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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army **Date:** May 2021

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	28.478	39.192	35.409	-	35.409	-	-	-	-	-	-
BT1: <i>Interoperability</i>	-	4.962	-	-	-	-	-	-	-	-	-	-
BT2: <i>Command Post Mobility/ Survivability</i>	-	5.322	9.373	8.418	-	8.418	-	-	-	-	-	-
BT3: <i>Common Operating Environment (COE)</i>	-	4.171	7.866	7.069	-	7.069	-	-	-	-	-	-
BT4: <i>Network Technology Maturation Initiatives (NTMI)</i>	-	2.301	-	-	-	-	-	-	-	-	-	-
BT5: <i>Integrated Tactical Network/Enterprise Network</i>	-	11.722	21.953	19.922	-	19.922	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Unified Network Transport is directly aligned to the Army Network Modernization Strategy Line of Effort 1 (LOE 1) Unified Network; LOE 2, Common Operating Environment (COE), LOE 3, Interoperability; and LOE 4, Command Post Mobility and Survivability. These efforts support advanced component development activities that are aligned to the Army's Tactical Network Capability Set development and fielding plans.

The Program Executive Office Command, Control, Communications-Tactical (PEO C3T) is responsible for prioritizing, programming, managing and executing these projects and ensuring these funds are prioritized to support the Network Cross-Functional Team (N-CFT) Army modernization priorities and prototyping. The N-CFT and PEO C3T prioritize technology demonstrations, focused evaluations, and expert analyses to inform future requirements, mature technologies, and deliver new capabilities. Efforts funded from these projects will inform technology transitions, research and development, and user assessments, and then rapidly transition to appropriate Programs of Record or be established as a new program.

Fiscal Year (FY) 2022 funds will support identification, maturation, demonstration, and evaluation of Technology Readiness Level (TRL) 6+ systems and subsystem components including, but not limited to, resilient Line of Site (LOS) and beyond Line of Sight (BLOS) communications, information systems and information management; cyber electromagnetic activities (CEMA) situational understanding and operations; intelligence fusion, cloud technologies, virtual augmentation, artificial intelligence, and data convergence and analytics in the Common Operating Environment to inform the Integrated Tactical Network/Enterprise Network and Enabling Functions, Computing Environments, Interoperability and Command Posts. Successful solutions identified through evaluation in a high fidelity and realistic operating environment will be transitioned to Programs of Record for integration and fielding. Funds will also support integration with solutions identified in the other Modernization CFT efforts to ensure network dependencies are addressed.

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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>
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B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	29.700	40.677	40.924	-	40.924
Current President's Budget	28.478	39.192	35.409	-	35.409
Total Adjustments	-1.222	-1.485	-5.515	-	-5.515
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.222	-1.485			
• Adjustments to Budget Years	-	-	-5.515	-	-5.515

Change Summary Explanation

The N-CFT and PEO C3T will ensure that highest priority projects that inform technology transitions and narrow technology gaps are funded based on available resources in FY 2022.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Army **Date:** May 2021

Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>				Project (Number/Name) BT1 / <i>Interoperability</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
BT1: <i>Interoperability</i>	-	4.962	-	-	-	-	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project BT1, Interoperability, is directly aligned to the Army Network Modernization Strategy Line of Effort (LOE) 1 and 2, Unified Network Transport and Common Operating Environment, respectively. These efforts support advanced component development activities that are aligned to the Army's Tactical Network Capability Set development and fielding plans.

The project enables Unified Action Partner Interoperability through integration into the Joint Information Environment (JIE) and the Mission Partner Environment (MPE). Interoperability is the ability to routinely act together coherently, effectively and efficiently to achieve tactical, operational, and strategic objectives. Interoperability between disparate forces allows coalitions to produce greater combat power than the sum of their parts by leveraging relative strengths while mitigating relative weaknesses.

