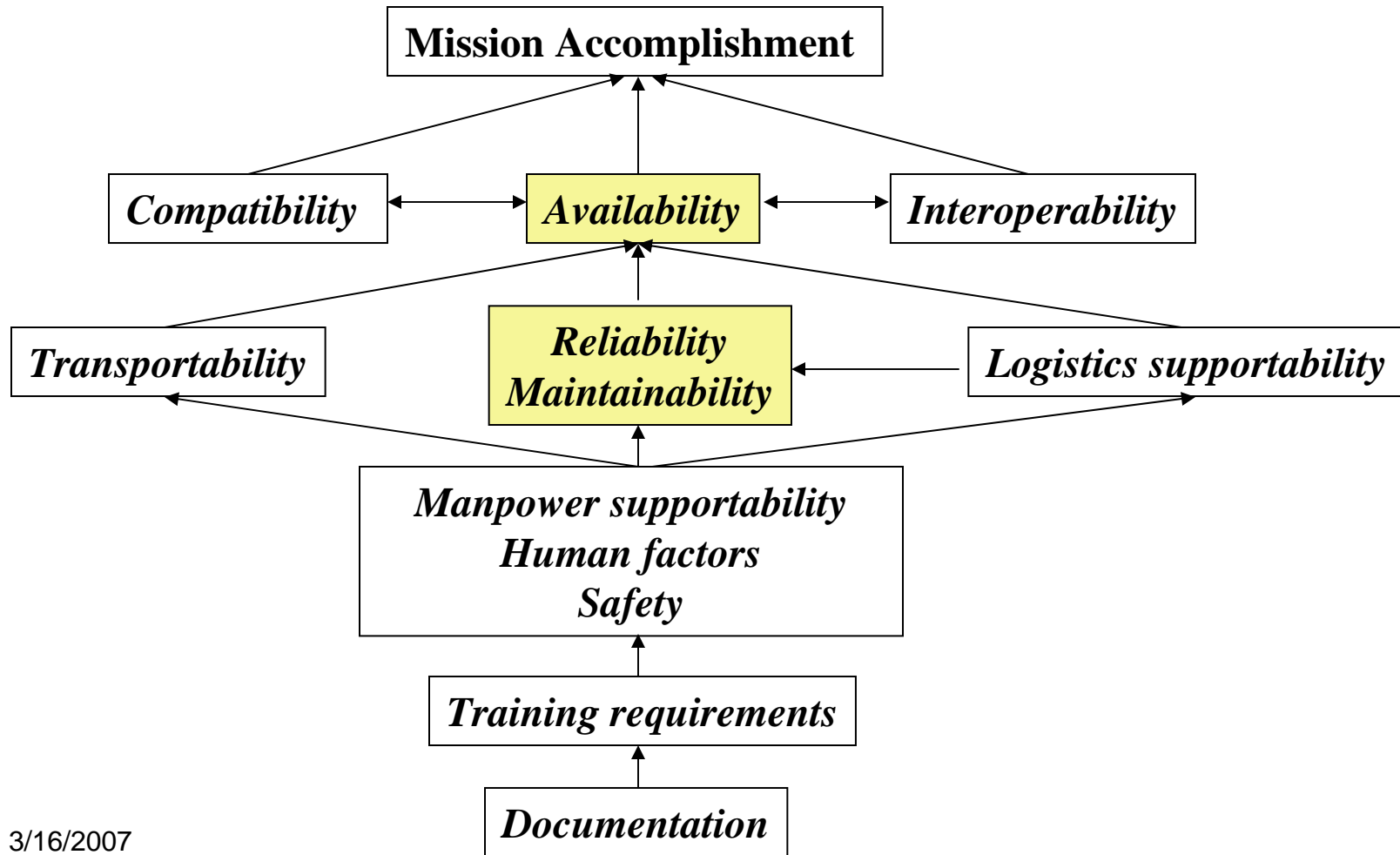# Suitability Assessment
in
Capabilities-Based T&E

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Institute for Defense Analyses**

3/16/2007

Affecting Mission Accomplishment

Guidance Relating to DOD T&E

- **Strategic Planning Guidance (SPG) 2006-2011:**
  - "**Development and fielding of joint force capabilities requires adequate, realistic** <u>**test and evaluation in a joint operational context.**</u> **To do this the Department will provide new testing capabilities and institutionalize the evaluation of joint system effectiveness as part of new** <u>Capability Based</u> **processes.**"

- *Recommendation from SPG tasked Report, "Testing in Joint Environments (TIJE) Roadmap" :*
  - *"Establish a <u>common, TASK-based language derived from UJTLs</u> for use in Concept development, functional analyses, JCIDS capabilities, acquisition, T&E, training and experimentation and mandate its use in all JCIDS documents.*

