MODULE *GDPR_Rules*

EXTENDS *GDPR_Time*

TypeInvariant $\triangleq$

$\land\ currentTime \in TimePoint$
$\land\ eventsToProcess \subseteq InitialEvents$
$\land\ activeProcesses \subseteq Process$
$\land\ activeLegalBases \subseteq LegalBasis$

Rule 1: Legal Basis Requirement If personal data is being processed, there must be a legal basis for it.

AllProcessingIsLawful $\triangleq$

$\forall\, p \in activeProcesses :$
$\exists\, l \in activeLegalBases :$
$\land\ p.subject = l.subject$
$\land\ p.data = l.data$
$\land\ TimeBetween(l.start,\ l.end,\ currentTime)$

Rule 2: Legal Basis Types
A legal basis must be a recognized type, such as consent or contract.

LegalBasesHaveValidType $\triangleq$

$\forall\, l \in activeLegalBases : l.type \in \{\text{“Consent”},\ \text{“Contract”}\}$

Rule 3: Breach Reporting Deadline
Guarantees that data breaches are reported within 72 hours of discovery.

BreachReportedOnTime $\triangleq$

$\forall\, b \in breachesInProgress :$
$(b.status = \text{“Pending”}) \Rightarrow Within72Hours(b.breachTime,\ currentTime)$

THEOREM $Spec \Rightarrow \Box TypeInvariant$
THEOREM $Spec \Rightarrow \Box AllProcessingIsLawful$
THEOREM $Spec \Rightarrow \Box LegalBasesHaveValidType$
THEOREM $Spec \Rightarrow \Box BreachReportedOnTime$

* Modification History
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