

WP2 Governance Models

# D2.4- Co-business model specification and analysis



<b>Project acronym</b>	INTERLINK
<b>Project full title</b>	Innovating governNment and ciTizen co-dEliveRy for the digitaL sINgle marKet
<b>Call identifier</b>	DT-GOVERNANCE-05-2020
<b>Type of action</b>	RIA
<b>Start date</b>	01/01/2021
<b>End date</b>	31/12/2023
<b>Grant agreement no</b>	959201

<b>WP</b>	WP2 Governance Models
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<b>Version</b>	1.0
<b>Deliverable Type</b>	R
<b>Dissemination Level</b>	PU
<b>Date of Delivery</b>	30/04/2022
<b>Submission Date</b>	03/05/2022



## VERSION HISTORY

Version	Issue Date	Status	Changes	Contributor
0.1	25.1.2022	Preliminary draft	Initial document structure and basic information.	CNS
0.2	20.2.2022	Introduction draft	First versions of sections 1 and 2.	CNS
0.3	30.3.2022	Example scenarios ready	All figures added, document structure updated, example scenarios described.	CNS
0.4	20.4.2022	Almost ready	Major additions, only few sections still to do.	CNS
0.5	21.4.2022	Review ready	Ready for starting internal review, some parts still to fine-tune or add.	CNS
0.6	28.4.2022	Reviewer comments received	Internal review completed	RU, DEDA, DEUSTO
0.7	29.4.2022	Improvements based on review	Easy reviewer suggestions applied. Cross references fixed.	CNS
1.0	30.4.2022	Final version	All review comments handled.	CNS



## Glossary

ENTRY	DEFINITION
INTERLINKERS	Common building blocks, provided as software tools or in the form of knowledge offered digitally, that represent interoperable, re-usable, EU-compliant, standardized functionality for the co-production of public services
INTERLINK platform	Digital environment developed by the INTERLINK project to foster co-production of new public services.
INTERLINK Collaborative Environment	Core component of the INTERLINK platform to foster collaboration in co-production projects.
Public Service	<i>“A public service is an aggregation of all activities that realize a public authority's commitment to make available to individuals, businesses, or other public authorities some capabilities intended to answer their needs, giving them some possibilities to control whether, how and when such capabilities are manifested”</i> (Guarino 2017).
Co-Production	Co-production refers to the generally voluntary (not regulated nor mandated) and active involvement of citizens alongside public employees in the co-engagement, co-design, co-implementation and/or co-sustainability of public services (Loeffler & Bovaird, 2020; Brandsen & Honingh, 2018).
Co-Business	Co-business emerges when a team of independent stakeholders work together towards a common goal to solve important real-world needs in a way which eventually brings benefits to everybody involved and beyond.
Co-production Ecosystem	All stakeholders (citizens, public administration, businesses, research organizations) participating in co-production in a specific digital environment (such as the INTERLINK platform) for mutual benefit.



## ACRONYMS

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ABBREVIATED	EXTENDED
CV	Curriculum Vitae
PA	Public Administrators
SME	Small and Medium-sized Enterprises
TOU	Terms of Use agreement
WP	Work Package

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## Executive summary

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The main objective of task T2.4 “Design and analysis of co-business models” was to design a solid co-business model which engages co-production participants and ensures the long-term sustainability of co-produced services. Co-business aims to strengthen the benefits emerging from co-production, maximise the likelihood of receiving them, and extend them with new forms of benefits made possible by the support from the co-production ecosystem. In addition, the objective was to analyse how co-business helps in different phases of the co-production lifecycle defined in the governance model developed in WP2, and how co-business could be used to reach financial sustainability of the co-produced service.

This deliverable D2.4 presents the main outcomes of T2.4 which comprise a **novel INTERLINK co-business model** and thorough analysis of its impacts to co-production ecosystems. It will be shown that the developed co-business model has potential to start a new era in co-production by elegantly solving the key issues related to engagement and sustainability.

First, the needs for co-business will be analysed from the perspective of expected co-production benefits by different participating stakeholders. The main weakness of co-production will be clarified with a new *co-production chasm* theory which leads to a conclusion that additional incentives are needed to keep co-producers engaged. However, the approaches tried earlier are declared insufficient because they clearly lack important elements of sustainability.

The INTERLINK co-business model is based on three types of incentives - points, tokens, and shares – and solid principles to do co-business with them. Each type of incentive has its specific purpose in co-business: points measure user activity, tokens are a virtual currency, and shares define the ownership of projects. The co-business model defines the ways to collect, transfer and exchange them within the ecosystem, which turns co-production into a very inspiring game with multiple ways to success. The co-business model can also be connected seamlessly to real money and business which creates a solid ground for a real **co-production economy**.

Thus, the outcomes of T2.4 clearly meet or even exceed the original objectives. INTERLINK project believes that the presented co-business model combined with sufficient technical support by the platform has potential to become **self-sustainable**. With the extra boost from co-business, the emerging co-production ecosystem could stay alive, grow, and evolve on its own simply because it is **beneficial to every stakeholder**.





## 1 Introduction

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Co-production of public services has great potential to become an efficient and holistic way to design, implement and deliver public services together for common real-world needs of the society (Lember et al. 2019). Several research and innovation projects have developed concepts, tools, and platforms to foster co-production and make it possible and easier in practice. However, despite advanced technologies, sophisticated processes, and promising co-production pilots, truly active and self-sustainable co-production ecosystems have not yet emerged.

Something essential is missing from earlier co-production approaches. Something, which would spontaneously stimulate the birth of new co-production projects, attract people from different stakeholder groups to join them, motivate them to continue working until project objectives have been reached, and guarantee sustainability of co-produced services. That something should make co-production a preferred lifestyle instead of a one-shot project after which everybody disappears and never comes back. The INTERLINK project claims that the missing piece of the puzzle is **co-business**.

The main objective of co-business is to ensure that all stakeholders participating in co-production will benefit from the project, as will be discussed in Section 2. To reach this goal, INTERLINK has developed a **co-business model** which will be defined in Section 3 and described in detail with help of an example scenario in Section 4. Furthermore, Section 5 explains how the co-business model can be connected to real businesses to create a **self-sustainable co-production economy**. Plans to validate the theoretical co-business model in practice will be described in Section 6. Finally, Section 7 will summarize the key features and advantages of the proposed co-business model. However, before entering the world of co-business, this section will introduce co-production as seen by INTERLINK and the key challenges that remain to be solved.

### 1.1 Co-production team

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In the context of the INTERLINK project, **co-production** refers to the generally voluntary (not regulated nor mandated) and active involvement of citizens alongside public employees in the co-engagement, co-design, co-implementation and/or co-sustainability of public services (Loeffler & Bovaird, 2020; Brandsen & Honingh, 2018). For each specific service idea or need, a **co-production project** is started to develop the service further. People and organizations who participate in a project form a **co-production team**.

Possible participants of the co-production team can be divided into four main groups (according to the Quadruple Helix approach for innovation) **1) public authorities, 2) citizens, 3) businesses and private non-profit organisations and 4) research organisations** as shown in Figure 1. They can be divided further into sub-groups that each have different motivational factors to join the work. It is important to understand why these stakeholders would become interested in co-producing public services. The list below gives some examples of typical motives but is not intended to be a complete list of possible reasons to participate.

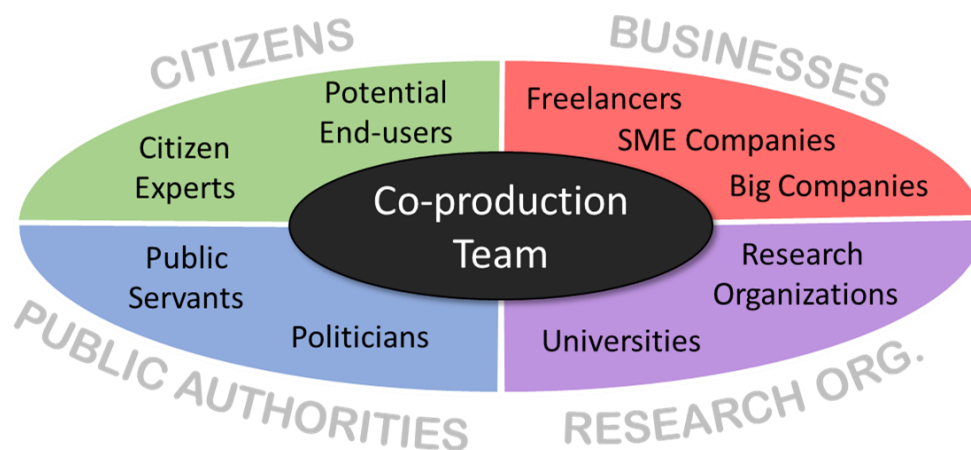


Figure 1: Co-production team

### 1. Public authorities

- *Public servants* who would benefit from the co-produced service in their work, e.g., by simplifying their regular duties. Besides, they could foster co-production of services prioritized by the PA.
- *Politicians* whose constituents/voters include end-users of the service.

### 2. Citizens

- *Potential end-users* who would benefit from the co-produced service directly as an end-user and/or want to help in creating a service which they believe to be useful. They could bring in experiential knowledge, valuable in (re-)designing a service. Their involvement can be individual or organised in groups (associations).
- *Expert citizens* who enjoy participating in co-creation projects and have the relevant skills to take on a more specialist role (knowledge activists).

### 3. Private businesses and non-profit organisations

- *SME* who are looking for new business opportunities and ways to utilize their skills and technology.
- *Freelancers* who are looking for new customers and ways to demonstrate the benefits of their capabilities.
- *Large companies* who are looking for new customer relationships (with involved PA or companies), investment opportunities or ways to improve their brand or corporate image.
- Private non-profit organisations (e.g. foundations, charities) who are willing to support the service.

### 4. Research organisations

- *Universities and other research organisations* who support the service as part of their research mission.

## 1.2 Co-production process

The co-production of a new service is a long process which typically comprises multiple phases requiring different kinds of skills. INTERLINK has identified two main phases (**co-design** and **co-delivery**) and four subphases (**engagement**, **design**, **implementation**, and **sustainability**) which are described in deliverable D2.1 – Preliminary Governance Model. Each process phase can be further divided into objectives, tasks, and resources which clarify how work should be organized and which tools could be used in different phases. The INTERLINK platform provides technical support to help the team go through the relevant parts of the co-production process and efficiently adopt reusable solution components (called “INTERLINKERS”) in the project.

Co-production should not be seen as an automated process which produces a complete public service from every new-born idea. Instead, it is a **funnel**, through which only the fittest projects manage to go all the way and become completed services creating long-term benefits, as shown in Figure 2. After every phase, the achieved results should be carefully evaluated to decide whether continuing to the next phase makes any sense. In case the answer is “No”, the co-production team should go back to one of the earlier phases to make iterative improvements - if they still believe in the idea. However, in hopeless cases it may be wisest to abort the whole process and find a better idea to work on, which can be counted as a **co-production failure**.

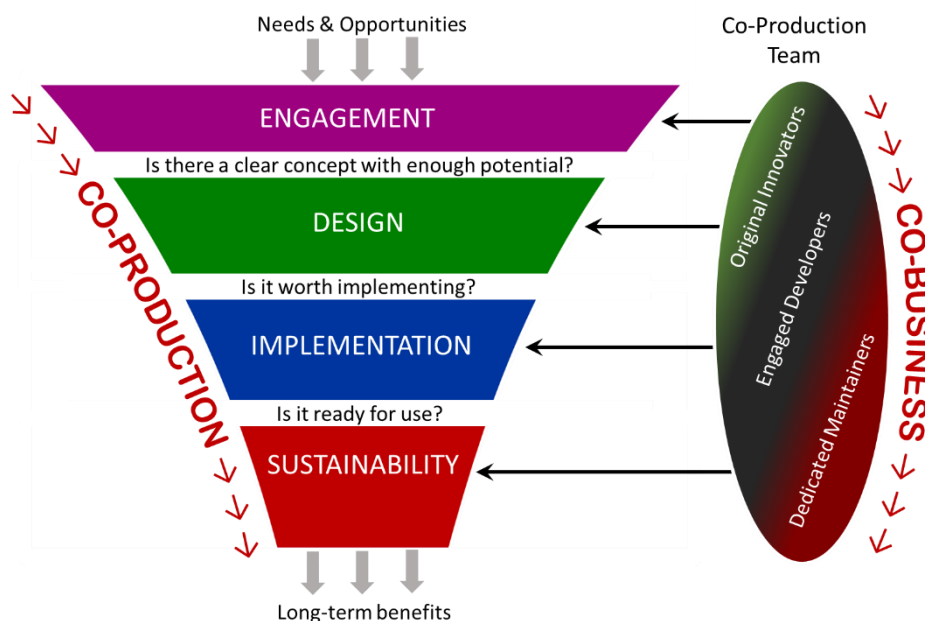


Figure 2: Co-production Process

Having a clear process to follow and advanced tools to use will certainly lower the risk of co-production failures, but do not solve issues related to the co-production team. Going all the way through the co-production funnel and completing the service requires a lot of time and effort, and it may be hard to engage team members to keep on working. Losing some key members in the middle of the process is certainly a big risk for the whole project.



Different phases of the process require different kinds of skills, which forces reshaping the co-production team accordingly, when necessary, as shown in the right side of Figure 2. In the beginning, the initial team may comprise only a few *original innovators*, who innovate the core service idea and create the first draft of the service specification. To develop the idea further, they may need to engage more people to the team. These *engaged developers* should co-design and co-deliver the service until it's ready for real use. Finally, there should be some *dedicated maintainers* who continue maintaining the service to ensure long-term sustainability (Jaspers & Steen, 2020).

Inability to expand the team with the right kind of skills when needed may lead to delivery delays and lowered quality of outcomes when existing team members try to cope with tasks beyond their expertise. This yields significant risks for the project as well and may compromise timely co-delivery of a good-enough service.