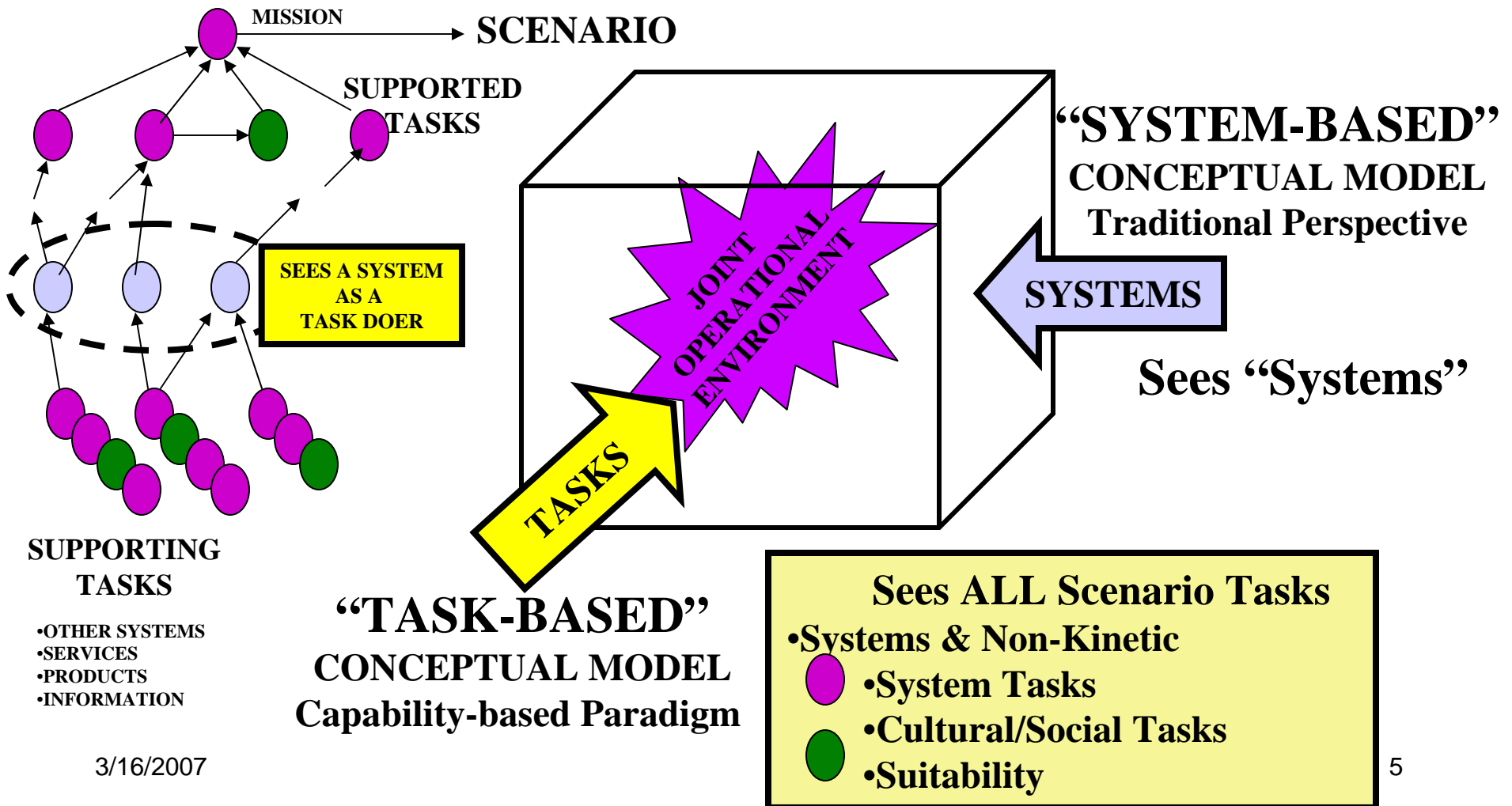## What is Needed? How Might it Work?

A Common, Task-based Language Definitions of "Capability"

- **CJCSI 3170.01 11 May 2005, JCIDS**

  *The ability to achieve a desired effect **under specified standards and conditions** through combinations of means and ways **to perform a set of Tasks**.*

- **Government of New Zealand, Pub 001, Corporate Statement of Intent(2004-2007), Appendix 5, Glossary** *SUITABILITY*

  *The appropriate **combination of competent people, knowledge, money, technology, physical assets, systems and structures** necessary **to deliver a specified level of performance** in pursuit of the organization's objectives, now and/or in the future.*

- A Capability is a Task performed to Mission derived Conditions and Standards

Capability-Based = Task-Based

TWO Conceptual Models of the Joint Operating Environment

MISSION → **SCENARIO**

SUPPORTED TASKS

"SYSTEM-BASED"
CONCEPTUAL MODEL
Traditional Perspective

SYSTEMS

SEES A SYSTEM AS A TASK DOER

JOINT OPERATIONAL ENVIRONMENT

Sees "Systems"

TASKS

SUPPORTING TASKS

- •OTHER SYSTEMS
- •SERVICES
- •PRODUCTS
- •INFORMATION

"TASK-BASED"
CONCEPTUAL MODEL
Capability-based Paradigm

Sees ALL Scenario Tasks
- •Systems & Non-Kinetic
  - •System Tasks
  - •Cultural/Social Tasks
  - •Suitability

