# Nanotechnology Design Space

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## 1 Definitions

**Assembly Method** The degree, on a scale from 0 to 1, to which the assembly is top-down, as opposed to bottom-up. [0..1]

**Assembly Precision** The degree, on a scale from 0 to 1, to which the assembly is deterministic, as opposed to random. [0..1]

**Bio-Integration Index** The degree, on a scale from 0 to 1, to which the product interacts with carbon-based life. [0..1]

**Functional Complexity** The amount of entropy, in eu (4.184 J/K-mol), per second leaving a system. [0..$\infty$)

**Inter-Systemic Forces** The number of significant forces which have effects which extend beyond the system. [0..$\infty$)

**Macro-Dimensions** The number of required dimensions which are larger than 50nm. [0..$\infty$)

**Nano-Dimensions** The number of controlled dimensions which are 50nm or smaller. [0..$\infty$)

**Organic Composition** The degree, on a scale from 0 to 1, to which the product is organic, as opposed to inorganic. [0..1]

## 2 Evaluations

### 2.1 Nano-Technitude

#### 2.1.1 Order of Importance

1. Nano-Dimensions (N) - What is it?
2. Macro-Dimensions (M) - What limitations does it have?
3. Inter-Systemic Forces (F) - How does it work?
4. Assembly Method (A) - How is it made?
5. Assembly Precision (P) - How well is it made?

#### 2.1.2 Approximation Function

Result := (N + F)/(M + 1) + P/(A + 1)

## 2.2 Danger Metric

### 2.2.1 Order of Importance

1. Bio-Integration Index (B) - How can it affect me?
2. Assembly Method (A) - How quickly can it go wrong (linear vs. exponential)?
3. Functional Complexity (C) - How much does it do?
4. Inter-Systemic Forces (F) - How much can it do?
5. Assembly Precision (P) - How much does it degrades per generation?
6. Organic Composition (O) - How much is it likely to infringe upon our resources?
7. Macro-Dimensions (M) - How much infrastructure does it require?

### 2.2.2 Approximation Function

Result := B * $((C + F)^A)/(P + 1) + (O + B)/(M + 1)$