### 1.3 Co-production challenges

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Co-production involves many kinds of challenges and governance issues that are discussed in deliverable D2.1. The main types of challenges are:

1. **Service design** - Challenges related to the co-produced service itself, such as: What kind of service is needed? What features should it have? What should it look like? How to implement it?
2. **Tools and processes** - Challenges related to teamwork and development, such as: How to organize the work? Which tools and technologies to use? How to identify required tasks? How to communicate?
3. **Team engagement** - Challenges related to engaging and motivating people, such as: How to find new team members? How to activate people? How to keep everybody inspired? How to reward people doing great work?
4. **Financial issues** – Challenges related to making or receiving payments, such as: How to purchase non-free services? Where to get funding? How to receive payments? How to do business with project outcomes?
5. **Sustainability** – Challenges related to long-term service maintenance: Who will maintain the service? Who will give end user support? How to cover maintenance costs? How to ensure further development?
6. **Exploitation** – Challenges related to ownership of intellectual properties and exploitation rights, such as: Who owns project outcomes? Who can exploit them? How could they be exploited? Can others licence them? Which licensing model to use? How revenues will be distributed?

Service design related challenges obviously depend on the co-produced service and must be solved by the co-production team. In order to succeed, the team needs to have talented people, advanced tools, and sufficient resources available, which can be best arranged by solving challenges 2-4. Challenges related to tools and processes will be addressed by the INTERLINK platform, so they need no closer attention in this deliverable. However, the next three challenges (**team engagement, financial issues, sustainability**) need to be tackled by the co-business model presented in this deliverable and therefore explained in the following sub-sections. Exploitation related challenges are mainly addressed by task T2.5 based on the co-business model and will be analysed in the forthcoming deliverable D2.5.

### 1.3.1 Team engagement

The hardest challenges in co-production are related to engaging people in a continuous manner. Co-production cannot succeed without a talented and highly motivated team which relentlessly develops and improves the service until it's ready for real use. However, forming such a team, activating it, and keeping it together is far from trivial. Failing on team engagement may compromise the whole co-production project as discussed in Section 1.2.

Figure 3 clarifies the core nature of the problem. Typically, the people who have the skills to develop a specific service are different from those who'd actually need the service. In other words, the developers do not benefit from using the service themselves. So, the key question is: *Why would the developers use their time and effort to create a service for others?*

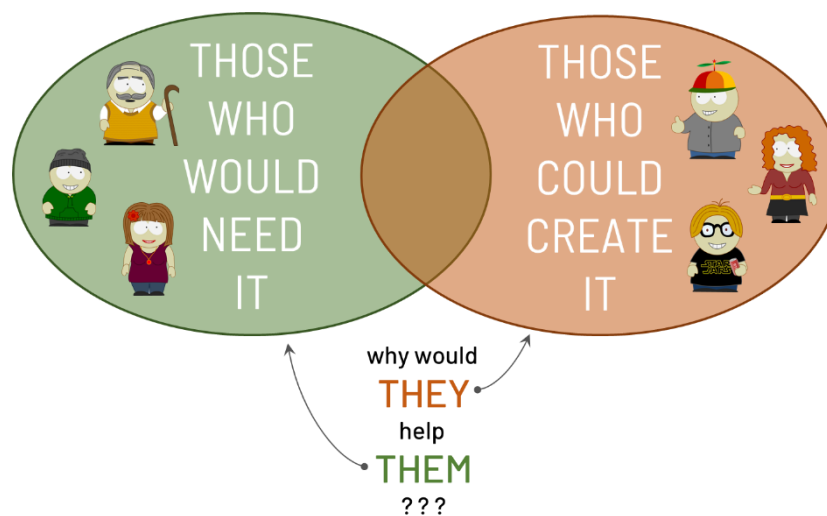


Figure 3: Co-production dilemma

Outside the co-production context, this kind of issues would be solved with money: Those who need something pay to those who can deliver it. However, the whole co-production concept is built upon noble principles such as openness, voluntariness, common good, and free-of-charge, so solving the service need simply with a big budget is out of question (Voorberg et al, 2018). So, another way to engage talented people into co-production is needed.

### 1.3.2 Financial issues

Early phases of co-production projects typically focus on exploring, innovating, and designing activities that can be carried out without expenses by utilizing free tools and methodologies provided by the INTERLINK platform or available on the web. However, the project may eventually reach a phase where some resources or services need to be purchased to continue the work or publish project outcomes. For example, hosting co-produced web services or organizing events may involve significant costs and somebody needs to pay for them.

This raises several financial issues because the co-production team is not really an official entity that owns a bank account, credit card or any other means to perform such payments. The team is just a group of independent stakeholders that have decided to work together to co-produce a public service. Thus, unless they decide to found a real business entity, such as a start-up



company, or choose one of the project members to manage financial issues, the project cannot make any payments nor receive money.

Founding a company or other kind of official entity to continue co-production and manage budgets is not a realistic option until there is a high confidence that sufficient financing to operate such an entity can be arranged by either receiving external funding or doing business with project outcomes. Moreover, keeping the entity operational would require long-term commitment from the team members or hiring additional personnel. All this trouble and seriousness may be too much for early co-production initiatives that just wish to try and create a feasible solution to some common real-world need while still continuing their normal lives. Someday, perhaps, it might make sense, but not in the beginning of the project.

In case the project related costs are moderate and temporary, some members of the co-production team may volunteer to pay them as a kind of donation without expectations to ever receive the money back. However, this is not a sustainable solution when costs are continuous and increasing - at some point, such money sources will inevitably close. In case the payer is a company or an organization, payments must also be justified by the internal strategy of the paying entity and be in line with financial laws and accounting practices. Furthermore, unless the payments are equally balanced among team members, prolonged gratuitous financial support will create inequality between team members (some have paid more than others) which may culminate in conflicts later - especially when it is time to distribute gains from project outcomes within the team. Without a clear prior agreement on how possible profits will be shared among the stakeholders and trusted records on how much each stakeholder has contributed to the project, it is very hard to reach a consensus afterwards - which may lead to serious conflicts or even termination of the project.

### 1.3.3 Sustainability

Co-produced services need to be maintained for years to make them sustainable and realise service benefits in practice. They should also be continuously developed further and updated frequently to match new end-user needs and react to possible changes in the service context. Sustainability does not just magically appear and is hard to add afterwards: it must be taken into account already from the beginning of co-production.

Ensuring sustainability of co-produced services may be very challenging in practice for the following reasons:

- Designing and implementing a new public service together can be a very inspiring and even a fun social activity - maintaining the service for years probably isn't.
- Maintenance may require skills not present in the original development team.
- Maintaining a service requires long-term commitment for the job.
- Maintenance may involve significant costs that need to be paid by someone to keep the service running.
- End-user's trust towards the service is hard to keep if nobody is giving customer support and the identity of the service provider is unclear.
- Service will quickly lose its competitive advantage or usability if not continuously improved and updated to match the current needs or changes in the service context (e.g., new regulations).

Solving the sustainability challenges listed above requires proper solutions to team engagement and financial issues discussed in Sections 1.3.1 and 1.3.2.

## 2 Co-business objectives

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The INTERLINK project defines co-business as follows:

*“Co-business emerges when a team of independent stakeholders work together towards a common goal to solve important real-world needs in a way which eventually brings benefits to everybody involved and beyond.”*

- INTERLINK -

In short, *co-business* is the force which makes co-production happen. Who would commit to a hard and long voluntary project without any hints of benefits that may eventually reward and justify the effort? Nobody. Everybody has some expectations of co-production benefits which will be discussed in Section 2.1. Co-business is needed to ensure that benefits received throughout the project are always sufficient to justify the required effort, which will engage the team to continue. Without the additional boost from co-business, the project could fall into the “*co-production chasm*” as explained in Section 2.2. Earlier attempts to address the needs of co-business will be described in Section 2.3.

### 2.1 Expected benefits

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Co-production teams may include members from very different backgrounds, as discussed in Section 1.1. Each of these stakeholder groups has their own reasons to participate in co-production projects. It is very important to understand the motives of different stakeholders and ensure that they receive the kind of benefits they are looking for. Otherwise, they will very quickly lose their interest to contribute or not join the project at all.

Figure 4 illustrates the typical expected benefits of different stakeholder groups. The four segments of the ellipsis denote citizens, businesses, public authorities, and research organizations (as mentioned earlier, see Section 1.1), while the coloured areas visualize which types of benefits could be important for them. For example, citizens are assumed to mostly seek for personal or societal benefits, while governance benefits are the key driving factor(s) for public authorities.

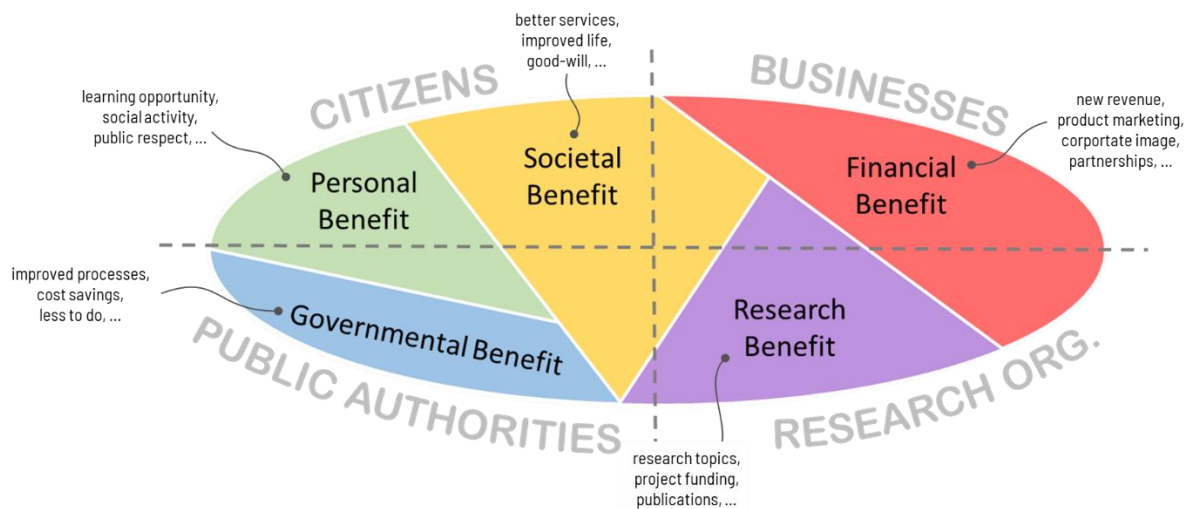


Figure 4: Expected co-production benefits

Expected benefits from co-production can be divided into the following categories:

- 1) **Personal benefit:** A person participating in a co-production project would benefit directly from the co-produced service by:
  - a. using it personally or for family members,
  - b. receiving benefits when others use it, e.g., simplified duties for public servants or for service deliverers,
  - c. getting rewards when contributing,
  - d. learning by doing,
  - e. advertising personal skills, e.g., to find a job,
  - f. social acceptance/reputation, e.g., becoming famous, or
  - g. having a fun hobby.
- 2) **Societal benefit:** Participating in co-production for the sake of common good which could bring benefits to the whole society, such as:
  - a. improved quality-of-life,
  - b. more acceptable and adopted stakeholder-driven public services,
  - c. solving a common problem/need or improving an existing solution,
  - d. helping a specific group of people in everyday life,
  - e. new kind of services not possible before, or
  - f. cost savings from improved processes.
- 3) **Financial benefit:** Participating in co-production should bring clear financial benefits to justify the effort, such as:
  - a. short- or long-term revenue to businesses,
  - b. funding for research organizations, e.g., as a research project,
  - c. new business partnerships,
  - d. intellectual properties that could be licensed,
  - e. revenue sharing opportunities,
  - f. improved corporate image,
  - g. proof-of-concept for a new technology or service, or
  - h. opportunity to learn or practice skills needed in other businesses.





- 4) **Governmental benefit:** The co-produced service would help governmental organizations, e.g., by:
  - a. helping public servants to fulfil their daily duties,
  - b. allowing citizens to participate in governance related tasks, e.g., by providing feedback and information or expressing their opinions,
  - c. improving communication between public servants and citizens,
  - d. elegantly solving something that must be done by the governance and would be complex, slow and/or expensive without the co-produced service,
  - e. from “command and control” to “propose, guide and support”, or
  - f. improving acceptance and adoption of new services.
- 5) **Research benefit:** Participating in co-production projects brings research opportunities and benefits, such as:
  - a. new (interdisciplinary) research projects,
  - b. academic publications,
  - c. thesis,
  - d. identification of new research challenges,
  - e. opportunity to evaluate new innovations in practice,
  - f. research cooperation with citizens, businesses, and public authorities,
  - g. applied science for society benefit,
  - h. justification of benefit brought back to society by financed research, or
  - i. demonstration of the social impact of research.

## 2.2 The Co-production Chasm

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The list of potential co-production benefits presented in Section 2.1 may give a false impression that everything is fine – surely those benefits are enough to keep the co-production engine running! Unfortunately, that’s not the case, which becomes clear when we take a closer look into the timeline when benefits are received.

The expected benefits of co-production can be divided into two main categories based on when they are received:

### 1) Benefits received during the co-production project:

Learning new skills, enjoying social teamwork activities, active communication between stakeholders, understanding service end-user needs, public respect, research opportunities, demonstrating skills and technologies, new partnerships, and similar benefits.

### 2) Benefits received when the co-produced outcomes are ready and in use:

All other benefits gained from the real use or maintenance of the completed service, or its impact on the society. This includes most of the financial benefits expected by businesses, process improvements urged by governance, evidence on service impact needed for research, and the promised quality-of-life improvements demanded by citizens.

Thus, a big portion of the potential benefits will be received after a long and hard co-production project, and only if the service is successfully completed and released. In fact, at some point of a co-production project, those benefits may seem so distant and blurry that they no longer justify

the significant effort required from the team. This critical phase of the project, when disbelief begins to creep into co-producer minds, has been named as the **Co-production Chasm** by INTERLINK (Figure 5).

