`corasdiagram` Manual

Version 0.1.2

Contents

1 Overview

`corasdiagram` is a semantic-first LaTeX package for CORAS diagrams and tables. The preferred public API uses semantic nouns and verbs that mirror the formal English-prose interpretation of the CORAS language.

The canonical diagram environments are:

- `corasassetdiagram`
- `corasthreatdiagram`
- `corasriskdiagram`
- `corastreatmentdiagram`

Treatment overview diagrams are expressed with `corastreatmentdiagram[mode=overview]`. The package also ships the high-level analysis and high-level risk tables.

This manual is scoped to printable reference use:

- semantic-first commands and keys
- compact compatibility appendix
- advanced structural appendix
- complete compilable examples of every diagram and table family

For the user-facing migration guide, see `docs/semantic-api-migration.md`. Maintainer-oriented release and API inventory material lives outside the public documentation set.

2 Installation

Compile from the repository root with:

```
TEXINPUTS=tex/latex//: latexmk -pdf -interaction=nonstopmode -halt-on-error \
  examples/corasdiagram-minimal.tex
```

For a user TEXMF installation, copy `tex/latex/corasdiagram/` into `$HOME/texmf/tex/latex/corasdiagram/`.

3 Semantic-First DSL

3.1 Asset diagrams

English sentence forms:

- "... is a party."
- "... is a direct asset."
- "... is an indirect asset."
- "... assigns value to ...."
- "... assigns the value ... to ...."
- "Harm to ... may result in harm to ...."

Canonical commands:

- `\party[...]`
- `\asset(direct)[...]`
- `\asset(indirect)[...]`
- `\assigns{party -> asset}[asset value=...]`
- `\harms{asset -> asset}`

3.2 Threat diagrams

English sentence forms:

- "... is a deliberate human threat."
- "... is an accidental human threat."
- "... is a non-human threat."
- "... is a vulnerability."
- "Threat scenario ... occurs with likelihood ...."
- "Unwanted incident ... occurs with likelihood ...."
- "... exploits vulnerability ... to initiate ...."
- "... leads to ... with conditional likelihood ...."
- "... impacts ... with consequence ...."

Canonical commands:

- `\threat(deliberate|accidental|nonhuman)[...]`
- `\vulnerability[...]`
- `\threatscenario[...]`
- `\unwantedincident[...]`
- `\initiates{source -> target}[vulnerability=...]`
- `\leadsto{source -> target}[conditional likelihood=...]`
- `\impacts{incident -> asset}[consequence=...]`

3.3 Risk diagrams

English sentence forms:

- "Risk ... occurs with risk level ...."
- "... initiates ...."
- "... impacts ...."

Canonical commands:

- `\risk[...]`
- `\initiates{source -> risk}`
- `\impacts{risk -> asset}`

3.4 Treatment diagrams

English sentence forms:

- "... is a treatment scenario."
- "... treats ...."
- "... decreases the likelihood of ...."
- "... decreases the consequence of ...."

Canonical commands:

- `\treatmentscenario[...]`
- `\treats{treatmentscenario -> target}[treatment category=...]`
- plus `\initiates`, `\leadsto`, and `\impacts` when the treated threat or risk chain is shown

3.5 Treatment overview mode

Use `corastreatmentdiagram[mode=overview]` when treatments are attached directly to risks instead of a full threat/risk chain.

4 Tables

4.1 High-level analysis table

`corashighlevelanalysistable` is the canonical high-level table environment. Use `\corashighlevelanalysisrow` to add rows.

4.2 High-level risk table

`corashighlevelrisktable` and `\corashighlevelriskrow` remain available for the risk table naming variant. They render the same table structure as the analysis table and are kept for compatibility and document readability.

