

# RBOP UPDATE

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JUDITH PERERA | VERACITY SPEARHEAD GROUP MEETING 19, MARCH, 24

# AGENDA

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- RBOP BRIEF, FUTURE WORK
- PRELIMINARY RESULTS OF SURVEY
- OPEN TO DISCUSSION

# RBOP BRIEF

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- **Part B: Publications RE, REJ --- Theoretical foundation for "Veracity Requirements Technical Debt" i.e., "Veracity Debt"**
  - RE: SMS
  - RE: Conceptual Model for Requirements Technical Debt Quantification
  - RE Journal Paper (currently working on revisions):
    - Functional and Non-Functional aspect of Requirements Technical Debt
    - Illustrative Example of Veracity Requirements Technical Debt Quantification for Practitioners --- Organic Use Case
  - Survey (Data collection is ongoing, Preliminary results presented today)
  - Utilizing the Conceptual Model: Expansion of the illustrative example for Veracity Requirements Technical Debt Quantification --- Organic Use Case, Indigenous Data Use Case
- **Part C: Cultural Veracity**
  - Collaborations with Nicholson Consulting --- Ernestynne Walsh (ongoing)
  - Recruiting RAs for Lit Review and Semi-structured Interviews/ Focus Group (currently with UOA HR)
    - Lit review: Mapping between software quality frameworks, veracity attributes, and cultural dimensions
    - Semi-structured interviews: has the potential to gather more data for other types of veracity as well

# PRELIMINARY RESULTS OF SURVEY

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- Aim: Gathering software practitioners' perceptions on quantifying veracity requirements TD
- Online anonymous questionnaire distributed worldwide
- Survey Sections:
  - Demographics
  - Requirements TD Quantification
    - Do they formally or informally quantify RTD, if so by what means, CIT
  - Veracity Requirements TD Quantification
    - Simplified illustrative example of the Organic Use Case was provided
- Question Style: Uses CIT – Critical Incident Technique, Single Choice, Multiple Choice, Likert-Scale and Open-Ended
- 72 responses so far

# BACKGROUND

## VERACITY REQUIREMENTS TD (VERACITY DEBT)

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- **Veracity Requirements:** Software requirements related to the trustworthiness, truthfulness, authenticity, provenance, integrity, and demonstrability of data and human interactions in software-based technologies. *They can be Functional or Non-functional Requirements.*
- **Veracity Requirements TD (i.e., Veracity Debt)**
  - **Captures the consequences of sub-optimal decisions made concerning veracity requirements**, either deliberately (for strategic gains) or inadvertently (due to changes in context), during the identification, documentation, and implementation of such requirements.
- We are investigating how consequences of *sub-optimal decisions made with respect to veracity requirements* (Veracity Debt) during the design and development of software-based technology can be measured — we term this as “**quantifying Veracity Requirements Technical Debt**”

# BACKGROUND

## 5 (DIMENSIONS) TYPES OF VERACITY

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- **Regulatory:** Compliance with standards and regulations
- **Data:** Provenance, transparency, sovereignty, integrity, accuracy, and correctness of data entered in systems
- **Financial Data:** Correctness of banking, tax, and accounting data
- **Process:** Adherence to organizational policies, processes, methods, and practices
- **Cultural:** Trust within society, culture, and brand

