



# Cyber Range User's Guide (RUG)

Integrating T&E and Training Cyber Range Capabilities

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# Cyber Range Landscape



Joint Staff	OSD(AT&L)	Army	Navy	Air Force	Marines	Other
Joint Information Ops Range**	JMETC MILS Network (TRMC)	I2WD Aberdeen	NCWDG Int. Test Facility Dyn. Auto. Range Testing (DART)	Distrib. Mission Ops Cntr-Cyber	Marine Corps Cyber Range	Idaho National Labs
C4 Assessment Division**	National Cyber Range** (TRMC)	Cyber Battleground Range (CECOM)	NCDOC - HBSS Ctr-Msr T&E Virt. Environ.	Cyber TTR	Cyber Test & Evaluation Platform	Pacific Northwest National Labs
Cybertropolis Muscatatuck (ICS) (Army)	National Wireless Range (JIDA)	Cyber Battle Lab	SPAWAR - ATL Cyber Range Ops Center (C-ROC)	Cyber Range Complex	USMC Info Assurance Red Team (MCIART)	Sandia National Labs
DISA	CYBERCOM	Electronic Proving Ground (Yuma)	SPAWAR - PAC SSC PAC Cyber Test Anly & Sim. Environ. Sys Ctr	LABNET		MIT/LL + RSDP
Cyber Security Range**	Simulation Training & Exercise Platform (STEP)		RSDP - Pax River	Capability Integration Environ.	Guard Bureau	John Hopkins
CFBL Net (CIAV)	Cyber Immersion Lab	Regional Serv Deliv. Pt (RSDP) - Huntsville	USS SECURE	Hanscom Collab & Innovation Ctr	177 <sup>th</sup> IAS (AF)	AZ Cyber Warfare Range
CV2E (CIAV)	PACOM		Navy Red Team	AOC Test Lab	DIA	MI Cyber Range
	Cyber War Innovation Center (CWIC)	TSMO Red Team	SPAWAR Red Team	Datalinks Test Facility	JRAAC Huntsville	Raytheon CODE
DISA Red Team		1 <sup>st</sup> IO		Cyber Exper. Environment		Sans Institute
				Nellis TTR		iSight Partners
				Space TTR		Other Def Industry Base Ranges
				Distributed Msn Ops Net		NSA Red Team
				57 <sup>th</sup> IAS		

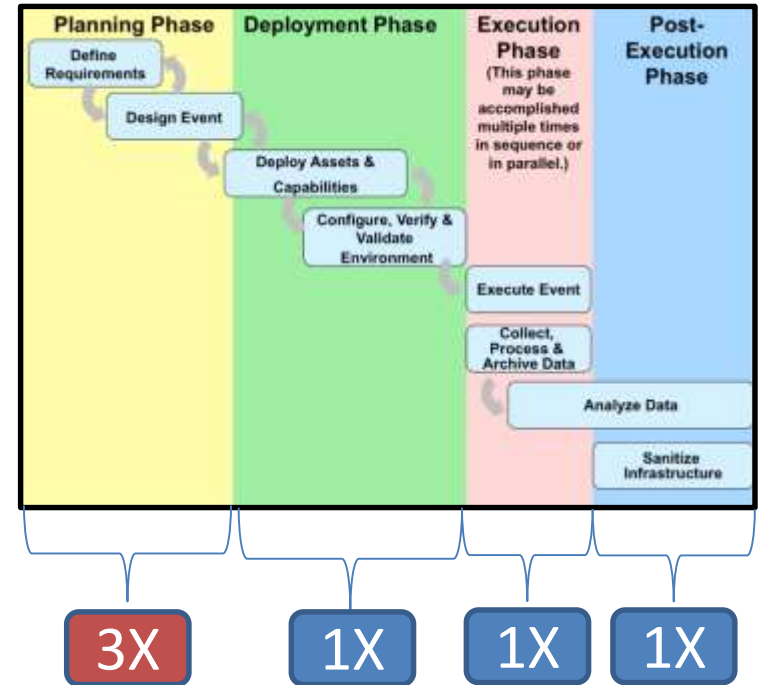
Connectivity
  Cyber Environments
  Certified Red Team