Funding is used for technical maturation and evaluation of technologies to address gaps associated with LOE 3, Interoperability, solutions that will incorporate common commercial standards and/or widely recognized military interoperability standards. This funding will support demonstrations and experimentation, in a relevant operational environment, of key research and development (R&D) and science and technology (S&T) initiatives related to this effort, to include communications, information systems and information management; intelligence, surveillance and reconnaissance; intelligence fusion and digital fires.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2020	FY 2021	FY 2022
Title: BT1: Interoperability	4.962	-	-
Description: This funding is used to identify and acquire technologies to address gaps associated with LOE 3, Interoperability, solutions for evaluation that will incorporate abilities to leverage common commercial standards and/ or widely recognized military interoperability standards. This funding will support demonstrations and evaluations, in a relevant operational environment, of key research and development (R&D) and science and technology (S&T) initiatives related to interoperability, to include communications, information systems and information management; intelligence, surveillance and reconnaissance; intelligence fusion and digital fires.			
Accomplishments/Planned Programs Subtotals	4.962	-	-

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Army **Date:** May 2021

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT1 / <i>Interoperability</i>
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D. Acquisition Strategy

The Network Cross-Functional Team (N-CFT) and Program Executive Office Command, Control, Communications-Tactical (PEO C3T) will coordinate on technologies to be evaluated with appropriate Program Management offices where there is an opportunity for technology insertion. Technologies that are determined to address technology gaps and require further evaluation will be documented in an acquisition decision memorandum after being approved by the Milestone Decision Authority. The various prototyping technologies will be pursued via competitively awarded contracts using best value source selection procedures.

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army **Date:** May 2021

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT1 / <i>Interoperability</i>
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Event Name	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Industry Innovation Prototyping & Evaluation Capability Gap Reduction and Enhancement Development Effort																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army **Date:** May 2021

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT1 / <i>Interoperability</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Industry Innovation Prototyping & Evaluation	4	2020	1	2021

Note

Technical Exchange Meeting (TEM) projects are continuous activities; Network Cross-Functional Team (N-CFT) and Program Executive Office Command, Control, Communications-Tactical (PEO C3T) will reach out to industry partners in order to assess and demonstrate the latest emerging technologies which will reduce capability gaps and provide rapid software/hardware insertions into Programs of Record.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Army **Date:** May 2021

Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604541A / Unified Network Transport				Project (Number/Name) BT2 / Command Post Mobility/Survivability			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
BT2: Command Post Mobility/Survivability	-	5.322	9.373	8.418	-	8.418	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project BT2, Command Post Mobility/Survivability, is directly aligned to the Army Network Modernization Strategy Line of Effort 4 (LOE 4), Command Post Mobility and Survivability. These efforts support advanced component development activities that are directly aligned to the Army's Tactical Network Capability Set development and fielding plans.

This project supports mobile Command Post efforts that may transition to the Command Post Integrated Infrastructure (CPI2) program or other programs that get integrated in CPI2's platforms. The technical maturation and evaluation allow for Command Post disaggregation capabilities to inform future designs. Spectrum obfuscation and assessments of antenna remoting will support the Command Post efforts for CPI2 Increment 1 and beyond.

Fiscal Year (FY) 2022 funds will be used to mature, prototype, and evaluate emerging technologies that will inform design choices for the Command Post Integrated Infrastructure (CPI2) Increment 1 and beyond. Funds also support identification, maturation, demonstration, and evaluation of Technology Readiness Level (TRL) 6+ systems and subsystem components including Cyber Electromagnetic Activities (CEMA) situational understanding and operations Interoperability functions. Successful solutions identified through evaluation in a high fidelity and realistic operating environment will be transitioned to Programs of Record for integration and fielding. Funds will also support integration with solutions identified in the other Modernization Cross Functional Team (CFT) efforts to ensure network dependencies are addressed.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2020	FY 2021	FY 2022
Title: BT2 Command Post Mobility and Survivability	5.322	9.373	8.418
Description: This funding is used to identify and acquire technologies for evaluation that address gaps associated with LOE 4, Command Post (CP), in the overall Integrated Tactical Network. The CP LOE will focus on developing and obtaining approval of requirements for integrated command posts, then delivering these integrated command post designs to Army units. LOE 4 addresses the operational requirement of Deployable, Integrated, and Mobile Command Post and integrates Knowledge Management.			
FY 2021 Plans: Funds will be used to mature, prototype, and evaluate emerging technologies that will inform design choices for the Command Post Integrated Infrastructure (CPI2) Increment 2 and beyond. Effort includes evaluation for tactically employable Command Post (CP) disaggregation capabilities, will also allow for the integration of spectrum obfuscation modes of employment for limited radio frequency emissions capabilities into a tactically deployable CP and assess antenna remoting solutions, and will enable integration of Mission Partner Environment hardware components into the CP. These efforts will be demonstrated and evaluated			

