory), Liz Corbin (Materiom and Metabolic).

It was highlighted that since 2008, distributed ledger technologies (DLT) have increased their popularity thanks to the publication of the anonymous Bitcoin whitepaper. The underlying technology of Bitcoin, the blockchain, allows distributed networks of computers to keep a copy of the transactions made within the network's agent, and to participate in the decision making of it through a Proof of Work approach. Bitcoin is now considered an asset by many, but its technology offers endless possibilities to design networks, and to create more complex ways of generating, distributing, and certifying value. Following this, the Ethereum project was launched to further explore the possibilities of the blockchain technologies in order to create global and distributed computers to run applications on top. Ethereum targets smart contracts creation and execution as one of its key features, and allows third parties to run applications on top of it. Examples could be found in the field of energy, supply chains, decentralised finance, amongst others. Thanks to its open source nature, both Bitcoin and Ethereum have unleashed a massive innovation ecosystem in the field of blockchain, as well as offering investors to invest in over 13,800 projects based in these technologies, with a market size of around a trillion USD in October 2021.

Comments

The key takeaways from this event was that the technology, networks and platforms to enable distributed design globally, such as Etherium, exist, but specific applications of the technology as well as take-up, skilling and socialisation within the distributed design community is needed.

Written Contributions

Written contributions were assessed as part of the preliminary research phase including:

- Articles published in the annual Platform publications: Design, Remix, Share Repeat, 2019 and Viral Design, 2020
- Article presented at the Making Futures: 2020 International Research Conference: 'Distributed Design, a platform approach', 2020

Labelling systems included in the written contributions of the Platform 2019-2020

Creative Commons Licences, give everyone from individual creators to large institutions a standardised way to grant the public permission to use their creative work under copyright law. From the perspective of the re-user, the presence of a Creative Commons license on a copyrighted work answers the question, "What can I do with this work?". These licenses therefore protect/attribute the creator even when the work is meant to be shared openly by offering varying levels of permissions.

Open Covid Pledge, aims to make intellectual property available free of charge for use in ending the COVID-19 pandemic and minimising the impact of the disease. It is aimed to be implemented through a license that details the terms and conditions under which our intellectual property is made available. This is interesting in that the social context helps regulate the use of the license.

Comments
These tools offer significant lessons while creating distributed tools or systems. Key takeaways and considerations include:

- The relevance of tools such as blockchain in value-based exchange.
- The need to ensure such tools (any tool) is sufficiently socialised amongst the distributed design community.

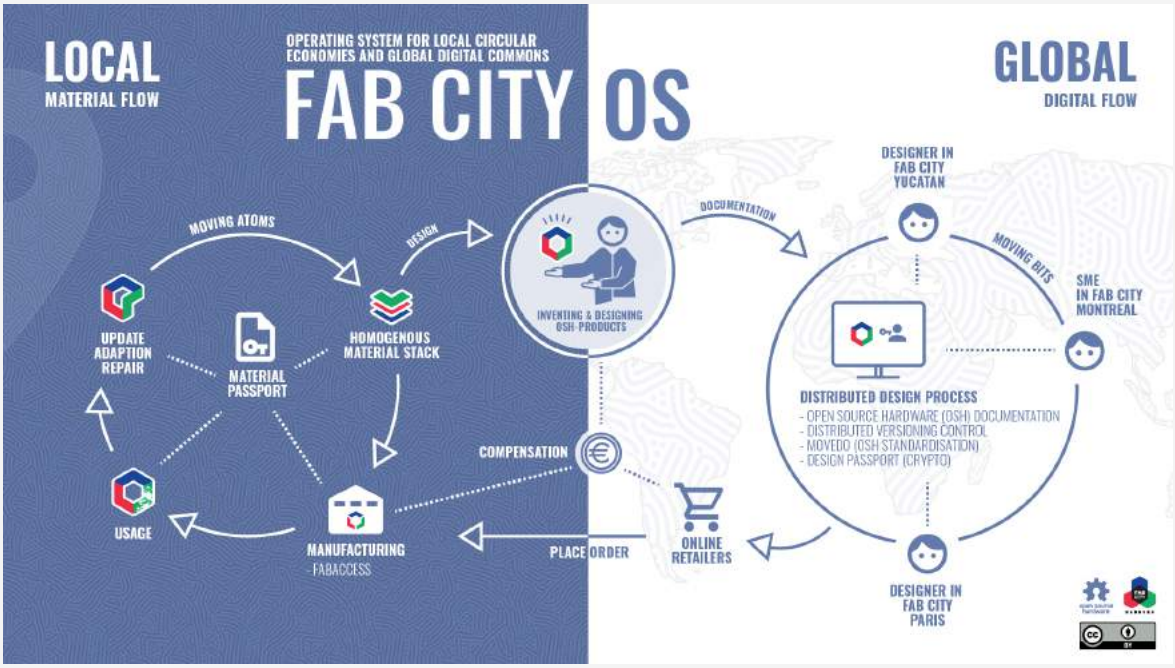
Case studies

This section presents some existing solutions that have been affiliated with the Platform 2019-2021, it focuses on the cases currently engaged in or linked to the Platform. These case studies were undertaken through desk research and interviews with actors from each case.