\*List is not exhaustive \*\* DECREE range CJC SM 6510.03



# Ranger User's Guide Purpose

- Cyber range infrastructure inherently dual-use
- Range providers spend considerable time with range users during the event planning process
- Cyber range planning and deployment tools lack standardization
  - Automated ↔ Manual
- Acquisition program managers need a guide that is...
  - Easily accessible
  - Provides common lexicon
  - Non-authoritative
  - Unclassified



Create efficient interactions between range providers and users



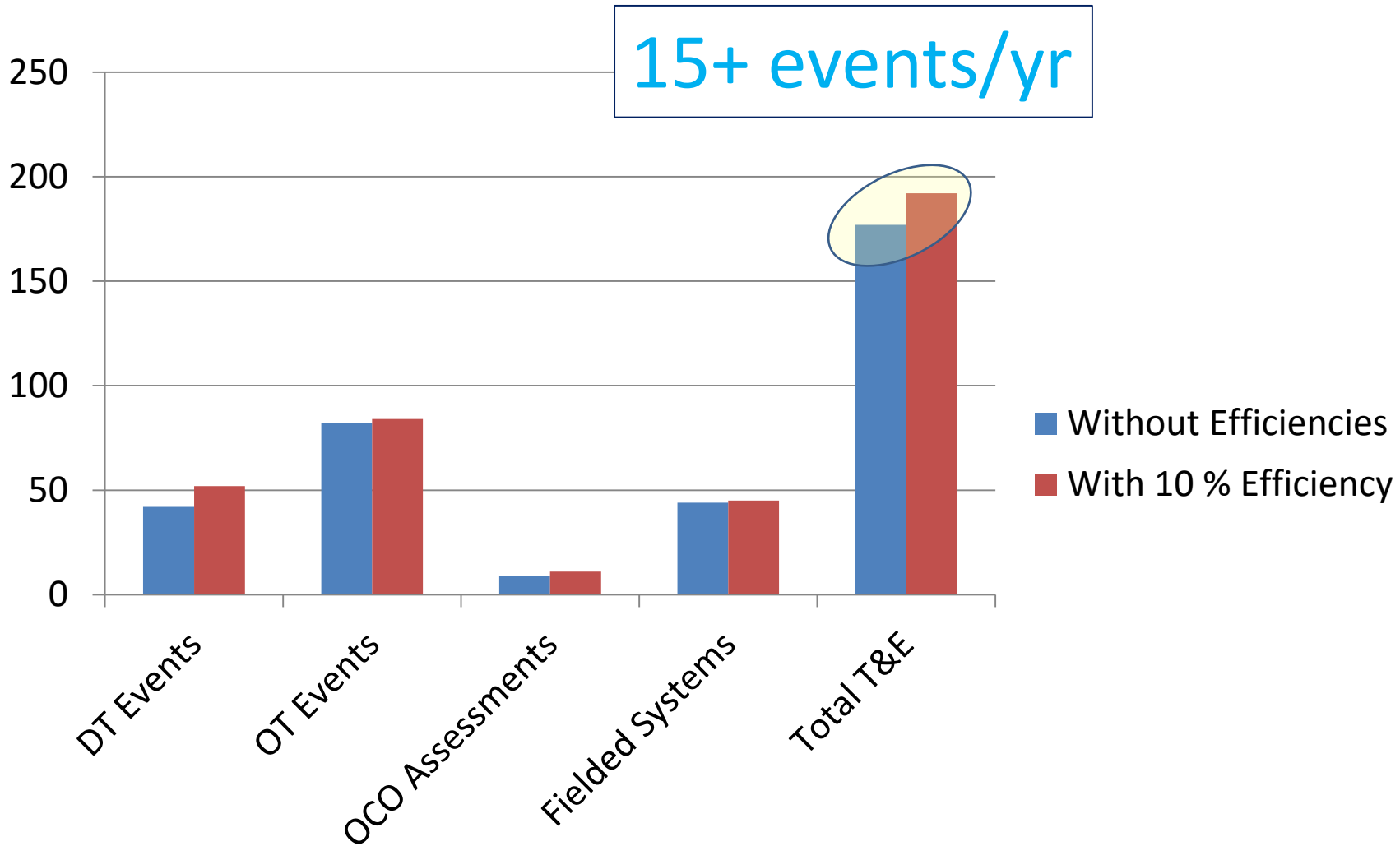
# Cyber Range Capacity Model Scenario



- Studies capacity through the entire Lifecycle of cyber range events
  - Planning → Deployment → Execution → Post-Execution
- Identifies the As-Is Cyber Range Supply, Demand & Process, which together determines the throughput of events
  - **Workload** – the **demand** on the ranges
  - **Resources** – the range **supply** (compute resources, personnel) available at ranges
  - **Workflow** – the **process** by which the workload is handled by the resources
- If the implementation of the Ranger User's Guide decreases the amount of time needed to plan events by 10%:
  - How does this impact the number of T&E events that complete in a given year?
  - How does this impact the number of T&E events that get planned in a given year?
  - Assumptions: 310 General Purpose Devices, 560 Engineers, 50 Cyber Red Teams

