



CENTRAL TEXAS REGIONAL  
**MOBILITY AUTHORITY**

July 25, 2018  
**AGENDA ITEM #5**

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Approve Work Authorization No. 16 with Kapsch  
TrafficCom USA, Inc. for system integration  
services related to the new Pay By Mail back office  
system implementation

Strategic Plan Relevance: Regional Mobility  
Department: Toll Operations  
Contact: Tracie Brown, Director of Toll Operations  
Associated Costs: \$499,198.15 (not to exceed)  
Funding Source: Operating Funds  
Action Requested: Consider and act on draft resolution

Summary:

Kapsch TrafficCom USA, Inc. serves as the Authority's toll system integrator under a contract procured in 2004. The Agreement, executed in April 2005, called for Kapsch (then Caseta Technologies) to design, sell, install and maintain the toll collection system needed to support the 183A, 290 (*aka Manor Expressway*), SH 71, 183S (*aka Bergstrom Expressway*), and SH 45 SW toll facilities as well as the MoPac Express Lanes.

Under Work Authorization No. 16, Kapsch TrafficCom USA, Inc. will provide toll system integration services for activities required to process video tolls under the Mobility Authority's new Pay By Mail program. The new Pay By Mail program will be managed by Cofiroute USA and will provide more customer payment options; enhanced customer relationship management capabilities; improved reporting and reconciliation back to the CTRMA Host system; and a better overall customer experience. The program will launch in late fall 2018.

Kapsch's work efforts under this authorization will include the designing, testing, and integrating a complete and fully operational video tolling solution that conforms to a new interface control document (ICD); updating key technologies to aid in resolving customer disputes; and reconciling video tolling revenue back to the CTRMA Host, the system of record for all Authority toll activity.

Kapsch's compensation under this Work Authorization is a fixed fee of \$499,198.15. The performance of these services will be as directed by the Mobility Authority.

Staff recommends approval of this item.

|                  |                                 |
|------------------|---------------------------------|
| Backup provided: | Draft Resolution                |
|                  | Draft Work Authorization No. 16 |
|                  | Statement of Work               |
|                  | Fee Estimate                    |

**GENERAL MEETING OF THE BOARD OF DIRECTORS  
OF THE  
CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY**

**RESOLUTION NO. 18-0XX**

**APPROVING WORK AUTHORIZATION NO. 16 WITH  
KAPSCH TRAFFICCOM USA, INC. FOR SUPPORT OF THE NEW  
PAY BY MAIL BACK OFFICE SYSTEM IMPLEMENTATION**

WHEREAS, the Central Texas Regional Mobility Authority (“Mobility Authority”) entered into a contract with Caseta Technologies, Inc. dated April 27, 2005, for the design, procurement, and installation of a toll collection system on the Authority’s turnpike system (the “Contract”); and

WHEREAS, Kapsch TrafficCom USA, Inc. (formerly Schneider Electric Mobility NA) is the successor in interest to the Contract with Caseta Technologies, Inc., and all rights and obligations of Caseta Technologies, Inc. under the Contract are now the rights and obligations of Kapsch TrafficCom USA (“Kapsch”); and

WHEREAS, the Executive Director and Kapsch have discussed and agreed to a proposed Work Authorization No. 16, in an amount not to exceed \$498,198.15, to provide toll system integration services required to process video tolls under the Mobility Authority’s new Pay By Mail program including but not limited to design, testing, and integration of a complete and fully operational video tolling solution; and

WHEREAS, the Executive Director recommends that the Board approve proposed Work Authorization No. 16, a copy of which is attached to this resolution as Exhibit A.

NOW THEREFORE, BE IT RESOLVED that Work Authorization No. 16 with Kapsch TrafficCom USA, Inc. is hereby approved; and

BE IT FURTHER RESOLVED that the Board authorizes the Executive Director to finalize and execute Work Authorization No. 16 for the Mobility Authority in the form or in substantially the same form as is attached hereto as Exhibit A.

