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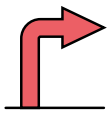
GLOBAL TRADE RULES ACCESS AND COMPUTATIONAL LAW



Businesses operate in an environment of increasing legal complexity. At a global level, trade compliance is particularly time consuming and costly, as enterprises need to be aware of and comply with rules under different international agreements as well as meet their contractual obligations.[1]

With continual economic integration (and in some instances devolution), the rules that apply in cross-border contexts are becoming more numerous, technical in nature, complicated to understand and difficult to operationalize (Atkinson and Schubert, 2021). Although trade policy transparency tools exist (e.g. ePing[2]), many small businesses remain unable to identify and comply with market access rules – tariffs and NTMs – or to utilize preferences.

Capacity to adhere to identity, tax and digital and data regulations can also play a role in limiting or facilitating cross-border commercial activity. Recently, however, legal innovations have sought to address administrative barriers to trade (see Box 24).

These digital solutions can be considered basic examples of computational law: they leverage natural language rules expressed in conditional programming forms (e.g. "if then, else" statements) so that computer software can automatically provide users with legal answers that depend on the input of concrete, trade-related parameters. Yet in such examples of tools where users obtain necessary information on which rules apply, they must still know how to comply with the identified regulations. The automation of this "operationalization" step represents the future of computational law for trade policy.

Computational law is the branch of legal informatics concerned with the codification of regulations in precise, computable form and the automation of legal reasoning (Genesereth, 2015). As such, this area of legal informatics is particularly applicable to trade rules. Emphasizing the capacity of machines to perform legal analyses and processes on behalf of humans, computational law also addresses the automation of private obligations (e.g. contracts, financial standards, business rules for pricing).

BOX 24

EARLY STEPS TOWARD THE APPLICATIONS OF COMPUTATIONAL LAW FOR THE BENEFIT OF SMALL AND MEDIUM-SIZED ENTERPRISES

In response to the difficulties that small businesses face in complying with rules of origin (RoOs) contained in RTAs, the European Commission introduced the Rules of Origin Self-Assessment (ROSA) tool. In ROSA's development phase, RoOs were expressed as "if, then" statements to enable SMEs to see whether their product meets criteria for preferential or duty-free access by answering clear and simple questions. The result of using ROSA is a tailored self-assessment report (i.e. eligibility/ineligibility) based on their answers.

Similarly, in the field of public procurement, more and more RTAs contain ambitious procurement chapters offering new business opportunities. A need for simpler, business-friendly advice on how to use these procurement chapters was stressed as a priority by EU-based exporting firms. The eligibility of a foreign trader to a public procurement opportunity depends on many parameters (e.g. level of government, goods versus services, thresholds, specific conditions, exceptions). Hence, getting a straight answer to a simple question by a trader such as "will my offer be considered on the same basis as the offer from a local company" can theoretically be one in over a million combinations.

Through computational law approaches, this process can be simplified. The development of the Access2Procurement tool also codifies procurement parameters into conditional statements to enable a single step-by-step web interface that only requires a few simple inputs before offering a straight answer.

Challenges still remain. Two in particular are noteworthy. Firstly, translating legal texts into an algorithmic form to give an SME a definitive answer is not always possible. Some RTA provisions do not lend themselves to simple "if then, else" type of algorithms that underpin the two online tools described above and leave a wide margin of interpretation for procurement entities. A second challenge relates to the SMEs themselves. There is still a considerable number of SMEs that are not fully aware of the existence of such tools or their usefulness. This lack of awareness may keep SMEs from being able to capitalize on lucrative commercial opportunities abroad.

Source: Cernat (2021).

> **"Computational law is the branch of legal informatics concerned with the codification of regulations in precise, computable form and the automation of legal reasoning."**

Computational law (sometimes known as algorithmic law) involves several approaches that include the production of natural language legal texts in machine-readable formats (e.g. XML formats) to augment computer and human interaction with content or the expression of rules in machine-executable forms (e.g. through traditional programming, natural language processing and logic programming methods) to enable code and data-driven automation of legal processes (see Hildebrandt, 2018; Genesereth, 2021).

