

```

{
  "name": "Library with Input Parameters and Environment Specific Functions",
  "objectType": "sipModel",
  "libraryType": "SIPmath_3_0",
  "dateCreated": "2021-07-03",
  "provenance": "SLS",
  "comments": [
    {
      "name": "first3Trials",
      "comments": "Variable 2 has a user entered Seed3. For this test Seed
=1",
      "value": [
        "Variable1",
        2.894698,
        0.865379,
        1.8223,
        "Variable2_seed3_param",
        11.091734,
        12.036073,
        7.760296,
        "StandardNormal",
        -0.07923,
        -1.046566,
        0.081651
      ]
    },
    {
      "name": "U01",
      "rng": [
        {
          "name": "HDR1",
          "function": "HDR_2_0",
          "arguments": {
            "counter": "PM_Index",
            "entity": 9039920,
            "varId": 1,
            "seed3": 0,
            "seed4": 0
          }
        },
        {
          "name": "HDR2",
          "function": "HDR_2_0",
          "arguments": {
            "counter": "PM_Index",

```

U01 section refers to a uniform random variable on 0 to 1.

rng stands for random number generator, which in this case is named "HDR1" and is an HDR2.0 function (current HDR Generator with an iteration counter and 4 seeds). In theory other RNGs could be supported as well. There are multiple rngs in this version.

The arguments of the HDR are the Monte Carlo iteration counter (PM_Index), and the four seeds as specified.

```
    "entity": 9039920,
    "varId": 2,
    "seed3": {
      "type": "parameter",
      "name": "User-entered Seed3"
    },
    "seed4": 0
  },
  {
    "name": "HDR3",
    "function": "HDR_2_0",
    "arguments": {
      "counter": "PM_Index",
      "entity": 9039920,
      "varId": 3,
      "seed3": 0,
      "seed4": 0
    }
  }
],
"sips": [
  {
    "name": "Variable1",
    "ref": {
      "source": "rng",
      "name": "HDR1"
    },
    "function": "Metalog_1_0",
    "arguments": {
      "lowerBound": 0,
      "upperBound": 5,
      "aCoefficients": [
        -0.44366710027334577,
        0.31428823046335125,
        -0.4602599042847327,
        0.5255629124333913,
        2.1156523838083356
      ]
    }
  },
  {
    "name": "Variable2_seed3_param",
    "ref": {
```

"seed3" is specified as a user-entered parameter.

SIPs section starts here. This example has five.

This SIP is named "Variable1" and is driven by a U01 named "HDR1".

The function is a Metalog 1.0 (current formulation of the Metalog).

The arguments are the a-coefficients and a lower bound of 0 and an upper bound of 5.

```

    "source": "rng",
    "name": "HDR2"
  },
  "function": "Metalog_1_0",
  "arguments": {
    "aCoefficients": [
      10.28359942,
      1.433048092,
      1.737463084,
      3.927285373,
      -13.45782811
    ]
  }
},
{

```

Note that "HDR2" required a user-entered parameter for "seed3".

```

  "name": "StandardNormal",
  "ref": {
    "source": "rng",
    "name": "HDR3"
  },
  "function": "Metalog_1_0",
  "arguments": {
    "aCoefficients": [
      -1.18721e-8,
      -108.7360185,
      0.000228037,
      437.4513354,
      -0.000910088,
      988.3027041,
      -3370.883493,
      -0.001941269,
      0.006475465,
      -2823.944368,
      7434.879183,
      0.004897097,
      -0.011367609,
      2456.743398,
      -3595.592826,
      -0.003114859
    ]
  }
},
{

```

This SIP is a Metalog representation of a Standard Normal.

```

  "name": "StandardNormal",
  "ref": {

```

```
    "source": "rng",
    "name": "HDR3"
  },
  "environment": "ExcelFrontline",
  "function": "PsiNormal",
  "arguments": {
    "mean": 0,
    "stdDev": 1
  }
},
{
  "name": "StandardNormal",
  "ref": {
    "source": "rng",
    "name": "HDR3"
  },
  "environment": "ExcelPalisade",
  "function": "RiskNormal",
  "arguments": {
    "mean": 0,
    "stdDev": 1
  }
}
]
}
```

This variable is specific to the Frontline Systems environment.

This is the Frontline function for generating a normal distribution.

This variable is specific to the Palisade environment.

This is the Palisade function for generating a normal distribution.