Automated and Data-driven approaches to address compliance challenges
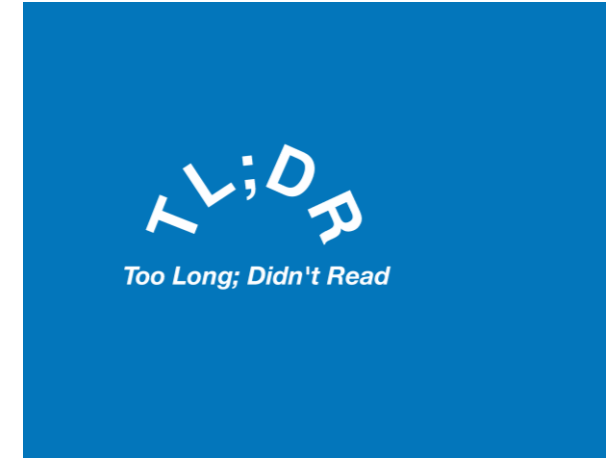
Natalie Bertels
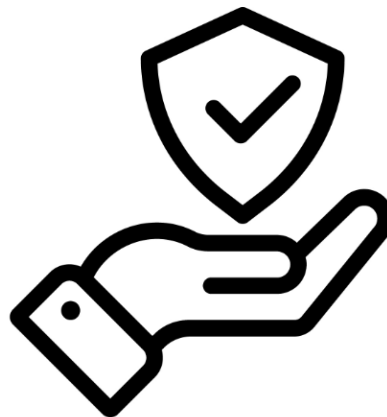
Tervel Bobev

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BDVA co-lead TF Policy &Societal

- Principles and values
- Fundamental rights and freedoms
- Laws
- Codes and standards
- (Company) policies
- Agreements
- (...)

How do we define 'Compliance'?

- NO SINGLE DEFINITION! -> Compliance is what you make it, and the term takes on different meanings depending on the context!

- Compliance as a state of being? Example:
  - "'legal compliance' means full implementation of applicable legal requirements" [Regulation 1221/2009 - EMAS regulation]

- Compliance as a property of an item? Example:
  - "EU Legislation Compliance is the property of (national/local) legislation to be coherent or to implement European legislation." [European Library of Architecture Principles, Interoperable Europe]

- Compliance as (a combination of) processes? Example:
  - "compliance would be 'all the processes that ensure that the behavior of the company, its managers and employees complies with the legal and ethical standards applicable to them' " [*Cercle de la compliance* via Antoine Gaudemet 2020 – "*What is compliance?*"]

How do we define 'Compliance'?

- Interim conclusion: Compliance is purposively defined by individual actors in a way that reflects their needs. Legislators often see compliance as an end-state, investigators and enforcements bodies see compliance as a collection of processes, engineers see compliance as a headache.

- For developing automated compliance solutions: Compliance = simultaneously a combination of processes (e.g., reporting obligations and mandatory security practices), a property of objects (e.g., a legally-compliant contractual term by its nature), and an end-state (e.g., a compliant business operation).

Towards a broader and more holistic compliance concept?

- Compliance with Regulatory Provisions
- Compliance with Industry Codes and Standards (also legally relevant)
- Compliance with Ethical Codes
- Compliance with Company Policies
- Compliance with Company Culture, (…)

Role of Data and AI?

- Compliance with Data and AI regulation
- How does regulation and compliance of this scale work in practice?

Need for RegTech (Regulatory Technology) - AI-driven and Data-driven compliance

Why Automated/Data-Driven compliance ?

- Automated solutions are scalable.

- Automated solutions are efficient.

- Data-driven solutions allow for better risk identification.

- Data-driven solutions allow for continuous compliance monitoring, rather than snapshot-like appraisals.

- Automated + Data-driven solutions enable greater accountability and transparency in reporting.

Data-driven and automated compliance is no longer an optional perk – it's becoming is a state-of-the-art **expectation** by regulators.

In Europe and beyond

"Do compliance personnel have knowledge of and means to access all relevant data sources in a reasonably timely manner? Is the company appropriately leveraging data analytics tools to create efficiencies in compliance operations and measure the effectiveness of components of compliance programs?" + "Are companies putting the same resources and technology into gathering and leveraging data for compliance purposes that they are using in their business?" – US DOJ, Sept. 2024 Evaluation Criteria for Corporate Compliance Programs

Stakeholder Audience	Function	Degree of Automation	Layer of Compliance	Industry	Maturity (TRL)	Technologies Employed	Legislations / Codes Addressed
RegTech	Risk and Operations	Descriptive	Regulatory	Financial	TRL	**AI**...	
SupTech	Compliance and Reporting	Diagnostic	Codes and Standards	Cybersecurity		...and many, many more!	
EnfTech	Supervisory	Predictive	Ethics	Healthcare			
	Ethical	Prescriptive	Internal Policies	Energetics			
	Enabling Infrastructure	Proactive	Internal Culture	Data			
				AI			
				Construction			
				Machinery			
				Many more!			