Adopted by the Board of Directors of the Central Texas Regional Mobility Authority on the 25<sup>th</sup> day of July 2018.

Submitted and reviewed by:

Approved:

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Geoff Petrov, General Counsel

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Ray A. Wilkerson  
Chairman, Board of Directors

**Exhibit A**

**CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY**

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**WORK AUTHORIZATION**

**WORK AUTHORIZATION NO. 16**

**TOLL SYSTEM INTEGRATION FOR**

**SUPPORT OF NEW PAY BY MAIL PROGRAM**

**THIS WORK AUTHORIZATION (“WA No. 16”)** is made pursuant to the terms and conditions of Article 1 of the GENERAL PROVISIONS, Attachment A, to the original Contract for Toll System Implementation, dated April 27, 2005 (the Contract) entered into by and between the Central Texas Regional Mobility Authority (the “Authority” or “CTRMA”), and Kapsch TrafficCom USA, Inc. (the “Contractor,” also referred to in attachments to this WA No. 16 as the “System Integrator” or “SI”).

**PART I.** The Contractor will perform toll implementation services generally described in the Kapsch Cofiroute Statement of Work attached hereto as **Attachment A**.

**PART II.** The maximum amount payable under this WA No. 16 is \$498,199.15. This amount is based upon the pricing obtained, and is documented by the fee schedule set forth in **Attachment A**.

**PART III.** Payment to the Contractor for the services established under this WA No. 16 shall be made in accordance with the Contract.

**PART IV.** This WA No. 16 shall become effective on the date both parties have signed this WA No. 16. This WA No. 16 will terminate on the Pay By Mail system final acceptance date or upon payment of the maximum amount payable in **Part II**, whichever date is first, unless extended as provided by the Contract. The work shall be performed in accordance with the Kapsch Cofiroute Interface Project Schedule as set forth in **Attachment B**.

**PART V.** This WA No. 16 does not waive any of the parties’ responsibilities and obligations provided under the Contract, and except as specifically modified by this WA No. 16, as such responsibilities and obligations under the Contract remain in full force and effect.

**THE CONTRACTOR:**

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Signature

Date

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Typed/Printed Name and Title

**CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY**

Executed for and approved by the Central Texas Regional Mobility Authority for the purpose and effect of activating and/or carrying out the orders, established policies or work programs heretofore approved and authorized by the Texas Transportation Commission.

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Signature

Date

Mike Heiligenstein, Executive Director

---

Typed/Printed Name and Title

**LIST OF ATTACHMENTS**

**Attachment A      Kapsch Cofiroute Statement of Work**

**Attachment B      Kapsch Cofiroute Interface Project Schedule**



## Document Control

|                             |   |
|-----------------------------|---|
| <b>Document Name:</b>       | Kapsch Cofiroute Transition Statement of Work |
| <b>Project Reference #:</b> | TBD   |
| <b>Project Title:</b>       | Toll System Implementation and Maintenance    |
| <b>Client:</b>              | Central Texas Regional Mobility Authority     |
| <b>Project Manager:</b>     | Randy Herrell                                 |

## Change Notice

| Revision# | Change Reason   | Reviewer        | QA By         | Date Completed |
|-----------|-----------------|-----------------|---------------|----------------|
| 1.0       | Initial version | Daniel Lafuente | Randy Herrell | 06/29/2018     |

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Kapsch TrafficCom USA, Inc.  
211 E. 7th Street, Suite 800  
Austin, TX 78701  
<http://www.kapsch.net>



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## 1.1 Conventions Used in This Document

Within this document, the following conventions are used:

- **Bold font and/or ‘NOTE:’ designation:** An important statement meant to clarify or add to the preceding section or statement.
- **Courier Font:** Designates something as source code or a source code reference.

## 1.2 Acronyms

**Below** is a list of the acronyms and their meanings that appear both within this document and comprehensively throughout the documentation set.

