



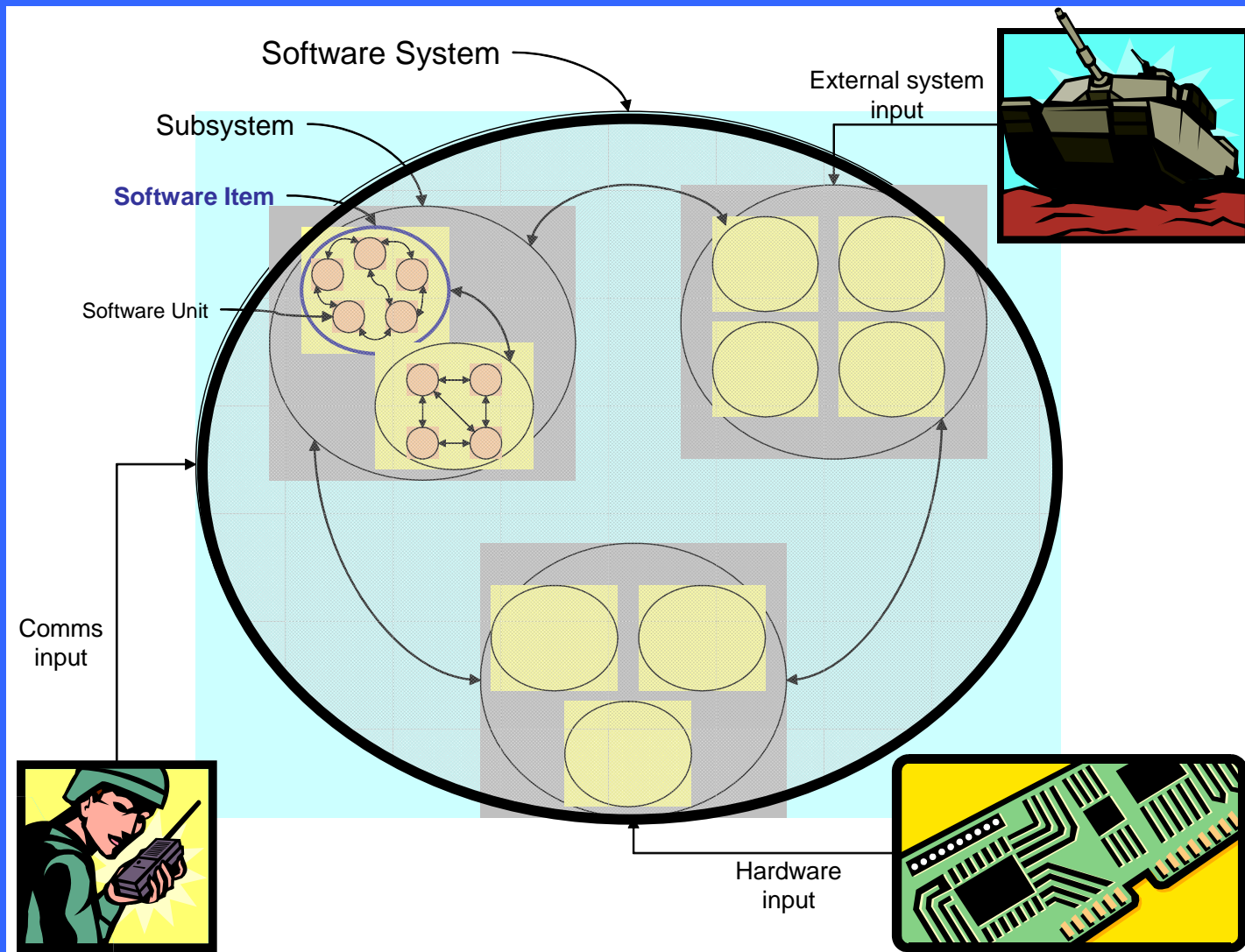
A Measurement Framework for Assessing Model-Based Testing Quality

