Definition (Internal Biased Monoid of a Multicategory $M$). A tuple $\langle M, o, a, e, i \rangle$ where the components have the following types:

- **Underlying Object** $M$: $O_M$
- **Operator** $o$: $[M, M] \to M$
- **Associativity** $a$: $\xymatrix{M \ar[r]^{o} & M \ar[r]^{o} & M = M \ar[r]^{o} & M \ar[r]^{o} & M}$
- **Identity Morphism** $\epsilon$: $[\,] \to M$
- **Identity** $i$: $\xymatrix{M \ar[r]^{\epsilon} & M = M \ar[r]^{id} & M = M \ar[r]^{\epsilon} & M}$

**Example.** The following are equivalent to internal monoids of respective multicategories:

- **Set:** A monoid
- **Prost:** A monoid with a congruent preorder, meaning a preorder $\leq$ on the underlying set $M$ such that:
  $$\forall m_1, m_1', m_2, m_2' : M. m_1 \leq m_1' \land m_2 \leq m_2' \implies m_1 * m_2 \leq m_1' * m_2'$$

$M$ where $M$ is a monoid: The identity element of $M$

- **BinRel:** A set and a preorder on that set

- **SplitGraph:** A small category

**Definition** (Internal (Biased) Monoid Homomorphism from $\langle M_1, o_1, *, e_1, i \rangle$ to $\langle M_2, o_2, *, e_2 \rangle$). A tuple $\langle f, d, i \rangle$ where the components have the following types:

- **Underlying Morphism** $f$: $[M_1] \to M_2$
- **Distributivity** $d$: $\xymatrix{M_1 \ar[r]^{f} & M_2 = M_1 \ar[r]^{o_1} & M_1 \ar[r]^{f} & M_2}$
- **Identity** $i$: $\xymatrix{M_2 = M_2 \ar[r]^{e_1} & M_2 = M_1 \ar[r]^{f} & M_2}$