Joint Operational Environment
Two Conceptual Models

SPG/DPS

SCENARIO

MISSIONS

TASKS

METT-T
DOTMLPF

UJTL

SUPPORTED TASKs

OPS ANALYSIS

SYSTEMS

Mission Impact Assessment

Needed
Performance
Available

Scenario-based Task Metrics & Conditions

Test Task

Test Conduct

Supporting Tasks

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Task Based Test Environments
LVC Design Efficiency
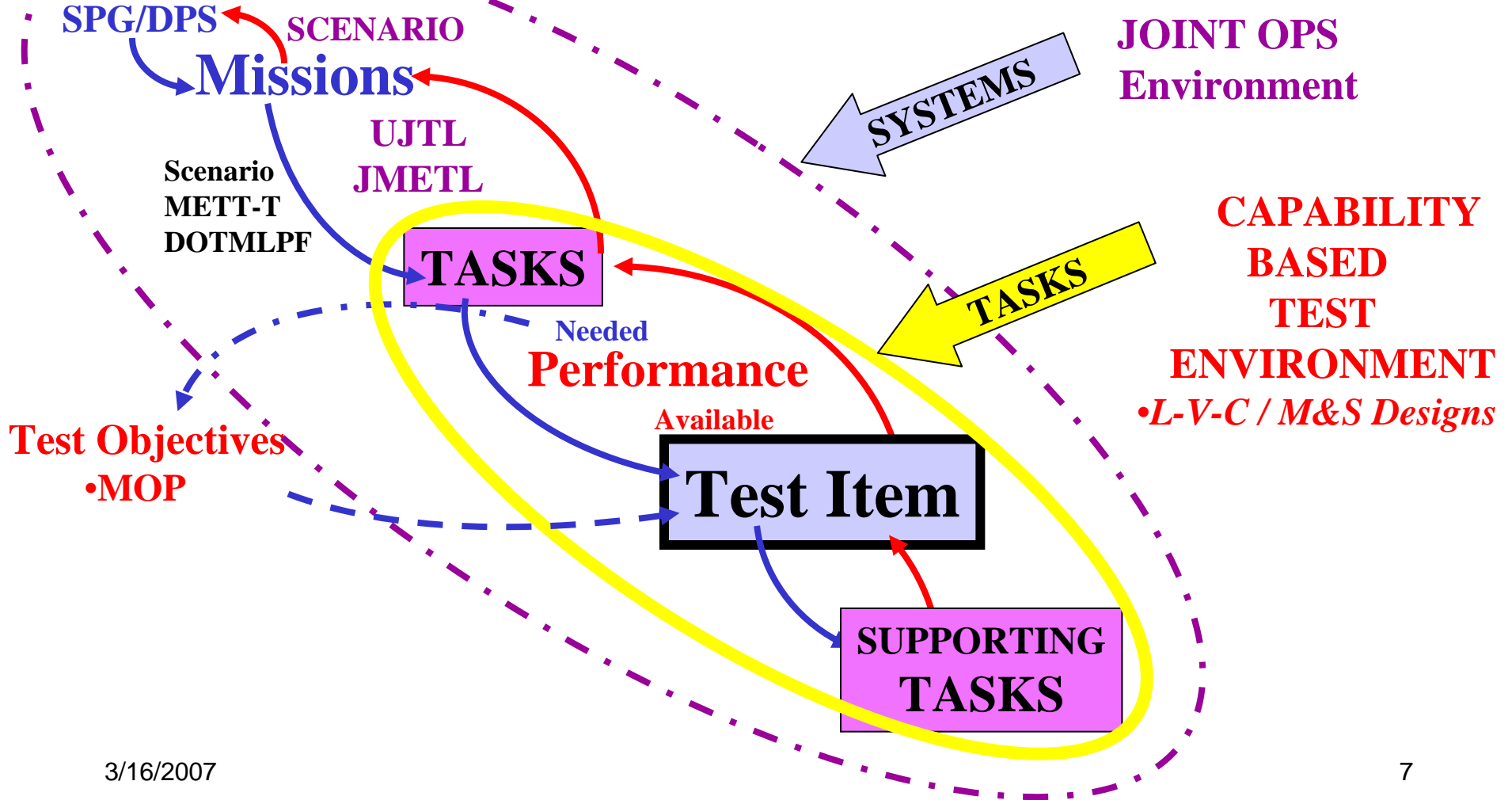
Capability-based T&E
Test Design & Assessment