Fab City OS

From an interview with Benedikt Seidel from Fab City Hamburg

The Fab City Operating System is the digital infrastructure for the global Fab City Initiative. The roadmap for its Alpha and Beta release until March 2023 is being led by Fab City Hamburg Association, supported by the project INTERFACER, funded by the European Commission REACT-EU.
At the core of the Fab City OS software is an adaption of Reflow OS, which creates the so-called design passport and material passport, which are crypto-based. This core technology is combined with open source software such as Fab Access, Git or FreeCAD. MoVeDo is the software tool that helps standardise designs. Not only CAD-files but also build instructions, a bill of materials and so on, which is included in the Open Source Hardware Documentation. All together, Fab City OS is a software stack that makes distributed production in a Fab City environment more efficient and competitive.
The design passport ensures documentation is stored safely in a distributed way digitally. It is a crypto-based passport that contains the design (or Open Source Hardware Documentation) that includes CAD files, author, licenses, additional documentation files, the market materials, etc. Any individual or company from the global crowd can contribute to improve the design, at the initial contributors discretion. Each successful contribution is stored within the design passport.
The material passport is similar for local material flow. Basically it is used when a manufacturer is actually producing a product. He writes the materials used in the material passport. One can track the materials the products contain, their source, their properties, etc. which make it easier for the product to be recycled, repurposed, modified, repaired, disassembled, etc. All this info is stored in the material passport and helps manufacturers with the life cycle, the environmental impact, etc. Any user can access this information via a unique identifier on the physical product such as an RFID-chip or a QR-code.



FAB CITY OS organisation graphic. Image via Fab City Hamburg

The design and material passports are essentially important labels that add a lot of the intangible information of the products that can be harnessed for distributed design practices. This digital infrastructure of the FabCity OS can provide potential value in certification for distributed design.

RE_label

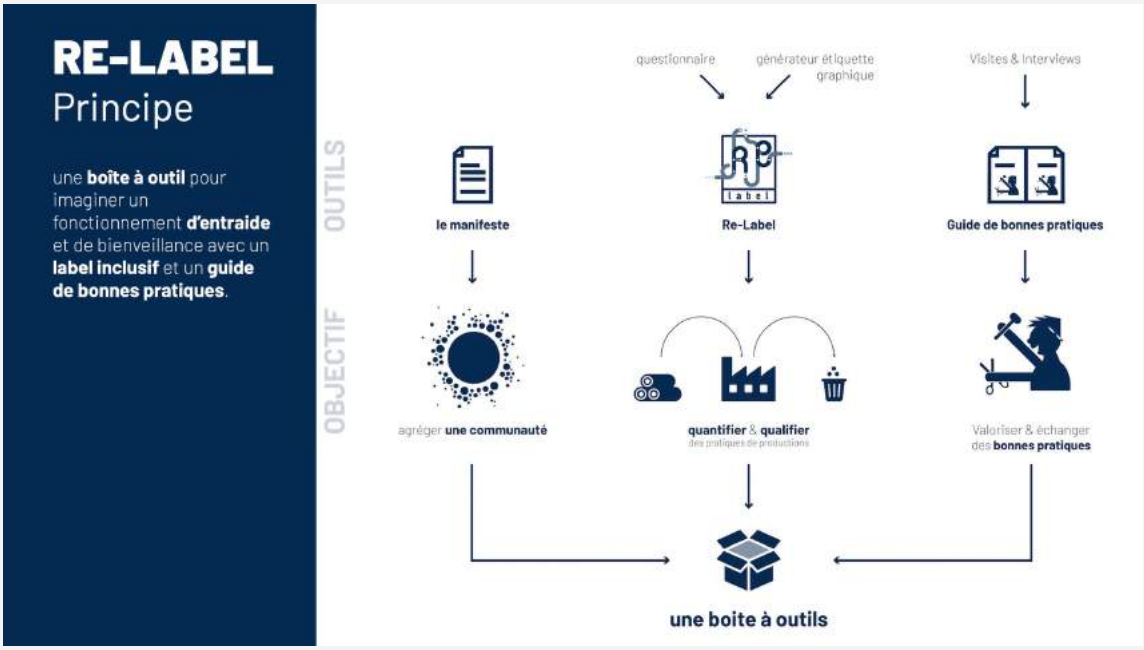
From an interview with Soumaya Nader, from Ars Longa and Reflow EU project

RE_label is driven by the Ars Longa association as part of the Reflow EU research-action program. The French AGEC law - Anti-Waste for a Circular Economy framework is already applied in many sectors by pointing out single-use plastics, lengthening the life of products, preserving resources, and increasing recycling. It is in this frame that RE-Label is involved: for the transformation of practices within manufacturing workshops, for a facilitated implementation of a circular economy approach serving the ecosystem of actors on its territory.

Among the fields that are still difficult to access through automation routines, reuse requires an increased need for time and human's skills to source, identify, qualify the material and designate a new use for it. Because this skill is poorly identified, Ars Longa proposes with RE_label to make it the main axis of analysis of its monitoring tool.

The initial idea of RE_label is to enable designers to be compensated for the 'invisible' effort and time spent behind a project that goes beyond the product itself. They have a set of criteria that designers respect in order to apply for the label.