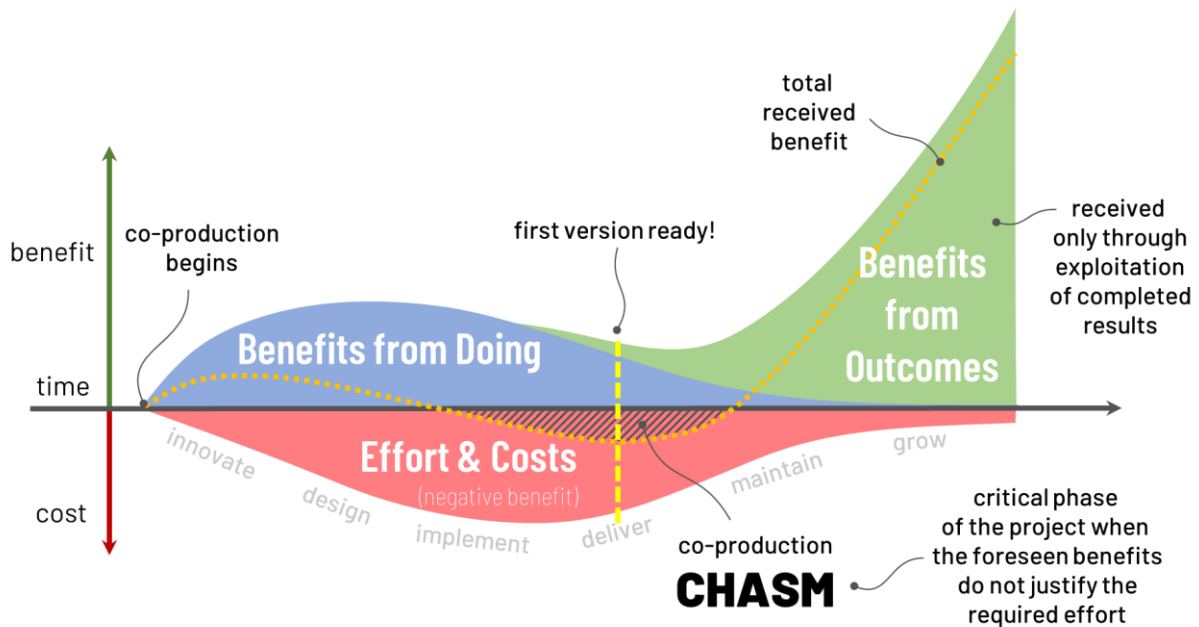


Figure 5: The Co-production Chasm

The *Co-production Chasm* is a critical phase in a co-production project when the foreseen benefits are not sufficient to justify the effort required. It is expected to occur when *benefits from doing* begin to slowly fade but *benefits from outcomes* have not yet properly raised and the required effort and costs are high. This is a deadly combination for intrinsic motivation because the total benefit received by the team at that moment may become negative as shown by the dashed orange line in Figure 5. In other words, co-production becomes a burden instead of a fun and inspiring project worth the trouble. Why would they continue?

In order to cross the chasm, some additional benefits are needed to ensure that the co-production team is motivated to carry on co-production until the point when the benefits from project outcomes begin to arise and reward the hard work. INTERLINK believes that the required extra boost could come from co-business which is supported by the whole co-production ecosystem (Figure 6).

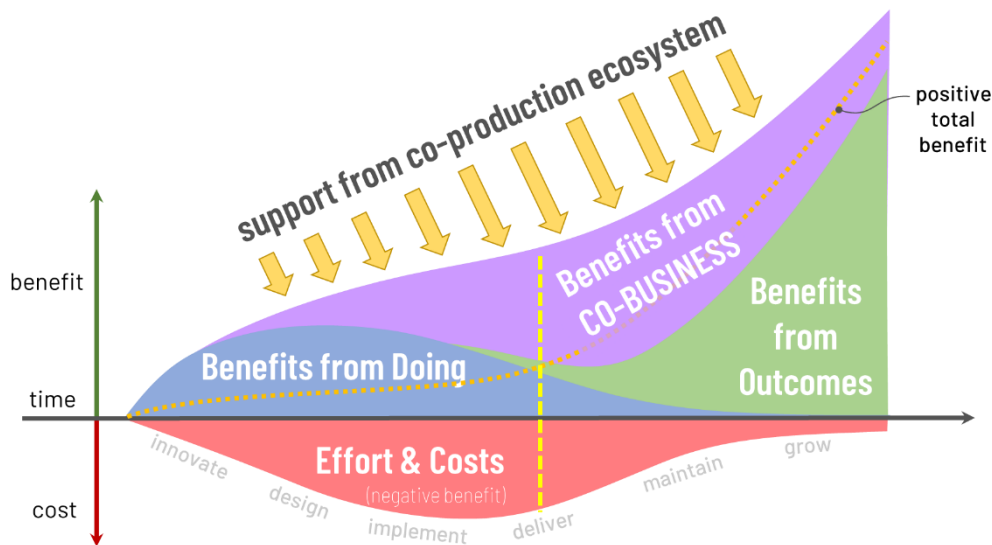


Figure 6: Crossing the co-production chasm with help of co-business

Co-business can be seen as a general objective to strengthen the benefits emerging from co-production, maximise the likelihood of receiving them, and extend them with new forms of benefits made possible by the support from the co-production ecosystem. Although the term “co-business” has not yet been used widely in the literature, the same objectives have been addressed in earlier approaches briefly discussed in Section 2.3. However, none of them has provided a complete and realistic solution to reach co-business objectives as will be presented in this deliverable starting from Section 3.

### 2.3 Earlier approaches

An extensive literature review of earlier co-production research, identified challenges and suggested solutions is presented in deliverable D2.1. Term “co-business” was introduced quite recently by the WeLive project (2015-2018, grant agreement ID: 645845) and has not yet been used widely in the literature. However, many of the challenges described in previous sections have been recognized and addressed by earlier approaches, but with slightly different terminology.

Different kinds of *incentives* are commonly suggested as a potential way to engage volunteers to participate in co-production (Voorberg et al., 2014). The basic idea is simply to somehow reward those who contribute or succeed in co-production to keep them engaged. What exactly is given as a reward and by whom varies between different approaches. For example, rewards could be public acknowledgements (Van Eijk & Steen, 2016), small material rewards (Vanleene et al. 2017), social credits (Nederstigt et al, 2019), social coins (López-de-Ipiña et al., 2021) or even financial rewards (Voorberg et al., 2018). Moreover, public events such as workshops, hackathons, challenges, or competitions, could be organized to gain more attention. Usually, public administrators (or commercial sponsors) pay the given rewards, but citizens may be allowed to choose competition winners by public voting. In addition, the concept of gamification could be applied to make co-production tasks more interesting (Morschheuser &



Hamari, 2019; Kauppinen et al., 2016). Use of incentives to stimulate co-production will be discussed more in Section 3.1.

Sustainability of co-produced public services seems to be one the weakest points of earlier approaches. In case the service has enough business potential, it could be commercialized, in which case some company (existing or a new start-up) takes the responsibility of service maintenance and further development. However, this is not a realistic option without a solid business model which can create enough revenue to cover service maintenance costs or even make the service profitable. In addition, this kind of sustainability arrangement could raise very difficult intellectual property issues - What do the original co-producers gain when some company makes good profit with a co-produced service? In order to achieve co-sustainability as the final phase of the co-production process, co-assessment/co-evaluation/co-monitoring subphases have been suggested to continuously monitor and adapt the service after its delivery (Jaspers & Steen, 2020; Bovaird & Loeffler, 2020). However, the problem of engaging people for long-term co-sustainability remains to be solved.

The co-business model developed in the WeLive project is a promising approach to ensure sustainability of a co-produced public service by commercializing it together so that every stakeholder receives a fair share of possible profits. However, the model is mostly useful when developing web services based on reusable “building blocks” and open/private data sources wherein every solution component has a clear owner. In the WeLive context, the co-production team comprises application developers, building block developers, data providers, and other members helping in non-technical matters. The developed software components and data sources are integrated via application programming interfaces to build a complete new public service application that could be commercialized for example by 1) licensing the service to public administrators who make it freely available to citizens, 2) charging a fee from service end-users, or 3) selling advertising space in the service.

The WeLive co-business model is based on the profit-sharing principle. Before making the application commercially available, the co-production team must negotiate a co-business agreement which defines service maintenance responsibilities and percentages to share possible profits. The profit-sharing percentages should reflect the importance of different solution components in the overall service and estimated effort in service maintenance. For example, if a specific building block A is the core component of a service, the provider of A should receive relatively a high percentage of the service profits as well. Also, those who are responsible for maintaining the service should be compensated with a significant share of incomes to cover their costs. Although the WeLive co-business model is very interesting and could work in some specific scenarios, it is applicable only in a limited subset of co-production projects. Thus, there is a clear need for further co-business innovations.



### 3 The INTERLINK Co-Business Model

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To overcome the challenges of co-production presented in earlier Sections, the INTERLINK project has developed a **co-business model** which will be defined in this Section. As discussed in Section 2, the main objective of co-business is to ensure that all participating stakeholders gain benefits during and after the co-production project. The solution clearly needs to involve some additional incentives, which will be discussed in Section 3.1. The INTERLINK co-business model is based on three types of incentives including collectable points, tokens and shares that will be explained in Section 3.2. These assets can be converted to others and transferred between platform users with principles described in Section 3.3. that have very interesting consequences that will be outlined in Section 3.4 and analysed thoroughly in an example scenario presented in Section 4. Furthermore, connecting INTERLINK tokens with real money and businesses creates a solid base for a self-sustainable *co-production economy*, as described in Section 5.

#### 3.1 Incentives

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The core idea of the INTERLINK co-business model is that users of the co-production platform and members of co-production teams should be rewarded immediately when they do something useful within the platform such as contributing to a given project. They should be given something that they can possess, collect, and utilize. Something that they find inspiring and pursuable as it helps them to achieve the benefits they are seeking for. Something that they may even become addicted to.

Several earlier research- and innovation projects have tried to reward users with points that can be earned from activities, organize competitions with concrete prizes such as movie tickets, or apply gamification concepts to turn co-production into an exciting race where winners get public awards. These are all great ways to engage and stimulate users and will be applied by INTERLINK too. However, they are simply not enough to make a permanent change in the long run.

The main problem with this kind of incentives is that whatever is given as a reward, it benefits only the receiver temporarily – it does not help the co-production ecosystem in the long run. Continuously organizing co-production challenges with great prizes is like giving artificial respiration to a patient who does not want to live – as soon as you stop it, the patient will die.

INTERLINK believes that the given incentives should stay in the ecosystem so that they can be used to support further co-production projects. Moreover, there should be multiple types of incentives to reflect the fact that the co-production ecosystem will comprise user profiles ranging from random visitors to co-production enthusiasts. There should be incentives easy to obtain by any users, but also incentives that are more valuable but much harder to earn. These thoughts led to the design of the INTERLINK co-business model with three types of incentives explained in Section 3.2.

#### 3.2 Key concepts

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The INTERLINK Co-Business model is based on three levels of incentives - **INTERLINK Points**, **INTERLINK Tokens** and **Co-production Shares** –each having their own specific purpose in co-business. Figure 7 summarizes the nature of these assets and shows how they relate to each other. Brief overviews of points, tokens and shares will be given in the following

subsections. However, understanding the full beauty and potential of the concept requires also reading the rest of this deliverable wherein different aspects and dynamics of co-business are explained and analysed in detail.

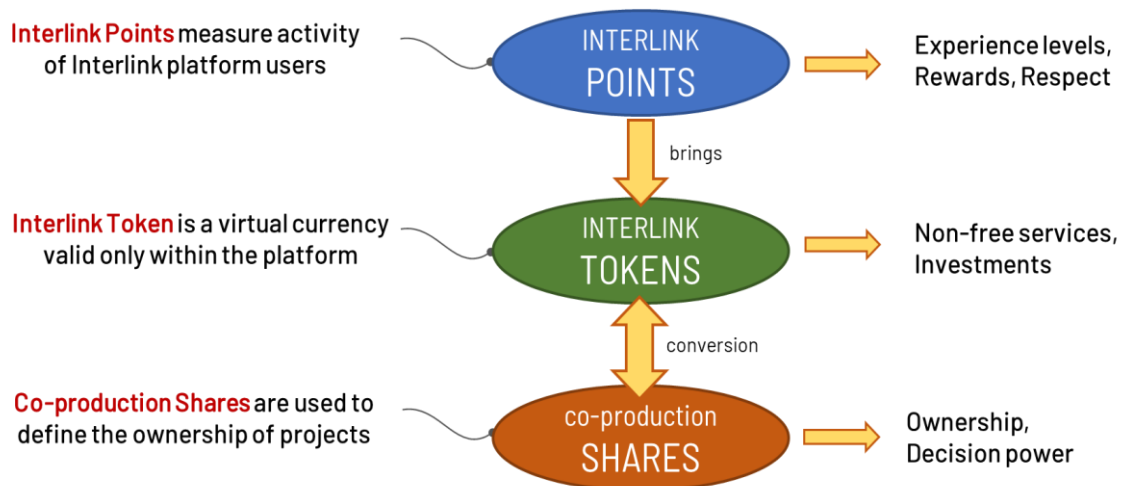


Figure 7: Key concepts of the INTERLINK co-business model

### 3.2.1 INTERLINK Points

INTERLINK points measure the activity of INTERLINK platform users. Points can be earned simply by visiting and using the platform frequently. For example, few points could be given every time a user logs into the platform, reads platform content, submits comments, likes projects, shares links on social media, votes on polls or does other similar basic actions. There is no need to scrimp with points or require any meaningful contributions. Any activity on the platform is a good thing for the ecosystem and should be rewarded immediately with points.

Points are cumulative (they only increase) and can be shown on the user's public profile to separate co-production rookies from veterans. In addition, there could be experience levels that are gained when total points exceed a certain threshold. Also, users could earn badges when they collect enough points from certain kinds of activities. For example, there could be a special badge for users that have voted more than 100 times. Furthermore, even co-production certificates could be given to users who have collected a specific set of badges to prove their skills and activity in co-production.

The number of points given per action should be decided by the INTERLINK platform operator and may vary based on special platform campaigns. For example, there could be a campaign "This week you get 10x points from comments!" to encourage users to express their opinions. Also, there could be challenges wherein users that collect the most points are awarded, and so forth.

