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## **D3.6 Trust in Data Markets v1**

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## 2 Executive Summary

Trust is generally considered as a crucial aspect affecting social interactions. Due to its universality, its role and functions have been studied in various disciplines, including economics, psychology and philosophy. Nonetheless, a comprehensive overarching definition of trust is still missing.<sup>1</sup> Within D3.6 and D3.7, we aim to define key characteristics of trust in the data markets, combining two legal research methods: desk research (literature review), and empirical research (survey and semi-structured interviews).

Within Safe-DEED project, one of the main goals is to foster and re-define the notion of trust in the data market context. Accordingly, two deliverable are going to be developed. In D3.6, the literature review will provide capita selecta of the key theories that have been developed around the concept of (interpersonal) trust and e-trust, in particular. In D3.7, the focus of the literature review will be on the notion of trust in the data market context. The outcomes of such investigation will be combined and substantiated with the results of the empirical research. Finally, in D3.7 we will be develop a list of recommendations for the relevant stakeholders, including platforms, end-users, policymakers and legislators, to increase the level of trust among the parties in the data marketplaces.

## 3 Deliverable Structure

The deliverable D3.6 is divided into three parts.

In the first part (Section 4) of deliverable D3.6 the leading theories developed on interpersonal trust, mainly produced in the social science context, are described. Such approach intends to help the reader to understand the main characteristics of the concept of trust. Subsequently, specific attention is paid to the development of the notion of trust in the online environment (so-called “e-trust”).

In the second part (Section 5), the methodology of this study is described. In particular, the main tasks, goals and research steps are outlined.

In the third parts (Section 6) sample questions that will be used to conduct the empirical part of the research, namely a survey, are listed. The presented questionnaire revolves around two main axes, i.e.: trust and privacy (B2C), and the organizational trust between platform peers (B2B).

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<sup>1</sup> Mariarosaria Taddeo, Luciano Floridi, *The case for e-trust*, Ethics Inf Technol, 13:1–3, Springer Science+Business Media B.V. (2011).

## 4 Introduction: the Concept of (interpersonal) Trust

Seppänen affirms there are more than 70 different definitions of trust.<sup>2</sup> Due to its strong context-dependence, defining trust is a challenging exercise. The definition of trust might vary according to the domain where such term is applied.

From the standpoint of psychologists, *'trust is one of the key aspects of [...] daily interactions.'*<sup>3</sup> *It has to do with the child expanding its view of the world by learning from others, developing strong ties with primary caretakers by building what has been called "basic trust". This basic trust is a necessary condition to build up trust with other people and institutions further away from the safety of the home.'*<sup>4</sup> Thus, psychologists observe trust from the perspective of interactions between human beings in their daily life, so-called interpersonal trust. For economists, *'trust has to do with calculation and risk-assessment, averting negative outcomes'*<sup>5</sup> and is preserved in the context of business relationships. Trust in the business context is often referred to as interorganizational trust.<sup>6</sup> In particular, it often deals not with the interactions and feelings of human beings per se but revolves around business relationships between legal entities. For sociologists, *'trust is the cement or social capital of society, or and an important enabler of social interaction.'*<sup>7</sup> For philosophers, *'trust is closely connected to autonomy, and it has been acknowledged as a necessary condition for a healthy democratic state.'*<sup>8</sup>

The difficulties of defining trust have become even more challenging when such term has been declined in the online world, where virtual (personal or business) interactions replace physical ones. The increasing dependence of users on smart artefacts leads to new fundamental questions in the discussion on trust.

Due to its multiple implications, nowadays, the debate around trust is no more relegated to the social science context but is a multidisciplinary topic, which involves experts coming from different domains such as philosophy, law, economics, ethics and computer ethic.<sup>9</sup>

<sup>2</sup> Seppänen R., Blomqvist K., Sundqvist S., *Measuring inter-organizational trust-a critical review of the empirical research in 1990-2003*, Industrial Marketing Management, Vol. 36, Issue 2 (2007) in Esther Lieve Omer Keymolen, *Trust On The Line: A philosophical exploration of Trust in the networked era*, Erasmus University Rotterdam (2016).

<sup>3</sup> DeSteno, David. "Who Can You Trust? Before Putting Faith in Others, Consider These Four Principles." *Harvard Business Review* 92.3: 112. (2014).

<sup>4</sup> Esther Lieve Omer Keymolen, *Trust On The Line: A philosophical exploration of Trust in the networked era*, Erasmus University Rotterdam, (2016).

<sup>5</sup> Guido Möllering, *Trust: Reason, Routine, Reflexivity*, Amsterdam: Elsevier, (2006). See also Esther Lieve Omer Keymolen, *Trust On The Line: A philosophical exploration of Trust in the networked era*, (2016) Erasmus University Rotterdam.

<sup>6</sup> Vanneste, Bart S., *From Interpersonal to Interorganisational Trust: The Role of Indirect Reciprocity*, *Journal of Trust Research* 6.1 (2016): 7-36. Web.

<sup>7</sup> Barbara Misztal *Normality and Trust in Goffman's Theory of Interaction Order*, *Sociological Theory* 19.3: 312-24. (2001).

<sup>8</sup> Esther Lieve Omer Keymolen, *Trust On The Line: A philosophical exploration of Trust in the networked era*, (2016) Erasmus University Rotterdam. See also David Archard, Monique Deveaux, Neil Manson and Daniel Weinstock, *Distrusting the Trustworthy: Reading Onora O'Neill*. Routledge, 196-208. (2013).