### Exhibit 1.2-1: Acronyms

| Acronym | Definition                                |
|---------|---|
| ACS     | Access Control System                     |
| (A)LPR  | (Automatic) License Plate Recognition     |
| (A)NPR  | (Automatic) Number Plate Recognition      |
| APC     | American Power Conversion (company name)  |
| ASA     | Adaptive Service Appliance                |
| AVC     | Automatic Vehicle Classification          |
| ASA     | Adaptive Service Appliance                |
| AVI     | Automatic Vehicle Identification          |
| CBIR    | Content-Based Image Retrieval             |
| CCD     | Charge-Coupled Device                     |
| CCL     | Connected Component Labeling              |
| CORBA   | Common Object Request Broker Architecture |





|       |                                       |
|-------|---------------------------------------|
| CPU   | Central Processing Unit               |
| CSC   | Customer Service Center               |
| CTC   | Car Type Classification               |
| DB    | Database                              |
| DBA   | Database Administrator                |
| DMZ   | Perimeter Network                     |
| DRAM  | Dynamic Random-Access Memory          |
| DVAS  | Digital Video Audit System            |
| DVR   | Digital Video Recorder                |
| EB    | Eastbound                             |
| EH    | Equipment Handler                     |
| ELCC  | Express Lanes Command Center          |
| ETC   | Electronic Toll Collection            |
| ETL   | Express Toll Lanes                    |
| FIFO  | First In First Out                    |
| FTP   | File Transfer Protocol                |
| GC    | Grammar Checking                      |
| GUI   | Graphical User Interface              |
| GZIP  | GNU Zip                               |
| IAG   | Interagency Group (E-Z Pass)          |
| ICD   | Interface Control Document            |
| ICS   | Image Capture Station                 |
| ICPS  | Image Capture and Processing System   |
| I-LTS | Image Long Term Storage Server        |
| IM    | Image Understanding                   |
| IMPM  | Image Modeling-Based Pattern Matching |
| IOS   | Internetwork Operating System         |
| IP    | Internet Protocol                     |
| ITS   | Intelligent Transportation Systems    |
| JPEG  | Joint Photographic Experts Group      |
| KVM   | Keyboard Video and Mouse              |
| LAN   | Local Area Network                    |
| LC    | Lane Controller                       |
| LCD   | Liquid Crystal Display                |
| LED   | Light-Emitting Diode                  |
| LMS   | Laser Measurement Sensor              |
| LPIC  | License Plate Image Capture           |
| MBPM  | Model-Based Pattern Matching          |
| MLT   | Manual Lane Terminal                  |
| MVC   | Model View Controller                 |
| NCC   | Normalized Cross-Correlation          |



|       |  |
|-------|--|
| NIC   | Network Interface Controller                     |
| OCR   | Optical Character Recognition                    |
| ODAC  | Oracle Data Access Components                    |
| OLTP  | On-line Transaction Processors                   |
| ORT   | Open Road Tolling                                |
| PAC   | Programmable Automation Controller               |
| PBM   | Pay By Mail                                      |
| PC    | Personal Computer                                |
| PDD   | Preliminary Design Document                      |
| PDF   | Portable Document Format                         |
| PDU   | Power Distribution Unit                          |
| PM    | Pattern Matching                                 |
| POSIX | Portable Operating System Interface (for Unix)   |
| PVC   | Permanent Virtual Circuit                        |
| RBAC  | Role Based Access Control                        |
| RF    | Radio Frequency                                  |
| ROI   | Region Of Interest                               |
| ROMS  | Remote Operations and Maintenance System         |
| RP    | Rule Processor                                   |
| RSA   | Rivest, Shamir and Adleman Public Key Encryption |
| RTC   | Roadside Toll Cabinet                            |
| SAN   | Storage Area Network                             |
| SC    | State Classification                             |
| SDD   | System Design Document                           |
| SDK   | Software Development Kit                         |
| SIFT  | Scale-Invariant Feature Transform                |
| SLA   | Service Level Agreement                          |
| SLD   | Source Level Document                            |
| SNMP  | Simple Network Mail Protocol                     |
| SONET | Synchronous optical networking                   |
| SVM   | Support Vector Machine                           |
| TBB   | Threading Building Blocks                        |
| TCP   | Transmission Control Protocol                    |
| TCS   | Toll Collection System                           |
| TLS   | Traffic Light Sensor                             |
| TM    | Template Matching                                |
| TMC   | Traffic Management Center                        |
| TNF   | Traffic Night Flash                              |
| TRC   | Toll Reader Cabinet                              |
| UPS   | Uninterruptible Power Supply                     |
| VAC   | Volts Alternating Current                        |



