Public-Private Partnerships for Data
Issues Paper for Data Revolution Consultation

Amparo Ballivian, World Bank
William Hoffman, World Economic Forum

This issues paper has been prepared for online consultation and will be discussed at a meeting on financing key priorities of the data revolution in New York on January 22 2015.
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1. Overview

1.1. In August 2014 UN Secretary-General Ban Ki-moon asked an Independent Expert Advisory Group (IEAG) to make concrete recommendations on bringing about a data revolution in sustainable development. The IEAG delivered its report “A World that Counts” on November 7, 2014. Among other things, the report recommends “… a new funding stream to support the data revolution for sustainable development should be endorsed at the ‘Third International Conference on Financing for Development,’ in Addis Ababa in July 2015.”

1.2. In support of this recommendation, the World Bank is leading a process to prepare a background document to describe the approach to financing the Post-2015 data revolution, preliminarily titled “Financing the Data Revolution.” This issues paper is intended as an input to the background document and the discussions that will lead to the Addis Ababa Conference and other broader discussions on the post-2015 development agenda.

1.3. The data revolution, understood as a key element to monitor progress in eliminating poverty in a sustainable way around the globe, is still waiting to happen. At the same time, there was and still is a parallel discussion about another data revolution that is already here: the revolution in the amount of data available as a result of the increased digitalization of our societies, along with the non-conventional methodological approaches, uses and types of users of these data. The IEAG report succeeded in bringing together these two parallel discussions under a common vision: good data are the lifeblood of decision making for governments, international development agencies, companies, others institutions and citizens. The new technologies and sources of data can be brought to represent a large leap in the amount of good development data.

1.4. In addition, the IEAG report highlighted that a successful outcome of the Post-2015 data revolution must include the private sector. We strongly endorse this proposal. Hence, this issues paper will explore how governments and private companies may work as partners with the common goal of increasing the amount and frequency of quality data on developing countries’ social and economic conditions, and what is the role of development agencies to foster such Public-Private Partnerships for Data.

2. The Need for Public-Private Partnerships for Data (Data PPPs)

2.1. A data revolution that does not include the private sector would be poised for failure in our increasingly digitally connected world. Private companies are deeply engaged throughout the data value chain (collection, storage, processing and sharing) and enable the transformation of an array of sectors including governments and public sector entities. At the core of this transformation—companies as users of government data and as providers of data to citizens and governments— is the trustworthy flow of data across institutional, sector and sovereign state borders. Some companies owe their very existence to the recent—since approximately 2009—advent of the first government open data policies (see Box 1). In addition, some private sector

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2 Whenever this document refers to the private sector, the reference is to profit-making companies around the globe. The role of other private sector actors, such as citizens, academia, media and NGOs would be included in companion documents.
companies have entered into partnerships with government agencies, academic institutions and donor agencies for providing analytical services related to their digital transformation (see Section 3).

2.2. Regardless of incumbent interests for maintaining centralized control of data assets, at the center of these cross-industry and cross-jurisdictional relationships are the contractual and legally binding agreements which establish the terms and conditions for delivering sustainable value. Yet, for a variety of reasons, there is lack of openly available, easy to use and legally compliant resources for establishing these partnerships, particularly in developing countries. Some early examples are available (see next section), but there is a need for more thought and discussion on the shared risks, incentives and impacts for establishing multi-stakeholder data sharing agreements. This paper aims to contribute to that goal. We believe that the opportunity for more transparent, efficient and scalable PPPs in the data domain will be essential for increasing the leverage the Data Revolution and reducing the current risks inherent in many data management domains. The opportunity to gain political support afforded by the Financing for Development summit in Addis Ababa should not be missed. We expect that this paper and subsequent consultations and discussions among stakeholders, will contribute to identify concrete proposals.