# BACKGROUND

## QUANTIFICATION CONCEPTS FROM THE CONCEPTUAL MODEL

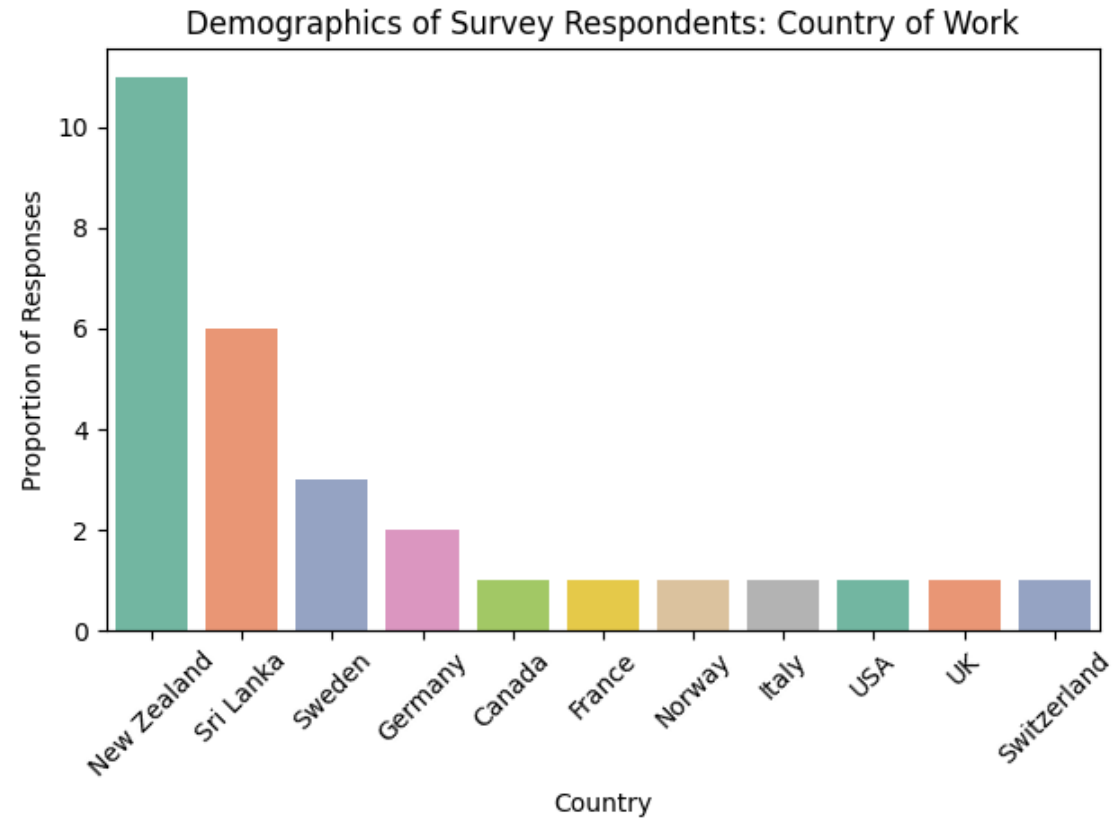
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- Quantification Concepts from the RTD Quantification **conceptual model informed the development of the survey instrument**
- **Veracity RTD instances** (examples of incurring **Veracity RTD Items**):
  - Inadequately capturing user needs related to veracity during RE
  - Ambiguously or incompletely specifying veracity requirements in specs
  - Inadequately (or partially or incorrectly) implementing veracity requirements as features during system implementation
  - Inadequately (or partially or incorrectly) satisfying veracity requirements when making design decisions during architectural or system design
- The presence of **Veracity Requirements TD can cause extra efforts or costs** in terms of having to **rework** the software requirements, **redesign** the software architecture, and **rework** the software code --- **(RTD Interest constituents) *these can lead to large cost overruns***
- However, sub-optimal decisions can be fixed or rectified (RTD Items can be remediated)
  - If chosen to fix, there can be a **cost to fix (Cost of rectifying)** and a **benefit of fixing (Benefit of rectifying)** sub-optimal decisions i.e., "problems with requirements"
  - If chosen NOT to fix, there can be **consequences (RTD Interest)**