Peter B. Lakey
Software Reliability Specialist
Cognitive Concepts LLC

1-314-961-7454
St. Louis, MO, USA
peterlakey@cognitiveconceptsllc.com

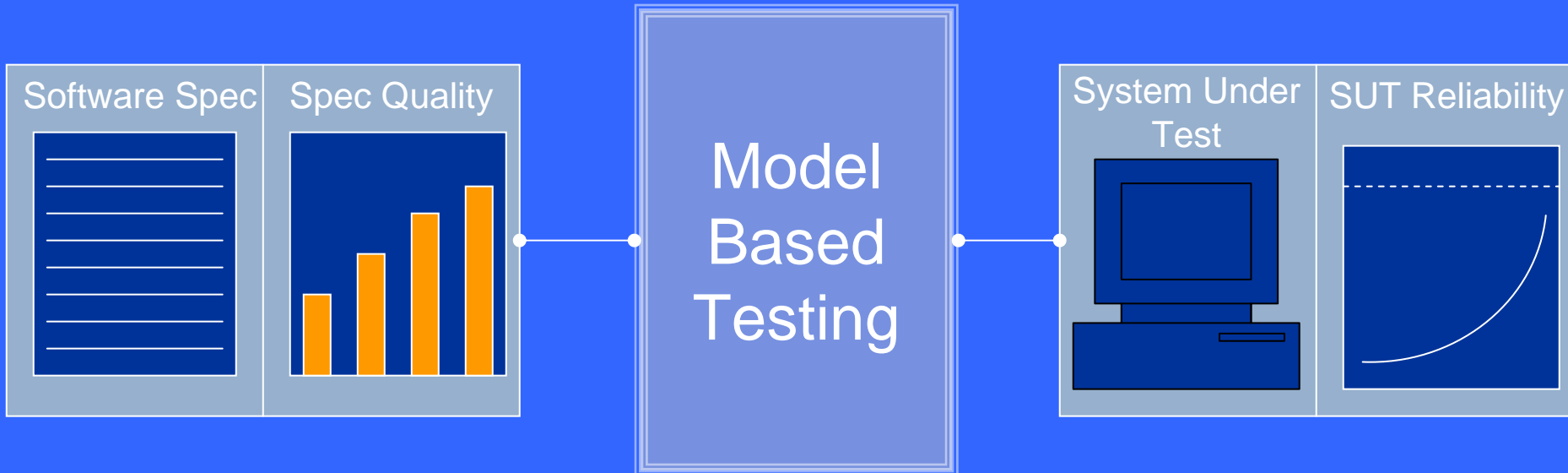


Scope of the Paper – Black Box





Relevance of MBT Measurement





Common Basis of MBT Measurement

Operational Profile of SUT

$$OP = \{ U, D, C \}$$

OP operational profile

U usage profile

D data profile

C configuration profile



Operational Profile Components

Usage Profile – contains all unique responses

$$U = \{ (a_i, p_{ij}), 1 \leq i \leq n \}$$

U usage profile

a_i one of the n possible activities

p_{ij} probability of performing activity a_i given all previous activities



Operational Profile Components

Data Profile – contains all data type definitions

$$D = (I_{\text{internal}}, I_{\text{external}})$$

D data profile

I_{internal} profile for internally supplied inputs

I_{external} profile for externally supplied inputs

$$I = \{ (\text{name}_q, \text{value}_q, t_q, \text{MAX}_q, \text{MIN}_q, \text{amount}_q, \text{time}_q, \text{rate}_q, \text{duration}_q) \mid 1 \leq q \leq r \}$$