5 Canonical Keys

5.1 Node keys

Key	Applies to	Meaning
`id`	all typed nodes	Stable public identifier.
`risk ref`	risk, unwantedincident	External reference tag such as `R4`.
`risk level`	risk	Risk level line such as `unacceptable`.
`likelihood`	threatscenario, unwantedincident	Plain-text likelihood such as `possible`.
`likelihood basis`	threatscenario, unwantedincident	Bracketed quantitative basis such as `3,15:30y`.
`at`	all typed nodes	Manual placement coordinate.
`right / left / above / below`	all typed nodes	Relative placement helpers.
`scope`	asset and party nodes	Named scope fit group membership.
`order`	auto-laid-out families	Preferred auto-layout order.

5.2 Edge keys

Key	Applies to	Meaning
`asset value`	\assigns	Rendered asset-value label.
`vulnerability`	\initiates	One or more grouped vulnerabilities on the edge.
`conditional likelihood`	\leadsto	Conditional likelihood label on the edge.
`consequence`	\impacts	Consequence label on the edge.
`treatment category`	\treats	Treatment-category label on the edge.
`pos`	edge commands	Label position override.
`path / route / tikz / label options`	edge commands	Drawing overrides and styling.

6 Compatibility Appendix

Retained compatibility aliases:

- `corastreatmentoverviewdiagram`
- `\asset[...]` as `\asset(direct)[...]`
- `\indirectasset[...]`

- \scenario[...]
- \incident[...]
- \treatment[...]
- \cause{...}
- \impact{...}
- \relate{...}
- \concern{...}
- \treat{...}
- \associate{...}
- risk id, risk-id, and riskid

Use the semantic-first commands in new documents. The migration guide covers one-to-one replacements and the \cause dispatcher rule.

7 Advanced Structural Appendix

The following commands remain public, but they are structural helpers rather than part of the first-line semantic vocabulary:

- \junction
- \corasscope
- \corascontainer
- \corasriskref
- \corasnode
- \corasedge
- \associate

8 Complete Examples

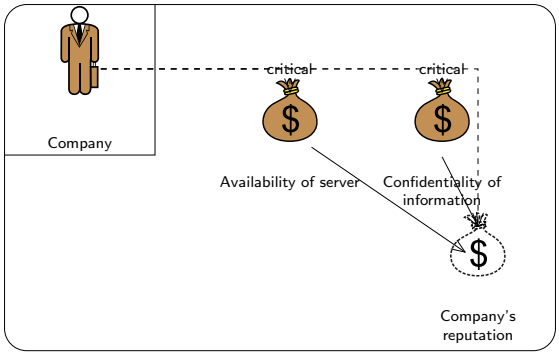
8.1 Asset diagram

Compileable source

```
\documentclass[a4paper]{article}
\usepackage[margin=18mm]{geometry}
\usepackage{corasdiagram}
\pagestyle{empty}
\newcommand{\examplefragment}[1]{%
  \IfFileExists{examples/fragments/#1}{%
    \input{examples/fragments/#1}%
  }{%
    \input{fragments/#1}%
  }%
}

\begin{document}

\section*{Asset Diagram}

\examplefragment{corasdiagram-asset-diagram-fragment.tex}

\end{document}
```

Rendered output

Asset Diagram



8.2 Threat diagram

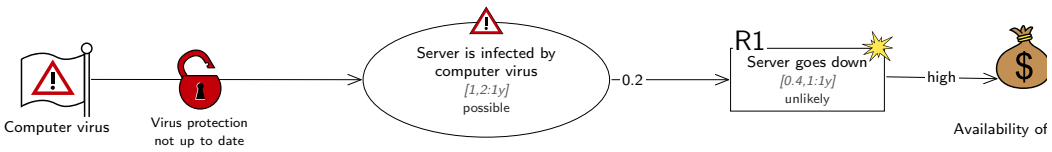
Compileable source

```
\documentclass[a4paper]{article}
```

```
\usepackage[margin=18mm]{geometry}
\usepackage{corasdiagram}
\pagestyle{empty}
\newcommand{\examplefragment}[1]{%
  \IfFileExists{examples/fragments/#1}{%
    \input{examples/fragments/#1}%
  }{%
    \input{fragments/#1}%
  }%
}

\begin{document}

\section*{Threat Diagram}

\examplefragment{corasdiagram-threat-diagram-fragment.tex}

\end{document}
```