The idea is to have a physical certificate the same way you do when you buy a piece of art for example. With the name, the story helps consumers understand what exactly they buy when they buy an object. They are not only buying the object but this whole invisible task and problems that go behind actually making it.
The relabel is not only the physical label but also a toolkit with methodology to exchange good practices with other designers, quantify the materials and share info about procurement of materials. It works with these different methodologies to estimate the time spent on a project, good practices that each designer can exchange and practice. They have a manifesto explaining this methodology to estimate the time.
These methodologies are a good point of contact between the DD certification program and RE_label. There is potential to link them in a meaningful way around circularity or reuse of materials.
RE_label works with designers through the Fab City store as their territory of experimentation for the development of the label. They are in efforts of combining the online catalog for Fab City store products with the RE_label catalog.



Re_Label graphic via Ars longa

Precious plastics community verification program

From an interview with Joseph Klatt who leads operations at Precious Plastic

Precious Plastic community is currently in the process of professionalizing the organisation. They began as a grassroots all-volunteer driven project and now after 8 years are trying to take it to the next levels in terms of impact, scalability and structural organisation. And this led them to look into how they can benefit from the other organisations who use their knowledge in terms of attribution or sharing back open source technology.

They created the community verification program to recognise, highlight and give benefit to organizations that were attributing PP and sharing back information. Another reason was segmentation of the PP community. PP has a very wide umbrella of people involved, ranging from a person using his panini press to melt plastic in the garage to organisations with 10s of employees that recycle a lot more plastic. They wanted to segment these groups so that when people see the PP map, they can recognise the type of players in the community when looking for the right partners or collaborators.

The first step in the process of making the program was to recognise where to draw this line between different segments. They settled on two tiers in the programs, the allied tier, which is the main entry point. They award stars to people doing a certain level of attribution and or sharing back knowledge. Once they pass a certain threshold of stars they become an ally and are recognised on the PP map. They thought about the thing that would benefit them as an organisation to come up with the star system.

And secondly they created the verified tier, targeting the high quality, the top 10% of their community that they wanted to segment out to accelerate development within the community in collaboration. They wanted those organisations to have access to one another's resources to get projects done and secondly users who came to PP map from external bigger organisations to be able to recognise who these people were in case they wanted to partner with them. Criteria for verified tier was vague at first - they handpicked the first batch themselves and then created criteria for others to apply to with mostly objective standards with a few subjectives in terms of perceived quality of their output. In return these organisations not only gain communication benefits but also business development benefits.

What DDMP can learn from this verification program is first - how to think about criteria for selection such that it benefits everyone, and second - what in policy making is called sticks and carrots, incentivising people to promote certain actions. Segmentation of community is also useful to recognise various types of players and differentiate contributions.

Fablabs.io

From an Interview with Guillem Campradon, Fab Lab Barcelona

FabLabs.io maps all the FabLabs of the network. The platform was developed in part at Fab Lab Barcelona. When a new lab registers, a select few established FabLabs are in charge of verifying the new one. This makes them visible on the platform. This is manually done once for incoming applications. Next steps are to verify these periodically, as to not make information redundant with time.
Among the many approaches to certification, one of the more recent and popular developments is the adoption of digital badges as an indicator of accomplishment, skill, quality or interest that can be earned in various learning environments. Digital badges are basically images with meta-data embedded that can be displayed, accessed and shared across platforms.

Badge Nation

From an Interview with Ruby Barter, program coordinator at Badge Nation, a platform that helps create digital badges.

Badge Nation has an issuing license on Credly, which is the platform they use to issue the digital badges. They essentially give organisations permission to use the platform and then they can issue batches within their own collections. Badge nation provides guides and services to support these organisations in all of the badge writing. They employ a membership model, where a one year membership gives the organisation all of the support to write and issue badges and provides access to their platform. Badge Nation makes it cheaper and more accessible by being a middle man between Credly and the organisations.
Digital badges are flexible enough to make what you can make of it. They have some organisations that issue badges to organisations as a quality mark. Badges are a flexible way to not only recognise individuals but also organisations.
Ruby suggests that within an organisation or network to keep the number of people actually managing the collection quite small.
It is best to think about the first badge and what it would be - if there's a badge that would cover the majority of people within the network finding that one is the most efficient way, because it doesn't make sense for people to be managing giant collections. The biggest earner pool within the network gives some amazing analytics. It can be used to measure impact and as a reporting tool - to recognise participation, attendance and leadership as different types of people engagements using the same standard. They tend to call it layers rather than levels since they don't have to be earned in any particular order. One can write badges for pretty much anything and award them to anyone. But in a way you can make them reflect your system. Digital Badges are an easy flexible way to prototype or recognise actors within the network. It is a potential way to explore engagement of different stakeholders.

Key Findings

In conclusion from exploring the pros and cons of all different mechanisms, studying existing practices, member participation we gather that to certify different things of value, and appropriately align with the values of DD the label needs to be.

Distributed. The platform doesn't remain the sole source of truth or authority, but rather a crowdsourced but (initially) centrally managed platform is key to openness and transparency, and also reflects the values of the community.

Open. Evaluation criteria must itself be modifiable by peers, with certain regulated mechanisms.

Continuously Self-verifiable so that if some information changes, or some links become inactive, the certification ceases to exist. So data can always be trusted. Semi-automated for example by developing programming bots or coding mechanisms to automate repetitive tasks.

I**ncentivised exchange** using a peer review mechanism. Get rewarded for reviewing projects, or membership benefits etc. to be defined. This should help in building community participation.

Flexible enough to change the course of development depending on technological avenues, social adaptation and resource allocation timeline.

