Information Accountability Foundation

A Principled Approach to Rights and Interests Balancing
Multi-Dimensional Proportionality

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This is a briefing paper on the IAF ongoing work on evolving the proportionality principle to provide guidance for assessing whether interests and rights are balanced in a fair fashion. This paper will evolve so look to the date for the most current version.

Data Driven Innovation Aiming for 2025

Europe and much of the rest of the world have digital agenda that are about, in part, creating a safe pathway for data driven innovation:

- for data to be turned into information
- for information to be turned into knowledge, and
- for data to facilitate actions that are societally beneficial to people.

To meet national objectives, this processing must be conducted in a manner that is lawful, fair, and just. Many of these digital agendas are spurring fair artificial intelligence (AI) legislation and modifications of data protection law to create a pathway for data to be used for machine learning and AI model development. These laws do or will require more robust assessments related to the interests of individuals, groups of individuals, and society. As the laws attempt to create a pathway for data pertaining to people to be used, there also is skepticism that organizations will be tempted to use information inappropriately to serve the organization's needs, and not the needs of other stakeholders. So, legislation calls for processing to be necessary and proportionate. Necessary seems clear. Data is only processed if there is a legitimate need that may be achieved only with processing. Proportionality is less clear. What factors are being weighed to determine if the processing is proportionate? The purpose of this project is to define and scale the meaning and application of proportionate so that processing meets the needs of impacted stakeholders and does so in a in a manner that can be demonstrated.

Proportionality as a Private Sector Principle:

For the past three years, the IAF has been thinking about how the full range of rights should be balanced by private sector organizations as analytic programs have become more important to how society and organizations operate. The pandemic, and consideration of means to track the expansion of the dangerous virus, showed the policy community lacked the mechanism to balance the interest in individual control and autonomy, with the interest of other persons impacted by the disease spread. The expansion of national digital agendas in numerous jurisdictions have increased the focus on the need for data to inform fair AI, without a demonstrable mechanism to balance individual interests versus group interests. The 2009 work on the accountability principle, where the principle received form and substance, led the IAF team to an exploration of how the proportionality principle, which is

built into most privacy laws, including the proposed Canadian law C 27, the Council of Europe Convention 108+, and the proposed American Data Privacy and Protection Act (ADPPA), might receive depth and dimension. If multiple stakeholder interests are to be considered, the IAF thinks proportionality is a path to evaluate. To mirror the dimension the IAF intended for the principle, the phrase multi-dimensional proportionality was coined. The IAF has chosen to give a current principle added meaning and a revised name, rather than attempting to create a new principle not already established in law and guidance.

Evolving Proportionality So It Works with Learning Systems Such as Machine Learning

Legacy definitions for proportionality begin with mathematics. The mathematical concept of proportionality is simple. It relates to the fixed ratio of one factor to another. When baking a cake, for example, as the flour volume is increased, the amount of baking powder must be increased at the same ratio. Factor A relates directly to factor B. This relationship assumes that factors A and B are the only factors involved. In reality, that is rarely the case. As external factors change, the relationship between the factors changes as well. In the baking example, the relationship between flour and baking soda might change as the humidity or altitude at which the cake is baked changes.

The mathematical proportionality definition may be sufficient when thinking about applying the principle to data used by the government for a specific application because other factors already have been weighed. When the government collects and uses data pertaining to people, it must have a public purpose. That purpose sets factor A, and that factor must be balanced against the loss of liberty by people to whom the data pertains, factor B. So, the achievement of the public purpose is being balanced against the loss of liberty, and the means that achieves that purpose with the least impact on individual rights is desired.

An example of this public sector balancing is the guidance given by the European Data Protection Supervisor to the European Parliament on how to take proportionality into consideration when considering new laws governing public use of data. However, before factor A, the public purpose, is defined as necessary and legitimate, there has been a political balancing of external factors that drive the realization that there is a public purpose. Since the defining of appropriate policy has taken place already in defining public purpose, the balancing of A versus B may stay a simple ratio of A versus B. Furthermore, since the scope of public purpose is defined already, proportionality in the government setting often tends to take on the character of data minimization, the least amount of data to achieve the public purpose at a satisfactory level.