As "calculators for the law" with conditions and electronic documents and data as context, computational rules can help non-experts to understand and comply with obligations. Well-known applications of computational law include tax software (e.g. TurboTax) to automate tax codes with data from employment records or the use of smart contracts to administer private written agreements.

While computational law is a relatively new field and continues to take shape, numerous compliance-focused solutions are in development or exist for, *inter alia*, privacy regulations, intellectual property rights management, and cross-border e-commerce (e.g. tax administration; Genesereth, 2021). Computational rule, norm and guideline specification standards (e.g. OASIS LegalRuleML v1.0) are also emerging. Ultimately, interest is growing in computational law because it can help to bridge the gap between legal and governance structures, information systems and the expertise of users.

Among 1,500 possible technologies, the *Gartner 2021 Hype Cycle for Emerging Technologies* features machine-readable legislation in its set of emerging must-know technologies and trends that show promise in delivering a high degree of competitive advantage over the next five to ten years. As an expected trigger for innovation, computational approaches are starting to influence the operational architecture of international commerce. Although a new term to many, computational law is becoming a driving force behind efforts to digitalize trade.

The difference between computational law and rules as code

The governments of Canada, France and New Zealand have each explored rules as code (RaC) initiatives. A recent OECD study (Mohun and Roberts, 2020) reports that the RaC concept "proposes that governments create an official version of rules (e.g. laws and regulations) in a machine-consumable form, which allows rules to be understood and actioned by computer systems in a consistent way."

For the computational administration of social benefits, the governments implemented RaC initiatives to enable greater functionality of administrative portals and other web services (e.g. benefits calculators) to improve citizen awareness of, access to and qualification for entitlements. As official sources in parallel to natural language legislation, RaC represents an application of computational law, yet not all computational legal methods fall into this category (see Box 25).

BOX 25

COMPUTATIONAL LAW VERSUS RULES AS CODE

Computational law

- the branch of legal informatics concerned with the automation of legal analysis and processes
- includes many approaches, such as the production of legal texts in machine-readable formats and the expression of rules in machine-executable forms

Rules as code

- can be considered as a subset of applied computational law
- typically refers to a variety of approaches to encode official, *de jure*, government rules in machine-executable forms

BOX 26

COMPUTATIONAL LAW IN PRACTICE: CHILE AND THE DIGITALIZATION OF TRADE POLICY

The Government of Chile is taking steps to advance the participation of small business in international trade. Aligned with national economic and social development strategies, the Subsecretaría de Relaciones Económicas Internacionales (SUBREI) of the Ministry of Foreign Affairs has launched a pilot programme in collaboration with the Xalgorithms Foundation to create a freely accessible online repository of trade rules in a human-readable and machine-executable "rules as data" form using tabular declarative programming.*

The emphasis of the pilot is, along with software, to enhance accessibility and functionality of trade rules that are presently written in complex natural languages and "legalese". Through its contributions, Chile aims to become the first jurisdiction to express and publish trade rules as "standardizable" data packages to the internet that can be picked up and used by any system, anywhere. Under the model, SUBREI will also assist Chilean academic institutions in joining the collaboration.

*See https://oecd-opsi.org/innovations/chiles-contribution-to-an-internet-of-rules-for-trade.

Source: Atkinson and Schubert (2021).

What are the features and possible benefits of computational law for TradeTech?

As an interface between businesses, consumers and governments, computational law can build bridges between the various entities and software systems used in trade, with the potential to enable accessibility, automation, standardization, interoperability, cost reductions, transparency, and modelling and testing the effects of regulations (see Box 26):

- Accessibility and automation:
  - For machines, access to computational rules can enhance the functionality of electronic systems for trade information (e.g. trade information portals, transparency notification tools, tariff calculators), operations (e.g. enterprise resource planning, transportation and logistics, e-commerce, banking and finance platforms) and facilitation (e.g. NSWs).
  - For humans, mediated by these systems, accessibility stems from greater inclusion: increased awareness and capacity of non-experts to automate compliance with regulations across jurisdictions. Similar benefits apply for public servants (e.g. customs agents) that can use computational law-enabled technologies to better understand the application and enforcement of their own rules.