Segmentation of contributors as the community involves various stakeholders with varying levels and types of value-additions. Categorising helps target appropriate audiences.

The evaluation system not only needs to reflect the values of distributed design, but also take an innovative approach to valorise multiple forms of excellence. The next section of the report proposes a roadmap to reach (an ultimate) model that offers all the above. Instead of jumping on to a resource-demanding complex system, a step-by-step guide is proposed to gradually reach an evolved system for certification, testing along the way various mechanisms and community adaptation.

Proposing a plan

Based on the key findings, the next step in the research was to design a potential solution for Distributed Design certification, which is innovative in it’s approach but also remains applicable. A road map is proposed in steps of gradually increasing complexity, both on the technological side and more importantly to allow for gradual social dissemination within the community of practice.

A two part-system helps in segmentation of the community depending on their levels of participation / contribution to the network and also the gradual implementation of the system integrating the social and technological aspects.

Part	Objective	Tool	Supporting Tasks	Incentive
Part 1	Invite participation	Self-assessment tool	Create a manifesto / guide book to reflect / store / communicate criteria	• Get access to DD project database • Eligible to DD certification • Other defined participant benefits
Part 2	Certification label	Peer-reviewed semi-automated distributed evaluation system	• Guide for good practices • Define value standards periodically	• DD quality certification label • Feature on platform / IG • Other defined member benefits

Part 1: Self-assessment tool

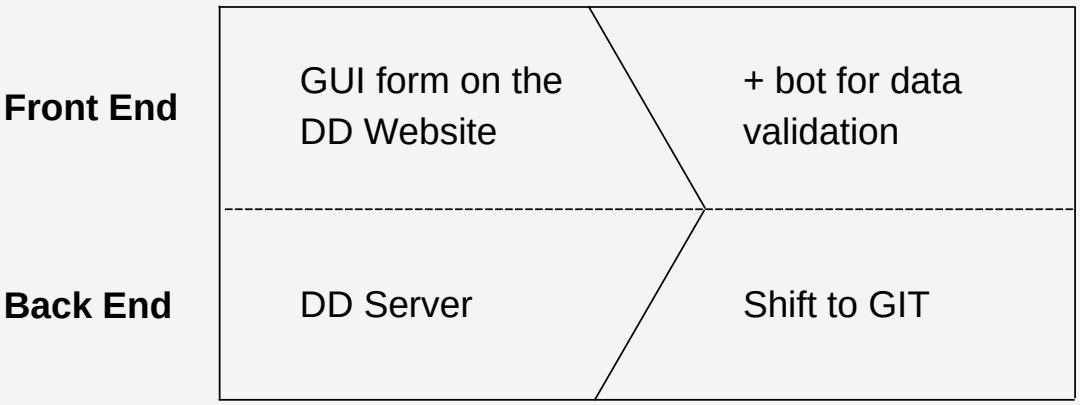
- Designers/ makers can assess themselves if their project follows a Distributed Design approach.
- Defines further the value system and what exactly it means to be open, regenerative, collaborative and ecosystemic in a practical way. (This will help with creating evaluation for smart contracts later on.)
- People can reiterate projects to reach the particular threshold set on the DD self-assessment tool scale or checklist, pointing them to guides or DD published books. Or be guided towards other suitable licenses like OSHWA, etc.
- Easily grows into the community and beyond, an easy way to warm up into the next steps of certification.
- Participation is rewarded by getting added to the DD database, and other to-be-defined benefits (eg. feature on social media)

An example of the self-assessment tool content:

Distributed Design Self-Assessment Tool			
Collecting META DATA	☑ ☑ ☐	Project name Author/s Lab/s	....
Measurable properties of OPEN	☑ ☐ ☑	Git URL CC / License Design files shared	....
Measurable properties of COLLABORATION	☑ ☑ ☐	Individual contributors Partner organisations DD member collab	....
Measurable properties of REGENERATIVE	☑ ☑ ☑	Local knowledge 0KM sourcing Circular properties	....
Measurable properties of ECOSYSTEMIC	☑ ☑ ☐	Toolkits Platforms Guides	....
Defining threshold	**11/15**	**Total Score**	

Part 1 can easily be implemented by some further deliberation required into detailing out the measurable properties of the four value criteria. Plus by the developers of the platform integrating a GUI custom form on the website that stores all qualified input data into a dedicated database.

Development of the self-assessment tool over time:

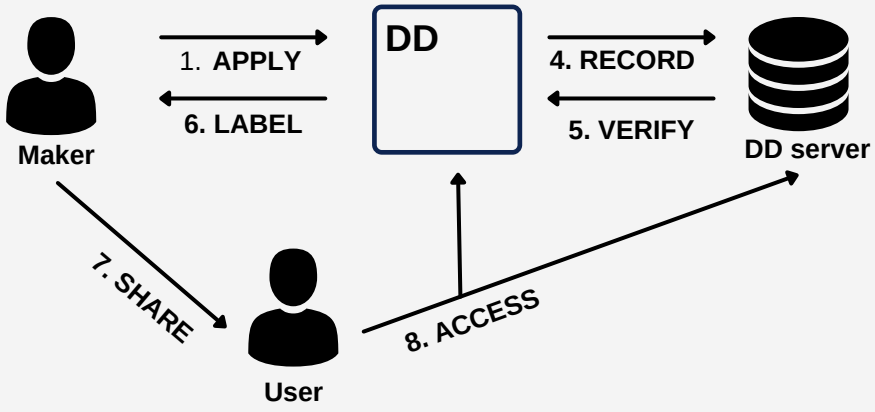


Part 2: A peer-reviewed periodically verifiable distributed semi-automated and open system to get certified

- Can be implemented step-by-step adding levels of technological complexity whenever the social participation and resource allocated is ideal.
- Peer-reviewed because the system needs to be distributed and collaborative following the values.
- Periodically verified, as not to make data available redundant and keep its usefulness.
- Certain aspects of recognising distributed-ness cannot be automated so the systems need to be semi-automated with parts that require inputs of the network.
- The database is stored in a block-chain / or block-chain-like database, this protects from tempering and also removes DDMP as the sole source of authority for certification.
- Sharable certifications that can be verified for authenticity.