3. Lessons learned

3.1. Existing PPPs and past attempts at PPPs, even those not aimed at data-related objectives, afford some lessons on the business models and innovations that make PPPs successful. One of the most successful global PPP is the GAVI Alliance, a global vaccine alliance bringing together public and private sectors with the shared goal of creating equal access to new and underused vaccines for children living in the world’s poorest countries. Since 2000, close to half a billion children have been vaccinated in poor countries. Gavi's staff review developing country applications, disburse billions of dollars to purchase vaccines for immunization programs and monitor the results. Core funding is provided by donors. By pooling the demand from developing countries for new vaccines and providing long-term, predictable financing to meet this demand, the Vaccine Alliance's business model influences the market for vaccines. This helps attract new vaccine manufacturers, including an increasing number of suppliers based in emerging markets, increase healthy competition and, as a result, drive vaccine prices down. Among other innovative financing mechanisms, GAVI also includes a matching funds program whereby donors match funds provided by the private sector.

3.2. This is a very good example of the benefits of a smart partnership model for the donors, the beneficiary developing countries and the private sector companies. It is also a good example of the role of international organizations in bridging market failures; in this case, reducing the prices of vaccines through aggregated volumes of purchases. Can such examples be replicated in Data PPPs?

3.3. The key elements of success of a sustainable PPP seem to be: common objectives across all impacted stakeholders, alignment of incentives, and sharing of risks. The following section discusses risks and risk mitigation measures. The difficult key element seems to be to find ways to align the incentives of very different sets of actors: (a) governments in developing countries,

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3 http://www.gavi.org/about/
4 See more at: http://www.gavi.org/about/gavi-is-business-model/the-business-model/
(b) private sector, profit-driven companies, and (c) governments in developed countries that contribute to development efforts and international organizations. And, as if this equilibrium were not already difficult to achieve, its sustainability depends on taking in to account and protecting the interests of ordinary citizens.

3.4. There are a few emerging examples of multi-stakeholder agreements on data issues that provide a baseline set of insights to build upon. These include:

- **HP Earth Insights** is a joint project between the technology company Hewlett-Packard and Conservation International dedicated to monitor tropical forests to enable proactive responses to environmental threats and supporting the protection of hundreds of threatened and endangered species. “Tropical forests are home to some 30 million species, or half of all plants and animals on earth and generate 40 percent of the planet’s oxygen – but these precious resources are disappearing at an alarming rate” ([harnessing-bing-data-drive-environmental-progress](#)). The scientists’ largest challenge was collecting, managing and analyzing the biodiversity and climate data they’ve captured at 16 sites across four continents. “Scientists had to manually collect and analyze this data from tropical forests – often taking weeks, months or more to analyze information – making it difficult to identify new patterns and intervene to protect biodiversity.” HP’s analytics platform is able to manage volumes of data on biodiversity and climate measurements like precipitation, temperature, humidity and solar radiation nine times faster than before – and improving accuracy of data analysis.

- **Orange Data for Development Challenges**. The Orange company, one of the world’s leading telecommunications operators in Africa has sponsored and provided Call Detail Records (CDR) data for two competitions among data researchers. The first one was held in 2013 using CDRs from Cote d’Ivoire. The second was held in 2014 using CDRs for Senegal. The challenge rewards the “best work on improving algorithms for anonymisation, data mining, and data visualisation and cross-matching” ([Data for Development challenges](#)). Researchers have been able to use CDRs to estimate mobility patterns, epidemiological trends, measures of well-being, and other development issues.

- **Amazon Web Services** hosts US Geological Survey data and makes it available for free. Incentive: get users of data to use their computational tools. Risks: they do not control the supply of data, it is a Government agency that produces it.

- **Smart Cities Initiative**, is an IBM-supported initiative that work with local governments to do data analysis for city planning.

- **Weather companies** working with weather data agencies both to share their data for public use, and to help host and disseminate the data.

- **Open500**. The Governance Lab (GovLab) at NYU, a research center working to improve government through technology, has launched the Open Data Roundtable Series to create that dialogue and help realize the vast potential of open government data. The Roundtables bring together federal agencies with businesses and organizations that use their data to help prioritize agencies’ work on open data to meet demand and help create social and economic value from the government’s massive data resources. The Roundtables are designed to: Prioritize the most important datasets in each agency for business and public use, Improve each agency’s data and make it easier to find, access, and work with, and Connect businesses and organizations with government agency staff who manage the data they use, and set up a process for ongoing feedback.