<sup>9</sup> Mariarosaria Taddeo, Luciano Floridi, *The case for e-trust*, *Ethics Inf Technol* (2011) 13:1-3, Springer Science+Business Media B.V. (2011).

D3.6 provides capita selecta of key concepts that have to be taken into account when speaking of trust.

## 4.1 Key elements that define trust

Two main factors have to be considered when analyzing trust: the agents involved, and the context where the interaction between such agents takes place.

Generally, trust is considered as a social function established, in its elementary form, between two different individuals: an agent (the trustor) and another agent (the trustee). In principle, both parties have certain expectations for one another. In particular, the trustor believes that the trustee will meet certain expectations.<sup>10</sup> At the same time, the trustee has faith that the trustor will also hold his part of the ‘bargain’.

The relationship between the trustor and the trustee assumes different declinations according to the social context where the interaction takes place. According to Weckert, trust is a variable social element through which one individual interacts with another individual and with the environment. The relationship between agents is not isolated but might vary according to social context, history, and interactions of other actors.<sup>11</sup> In particular, the context where the interaction occurs plays an important role. The reputation the agents have in a given context might also determine the nature of their relationship (e.g., ‘I trust you because you have a good reputation’ approach).<sup>12</sup>

## 4.2 Main theories on trust and e-trust

In this sub-section, a brief description of the main theories developed around the notion of trust is given, namely, the one developed by Luhmann and Gambetta. Given by the abstract nature of the theoretical framework developed the theories developed by Luhmann and Gambetta are easily applicable in different domains.<sup>13</sup>

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<sup>10</sup> Wolter Pieters, *Explanation and trust: what to tell the user in security and AI?*, Ethics Inf Technol, Springer (2011), p. 57.

<sup>11</sup> Weckert, J., *Trust in Cyberspace*, in R. J. Cavalier (Ed.), *The impact of the internet on our moral lives*, Albany: University of New York Press (2005).

<sup>12</sup> According to Ȧzderska and Jerman Blȧzi̇ ‘*Reputation should be intended as the empirical memory about an entity’s past behavior, performance, or quality of service, in a specific context, i.e., domain of interest. Hence, reputation is a quantitative representation of trustworthiness bounded by the domain of interest. It results from calculation and assessment and is based on facts rather than mere opinion and belief.*’ Tanja Ȧzderska and Borka Jerman Blȧzi̇, *A Novel Systemic Taxonomy of Trust in the Online Environment*, in Marcelo Corrales, Mark Fenwick and Nikolaus Forgo (eds), *New Technology, Big Data and the Law*, Springer Singapore (2017).

<sup>13</sup> Esther Lieve Omer Keymolen, *Trust On The Line: A philosophical exploration of Trust in the networked era*, (2016) Erasmus University Rotterdam. See also David Archard, Monique Deveaux, Neil Manson and Daniel Weinstock, *Distusting the Trustworthy: Reading Onora O’Neill*. Routledge, (2013).

### 4.2.1 Nikolas Luhmann

Niklas Luhmann (1927-1998), is considered the first author, in the social science context, to describe trust and its main features. In its 1997 book *Theory of Society*<sup>14</sup>, Luhmann provides a comprehensive definition of trust, its value and function. Taddeo considers Luhmann's work as '*the starting point for the modern approach to trust and its cognate concepts*'.<sup>15</sup> According to Luhmann, individuals tend to deal with the complexity of our society, trying to organize and order such *complexity*. Differently from other animals, human beings are the only ones aware of such complexity, and they use such capability to interpret the environment in which they live. According to Luhmann the artificial system created, '*interprets the world selectively, overdrawing on the information which it possesses, reduces the world's extreme complexity to an amount of complexity to which it can meaningfully orient itself, and so structures the possibilities of its own experience and action*'.<sup>16</sup> Such a theory is known as *system theory* and has been developed by other eminent scholars like Giddens.<sup>17</sup>

In Luhmann's view, trust, together with legal frameworks and the use of contracts, is a way to decrease the difficulties that individuals have to face daily in such a system.<sup>18</sup> When it comes to trust, he considers it as a positive expectation about the future actions of other actors with whom we interact, directly or indirectly in such a system. The expectations Luhmann refers to are not based on irrational considerations but are the result of rational considerations developed based on socio-cultural norms of any society.<sup>19</sup>

The theory developed by Luhmann, and in particular its link between trust and contracts have been extensively developed in the so-called organisational trust. According to multiple scholars, trust should be seen as '*positive expectations about another's motives with respect to oneself in situations entailing risk*'.<sup>20</sup>

### 4.2.2 Gambetta's approach

Another fundamental author that deserves to be mentioned in such a brief overview of the concept of trust is Diego Gambetta. Gambetta, similarly to Luhmann, has provided a very theoretical and broad definition of trust. According to Gambetta, '*trust (or, symmetrically, distrust) is a particular level of the subjective probability with which an agent assesses that another agent or group of agents will perform a particular action, both before he can monitor such action (or independently of his capacity ever to be able to monitor it) and in a context in*

<sup>14</sup> Luhmann, Niklas. *Theory of Society*, Stanford UP, (2012).

<sup>15</sup> Taddeo, Mariarosaria, *Defining Trust and E-Trust: From Old Theories to New Problems*, International Journal of Technology and Human Interaction (IJTHI) (2009) p. 24.