name_q one of the r variables

value_q input values

t_q data type

MAX_q maximum value

MIN_q minimum value

MODE_q mode of the possible values

amount_q amount of data

time_q timing for data input

rate_q rate of data input

duration_q duration of data input



Operational Profile Components

Configuration Profile – contains config params

$$C = \{P, M, D, \mathcal{P}, N, O\}$$

C configuration profile

P processor profile

M memory profile

D device profile

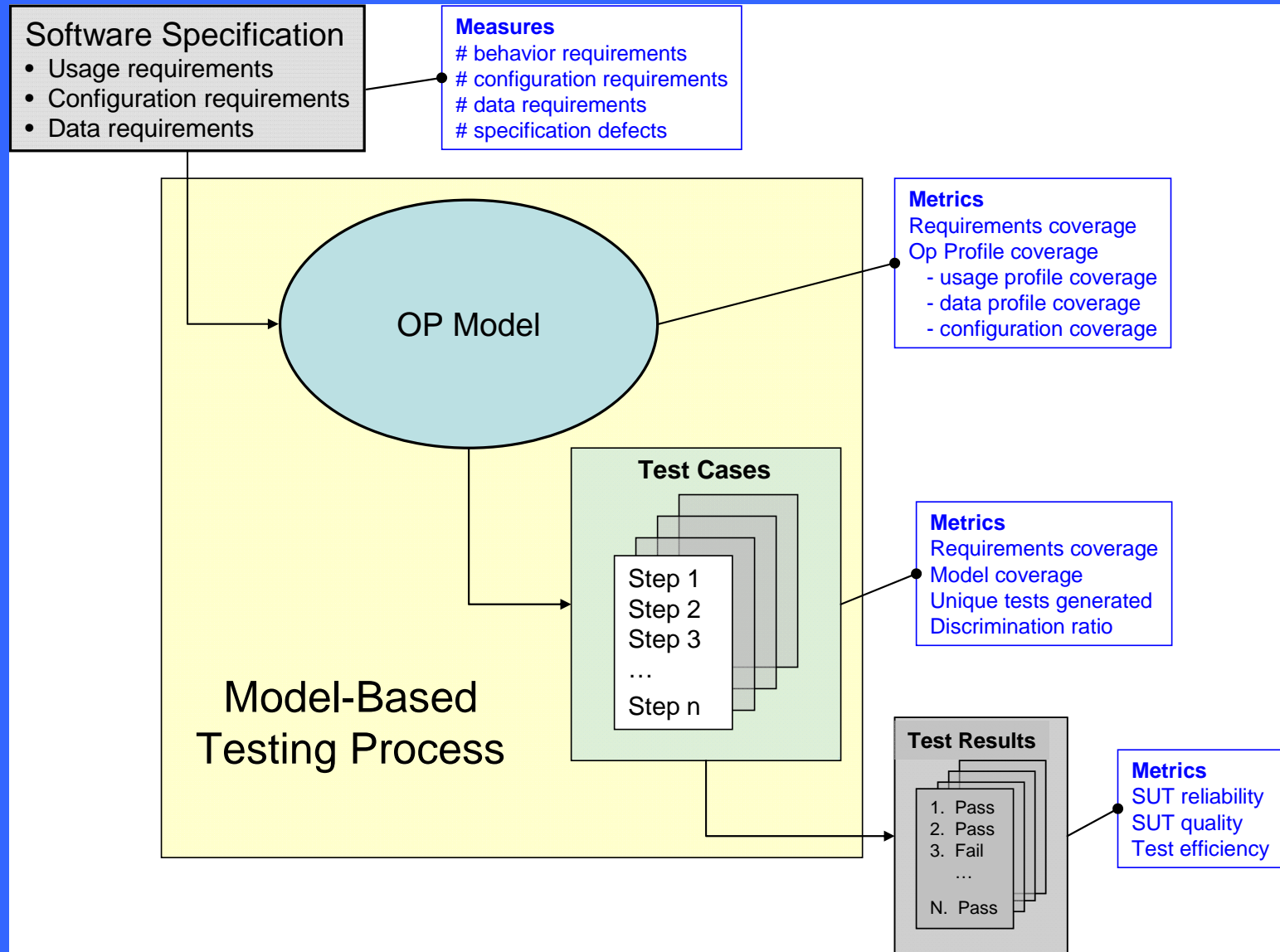