3.5. These examples show that there are private companies willing to contribute data, data analysis tools, analytical capacity and other assets, and to work together with NGOs and public sector
agencies to put data assets to use for the common good. Understanding their motivations to do so, and the constraints they face to expand this work will be the key to unlock the potential of Data PPPs to bring about a Data Revolution.

3.6. Conversely, there are also examples of things that no longer work or are less feasible in a developing country context. For example, the old model where large data aggregators take low-quality or hard to use government data, invest in improving it, and then sell it to business customers at a price. The core open data should be available more widely and without this kind of charge. Wider data access would generate more value overall than what these companies currently contribute.

4. Risks and incentives of public and private actors

4.1. Beneficiary governments are incentivized, in principle, by any actions that contribute to the well-being of their citizens, while private companies aim at maximizing their profits. There is a tacit Data PPP that is successfully aligning both objectives. Current practice in developed countries has shown that private sector companies can use open government data to the benefit of ordinary citizens (see Box) while making profits. These data flows—from public to private sector to citizens—are starting to become reality in developing countries as well.
Open Data is data that is freely available to anyone, online, for use and reuse for any purpose. The key word is “reuse”. For data to be freely reused it must be in “machine readable” format, i.e. in formats that can be processed by software instead of humans, and must be covered by a legal license that gives the right to the users to reuse the data in any way, including for profit. Based on those two simple concepts, a number of private sector companies are using government data made available as open data. The largest of these are based in the most mature open data countries, for example:

- Zillow, a real estate marketing company in the US combines data from a variety of sources on residential real estate supply with data on historical transaction prices and taxes for each property, data on neighborhood characteristics such as schools, crime and transportation, photos, map locations and other data to help ordinary citizens make decisions. The company’s market valuation is estimated at more than US$1 billion.
- Climate Corporation is another prime example of the private, for profit use of open government data in the US. The company combines data on agricultural soil productivity and highly localized weather data in a proprietary algorithm that allows to provide highly efficient crop insurance. The Company was bought by Monsanto for US$930 million in November 2013.
- Open Weather Data has allowed the creation of around 400 companies in the US.
- The business impact of Open GPS Data can hardly be estimated without becoming outdated.
- The European Commission has estimated that Open Government Data in the European Union would increase business activity by up to €40 billion per year.

These examples explain why Open Data has become public policy in the US, the UK and other advanced economies. “Open Data is going to help launch more startups... It's going to help launch more businesses. It's going to help more entrepreneurs to come up with more products and services that we haven't even imagined yet.” (President Barack Obama, May 9, 2013)

These developments are not circumscribed to rich—or data rich—countries only, as can be seen in this blog New surveys reveal dynamism, challenges of open data-driven businesses in developing countries. The findings of that work indicate that, although Open Data is still a very nascent concept in emerging markets, there is “a growing number of open data-driven companies in all the markets we surveyed and these companies target a wide range of consumers/users and are active in multiple sectors.” The companies represent a variety of sectors and business models, like Scanntech, a Uruguayan company that provides small retailers with a simple register system and sells the data generated to market research firms; Rock Content, a Brazilian company that helps brands and media outlets generate the content their audiences want using predictive analytics; GeoMash, a Malaysian company that provides logistics, shipping and infrastructure companies with a platform to utilize GIS and sensory data; Medicinia, a Brazilian startup with a platform to facilitate the sharing of data within hospitals to improve patient care and doctor performance; Urbanindo, an Indonesian startup that runs an online real estate marketplace; Solapa, an Argentinian startup building a platform to help farmers analyze their crop strategy and yield by combining market data with sensory and GIS data; Kalibrr, a company that uses natural language processing to match skilled job seekers with companies seeking talent; Blueship, a Thai startup developing an on-board diagnostics (OBD) device called Drivebot to transfer data of a vehicle to a mobile application because the government does not have good traffic data; and many other examples.
4.2 The more difficult challenge is the reverse flow of data, from the private to the public sector. To the extent that privately produced data can lead to the common good, as some early experiments using big data are showing, governments should have incentives to encourage private sector companies to share their data. Gaining new insights from data and making better decisions in a manner that recognizes and protects the human, civil and economic rights of individuals is a growing concern.

