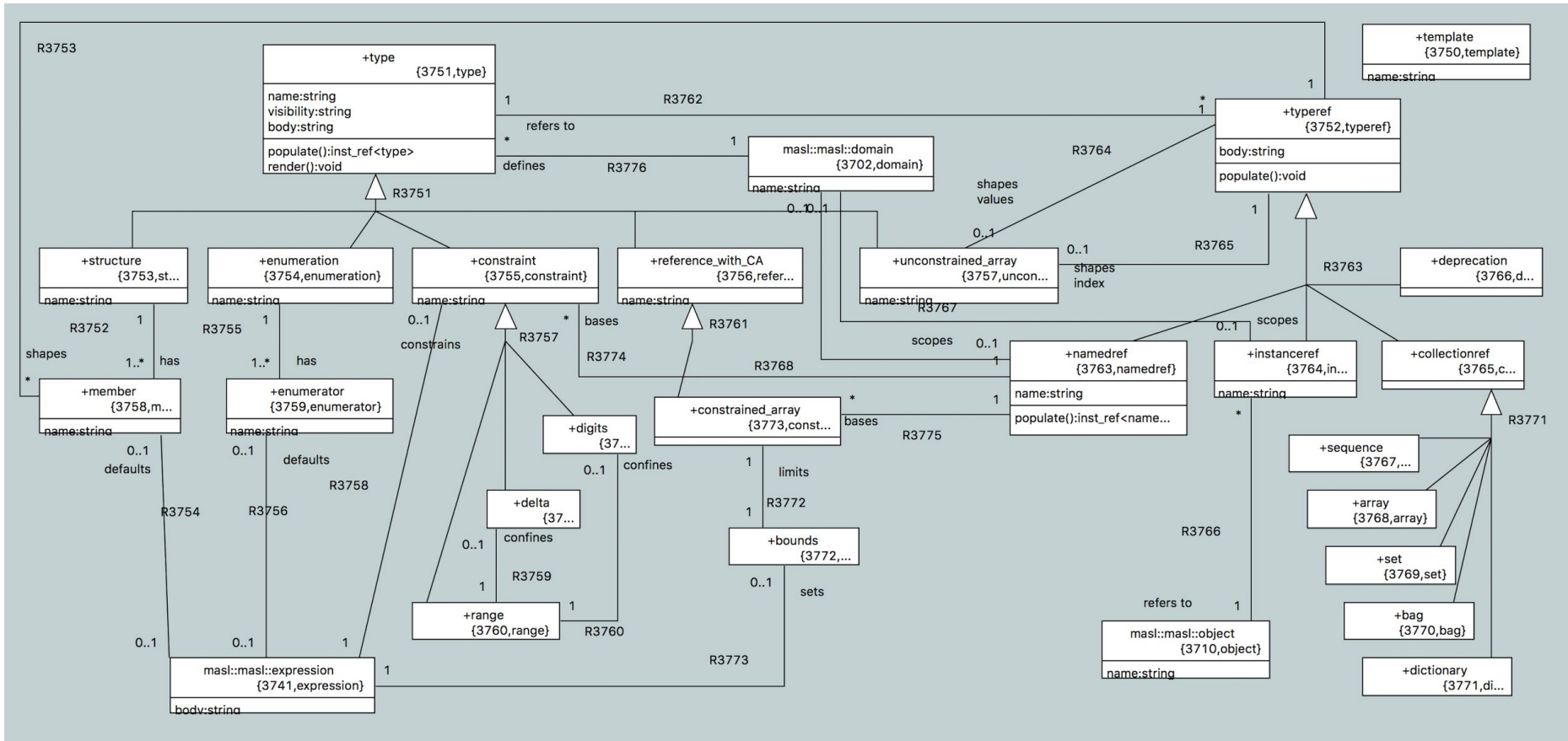


xtUML Type System

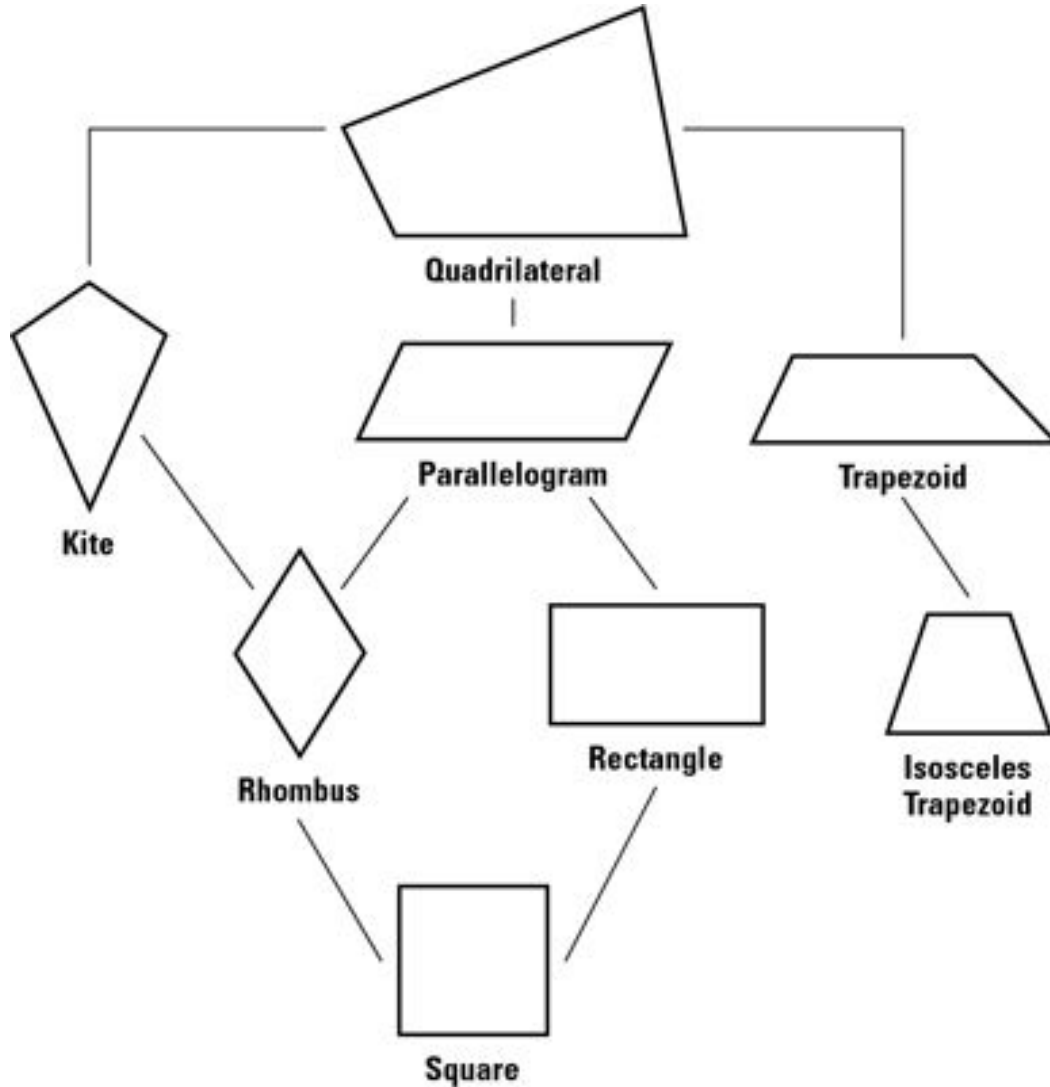
May 2017



MASL Types

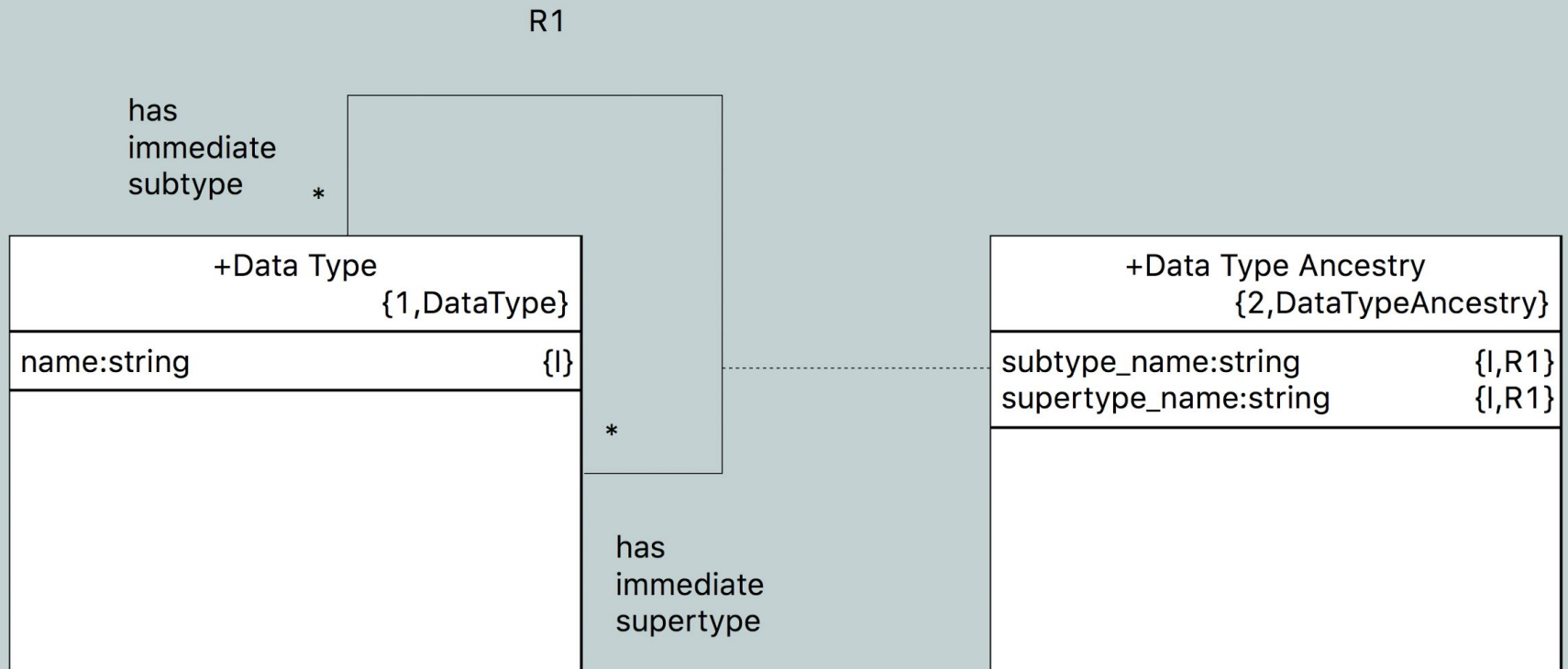


Subtype-Supertype Hierarchy



- Directed acyclic graph
- Each type can have many subtypes
- Each type can have many supertypes
- Darwen and Date “Inheritance Model” ([reference](#))

Modeling Hierarchy



Benefits of a Type System

- Easy, natural type conversions
- Flexible user defined type hierarchies
 - Add constraints on existing types
 - Convert between user defined types in a hierarchy
- Collection types with various properties
 - Ordered/unordered
 - Unique elements/repeat elements
 - Defined bounds/boundless
- Type references and anonymous types
 - Facilitate better type sharing
 - Enable textual persistence of signatures