Phase 1: simple self-verification

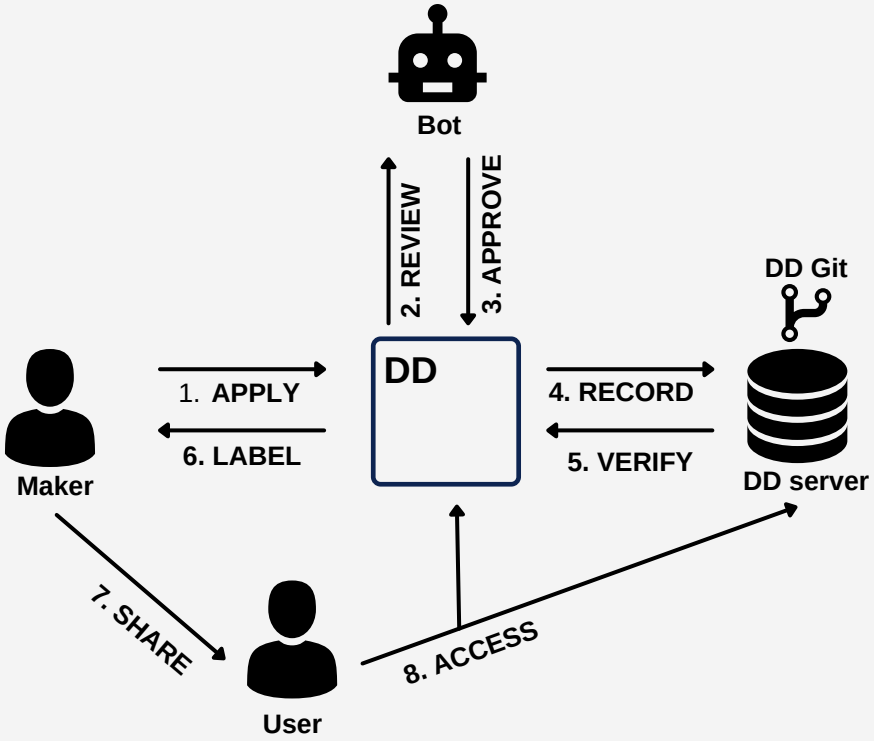
A maker uploads data on DD website GUI form
The data (project, URL, author,...) is stored on DD server
As soon as the data is uploaded
A custom dynamic QR code generated
The maker uses the QR code to promote their work
Users can access the project data using the QR code



- This first step is simple enough to be adopted and also flexible to change some aspects later on if needed. A fancy GUI with simple operations on the backend can be developed.
- A maker uploads information about the project on a dedicated section on the DDMP website. The form inputs details like the project title, URL, author/s, lab/s, etc.
- This data is added to the public but centralized database managed by distributed design accessible on the platform. The maker can then use a link to share, promote the project.
- The project itself can be hosted anywhere, the platform basically offers a common source to house these projects that apply the distributed design approach.
- This is a simple closed loop system with minimal infrastructure required for external verification.
- One disadvantage at this stage is that nobody is actually verifying the project inputs.

Phase 2: adding verification criteria

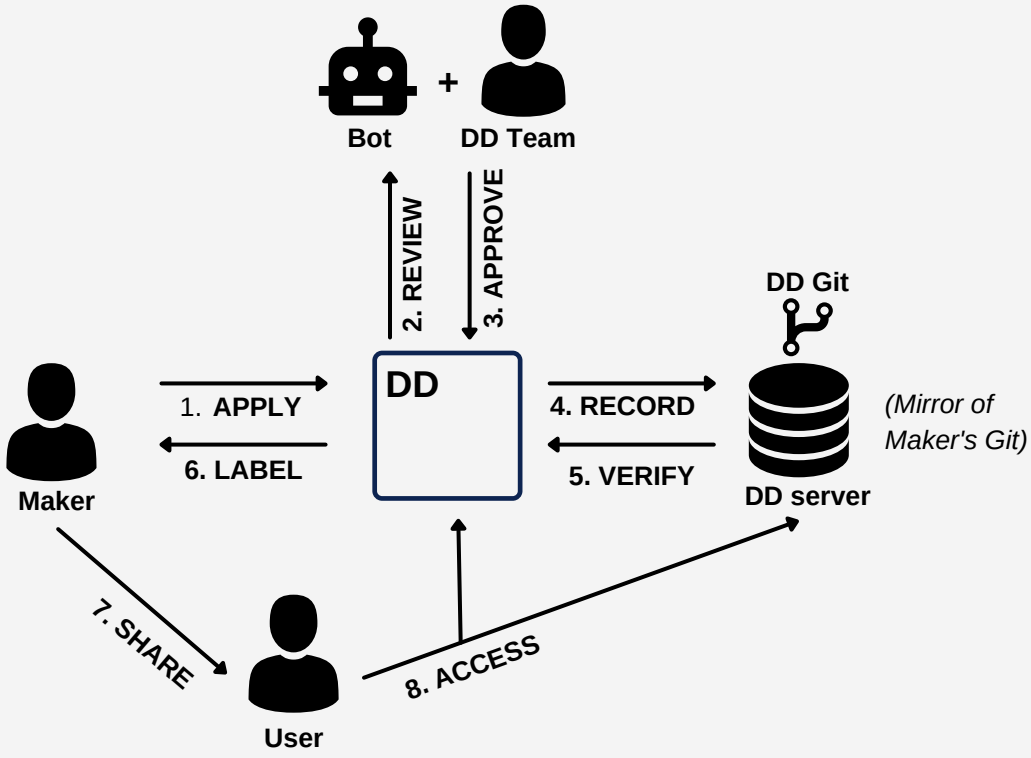
A maker uploads data on DD website GUI form
The data (project, URL, author,...) is stored on DD git
Data is verified by a programming bot
As soon as it is approved
A custom dynamic QR code is generated
The maker uses the QR code to promote their work
Users can access data using the QR code