Private sector privacy laws often require processing be proportionate, but rarely define the term. The term is used to suggest analysis, in partnership with the term necessity, with the assumption that data controllers will understand what those terms mean. Necessity means processing necessary to achieve a legitimate processing objective. But what does proportionality mean? Based on guidance and cases where proportionality is discussed, it seems that policymakers and regulators are saying that proportionality is limiting the data processed to only that data that is necessary to achieve the processing already deemed necessary. In other words, in the private sector, proportionality means data minimization. This interpretation makes proportionality similar to the way it is articulated for the government. Yet in the government case, there already is a prior process that has defined a purpose as being a legitimate public purpose. This determination has been subject to a political process that defines the parameters for public purpose, but there is no methodology for that determination to take place in private sector processing.

Organizations process data to achieve one or more private purposes. Many of those purposes may have public value, but they are not typically public purposes. Furthermore, the risks to people are broader than a loss of liberty. Instead of the single factor of balancing a public purpose against a loss of liberty, in the private sector, it is more like baking bread at changing altitudes with ever changing humidity, and other factors coming into play as well. The private sector is multi-factor in nature. Furthermore, the multi-factor analysis is not limited solely to the factors of organizational processing and the individual to whom the data pertains.

For example, new state laws in the United States require organizations to look at the impact to groups of people and society, as well as the impact to the individual. This approach also is reflected in Recital 4 of the EU General Data Protection Regulation (GDPR) which states that the right to data protection is not absolute and must be balanced against other fundamental rights. The impact of complex processing on numerous stakeholders against numerous interests needs to be considered.

Proportionality, in the private sector, cannot mean just minimization. It should mean multi-factor analysis, hence the term multi-dimensional proportionality. There is a tendency for policy discussers to take the proportionality factor from the public sector and apply it and its data minimization implications as the balancing factors in the private sector. However, private sector data users are not chartered to serve a public purpose. The balancing that goes into defining a public purpose as being legitimate does not exist for the private sector. The public purpose for the government already has balanced societal factors to define the public purpose as satisfactory. Furthermore, data minimization already exists as a privacy principle. The IAF thinks proportionality in the private sector must be more than data minimization, and since the organization is not representing the public interest, proportionality when used in the private sector most have a meaning different than when applied to government use of data.

Therefore, for proportionality to have meaning in the private sector, there must be an evaluation process that goes beyond the balancing of two factors. Instead, proportionality needs to bring in all the factors that are involved when data is used for complex purposes. This involvement is particularly so when data protection as an individual right requires a balance with other fundamental rights, and those other fundamental rights must be balanced with the interests of others. Proportionality must become less linear and more multi-dimensional. The mathematical definition, that requires fixed ratios, is the basis of proportionality in the government setting, but it is not expansive enough to give proportionality the substance and form necessary for it to be exercisable by organizations and overseen by regulators in the organizational context. This difference means that proportionality, as a principle, as it relates to governing the relationship between organizations and individuals, must operate in a non-linear manner.

Developing a Methodology

A methodology is necessary to, in an orderly and repeatable fashion, identify and demonstrate three components:

- The individual rights (in a fundamental rights-based system) or established individual interests (in legal systems when fundamental rights are not established),
- The stakeholders whose rights or interests are involved, and
- The adverse processing impacts that may be involved and their likelihood and level of consequence

To create that robust process, the IAF has developed a directory of rights, interests, stakeholders, and consequences, and symbols that represent those factors. This is the multi-dimensional proportionality

project which provides form and substance in a world that demands both protection and advanced probabilistic programs. To workshop this issue, the IAF is conducting at least three dialogs. The first workshop was held on 14 September 2022 in London. The second will take place 18 January 2023 in Toronto. The third will be held in April in Washington DC.

- The London discussion explored:
    - What "proportionality" means to the various stakeholders,
    - How moving from a linear perspective to the multi-dimensional perspective, which takes into account the full range of interests of (a) data subjects; (b) groups of data subjects; (c) broader society; and (d) organizations, changes the perspective.
    - With the full range of interests and impacted parties in mind, what would be the basis for (a) a definition of; (b) parameters for measuring; (c) scoring; and (d) demonstrating multi-dimensional proportionality.
    - Whether the concept of multi-dimensional proportionality begins to create a trusted means for data being used for the most advanced forms of probabilistic programs (such as AI).
    - Next steps for further expansion and exploration.