# PRELIMINARY RESULTS

## Demographics: Country of Work

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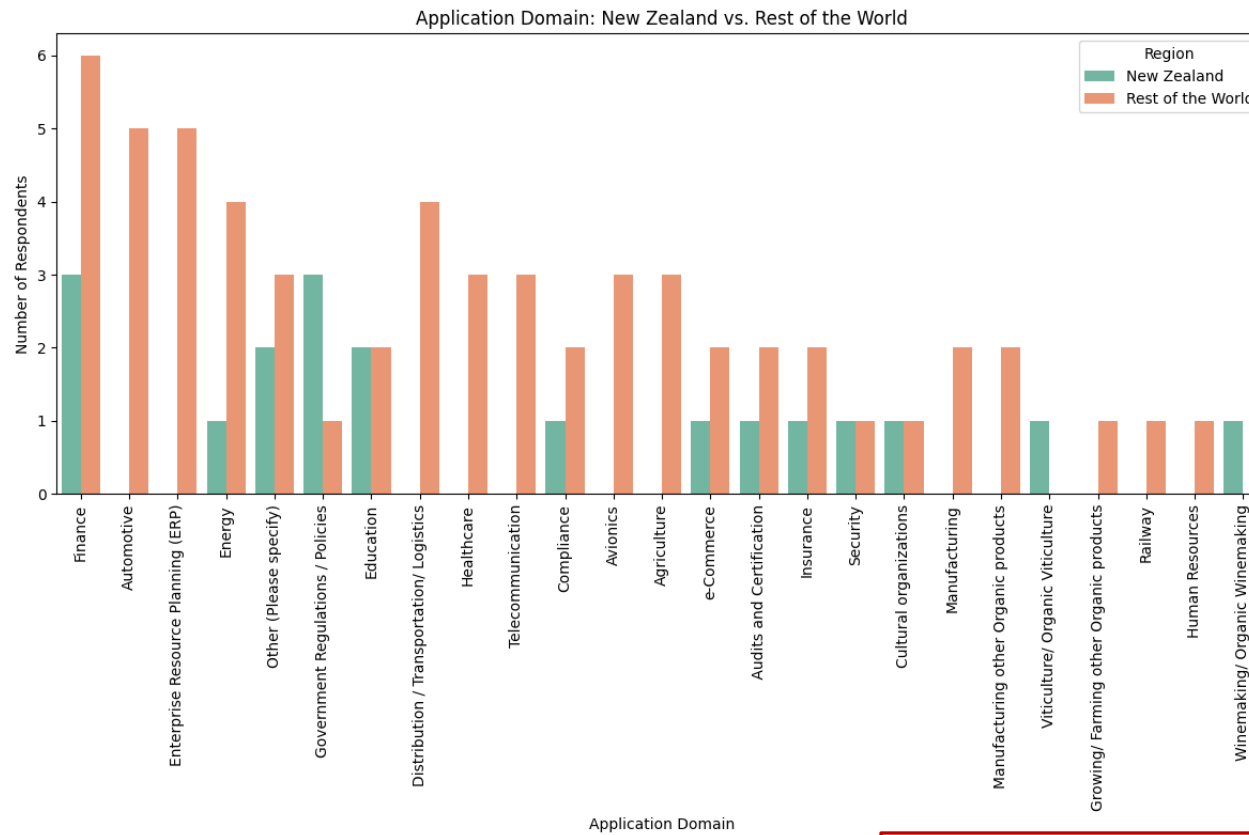


**11 Responses for NZ** out of 29 respondents who chose to reveal their country of work. However, some respondents chose not to reveal their country of work.