- In Phase 2, we start adding programming bots to perform simple repetitive tasks, like checking if the Instagram and git links are correct, etc. Once data is stored on the DD database, a custom dynamic QR code is generated, and sent back to the maker.
- Also, we shift the database on a Git to to allow more transparency and record development and contributions, so that it becomes transparent, can be verified for modifications, and also serves certain levels of structural workflows. The projects themselves are not hosted here, but the DD database is the collection that links to the original sources.
- The QR code may have a graphic label generator as used by RElabel or the logo generator used by Precious Plastic.

Phase 3: adding human verification

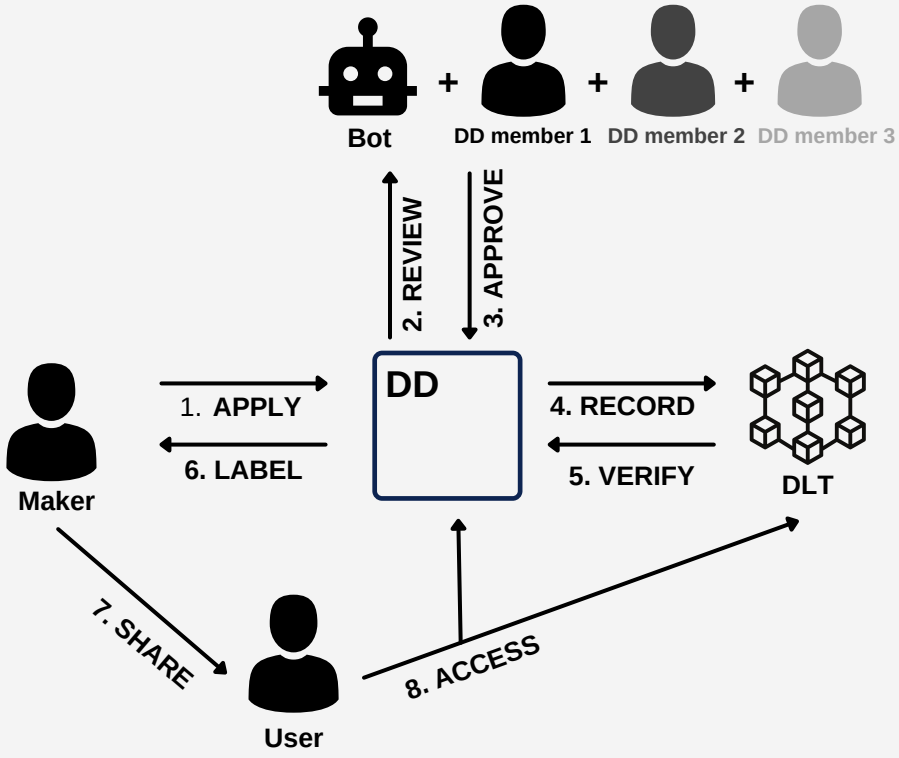
A maker uploads data on DD website GUI form
The data (project, URL, author,...) is stored on DD git
Data is verified by a programming bot and DD team
As soon as it is approved
A custom dynamic QR code is generated
The maker uses the label to promote their work
Users can access data using this label



- In this phase, the DDMP team or a member verifies the data in addition to the programming bot.
- Plus, the Maker's git repository is mirrored on to the DD git. Meaning, now, all data is hosted in the same git repository. (GIT allows to check if data is modified, and by whom)
- At this stage, the label may evolve into a digital badge. An image that has metadata embedded in it. This helps in sharing it across platforms.