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Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT2 / <i>Command Post Mobility/Survivability</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<p>with United States Army Forces Command (FORSCOM) and inform the program technical baseline and Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF). Will conduct iterative Technical Exchange Meetings with Industry that will assess, demonstrate, prototype, and integrate emerging industry solutions to mature Command Post capabilities. Efforts will inform the requirements for a survivable and effective mobile Command Post in a contested and congested environment.</p> <p><i>FY 2022 Plans:</i> Funds will be used to mature, prototype, and evaluate emerging technologies that will inform design choices for the Command Post Integrated Infrastructure (CPI2) Increment 1 and beyond. Effort includes evaluation for tactically employable Command Post (CP) disaggregation capabilities and will also allow for the integration of spectrum obfuscation modes of employment for limited radio frequency emissions capabilities into a tactically deployable CP. Efforts also include assessment of antenna remoting solutions and will enable integration of Mission Partner Environment hardware components into the CP. These efforts will be demonstrated and evaluated with FORSCOM and inform the program technical baseline and DOTMLPF. Technical Exchange Meetings (TEM) with Industry will lead to the assessment, demonstration, prototyping and integration of emerging industry solutions to mature Command Post capabilities. Efforts will inform the requirements for a survivable and effective mobile Command Post in a contested and congested environment.</p> <p><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Decreased requirements associated with transition of funds to align with prioritization of Army Capability Set 23 development and prioritization of science & technology and industry innovation efforts.</p>			
Accomplishments/Planned Programs Subtotals	5.322	9.373	8.418

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Network Cross-Functional Team (N-CFT) and Program Executive Office Command, Control, Communications-Tactical (PEO C3T) will coordinate on technologies to be evaluated with appropriate Program Management offices where there is an opportunity for technology insertion. Technologies that are determined to address technology gaps and require further evaluation will be documented in an acquisition decision memorandum after being approved by the Milestone Decision Authority. The various evaluations and prototyping of technologies will be pursued via competitively awarded contracts using best value source selection procedures.

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army **Date:** May 2021

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT2 / <i>Command Post Mobility/Survivability</i>
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Event Name	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Survivable Command Post	[Redacted]				[Redacted]																							
Spectrum Obfuscation	[Redacted]				[Redacted]																							
Mobile and Survivable Command Posts (MASCP)	[Redacted]				[Redacted]								[Redacted]															
Industry Innovation Prototyping & Evaluation	[Redacted]				[Redacted]				[Redacted]				[Redacted]															

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army **Date:** May 2021

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT2 / <i>Command Post Mobility/Survivability</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Survivable Command Post	2	2020	4	2022
Spectrum Obfuscation	2	2020	4	2022
Mobile and Survivable Command Posts (MASCP)	1	2023	1	2028
Industry Innovation Prototyping & Evaluation	4	2020	1	2026

Note

Industry Innovation Prototyping and Evaluation projects are awarded following Technical Exchange Meetings (TEM) and are continuous activities; Network Cross-Functional Team (N-CFT) and Program Executive Office Command, Control, Communications-Tactical (PEO C3T) will reach out to industry partners in order to assess and demonstrate the latest emerging technologies which will reduce capability gaps and provide rapid software/hardware insertions into Programs of Records.

Changes from PB21 Schedule:

- TEM (Technical Exchange Meeting) Prototyping and Evaluations have been retitled as Industry Innovation Prototyping & Evaluation
- Science and Technology (S&T) projects are evaluated based on ongoing forums with the S&T community. N-CFT and PEO C3T track changes to the S&T efforts, including but not limited to, titles, descriptions, Technology Readiness Level (TRL), planned program transition and transfer agreement status. N-CFT and PEO C3T utilizes this information to prioritize the S&T projects by fiscal year.
- Node to Node Connectivity Solutions is included in the Survivable Command Post project and was eliminated as an individual effort in the schedule.
- Warfighting Assessments - Mission Partner Environment (MPE)/Network Operations was removed as Warfighting Assessments will be determined on a case by case based on each S&T project.
- Spectrum Obfuscation, previously captured on funding project BT5, Integrated Tactical Network/Integrated Enterprise Network, is now captured on BT2, Command Post Mobility/Survivability, schedule.
- Mobile and Survivable Command Posts (MASCP) has been identified as a project planned to start in FY23.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Army										Date: May 2021		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>				Project (Number/Name) BT3 / <i>Common Operating Environment (COE)</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
BT3: <i>Common Operating Environment (COE)</i>	-	4.171	7.866	7.069	-	7.069	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project BT3, Common Operating Environment (COE), is directly aligned to the Army Network Modernization Strategy Line of Effort 2 (LOE 2), Common Operating Environment (COE). These efforts support advanced component development activities that are aligned to the Army's Tactical Network Capability Set development and fielding plans.