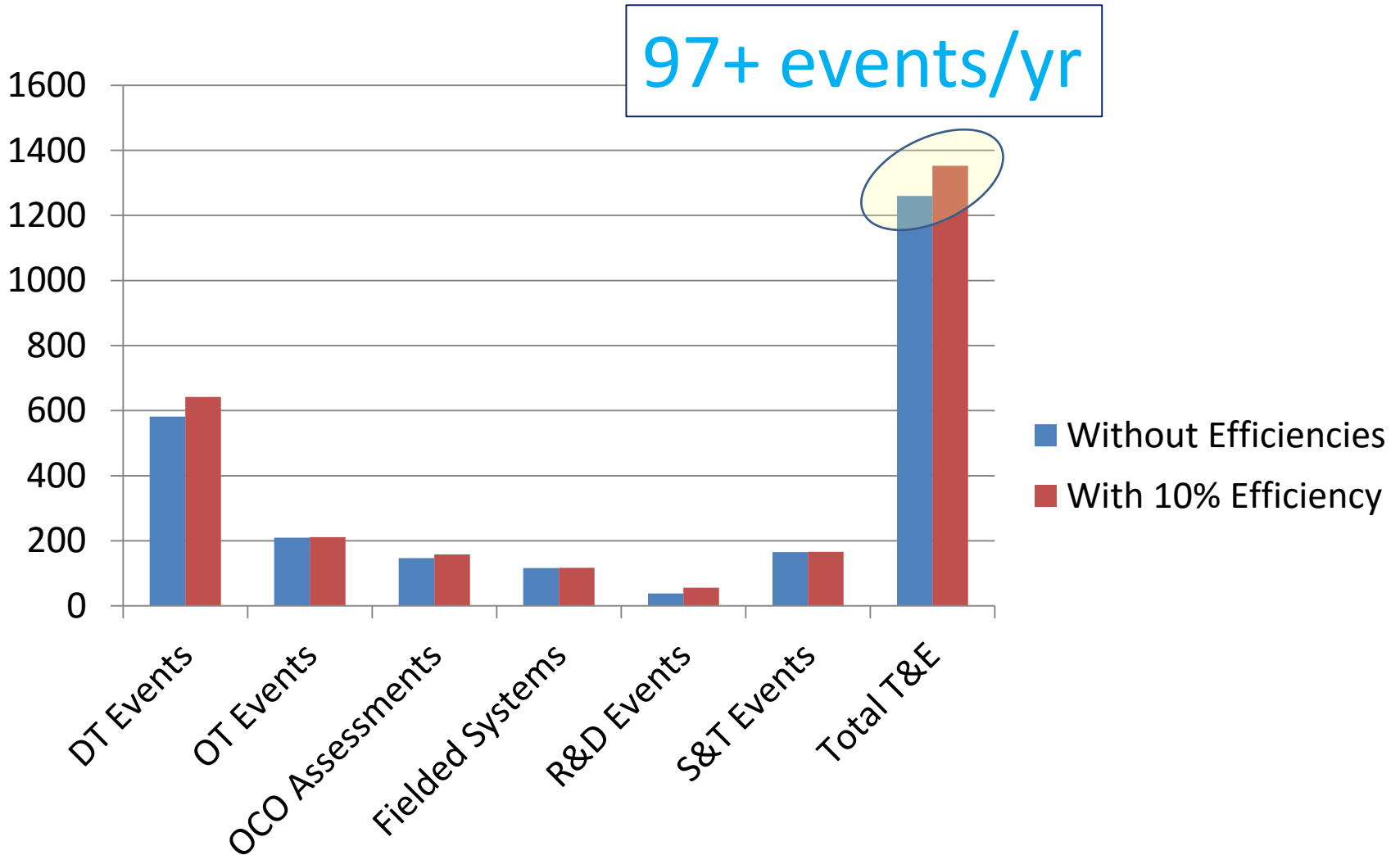


# T&E Event Completion Rates



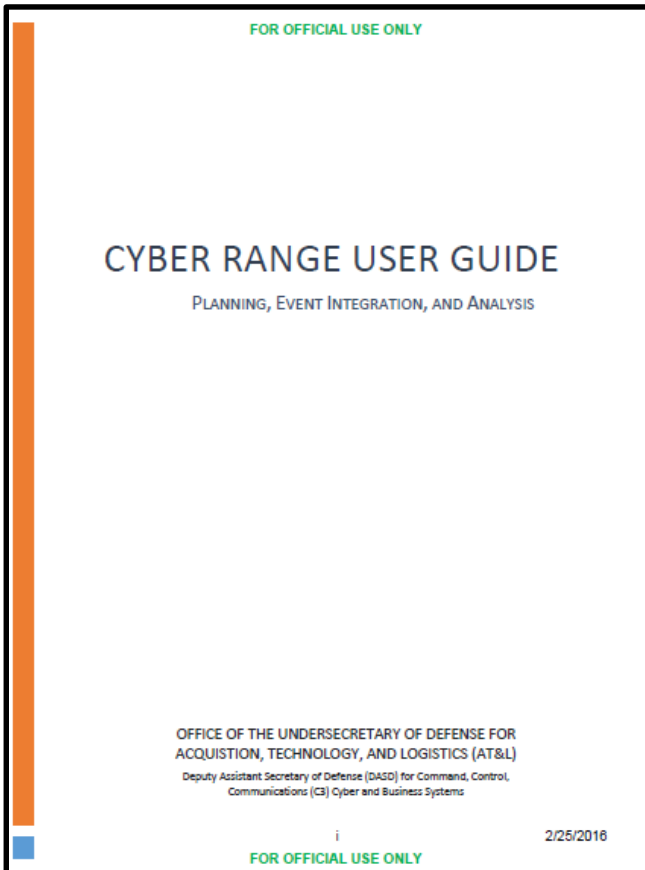


# T&E Event Planning Completion Rates





# Questions?



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# Backup Slides





# T&E Event Completion Rates With and Without Efficiencies



Event Type	Without Efficiencies	10% Efficiency in Planning	Percent Increase
DT Events	42	52	23.8%
OT Events	82	84	2.4%
CCMD Assessments	0	0	0.0%
OCO Assessments	9	11	22.2%
Fielded Systems Events	44	45	2.3%
Range Events	0	0	0.0%
R&D Events	0	0	0.0%
S&T Events	0	0	0.0%
<b>Total T&amp;E</b>	<b>177</b>	<b>192</b>	<b>6.3%</b>

- As the amount of time required in planning an event decreases, more events can complete in one year (from planning to post-execution analysis)
- Increase number of events complete by an average of 6.3% in a nominal year, or 12.7% among event types that have events completing



# T&E Event Planning Completion Rates With and Without Efficiencies



Event Type	Without Efficiencies	10% Efficiency in Planning	Percent Increase
DT Events	582	642	10.3%
OT Events	210	211	0.5%
CCMD Assessments	1	2	100.0%
OCO Assessments	147	158	7.5%
Fielded Systems Events	116	117	0.9%
Range Events	1	1	0.0%
R&D Events	38	56	47.4%
S&T Events	165	166	0.6%
<b>Total T&amp;E</b>	<b>1260</b>	<b>1353</b>	<b>7.4%</b>

- As the amount of time required to plan an event decreases, the number of events able to complete the planning phase in one year increases substantially
- Total number of events planned in after one year increases by 7.4%