|       |                             |
|-------|-----------------------------|
| VDC   | Volts Direct Current        |
| VMS   | Variable Message Sign       |
| VIP   | Video Image Processing      |
| VPS   | Violation Processing System |
| VSS   | Video Surveillance System   |
| WB    | Westbound                   |
| XFRMR | Transformer                 |
| XML   | eXtensible Markup Language  |
| ZC    | Zone Controller             |



## 2 Cofiroute Transition

### 2.1 Introduction and Overview

Kapsch TrafficCom USA, Inc. (Kapsch) is pleased to provide this detailed scope of work to the Central Texas Regional Mobility Authority (CTRMA) for the implementation, transition, and operation of the CTRMA VPS to a new vendor – Cofiroute. Kapsch will be providing services for 5 major items as part of the transition process.

- Transition of the Kapsch system for conformance to the new ICD established with Cofiroute.
- Support to Cofiroute during development and testing phases according to the Cofiroute schedule.
- Creation or rework of up to Seven (7) additional reports. Including report workshop(s).
- Enhancement to the Kapsch CSR tool to include more lookup functionality, including tag and plate history lookup.
- New tag and plate history tracking functionality and workflow enhancements.

CTRMA will provide complete input and oversight during all phases of development and implementation. The Cofiroute transition will be a joined effort between Kapsch and CTRMA with regular status updates between the parties to ensure the final product delivered to CTRMA best serves their needs for the future.

#### 2.1.1 Cofiroute ICD Compliance

The ICD between Kapsch and Cofiroute includes processing for transaction files, reconciliation files (multi-tiered), acknowledgment files, and transfer of physical images. The work to be executed with conforming to the ICD will be the core of the ability to allow CTRMA to transfer Pay by Mail (PBM) transactions processing flow to Cofiroute. This work would include adjustments to the workflow to allow potential for more frequent file sending, handling of dispositions and tracking when items are missing, and more robust ROMS monitoring for failure detection and more prompt notification of file issues. The ICD itself will define all items that should be handled and the thresholds for failures that will then be utilized when developing the failure monitoring thresholds.

#### 2.1.2 Testing Support to Cofiroute

Kapsch will be responsible for providing needed support to Cofiroute in order for the required testing phases of Cofiroute to be completed. Kapsch is committed to providing a high level of QA/QC, testing, and validation as part of this scope of work in order to ensure the smoothest possible transition for CTRMA. The work required for this portion of the scope of work includes sample file creation, sample file loading, interface validation, network validation, and multiple conjoint testing phases.

#### 2.1.3 Reporting

Kapsch will complete up to Seven (7) report creations or reworks. These reports are expected to come into play for enhancing reconciliation based reports in order to utilize the new disposition tracking that will be a part of the Cofiroute ICD. With these reports, CTRMA will have more insight into the full lifecycle of a transaction similar to how it is currently being done with HUB based transactions.

#### 2.1.4 CSR Tool Upgrade

Currently the CSR tool provides the capability to do trip transaction investigation, particularly for the mopac system, to aid CSRs when customer call to ask questions about their bill. One of the main functions is to validate the price



that was being displayed on the sign when a user travelled the Mopac Express Lanes. This tool will be enhanced as part of this scope of work to allow another major item for customer calls – tag and plate status. The CSR tool will not provide historical tag and plate status lookup to aid CSRs who may be receiving calls from customers that believe their tag or plate account should have been billed instead of receiving a bill in the mail. This tool will show history based on CTRMA billing business rules for when status is evaluated.