IDA

DPS

Scenario

"Mission" Effectiveness

Missions

UJTL

TEST ITEM

TASKS

Needed

Capability

Available

Test Environment

Test Performance Objectives

Task-based T&E

L-V-C

MISSION → **SCENARIO**

SUPPORTED TASKS

TESTED SYSTEM AS A TASK DOER

SUPPORTING TASKS
- OTHER SYSTEMS
- SERVICES
- PRODUCTS
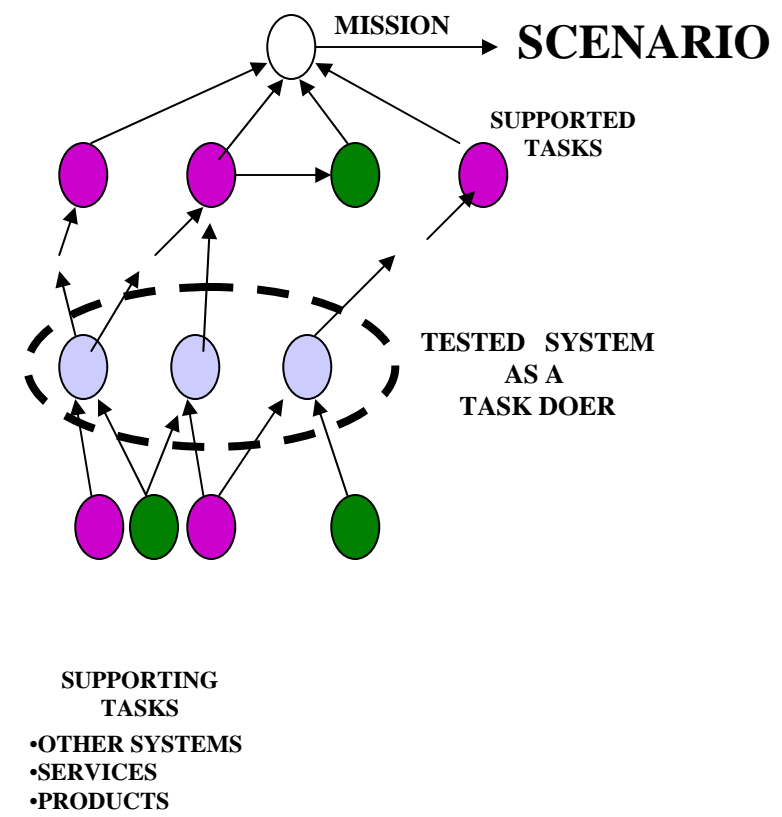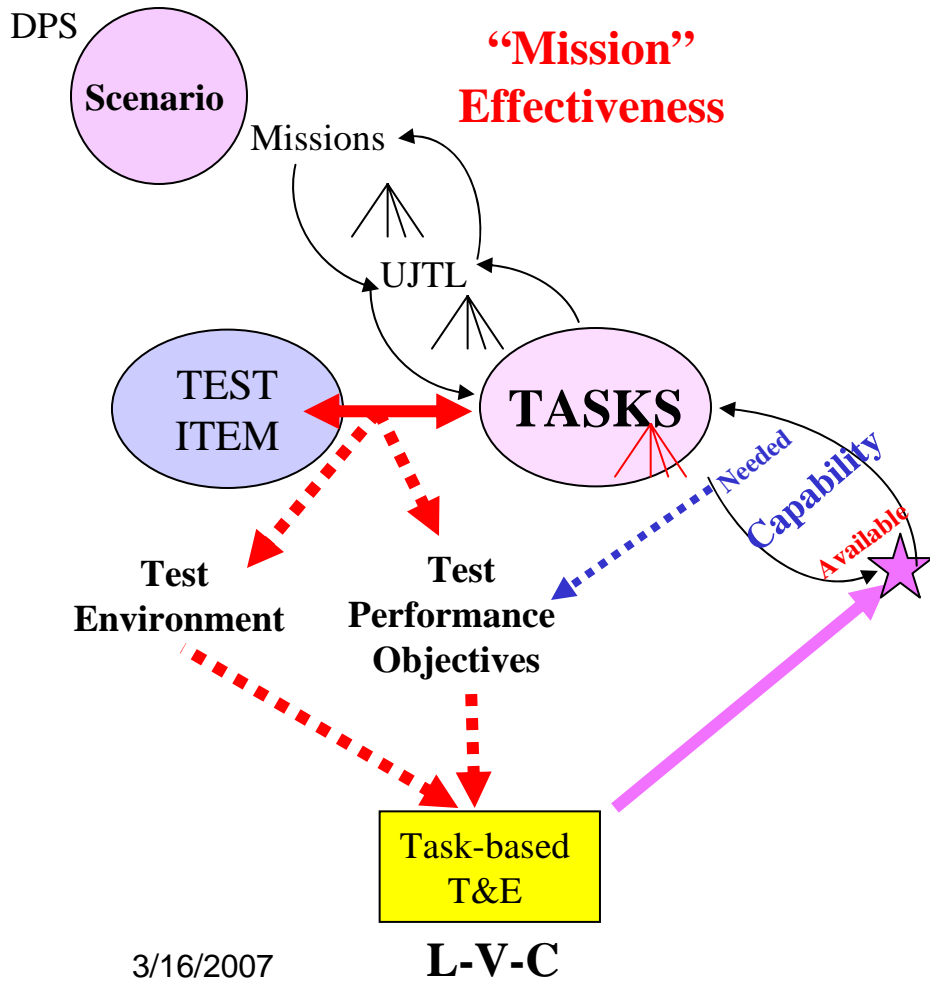
=**System Tasks**

= **Non-Kinetic Tasks (SUITABILITY)**

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Capability-based Suitability Testing "Suitability" Components

Supported Task

MISSION ← **TASK**

Performance (demand)

Documentation

TASK

Available Performance

Training

TASK

TESTED TASK

A **Task** done by "the System"

TASK

Reliability = Maintenance "Demand"

TASK

Maintenance "Available"

Maintenance (a Supporting Task to the System)