There is nothing innovative on INTERLINK points. Similar concepts have been used successfully for ages which makes activity points a good, simple, and well-understood basic feature of the platform. However, the most interesting and unique aspect of INTERLINK points is that they can be used to claim *INTERLINK tokens*.



### *3.2.2 INTERLINK Tokens*

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An INTERLINK Token is a virtual currency which is valid only within the INTERLINK platform and has no monetary value outside. Platform users can claim tokens when they have collected enough INTERLINK points from platform activities as explained above. For example, one token could be claimed for every 100 points collected. Every user and project registered to the platform has a **token wallet** to safely store owned tokens and do transactions with them.

Co-production projects can use tokens to reward users who perform project tasks to tackle team engagement issues discussed in Section 1.3.1. Tokens are given in addition to points (earned from related platform actions) but only when task outcomes are acceptable, which makes them more valuable and harder to obtain. Urgent and important tasks can be prioritized higher by promising more tokens as a reward to find volunteers. Projects can also purchase non-free services, such as hosting or consulting services, made available through the INTERLINK platform by paying with tokens to overcome issues related to real money payments explained in Section 1.3.2. Tokens are the basis to solve many of the sustainability challenges outlined in Section 1.3.3, but first projects must get tokens from somewhere.

Platform users can support interesting and promising co-production projects by giving them tokens. In the simplest form of support, users can **donate** their tokens to projects they wish to succeed. This way, potential end-users of the co-produced service can help the project although they couldn't participate in the actual co-production work. Projects may also accept **sponsors** to get more tokens in exchange of giving sponsors visibility on project's public profiles pages. However, the most interesting and powerful form of support is **crowdfunding**: platform users can become project co-owners by investing tokens to the project and receiving **co-production shares** in return.

### *3.2.3 Co-production shares*

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Co-production shares are used to define the ownership of co-production projects. In the beginning, initial project shares are divided among the authors of the original service idea and later contributions can be rewarded with additional shares. This engages the core team even when the project does not yet have any tokens. At any point of the project, the ownership of the project is defined precisely based on the percentage of project shares owned by each team member. Shares also enable fair decision-making in the project in case the team cannot reach consensus by discussing: each share counts as one vote and the option receiving most votes will be the team's decision.

Shares of a project can be converted to tokens and back based on **project valuation** which defines the price of one project share in tokens. Project valuation can be freely decided by the team and changed at any time when the project evolves and becomes more valuable. The current valuation and its change history is shown publicly in the platform to help users find good investment opportunities and figure out whether a project task is worth doing.

Increasing the total value of a project should be an important objective for the co-production team because it maximises the success probability and long-term benefits of the project. Projects with high value increasing potential will attract investors, sponsors and donators which improves the potential even further and gives the project the means to expand the team, continue development and deliver a sustainable service with well-arranged maintenance. Furthermore, owning valuable project shares opens a solid co-exit plan for team members to finally leave the



project when the work is done and move on to new co-production challenges. The shares owned by a leaving member can be converted back to tokens so that they can be used to fuel co-production in other projects.

### 3.3 Principles

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Co-business needs to be based on clear principles accepted by all co-production participants. In this Section, the most important principles, guidelines, and best-practices to implement the INTERLINK co-business model into a co-production platform will be described.

#### 3.3.1 Transparency

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Co-business related information of co-production projects should be fully transparent and publicly visible to all platform users. All platform users should be able to check the following information about any co-production project at any time:

**a) Project objectives:**

Description of the public service to be co-produced and the main objectives of the project.

**b) Project co-owners:**

Complete list of users that own project shares and the number of shares in their possession. Platform users can define in their user profiles what personal information (such as name, nick name, contact info) they wish to be shown publicly, if any. In case the user prefers to remain anonymous, only a generated unique user id (for example “user-31875”) will be used as co-owner identity.

**c) Project valuation:**

Current project valuation (price of a share in tokens) and its complete change history.

**d) Project tasks:**

List of agreed project tasks (both pending and completed), and for each task:

- a sufficient specification of task requirements and acceptance criteria,
- the reward promised for completing the task in tokens and/or shares,
- named task owner who shall review and accept performed tasks,
- list of users assigned to the task, if already decided.

**e) Project status:**

Up to date status of the project, including:

- current co-production phase,
- estimated completion time of the current phase,
- current needs for crowdfunding, sponsors, or donations.

Publicly displaying project information listed above allows users to carefully evaluate project’s situation and potential before making decisions on possible contributions or investments. In addition, it enables a fair comparison between different projects to find and select the most





interesting one. As a consequence, it forces projects to pay attention to their public material to succeed in the competition with other projects for user's attention and contributions.

The recommended way to implement co-business transparency into the co-production platform is to create a public profile page for every registered project which comprises the required project details. Due to their high information value to platform users and continuous updates (new tasks etc.), the profile pages may become very popular and frequently shared web pages that get good visibility in social media and web search engines, which will obviously increase traffic on profile pages even more. This makes public profile pages valuable assets for the projects and helps finding sponsors by offering them visibility on the profile page.

### *3.3.2 Instant, accurate and understandable*

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Co-business related information should always be up to date to give an accurate view to the situation of co-production projects. For example, whenever a project receives new team members or investments, pays task rewards, or updates its valuation, the related updates should be performed and published automatically. Any unjustified delay would confuse users and create unnecessary doubts that lowers user experience and makes them hesitate to do those actions again. But if everything works fine and instantly, co-business can be great fun and very addictive.

Obviously, requirements for immediacy need to be addressed in the technical implementation of the co-production platform, but these are relatively easy to satisfy with modern technologies. However, the real challenge is to ensure that users understand the concept of co-business and the consequences of their actions. The terms of co-business must be agreed in advance, before the action, because there is no time or place for negotiations during it.

Although tokens are not real money, they have a real value as will be clarified in Sections 4 and 5. Always, when people do transactions with valuable assets, there is a risk of a conflict. Unless everything is perfectly clear to all parties, some consequences of the transaction may come as an unpleasant surprise and cause regrets or even anger. In extreme cases, the conflict could expand from the virtual co-production environment to the real world and cause disagreements between people and organizations. Therefore, a co-business powered co-production platform must do everything possible to ensure that users understand and accept how co-business works.

Co-production platforms are recommended to include detailed specification of co-business enabled features into the "terms of use" agreement (TOU) of the platform which must be agreed by every registered platform user. TOU should make the terms of co-business actions perfectly clear so that everybody understands the consequences of the actions. For example, it should be made clear that when a user donates its tokens to a project, the ownership of the donated tokens is transferred to the project and cannot be reverted. In other words, the user really loses the tokens. Special attention needs to be paid to terms of actions involving real money (see Section 5). Although many will skip reading the TOU before accepting it, it is extremely important to have a legally binding agreement in place to reduce platform operator risks.

In addition to well-specified terms of use, the platform should provide sufficient descriptions of the co-business actions in association with the related user interface components. For example, next to a DONATE-button shown on the project's profile page, there should be a way to view a related guide which explains what will happen if you click the button. Guides should also refer to TOU whenever possible so that the user can easily check the related terms. Actions involving transfer of ownership should be double-checked from the user before executing them.



For example, clicking an INVEST-button on project page could open a confirmation dialog with a question like “Do you really want to invest 500 tokens to this project in exchange for 60 project shares?” with options to confirm or withdraw the action.

### 3.3.3 Fairness

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*“Co-business should be tough but fair.”*

- INTERLINK -

Fairness is one of the cornerstones of co-business. It is very important that users feel being treated fairly in all situations – any sense of unfairness could poison the ecosystem with nasty comments and accusations. In fair co-business, the most active and talented co-producers are generously rewarded in ways that are transparent and acceptable by everybody else. Co-business also removes the justified reasons to be jealous about somebody’s success by recording the path that led to glory: In which projects did they participate? What tasks did they contribute? How big were the investments that they made? Who was part of the team? Based on the recorded facts, the success will just seem fair and respectful, and others can learn from it.

On the other hand, when a co-production project fails (as some inevitably will), the recorded co-business history may provide hints that explain the core reasons for the failure: They didn’t try hard enough; Their idea was not gaining interest; Their valuation was way off, and so forth. After this kind of ex-post analysis, it may feel kind of fair that the project failed – the project simply didn’t earn any better outcome. Failures are valuable lessons to learn from, and therefore should be kept visible as well.

Fairness is a built-in feature of the INTERLINK co-business model. It is only fair that those who own the most co-production project shares have the loudest voice in decision making and collect the biggest benefits from project outcomes. After all, major share owners are the ones that have made the biggest contributions to the project. In addition, the rewards given for tasks are also fair as they reflect the required effort and importance of task outcomes. When users consider accepting a task, they can evaluate the fairness of the reward and simply reject the task or make a counteroffer to negotiate the reward to an acceptable level.

## 3.4 Consequences

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Although the principles of co-business described in earlier sections are fairly simple and similar to real world businesses, applying them in the co-production ecosystem shall have remarkable positive consequences. Co-business will turn co-production into a game wherein only the active, smart, and brave players will succeed! In particular, the following built-in features of the “co-business game” are fascinating:

- To earn tokens, users need to be active and helpful in the ecosystem, which brings the platform alive and helps in growing the ecosystem further.
- Points and tokens received by users are immediate incentives that motivate them to continue being active, although completing any projects may take a considerably long time.
- Projects need tokens to co-produce efficiently. A fat wallet gives them opportunities to speed up the work by purchasing services or resources and pricing their tasks generously to find talented actors.



- Teams need to carefully think how to price their tasks. In case a task is very important and urgent for the project, a higher price tag will improve chances to get it done well and quickly. On the other hand, hard or unpleasant tasks with low rewards will be ignored.
- Teams need to carefully choose the current valuation of the project. In the beginning, the valuation should be low to welcome new co-owners and receive initial funds. Later, when some achievements are already visible, the valuation should be slowly raised to protect the ownership percentage of early co-owners. However, if the valuation is high, most task actors may choose to collect task rewards as tokens (instead of converting them to shares), which increases project token consumption rate.
- Interesting projects receive more crowdfunding, which improves their chances to succeed, which will make them even more interesting. Therefore, projects should pay attention to their public descriptions to catch the attention of potential investors.
- Ownership of the project and related intellectual properties are known precisely all the time. Everybody who owns project shares, is a project co-owner and the percentage of shares over all existing shares defines the ownership percentage.
- In case voting is needed to make project decisions, each share counts as a vote. In other words, those who have invested the most into the project (effort or tokens) shall have the strongest opinions.

When co-production teams learn to play the game, they may discover even more surprising and brilliant ways to use the tools given to them to achieve their objectives. The following Section 4 will clarify how co-business principles can be applied in practice to solve different challenges faced during a co-production project.

## 4 Analysis through an example scenario

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In this Section, the co-business model introduced in Section 3 will be explained and analysed in detail by using an imaginary example scenario. This will clarify how co-business principles and concepts work in practice during different phases of co-production, and show the impact of the co-business on the process. The example scenario will cover the whole co-production lifecycle starting from the initial idea all the way to a completed sustainable service.

### 4.1 Co-production begins

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Every co-production project begins with an initial idea or identified need for a new public service raised by few *core innovators*. In the example scenario used in this analysis, the original idea of the service was invented by a single individual “Smarty”. Smarty discussed the idea with his technical developer friend “Nerdy” who also thought it was a good idea. So, they decided to start a new co-production project together in the INTERLINK platform to develop the idea further. In addition to basic information of the new project, such as the name and a brief description, they are requested to decide and register the following information about the project in the INTERLINK platform by using the INTERLINK Collaborative Environment tools:

#### **Initial co-production team members.**



The list of team members should include everybody who has contributed to the core idea of the project or helped in starting the project. Each listed team member must be a registered platform user so that project ownership can be associated with an existing user account. In this example scenario, the initial team comprises Smarty and Nerdy.

### **Initial number of co-production project shares.**

In principle, the number of shares could be freely chosen separately by every project, because only the percentage of shares owned by team members really matters. However, to make different co-production projects more comparable with each other, it is strongly recommended to use a default share amount for new projects, which can be for example 1000, as in this example. Higher number of initial shares could be considered in cases where the project has considerably valuable assets already in the beginning (for example, a service prototype), to indicate that the initial value of the project is higher than usual.

### **Initial allocation of shares to team members.**

Team members should reach an agreement on the initial ownership of the project and allocate the project shares to everybody accordingly. In the example scenario, the only real asset of the project is the core innovation which came from Smarty, so it seems fair to them that Smart gets the majority of the shares as well (700 shares). Nerdy helped a bit on shaping up the idea and is going to play an important role in developing the service – he is the one with software development skills - so he gets roughly a third of the shares (300 shares). Throughout this example scenario, the number of shares owned by each team member is visualised in Figures as histograms, wherein the character stands upon the pile of shares, as in Figure 8.

### **Initial valuation of the project.**

Valuation of a co-production project defines the conversion ratio between project shares and INTERLINK tokens, i.e., how many tokens one project share is worth. Thus, it also defines how valuable the whole project is in terms of tokens (number of shares multiplied by valuation). However, this estimation of the project's total value is purely speculative until proven in practice. In the beginning, setting the valuation to a realistic level may be difficult and meaningless, but it plays a very significant role in later phases of co-production. In the example scenario, Smart and Nerdy decided to use initial valuation “2 tokens per share”.