4.3 The recent ebola crisis in western Africa is a good example, where several NGOs and data researchers requested government intervention in persuading private companies to release data that could be put to help to address or diffuse that crisis. But the response from both private companies and governments was not as forthcoming as was expected. Privacy was probably the biggest obstacle. In an effort to address this, the ebola crisis prompted GSMA (the GSM Association of mobile operators and related companies operating in 220 countries) to release GSMA-Guidelines-on-protecting-privacy-in-the-use-of-mobile-phone-data-for-responding-to-the-Ebola-outbreak_October-2014.pdf as well as an Ebola-Mobile-Response-Blueprint.

4.4 The reasons for the constrained flows are a complex entanglement of political, commercial, ethical, regulatory and reputational factors, which reflect conflicts among multiple interests interacting in the ecosystem. We could start to understand the motivations of private companies. Why would a private, profit-making institution contribute to improve the quantity, quality and frequency of data of a developing country on a voluntary basis? One can imagine possible benefits, including increasing their market penetration, or improving their corporate image, or joint learning, or many others, as some of the examples in the previous section show. But aside from casuistic, the truth is that we don’t know this very well and we cannot even start Data PPP explorations until we do.

4.5 On the other hand, what are the costs of private companies in sharing their data? One commonly cited argument is that they would lose competitive advantage. This may be true in certain cases, but if companies own data that is not being commercially exploited this should be a relatively minor reason. In reality, companies destroy vast amounts of data every day, a lot of it unused, despite the significant recent decrease in data storage costs.

4.6 An important reason for the reluctance of private companies to share data is risks, particularly, legal risks arising from actual or perceived invasion of individual privacy. The forward transfer of data is arguably the primary driver of this uncertainty. The commercial and political deterrents to share data with secondary and tertiary parties is strong and deeply embedded in existing business models. When these business models (with very complex interconnections) are utilized in non-commercial contexts (e.g. national security strategies) the uncertainties and risks associated with a highly fragmented data supply chain often outweigh the rewards.

4.7 Hence, the private sector’s reluctance to share data is due both to a utilitarian calculus of proprietary and competitive concerns, as well as uncertainties with respect to data property rights. They are not alone. Even within the UN system, among non-profits and in many developing countries there are proprietary default positions that can make it difficult to get institutions to share data. Many concerns about sharing data are based on a lack of trust, a fear of incurring

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5 See this article in The Economist The Economist’s Ebola Data article and this practitioner’s tale Heath Care Data in Ebola Affected Countries
liabilities or a loss of institutional information control and arbitrage advantages (which create and maintain power differentials within organizations), but also on misunderstandings about novel concepts.

4.8 The hyper-connected world of big data is one of complexity and context. The ways in which data sets are combined to discover and derive analytic insights and value is highly dynamic and dependent on the local context in which it is used. Its rewards and risks are an emerging phenomenon beyond the control of any one actor. Given the complexity of the data ecosystem, the rate of change, the potential for significant value from data and the changing role of the individual, there is a need for a flexible, adaptive and resilient approach that has at its heart the aim of enabling the global trusted flow of data.

4.9 Data is a non-rivalrous good that can be copied infinitely. The forward transfer of data that creates leverage and additional value with each additional use also creates more data and additional challenges. As data is combined and commingled, the insights, discoveries, value and potential risks increase, particularly if this activity is performed by parties not directly known or necessary to the underlying data originators. And the pervasiveness of hierarchical institutions raises a question regarding the shared appetite for a genuinely transformative “data revolution”.

4.10 The foundation of effective Data PPPs will be the security, confidentiality and integrity of data. Issues of protection, security and the overall stewardship of data are central to the ecosystem. While the complexity of operating in a decentralized and distributed networked environment poses new challenges, ensuring data security and individual privacy remain crucial for effective data PPPs.

4.11 Gone are the days of one-size fits all templates for establishing trustworthy and transparent data usage practices. Rather it has become a world of context where having a full and transparent understanding of agreed upon shared principles (especially the awareness and engagement of individuals) across all stakeholder communities is essential for effective data governance. Competing incentives, supply chain complexity and a lack of technical interoperability are major points of friction within the ecosystem. The question of “Who has access to what data?” remains a nearly impossible question to answer.6

4.12 A primary factor creating inertia, is that actors in the ecosystem do not know where to start. The reputational, operational, legal and political risks coalesce into a cauldron of complexity and outweigh the rewards. Abstract, principle-based data laws which are present in many low and middle income countries, are open-ended and leave room for interpretation by institutions, civil society and regulators alike. More importantly, the enforcement of such laws in contexts of weak institutions is often inadequate.