Rendered output

Threat Diagram



8.3 Risk diagram

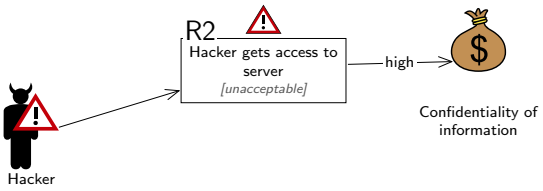
Compileable source

```
\documentclass[a4paper]{article}
\usepackage[margin=18mm]{geometry}
```

```
\usepackage{corasdiagram}
\pagestyle{empty}
\newcommand{\examplefragment}[1]{%
  \IfFileExists{examples/fragments/#1}{%
    \input{examples/fragments/#1}%
  }{%
    \input{fragments/#1}%
  }%
}

\begin{document}

\section*{Risk Diagram}

\examplefragment{corasdiagram-risk-diagram-fragment.tex}

\end{document}
```

Rendered output

Risk Diagram



8.4 Treatment diagram

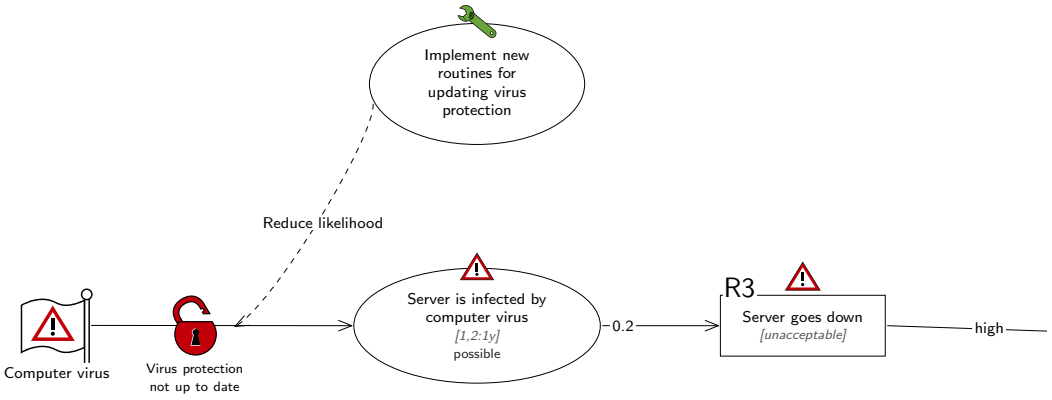
Compileable source

```
\documentclass[a4paper]{article}
\usepackage[margin=18mm]{geometry}
```

```
\usepackage{corasdiagram}
\pagestyle{empty}
\newcommand{\examplefragment}[1]{%
  \IfFileExists{examples/fragments/#1}{%
    \input{examples/fragments/#1}%
  }{%
    \input{fragments/#1}%
  }%
}

\begin{document}

\section*{Treatment Diagram}

\examplefragment{corasdiagram-treatment-diagram-fragment.tex}

\end{document}
```