This project will inform future network, applications and data capability sets by evaluating and maturing the use of cloud technologies, virtual augmentation, artificial intelligence, data convergence and analytics in the Common Operating Environment. This includes processing and storage to improve the architecture support for mobile, secure and distributed operations. Common Operating Environment (COE), creates an approved set of standards, computing technologies, integrated data and databases, common graphics and a unified set of mission command applications. It allows warfighters to adapt and configure the network as conditions change which is outlined in the approved COE requirements documents.

Fiscal Year (FY) 2022 funds will be used to mature technologies to assess and evaluate the technical feasibility of solutions for expanded computing in tactical environments, data convergence, sensor integration across identified platforms, and flexible and scalable computing hardware/software. Funds will also support identification, maturation, demonstration, and evaluation of Technology Readiness Level (TRL) 6+ systems and subsystem components including Cyber Electromagnetic Activities (CEMA) situational understanding and operations Interoperability functions. Successful solutions identified through evaluation in a high fidelity and realistic operating environment will be transitioned to Programs of Record for integration and fielding. Funds will also support integration with solutions identified in the other Modernization Cross-Functional Team (CFT) efforts to ensure network dependencies are addressed.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2020	FY 2021	FY 2022
Title: BT3 Common Operating Environment	4.171	7.866	7.069
Description: This funding is used to identify and acquire technologies to address gaps associated with LOE 2, Common Operating Environment (COE), in the overall Integrated Network. This LOE creates an approved set of standards, computing technologies, integrated data and databases and common graphics and a unified set of mission command applications. It will also support collaboration using a common picture with joint and coalition mission partners. This LOE delivers an integrated body of requirements that meet operational needs.			
FY 2021 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021		
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT3 / <i>Common Operating Environment (COE)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
<p>Will support evaluation of mature technologies that capture, correlate, and present data from available sources such as spectrum, electronic warfare (EW), red and gray space for visualization for cyber situational understanding. Will assess and evaluate the technical feasibility of solutions for expanded computing in tactical environments, data convergence, sensor integration across identified platforms, and flexible and scalable computing hardware/software. Will enable commanders to visualize, understand, describe, and assess complex problems rapidly. Will conduct iterative Technical Exchange Meetings to find Industry potential solutions to assess, demonstrate, prototype, and integrate emerging industry solutions to mature Common Operating Environment capabilities.</p> <p>FY 2022 Plans: Funds will be used to mature technologies that capture, correlate, and present data from available sources such as spectrum, electronic warfare (EW), red and gray space for visualization for cyber situational understanding. Funds will also be used to evaluate the technical feasibility of solutions for expanded computing in tactical environments, data convergence, sensor integration across identified platforms, and flexible and scalable computing hardware/software as well as efforts with Industry partners resulting from Technical Exchange Meetings that will lead to potential solutions to assess, demonstrate, prototype, and integrate emerging industry solutions to mature Common Operating Environment capabilities.</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Decreased requirements associated with transition of funds to align with prioritization of Army Capability Set 23 development and prioritization of science & technology and industry innovation efforts.</p>				
Accomplishments/Planned Programs Subtotals		4.171	7.866	7.069
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
<p>The Network Cross-Functional Team (N-CFT) and Program Executive Office Command, Control, Communications-Tactical (PEO C3T) will coordinate on technologies to be evaluated with appropriate Program Management offices where there is an opportunity for technology insertion. Technologies that are determined to address technology gaps and require further evaluation will be documented in an acquisition decision memorandum after being approved by the Milestone Decision Authority. The prototyping technologies in this project will be pursued via competitively awarded contracts using best value source selection procedures.</p>				

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT3 / <i>Common Operating Environment (COE)</i>

Event Name	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Cyber Situational Understanding																												
Spectrum Awareness																												
Hardened Transport																												
Convergence Tools for Tactical Environments & Commander's Visualization																												
ERASe/RainMaker																												
Information Trust																												
Autonomous Cyber																												
Industry Innovation Prototyping & Evaluation																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT3 / <i>Common Operating Environment (COE)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Cyber Situational Understanding	2	2020	1	2022
Spectrum Awareness	2	2020	2	2021
Hardened Transport	4	2020	1	2021
Convergence Tools for Tactical Environments & Commander's Visualization	1	2022	1	2026
ERASe/RainMaker	1	2023	1	2024
Information Trust	1	2023	2	2025
Autonomous Cyber	2	2023	1	2026
Industry Innovation Prototyping & Evaluation	4	2020	1	2026

Note

Industry Innovation Prototyping and Evaluation projects are awarded following Technical Exchange Meetings (TEM) and are continuous activities; Network Cross-Functional Team (N-CFT) and Program Executive Office Command, Control, Communications-Tactical (PEO C3T) will reach out to industry partners in order to assess and demonstrate the latest emerging technologies which will reduce capability gaps and provide rapid software/hardware insertions into Programs of Record.

