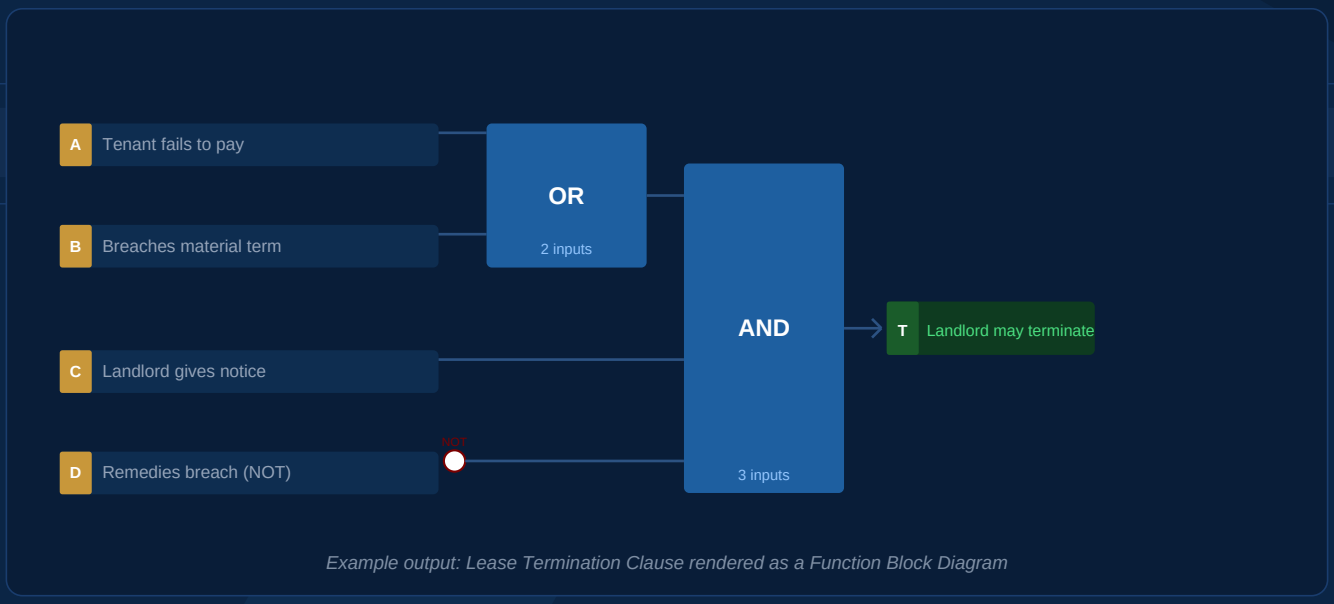
A KCE INNOVATION

Legal Logic

Boolean Logic Analysis for Legal Documents

Function Block Diagram Generation · Powered by Claude AI



Example output: Lease Termination Clause rendered as a Function Block Diagram

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FREE SOFTWARE FOR STUDENTS OF LAW · Requires Anthropic API Key

The Challenge & The Solution

Why legal logic visualisation matters

The Problem

Legal drafting is precise by necessity — but **natural language obscures logical structure.** A single clause may contain nested conditions, disjunctions, exceptions and double negatives that are near-impossible to parse at a glance.

Law students and junior practitioners routinely misread the Boolean structure of clauses — leading to incorrect analysis and misinterpreted rights.

Traditional tools such as flow charts are **manually drawn, time-consuming and inconsistent.** There is no standard visual notation for legal logic — until now.

COMMON PAIN POINTS

Nested conditions
are invisible to the naked eye in long clauses

Ambiguous 'or'
inclusive vs exclusive is rarely made explicit

Unless / except
negation buried in subordinate clauses

Multi-paragraph
links between clauses are lost without mapping

The Solution

Legal Logic automates the extraction and visualisation of Boolean logic from legal text — producing clean, standardised **Function Block Diagrams (FBD)** modelled on the industrial IEC 61131-3 notation.

Powered by **Claude AI from Anthropic**, the tool reads a legal clause in plain English, identifies every atomic proposition, maps the AND / OR / NOT structure, and renders a professional diagram — complete with variable legend and Boolean expression — in seconds.

The result is **a fool-proof, reproducible visual representation** of any legal condition that a student or lecturer can immediately understand and verify.

