




— INFORM'S RESPONSIBLE AI GUIDELINES



We aim at trustworthy AI. To that end, we have defined principles for the responsible design, development, and application of AI systems. 

PREFACE

The capabilities of AI models and their applications in business and everyday life are developing at a fast pace. The tremendous progress on Large Language Models like ChatGPT, but also on other AI applications fascinates people and humanity. At the same time, it raises concerns on the reliability and safety of the use of AI for some specific cases, and their impact on society, businesses, and work life. Software companies providing AI can no longer treat algorithms as a purely technical matter but need to frame the deployment of AI with questions on impact, ethics, and responsibility. AI has evolved from research into a matter for everyone to consider.

Since its founding in 1969, INFORM has been a pioneer in applying algorithms to business problems, including search and optimization techniques as well as machine learning. Both classes of techniques have tremendously benefited from technical as well as methodological enhancements. We continue to be eager to enhance businesses with such technology. At the same time, our strong values have always driven us towards a responsible use of AI.

We see ourselves continuing to work on this mission. In order to uphold our high standards when scaling AI applications, we see the need to make our values and product development practices clear and transparent. INFORM's Responsible AI Guidelines are meant to make our principles explicit, towards our employees as well as towards our customers, suppliers, and partners. We believe that only transparency and a human-centered approach can provide the basis for trustworthy AI to be adopted and accepted by people.

With our European roots and worldwide presence, we see our values to be deeply anchored in humanitarian thinking, and we are happy to see our home country rank highest in the AI Social Contract Index¹. While this provides the basis for an ethical and responsible use of AI, we are at the same time eager to contribute to a more widespread adoption of ethically acceptable AI and other algorithmic methodology for the good of business, humanity, and sustainability. As part of our sustainability agenda, we are committed to the UN's Sustainable Development Goals, and this includes our AI activities.

With this document, we contribute to the ongoing discussion about how AI can be framed responsibly.

¹ Michael Dukakis Institute for Leadership and Innovation, Center for AI and Digital Policy: Artificial Intelligence and Democratic Values – The AI Social Contract Index 2020 (AISCI-2020), <https://dukakis.org/wp-content/uploads/sites/15/AISCI-2020.pdf>

INFORM'S AI APPROACH

Even though Large Language Models (LLMs) – with ChatGPT as the most popular representative – have attracted a lot of attention from the public lately, a whole range of technologies is now currently summarized under the term “AI”². INFORM has always been building algorithms and software to optimize business processes using artificial intelligence technology, with strong roots in the advanced mathematics of operations research (OR). Based on the specific use case, we employ appropriate methodologies according to the task at hand, including search and optimization techniques and heuristics, supervised and unsupervised learning, or combinations of those. We call this “customer-centric strategy” in our Hybrid AI approach.

Our over 1,000 employees serve more than 1,000 current business customers worldwide, including container terminals, passenger airports, financial and telecommunication service providers, industrial operations, wholesalers, storage, and transshipment hubs, as well as shipping companies. We have more than 50 years of experience with business processes and AI methodology, including all of the above classes of AI algorithms. However, we are not only interested in AI technology. Our industry experts aim to leverage the potential of algorithms and software in close collaboration with our customers, as part of their digitalization and optimization initiatives. As part of our B2B approach, our AI applications typically apply to well-defined business contexts, which can typically be used to contain potential AI-related risks.

We believe that the above-mentioned AI methods will see even more widespread business adoption in the coming years and decades. We aim to leverage advancements in methodology and computing power even more, for the benefit of our customers. This includes AI that makes even more business data available (e.g., as part of privacy-preserving perception AI) as well as exploitation of business data as part of focused-process AI use cases up to large-business AI models, and language models for human-computer interaction.

We embrace the opportunities that research and technological advances bring and believe AI incorporates promises to increase human agency. As an example, LLMs hold many positive promises, not only with regard to assisted authoring of texts, but in particular with regards to improvements of the human-machine interfaces to business systems. On the other hand, we are aware that AI advances may provoke fear and entail risks. All the more, we see the need to define the circumstances under which AI is used, as laid out in our Responsible AI Guidelines.

RESPONSIBLE AI AT INFORM



The following guidelines are applied to the design, development, and maintenance of INFORM's systems, regardless of which AI methods they rely on. Thereby, we aim to build trustworthy software. We aim to uphold high standards in engineering the algorithms underlying our systems and engage in their responsible application and design.

