Towards a Taxonomy of *Inconsistency* Patterns in Multi-View Modelling

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All models are wrong

Seven ways models lie to each other

Code	Label	As primary	As secondary
C1	Structural mismatch	13	7
C2	Interface contract mismatch	4	5
C3	Behavioural contradiction	3	6
C4	Requirement satisfaction gap	7	1
C5	Terminology divergence	3	3
C6	Traceability disruption	7	6
C7	Temporal skew	3	9

https://circus.github.io/tip/

Inconsistency considered harmful

- stale trace links
- mismatched ports
- missing implementation elements
- uncovered requirements
- contradictory behaviour
- naming drift
- outdated versions
- . . .

Contributions

- evidence map
  - 19 sources
  - 46 extracted examples
- core dataset
  - 40 examples kept
- seven-category taxonomy
- coding rules
  - primary / secondary codes
  - temporal overlays
  - support-only rows
- public website to browse, inspect, validate

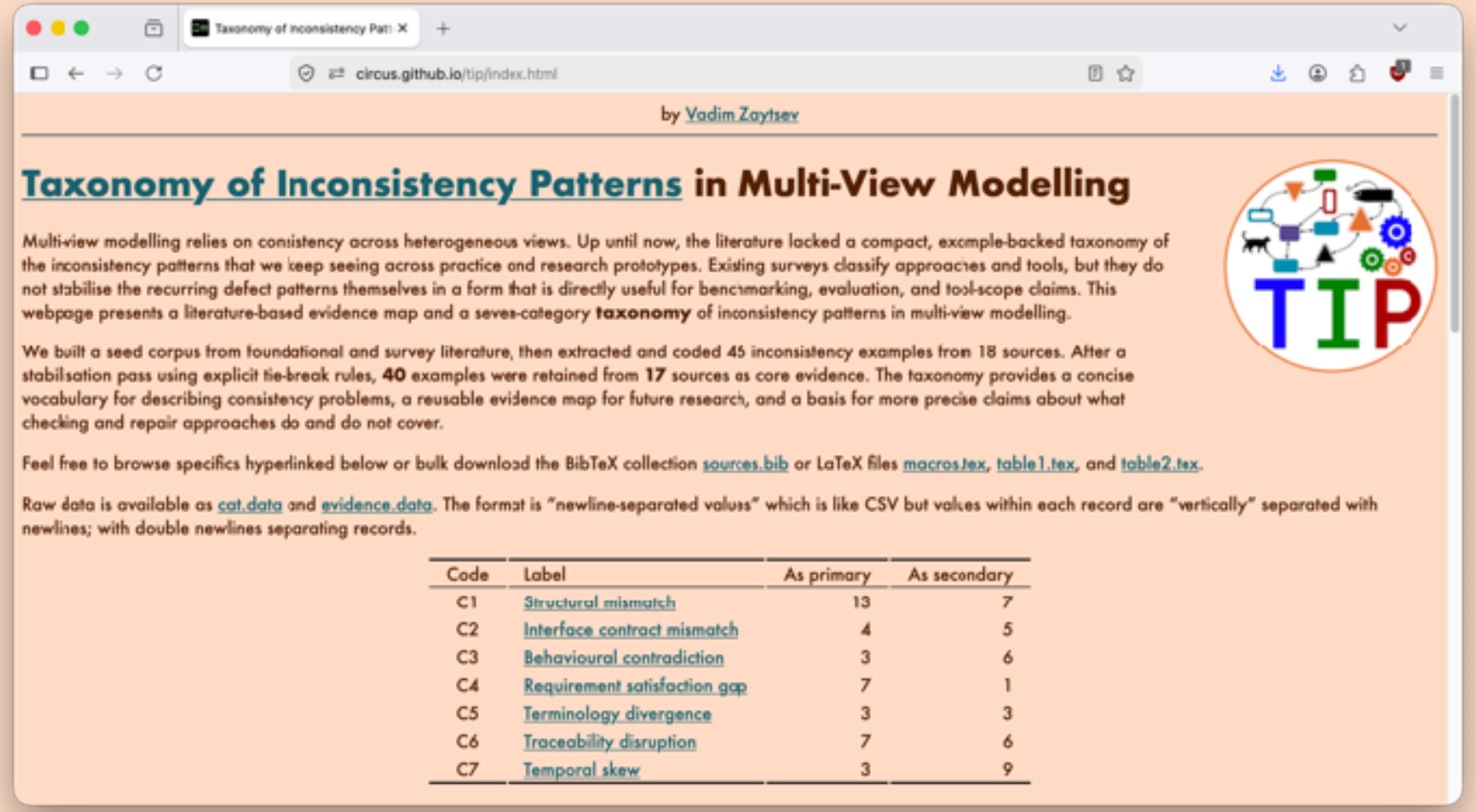
- source
- categories
- domain
- views
- artefacts
- quotes
- summary

https://circus.github.io/tip/

Seven suspects (failure modes?)

- **C1 Structural mismatch** — the parts do not line up
- **C2 Interface contract mismatch** — the plug does not fit
- **C3 Behavioural contradiction** — the choreography conflicts
- **C4 Requirement satisfaction gap** — the promise is not justified
- **C5 Terminology divergence** — the names betray us
- **C6 Traceability disruption** — the thread is broken
- **C7 Temporal skew** — the views come from different times

Let's inspect the evidence



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Let's inspect the statistics

Code	Label	As primary	As secondary
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Small count ≠ small problem

- Low (primary) counts (3)
  - C3 Behavioural contradiction
  - C5 Terminology divergence
  - C7 Temporal skew
- harder to formalise?
- less often written as crisp examples?
- treated as background context?
- difficult to extract from published papers?
- under-supported by tools?

On the nature of coding

- Ambiguity is good
  - *A requirement is no longer tested because the trace link decayed after evolution.*
  - C4 Requirement satisfaction gap
  - C6 Traceability disruption
  - C7 Temporal skew
- No C8 Miscellaneous?
  - ambiguity is a coding property, not a category

Takeaways

https://circus.github.io/tip/

- sharper and clearer claims for tools
- better questions as reviewer
- more balance for benchmarks
- reusable challenge cases
- more honest comparison across papers
- shared vocabulary
- browseable evidence
- name the failure before fixing it
- questions?