Changes from PB21 Schedule:

- TEM (Technical Exchange Meeting) Prototyping and Evaluations have been retitled as Industry Innovation Prototyping & Evaluation
- Science and Technology (S&T) projects are evaluated based on ongoing forums with the S&T community. N-CFT and PEO C3T track changes to the S&T efforts, including but not limited to - titles, descriptions, Technology Readiness Level (TRL), planned program transition and transfer agreement status. N-CFT and PEO C3T utilizes this information to prioritize the S&T projects by fiscal year.
- Cyber Situational Understanding and Spectrum Awareness were identified as having high TRLs and ready for a FY20 start and transition to RDT&E 6.4 funding in support of future Capability Set development and fielding.
- Every Receiver A Sensor (ERASe)/Rainmaker is expected to have a high TRL by FY23 to support a start and transition to RDT&E 6.4 funding in support of future Capability Set development and fielding.
- Hardened Transport was identified as an industry innovation and awarded in FY20
- Information Trust, previously captured under funding project BT5, Integrated Tactical Network/Enterprise Network, schedule is now captured under BT3, Common Operating Environment (COE).

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
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<p>- Autonomous Cyber, previously captured under funding project BT5, Integrated Tactical Network/Enterprise Network, schedule is now captured under BT3, Common Operating Environment (COE).</p> <p>- Convergence Tools for Tactical Environments & Commander's Visualization have been included to address emerging Common Operating Environment (COE) requirements.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Army **Date:** May 2021

Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>				Project (Number/Name) BT4 / <i>Network Technology Maturation Initiatives (NTMI)</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
BT4: <i>Network Technology Maturation Initiatives (NTMI)</i>	-	2.301	-	-	-	-	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project BT4, Network Technology Maturation Initiatives (NTMI), is directly aligned to the Army Network Modernization Strategy Lines of Effort (LOE) and Capability Set 23 objectives.

This project funding will mature solutions through evaluation from non-Army organizations that include the Services, Academia and other science and technology organizations. The lab-based and operational field evaluation and assessments will support the Army's use of technologies to support Joint collaboration and coordination of transport, network and data classification, visualization for Situational Understanding, Cyber Electromagnetic Activities (CEMA), and artificial intelligence for Capability Set 23. This includes evaluation and prototyping of mature algorithms/systems to support Joint and Coalition data sharing for Mission Command/Intel convergence, sensor to shooter cycles and Joint Multi-Domain Command and Control.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2020	FY 2021	FY 2022
Title: BT4: Network Technology Maturation Initiatives (NTMI)	2.301	-	-
Description: This funding will be used to continuously identify, prioritize, mature, demonstrate, and insert emerging technologies to enhance operational capability through our Market Research and Concept Capability Development activities. Funding provides engineering and programmatic support required for execution of lab-based and field prototyping and evaluation.			
Accomplishments/Planned Programs Subtotals	2.301	-	-

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

The various evaluations and prototyping of technologies will be pursued via competitively awarded contracts using best value source selection procedures.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army												Date: May 2021			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 4				PE 0604541A / Unified Network Transport				BT4 / Network Technology Maturation Initiatives (NTMI)							
Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Support	MIPR	Acquisition Contracting Center : APG, MD	-	0.263	Apr 2020	-		-		-		-	0.000	0.263	-
Subtotal			-	0.263		-		-		-		-	0.000	0.263	N/A
Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Industry Innovaton Prototyping & Evaluation	TBD	GDMS/Palantir : Taunton, MA/Wash DC	-	2.038	Sep 2020	-		-		-		-	0.000	2.038	-
Subtotal			-	2.038		-		-		-		-	0.000	2.038	N/A
Project Cost Totals			-	2.301		0.000		-		-		-	0.000	2.301	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT4 / <i>Network Technology Maturation Initiatives (NTMI)</i>	

Event Name	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Industry Innovation Prototyping & Evaluation																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT4 / <i>Network Technology Maturation Initiatives (NTMI)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Industry Innovation Prototyping & Evaluation	4	2020	1	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Army										Date: May 2021		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>				Project (Number/Name) BT5 / <i>Integrated Tactical Network/Enterprise Network</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
BT5: <i>Integrated Tactical Network/Enterprise Network</i>	-	11.722	21.953	19.922	-	19.922	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project BT5, Integrated Tactical Network/Enterprise Network (ITN/IEN), is directly aligned to the Army Network Modernization Strategy lines of effort 1 (LOE 1) Unified Network. These efforts support advanced component development activities that are aligned to the Army's Tactical Network Capability Set development and fielding plans.