As part of this, it is relevant to distinguish between different applications of AI. As an example, recommender systems which are often used in e-commerce are usually uncritical. Decision support systems often fall into a similar category. In contrast, in consequential applications of AI, an AI system's decisions will have a more significant impact, e.g., affecting people at a personal level. For example, when AI-based algorithmic decisions are not only used as recommendations or decision support, they may also directly impact workers' lives. Some AI systems even need to be considered life-critical, e.g., in medical applications or autonomous driving. Most INFORM systems can be categorized as recommender or decision support systems, but some of them have a higher impact.

AWAWARENESS

² See e.g. the AI definitions by OECD and the European Union.

INFORM'S RESPONSIBLE AI GUIDELINES

1. BENEFICIAL AI
2. HUMAN-CENTRIC AI
3. ALIGNED AI
4. PRIVACY-PRESERVING AI
5. RELIABLE AI
6. SAFE AI

1.

BENEFICIAL AI

We aim to build AI systems that benefit users and society. We promote advances in business operations through the adoption of ethical AI. We embrace the discussion on the societal impact of AI and the future of work. We aim to avoid AI's negative societal and business impacts, such as misinformation, bias amplification, and promotion of societal divides. We aim at AI that is fair, inclusive, and non-discriminative. We do not develop systems that are meant to be used for malicious purposes. For consequential and life-critical applications, we promote the review of our AI algorithms by our customers or experts commissioned by our customers.

2.

HUMAN-CENTRIC AI

We believe that AI systems should assist human beings in their work, supporting and enhancing decision-making processes in businesses. Our systems allow for a review of the outputs of AI algorithms. For planning applications, this usually means the results can be reviewed before being put into practice. Where real-time decision-making is involved, we allow for human monitoring and auditing. We build AI that provides tools for users rather than building fully autonomous agents. We believe that AI should increase human agency and that accountability needs to remain with human beings.

3.

ALIGNED AI

AI needs to align with human values and objectives. In the business context, this means that algorithms should follow the objectives of users and/or other stakeholders. Representing human and business objectives is an integral part of our continuous algorithm engineering. This includes ensuring that ethical objectives can be followed. With search and optimization algorithms, this means that the judgment of what a “good solution” is, can be controlled, e.g., in the form of an objective function. In machine learning, training data is analyzed for bias. Where possible and appropriate, we make use of transparent and explainable AI.

4.

PRIVACY-PRESERVING AI

We are committed to privacy and data protection and adhere to the respective legislation. We are particularly mindful of data protection and the ethical use of AI for use cases that significantly impact people. Our processes and practices comply with the regulations in the European Union’s GDPR. We have implemented information security practices and management systems to ensure high-security standards approved by ISO 27001 certifications.

5.

RELIABLE AI

Especially for consequential and life-critical applications, we are committed to delivering AI applications of high quality and reliability. This means that it must be made sure that such systems meet their desired effects. To that end, we use good software engineering practices to design, develop, and test algorithms. With machine learning algorithms, this especially includes the analysis of training data for bias. Machine learning algorithms are tested for unreasonable or other unwanted results. User interfaces make algorithmic results transparent to users. When operating AI-based software, audit trails or other software capabilities provide means of monitoring the software to remain reliable under changing conditions.

6.

SAFE AI

INFORM designs and develops AI algorithms for different markets. Their impact is usually clearly delimited to the business domain in which they operate, with clearly defined interfaces to surrounding business domains. This is normally always given for search and optimization algorithms as well as for focused AI use cases. Where Large Language Models or similar AI logic is used for which safety issues may arise, INFORM will contain the impact of such model. Where containment to the business domain is not evident from the system design, the AI system will be subjected to internal review for potential impacts, e.g., for excluding malicious API calls, code injection, jailbreaking, or other malicious practices.

TOWARDS A FUTURE WITH AI – **RESPONSIBLY**

Digital technology, and in particular AI, have long grown out of being a topic for engineers only. AI is more and more influencing our daily life, sometimes without even our noticing. It is to be expected that businesses will keep pace with this. AI is expected not only to change the labor market but affect work in many ways. We believe that these developments can be seen to be positive if these developments are taken responsibly. Moreover, we believe responsible AI conduct is even a precondition for adopting AI for successful use cases. In the above Responsible AI Guidelines, we lay further grounds to support these developments at a technical level and to frame them with ethical and societal dimensions.

In line with INFORM's core values, we are committed to high standards concerning AI design, development, and maintenance. Proving the practical viability of algorithmic technology was one of the main goals for founding INFORM more than 50 years ago. To this date, we stick to this principle and are complementing it with a discussion about more considerable impact of technology. In this pursuit, we are happy to further shape intelligent design-making in business, together with our customers, suppliers, and partners.

TOGETHER