# PRELIMINARY RESULTS

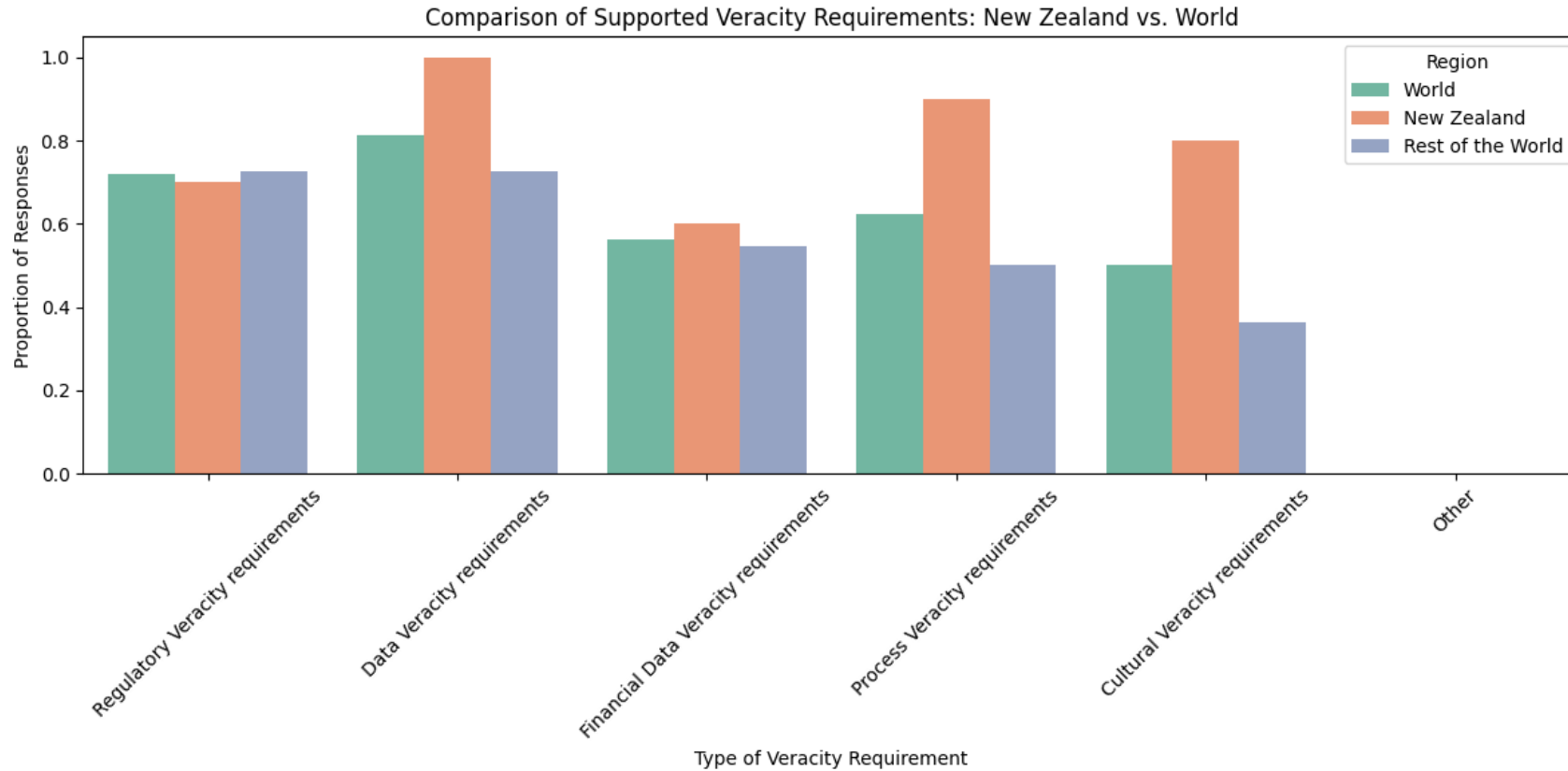
## Demographics: Application Domain



**For NZ respondents are mostly from Finance, Gov. Regulations and Policies**  
**For Rest of the World respondents are mostly from Finance, Automotive and ERP**

# PRELIMINARY RESULTS

## Veracity Requirements supported by Applications/ Technologies developed by Practitioners



**Cultural Veracity Requirements** receive more attention in New Zealand compared to Rest of the world. **80% of NZ Respondents vs. 37% of Rest of the World.** (50% of respondents for World including NZ)