The meeting results are being shared with London participants and are the starting point for similar discussions in Canada, the United States and possibly Europe.

Directory of Rights, Interests, Stakeholders and Impacts, Plus Visual Representations:
This discussion is broader than the European Union (EU). However, it is useful to look at the articulation of rights and interests in a couple of situations.

In the rights that are guaranteed in the Charter of Fundamental Rights of the EU (Charter), under the heading "Dignity," five rights are listed, including the right to human dignity, and under the heading "Freedoms," 14 rights are listed, including data protection. The provisions of the Charter are addressed to government action against the individual, and according to Article 52(1) of the Charter, limitations on the exercise of these rights and freedoms must be provided for by law and they must be subject to the principle of proportionality and may only be made if they are necessary and genuinely meet objectives recognized by the EU or they need to protect rights and freedoms.

Recital 4 of the GDPR states that the right to the protection of personal data is not an absolute right and that it must be considered in relation to its function in society and be balanced against other fundamental rights recognized in the Charter, in accordance with the principle of proportionality. Thus, Recital 4 makes it clear that the process for data protection goes beyond the fundamental right to data protection, which is not absolute, and that the concept of risk balancing is built into the right of data protection.

GDPR Recital 76 makes clear that the likelihood and severity of the risk to the rights and freedoms of the data subject should be determined by reference to the nature, scope, context, and purposes of the processing. The risk should be evaluated on the basis of an objective assessment.

The United Nations Universal Declaration of Human Rights (UN Declaration) issued in 1948 contains 30 articles. For the purposes of this discussion, the most relevant articles are:

- Article 1-2 establish the basic concepts of dignity, liberty, and equality.

- Articles 12-17 set forth the rights of individuals not to be subjected to arbitrary interference with their privacy, family, home, or correspondence, towards the community, including freedom of movement and residence within each state, the right of property and the right to a nationality.
- Articles 19-21 sanction the so-called "constitutional liberties" and spiritual, public, and political freedoms, such as freedom of thought, opinion, expression, religion, conscience, peaceful association of individuals, receiving and imparting information and ideas through any media
- Articles 22-27 sanction individuals' economic, social, and cultural rights, including healthcare; upholds an expansive right to an adequate standard of living; and makes special mention of care given to those in motherhood or childhood

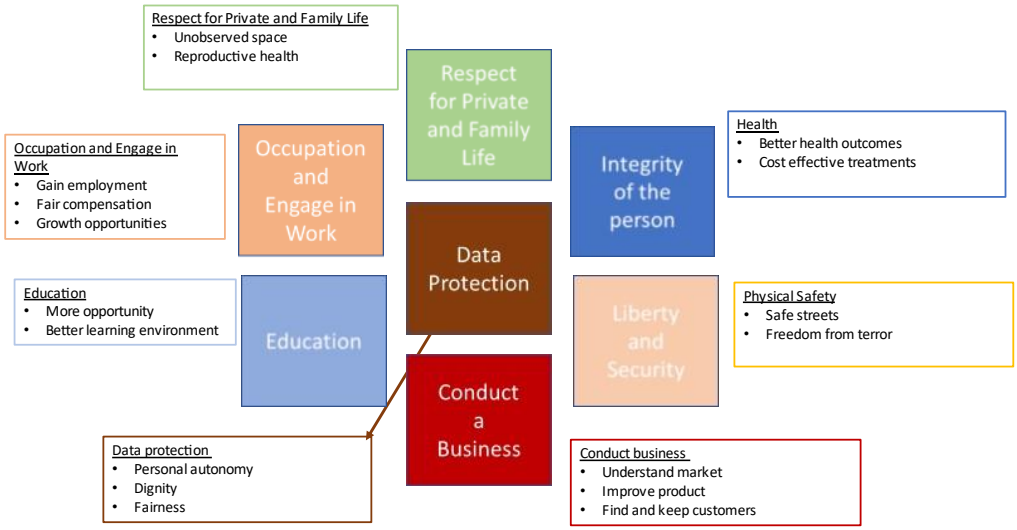
The UN Declaration sets forth individual rights which apply to both the public and private sector. For this reason, it is a good basic directory of rights.