Stakeholder audience

SupTech

- data collection & analytics to enhance reporting, data monitoring, forecasting, etc.
- Audience: Supervisory Authorities

EnfTech

- monitor for violations, process evidence, and execute or assist in sanctions.
- Audience: Enforcement Agencies

RegTech

- any **technology** that **ensures** companies are **complying** with regulatory requirements." (Teichmann et al., 2024)
- Audience: Industry

Functions of Data-Driven/Automated 'Regtech' Solutions

- Grassi and Lanfranchi (2022):
  - Compliance
  - Monitoring
  - Risk Management
  - Reporting
  - Operations
- Sitra - Fehlinger (2023):
  - Risk & Operations Tech
  - Compliance & Reporting Tech
  - Supervisory Tech
  - **Ethical Tech**
  - **Enabling Infrastructure Tech**

Expected Functions of Industry Regtech

- Sitra (2023):
  - Risk and Operations Tech
    - Internal risk management
    - Data analytics
    - Data-enhanced corporate decision-making
    - Technology and interactions monitoring
    - Abuse detection
  - Compliance and Reporting Tech
    - Collecting relevant data points for audits by regulators
    - Submitting reports and data to supervisors
    - Structuring data for transparency reporting and explainability of the functioning of systems
  - Ethical Tech
    - Navigating the risks of yet unregulated uses of new technologies, such as computer-brain interfaces or quantum computing
    - Navigating the grey zone areas of existing regulations (for example moderating illegal content under the DSA)
  - Enabling Infrastructure Tech
    - Absorbing regulatory complexities
    - Automatically enforcing new legal requirements by design
    - Proprietary or open-source technological infrastructure protocols
    - Application programming interfaces
    - Data-sharing solutions
    - Blockchain and smart-contract solutions
    - Digital ID systems
    - Foundational ethical AI models

    https://www.sitra.fi/en/publications/enabling-the-responsible-use-of-technology-at-scale/#summary

Degrees of Automation: some examples

- Coll (2024) on Enftech Generations:
  - Descriptive
  - Diagnostic
  - Predictive
  - Prescriptive
  - Proactive
- ACCORD Project, D1.1 (2023) on automated construction compliance checking:
  - No Automation: manual processes
  - Automated Information Exchange: Automating submission of information using appropriate data models
  - Automated Validation: Automating the checking of submitted information for completeness
  - Partial Automation: Automatic assessment of some key aspects of the building permitting process
  - Automation: Fully Automated assessment of the entire building permitting process but requiring final human review and approval.
  - Full Automation: Fully automated building permitting

Industries/Areas of Compliance Automation

- Established:
    - Financial Services
    - Cybersecurity
    - Healthcare
    - Energetics
- Recent:
    - Construction/Machinery
    - Data (personal/non-personal) & Data Markets
    - Artificial Intelligence

(Some) Common Technologies for Automated and Data-driven Compliance

- AI and Machine Learning

- Natural Language Processing for complex unstructured data

- Blockchain for e.g. transparent records of transactions

- Data Analytics for e.g. data validation and risk identification

- Knowledge Graphs for e.g. inducing rules and explainability in AI decision making.

Typical compliance solutions rely on several technologies working together!

More dimensions for mapping compliance tools

- Legislations/codes governing the use of the compliance solution itself
- Jurisdictional scope of service (Municipal/National/Regional/Union or EEA-wide/Global)
- Licensing approach for the compliance solution: public domain, proprietary, or open-source? (If applicable – which license family?)

Call to action

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Some Challenges in Automated Compliance

- Achieving legal understanding – purely ChatGPT not a legal advisor!
  - Reliable, AI-assisted or automated compliance requires machine-interpretable rules

- Greater semantic interoperability needed to track data provenance/rights/permissions in multilateral ecosystems.
  - Predicated on common ontologies and vocabularies that translate new legislation into machine-readable policy language.
  - Don't neglect the metadata

- AI-assisted compliance tools operate in an evolving regulatory regime. See: AI Act, proposed AI Liability Directive.
  - Recent Complementary Impact Assessment on AI Liability Directive – found "key shortcomings", suggested alterations to regulatory approach. From "AI Liability Directive" to "Software Liability Regulation"?

- Understanding the legal implications of different technical solutions for automated compliance.

Data Spaces as key enablers of Automated Compliance

- Data Spaces enable the predicates of streamlined, automated compliance in an ecosystem:
  - Trust
  - Interoperability
  - Accountability and Transparency

The Broad View: Automation by Default

- Automated compliance is a group effort – the legislator needs to produce automatable provisions.

- **Open question: what qualities do automatable legal provisions need to possess?**

- Looking to the future: the importance of parallel drafting and multidisciplinarity for producing automation-ready legislation.

Governing digital legal systems

Insights on artificial intelligence and rules as code

Hamish Fraser and Tom Barraclough

June 2024