# PRELIMINARY RESULTS

## Veracity Requirements encountered in the most critical incident (CIT) described by Practitioners

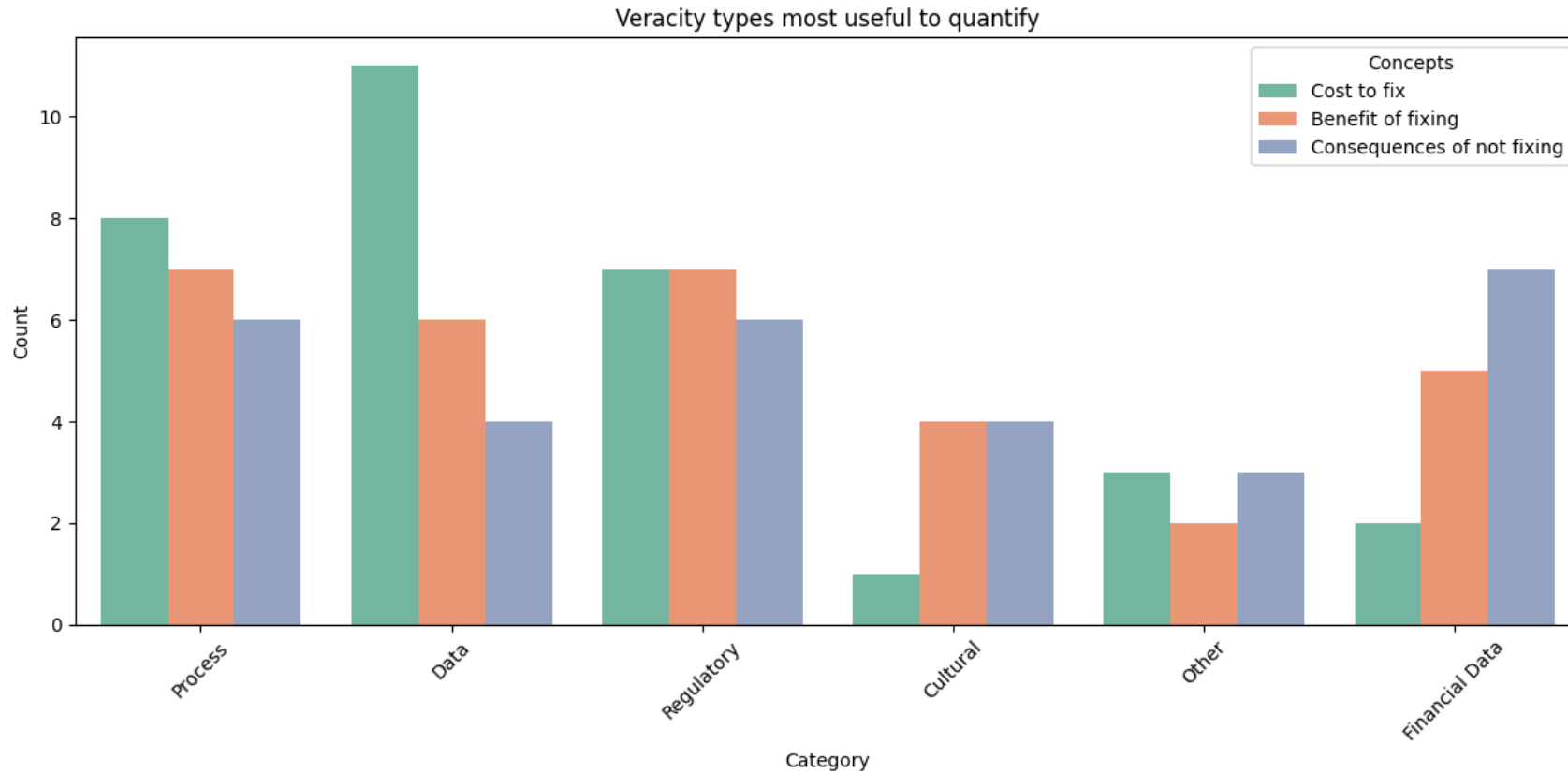


**Applications/ Technologies support (prev. slide) for Data Veracity Requirements** 100% of NZ Respondents vs. 73% of Rest of the World. (81% of respondents for World including NZ)

**Data Veracity Requirements** are the most common type reported in the most critical incidents. **67% of NZ Respondents**, 47% of Rest of the World and 54% of respondents for World including NZ.