5. Preliminary proposals for discussion

5.1. Building the legal, cultural, technological and economic infrastructures to enable the balancing of competing interests—which would be reflected in Data PPPs— is vitally important for achieving

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the goals of sustainable development. Maintaining balance will require addressing entangled concerns in data usage. The approaches will need to be meaningful, pragmatic, adaptive and proportional. So where to begin? What types of Data PPPs would be meaningful for catalyzing the data revolution?

5.2. **Understanding.** First of all, the extensive inertia and reticence for sharing data across sectors needs to be fully recognized and its underlying causes well understood by the partners. This requires extensive dialogue based on good faith and devoid of ideological pre-conceived notions. To achieve the level of mutual trust required by meaningful Data PPPs, the starting dialogue itself needs to be trust-worthy. There are few guidelines available to enable “cross talk” among these stakeholders. Neutral bodies can be very helpful in breaking these barriers.

5.3. Today, the data for development ecosystem lacks a reliable and accountable structure. One element, which could serve as a seed crystal, would be a shared framework and taxonomy for identifying classes of impact (both benefits and risks) and how organizations and individuals looking to use data would be impacted by those outcomes. Table 1 presents a preliminary proposal for such a shared framework. Without a common language, no single actor is able to effectively identify and manage the benefits and risks that are mostly likely to emerge. This can lead an “assume the worst” approach to regulation and disproportionate fears of unlikely, but dreaded, events.

5.4. **Experimentation.** With so much uncertainty, the need for continuous experimentation, learning and sharing is paramount. Investing in small-scale pilots that bring together the private sector, regulators, civil society and local communities will provide the insights and local knowledge critical for long-term resilience and adaptation.

5.5. **Adaptability.** Establishing systemic trust, transparency and accountability in such a complex, multi-stakeholder environment will require a number of fundamental elements. At its core the approaches will require an underlying pivot away from pre-emptive and static definitions to approaches which are adaptive, anticipatory and which balance protection measures in a contextual and evidence-based way.

5.6. **Balance.** Establishing balance across all stakeholders (in particular individual and community-based stakeholders who are the intended subjects of the data usage) will require a focused engagement regarding the issue of consent and purpose specification. With an increasing proportion of data now being passively collected by sensors or synthetically generated by algorithms, engaging individuals for consent to use data they know nothing about (and for purposes which are yet to be defined) remains problematic. This challenge will be even more acutely felt when the subjects are those living in extreme poverty and are highly vulnerable. Similarly, ex-ante limits on the ways that data can be used to restrict innovation and growth is a concern and will continue to destabilize the ecosystem if left unchecked. Stated simply, the data property rights of individuals are fundamental for a balanced and sustainable data ecosystem.

5.7. **Persuasion and compulsion.** Overcoming some of the issues that limit data sharing may require a combination of external compulsion in the form of improved oversight and enforcement, where such an authority is available (either by government regulation or enforceable stakeholder self-regulation) and persuasion, such as the recent government open data policies.
5.8. **Risk management.** A risk-based approach can help non-experts in privacy and data protection grapple with imprecise data protection principles and understand the impact of new services. Complementing existing laws and regulations, adaptive risk management approaches can facilitate the application of existing data protection principles and requirements. A risk-based approach can provide a scalable and balanced approach to “getting things right”, while at the same time, giving decision-makers contextual understanding, critical in the challenging environment of the global south.

5.9. **Governance.** With a general understanding of the various possible impacts of sharing private data for the common good, assessing the severity and likelihood of these possible outcomes becomes a core focus of the governance process. This process encourages stakeholders to prioritize and draw attention to highly likely and severe risks. The assessment of risks needs to occur at multiple levels of impact, including individuals, communities, governments and private companies. Table 1 presents a preliminary proposal for the possible benefits and risks to be assessed for each of these stakeholder categories. When assessing risks, stakeholders need a deep understanding of the contextual situation – cross-functional teams should set policy and ensure “contextual integrity”.