<sup>16</sup> Luhmann, Niklas. *Trust and Power*. Cambridge: Polity, 2017, p. 35

<sup>17</sup> Esther Lieve Omer Keymolen, *Trust On The Line: A philosophical exploration of Trust in the networked era*, Erasmus University Rotterdam (2016). See also David Archard, Monique Deveaux, Neil Manson and Daniel Weinstock, *Distrusting the Trustworthy: Reading Onora O'Neill*. Routledge, 2013. 196-208. Web.

<sup>18</sup> Ibid.

<sup>19</sup> Ibid.

<sup>20</sup> S. D. Boon and J. G. Holmes, 'The Dynamics of Interpersonal Trust: Resolving Uncertainty in the Face of Risk' in Robert A. Hinde and Jo Gorebel (eds), *Cooperation and Prosocial Behaviour* (Cambridge University Press 1991), p. 194.

*which it affects his own action. When we say we trust someone or that someone is trustworthy, we implicitly mean that the probability that he will perform an action that is beneficial or at least not detrimental to us is high enough for us to consider engaging in some form of cooperation with him*'.<sup>21</sup>

The definition provided by Gambetta considers trust as a variable threshold, that changes according to general expectations on a scale that goes from (0), which represents complete distrust, till (1) complete trust. Contextual factors such as our ignorance or knowledge about other people (their reputation), or the uncertainty about future events affect our perception, determining the fact to a variation on such scale.<sup>22</sup>

Following Luhmann's approach, Gambetta believes that given the impossibility to control external factor (i.e. full knowledge of the trustee) *'trust is a tentative, intrinsically fragile response to our ignorance, a way of coping'* with the complexity of the world.<sup>23</sup>

In addition, due to its universality, many other authors have used the definition of trust developed by Gambetta in different contexts, using it as a starting point for their research in the field.<sup>24</sup> Nonetheless, some scholars have critically assessed Gambetta's work. For Taddeo, the attempt of Gambetta to provide a comprehensive definition of trust has two problems: the lack of specification about the reason that motivates the trustor to trust the trustee, and the link between cooperation and trust.<sup>25</sup> In the work of Gambetta, trust is a kind of pre-requisite to establish cooperative relations between individuals in a given society. Moving from such assumption, Taddeo objects that trust and cooperation are different, and the former notion cannot be reduced as a pre-requisite to reach the latter. Cooperation might arise from trust, but to have a cooperative relationship between agents, other factors should also be considered, in particular, *'the context, goals and intentions of the agents involved'*.<sup>26</sup>

### 4.3 e-TRUST

The difficulties in providing a comprehensive definition of trust increase when the context where such a notion is used is the online context. In such a context, key parameters that have been taken into account so far to describe trust context and actors (trustor and trustee) have specific characteristics.

On the one hand, it may be more challenging to establish a trustworthy relationship between the trustor and the trustee in the online context, since the context is highly ambiguous. The online context entails, for instance, multiple devices (i.e. smartphones), entities (providers), and

<sup>21</sup> Gambetta, Diego, *Can We Trust Trust?*, in Gambetta, Diego (ed.) *Trust: Making and Breaking Cooperative Relations*, Department of Sociology, University of Oxford, chapter 13 (2000), p. 217.

<sup>22</sup> Ibid.

<sup>23</sup> Ibid.

<sup>24</sup> Among other: Tanja Ažderska and Borja Jerman Blažič, *A Novel Systemic Taxonomy of Trust in the Online Environment*; Wolter Pieters, *Explanation and trust: what to tell the user in security and AI?*; Esther Lieve Omer Keymolen, *Trust On The Line: A philosophical exploration of Trust in the networked era*, and many others.

<sup>25</sup> Taddeo, Mariarosaria, *Defining Trust and E-Trust: From Old Theories to New Problems*, International Journal of Technology and Human Interaction (IJTHI) 5.2: 23-35. (2009), p. 25.

<sup>26</sup> Ibid., p. 25.



other factors (security of connection) which increase the level of complexity of transmitted information. Those complex factors affect individuals' decision-making process on unprecedented levels. Furthermore, online, trust might differ if our behaviour involves human or artificial agents.

On the other hand, according to Tanja Ažderska and Borca Jerman Blažič 'online people acknowledge lower competences, tolerate worse experiences, exhibit lower privacy requirements, accept greater risks and act under higher uncertainty. The fast convergence of the reputation effects degrades reputation as soon as the information propagates the network'.<sup>27</sup>

To conclude, 'e-trust occurs in an environment where direct and physical contacts do not take place, moral and social pressures can be differently perceived, and where interactions are mediated by digital devices'.<sup>28</sup>

Due to the remarkable differences between trust and e-Trust, the notion of e-Trust has been questioned. From a social science angle, authors like Nissenbaum<sup>29</sup> have questioned the existence of e-Trust due to three main obstacles: (1) trust requires direct interpersonal interactions between two agents (trustor and trustee); (2) trust requires the presence of shared social norms and ethical values among peers to regulate the interactions that take place in a given environment; and (3) trust requires a finite number of involved agents.<sup>30</sup>

Against the first argument, the lack of direct interpersonal interaction between agents ("trust needs touch"), Taddeo replies affirmatively that, nowadays, there are multiple ways to overcome such an obstacle. For example, the widespread use of referential tools overcomes the absence of interactions between agents. In addition, the creation of online communities, the diffusion of peer-to-peer software, and the development of platforms, where the entities who want to join have to commit themselves to respect platforms requirements and ethical values, provide to be helpful in overcoming such obstacles.<sup>31</sup>