This project enables a converged Mission Command Network that operates seamlessly worldwide and in any environment. It includes the development of a standards-based network architecture that unifies enterprise and deployed network capabilities and features a unified transport layer, network operations and other enabling functions that allows integration of disparate networks. The Army network will provide resiliency through path diversity and dynamic routing to ensure tactical units can communicate in hostile environments. It will provide multiple ways to communicate and give commanders the ability to choose their communications methods and tools during operations. It fully incorporates cyber and electronic warfare capabilities that support the employment of the network as a weapon system. The Army ITN/IEN provides the ground domain network connectivity of Joint All Domain Command and Control (JADC2) and enables Unified Action Partner interoperability through integration with the Mission Partner Environment (MPE). Interoperability is the ability to routinely act together coherently, effectively and efficiently to achieve tactical, operational, and strategic objectives. Interoperability between disparate forces allows coalitions to produce greater combat power than the sum of their parts by leveraging relative strengths while mitigating relative weaknesses.

Fiscal Year (FY) 2022 funding will be used to inform design decisions for future tactical network capability sets in the areas of Aerial Tier, protected communications satellite capabilities, cyber hardened communications, and resilient Line of Site (LOS) and beyond Line of Sight (BLOS) waveforms through evaluation and technical maturation. Funds also support identification, maturation, demonstration, and evaluation of Technology Readiness Level (TRL) 6+ systems and subsystem components including Cyber Electromagnetic Activities (CEMA) situational understanding and operations Interoperability functions. Successful solutions identified through evaluation in a high fidelity and realistic operating environment will be transitioned to Programs of Record for integration and fielding. Funds will also support integration with solutions identified in the other Modernization Cross Functional Team (CFT) efforts to ensure network dependencies are addressed.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2020	FY 2021	FY 2022
Title: Project BT5: Integrated Tactical Network/Integrated Enterprise Network	11.722	21.953	19.922
Description: This funding is used to identify and acquire technologies to address gaps associated with LOE 1, Unified Network, for evaluation and demonstration in the overall Integrated Network. The Unified Network LOE enables a converged Mission Command Network that operates seamlessly worldwide and in any environment. This will require the creation of a standards-based network architecture that effectively integrates enterprise and deployed network capabilities across domains and			

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT5 / <i>Integrated Tactical Network/Enterprise Network</i>

B. Accomplishments/Planned Programs (\$ in Millions)

environments, and features a unified transport layer that permits "plug and play" for specific network capabilities. LOE 1 addresses the following operational requirements: Converged Mission Command Network, Network Augmentation / Extension, and Synthetic Training Environment.

FY 2021 Plans:

Will prototype and evaluate Army science and technology solutions in order to support approved requirements documents and critical network modernization efforts to accelerate Next Generation Tactical radios, Air to ground integration, Secure LTE capabilities for mounted/ dismounted soldiers and solutions for a hardened, resilient network. Will evaluate artificial intelligence and other advanced solutions for communications network processing, transport, and operations to support resiliency in a contested and congested environment. This includes evaluating and prototyping with emerging technology solutions for communications for tactical and strategic Army assets in satellite denied, area denied environments and increase immunity to enemy detection and interception. Funding will allow the Army to identify and prototype solutions to mature the network transport and gateway components of the Mission Partner Environment (MPE) and share network operations information through warfighting assessments and evaluations that will inform Capability Set 23 and beyond. Will conduct iterative Technical Exchange Meetings with Industry and non-Army organizations such as other Services, DARPA, NSA, OSD, FFRDs, and Academia to assess, demonstrate, prototype, and integrate emerging industry solutions to mature unified network capabilities to include integration of government and commercial Low Earth Orbit (LEO), Mid Earth Orbit (MEO) and Geosynchronous Earth Orbit (GEO) high throughput satellite communications. Will reduce capability gaps and provide rapid software/hardware insertions for Programs of Record. These efforts directly support the Army's tactical network acquisition strategy roadmap submitted to Congress.