Rendered output

Treatment Diagram



8.5 Treatment overview diagram

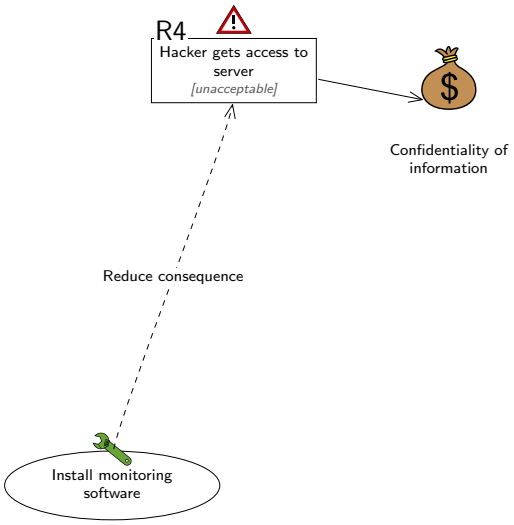
Compileable source

```
\documentclass[a4paper]{article}
\usepackage[margin=18mm]{geometry}
```

```
\usepackage{corasdiagram}
\pagestyle{empty}
\newcommand{\examplefragment}[1]{%
  \IfFileExists{examples/fragments/#1}{%
    \input{examples/fragments/#1}%
  }{%
    \input{fragments/#1}%
  }%
}

\begin{document}

\section*{Treatment Overview Diagram}

\examplefragment{corasdiagram-treatment-overview-diagram-fragment.tex}

\end{document}
```

Rendered output

Treatment Overview Diagram



8.6 High-level analysis table

Compileable source

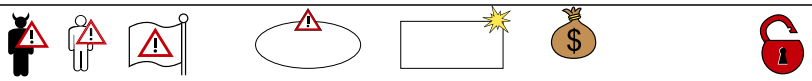
```
% Compile from the repository root:
%   TEXINPUTS=tex/latex//: pdflatex examples/corasdiagram-high-level-analysis-table.tex
```

```
\documentclass[a4paper]{article}

\usepackage[margin=18mm]{geometry}
\usepackage{corasdiagram}
\pagestyle{empty}
\newcommand{\examplefragment}[1]{%
  \IfFileExists{examples/fragments/#1}{%
    \input{examples/fragments/#1}%
  }{%
    \input{fragments/#1}%
  }%
}

\begin{document}

\section*{High-Level Analysis Table}

\examplefragment{corasdiagram-high-level-analysis-table-fragment.tex}

\end{document}
```

Rendered output

High-Level Analysis Table

Table 1: Documenting the high-level analysis



Who/what causes it?	How? What is the scenario or incident? What is harmed?	What makes it possible?
Hacker or confidentiality of databases insufficient access control	Breaks into system and compromises integrity Use of web application and remote access;	
Employee or confidentiality of databases work processes not aligned with policy	Sloppiness compromises integrity Lack of competence;	
System failure web application or loss of network connection loss of network connection	Online store goes down because of failure of Immature technology;	
Employee diverge from data protection laws insufficient routines for processing personal data	Collection and processing of personal data Lack of competence on data protection laws;	

8.7 High-level risk table

Compileable source

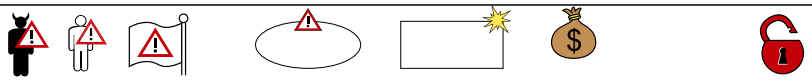
```
% Compile from the repository root:
%   TEXINPUTS=tex/latex//: pdflatex examples/corasdiagram-high-level-risk-table.tex
```

```
\documentclass[a4paper]{article}

\usepackage[margin=18mm]{geometry}
\usepackage{corasdiagram}
\pagestyle{empty}
\newcommand{\examplefragment}[1]{%
  \IfFileExists{examples/fragments/#1}{%
    \input{examples/fragments/#1}%
  }{%
    \input{fragments/#1}%
  }%
}

\begin{document}

\section*{High-Level Risk Table}

\examplefragment{corasdiagram-high-level-risk-table-fragment.tex}

\end{document}
```

Rendered output

High-Level Risk Table

Table 1: Documenting the high-level risks



Who/what causes it?	How? What is the scenario or incident? What is harmed?	What makes it possible?
Hacker	Gets access to a privileged account and exposes customer data	Weak authentication controls and insufficient monitoring
Employee	Misconfigures access and exposes confidential information	Lack of competence and inconsistent review routines
System failure	Payment service becomes unavailable during peak traffic	Insufficient redundancy and fragile upstream dependencies