5.10. **Role of international organizations.** Donor country governments and international organizations can serve as bridges by promoting risk identification and assessment methods, encouraging risk-sharing agreements, and act as trusted – or “least distrusted” – intermediaries. Development organizations can help to reduce risks by using their convening advantages to forge consensus on basic principles to ensure privacy and data protection.

6. **Monitoring progress**

[NOTE: This section will be completed after the consultations on this paper]

How would we know it has been successful? Setting expectations on and measuring performance: We decide in advance how we will measure results and link to expected successes and failures.
<table>
<thead>
<tr>
<th>Benefits</th>
<th>Individual</th>
<th>Community</th>
<th>Governments</th>
<th>Private companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Improve health and wellness outcomes</td>
<td>• Strengthened ability to uphold political, civil, economic and human rights</td>
<td>• National statistics: increased timeliness, accuracy, coverage</td>
<td>• R&amp;D</td>
<td></td>
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<tr>
<td>• Freedom of movement</td>
<td>• Strengthening of social trust and accountability</td>
<td>• New partnerships and better engagement with private sector and NGOs</td>
<td>• General market &amp; consumer research</td>
<td></td>
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<tr>
<td>• Increased earning power and access to employment opportunities</td>
<td>• Ability to understand, act and adapt to crisis situations and public safety concerns with more precision and flexibility (e.g. disaster response, infectious disease)</td>
<td>• Reduction in economic and societal impact from crises situations</td>
<td>• Reputational improvement</td>
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<tr>
<td>• Identify integrity assurance</td>
<td>• Optimized food, energy and water resource allocation to address environmental issues from climate change</td>
<td>• Increased growth in GDP per capita</td>
<td>• New partnership and better engagement with government and NGOs</td>
<td></td>
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<tr>
<td>• Fair and non-discriminatory uses of advanced analytics</td>
<td>• Establishments of private spaces which are safe and protected</td>
<td>• Trade restriction/sanctions</td>
<td>• Reduction in business impact from crises situations</td>
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<tr>
<td>• National statistics: increased timeliness, accuracy, coverage</td>
<td>• Personal, family, workplace or social fear, embarrassment or anxiety</td>
<td>• Political change and/or backlash</td>
<td>• R&amp;D</td>
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<tr>
<td>• New partnerships and better engagement with private sector and NGOs</td>
<td>• Unacceptable intrusion into private life</td>
<td>• Criminal or civil legal instigations and proceedings</td>
<td>• General market &amp; consumer research</td>
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<td>• Reduction in economic and societal impact from crises situations</td>
<td>• Loss of liberty or freedom of movement</td>
<td>• Loss of regulatory licenses, standards, certifications/damage to regulatory ratings</td>
<td>• Reputational improvement</td>
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<tr>
<td>• Increased growth in GDP per capita</td>
<td>• Damage to earning power</td>
<td>• Loss of competitive positioning/ advantage</td>
<td>• Legal/regulatory fines, fees and charges</td>
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<tr>
<td>• Optimized food, energy and water resource allocation to address environmental issues from climate change</td>
<td>• Other significant damage to economic and social interests</td>
<td>• Disrespect of culture</td>
<td>• Impact to share price and or cost of capital</td>
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<td></td>
<td>• National statistics: increased timeliness, accuracy, coverage</td>
<td>• Discrimination</td>
<td>• Material increase to customer attrition rates</td>
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<tr>
<td></td>
<td>• New partnerships and better engagement with private sector and NGOs</td>
<td>• Economic interests</td>
<td>• Material decrease in employee recruitment, productivity and retention</td>
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<td></td>
<td>• Reduction in economic and societal impact from crises situations</td>
<td>• Loss of privacy/additional surveillance</td>
<td>• Increase in operating expenses</td>
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<td></td>
<td>• Increased growth in GDP per capita</td>
<td>• Disrespect of culture</td>
<td>• Industrial damages</td>
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<td></td>
<td></td>
<td>• Dissatisfaction with how much is known about whom?</td>
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<tr>
<td></td>
<td></td>
<td>• Loss of social trust</td>
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