Personnel

3/16/2007 **TASK** **Logistics (Materiel)**

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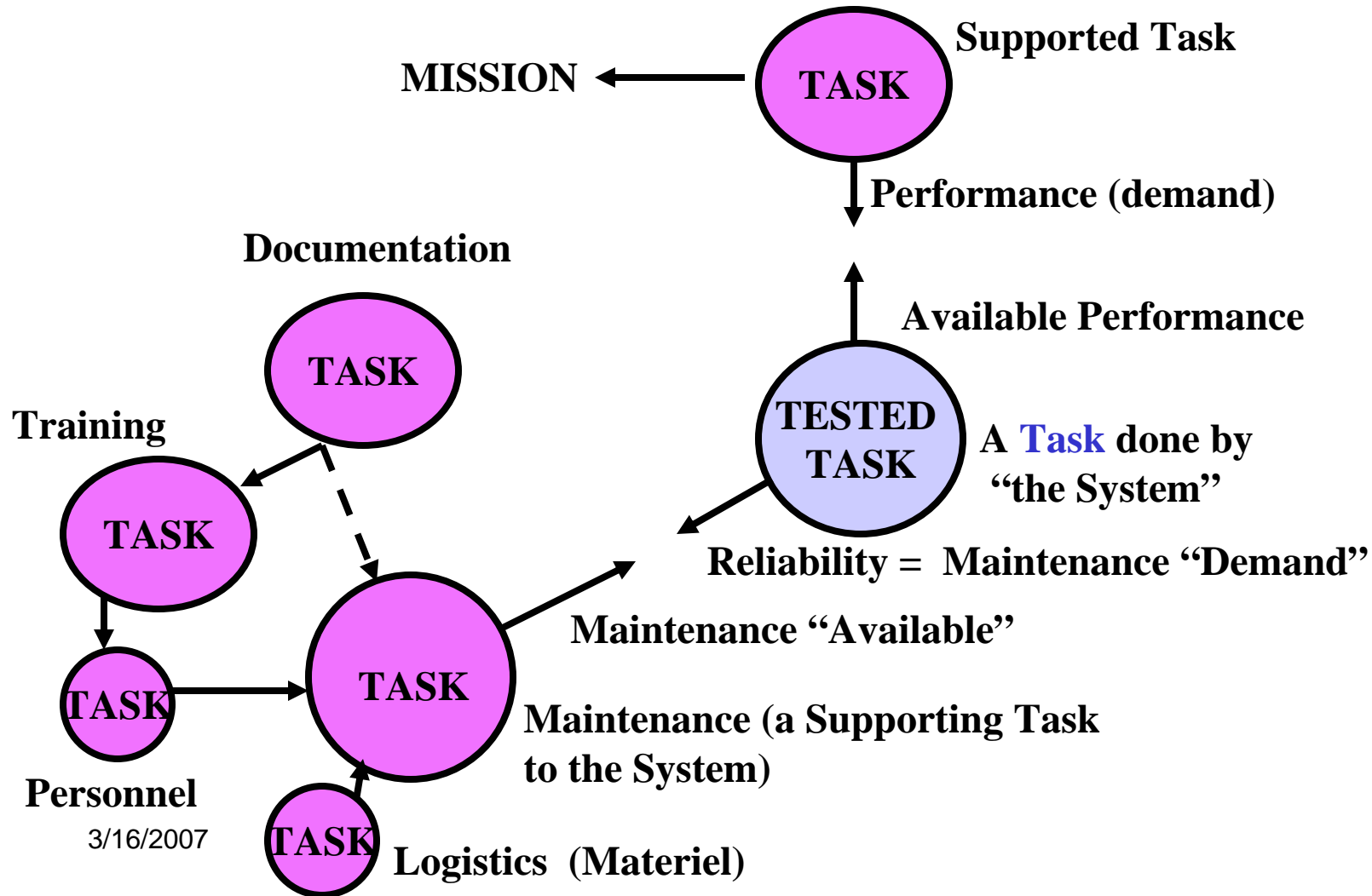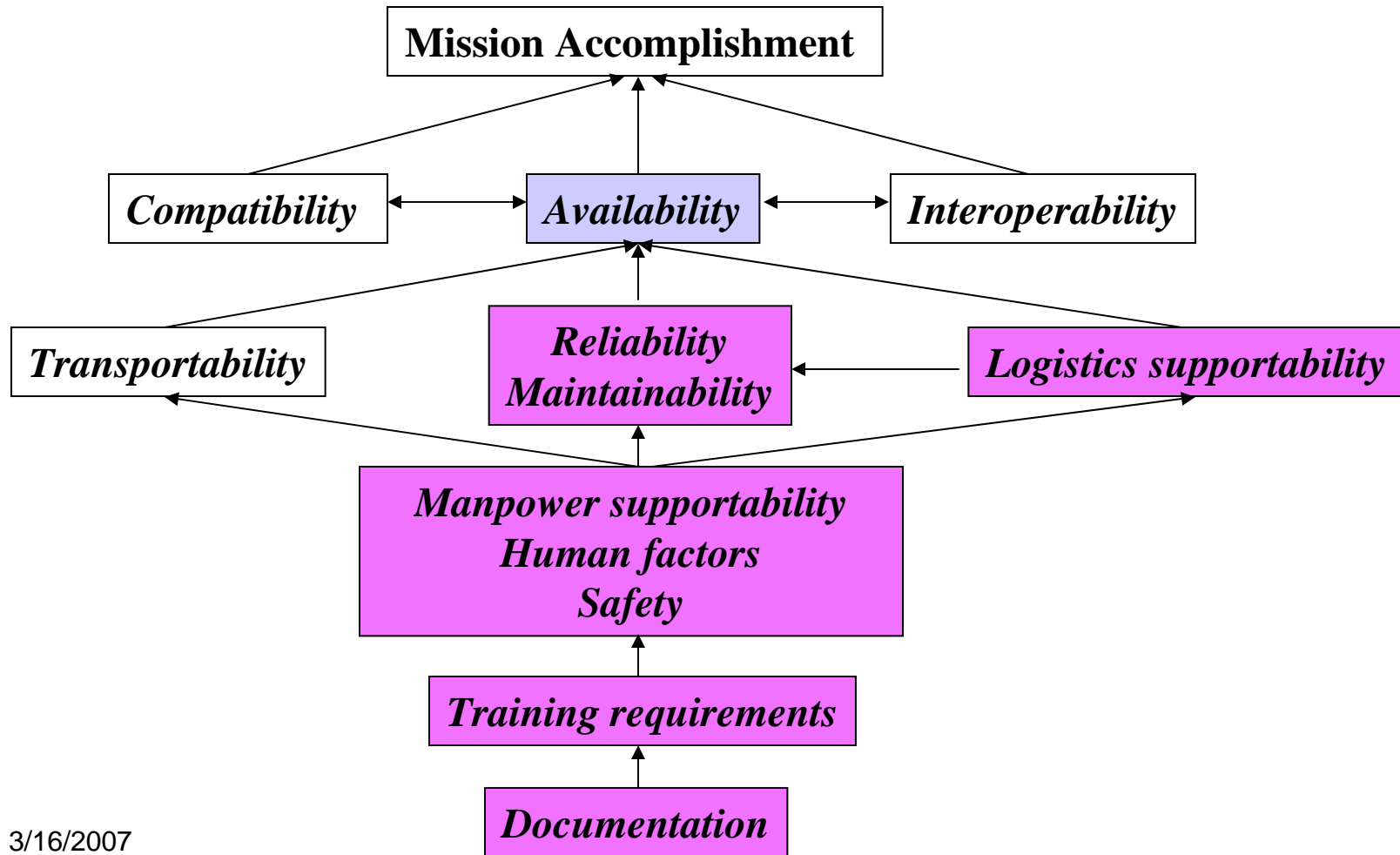
Capability Assessment T&E Process Implementation Approach