KEY BENEFITS

Instant clarity
See full logical structure in one glance

Standardised format
IEC 61131-3 FBD — the engineering gold standard

AI-powered speed
Seconds from clause text to finished PDF diagram

Multi-clause maps
Cross-paragraph variable linking and summary page

> ***"Legal logic is Boolean logic. Legal Logic makes that visible."***
>
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Features & How It Works

Capabilities · Workflow · Output

CORE CAPABILITIES

■ Automatic Logic Extraction

Claude AI reads any legal clause and identifies atomic propositions, logical connectives (AND/OR), conditionals (IF-THEN) and negations (NOT/unless/except) — no manual tagging required.

■ Function Block Diagrams

Outputs clean FBD-style diagrams per IEC 61131-3: AND/OR blocks, open negation circles on input pins, labelled wires with full variable text, and directional arrows.

■ Professional PDF Reports

Each analysis produces a PDF with the original text, variable legend, Boolean expression, and the complete FBD diagram — ready for printing, submission or teaching materials.

■ Multi-Clause Analysis

Separate multiple clauses with a blank line. Each clause gets its own FBD page. A summary page cross-references shared variables across paragraphs, revealing inter-clause logic dependencies.

■ Universal File Input

Open clauses from .txt plain text, .pdf or .docx Word documents directly in the GUI — or paste text from any source into the built-in editor.

■ Clean Desktop GUI

A professional Windows/Mac/Linux graphical interface: paste text, open files, manage your API key, track progress in a live log, and open the finished PDF with one click.

WORKFLOW — FROM CLAUSE TO DIAGRAM IN 5 STEPS

1 — Install & Launch

Run **legal_fbd_analyzer.py** with Python 3, or double-click the .exe on Windows. GUI opens instantly.

2 — Set Your API Key

First run: click **Change Key** and paste your Anthropic key. Saved securely — never asked again.

3 — Load Your Clause

Click **Open File** for .txt/.pdf/.docx, or paste text directly. Multi-clause: separate by blank line.

4 — Analyse

Press **Analyse & Generate PDF**. AI maps the logic structure and builds the FBD — typically 5–15 seconds.

5 — Open PDF

Report saved beside your input file. Click **Open PDF** in the log panel to view immediately.

Getting Started

Installation · API Key · First Use

INSTALLATION

Requirements

Python 3.8+	`Free — python.org`
reportlab	`pip install reportlab`
pdfplumber	`pip install pdfplumber`
python-docx	`pip install python-docx`

One-line install

```
pip install reportlab pdfplumber python-docx
```

Launch

```
python  legal_fbd_analyzer.py
```

Or simply **double-click** the file in Windows Explorer — no terminal required.

Windows .EXE Available

A ready-to-run **Windows executable (.exe)** is available for users who prefer not to install Python.

Contact KCE to obtain the compiled application:
m.kraus@keypointprojects.co.za · keypointprojects.com

OBTAINING YOUR ANTHROPIC API KEY

1. **Create account**

   Go to **console.anthropic.com** and sign up or log in.

2. **Activate billing**

   Go to **Settings** → **Billing** and add a payment method. This activates API access. (A few cents per analysis — typical cost ~$0.01.)

3. **Generate key**

   Go to **Settings** → **API Keys**, click **Create API Key**, name it 'Legal Logic' and click **Add**.

4. **Copy key**

   Copy the key immediately — shown **only once**. Begins with **sk-ant-…**

5. **Enter in app**

   In Legal Logic click **Change Key**, paste the key and click **Save & Close**. Done — saved permanently.

Typical cost per analysis

Claude Sonnet 4.6: approx. USD 0.003–0.01 per clause
Full contract (20 clauses): approx. USD 0.10–0.20

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NOT LEGAL ADVICE. The diagrams, expressions and analyses produced by this software do not constitute legal advice. Legal Logic is a visualisation tool only. Always consult a qualified legal professional for advice on specific legal matters.

AI-GENERATED OUTPUT. Analysis is performed by an AI language model (Claude by Anthropic PBC) and may contain errors or omissions. Users must verify all output independently before relying on it.

ANTHROPIC API KEY REQUIRED. This software calls the Anthropic Messages API. Users must obtain their own API key from **console.anthropic.com**. Standard Anthropic usage charges apply. KCE Kraus Consulting & Engineering is not affiliated with, endorsed by, or in any way connected to Anthropic PBC.

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With offices in Vienna, Durban, London, Hong Kong and Singapore, KCE serves clients across infrastructure, energy, finance, law and government — delivering measurable outcomes on complex, cross-border engagements.

Legal Logic is developed by KCE's **Keypointprojects Digital Division** as part of an ongoing programme to apply engineering tools and AI to professional education and knowledge work.

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Windows .EXE Application

Legal Logic is a KCE Innovation — Free for Students of Law.

Requires Anthropic API key · console.anthropic.com/settings/keys