In addition to the critiques of social science experts, in the ethical and philosophical context, when it comes to e-Trust, four problems have been highlighted by Floridi and Taddeo: '(i) the identification of the fundamental and distinctive aspects of e-trust; (ii) the relation between trust and e-trust, that is, whether e-trust should be considered as an occurrence of trust online or as an independent phenomenon in itself; (iii) whether the environment of occurrence has any

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<sup>27</sup> Tanja Ažderska and Borca Jerman Blažič, *A Novel Systemic Taxonomy of Trust in the Online Environment*;

<sup>28</sup> Taddeo, Mariarosaria, *Defining Trust and E-Trust: From Old Theories to New Problems*, International Journal of Technology and Human Interaction (2009). p.26. See also Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. *Not So Different after All: A Cross-Discipline View of Trust*, Academy of Management, Review, 23(3), (1998).

<sup>29</sup> Nissenbaum, H. *Securing Trust Online: Wisdom or Oxymoron*, Boston University Law Review, 81(3), 635-664, (2001).

<sup>30</sup> Taddeo, Mariarosaria, *Defining Trust and E-Trust: From Old Theories to New Problems*, International Journal of Technology and Human Interaction 5.2 (2009), p. 26.

<sup>31</sup> Ibid p.26.

*influence on the emergence of e-trust; and, finally, (iv) the extent to which artificial agents can be involved in an trust relationship*'.<sup>32</sup>

Against such legitimate observations, it is useful to notice the approach developed by Pieters, in the context of Artificial Intelligent and e-voting systems using the concept of *explanation-for-trust*. According to Pieters, the goal of an explanation is to *acquire confidence or trust*. Nonetheless, while trust entails a decision (I trust after having compared multiple options), confidence does not involve such comparison exercise. Substantiating such assumption Pieters states that '*explanation-for-trust is an explanation which aims to describe how a system works, by revealing details of its internal operations*'.<sup>33</sup> Using such interpretative tool Pieters affirms that in the online context, e-Trust should be intended as '*the explanation provided to the users concerning the systems' function*'.<sup>34</sup>

#### 4.4 Looking forward: Organisational trust in the context of data market

Deliverable D3.6 has described how eminent scholars have interpreted the notion of trust at the interpersonal level. In particular, we have focus on the definition of trust elaborated by Luhmann and Gambetta, which seems to be the more appropriate considering the data market context we will analyze in deliverable D3.7.

We have also described the characteristics and the debate around the notion of e-trust. On the contrary, concerning literature review, D3.7 will attempt to describe the development of the notion of trust in new organizational contexts such as the data market ones. In particular, the literature analysis will pay specific attention to the role of privacy in enhancing trust among peers.

In particular, deliverable D3.7 will consider the notion of trust in specific organizational contexts. We will investigate key factors that influence and shape trust in a distributed closed platform since it is the one where Safe-DEED functionalities will be deployed. In such an interactive, adaptable and self-governed context, agents have limited control over the platform and other peers activities. Consequently, crucial elements such as privacy and security play a fundamental role in assessing trust not only among peers of the platform, but also for and those entities interacting with them.

The methodology used to carry out our analysis on the notion of trust in the B2C and B2B context, and the questions that will be used to conduct our survey, which aim to substantiate our literature investigation, are presented in the next sections.

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<sup>32</sup> Mariarosaria Taddeo, Luciano Floridi, *The case for e-trust*, Ethics Inf. Technol. Springer Science+Business Media B.V. (2011)

<sup>33</sup> Wolter Pieters, *Explanation and trust: what to tell the user in security and AI?*, Ethics Inf Technol, Springer (2011), p.56

<sup>34</sup> Mariarosaria Taddeo, Luciano Floridi, *The case for e-trust*, Ethics Inf Technol, 13:1–3, Springer Science+Business Media B.V. (2011). See also Wolter Pieters, *Explanation and trust: what to tell the user in security and AI?*, Ethics Inf Technol, Springer (2011)

# 5 Methodology

## 5.1 Task description

In this section the general methodology applicable to D3.6. ‘Trust in Data Markets’ is described. D3.6. corresponds to Task 3.3. ‘Fostering trust in data markets’, as described in the Safe-DEED Project Proposal. Task 3.3. builds upon the insights gained in Task 3.2.<sup>35</sup>, with the broader aim of engendering more trust (organizational and individual) in data markets.

The research conducted within Task 3.3. combines traditional legal desk-research (Research Phase 1 – RP1) with two sets of surveys and semi-structured interviews with various relevant stakeholders (RP2), in order to understand the key existing challenges for generating both organizational and individual trust, e-trust in particular, in the data markets (RP3) as well as formulate a more grounded perspective on the potential solutions to increase the level of trust between relevant stakeholders in data markets (RP4).

## 5.2 Goals

The general goal of this deliverable is to explore how to increase the organizational (B2B) and individual/end-user (B2C) trust in the data markets.

In order to achieve the general goal we aim to reach the following (interim) objectives (O) of this particular empirical study, that we have defined based on the preliminary research in the framework of D 3.6 and 3.7<sup>36</sup>:

**O1:** Formulate a definition of trust for the purpose of the scope of this project, based on a literature review of the relevant legal/ethical literature on trust and trust and data markers (RP 1).