IDA

SPG *Scenario Missions*

MSFD

Joint Operations Environment

JMETL TASKS

- *"Establish a common, TASK-BASED language"*

- *"Define Capabilities in common, measurable warfighting terms."*

- *"Identify characteristics' ability to accomplish or limit accomplishment of the mission"*

Task-based Mission Descriptions

T&E

Plan	Conduct	Assess	Report

Distributed

Test Environment M&S

ACQ — ANALY — EXPR — PLNG — TRNG

JCIDS

COCOMS

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Common and Cross Cutting Capability-based Conceptual Model

"Establish a common, TASK-BASED Language, derived from UJTLs for use in Concept development, functional analyses, JCIDS capabilities, acquisition, T&E, training and experimentation and mandate its use in all JCIDS documents"; TIJE Road Map

SPG

Scenario

DPS

Joint Operations Environment

TASKs + MOPs

EXPERIMENTATION

ANALYSIS

JCIDS

Common, Task-based, Mission Descriptions

ACQUISITION

TRAINING

Plan | Conduct | Assess | Report

TEST ITEM

Distributed

T&E M&S

Item "Performance"

T&E

PLANNING
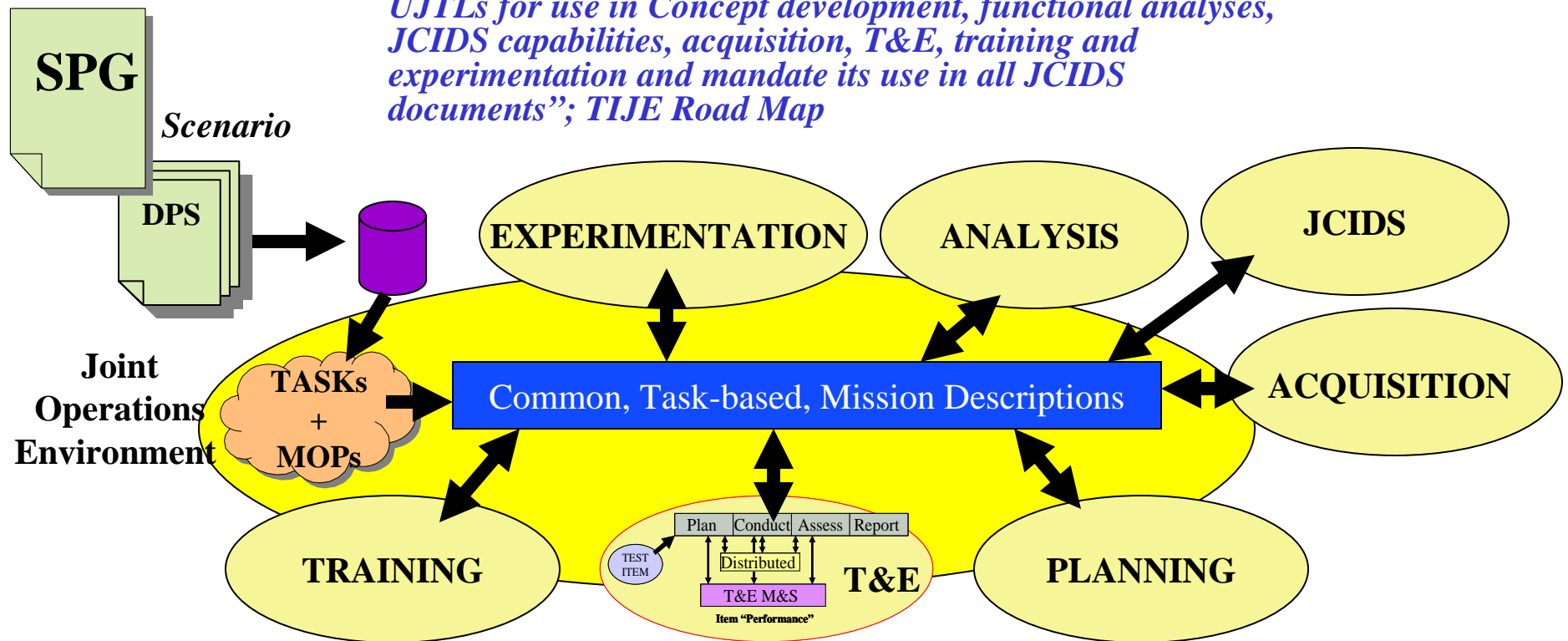
Capability-based Suitability Testing
SUMMARY

- Task-based Conceptual Model of the Joint Operational Environment provides:
  - A comprehensive perspective on ALL activities in the Joint Operating Environment.
  - A useful paradigm for efficient & effective testing and assessment of system Suitability relative to Mission Accomplishment.