\mathcal{P} power profile

N network profile

O operating system profile

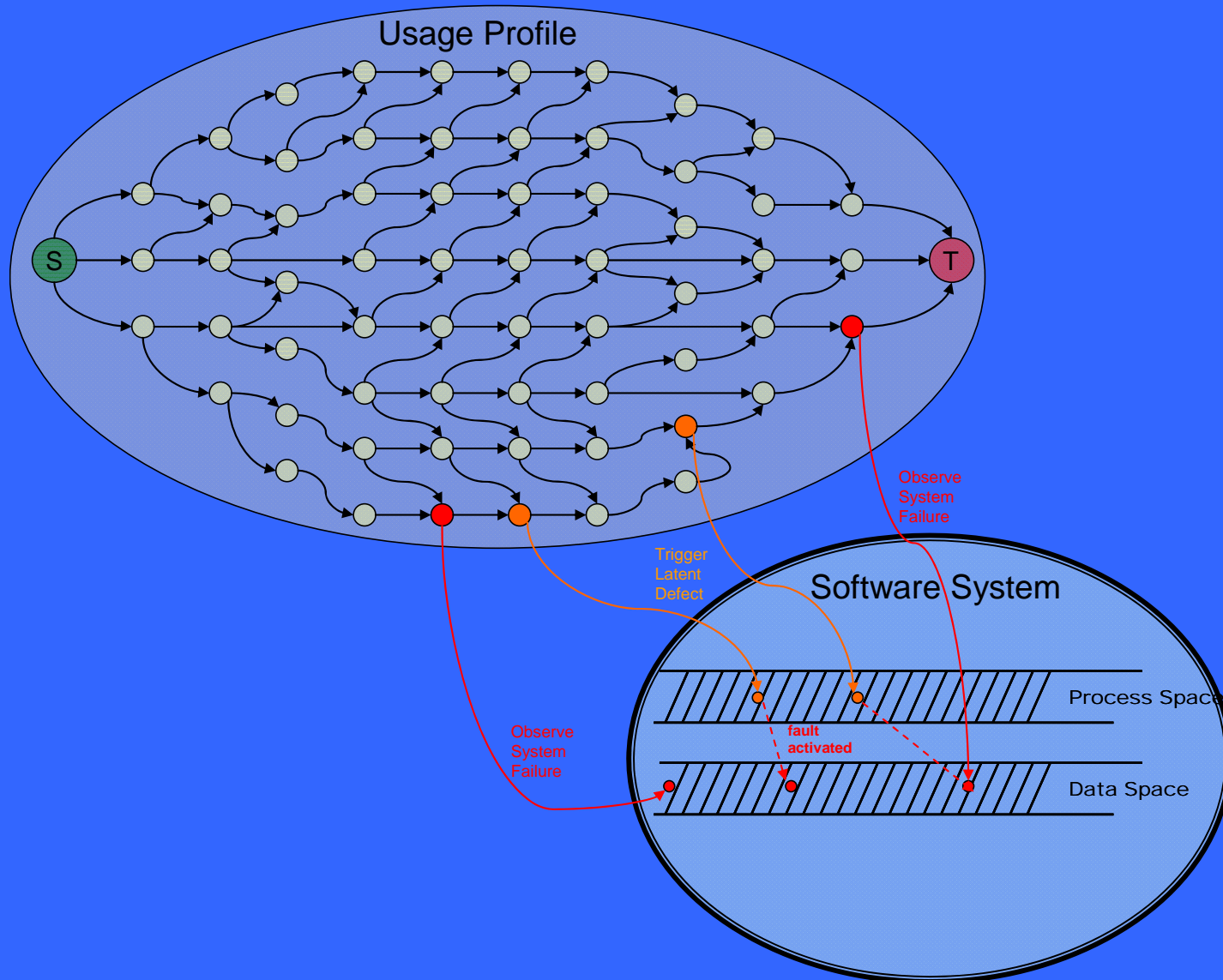


Measurement Framework



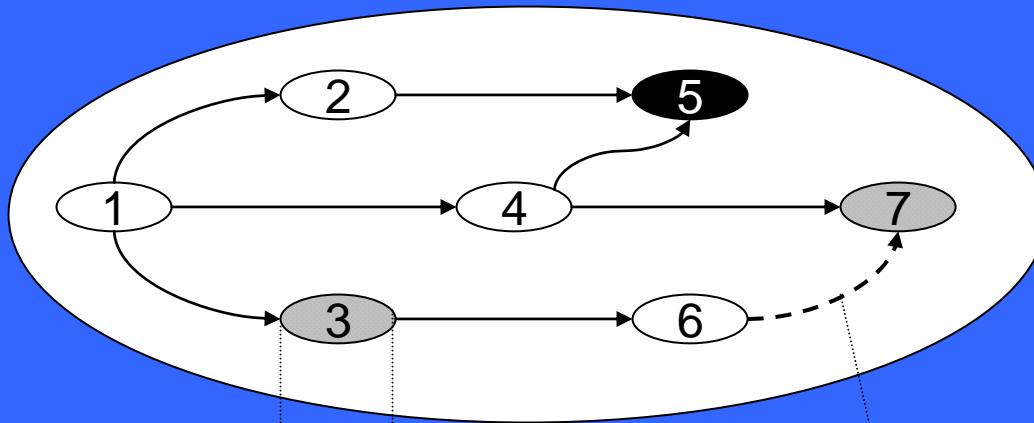


Usage Profile Relevance





Data Profile Relevance