**O2:** Understand the existing challenges in establishing, maintaining and/or potentially increasing trust in B2B and B2C settings in the data markets through conducting surveys and semi-structured interviews with relevant selected stakeholders (RP 2).

**O3:** Formulate and evaluate the existing challenges in establishing, maintaining and/or potentially increasing trust in B2B and B2C settings in the data markets based on the empirical data collected in RP 2 (RP 3).

**O4:** Suggest potential solutions that could facilitate the trust building between the B2B and B2C stakeholders as well as increase the level of trust in the data markets (RP 4).

Each objective corresponds to a particular RP. The scope of the RPs is elaborated upon below.

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<sup>35</sup> A comparative study of legal and ethical literature on impact assessments, focused on data protection and privacy law, ethics in the data economy, and competition law.

<sup>36</sup> These objectives are distinct from the overall objectives specified in the DOA.

## 5.3 Research phases

The research for this deliverable is conducted in line with four RPs. Each RP has its own scope and objective (see Section 2.2).

### **RP 1: Literature review (descriptive research)**

In general, this deliverable will describe the coordinated theory of trust in the data economy, based on the existing literature in the field of law and ethics. First, we will review the general literature on trust, focusing primarily on the literature on organization and individual trust. After completing the general literature study, we will turn to analysing the specific literature on e-trust in data markets. Preliminary research (conducted when developing this deliverable) of literature on trust and trust in data market we concluded that the existing literature can be divided into the following sub-categories: (1) trust, intermediaries and e-commerce; (2) trust and data privacy; (3) trust and data sharing; (4) trust and data quality; and (5) trust and transparency of data markets/ online platforms.

Based on the preliminary literature review, we propose to focus this study on the following two main issues:

- 1) **From interpersonal to interorganizational trust between platforms in a data platform context (B2B)**: The focus is made on the trust at the architectural level. In particular, we aim to understand how trust between platform peers is currently established and maintained, as well as investigate how this trust can be increased.
- 2) **Trust and privacy (B2C)**: The focus is made on the trust between platform stakeholders (suppliers/legal entities) and the end users (customers). Similarly to B2B, we aim to understand how trust between platform stakeholders and the end users is currently established and maintained, as well as investigate how this trust can be increased.

Overall, the in-depth literature study will allow us to, first, formulate the definition of e-trust applicable to the scope of our research and, second, identify potential challenges the relevant parties face when engaging in business relationships with various stakeholders in the data markets. Finally, the literature study will permit to identify and clearly define the scope of the empirical research (e.g. relevant actors, relevant topics to be addressed) and formulate the questions to be asked to the survey participants and interviewees.

### **RP 2: Collection of empirical data (empirical research)**

After the completion of the descriptive, desk research, we will initiate the empirical research. The empirical research consists of two parts: (1) surveys (RP 2.1); and (2) semi-structured interviews (RP 2.2.) with various stakeholders.

#### ***RP 2.1: Surveys***

A survey will be developed and distributed to the relevant stakeholders, e.g. representatives of semi-conduct industry and manufacturing community active in data marketplaces. To achieve objectives 2 and 3 (see Section 5.2), a survey will be addressed the selected stakeholders , in

which we address questions to related to the trust in data market, first, in the B2C setting (e.g. privacy concerns of end-users) and, second, in the B2B setting (e.g. trust between platform stakeholders). The preliminary scope of the survey questionnaire is provided for your review in Section 6 of this deliverable. The survey questionnaire consists of both closed and open questions and aims to collect both quantitative<sup>37</sup> and qualitative data.

We aim to use the Typeform software to create online surveys. This software has been actively used by KU Leuven CiTiP researchers in the framework of various Horizon 2020 projects. The collected data will be analysed and coded via NVivo software. The survey results will be anonymised to increase the number of respondents. The survey participants will be classified based on certain characteristics, e.g. industry sectors; type of actors, to be able to compare and cluster the results and to assess whether there are differences depending on these selected characteristics in establishing and maintaining trust in B2B and B2C settings in data marketplaces. The general goal is to collect maximum 100 survey responses. The survey will be distributed via BDVA and other relevant associations since those associations incorporate experts/stakeholders in the field of Safe-Deed business activities. The valorization manager and research coordinator Natalie Bertels (KU Leuven CiTiP) has strong connections with the association and will assist us in setting up and distributing the survey.

### ***RP 2.2: Semi-structured interviews***

After obtaining and analysing the survey results, to further explore and evaluate how trust in B2B and B2C settings can be increased, we aim at conducting maximum 20 semi-structured interviews with selected survey respondents to gather additional qualitative insights. The purpose of the survey is to identify the core problems in trust and data markets and, according to the responses, we will formulate the core questions to be addressed to the selected stakeholders. The interview questionnaire will consist of number open questions and aims to collect qualitative data. The stakeholders will be selected among the industry sectors related to the peers. For example, additional conversation will take place with manufacturing community to understand concrete barriers that they may have in establishing trust in their network.

Similarly to the survey, the interviews will be anonymised and classified based on certain characteristics, e.g. industry sectors; type of actors. The interviews will be either conducted in person or via telephone or other related electronic means. Depending on the preferences of the interviewees, the interviews will be recorded and later on transcribed or will be transcribed during the conversation. Transcriptions will be sent to the interviewees for the review. The approved transcriptions will be analysed and coded through NVivo.