- Task-based Conceptual Models are increasingly important to DOD decision making
  - Address today's warfare processes more comprehensively than Systems-based paradigms.
  - Basis for an increasing number of DOD Assessment processes

- System-based Conceptual Models are still needed to inform on MOP for Tasks at the Strategic, Operational and Tactical Level.
  - An enduring role for traditional systems analysis and M&S

BACKUP SLIDES

A Common, Task-based Language
Task Performance Standards

CJCSM 3500.04c, 1 July 2002

- **The standard for a joint task is set within the framework of the joint force commander's mission and in the context of the conditions**, either most likely or worst case, that are linked to those missions**. Thus, the standard(s) for a joint task can only be set when:**
  - **(1) the mission analysis is complete**
  - **(2) the conditions affecting the task have been identified and described, and**
  - **(3) measures and criteria have been selected that reflect the task contribution to mission accomplishment.**
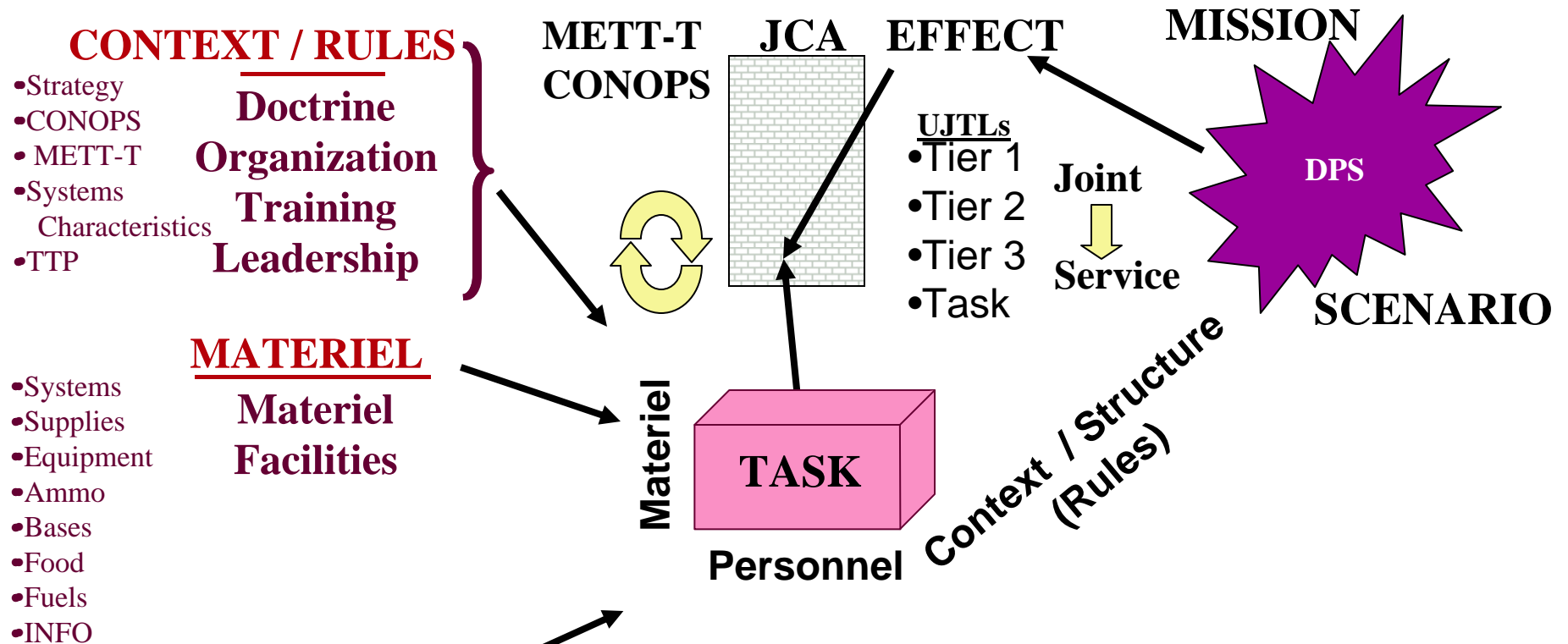
  This means that standards are tied to missions. That is, just because a joint task has a particular standard on one mission does not mean that the same standard will apply to other missions.

To become expressions of "Capability"
UJTLS require specification of scenario-based conditions and standards

CAPABILITY
DOTMLPF, Scenarios, Missions, Effects and Tasks

IDA

CONTEXT / RULES

- Strategy
- CONOPS
- METT-T
- Systems
  Characteristics
- TTP

Doctrine
Organization
Training
Leadership

METT-T
CONOPS

JCA

EFFECT

MISSION

UJTLs
- Tier 1
- Tier 2
- Tier 3
- Task

Joint

⬇

Service

DPS

SCENARIO

MATERIEL

- Systems
- Supplies
- Equipment
- Ammo
- Bases
- Food
- Fuels
- INFO
  etc

Materiel
Facilities

Materiel

TASK

Personnel

Context / Structure (Rules)

PERSONNEL

Personnel

Capability => A **Task** performed to a **Standard**

SCENARIOS & MISSIONS → **EFFECTS**	⬍
DOTMLPF → **TASKS**	

IDA Other "Capability-based" Processes

DPS

Scenarios

"Mission" Effectiveness

Missions

UJTL

TEST ITEM

TASKS

Test Environment

Test Performance Objectives

Test Design

Needed

Capability

Available

Task-based T&E **Test Items**

T&E

Task Performance

TRAINING

FCS SOS

Army FCS Program

Military Forces / Organizations

OSD(P) & JS/J7 "Adaptive Planning"