Balanced Analysis, Demonstrability, and Proportionality

National digital agenda have stated goals to achieve greater digital driven economic growth, meet societal needs, and still protect individuals from inappropriate adverse processing impacts. Meeting the full range of societal interests, while still protecting individuals from inappropriate adverse processing impacts, requires rigorous assessments and demonstrability when data is used beyond the top-of-mind expectations of people. Without structure, it is hard for an organization to demonstrate the various stakeholders involved, the rights and interests of each of these various stakeholders and how the likelihood and severity of risks impact the rights and interests of each of these various stakeholders. This project is intended to create a pathway for that analysis so there is a course of action to advanced analytics and AI. This demonstration of stakeholders and interests is multi-dimensional proportionality, and an example of it is illustrated on the following charts.

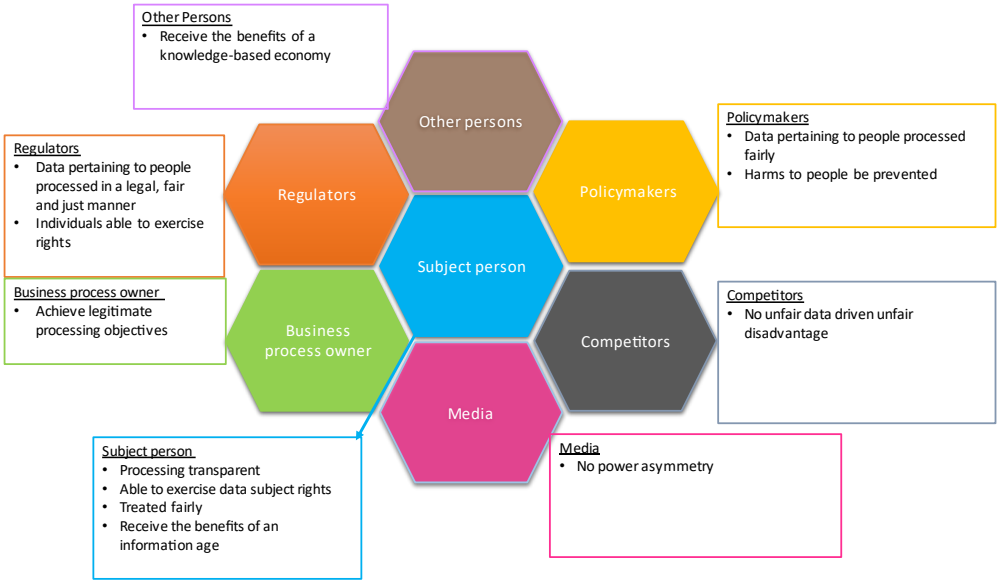
As an example, this first chart shows the rights, as defined by the Charter, that might be involved.

Fundamental Rights



When looking at rights and interests, it is important to identify which stakeholder's rights and interests are involved when looking at the likelihood and magnitude of adverse consequences related to a processing. Obviously, the person to whom the data pertains and the person that would like to process the data have rights and interests. However, there are other persons that have rights and interests. This particularly is the case when data is being processed to discover new insights, to solve problems or to conduct scientific research. Those other persons are defined based on the context for the processing. The chart below shows who those stakeholders might be.