# PRELIMINARY RESULTS

Types of Veracity Debt most useful to Quantify Concepts: cost, benefit and consequences



According to the practitioners' perceptions;

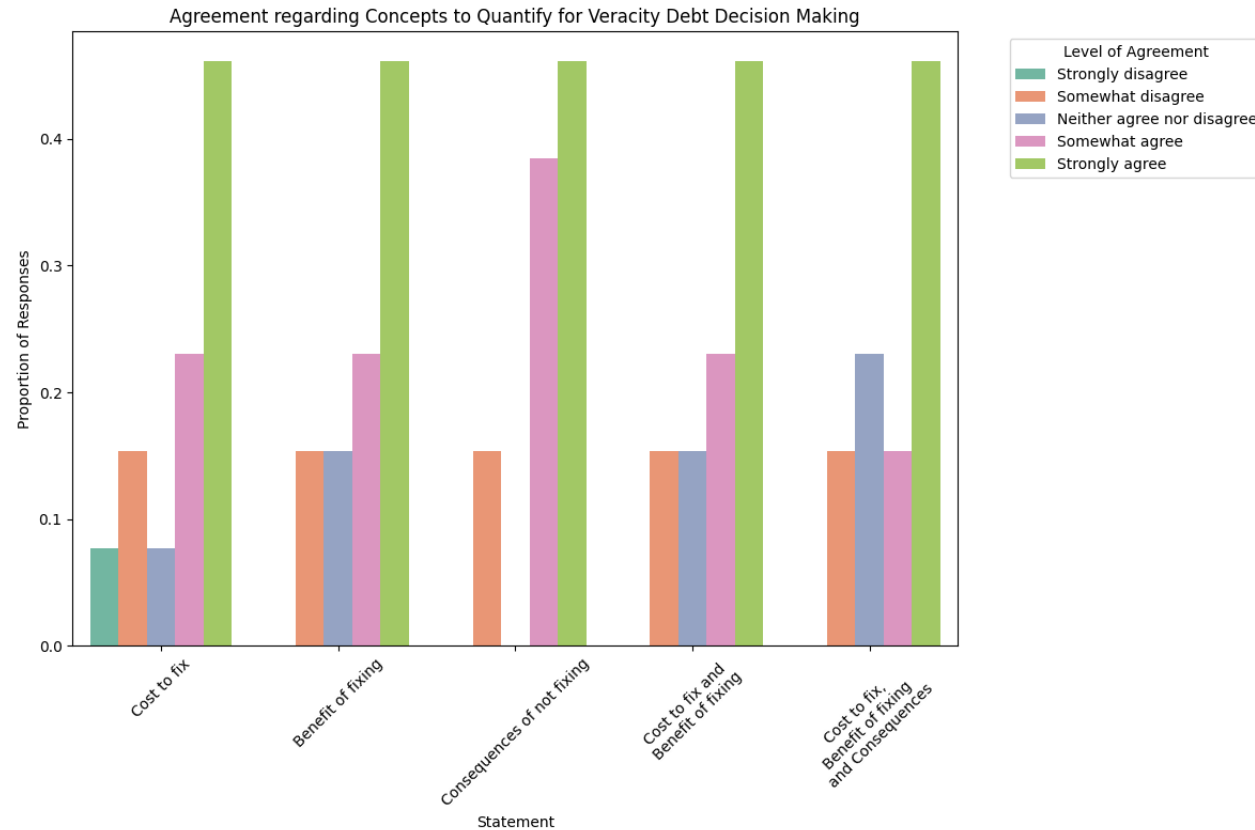
**Data Veracity Requirements Debt** is the most useful type to quantify the '**Cost to fix**'

**Regulatory and Process Veracity Requirements Debt** are the most useful types to quantify the '**Benefit of fixing**'

**Financial Data Veracity Requirements Debt** is the most useful type to quantify the '**Consequences of NOT Fixing (i.e., Veracity RTD Interest)**'