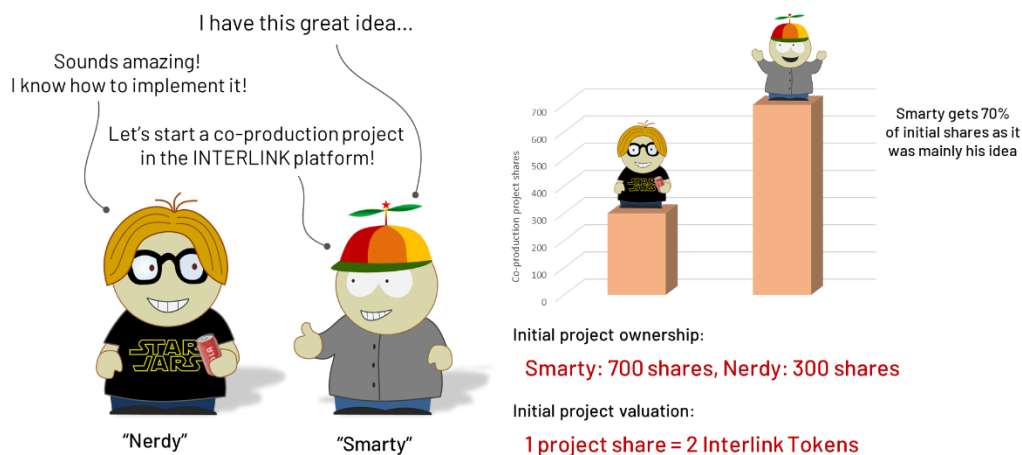


Figure 8: Starting a co-production project

All information registered when starting a new co-production project is published in the co-production platform on project's public profile pages and updated in real-time throughout the whole project lifecycle. Thus, the current ownership and estimated value of the project is visible to all platform visitors at any time. This kind of transparency is very important for co-business and serves the purpose of co-production because it helps gaining public attention for the project and increases trust towards co-produced outcomes. Moreover, platform users may find the possibility to follow projects on such a detailed level very interesting, which can engage them to actively visit the platform frequently or even participate in co-production themselves, for example by making donations as will be seen later in this example scenario.

## 4.2 Early development

Early phases and initial development of co-production projects are most likely carried out by the original core team which started the project. Although they may already believe strongly in the idea, some work needs to be done to clarify, improve and describe the idea, to also convince others and attract them to join the co-production endeavour. In some cases, it may even be necessary (or just a smart tactic) to build a prototype or other kind of proof-of-concept to show what the project is all about before inviting more people into the project. This was the case in our example scenario, where Smarty and Nerdy decided to implement a quick service prototype by themselves.

Building the service prototype requires mostly software development skills, which is Nerdy's expertise – Smarty can only help in non-technical matters. The required software development effort is quite significant – several days of work – which raises an important and challenging dilemma: *Why would Nerdy use his time to implement the prototype for a project which is mostly owned by Smarty?*

Obviously, Nerdy should somehow be rewarded from his hard work, but what does the project have to offer? All new-born co-production projects are practically broke as they have no funds, they are just an idea. The proposed co-business model brings a solution to this situation: **team members who perform project tasks can be rewarded by giving them project shares.**

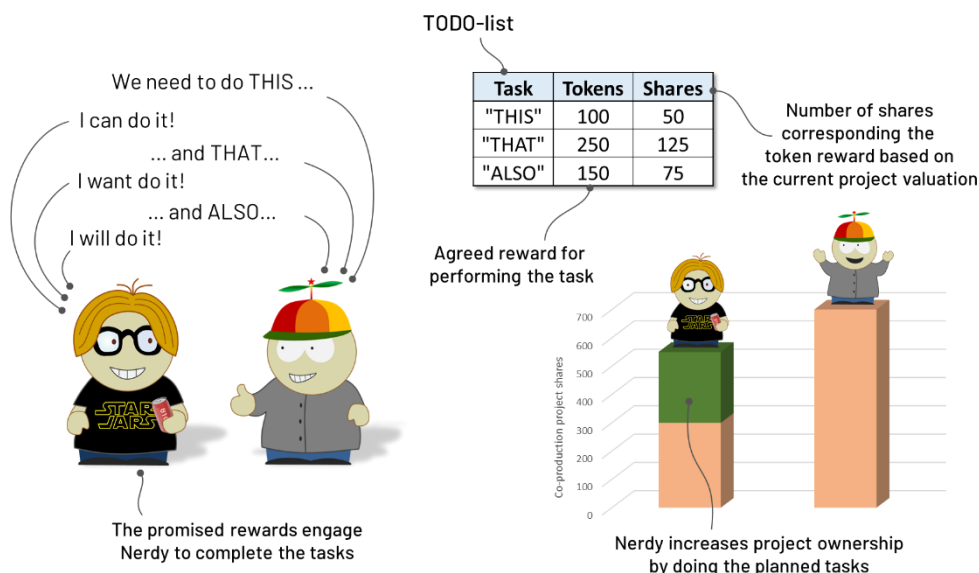
Project members need to identify and specify the tasks that should be performed and agree on the reward given to those who successfully perform the tasks. In principle, task rewards can be

paid as project shares or INTERLINK tokens, but in case the project does not have any tokens yet – as in our example scenario – only share-based rewards are plausible for new projects. It is enough to declare the reward either as in tokens or shares - the other can be calculated simply by applying the current project valuation which defines the conversion ratio between shares and tokens.

In addition, every task should have a named *task owner* who is responsible for reviewing task outcomes and deciding when the task can be marked as “completed”. While accepting a completed task, the task owner should also register new assets or improvements to existing assets that were created during the task, list all authors who performed the task and define percentages of their contribution. Task rewards will be paid to the named authors according to the defined percentages of contribution. Authors of the task will hold intellectual properties for the created/improved assets while the project is granted a right to utilize the assets within the exploitation context of the project (guidelines for co-exploitation will be specified in the forthcoming deliverable D2.5).

Agreed tasks and rewards are published in a to-do list shown on the public profile page of the project. Any platform user who is interested in those tasks, can offer her help through the public to-do list, and use collaborative tools of the platform to ask for clarifications or give feedback. When enough promising volunteers have been found, the task owner decides to whom the task will be assigned and marks the task as “assigned”.

In our example scenario, Smarty and Nerdy agreed on three software development tasks net worth of 250 project shares that were all assigned to Nerdy. Smarty was selected as the task owner, and he reviewed and accepted the application features implemented by Nerdy when they were completed. After receiving the promised 250 project shares, Nerdy had increased his ownership for the project remarkably to 44% (Figure 9).



**Figure 9: Receiving project shares as a task reward**

Project shares given as task rewards are always new shares, so they increase the total number of existing project shares, which has two consequences: 1) total value of the project increases, and 2) percentual project ownership of other team members decreases. In the example scenario,

the project was originally worth of  $1000 \times 2 = 2000$  tokens but raised to  $1250 \times 2 = 2500$  tokens after the tasks were completed, while the ownership ratio changed from 70%/30% to 56%/44%. Both consequences are fair and logical: the project will be mainly owned by most active contributors and additional work makes it even more valuable.

In fact, thinking about the relative increment of a project's total value is the best way to define fair compensation for completing tasks. When selecting the reward to be offered for a task, the team should first answer the question: *How much does completing this task increase the total value of the project?* So, they should evaluate the importance of expected task outcomes compared to what they already have (the core innovation, possible earlier tasks) to find a good and fair balance between different contributions.

### 4.3 Public credit

Basic information about project tasks, including a sufficient specification, related rewards and assigned users, should be shown on the public profile page of the project. This follows the transparency principle explained in Section 3.3.1 and allows anyone to see what the project is doing and who has contributed to it. In addition, completed tasks could be shown on the profile pages of users who contributed to the tasks. The list of tasks completed by a user can be seen as a public “curriculum vitae” (CV) of the involved co-producers.

In the example scenario, Nerdy has completed three project tasks that can be listed on his CV as shown in Figure 10. This gives him the well-earned public credit for co-production efforts which can be important for many users. Technically, the CV should be implemented so that there are links from CVs to original project tasks and back, so that users can easily browse projects, users, and tasks in order to find out how they relate to each other. Also, it should be possible to share links to CVs on social media channels so that users can advertise themselves - “I did this!” – and be discovered by co-production teams that need similar skills, or even open job opportunities outside the co-production ecosystem.

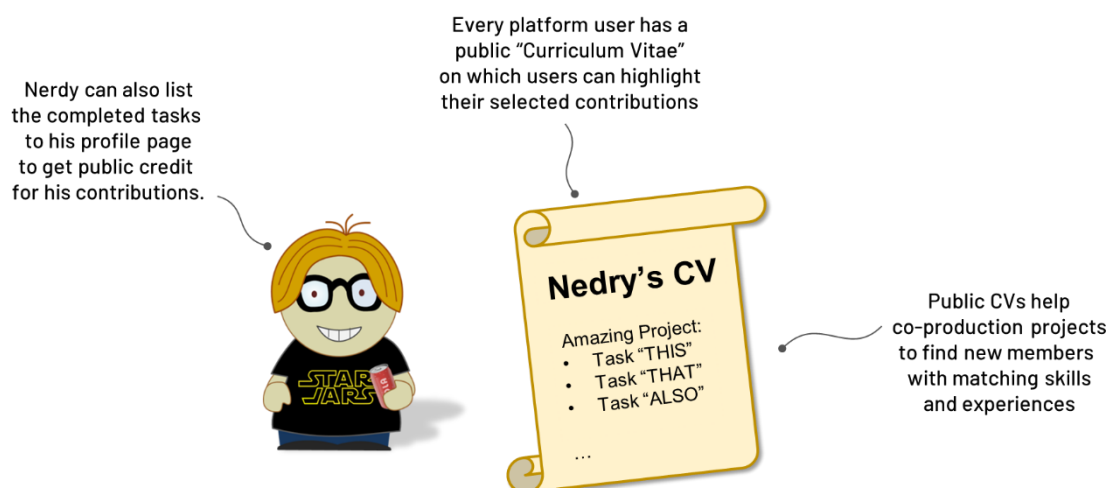


Figure 10: Curriculum Vitae of co-production

The co-production platform should also provide advanced search features to find people with specific skills and experience based on the information on CVs. For example, a project which needs a software developer could discover Nerdy from search results and contact him to offer development tasks or even take a bigger role in the project. It is very natural that talented co-



producers work on several projects simultaneously because their skills may not be needed all the time in one project, which gives them a chance to help other projects meanwhile.

#### 4.4 Team expansion

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At some point of a co-production project, the team may face a situation where none of the current team members has the skills or enough time to do a required task. So, they would need help from *someone outside the original team* to get the task done. In case the team does not know anyone suitable and willing for the task in their existing social networks, finding a talented stranger could potentially become a very challenging issue. In normal everyday life, one could simply do a web search to find a local expert and pay for the help. However, in the co-production context, one should somehow find an expert who is ready to help without direct monetary payments. *Why would any expert help the team?*

The proposed co-business model and the public to-do list explained earlier gives a solution for expanding the team with new experts. The team can define the task in their public to-do list and offer a tempting reward for it, but leave the task unassigned so that co-production experts seeking for new challenges can find it. The team should also pay attention to other project descriptions available on the project's public profile page, because potentially interested experts will most certainly take a close look at them. After all, they are considering offering their expertise in exchange for project shares which would make them project co-owners. This public information about the project should be clear, sufficient, and convincing in order to make the project look like a good investment and co-ownership offered as a reward should be high enough to justify the effort required to complete the task.

In our example scenario, the team defined a public task worth 125 shares, but also raised project valuation to “4 tokens per share”, because the prototype developed earlier was very successful and clearly yields high potential. Teams can freely adjust project valuation whenever they find necessary but should take into account that valuation change history can be publicly seen on project's profile page – projects that change their valuation frequently without clear and justified reasons may seem very suspicious. In this case, the raise of valuation reflects the true increased value of the project and therefore is justified to protect the stakes of original co-owners while inviting new members. Mindy, who notices the open task becomes interested and after checking project details offers her help, which is accepted by the task owner. After successfully completing the task, Mindy becomes a project co-owner with a 125 shares stake (Figure 11).



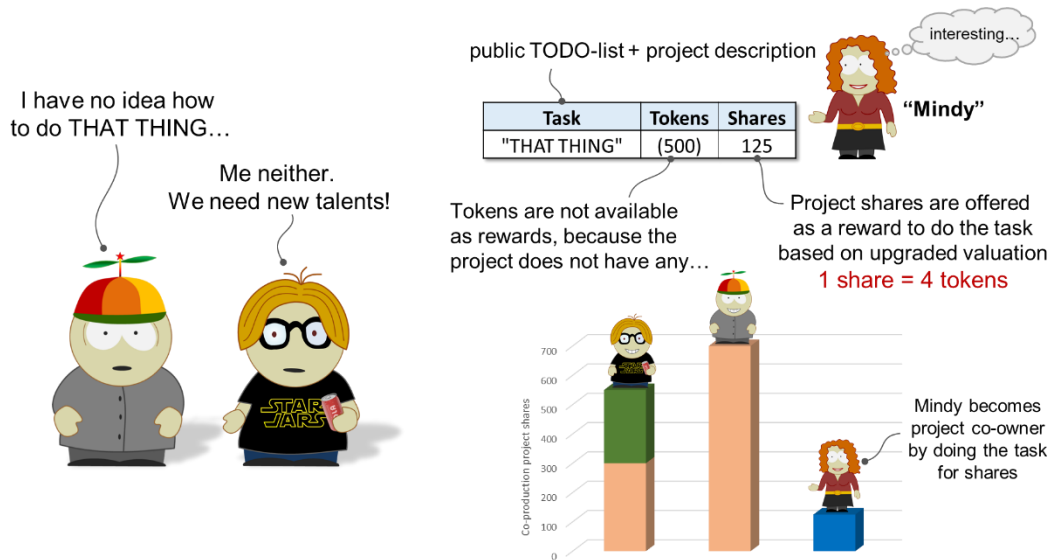


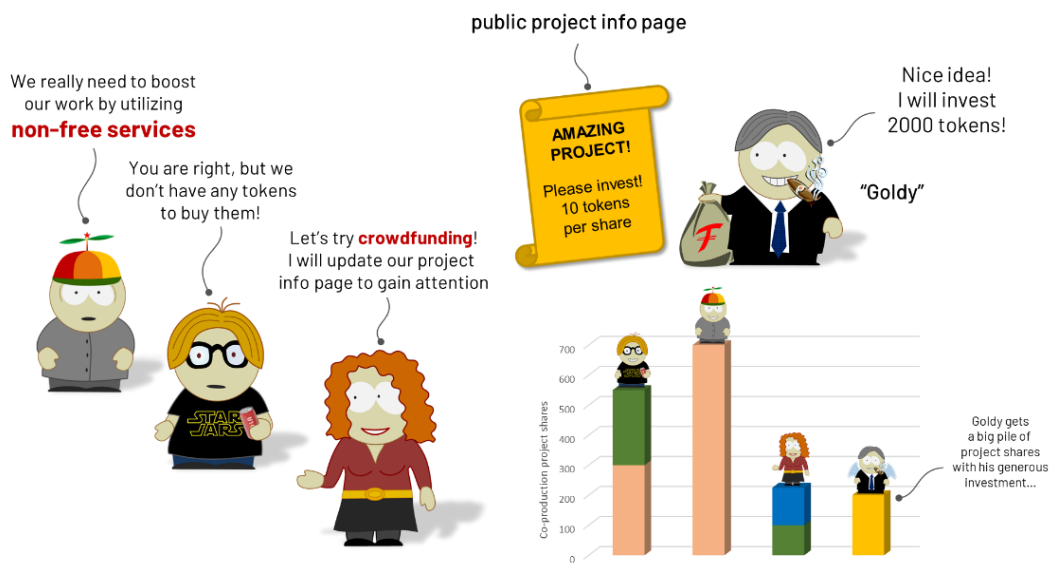
Figure 11: Expanding the co-production team with new talents

## 4.5 Crowdfunding

Eventually, the co-production project may reach a phase wherein they can no longer continue development just by offering new shares to those who perform tasks. They may need to utilise some non-free services made available in the INTERLINK platform, but how could they do that without any budget? As discussed in Section 1.3.2, co-production projects cannot make or receive payments with real money and therefore INTERLINK tokens has been suggested as a virtual currency valid only within the platform to purchase non-free services (see Section 5.2 for further insights). However, our example team does not have tokens either. What can they do now?