### 2.1.5 Tag and Plate History Tracking

In order to support the new CSR tool functionality described above, Kapsch will add new functionality to its workflow during the loading of Tag and Plate Validation Lists. Rather than tracking current status only for decision making, Kapsch will track all statuses changes (for a period of time to be determined by CTRMA business rules), such that more intelligent decision making can be made when deciding where to send a transaction for billing. This new historical information/tracking will also be utilized to feed the CSR tool with information for helping resolve customer calls about billing questions.

### 2.1.6 Proposed Schedule

The proposed schedule to implement the work require for the Cofiroute transition is detailed below.

| Task Name  | Duration         | Start               | Finish              | Predecessors |
|--|------------------|---------------------|---------------------|--------------|
| <b>CTRMA_Kapsch-Cofiroute Interface Project Schedule_v2_06292018</b> | <b>120 days</b>  | <b>Mon 6/18/18</b>  | <b>Fri 11/30/18</b> |              |
| <b>┆ Cofiroute Interface Development</b>                             | <b>120 days</b>  | <b>Mon 6/18/18</b>  | <b>Fri 11/30/18</b> |              |
| NTP  | 0 days           | Mon 7/30/18         | Mon 7/30/18         |              |
| Conformance to ICD   | 30 days          | Mon 7/30/18         | Fri 9/7/18          | 2            |
| <b>┆ Cofiroute Testing Support</b>                                   | <b>115 days</b>  | <b>Mon 6/18/18</b>  | <b>Fri 11/23/18</b> |              |
| <b>┆ FAT</b>   | <b>20 days</b>   | <b>Mon 7/30/18</b>  | <b>Fri 8/24/18</b>  |              |
| Test file creation   | 5 days           | Mon 7/30/18         | Fri 8/3/18          | 2            |
| FAT support, coordination, & execution                               | 10 days          | Mon 8/13/18         | Fri 8/24/18         | 2FS-30 days  |
| <b>┆ SIT</b>   | <b>83 days</b>   | <b>Mon 6/18/18</b>  | <b>Wed 10/10/18</b> |              |
| Interface readiness  | 0 days           | Mon 6/18/18         | Mon 6/18/18         | 2FS-30 days  |
| SIT prep & support   | 8 days           | Mon 9/10/18         | Wed 9/19/18         | 9,5          |
| SIT support, coordination, & execution                               | 15 days          | Thu 9/20/18         | Wed 10/10/18        | 10,5         |
| <b>┆ SAT</b>   | <b>32 days</b>   | <b>Thu 10/11/18</b> | <b>Fri 11/23/18</b> |              |
| SAT prep & support   | 7 days           | Thu 10/11/18        | Fri 10/19/18        | 8            |
| SAT support, coordination, & execution                               | 25 days          | Mon 10/22/18        | Fri 11/23/18        | 13           |
| <b>┆ Ops Test</b>  | <b>10 days</b>   | <b>Mon 10/29/18</b> | <b>Fri 11/9/18</b>  |              |
| Ops Test prep & support  | 5 days           | Mon 10/29/18        | Fri 11/2/18         | 12FS-20 days |
| Ops Test support, coordination, & execution                          | 5 days           | Mon 11/5/18         | Fri 11/9/18         | 16           |
| <b>Tracking Tag &amp; Plate History - Dev &amp; Test</b>             | <b>15 days</b>   | <b>Mon 7/30/18</b>  | <b>Fri 8/17/18</b>  | <b>2</b>     |
| <b>┆ Reports Development &amp; Updates</b>                           | <b>78 days</b>   | <b>Mon 7/30/18</b>  | <b>Wed 11/14/18</b> |              |
| <b>┆ Reports Workshops</b>   | <b>11 days</b>   | <b>Mon 7/30/18</b>  | <b>Mon 8/13/18</b>  |              |
| Workshop #1  | 0.5 days         | Mon 7/30/18         | Mon 7/30/18         | 2            |
| Workshop #2  | 0.5 days         | Mon 8/13/18         | Mon 8/13/18         | 21FS+10 days |
| <b>┆ Report Deliveries</b>   | <b>77.5 days</b> | <b>Mon 7/30/18</b>  | <b>Wed 11/14/18</b> |              |
| Report Mockp Delivery Set #1   | 12 days          | Mon 7/30/18         | Wed 8/15/18         | 21           |
| Report Mockp Delivery Set #2   | 20 days          | Thu 8/16/18         | Wed 9/12/18         | 22           |
| Final Report Delivery  | 45 days          | Thu 9/13/18         | Wed 11/14/18        | 24,25        |
| <b>CSR Tool</b>  | <b>90 days</b>   | <b>Mon 7/30/18</b>  | <b>Fri 11/30/18</b> | <b>2</b>     |