# PRELIMINARY RESULTS

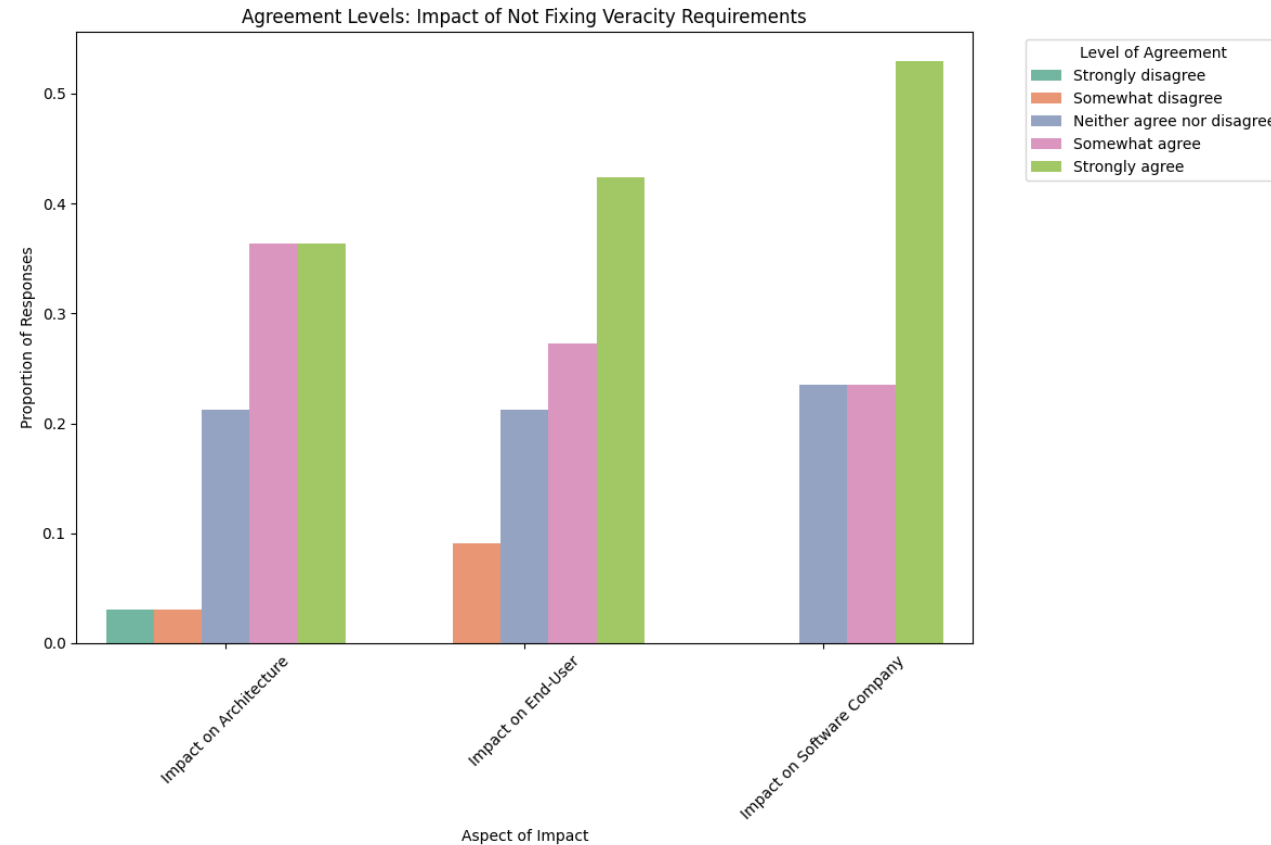
## Agreement regarding Concepts to Quantify for Veracity Requirements Debt Decision Making



Most respondents agree that '**Consequences of NOT Fixing (i.e., Veracity RTD Interest)**' must be quantified for decision-making  
Some respondents strongly disagree that the '**Cost to fix**' should be the factor considered for decision-making

# PRELIMINARY RESULTS

## Agreement regarding the Impact of Veracity Requirements Debt



Most respondents agree that the **'Impact on the Software Company'** (e.g., in terms of potential ROI, product success, and company reputation) is high for veracity debt.

However, the opinions are mixed regarding the **'Impact on software architecture'** (e.g., rework on the software architecture or data infrastructure) and the **'Impact on the end-user'** (e.g., end user desired level of veracity is not met)