The proposed co-business model makes it possible to collect tokens for the project through crowdfunding. A co-production project can simply announce on their public profile page that the project is seeking investors and specify the number of tokens they need as well as the project valuation applied when exchanging the invested tokens to project shares. The process is very similar to extending the team with new experts which was discussed earlier (Section 4.4). The only difference is that instead of performing a task, the new co-owner should invest tokens into the project. Obviously, the public information about the project should be prepared carefully to convince potential investors.

In our example scenario, an investor named "Goldy" saw the crowdfunding offering on the project profile page, became interested and decided to invest 2000 tokens into the project. The applied valuation was "10 tokens per share", so Goldy received 200 project shares as a return on his investment (Figure 12).



*Figure 12: Crowdfunding a co-production project*

The fact that Goldy actually made a positive investment decision indicates that the project's valuation was roughly on the right level – or at least not too expensive from the investor's point of view. Goldy probably had many other candidate projects as well under his loop, but still chose this one. If the valuation would have been significantly higher (e.g., 50 tokens per share), some other project might have received Goldy's tokens instead. On the other hand, significantly lower valuation (e.g., 2 tokens per share) would have made the project extremely cheap and weakened the ownership of original innovators remarkably, which could harm the project by reducing core team engagement. Thus, before enabling crowdfunding, the team should carefully set project valuation to the level which is reasonable, tempting for investors and protective for the team.

Crowdfunding can be organized as a campaign-like investment opportunity with specific funding objectives or as a continuous arrangement which is open all time for any size of investments. Continuous mode also allows ordinary platform users to become "micro-investors" and support interesting projects by investing a few tokens into them. As described in Section 3.2.1, users can earn activity points simply by doing things in the platform, which can be further converted to tokens. This makes every active user a potential investor and adds interesting gamification aspects to co-production. Users can browse public profile pages of different co-production projects to find something to invest on. User's decision to invest into a project could be based on:

- **Personal importance:** The project is aiming to create a public service which has personal importance for the user as a potential end-user. Therefore, the user wishes to support the project to improve chances that the service will be successfully completed and released, although the user is not planning to actively participate in the co-production process via other means.
- **Societal impact:** The user recognizes that the project is trying to create a service which would have a remarkable positive impact on the society, although not especially useful for herself. Therefore, the user decides to support the project for the sake of common good.



- **Value raise potential:** The project looks strong and has good chances to succeed and thereby become much more valuable than currently. Therefore, the user decides to make a bet by investing in the project in the hope that it will generate some profit later. So, investing is made purely for fun or as a kind of gamble – *can you bet on the right horse?*

Users who have invested in some projects will most likely also follow those projects closely by visiting the platform frequently and checking the latest progress. So, projects should continuously update their profile pages with the latest news and plans to keep their current investors up-to-date and attract new investments. Thus, crowdfunding is an efficient way to engage platform users and bring life to the co-production ecosystem.

## 4.6 Decision Making

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Co-production projects are open for anyone to join. Although the original team may have been formed by a few good friends or close colleagues, it may evolve into a group of total strangers from very different backgrounds that try to work together. This will inevitably lead to situations where team members do not fully agree on the next steps they should take. *Disagreements may cause difficult conflicts within the team that can disturb the work or even compromise the whole co-production project.* Thus, inability to take team decisions can become a very serious issue.

Fortunately, the proposed co-business model brings an elegant and fair solution to decision making within co-production teams. In case consensus cannot be reached by discussions, the team can simply vote based on the current ownership of project share. Each team member has as many votes as owned project shares and the proposition with the most votes will become the team’s decision.

In the example scenario, Smarty would like to focus on task X but Mindy believes that task Y would be a better choice (Figure 13). To solve this issue quickly, they decide to use the team voting tool provided by the INTERLINK platform which knows about project share ownership and there can determine the winning option. This time, all other team members support Mindy’s suggestion, so task Y will be chosen as the next target plan. Smarty accepts this decision, although he is the biggest shareholder.

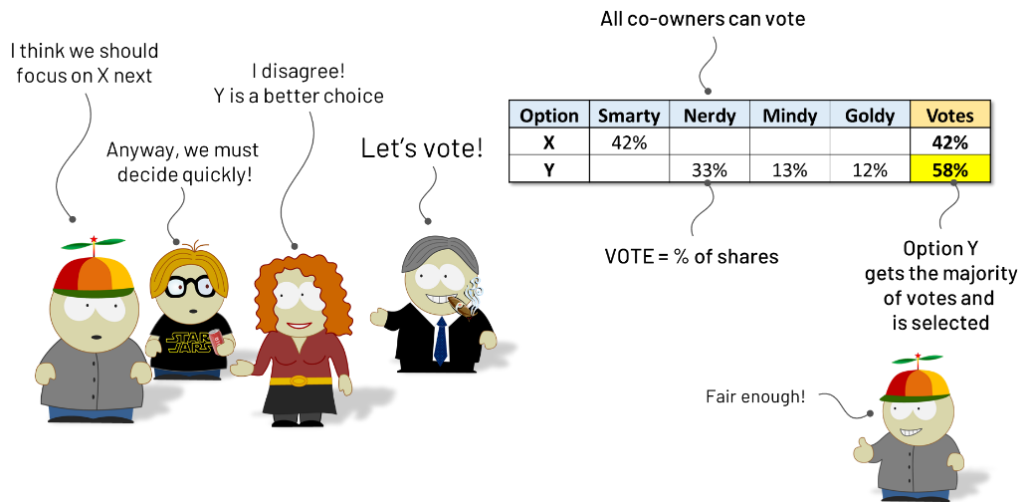


Figure 13: Decision making in co-production projects

## 4.7 Freelancers and prioritizing

Tokens received through crowdfunding can be used as task rewards instead of project shares, which is a great option for external experts who could help the project but are not so keen to become a project co-owner. This kind of “freelancers” prefer collecting rewards for completed tasks as tokens because they can be used immediately for other purposes. Paying rewards as tokens is a good option also for the project because it keeps project ownership unchanged, which helps keeping the core team engaged. Furthermore, intellectual properties for task results are transferred to the project when a freelancer is paid with tokens (unless otherwise agreed) which increases the value of the project.

Pricing of tasks can be challenging at first, though. In case the reward offered for a task is too low compared to the required effort, nobody will take it. On the other hand, if the reward is too high, the team may rapidly run out of tokens. Finding a good balance between task complexity and offered tokens is a matter of learning and prioritizing. The team could first try to set a moderate reward and wait for a while to see if somebody accepts it. If that does not happen, the team can prioritize urgent and important tasks higher by increasing the rewards until somebody is ready to take the tasks (Figure 14). Next time, with a task of similar difficulty, the team already knows a good starting point for reward levels. Checking the public to-do lists of other projects may also help to find out the “fair market price” for certain types of tasks.

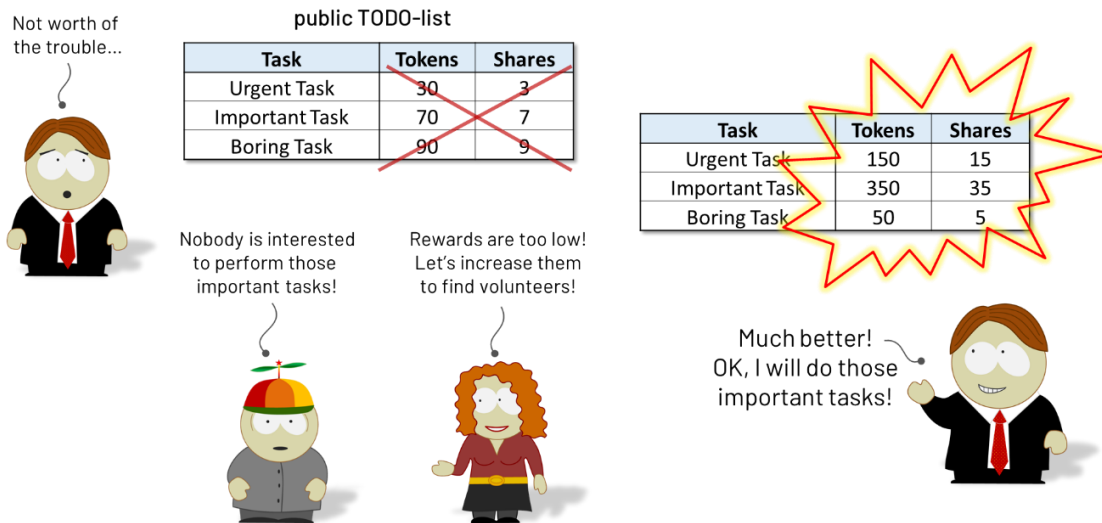


Figure 14: Prioritizing important task with higher rewards

The possibility to participate in co-production projects as independent freelancers without long-term commitments will most likely be a major game-changer in co-production. Expertise of freelancers can be utilized efficiently in multiple projects for specific tasks, but the freelancer is free to move between projects and relieved from the burden of project management and other less interesting tasks. Thus, freelancers are committed to the project only for the duration of assigned tasks and can focus on tasks they are good at.

#### 4.8 Sponsors and income sharing

Co-business has great potential to turn co-production platforms into lively ecosystems which offer something interesting to see every day as projects evolve and seek for task performers, team members, sponsors and investors. Frequently updated public profile pages and to-do lists engage users to visit project pages frequently – especially if already owning some project shares. This makes those pages a good place to display additional information such as advertisements. In other words, it opens great opportunities to earn extra tokens for the project by selling advertisement space on their profile pages.

In our example scenario, the project was contacted by a sponsor who offered to pay 1000 tokens per month if his advertisements could be shown on the project's public profile page. This sounds good for the team (they need extra tokens) so a deal is made and put into practice (Figure 15). Now the team has recurring incomes!

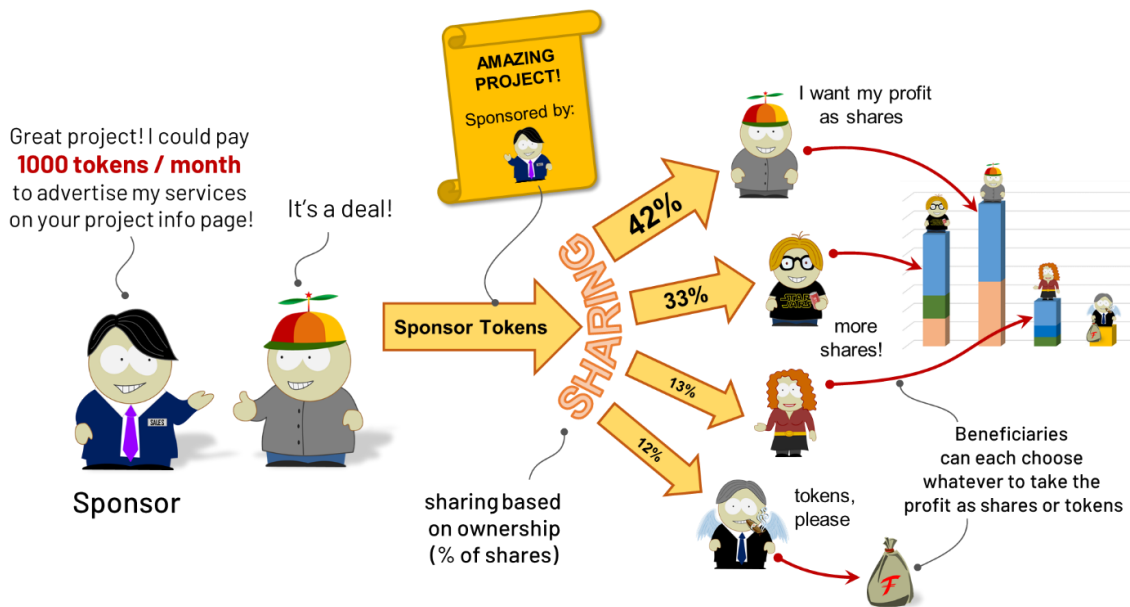


Figure 15: Sharing profits from sponsors

Incoming token flows are divided between team members based on their current ownership percentages. Each team member has two options to choose from: to collect the incomes either as tokens or shares. In our example, Goldy wants to have a quick return on his investment, so 12% of the incoming tokens are given to him (Figure 15). However, Smart, Nerdy and Mindy want to have incomes as additional shares, so the remaining tokens are added to the project and the corresponding number of shares (based on the current project valuation) is given to team members.

Ordinary platform users can also sponsor interesting projects by making donations. In this case, the sponsoring user does not need any advertisement space, but just wants to support the project by giving tokens to it for free. While making the donation, the user can choose whether to stay anonymous or should her name/nickname be added into the sponsor list shown on the project's profile page. Optionally, also the number of donated tokens per sponsor can be shown in the sponsor list.