Phase 4: replacing by continuous distributed verification

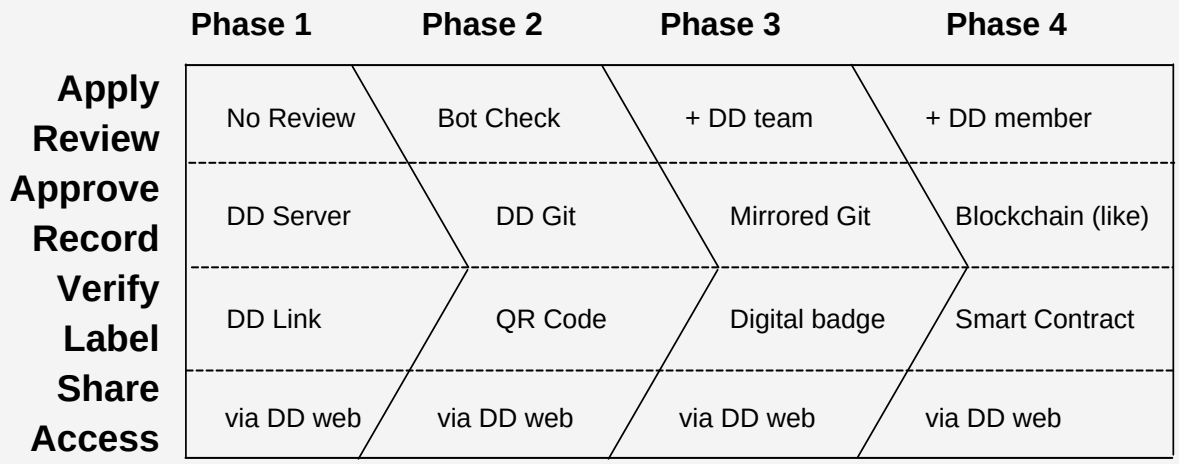
A maker uploads data on DD website
The data (project, URL, author,...) is stored on DLT/blockchain
Data is verified by a programming bot and DD member periodically
As soon as it is approved
A custom dynamic QR code is generated
The maker uses the label to promote their work
Users can access data using this label



- In this last phase, the verification is distributed within the network. Any previously approved member can verify a new application. To keep it updated, all projects go through periodic verification, each time done by a different member.
- The time can be decided based on findings during Phase 1-3.
- The data is now stored on a blockchain or a distributed ledger to keep track of changes and to distribute it. Also, the transactions are now based on smart contracting. The label at this stage may become a more dynamic NFT (Non-Fungible Token) or digital passport.
- Measurable properties of Part 1 evolve into smart contract evaluation rules.
- GIT shared server evolves into a blockchain database.

Development of the verification tool over time:

The normal working flow of the system is
Apply > Review > Approve > Record > Verify > Label > Share > Access
All these stages evolve from Phases 1 till 4 gradually shifting details and mechanisms.



Conclusions

Prior to technical development, Distributed Design requires a written document such as a manifesto, book or guide to widely communicate the basic values and intent behind the development of a DD Label. It should be verified and periodically reviewed with member organisations or stakeholders for example the Distributed Design Advisory Board or a group of domain-specific experts to ensure relevance.

The measurable properties of the value criteria should be designed and/or periodically reviewed by the Platform with member organisations or expert stakeholders, for example the Distributed Design Advisory Board or a group of domain-specific experts.

The timeline of implementation needs to be structured to accommodate community participation and resources assigned in the future. For example, if 1000 entries are collected in Phase 1 with two full-time developers on board, it is possible to move on to Phase 2.

It is important for the system to be flexible, open, and transparent, to truly align with the values of distributed design. Peer discussion between edits is key. Depending on the system adopted it might take a different form. Git has a way of doing this through issue tracking, pull requests, etc. in the initial phases.

A lot of parallels in intention and ideology with the Design & Material Passports implemented within Fab City OS make it suggest aligning efforts would be beneficial. The digital infrastructure of FabCity OS chiefly complements the social exchange and networking competencies of the Distributed Design Platform.

RE_label provides a good qualification criteria to assess the ‘Regenerative’ aspect for verification. This can automatically satisfy criteria in that regard.

While measurable properties might be easier to access for the open, regenerative, and collaborative nature of projects, evaluation for ‘ecosystemic’ might need more subjective human discretion.

Smart contracting, Non-Fungible Tokens and other Distributed Ledger Technologies are crucial tools in a toolchain to implement value-based certification mechanisms. They are not however a stand-alone solution and require a) embedding into a ecosystemic approach, b) socialisation and training at each point of a digital-to-physical supply chain.

It is imperative to create set actions (a governance model) to ensure that the system is created properly, reviewed periodically and communicated effectively. All organisation members can be workshopped and efforts can be regularly reviewed, according to a collectively determined frequency.

It is necessary to keep in mind a further expansion of the Platform to reach beyond the limits of the European context into a more global context, aided by the expansive Fab Lab and Fab City network. A value-based certification for the Platform can further develop the global potential of distributed design amongst the many to decentralise and democratise the future of design.

Next Steps

In recognition of the breadth of existing platforms that could be adopted in order to implement such a solution, a non-exhaustive list is compiled below to outline potential areas of further inquiry towards implementation.

The Anagolay network is a distributed, peer-to-peer network that is built on top of the Substrate framework for building and running blockchains. Anagolay comes with built-in economic incentives to ensure the Rules and Operations are correctly implemented, audited and tested by the community.

Holochain is an open-source framework for creating peer-to-peer applications using distributed ledger tech that allows self-owned data, a distributed database, and peer accountability.

Wikipedia bots perform a wide range of editorial and administrative tasks that are tedious, repetitive and time-consuming but vital. They delete vandalism and foul language, organise and catalogue entries, and handle the reams of behind-the-scenes work that keep the encyclopaedia running smoothly and efficiently and keep its appearance neat and uniform in style.