### **RP 3: In-depth analysis of selected topics based on the collected empirical data (evaluative research)**

In RP 3 we will evaluate the empirical data collected, analysed and coded in RP 2. Based on the obtained data, we will formulate and evaluate the existing challenges in establishing, maintaining and/or potentially increasing trust in B2B and B2C settings in the data markets.

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<sup>37</sup> In this research we will focus primarily on the legal methods of conducting empirical research. We will not provide any in-depth quantitative measurements.

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The key challenges will be described in detail both in the context of organization trust (B2B; organizational trust between platform stakeholders) and individual trust (B2C; trust and privacy).

**RP 4: Recommendations (normative research)**

In RP 4 we will formulate and present concrete recommendations for all relevant stakeholders to foster trust in data markets. *First*, a set of recommendations will be addressed to platform stakeholders to suggest changes to their internal policies and business models to increase trust within the platform and for the end users. In addition, we will decide specific attention to the implementation of these recommendation in the framework of Safe-DEED. *Second*, a set of recommendations will be addressed to end-users to provide guidance on sharing of (personal) data and privacy in online platforms. *Finally*, a set of recommendation will be addressed to policymakers and legislators to facilitate the establishment, maintenance and increase of trust in data markets.

## 6 Sample Questions for the Survey

The questionnaire revolves around two main axes, i.e.:

1. Trust and privacy (B2C), and
2. The organizational trust between platform peers (B2B)

The first axe is composed of questions that seek to explore how organizations generate trust to the end-users within a B2B platforms environment. These questions reflect on the mechanisms and procedures that organizations adopt in order to be more trustworthy in the eyes of the end-users, as well as on the means used by organizations to empower the end-users and safeguard the end-users' privacy.

The second axe includes questions that explore trust at the architectural level and aim to acquire insights from the interviewees on how to increase trust between peers. It is composed of three parts, namely questions about the organizations and their involvement in B2B platforms, questions on the definitions of trust, e-trust, and B2B platforms, and, finally, questions addressing especially the concept of trust within B2B platforms.

In order to share a common understanding with the interviews regarding some of the terms used throughout the questions, we provide the following working definitions:

**Working Definition of B2B platforms:** An operating system on the internet, *‘where digital data is exchanged as products or services. It involves the generation, collection, storage, processing, distribution, analysis, elaboration, delivery, and exploitation of data enabled by digital technologies’*.<sup>38</sup>

**Working Definition of Trust:** *“Trust (or, symmetrically, distrust) is a particular level of the subjective probability with which an agent assesses that another agent or group of agents will perform a particular action, both before he can monitor such action (or independently of his capacity ever to be able to monitor it) and in a context in which it affects his own action. When we say we trust someone or that someone is trustworthy, we implicitly mean that the probability that he will perform an action that is beneficial or at least not detrimental to us is high enough for us to consider engaging in some form of cooperation with him”*.<sup>39</sup>

**Working Definition of e-Trust:** The term encompasses the notion of trust described above in the online environment. More precisely, *“e-trust occurs in an environment where direct and physical contacts do not take place, moral and social pressures can be differently perceived, and where interactions are mediated by digital devices.”*<sup>40</sup>

<sup>38</sup> European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Regions “Building a European Data Economy” (COM(2017) 9 final), available at <<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2017:9:FIN>>, accessed 18/05/2020.

<sup>39</sup> Gambetta, Diego, Can We Trust Trust?, in Gambetta, Diego (ed.) Trust: Making and Breaking Cooperative Relations, Department of Sociology, University of Oxford, chapter 13 (2000), p. 217.

<sup>40</sup> Taddeo, Mariarosaria, Defining Trust and E-Trust: From Old Theories to New Problems, International Journal of Technology and Human Interaction (2009). p.26.

## 6.1 Trust and privacy (B2C) How to increase trust for the end-users

1. Which are the most important factors that your organization believes that increase trust for the end-users (5 meaning the most important and 1 meaning the least important)

- |   | 1                        | 2                        | 3                        | 4                        | 5                        |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="radio"/> Quality Control <sup>41</sup> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="radio"/> Transparency                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="radio"/> Security                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="radio"/> Data Management               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="radio"/> Value Exchange <sup>42</sup>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Please, describe below other factors that your organization believes that are important for increasing trust for the end-users.

<sup>41</sup> Quality control (QC) is “a procedure or set of procedures intended to ensure that a manufactured product or performed service adheres to a defined set of quality criteria or meets the requirements of the client or customer.” See more at: [Rouse Margaret, Quality Control \(QC\), Techtarget \(2013\).](#)

<sup>42</sup> Within a transaction, the term exchange of value has the meaning that each of the parties involved acquires a benefit out of the exchange. This benefit could be quantifiable or not. See more at: [Changing Minds, Value Exchange.](#)



2. *If one of your partners is not trustworthy any more in the eyes of the end-users (for example, due to a data breach, or a financial scandal, or whatever other reason) would you agree with the statement “Our company would consider terminating our agreements with this partner in order to protect our reputation to the end-users”.*

- Strongly disagree*
- Somewhat disagree*
- Neutral*
- Somewhat agree*
- Strongly agree*

3. *Would your answer change if this partner is a loyal partner of your organization with whom you collaborate for several years?*

- Yes*
- No*

*Please, elaborate on your answer.*

4. *Would you agree with the statement “Within a B2B platforms environment, the applicable organizational and security measures increase trust for the end-users”.*

- Strongly disagree*
- Somewhat disagree*
- Neutral*
- Somewhat agree*
- Strongly agree*

5. Please explain what criteria should be met in order the data processing activities of your organization to be perceived as adequately secure (for example, compliance with the applicable legal framework, experience of the working staff, adoption of standards, certifications, seals/marks, etc.).