Each team member should select the preferred way to receive incomes on its profile settings. The selected income mode is publicly shown on the project's co-owner list and may have an impact on how much donations the project will receive. In case the majority of the co-owners just want to receive quick tokens, donating does not help the project so much because tokens are given directly to those greedy co-owners. On the other hand, if the whole team is dedicated to converting all incomes into shares, donations truly help to extend the project's budget.

## 4.9 Sustainability

Poor sustainability is one of the most common pitfalls of co-production. Innovating, designing, and implementing new public services together can be a very inspiring and fun social activity – at least in the beginning – but when the process enters the maintenance phase, it may become a burden. First, co-delivery and co-maintenance tasks require different skills than earlier phases that may not yet be present in the team. Furthermore, maintaining the service for years requires long-term commitment which may not fit into plans of the original core team – perhaps they intended to do something else for the rest of their lives? Finally, deploying and operating the

service for real use may involve significant costs that must be covered somehow. If any of these aspects cannot be solved, the co-produced service is doomed to slowly fade away and fails in sustainability.

The proposed co-business model helps to ensure sustainability of the co-produced service already before releasing it. As discussed earlier, the project can receive incomes in forms of donations, sponsorships and crowdfunding that allow purchasing required maintenance services from freelancers and platform operators (Figure 16). So, the original team can delegate maintenance and end-user support tasks to external experts and focus on further development or other projects.

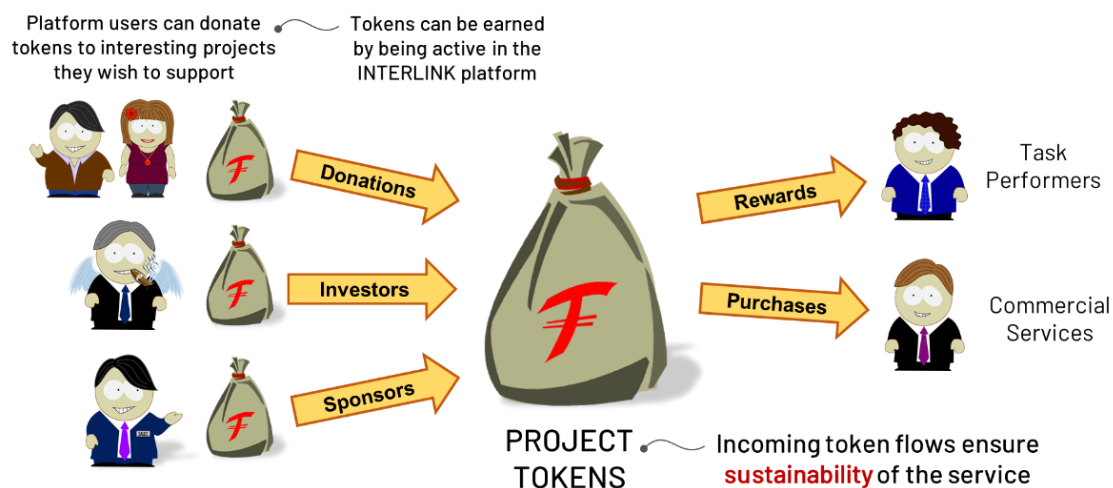


Figure 16: Using tokens to ensure service sustainability

It should be noted, however, that only the fittest services will survive. The incoming token flows are highly dependent on popularity and importance of the service. In case the great audience loses their interests towards the service, the flows of tokens will quickly shrivel until further maintenance is no longer possible. Thus, the laws of the jungle apply also in co-production – be the strongest or die. However, if the service is truly good and necessary, the active co-production ecosystem will keep it alive by funding and improving it further. In a way, donations and investments are a kind of voluntary payments for using the service although the actual service would be available for free.

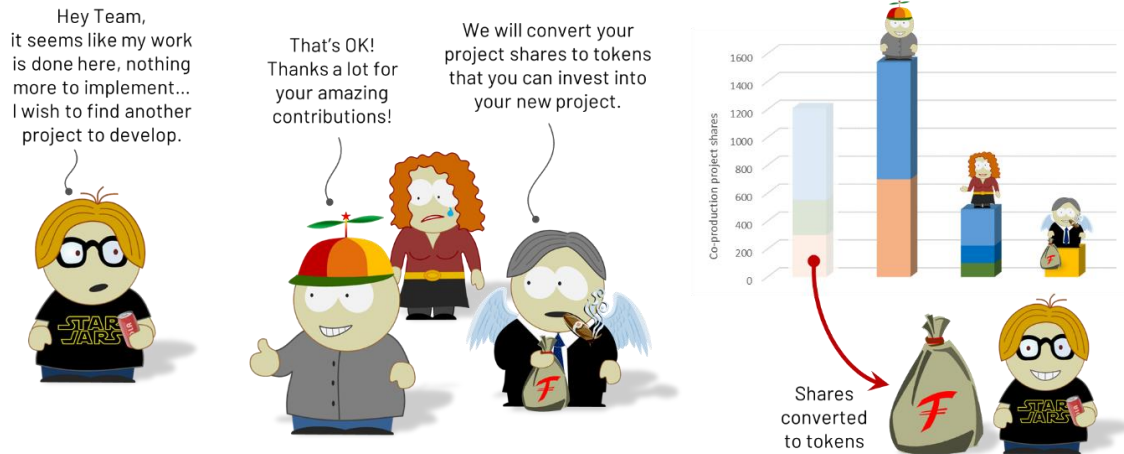
#### 4.10 Co-Exit

Co-production of a service is just a project - it's not meant to last forever. There should be a way to exit the project when the time has come, when there are no longer reasons to stay. INTERLINK calls this phase of the project the **co-exit subphase**, while earlier approaches seem to have forgotten it totally. Of course, one could just disappear from the project, but that would leave the participant empty-handed (nothing concrete gained) and possibly compromise further collaboration with the same people.

The proposed co-business model offers an elegant way to leave a co-production project with a smile and well-earned concrete benefits. The solution is to convert the project shares owned by the leaving persons into tokens (Figure 17). This way, the ex-member can utilize the tokens in other co-production contexts, for example by investing them to another project. At the same



time, the relative ownership of remaining team members increases because the project now has fewer total shares, so they shouldn't have much to complain either.



*Figure 17: Exiting a co-production project with a smile and tokens*

However, co-exiting is possible only when the project has enough tokens to pay for the shares. Typically, the total value of the project (number of shares multiplied by price per share) is much higher than the number of tokens currently in project's possession, so collecting the required tokens may require some arrangements and time. If the project is on solid base, it shouldn't be too hard to find an investor who can invest the tokens or buy the shares from the leaving team member directly. However, if finding the tokens becomes an issue, that may indicate that project valuation is too high and should be decreased.

Existence of a proper co-exit plan makes joining the co-production team easier in the first place. The person joining a co-production project may be relieved to know that it is perfectly possible and acceptable to leave the project when it is time to move on. Another positive consequence is that co-producers can easily move between projects to be in the right place at the right time when their expertise is needed. This will improve the overall efficiency of the co-production ecosystem.





## 5 Co-production economy

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In principle, most aspects of the proposed co-business model could be implemented without any connections to real money. In such a case, the only source of tokens would be the activity of users. As explained earlier, platform users can earn INTERLINK points by doing certain simple activities within the platform, such as logging in, writing comments, sharing links, and so on. When enough points have been earned, they can be converted to INTERLINK tokens that can further be used to support projects by making investments or donations. Basically, this could already be enough to populate the platform with tokens that circulate from users to projects and back as rewards. However, starting the co-business ecosystem this way would require a lot of time. In addition, a very critical problem remains unsolved: *where does the platform operator get funding to run the platform and provide required services?*

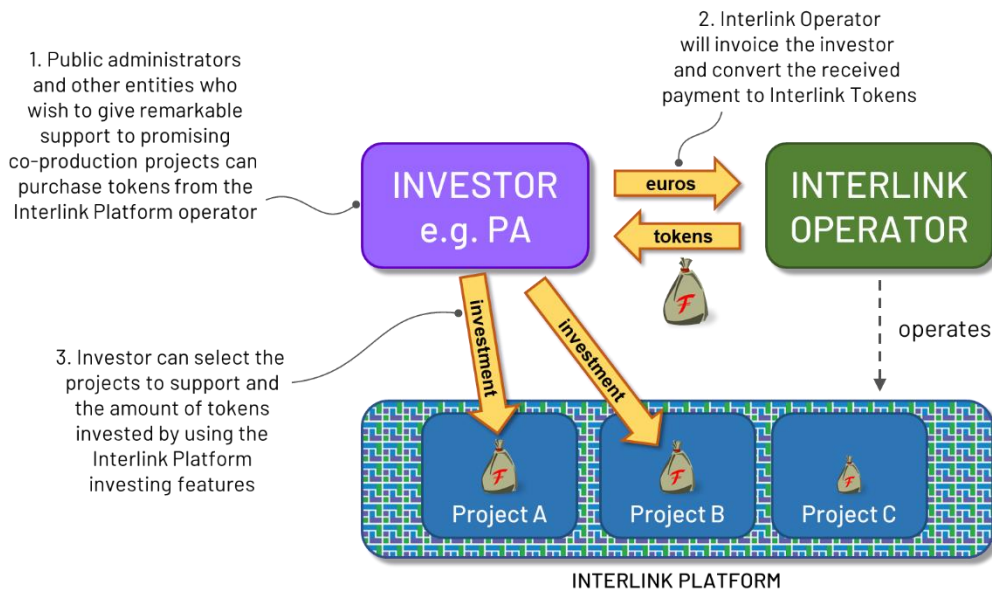
In this section, we will describe how the proposed co-business model can form a solid base for a **co-production economy** which links seamlessly to real world businesses and is self-sustainable. First, Section 5.1 describes how “big investors” such as public administrators can stimulate co-production with real money. In Section 5.2, a solution for providing non-free commercial services will be presented. Finally, Section 5.3 wraps everything together and summarizes all co-production economy elements and flows.

### 5.1 Real money investments

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Many public administrators (PA) believe that the co-production of new public services will benefit the society and improve the quality of life by solving important needs of citizens. Therefore, PA's are eager to promote and stimulate co-production projects but they have very limited ways to do that in practice. Organizing hackathons, challenges, workshops and competitions, and providing tools, facilities and open data may help boost co-production activities for a while but keeping up the enthusiasm requires a lot of continuous effort and an endless budget.

**The INTERLINK co-production platform and co-business model offers a new efficient channel to support co-production.** Investors, such as PAs, who would like to help promising co-production initiatives can purchase INTERLINK tokens from the INTERLINK platform operator and invest the received tokens to co-production projects they wish to support, as shown in Figure 18.



*Figure 18: Purchasing tokens with real money and investing them into projects*

In practice, the operator will send a normal invoice to the investor with the agreed amount to be invested. At this point, the final investment target does not need to be specified and the invoice can be written for “co-production services” or something similar. As soon as the invoice has been paid, the operator will add the purchased tokens to the token wallet of the investor's user account. After that, the investor can use the normal platform tools to invest tokens to promising projects.

Alternatively, in case the investor is too busy to evaluate candidate projects, the platform operator can do project investments on investor’s behalf. In fact, the operator can sell this kind of “auto-invest-service” to PAs as a regular subscription. For example, a PA and operator can make an agreement that for a fixed monthly fee paid by the PA, the operator will invest 5000 tokens every month to the most promising co-production projects on PA’s behalf. Thus, co-production teams see PA as the investor although it actually was the operator who made the investment decisions. This kind of arrangement could be a win-win situation for all: super easy for the PA, financial stability for the operator, and direct support for co-production projects which fuels the whole co-production economy.

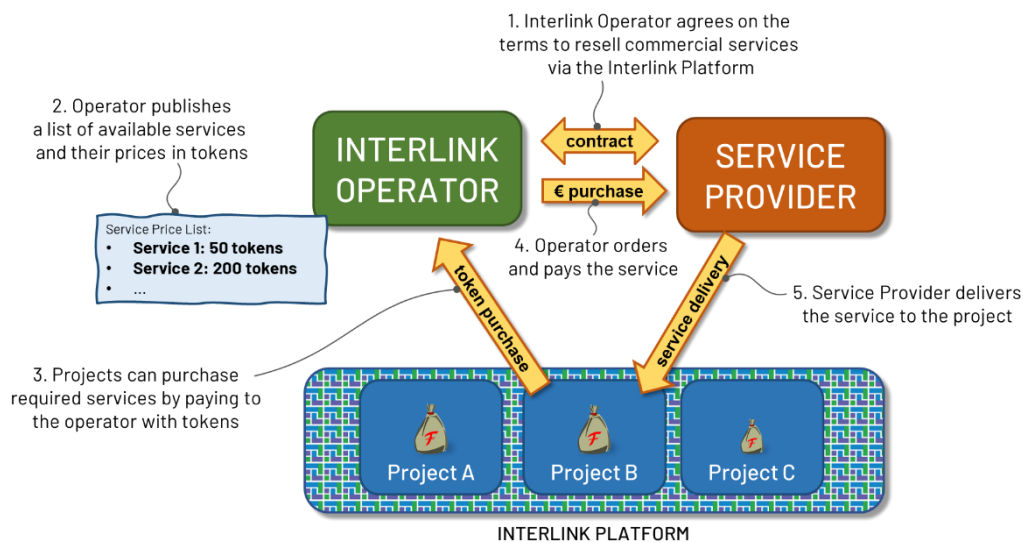
Commercial sponsors may utilize the same process to purchase tokens from the operator through invoicing. Their intention is not to make investments to projects, however, but to use tokens for buying advertising space from profile pages of popular projects. In case sponsoring brings the expected benefits in form of increased sponsor visibility, it is possible to negotiate a continuous subscription-like agreement with the sponsor as well. For example, the sponsor could purchase more tokens monthly from the operator to continue sponsorship agreements made with projects.