FY 2022 Plans:

Funds will be used for science and technology evaluation and prototyping solutions to support approved requirements documents and critical network modernization efforts to accelerate Next Generation Tactical radios, Air to ground integration, Secure LTE capabilities for mounted/ dismounted soldiers and solutions for a hardened, resilient network. Efforts will include evaluation of artificial intelligence and other advanced solutions for communications network processing, transport, and operations to support resiliency in a contested and congested environment. Funding will allow the Army to identify and prototype solutions to mature the network transport and gateway components of the Mission Partner Environment (MPE) and share network operations information through warfighting assessments and evaluations that will inform Capability Set 23 and beyond. Funds will also be used for innovative industry prototyping and evaluation effort associated with Technical Exchange Meetings to assess, demonstrate, prototype, and integrate emerging industry solutions to mature unified network capabilities to include integration of government and commercial Low Earth Orbit (LEO), Mid Earth Orbit (MEO) and Geosynchronous Earth Orbit (GEO) high throughput satellite communications. These efforts directly support the Army's tactical network acquisition strategy roadmap submitted to Congress.

FY 2021 to FY 2022 Increase/Decrease Statement:

FY 2020	FY 2021	FY 2022

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT5 / <i>Integrated Tactical Network/Enterprise Network</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
Decreased requirements associated with transition of funds to align with prioritization of Army Capability Set 23 development and prioritization of science & technology and industry innovation efforts.			
Accomplishments/Planned Programs Subtotals	11.722	21.953	19.922

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Network Cross-Functional Team (N-CFT) and Program Executive Office Command, Control, Communications-Tactical (PEO C3T) will coordinate on technologies to be evaluated with appropriate Program Management offices where there is an opportunity for technology insertion. Technologies that are determined to address technology gaps and require further evaluation will be documented in an acquisition decision memorandum after being approved by the Milestone Decision Authority. The various prototyping programs in this project will be pursued via competitively awarded contracts using best value source selection procedures.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army												Date: May 2021			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 4				PE 0604541A / Unified Network Transport				BT5 / Integrated Tactical Network/Enterprise Network							
Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management Office Support	MIPR	Acquisition Contracting Center : APG MD	-	-		0.090	Nov 2020	0.209	Nov 2021	-		0.209	0.000	0.299	-
Subtotal			-	-		0.090		0.209		-		0.209	0.000	0.299	N/A
Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Science & Technology - Soldier Authentication	Various	CCDC/FlexTech Alliance : APG, MD	-	2.000	Apr 2020	2.000	Nov 2020	-		-		-	0.000	4.000	-
Science & Technology - INB2	Various	CodeMettle : Atlanta, GA	-	4.021	Mar 2020	3.900	Nov 2020	-		-		-	0.000	7.921	-
Science & Technology - AppSecC	MIPR	CCDC : APG, MD	-	2.800	Mar 2020	-		-		-		-	0.000	2.800	-
Science & Technology - TSM IC	Various	CCDC/BAH/CACI : APG, MD/Mclean, VA/Arlington, VA	-	1.008	Aug 2020	-		-		-		-	0.000	1.008	-
Science & Technology (S&T) Maturation Prototyping & Evaluation	TBD	CACI/CodeMettle/BAH : APG MD/Atlanta GA/APG MD	-	-		10.875	Dec 2020	15.200	Nov 2021	-		15.200	0.000	26.075	-
Industry Innovation - C4ISR Open Suite of Standards	TBD	Spectranetix Inc : Sunnyvale CA	-	1.602		-		-		-		-	0.000	1.602	-
Industry Innovation Prototyping & Evaluation	TBD	TBD : TBD	-	0.291		5.088	Feb 2021	4.513	Feb 2022	-		4.513	0.000	9.892	-
Subtotal			-	11.722		21.863		19.713		-		19.713	0.000	53.298	N/A
Project Cost Totals			-	11.722		21.953		19.922		-		19.922	0.000	53.597	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army							Date: May 2021			
Appropriation/Budget Activity 2040 / 4			R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>			Project (Number/Name) BT5 / <i>Integrated Tactical Network/Enterprise Network</i>				
	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks
 FY22 change in distribution of funding based on planned transition of Science & Technology projects from Budget Activity)BA) 6.3 to BA 6.4.