Newcoin promises to power creative coordination at scale. The Newcoin Protocol is a scalable and interoperable blockchain for Social 3.0, enabling the new community-owned decentralised social economy of data ownership and creative coordination through DAO, NFT and DeFi standards.

It may be possible to use some of the functionalities of these tools for certains tasks at different stages of the proposed implementation. For programmed or crowdsourced evaluation and keep the process flexible in terms of when to use a centralised vs a distributed system, etc. Further technical inquiry is needed to understand which technical solutions could be used.

Recommendations

In order to develop a Value-base Certification for Distributed Design, the Distributed Design Platform offers key recommendations from a four-year research into the concept's potential. It aims to inspire the future implementation of such mechanisms within the Platform.

1 A stand-alone written document like a manifesto could help to widely diffuse the values of distributed design amongst the design and making community, in order to lay the ground for the criteria of a value-based certification.

2 The measurable properties of the value criteria should be designed and/or periodically reviewed by the Platform with member organisations or expert stakeholders, for example the Distributed Design Advisory Board or a group of domain-specific experts.

3 A guide to good practice could help to socialise the concept of the both value-based certification in order to communicate and scale the potential solutions effectively.

4 Any value-based certification system for Distributed Design must be flexible, open, and transparent, to truly align with the values of distributed design.

5 Any value-based certification system for Distributed Design must allow for collaboration in as many stages of a certification process as possible, for example in the form of peer discussion or technical solutions such as issue tracking or pull requests.

6 Collaboration with existing solutions that practice close to the Distributed Design Platform, for example Fab City OS or RE_label, is recommended.

7 Both qualitative and quantitative properties need to be considered when value is being measured. Experience and discretion should not be overlooked.

8 Smart contracting, Non-Fungible Tokens and other Distributed Ledger Technologies are crucial tools in a toolchain to implement value-based certification mechanisms but are not stand-alone solutions.

9 In order to realise an ecosystemic approach, existing communities, platforms and tools must be integrated through practice and both the technical and social needs must be considered equally.

10 A governance model can ensure that any value-based certification system created according to the needs of Distributed Design as well as managed, reviewed periodically and communicated effectively.

11 Value-based certification can help to expand the Platform beyond the European context, aided by the expansive Fab Lab and Fab City network, which can further develop the potential of distributed design amongst the many to decentralise and democratise the future of design.

References

Armstrong, Kate. 2019. “A quality label: certifying our values.” In DESIGN REMIX SHARE REPEAT, 56, 172. Barcelona: DDMP.

B Corporation. n.d. “bcorporation.net/certification.” bcorporation.net. https://bcorporation.net/certification. Cheng, Jiin-Chiou, Narn-Yih Lee, Chien Chi, and Abstract: According to the Taiwan Ministry of Education statistics, about one million graduates each year, some of them will go to countries, high schools or tertiary institutions to continue to attend, and some will be ready to enter the workplace employ Chen. 2018.

“Blockchain and smart contract for digital certificate.” https://ieeexplore.ieee.org/document/8394455.

Contreras, Jorge L. n.d. “Pledging intellectual property for distributed design.” In Viral Design, 98. Barcelona: DDMP.

Diez, Tomas. n.d. DDMP Strategic Roadmap. https://bit.ly/3oLlzYd.

Diez, Tomas, and Primavera de Filippi. n.d. FAB CHAIN, Community token ecosystem to enable the transition to a spiral economy. bit.ly/2mAvvFZ.

“EU Collective marks and certification marks.” n.d. ipright.eu. https://ipright.eu/trademark-regulation/en/specific-provisions-on-european-union-collective-marks-and-certification-marks.

Garon-Epaule, Geoffroi. 2018. “Digital credentials for Fab Lab with digital badges.” France. https://fr.slideshare.net/geoffroigaron/digital-credentials-for-fab-lab-with-digital-badges.

Guimas, Vincent. 2021. “RE_Label.” arslonga.fr. http://www.arslonga.fr/2021/04/08/re_label-2/.

“openbadges.org.” n.d. openbadges.org. https://openbadges.org/.

Peer 2 Peer University, The Mozilla Foundation, and The MacArthur Foundation. n.d. “An Open Badge System Framework.” https://wiki.mozilla.org/images/5/59/OpenBadges-Working-Paper_012312.pdf.

Roio, Denis, Alberto Ibrisevic, and Andrea D'Intino. 2021. “Reflow: Zero Knowledge Multi Party Signatures with Application to Distributed Authentication.” eprint arXiv 2105.14527.

Acknowledgements

This report has been prepared by the Distributed Design Platform, co-funded by the Creative Europe Program of the European Union, by the Platform coordinator Fab Lab Barcelona at IAAC.

Concept and coordination - Kate Armstrong

Research - Mitalee Parikh

Contributions - Tomas Diez, Guillem Camprodon

Interviewees - Benedikt Seidel, Soumaya Nader, Joseph Klatt, Ruby Barter

This publication reflects the views of the authors only, the Commission cannot be held responsible for any use.

Contact

Distributed Design Platform

Fab Lab Barcelona at IAAC

Pujades 102, Barcelona

www.distributeddesign.eu

info@distributeddesign.eu

@distributeddesign

FAB LAB BCN

Iaac Institute for advanced architecture of Catalonia

Distributed Design

Co-funded by the Creative Europe Programme of the European Union