Exhibit 2.1-2: Proposed Schedule

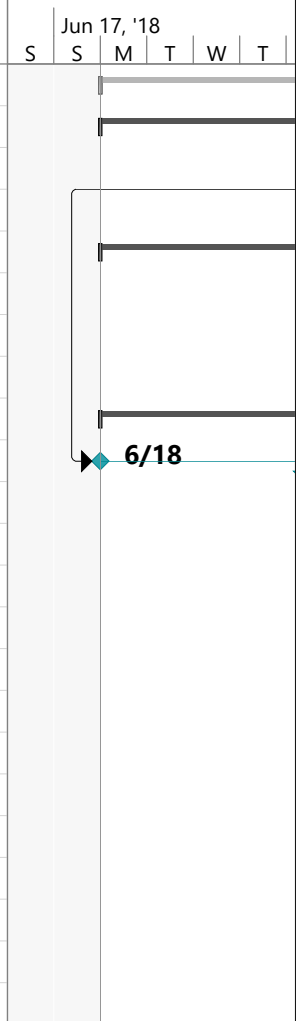


### 2.1.7 Pricing

Pricing is Fixed Fee based upon the accepted proposal price of \$498,199.15. Payments will be milestone based, using the Milestone Payment Schedule below.

| Payment Number   | Payment Milestones                                | % Paid | Cum. % Paid | \$ Amount                | Cum \$'s          |
|--|---|--------|-------------|--------------------------|-------------------|
| <b>A. Support to Cofiroute during development and testing phases</b>             |   |        |             |                          |                   |
| A-1  | Notice to Proceed                                 | 10.0%  | 10.0%       | \$ 14,864.59             | \$ 14,864.59      |
| A-2  | FAT Support                                       | 5.0%   | 15.0%       | \$ 7,432.29              | \$ 22,296.88      |
| A-3  | SIT Support                                       | 5.0%   | 20.0%       | \$ 7,432.29              | \$ 29,729.17      |
| A-4  | SAT Support                                       | 5.0%   | 25.0%       | \$ 7,432.29              | \$ 37,161.46      |
| A-5  | Ops Test Support                                  | 5.0%   | 30.0%       | \$ 7,432.29              | \$ 44,593.76      |
|  |   |        |             |                          | \$ 148,645.85     |
| <b>B. ICD Development Conformance</b>  |   |        |             |                          |                   |
| B-1  | Development Complete / SIT Acceptance             | 100.0% | 100%        | \$ 177,766.70            | \$ 177,766.70     |
|  |   |        |             |                          | \$ 177,766.70     |
| <b>C. Reports Development</b>  |   |        |             |                          |                   |
| C-1  | Workshops Completed & Mockup Sets Delivered       | 50.0%  | 50.0%       | \$ 52,566.40             | \$ 52,566.40      |
| C-2  | Reports Completed & Accepted                      | 50.0%  | 50.0%       | \$ 52,566.40             | \$ 52,566.40      |
|  |   |        |             |                          | \$ 105,132.80     |
| <b>D. Update to CSR Tool to Allow Features of Tag &amp; Plate History Lookup</b> |   |        |             |                          |                   |
| D-1  | CSR Tool Updates Completed & Accepted             | 100%   | 100.0%      | \$ 31,048.00             | \$ 31,048.00      |
|  |   |        |             |                          | \$ 31,048.00      |
| <b>E. New Development for Tracking Tag &amp; Plate History</b>                   |   |        |             |                          |                   |
| E-1  | Tracking Tag & Plate History Completed & Accepted | 100%   | 100.0%      | \$ 35,605.80             | \$ 35,605.80      |
|  |   |        |             |                          | \$ 35,605.80      |
|  |   |        |             | <b>Contract Total \$</b> | <b>498,199.15</b> |