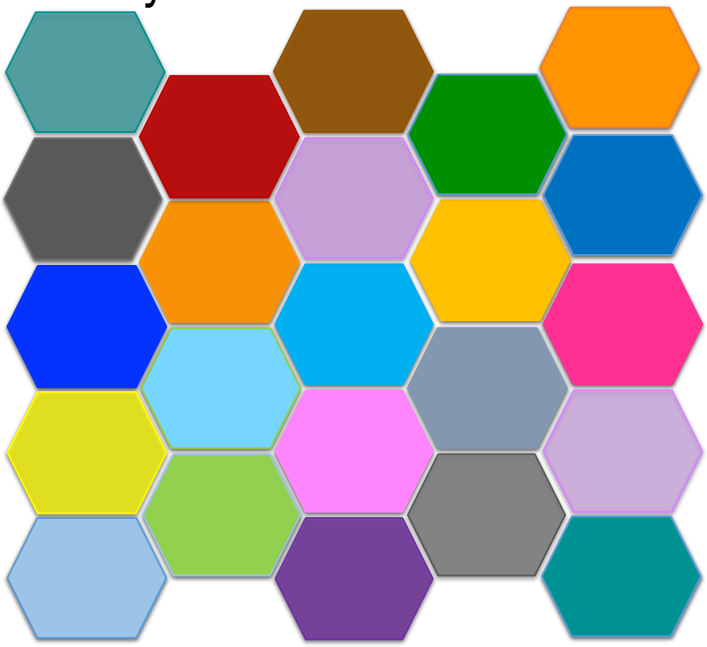
Possible Risk Stakeholders



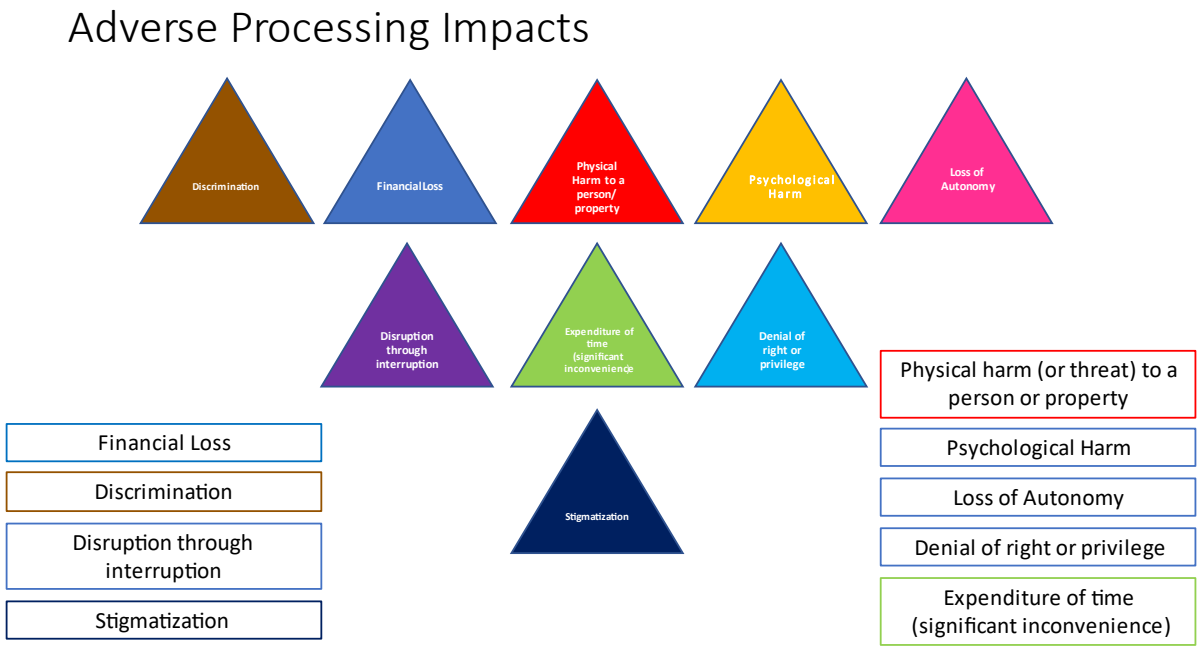
Not all rights and interests have the same risks. In order to identify the risks, it is necessary to identify the stakeholders. This chart identifies stakeholders that are external to an organization from a controller's perspective. This chart does not purport to identify all of the external rights and interests. The purpose of this chart is to give an idea of how to begin to identify one set of risk stakeholders and the related risks.

The purpose of the chart below is to show that there are dozens of risk stakeholders. The chart before this one only shows one set of risk stakeholders. In order to adequately do a risk assessment, the organization must identify all of the various stakeholders. Once all of the stakeholders and the risks they raise have been demonstrated, it is necessary to weigh those risks.