- Standardization:
  - Trade compliance involves adhering to regulations by following processes for the import and export of goods. If the 'output' of these processes is achieving compliance, it requires inputs: (i) awareness of all rules that apply to a trade transaction; and (ii) operationalization of these rules through assembly, submission and processing requisite documents and data.
  - Standardization of the content of inputs for trade compliance has progressed rapidly. Examples include HS codes as the global ontology for classifying goods and the WCO Data Model to meet the procedural and legal needs of cross-border regulatory agencies (e.g. customs authorities, ministries of agriculture and health).
  - In leveraging the content of e-document formats (e.g. OASIS Universal Business Language v2.3) and messaging standards (e.g. UN/CEFACT EDIFACT), computational law creates an opportunity to standardize how computational rules are expressed for, discovered by (e.g. based on HS code, origin and destination data) and automated with computer systems.
- Interoperability:
  - The digitalization of measures for trade facilitation is not proceeding uniformly. For example, under Article 10.4 of the WTO's Trade Facilitation Agreement, members agree to implement a single window system for customs authorities. While UN/CEFACT Recommendation No. 33 provides guidance on the development of single window networks (UN/CEFACT, 2005), WTO members are free to implement these systems in different ways (see Figure 3).
  - In the most advanced systems, computational rules are encoded to suit a particular government solution, exist in silos and are not available to other systems (including within the same government or external public and private entities that may benefit from access).
  - Open access to standardized computational rules can support interoperability (i.e. the capacity of computer systems to "talk to each other") through the assembly of applicable "rule sets" from different sources. Fostering interoperability through a corpus of computational law would support more holistic approaches instead of the development of disparate, disconnected intranets.
- Cost reductions:
  - Official rules are costly for governments to maintain across systems and departments. By developing and sharing computational rule repositories (i.e. shared services), governments can reduce maintenance and system upgrading costs. For the users of rules, costs associated with trade compliance may fall or be eliminated altogether.
- Modelling and testing:
  - Before computational rules, especially trade policies, are made available globally, governments can model and simulate possible economic effects (e.g. agent-based modelling).
  - A step further, computational rules can also be tested in controlled environments (e.g. regulatory sandboxes) to better understand their impacts on markets and economic actors.

> **"The development of a body of computational law has the potential to greatly enhance transparency."**

How can trade agreements support global trade rules automation?