| ID | Task Name  | Duration        | Start               | Finish              | Predecessors | Jun 17, '18 |   |   |   |   |   |  |
|----|--|-----------------|---------------------|---------------------|--------------|-------------|---|---|---|---|---|--|
|    |  |                 |                     |                     |              | S           | S | M | T | W | T |  |
| 0  | <b>CTRMA_Kapsch-Cofiroute Interface Project Schedule_v2_062918</b> | <b>120 days</b> | <b>Mon 6/18/18</b>  | <b>Fri 11/30/18</b> |              |             |   |   |   |   |   |  |
| 1  | <b>Cofiroute Interface Development</b>                             | <b>120 days</b> | <b>Mon 6/18/18</b>  | <b>Fri 11/30/18</b> |              |             |   |   |   |   |   |  |
| 2  | NTP  | 0 days          | Mon 7/30/18         | Mon 7/30/18         |              |             |   |   |   |   |   |  |
| 3  | Conformance to ICD   | 30 days         | Mon 7/30/18         | Fri 9/7/18          | 2            |             |   |   |   |   |   |  |
| 4  | <b>Cofiroute Testing Support</b>                                   | <b>115 days</b> | <b>Mon 6/18/18</b>  | <b>Fri 11/23/18</b> |              |             |   |   |   |   |   |  |
| 5  | <b>FAT</b>   | <b>20 days</b>  | <b>Mon 7/30/18</b>  | <b>Fri 8/24/18</b>  |              |             |   |   |   |   |   |  |
| 6  | Test file creation   | 5 days          | Mon 7/30/18         | Fri 8/3/18          | 2            |             |   |   |   |   |   |  |
| 7  | FAT support, coordination, & execution                             | 10 days         | Mon 8/13/18         | Fri 8/24/18         | 2FS-30 days  |             |   |   |   |   |   |  |
| 8  | <b>SIT</b>   | <b>83 days</b>  | <b>Mon 6/18/18</b>  | <b>Wed 10/10/18</b> |              |             |   |   |   |   |   |  |
| 9  | Interface readiness  | 0 days          | Mon 6/18/18         | Mon 6/18/18         | 2FS-30 days  |             |   |   |   |   |   |  |
| 10 | SIT prep & support   | 8 days          | Mon 9/10/18         | Wed 9/19/18         | 9,5          |             |   |   |   |   |   |  |
| 11 | SIT support, coordination, & execution                             | 15 days         | Thu 9/20/18         | Wed 10/10/18        | 10,5         |             |   |   |   |   |   |  |
| 12 | <b>SAT</b>   | <b>32 days</b>  | <b>Thu 10/11/18</b> | <b>Fri 11/23/18</b> |              |             |   |   |   |   |   |  |
| 13 | SAT prep & support   | 7 days          | Thu 10/11/18        | Fri 10/19/18        | 8            |             |   |   |   |   |   |  |
| 14 | SAT support, coordination, & execution                             | 25 days         | Mon 10/22/18        | Fri 11/23/18        | 13           |             |   |   |   |   |   |  |
| 15 | <b>Ops Test</b>  | <b>10 days</b>  | <b>Mon 10/29/18</b> | <b>Fri 11/9/18</b>  |              |             |   |   |   |   |   |  |
| 16 | Ops Test prep & support  | 5 days          | Mon 10/29/18        | Fri 11/2/18         | 12FS-20 days |             |   |   |   |   |   |  |
| 17 | Ops Test support, coordination, & execution                        | 5 days          | Mon 11/5/18         | Fri 11/9/18         | 16           |             |   |   |   |   |   |  |
| 18 | <b>Tracking Tag &amp; Plate History - Dev &amp; Test</b>           | <b>15 days</b>  | <b>Mon 7/30/18</b>  | <b>Fri 8/17/18</b>  | 2            |             |   |   |   |   |   |  |
| 19 | <b>Reports Development &amp; Updates</b>                           | <b>78 days</b>  | <b>Mon 7/30/18</b>  | <b>Wed 11/14/18</b> |              |             |   |   |   |   |   |  |
| 20 | <b>Reports Workshops</b>   | <b>11 days</b>  | <b>Mon 7/30/18</b>  | <b>Mon 8/13/18</b>  |              |             |   |   |   |   |   |  |
| 21 | Workshop #1  | 0.5 days        | Mon 7/30/18         | Mon 7/30/18         | 2            |             |   |   |   |   |   |  |
| 22 | Workshop #2  | 0.5 days        | Mon 8/13/18         | Mon 8/13/18         | 21FS+10 days |             |   |   |   |   |   |  |

