## **Encoding Competition Norms**

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# Background/Problem

- Legal and normative reasoning for digital systems
- Connectionist vs. symbolic approaches
- Goal: Knowledge Base for Automated Legal Reasoning (About Competition Norms)

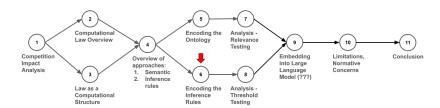
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## **Project Components**

- Ontology of Concepts Related to Competition Norms
- Encoding the Competition Norms
- Reasoning About the Norms

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# Chapter Plan (Previous)



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## Layers of Encoding

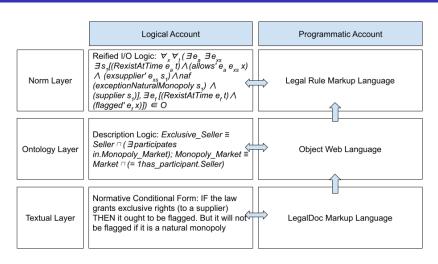


Figure: Layered Encodings (Robaldo, 2020)

## Description Logic

#### Theorem (A1, Ontology, Exclusive Seller)

 $Exclusive\_Seller \equiv Seller \sqcap$   $(\exists participates\_in.Monopoly\_Market)$ 

#### Theorem (A1, Ontology, Monopoly Market)

 $Monopoly\_Market \equiv Market \sqcap (= 1has\_participant.Seller)$ 

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## Reified I/O Logic

#### Theorem (A1, General Norm)

$$\forall_{x}\forall_{t}(\exists_{e_{a}}\exists_{e_{xs}}\exists_{s_{1}}[(\textit{RexistAtTime }e_{a}\ t)\land(\textit{allows'}\ e_{a}\ e_{xs}\ x)\land\\ (\textit{exsupplier'}\ e_{xs}\ s_{1})\land(\textit{supplier }s_{1})],\\ \exists_{e_{f}}[(\textit{RexistAtTime }e_{f}\ t)\land(\textit{flagged'}\ e_{f}\ x)])\in O$$

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## **Exclusivity**

- Very unrealistic no exclusivity clauses
- The test only captures exclusivity as an end-state
- BUT: Acknowledged as "coarse, naive", open to further elaboration
- ALSO: OECD Guidelines just for "first pass"

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#### Breadth or Depth



#### Limits the number or range of suppliers

This is likely to be the case if the provision:

- ☐ A1 Grants exclusive rights for a supplier to provide goods or services
- ☐ A2 Establishes a license, permit or authorisation process as a requirement of operation
- A3 Limits the ability of some suppliers to provide goods or
- □ A4 Significantly raises cost of entry or exit by a supplier
- □ A5 Creates a geographical barrier for companies to supply goods. services or labour, or invest capital



#### Limits the ability of suppliers to compete

This is likely to be the case if the provision:

- □ B1 Limits sellers' ability to set prices for goods or services
- ☐ B2 Limits freedom of suppliers to advertise or market their goods or services
- □ B3 Sets standards for product quality that provide an advantage to some suppliers over others, or are above the level that some well-informed customers would choose
- □ B4 Significantly raises costs of production for some suppliers relative to others (especially by treating incumbents differently from new entrants)



#### Reduces the incentive of suppliers to compete

- This may be the case if the provision: C1 Creates a self-regulatory or co-regulatory regime
- □ C2 Requires or encourages information on supplier outputs, prices, sales or costs to be published
- C3 Exempts the activity of a particular industry, or group of suppliers, from the operation of general competition law



#### information available to customers This may be the case if the provision:

- □ D1 Limits the ability of consumers to decide from whom they purchase
- □ D2 Reduces mobility of customers between suppliers of goods or services by increasing the explicit or implicit costs of changing suppliers
- □ D3 Fundamentally changes information required by buyers to shop effectively

# Norms Defining and Evaluating Exclusivity

- Market Power, Structural Features?
- Additional dimensions:
  - Elements of time and causation
  - Strategic behavior (games) among rational agents

# Next Steps

- One (or several) operational norms to be evaluated against the model norm
- Evaluate cases instead of statutes?
- Shapes Constraint Language (SHACL)- Data Validation to Compliance Testing

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## New Chapter Plan

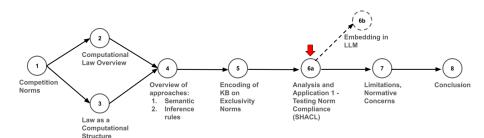


Figure: Chapter Plan, July 2025

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#### End

Thank you!



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