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT5 / <i>Integrated Tactical Network/Enterprise Network</i>

Event Name	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Application Security with Containers (AppSec-C)																												
Integrated Network Operations Battalion and Below (INB2)																												
Tactical Scalable Mobile Ad-hoc Networking (MANET) Interference Cancellation																												
Tactical IdAM – Soldier Authentication																												
C4ISR/EW Modular Open Suite of Standards (CMOSS)																												
Protected Comms for Manned-unmanned teaming (MUM-T)																												
Next Generation High Frequency (NGHF)																												
Non-traditional Waveforms																												
CMOSS Mounted Form Factor (CMFF)																												
WGS Ka Band Surrogate																												
Aerial Tier Networking																												
Narrowband SATCOM																												
Protected SATCOM																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT5 / <i>Integrated Tactical Network/Enterprise Network</i>

Event Name	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
GRiD (Geospatial Repository & Data Management) Tactical																												
Modular RF																												
Industry Innovation Prototyping & Evaluation																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT5 / <i>Integrated Tactical Network/Enterprise Network</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Application Security with Containers (AppSec-C)	2	2020	2	2021
Integrated Network Operations Battalion and Below (INB2)	2	2020	1	2022
Tactical Scalable Mobile Ad-hoc Networking (MANET) Interference Cancellation	4	2020	2	2021
Tactical IdAM -- Soldier Authentication	2	2020	4	2022
C4ISR/EW Modular Open Suite of Standards (CMOSS)	4	2020	1	2021
Protected Comms for Manned-unmanned teaming (MUM-T)	1	2021	1	2023
Next Generation High Frequency (NGHF)	1	2021	1	2024
Non-traditional Waveforms	1	2021	1	2026
CMOSS Mounted Form Factor (CMFF)	2	2021	1	2022
WGS Ka Band Surrogate	1	2022	1	2023
Aerial Tier Networking	1	2022	1	2024
Narrowband SATCOM	1	2022	1	2024
Protected SATCOM	1	2022	1	2026
GRiD (Geospatial Repository & Data Management) Tactical	2	2022	3	2025
Modular RF	1	2024	1	2025
Industry Innovation Prototyping & Evaluation	4	2020	1	2026

Note

Industry Innovation Prototyping and Evaluation projects are awarded following Technical Exchange Meetings (TEM) and are continuous activities; Network Cross-Functional Team (N-CFT) and Program Executive Office Command, Control, Communications-Tactical (PEO C3T) will reach out to industry partners in order to assess and demonstrate the latest emerging technologies which will reduce capability gaps and provide rapid software/hardware insertions into Programs of Record.

Changes from PB21 Schedule:

- TEM (Technical Exchange Meeting) Prototyping and Evaluations have been retitled as Industry Innovation Prototyping & Evaluation

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604541A / <i>Unified Network Transport</i>	Project (Number/Name) BT5 / <i>Integrated Tactical Network/Enterprise Network</i>
<ul style="list-style-type: none"> - Science and Technology (S&T) projects are evaluated based on ongoing forums with the S&T community. N-CFT and PEO C3T track changes to the S&T efforts, including but not limited to - titles, descriptions, Technology Readiness Level (TRL), planned program transition and transfer agreement status. N-CFT and PEO C3T utilizes this information to prioritize the S&T projects by fiscal year. - Spectrum Obfuscation, previously captured on BT5, Integrated Tactical Network/Enterprise Network schedule, is now captured under funding project BT2, Command Post Mobility/Survivability. - Information Trust, previously captured on BT5 schedule, is now captured under funding project BT3, Common Operating Environment (COE). - Autonomous Cyber, previously captured under funding project BT5, Integrated Tactical Network/Enterprise Network, schedule is now captured under BT3, Common Operating Environment (COE). - Projects Integrated Network Operations Battalion and Below (INB2), Tactical Identify Access Management (IdAM)-Soldier Authentication and Tactical Scalable Mobile Ad-hoc Networking (MANET) Interference Cancellation (TSM IC) were identified as having high Technology Readiness Level (TRLs) and ready for a FY20 start; ready for transition to RDT&E 6.4 funding in support of future Capability Set development and fielding. - C4ISR/EW Modular Open Suite of Standards (CMOSS) Mounted Form Factor (CMFF) was identified as having a high TRL and ready for a FY21 start; ready for transition to RDT&E 6.4 funding in support of future Capability Set development and fielding. - Geospatial Repository & Data Management (GRiD) Tactical is expected to have a high TRL by FY22 to support a start and transition to RDT&E 6.4 funding in support of future Capability Set development and fielding. - Modular RF is expected to have a high TRL by FY24 to support a start and transition to RDT&E 6.4 funding in support of future Capability Set development and fielding. - CMOSS was identified as an industry innovation and awarded in FY20. 		