



MULTI – TOWARDS UNIFICATION

MULTI-LEVEL MODELING

- Multi-level modeling may be **the future**
 - We believe that it can **improve** modeling/programming methods
 - We feel its **importance** when experiencing accidental complexity in existing systems (>30% of OMG metamodels have patterns for MLM)
 - We know that our solutions have **amazing features**
- ... but it is **not the present**
 - **Diversity in approaches** (terms, mechanisms, tooling, semantics) (“diversity road”)
 - We are **not** speaking the **same language**
 - Instantiation – classification – specialization
 - We do **not** have a **deep understanding** of each other
 - We do **not know why** and **how** we should **improve** our solutions
 - ...
 - (We do **not** have **design patterns, industrial case studies, ...**)

WHAT DO WE NEED?

- Common **understanding** of what we want to solve
 - Common **vocabulary**
 - Instantiation, type vs. meta, inheritance, ...
 - Common set of **requirements** – common **challenges**
 - The Bicycle Challenge (2017)
 - The Process Challenge (2019)
 - The Collaborative Comparison Challenge (2021)
- We need to **understand each other** *much* better
 - **Explain** our solution to others
 - **Be open** to others
 - **Collaborate**

UNDERSTANDING EACH OTHER

- Most of us **believes** that their **approach** is **well-documented**
 - Did you **solve** all of the **edge cases** following *your way* of thinking?
 - ... or all the **questions in general**?
 - **Can you explore the limits** of your approach by yourself?
 - Would it help to **ask somebody** to try to **understand you approach**?
 - + Need to solve the **tooling challenges** as well

COMMON GROUND

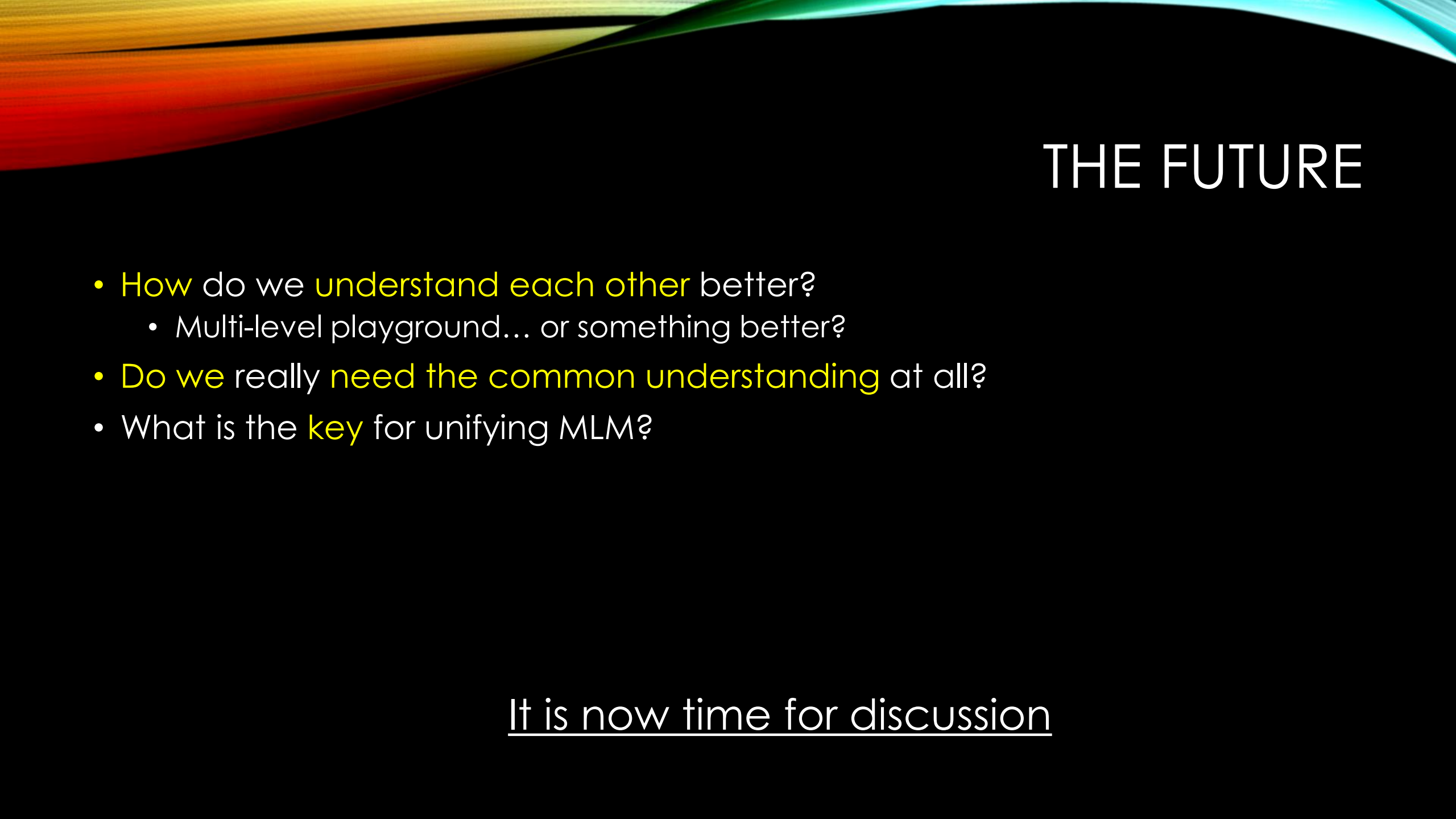
- Goal: to create a universal language/tool/approach (“MLM Core”, “unify road”)
 - Can **describe all existing** multi-level approaches
 - **Tweak definitions** and **test** them
 - **Open to invent new** approaches
- What could we gain?
 - List of **explicitly defined terms**
 - Well-defined **list of semantic rules**
 - The list can be iterated (Is it full?)
 - Edge cases can be checked against (How does it work?)
 - **Standardized way of understanding**

MLM CORE

- How can we **start** to create this common MLM Core?
 - Build from ground up or extend an existing approach? (Theory and practice)
- How can we **cope** with the **diversity** of approaches to MLM?
 - Support two or more different kinds of instantiation
 - Handling of levels and cross-level references
- How does it **fit into existing tool-chains**?
 - Fixed level metamodeling (e.g. Ecore)
 - Multi-level modeling

MULTI-LEVEL PLAYGROUND

- Multi-level playground – a prelude to MLM Core?
 - A platform to experiment with multi-level approaches
 - We are already working on it!
 - Basic concepts, language and architecture based on DMLA
 - Flexible, modular, extendable approach definitions
 - Defined the rules of classic-, leap -, star potency and order
 - Experiments with other multi-level approaches
 - SoSyM paper (“Playground for multi-level modeling constructs”)
 - But it is not yet a tool out of the box at the moment
 - Implementation is at ~60% due to major version change of DMLA
 - Not covering all multi-level approaches at the moment
 - No import/export to existing tools (not meant to become a tool for the industry)
 - Needs feedback from You



THE FUTURE

- How do we understand each other better?
 - Multi-level playground... or something better?
- Do we really need the common understanding at all?
- What is the key for unifying MLM?

It is now time for discussion