There may be dozens of stakeholders

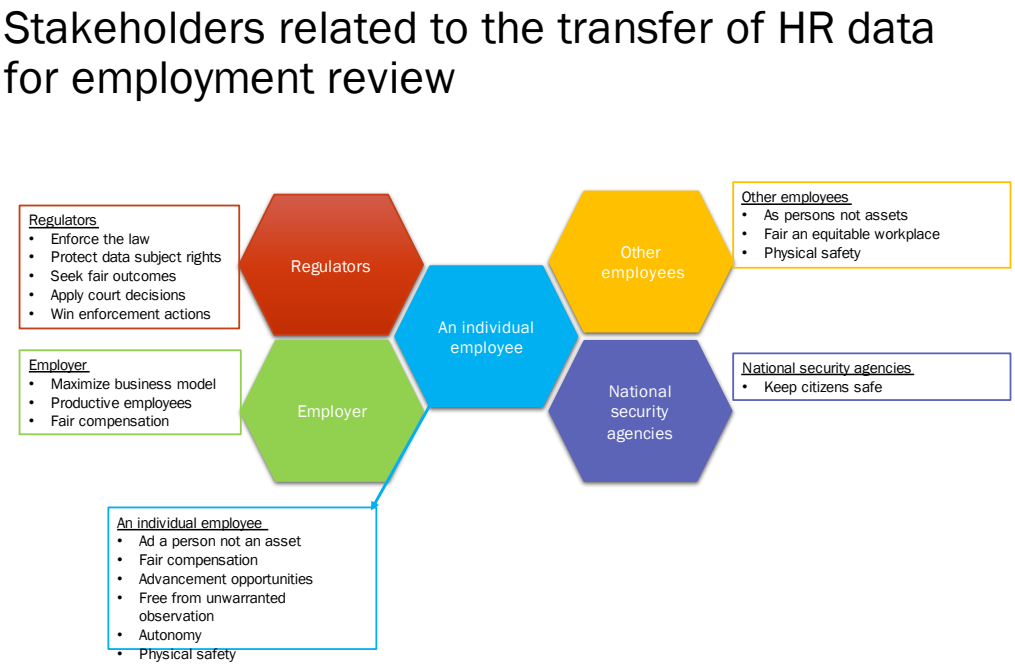


The IAF, based in part on the work conducted by the U.S. Commerce Department, identified nine classes of adverse processing. They are identified as triangles in the chart below.



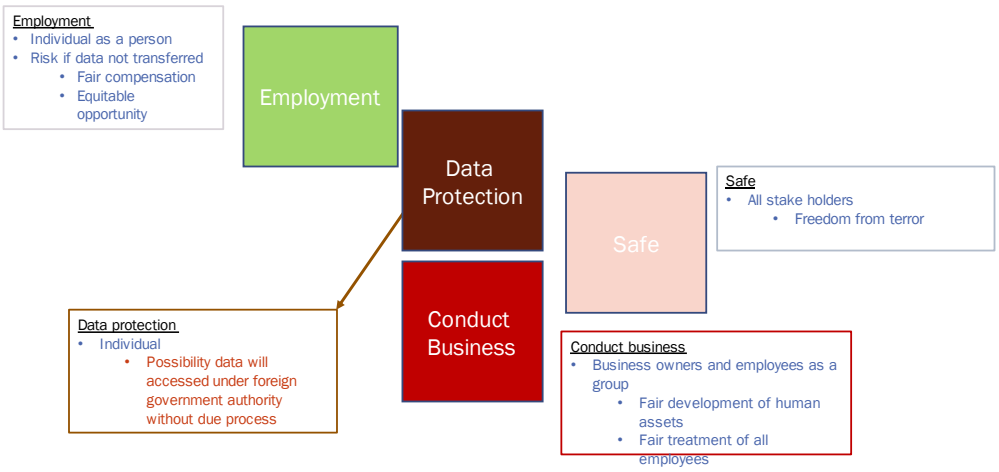
An Example Based on Human Resource Data Transfers

The IAF authored a paper in 2021 on the risks associated with transferring data for human resource processing purposes. The following charts are for demonstration purposes only. The first chart shows stakeholders involved when human resources data is transferred internationally for evaluation purposes and what their various interests are.