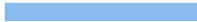




















Project: CTRMA\_Kapsch-Cofirou  
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|                    |  |                       |  |                    |  |
|--------------------|--|-----------------------|--|--------------------|--|
| Task               |  | Inactive Summary      |  | External Tasks     |  |
| Split              |  | Manual Task           |  | External Milestone |  |
| Milestone          |  | Duration-only         |  | Deadline           |  |
| Summary            |  | Manual Summary Rollup |  | Progress           |  |
| Project Summary    |  | Manual Summary        |  | Manual Progress    |  |
| Inactive Task      |  | Start-only            |  |                    |  |
| Inactive Milestone |  | Finish-only           |  |                    |  |

| ID | Task Name                    | Duration         | Start              | Finish              | Predecessors | Jun 17, '18 |   |   |   |   |   |  |
|----|------------------------------|------------------|--------------------|---------------------|--------------|-------------|---|---|---|---|---|--|
|    |                              |                  |                    |                     |              | S           | S | M | T | W | T |  |
| 23 | <b>Report Deliveries</b>     | <b>77.5 days</b> | <b>Mon 7/30/18</b> | <b>Wed 11/14/18</b> |              |             |   |   |   |   |   |  |
| 24 | Report Mockp Delivery Set #1 | 12 days          | Mon 7/30/18        | Wed 8/15/18         | 21           |             |   |   |   |   |   |  |
| 25 | Report Mockp Delivery Set #2 | 20 days          | Thu 8/16/18        | Wed 9/12/18         | 22           |             |   |   |   |   |   |  |
| 26 | Final Report Delivery        | 45 days          | Thu 9/13/18        | Wed 11/14/18        | 24,25        |             |   |   |   |   |   |  |
| 27 | <b>CSR Tool</b>              | <b>90 days</b>   | <b>Mon 7/30/18</b> | <b>Fri 11/30/18</b> | 2            |             |   |   |   |   |   |  |
| 28 |                              |                  |                    |                     |              |             |   |   |   |   |   |  |

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|                    |   |                       |   |                    |   |
|--------------------|---|-----------------------|---|--------------------|---|
| Task               |  | Inactive Summary      |  | External Tasks     |  |
| Split              |  | Manual Task           |  | External Milestone |  |
| Milestone          |  | Duration-only         |  | Deadline           |  |
| Summary            |  | Manual Summary Rollup |  | Progress           |  |
| Project Summary    |  | Manual Summary        |  | Manual Progress    |  |
| Inactive Task      |  | Start-only            |  |                    |   |
| Inactive Milestone |  | Finish-only           |  |                    |   |