6. Would you agree with the statement “Within a B2B platforms environment, measures that enhance transparency are important for generating end-users’ trust”.

- Strongly disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Strongly agree

7. Would you agree with the statement “Within a B2B platforms environment, raising end-users’ awareness of the identity of platform parties and their roles within the platform enhances transparency and increases trust to the end-users”.

- Strongly disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Strongly agree

8. *Would you agree with the statement “Within a B2B platforms environment, implementing quality controls and auditing procedures for the different functionalities of the platform increases trust to the end-users”.*

- Strongly disagree*
- Somewhat disagree*
- Neutral*
- Somewhat agree*
- Strongly agree*

9. *Would you agree with the statement “Within a B2B platforms environment, empowering the end-users is crucial for obtaining their trust”.*

- Strongly disagree*
- Somewhat disagree*
- Neutral*
- Somewhat agree*
- Strongly agree*

10. *Could you elaborate on the meaning of the phrase “empowering the end-users”? What does this phrase encompass for your organization?*

11. *What are the mechanisms and procedures that your organization has put in place in order to grant to the end- users more control over their data (for example, privacy policy, explanatory online guides, etc.)?*

12. *Are there other ideas that you want to share with us as regards the concept of trust and the means to increase trust for the end-users within a B2B platforms environment?*

**6.2 Organizational trust between platform peers (B2B) Trust at the architectural level: How to increase trust between the peers.**

**6.2.1 Part A: Questions about your organization and its involvement in B2B platforms**

1. *In which industry does your organization operate?*

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2. *Is your organization involved in B2B platforms' environments?*

- Yes, in one process*
- Yes, in more than one processes*
- No*

3. *What are the barriers, if any, that prevent your organization from participating in B2B platforms' environments (tick more boxes, if needed)?*

- There are no barriers*
- Our organization is not interested in B2B platforms' environments*
- Data ownership/sovereignty concerns*
- Security concerns*
- Technical complexity*
- Financial cost*
- Lack of trust*
- Do not know*
- Other. Please, indicate:*

4. *Regarding "lack of trust" as a barrier in the question above, could you please elaborate more on what does the term "lack of trust" encompass for your organization?*

5. *If your organization is involved in B2B platforms' environments, please give a short description about the process, for which you are involved in B2B platforms' environments: For example: i) field sales management, ii) customer ordering, iii) inventory/supplies management, iv) logistics, v) collaborative document management, vi) data storage or any other process:*

6. *Please, indicate the role of your organization in the above B2B platforms environment(s) you just described (mark more boxes, if more roles apply):*

- Developer/Owner of the platform*
- Maintainer of the platform*
- User of the platform*
- Other, please describe:*

7. *Could you please describe how many other stakeholders participate within the B2B platforms environments that your organization is involved, as well as which roles they have within these B2B platforms environments?*

8. *Does your organization cooperate with local or international partners within the B2B platforms environment(s)?*

- Local partners*
- International partners (partners from other countries)*
- Do not know*

### 6.2.2 Part B: Definitions

1. *Does your organization agree with the working definition of B2B platforms described in the beginning of Section 6?*

- Yes*
- No*
- Do not know*

*If your answer is “no” or “do not know”, how would you define B2B platforms, instead?*

2. *Does your organization agree with the working definition of trust described in the beginning of Section 6?*

- Yes*
- No*
- Do not know*

*If your answer is “no” or “do not know”, how does your organization define trust between peers, instead?*

3. *Does your organization agree with the definition of e-trust described in the beginning of Section 6?*

- Yes*
- No*
- Do not know*

*If your answer is “no” or “do not know”, how does your organization define e-trust between peers within a B2B platforms environment, instead?*

### 6.2.3 Part C: Trust within B2B platforms

1. *Would you agree with the statement: “Trust, even though it is as a characteristic of human relations, it can be attributed to legal entities in a commercial setting”.*

- Strongly disagree*
- Somewhat disagree*
- Neutral*
- Somewhat agree*
- Strongly agree*

2. *Would you agree with the statement: “Within a B2B platforms environment, our organization would never cooperate with a partner that we do not trust”.*

- Strongly disagree*
- Somewhat disagree*
- Neutral*
- Somewhat agree*
- Strongly agree*

3. *Could you elaborate more on what does the phrase “a partner that we do not trust” mean for your organization?*



4. *Would you agree with the statement: “Regarding a B2B platforms environment, our organization thinks that the higher the level of trust is, the higher the likelihood of cooperation is”.*
- Strongly disagree*
  - Somewhat disagree*
  - Neutral*
  - Somewhat agree*
  - Strongly agree*
5. *Would you agree with the statement: “Our organization accepts greater risks in an offline context, rather than in a B2B platforms environment”.*
- Strongly disagree*
  - Somewhat disagree*
  - Neutral*
  - Somewhat agree*
  - Strongly agree*
6. *Would you agree with the statement: “Within, a B2B platforms environment, there might be a situation where our organization will need to trust its partner(s) blindly”.*
- Strongly disagree*
  - Somewhat disagree*
  - Neutral*
  - Somewhat agree*
  - Strongly agree*