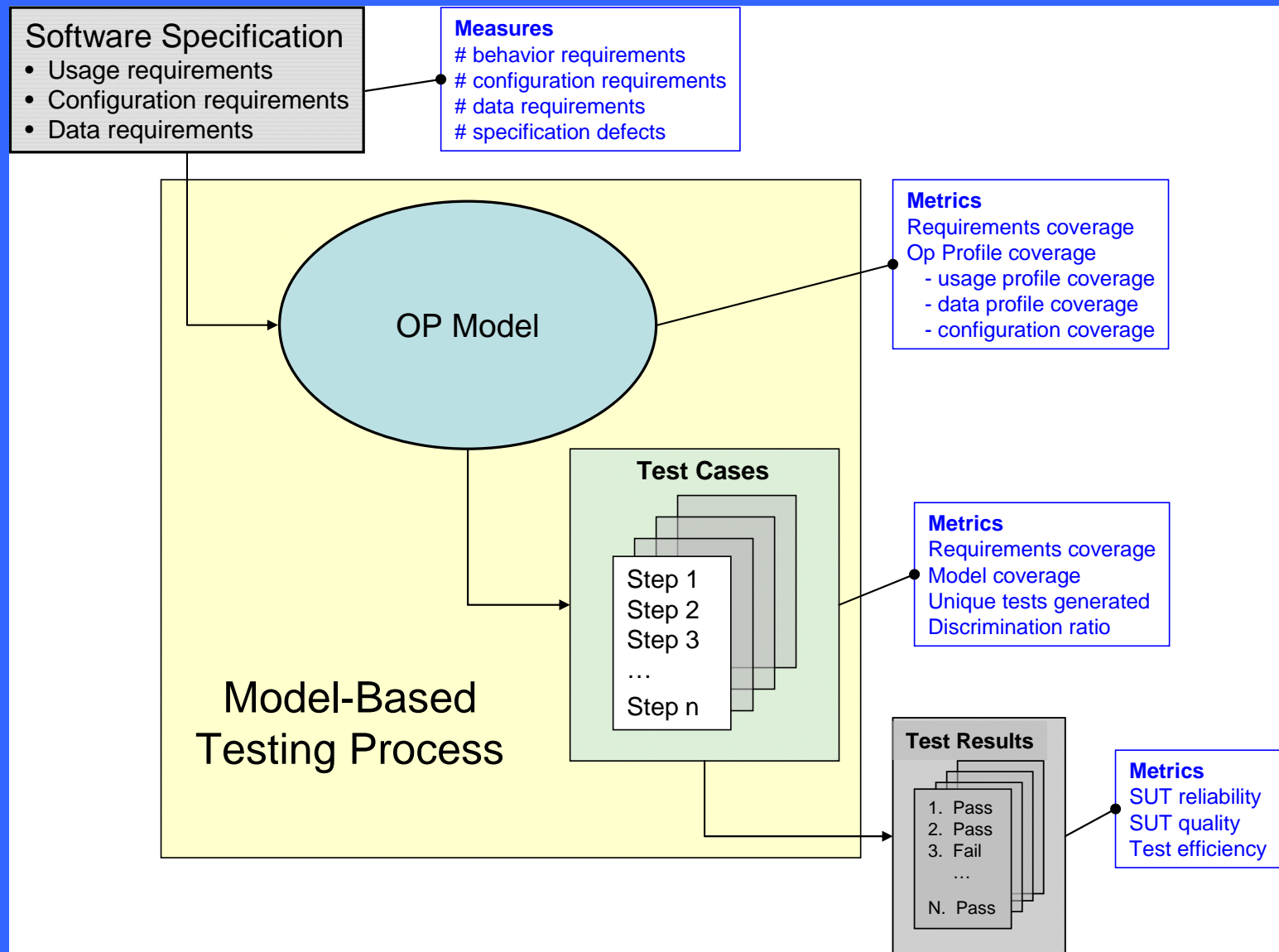


Var1	Var2	Var3
1.1	2	A
1.2	4	B
1.3	6	C
1.4	8	D
1.5	10	E
1.6	12	F
1.7	14	G

int
1
2
3
4
5
6
7
8
9

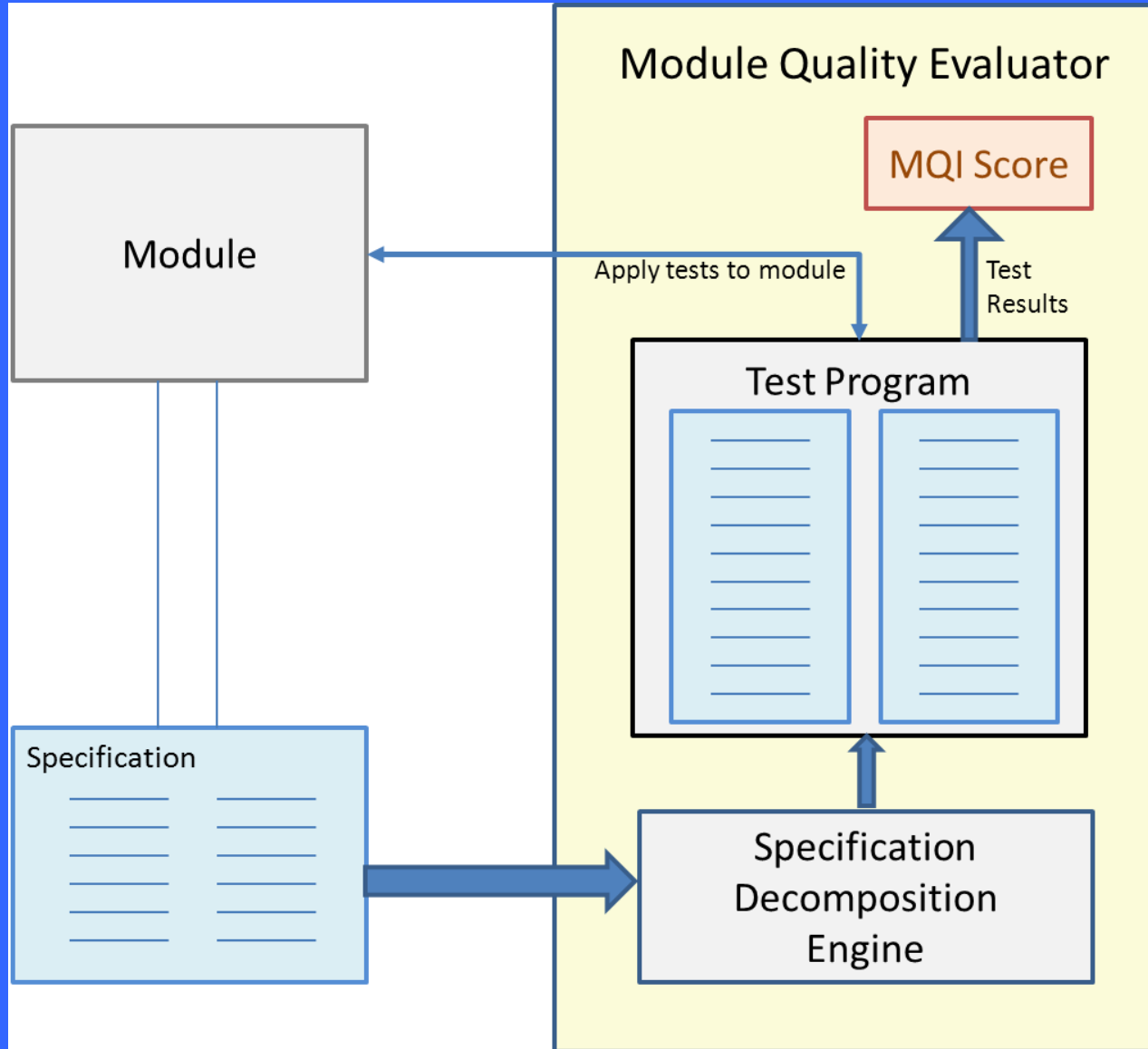


Measurement Framework





Module Level MBT Quality





Questions and Comments