Military Units

OSD(P&R) DRRS

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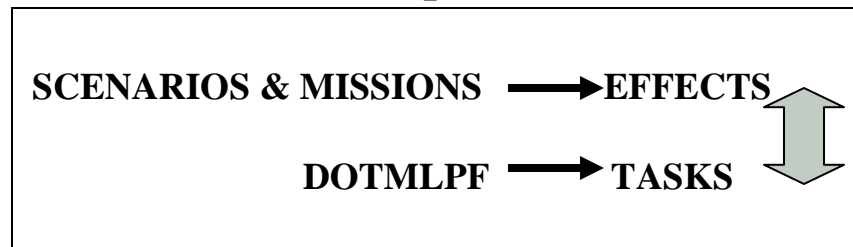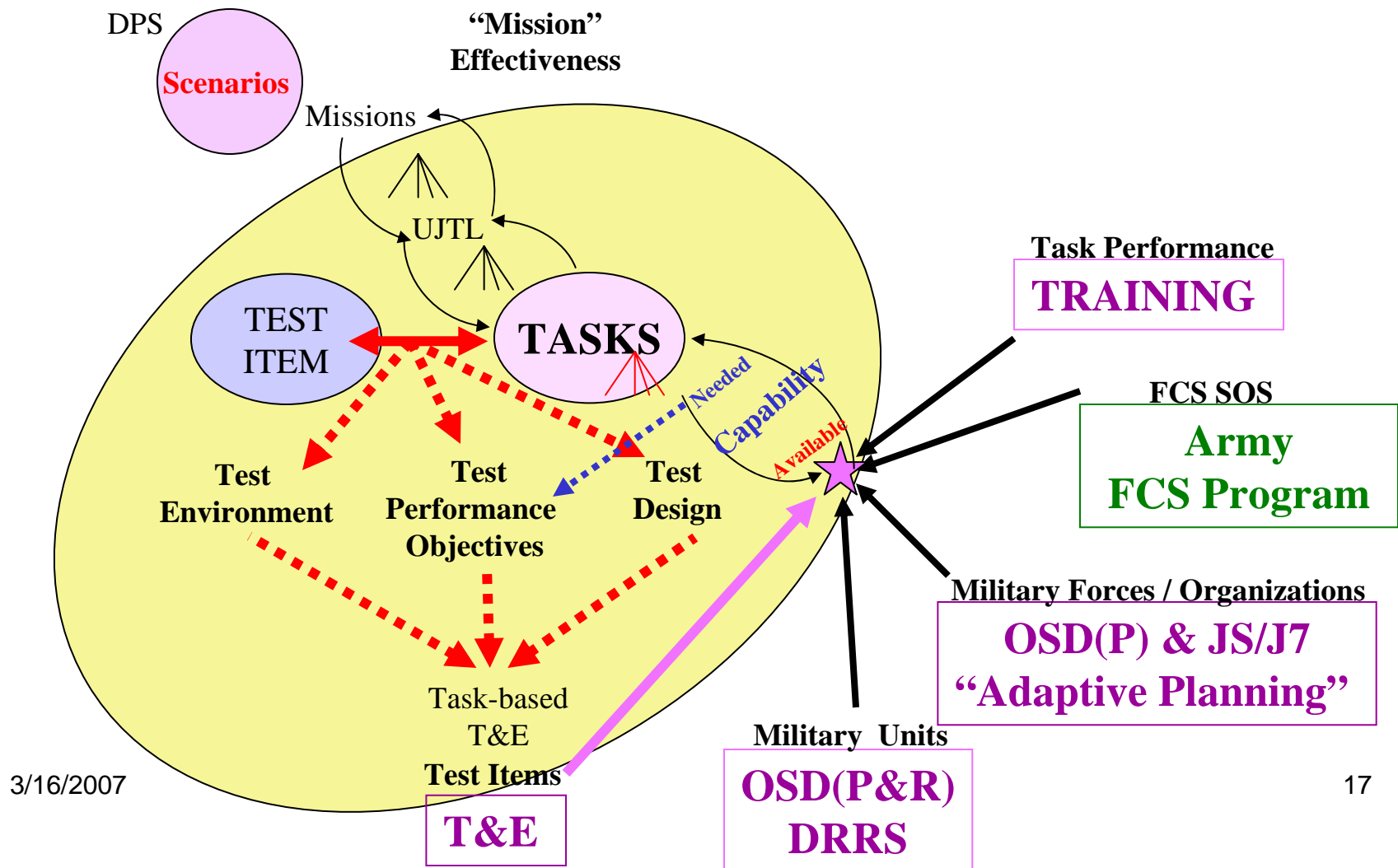
Task-based Adaptive Planning Example

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OPLAN SCENARIO → **MISSIONS**

CONOPS

•Deploy
•Employ
•Sustain

TPFDD

FORCES & RESOURCES

UJTL TASKS

•Tier 1JCA
•Tier 2 JCAs
•Tier 3 JMETLs
•Tier 4 Tasks
•**Tier 5 Tasks**

UTCs
UICs =

INTERACTION ZONE

UIC "Capabilities = Tier 5 Capability Tasks

IDA

Capability

- *Related to Mission Accomplishment*

- *A "Tasked Based" Expression of Performance*
- *Useful to other Capability Based Communities*

DT&E

OPS Scenario

Physical Test Environ

Operational Test Environ

Test Process

Test Item

DOTMLPF

OT&E

Tested Component

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