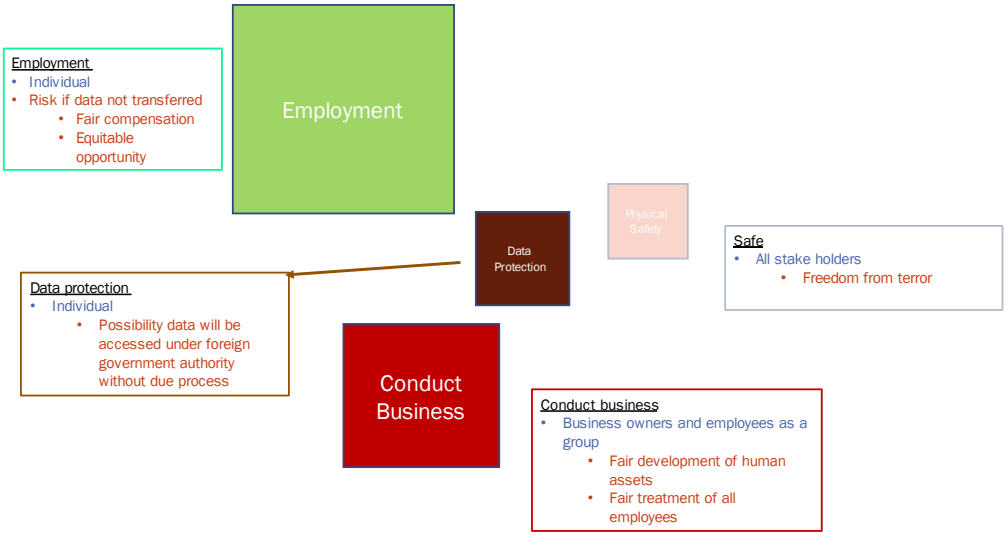
Next, the rights and interests need to be considered (oblongs as interests rather than squares as rights).

Fundamental Rights Related to HR Transfers



This chart identifies the various rights and interests raised by the international transfer of human resource data. Lastly, below the rights/interests are risk weighted (for demonstration purpose only).

Fundamental Rights Related to HR Transfers- Weighted



This chart demonstrates multi-dimensional proportionality. This risk ranking has been conducted by IAF staff and is an example of how risk rating might be demonstrated.

How to Add Multi-Dimensional Proportionality to the Assessment Process:

The IAF has been developing assessments to evaluate the rights and interests of the various stakeholders involved in advanced analytic processing since at least 2015. As the processing became more complex, as the stakeholders became more numerous, as more elements were added, the assessments became more complicated. Furthermore, regulators became unwilling to review assessments that added interests beyond those of data subjects because the addition of those elements made the assessments lack uniformity and that lack of uniformity made reviewing the assessments more difficult. That complexity and lack of uniformity made these assessments off-putting, harder to understand both internally and externally, and more time consuming. The appetite both to do them and to accept them decreased.

The answer has been to look for ways to make demonstration both more explicit and uniform. The first step has been to experiment with graphic representation that shows both elements and scale. As shown above, at least three sets of elements exist.

1. Interests or rights that are represented by oblongs for interests and squares for rights (the assessor picks one or the other). The different interests and rights are represented in different colors (tables with those colors are created).
2. Stakeholders are hexagons, and different stakeholders are different colors.
3. Adverse processing impacts are triangles, and different impacts are different colors.

The risks to particular rights and interests, to particular stakeholders, and from particular processing impacts may be large or small – or somewhere in between – and that degree is reflected in the size of the shape.

Future work of the IAF in assessments is focused on how the assessment questions generate these visual representations. The next step is to determine how to weigh and reflect visually the weight of the factors.

The IAF has a concurrent project exploring ways to make corporate knowledge creation - corporate research - trustworthy. That project is looking to the use of oversight sandboxes to develop the assessment elements that will establish that such research is socially beneficial. This assessment is a step towards creating a pathway for trustworthy data flows for knowledge creation as part of AI.

These two projects will come together to show that there is a standardized way to assess the full range of risks to the full range of stakeholders and that the results are easily demonstratable.