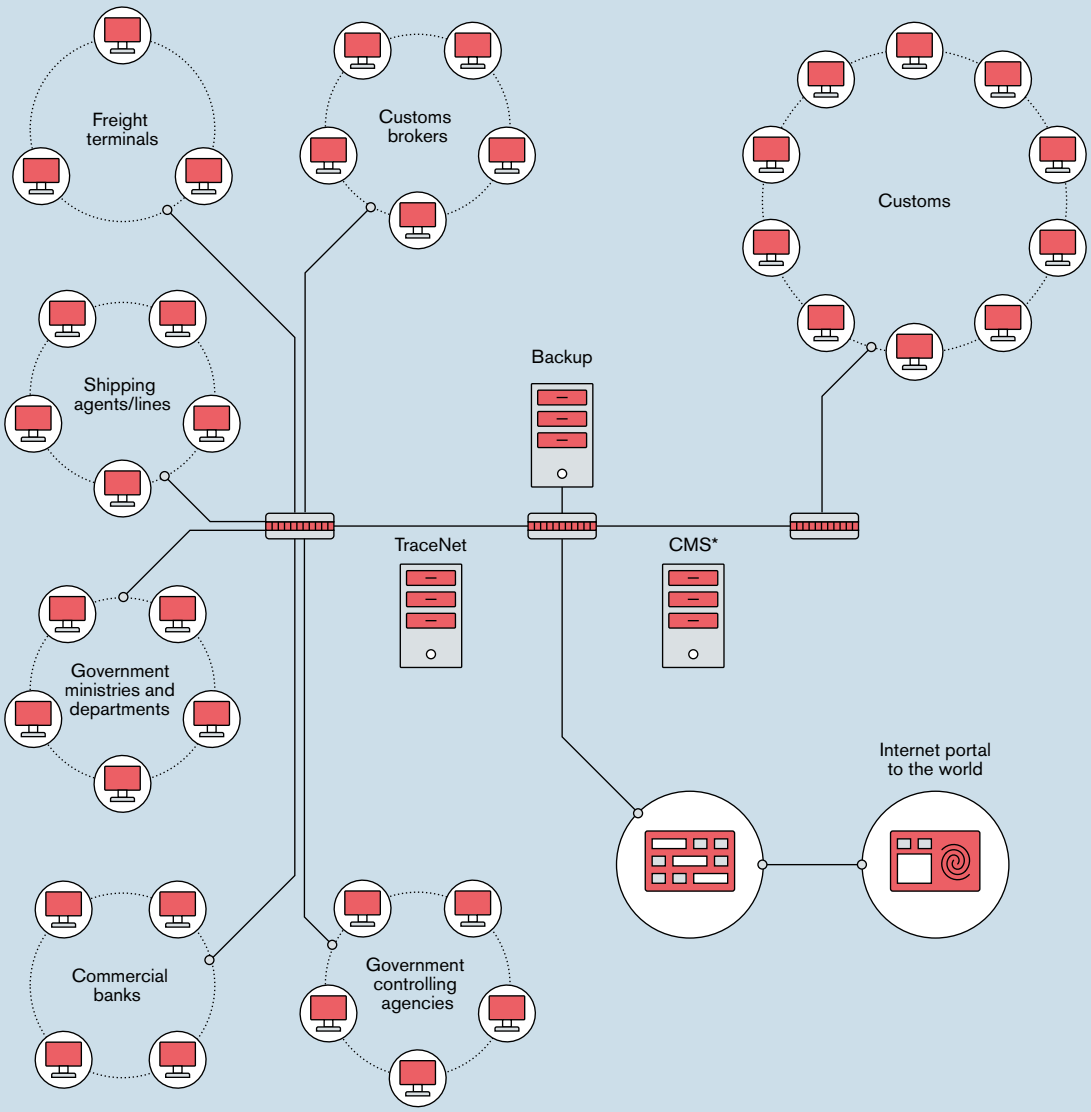
With a view to create a body of computational law that can be accessed by both humans and machines, future trade agreements can encourage governments to publish, alongside the deposited natural language texts, official machine-executable packages of commercial policies (i.e. trade and domestic rules that affect cross-border transactions) and necessary data sources to the internet.

As executable forms that can assist in compliance planning and automation, this goes beyond WTO obligations under GATS, the General Agreement on Tariffs and Trade (GATT) and other WTO agreements' provisions on transparency (requirement to make laws and regulations publicly available). It also goes beyond Article 1(2) (Information Available Through Internet) of the WTO's Trade Facilitation Agreement, which is currently the only WTO rule requiring members to publish trade information online.

When made available online (e.g. through APIs), in parallel to the natural language texts, computational rules and data sources are complementary to the development of single windows and systems for e-certificates of origin, payments, and digital identity, among others. This creates potential for the creation of tools by not only governments but through private sector innovation and developer community access to official computational rules and data sources.

FIGURE 3

EXAMPLE OF A SINGLE WINDOW "NETWORK OF NETWORKS" OF PUBLIC AND PRIVATE ACTORS



* CMS: customs management system.
Source: Based on https://tfig.unece.org/cases/Mozambique.pdf.

The development of a body of computational law has the potential to greatly enhance transparency. The WTO's Trade Policy Review Mechanism could include a section on computational law and provide all stakeholders with the real-time access to the rules of trade that are (or have been) in use during a period of national review.

ENDNOTES

1. See https://trade4devnews.enhancedif.org/en/op-ed/rules-data-21st-century-answer-trade-facilitation.
2. A joint initiative of the WTO, the International Trade Centre and the United Nations, e-Ping is a global online system that enables private and public stakeholders to access and discuss evolving product requirements (sanitary and phytosanitary, technical) and facilitates dialogue among the public and private sector in addressing potential trade concerns at an early stage.