Recommended Requirements (copied from [analysis note](#))

- **4.1** The type system shall adhere to the definition of the type inheritance model as defined in chapter 19 of Database Explorations [2.3] as much makes sense
 - **4.1.1** A document shall be produced during design that details points of divergence from the inheritance model
 - **4.1.2** The inheritance model shall be respected, but the needs of xtUML and MASL shall be prioritized over strict adherence to the model
- **4.2** The type system shall provide a comprehensive set of builtin types organized in a natural hierarchy

Recommended Requirements (cont.)

- **4.3** All types definable in MASL shall be representable in xtUML

- **4.4** The type system shall be name identifier based and not unique ID based
 - **4.4.1** Scoping rules shall be defined to prevent name collision and provide a strategy for type visibility and shadowing

 - **4.4.2** The concept of "type reference" shall be added to logically separate type definitions from typed elements and shall be associated to its referred to type by name

Recommended Requirements (cont.)

- **4.4.3** A text based type chooser shall be provided
- **4.4.4** Anonymous types defined at the location where the element is typed shall be supported
- **4.5** A textual persistence mechanism for types shall be considered for the type system
- **4.6** Adding explicit type casting shall be considered in the design
- **4.7** The model compilers shall remain compatible with the new type system wherever possible

OneFact

ONE FACT, INC.

onefact.net