



THE COLLABORATIVE COMPARISON CHALLENGE

MLM CHALLENGES

- Multi-level modeling: one goal – many ways
- Difficult to compare approaches even at a theoretical level
- MLM Challenges – a common set of tasks to compare solutions
 - The Bicycle Challenge (2017)
 - The Process Challenge (2019)
 - The Collaborative Comparison Challenge (C³) (2021)

WHAT'S NEW?

- Previous challenges
 - Focused: **how** to use MLM to solve a specification
 - Described **complex hierarchy** of requirements
 - Solutions were based on a **single approach**
 - ... therefore, they were **hard to be compared**
- The “C³” challenge is different
 - The **tasks** are significantly **simplified**
 - **Require** the **cooperation** of at least two research groups
 - Goal: try to **find commonalities** and **differences** based on **collaboration between teams**
 - **Domain**: companies, devices and factories for mobile phones
 - Natural language description
(<https://jku-win-dke.github.io/MULTI2021/#challenge>)

THE C³ CHALLENGE

1. A company
 - a) has a name
 - b) owns factories
 - c) owns device models

2. Huawei
 - a) is a company
 - b) owns Factory124
 - c) owns the mobile phone models S400 and S500

3. A factory
 - a) produces devices
 - b) supports a list of device models
 - c) can only produce devices that conform to (are of) supported device models

Color codes:
Domain concept
“Final” concept

THE C³ CHALLENGE II.

4. A **device** conforms to a **device model**
5. A **device model** captures what is universal about the **devices** it describes
6. A **mobile phone model**
 - a) is a **device model**
 - b) allows specific RAM size options
7. A **mobile phone device**
 - a) conforms to a **mobile phone model**
 - b) has an IMEI
 - c) has a RAM size
8. A **mobile phone factory** supports **mobile phone models** only

THE C³ CHALLENGE III.

9. A Huawei mobile factory

- a) supports Huawei mobile phone models only
- b) keeps track of mobile phone devices it produced
- c) constrains the IMEI of the mobile phone devices produced by the factory to start with '001'

10. Factory124

- a) is a factory
- b) supports Huawei S400 and S500 mobile phone models
- c) produced two S400 devices (S400 0001, S400 0002)

11. S400

- a) is a mobile phone model
- b) has either 4GB or 8GB of RAM

THE C³ CHALLENGE III.

12. S400 0001

- a) is a **mobile phone device**
- b) conforms to the **S400** model
- c) has 4GBs of RAM
- d) has '001468723648726' as its IMEI

13. S400 0002

- a) is a **mobile phone device**
- b) conforms to the **S400** model
- c) has 8GBs of RAM
- d) has '0018768768475638' as its IMEI

SUMMARY

- Experiences
 - Surprisingly hard to avoid
 - Misleading, differently interpreted words/expressions (“is a”, “refines”, “conforms to”, “belongs to”, ...)
 - Hints on how to solve the challenge (“instance of”)
 - To create a compact and simple case study that justifies the usage of MLM
- Current status
 - One challenge paper received (and accepted)
 - We hope to receive more solutions next year

Let's see that solution!