7. *Within a B2B platforms environment, if there is a situation where your organization needs to trust blindly its partner(s), what would this situation be? Could you offer some examples?*

8. *Would you agree with the statement: “Within a B2B platforms environment, our organization only trusts in cooperating with stakeholders, which have an establishment in the same country where we have our establishment”.*

- Strongly disagree*
- Somewhat disagree*
- Neutral*
- Somewhat agree*
- Strongly agree*

9. *Would you agree with the statement: “Within a B2B platforms environment, our organization only trusts to cooperate with stakeholders established in the EU/EEA”.*

- Strongly disagree*
- Somewhat disagree*
- Neutral*
- Somewhat agree*
- Strongly agree*

10. *Would you agree with the statement: “Within a B2B platforms environment, our organization would trust to cooperate with stakeholders from all around the globe”.*

- Strongly disagree*
- Somewhat disagree*
- Neutral*

- Somewhat agree*
- Strongly agree*

11. *What are the mechanisms that your organization uses within B2B platforms environments to agree upon the stakeholders' relations (obligations, rights, etc.) and to establish and/or increase trust between partners (tick more boxes, if needed)?*

- A contract*
- Other types of agreements<sup>43</sup>*
- Technical solutions*
- Other*

*Please, elaborate on your answer(s):*

12. *If you use an agreement (such as a contract), does this agreement clearly explains issues related to data ownership/sovereignty concerns, security concerns, technical complexity, or financial costs?*

- Yes*
- No*
- Do not know*

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<sup>43</sup> Any formal agreement between two or more parties that recognizes the terms governing their cooperation.

- To some extent.*

*Please, elaborate more on your answer:*

*13. In your organization’s perspective, what are the most important clauses in an agreement that generate trust between the partners (tick more boxes, if needed)?*

- There are no important clauses that play a role in generating trust*
- Data ownership/sovereignty clauses*
- Security Measures / Organizational Measures clauses*
- Financial clauses*
- Do not know*
- Other*

*Please elaborate more on yours answer(s)*

*14. Would you agree with the statement: “Within a B2B platforms environment, framework agreements shift the focus of trust on the efficacy of sanctions”.*

- Strongly disagree*
- Somewhat disagree*
- Neutral*
- Somewhat agree*

*Strongly agree*

15. *An agreement, such as a contract, is an important tool in commercial relations, since essentially it is a mechanism for encouraging and protecting trust. However, a standard form agreement (sometimes referred to as a “take-it-or-leave-it” agreement) is a usual option in B2B collaborations. Would you agree with the statement: “Take-it-or-leave-it style agreements undermine trust”?*

*Strongly disagree*

*Somewhat disagree*

*Neutral*

*Somewhat agree*

*Strongly agree*

16. *Regarding a B2B platforms environment, if a developer/owner of a platform offered to your organization a standard form agreement for a certain service, would your organization consider this practice as untrustworthy?*

*Yes*

*No*

*Do not know*

*Not relevant. The existence of a standard form agreement is not related to the generation of trust between the parties.*

17. *Would you consider the industry in which a partner operates as an important factor for trusting this partner?*

*Yes*

*No*

*Please, explain your answer*

18. Please, rate the following industries from most trustworthy to less trustworthy (5 meaning most trustworthy and 1 meaning the least trustworthy)

- |  | <b>1</b>                 | <b>2</b>                 | <b>3</b>                 | <b>4</b>                 | <b>5</b>                 |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="radio"/> Telecommunications service providers   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="radio"/> Software/Application Service providers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="radio"/> Device manufactures                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="radio"/> Bank and Credit Companies              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Please, elaborate more on your answers and the reasons on which you based your rating. Feel free to include below more industries.

19. Which are the most important factors that generate trust within a B2B platforms environment (5 meaning the most important and 1 meaning the least important)

- |                                       | <b>1</b>                 | <b>2</b>                 | <b>3</b>                 | <b>4</b>                 | <b>5</b>                 |
|---------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="radio"/> Loyalty         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="radio"/> Transparency    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="radio"/> Security        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="radio"/> Data Management | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Please, elaborate more on your answers and/or describe below other factors that your organization believes that are important for generating trust within a B2B platforms environment.

20. When sharing datasets with other companies, would you agree with the statement: “Within a B2B platforms environment, the more sophisticated data analytics tools our partner is using, the less control our company has over how our datasets are actually processed”.

- Strongly disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Strongly agree

21. When sharing datasets with other companies, would you agree with the statement “Within a B2B platforms environment, our company trusts more a data savvy partner than a partner, which has less experience in B2B platforms”.

- Strongly disagree
- Somewhat disagree

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<sup>44</sup> Within a transaction, the term exchange of value has the meaning that each of the parties involved acquires a benefit out of the exchange. This benefit could be quantifiable or not. See more at: [Changing Minds, Value Exchange](#).

- Neutral
- Somewhat agree
- Strongly agree

22. *Would you agree with the statement “Within a B2B platforms environment, trust between the partners is enhanced if there are rules clarifying and demystifying data processing and data protection procedures”.*

- Strongly disagree
- Somewhat disagree
- Neutral
- Somewhat agree
- Strongly agree

23. *Are there other ideas that you want to share with us as regards the concept of trust and the means to increase trust between peers within a B2B platforms environment?*



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