## 5.2 Access to commercial services

Co-production projects cannot make real money payments for reasons discussed in Section 1.3.2. However, they can utilize non-free services made available through the INTERLINK

platform (e.g., hosting or consulting services) by paying with tokens. This solves the needs of co-production teams but doesn't remove the fact that service providers must still be paid with real money.

In the INTERLINK co-business model, the platform operator acts as a service broker for non-free services purchased from commercial service providers (Figure 19). The operator negotiates a deal with the service provider, if necessary, wherein parties agree on the terms for reselling specific services via the INTERLINK platform and define the price, quality, and availability of the services. In case the service can be purchased online whenever needed, there is no need for a reselling agreement. Finally, the operator publishes a description of services and their prices in tokens on the platform, so that co-production teams can see what kind of services are available.



*Figure 19: Making commercial services available to projects*

Co-production projects can purchase access to a service by making a service order using the platform tools and paying the specified price with tokens. Platform operator receives the service order and makes the actual order to the corresponding service provider who delivers the actual service to the client project. Service delivery details depend on the nature of the service.

For example, co-production teams may need a virtual server to host a new public service implemented as a web service. This kind of services could be purchased from big cloud computing providers such as Amazon, Google or Azure or from smaller local companies. The operator pre-defines a few different server setups (how much CPU, RAM, disk, etc.) that seem most suitable for typical co-production projects and selects the best provider per setup. In this case, reselling agreements are not needed when ordering from big cloud computing providers (new virtual servers can be purchased online when needed), but smaller companies might be ready to give some volume discounts (worth trying). When a project orders a specific virtual server setup, the operator purchases it from the selected provider and delivers sufficient information on how to access the server to the team.

Another good example of services often needed in co-production are different consulting services. For example, the team may need some training to use a specific designing tool which could be provided by a small local training company. In this case, the operator should make a reselling agreement with the company because it may lead to significant discounts compared to

their normal price list. The concrete service offer published on the platform could be something like “3 hours of training: 300 tokens”. When a team orders training services, the operator pays for it but lets the consultant agree on service delivery details (when/where/how?) directly with the team.

### 5.3 Co-production ecosystem

Connecting real money payments with the co-business model based on virtual money (tokens) and shares complements the framework and enables the rise of the co-production economy. Figure 20 depicts the whole co-production ecosystem and shows how tokens, shares and money flow between parties.

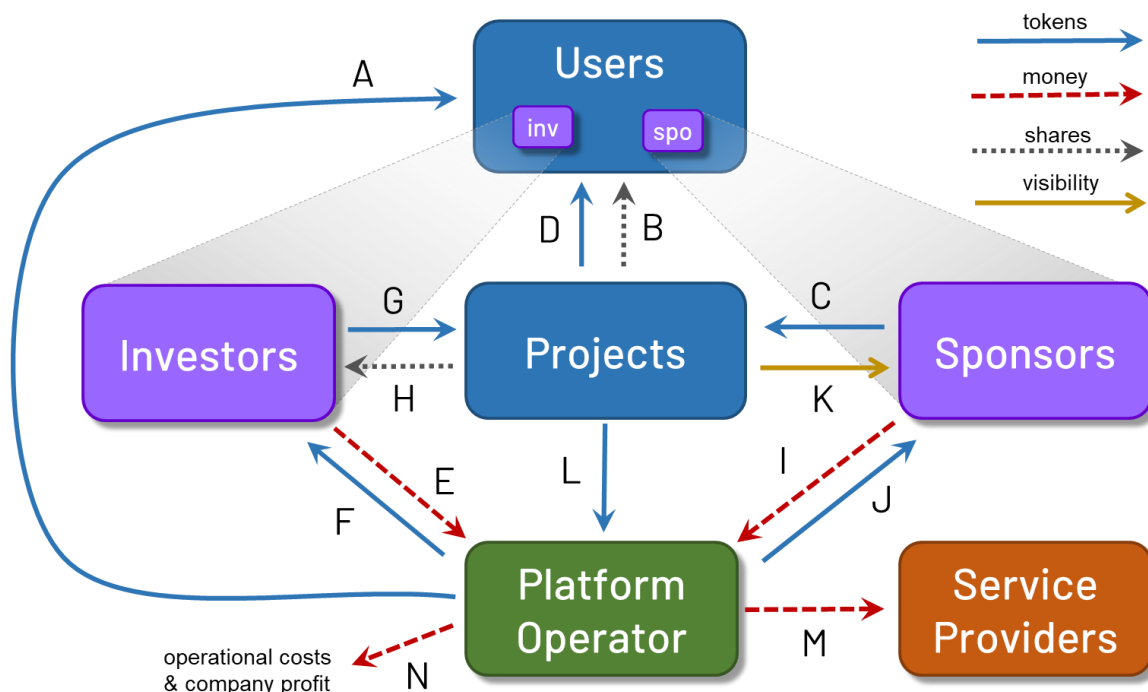


Figure 20: Co-production ecosystem

The key roles of the ecosystem shown in Figure 20 comprise:

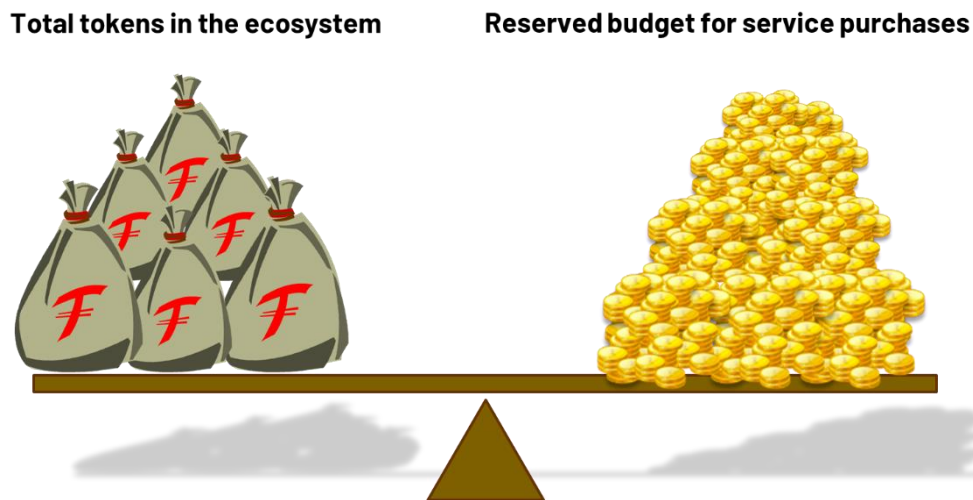
- **USERS:** Registered users of the co-production platform. Users include two important sub-groups:
  - **INVESTORS:** Users that also make investments to co-production projects (e.g., PAs)
  - **SPONSORS:** Users that also act as project sponsors or give donations to projects.
- **PROJECTS:** Co-production projects registered into the platform.
- **PLATFORM OPERATOR:** Legal entity which operates the co-production platform. Must be capable of receiving payments, sending invoices, purchasing services, and signing contracts. For example, a start-up company.
- **SERVICE PROVIDERS:** Providers of commercial services needed in co-production, typically businesses.



Figure 20 also includes four types of arrows explained in the upper right corner. Blue arrows indicate flows of tokens, i.e., how ownership of INTERLINK tokens are transferred between parties. Dashed red arrows indicate real money payments between parties. Dotted black lines indicate how ownership of co-production project shares are transferred. Each arrow has been named with a letter and explained below:

- A. Users are given tokens based on their activity on the platform.
- B. Users performing tasks for a project are rewarded with project shares.
- C. Users sponsor projects by giving them tokens either as donations (no return favour expected) or as payments for increased visibility on project’s profile page (see arrow K).
- D. Project pays rewards to task performers in tokens.
- E. Investors purchase tokens from the operator with real money.
- F. Operator delivers purchased tokens to the investor.
- G. Investor makes an investment to a co-production project.
- H. Project grants investors shares corresponding the invested token
- I. Sponsor purchases tokens from the operator with real money.
- J. Operator delivers purchased tokens to the sponsor.
- K. Sponsor gains extended visibility on project’s public profile page.
- L. Project purchases non-free service from the operator with tokens.
- M. Operator purchases commercial services from the service provider with real money.
- N. Operator revenue which exceeds service budget is used to cover other operational costs and increase operator’s profit.

The remark on the description of arrow N about service budget is very important. Although tokens are just “virtual currency valid only within the platform”, they can be used to purchase commercial services from the operator which requires real money payments to service providers. This means that the platform operator should have a reserved budget for service purchases which is sufficient to cover service expenses. In theory, to cope with the worst-case scenario when everybody uses all their tokens to buy services at the same time, the operator should have a service budget which matches the total value of tokens in the ecosystem (Figure 21).



*Figure 21: Balance between ecosystem tokens and service budget*

In practice, a much smaller budget should be sufficient to operate the platform. In the expected normal situation, the majority of the tokens are in possession of platform users, just waiting to be invested, and projects use only a small portion of their tokens to purchase services. The situation is analogous to how banks work: their cash reserves are only a fraction of the total sum of savings on bank accounts. In case everybody would withdraw their savings simultaneously, the bank would go bankrupt. However, because that kind of event is highly unexpected, banks can safely invest the majority of deposits to get bigger profits. Platform operators can do the same which releases cash for other operational expenses.

## 6 Validation plan

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The co-business model presented and analysed in this deliverable has clear potential to solve several key issues of co-production. However, it is still only a theory, which hasn't been proven in practice yet because project pilots are scheduled to begin after the submission of this deliverable.

The plan is to validate the key aspects of the co-business model during the second pilot phase of the project (M27-M33). Running co-business experiments in practice requires significant further technical development of the INTERLINK platform which will be based on the detailed specifications presented in this deliverable. However, full scale implementation of the co-business model with all advanced features, including real money payments and commercial services, would be outside the scope of this research project. Therefore, the initial technical support and pilot experiments will focus on the basic co-business features such as collecting points, claiming tokens, making donations, managing tasks and rewards, and investing in projects.

In addition, the core assumptions about the expected co-production benefits per stakeholder group (Section 2.1) will be validated and adjusted based on pilot participant interviews or online questionnaires. After the pilot, the same persons will be contacted again to find out how the received benefits matched their earlier expectations.

Officially, task T2.4 ends after submission of this deliverable, but co-business model analysis will be continued in a closely related task T2.5 focusing on co-exploitation. The presented co-business model is the base also for co-exploitation, so it is natural to continue work in T2.5 and present the results of co-business validation in deliverable D2.5.

## 7 Conclusions

This deliverable has presented the outcomes of the INTERLINK project task T2.4 “Design and analysis of co-business models”. First, the needs for co-business were analysed from the perspective of expected co-production benefits by different participating stakeholders (Sections 1 and 2). The main weakness of co-production was clarified by introducing a new co-production chasm theory to highlight that initial and future benefits may not be enough to justify the effort needed in the hardest phases of co-production projects. It was concluded that additional incentives are needed to engage co-production teams during the co-production project, but the approaches tried earlier are not sufficient because they lack important elements of sustainability.

The novel co-business model created by the INTERLINK project has the potential to start a new era in co-production by solving the key issues related to engagement and sustainability. The key concepts and principles of the INTERLINK co-business model were first introduced in Section 3 and then analysed thoroughly in Section 4 with an example scenario covering the whole co-production lifecycle summarized in Figure 22. The co-business model can also be connected seamlessly to real money and business as shown in Section 5 which creates a solid ground for the co-production economy. The plans to validate the proposed co-business model and underlying core assumptions during the forthcoming pilots were described in Section 6.

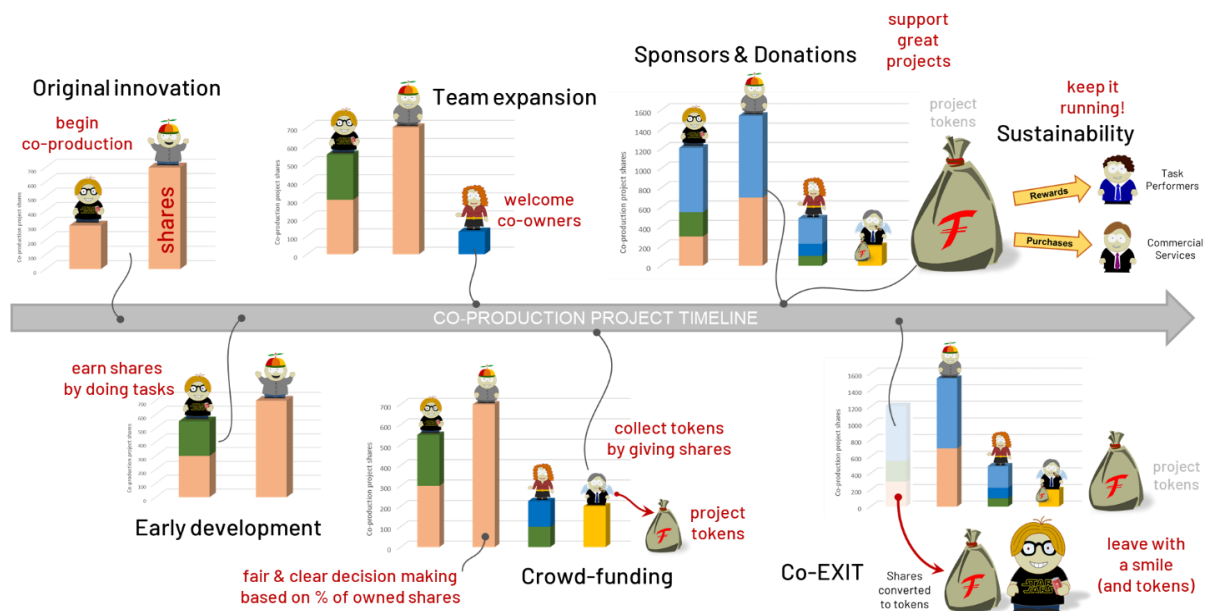


Figure 22: Co-business in different phases of co-production

The INTERLINK project believes that the presented co-business model combined with sufficient technical support by the INTERLINK platform has the potential to become **self-**



**sustainable.** In other words, the emerging co-production ecosystem would stay alive, grow, and evolve on its own simply because it is **beneficial to every stakeholder.**



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