Statement of work

ValueTime Online Services Pvt Ltd

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SOW 001012R0 for agreement to perform development of Automated Pathology Registry for Chest X-Ray
For
Techjivaa India Pvt Ltd

DATE	SERVICES PERFORMED BY:	SERVICES PERFORMED FOR:
1st April 2023	**ValueTime Online Services Pvt Ltd** India: 4, Golden Galaxy, Someshwar Park, Someshwarwadi, Baner Pune-411 008	**Techjivaa Software Pvt Ltd** **U74999PN2016PTC167651** **Registration number: 167651** CTS 281/1 TO 281/3 BAGMAR HIGHTS, GANDHI PETH, CHINCHWAD PUNE Maharashtra 411033 INDIA

This Statement of Work (SOW) is issued pursuant to the consultant services master agreement between Techjivaa India Pvt Ltd ("client") and Company Name ("contractor"), effective Date (the "agreement"). This SOW is subject to the terms and conditions contained in the agreement between the parties and is made a part thereof. Any term not otherwise defined herein shall have the meaning specified in the agreement. In the event of any conflict or inconsistency between the terms of this SOW and the terms of this agreement, the terms of this SOW shall govern and prevail.

This SOW # (001012R0) for agreement to perform development of Automated Pathology Registry for Chest X-ray AI tool for Techjivaa India Pvt Ltd (hereinafter called the "SOW"), effective as of 1st April 2023, is entered into by and between contractor and client, and is subject to the terms and conditions specified below. The exhibit(s) to this SOW, if any, shall be deemed to be a part hereof. In the event of any inconsistencies between the terms of the body of this SOW and the terms of the exhibit(s) hereto, the terms of the body of this SOW shall prevail.

Period of performance

The services shall commence on 1st April 2023, and shall continue through 31st March 2024. The duration for the Product development process would take approximately of 12 (twelve) months and goal to handover of the Minimum Viable Product (MVP) within 9 (Nine) months from the date of Purchase order and deposit along with executed Statement of Work (SOW).

Engagement resources

ValueTime Online Services Private Limited (VTOSPL) made the presentation on the Chest X-ray AI tool developed exclusively for TECHJIVAA. It would be customized based on the use case approved by the TECHJIVAA clinical team as to the features inclusions and the explainable AI

features. As VTOSPL works on a cost-plus pricing model to make it affordable from a product development for in-house consumption. This tool would be built exclusively for TECHJIVAA and below two scenarios would be adapted for being the co-author of this Chest X-ray AI tool.

a) **When Chest X-ray AI Tool is used exclusively by TECHJIVAA.**
   - VTOSPL would only have publications rights to the Chest X-ray AI tool, for its future business development reference perspective.

b) **When Chest X-ray AI tool is sold by TECHJIVAA to third party organisations.**
   - When this Chest X-ray AI tool is sold to third party organizations; VTOSPL will earn a 10% royalty on the sales price when sold to third party for the first 100 customers.
   - After the first 100 customers; no further royalty's commissions are payable to VTOSPL.

Exclusivity

TECHJIVAA Team requires this Chest X-ray AI tool product exclusively and VTOSPL will not develop this specific tool – Chest X-ray AI tool for any other party and will sign the necessary exclusivity agreement as required and drafted by TECHJIVAA. VTOPSL would also be equity partner to the Tool development and implementation through a special purpose vehicle (SPV) of the affiliate of TECHJIVAA to capture the benefits as intended.

Assistance

- TECHJIVAA will have a use case and scope definition meeting in Pune city as expressed by TECHJIVAA along with the clinical and technical team respectively and other stakeholders as deemed fit, to have a clear understanding on the inclusion and exclusions scope of work of this Chest AI tool.
- VTOSPL will assist in the regulatory identification of agencies for USFDA (510k), CE & CDSCO (India) respectively and will also bring in the best practices related to validation and Testing. The Validation would be done with the TECHJIVAA data and will have a testing team recommended and will work with the TECHJIVAA clinical team to get the specificity and sensitivity and will also require this for the regulatory documentation.

There will be a GANTT chart issued every 30 days and there will be a SPOC (single point of contact) from TECHJIVAA who will ensure the reviews, resources and escalations emerged for the smooth working of the product development milestones. VTOSPL will have a dedicated Project Director as the primary SPOC and will ensure smooth working between both the parties. The teams from VTOSPL will be from hybrid (onsite and offshore) and the detailed work measurements will be available to TECHJIVAA for verifications. VTOSPL will be leveraging global talent pool to complete this project.

30 Days GANNT chart

Feature	Training start date	Complete date
Data preparation of cardiomegaly	Day 1	Day 6
Data preparation of hilar prominence	Day 7	Day 12
Data preparation of CP Angle	Day 13	Day 18
Data preparation of Fibrosis	Day 19	Day 24
Training preparation of cardiomegaly	Day 7	Day 9
Training preparation of hilar prominence	Day 13	Day 15
Training preparation of CP Angle	Day 19	Day 21
Training preparation of Fibrosis	Day 24	Day 26
Training start for cardiomegaly	Day 10	
Training start for hilar prominence	Day 16	
Training start for CP Angle	Day 22	
Training start for Fibrosis	Day 27	

Scope of work

Contractor shall provide the services and deliverable(s) as follows:

Aim: To develop automated Pathology identification for Chest X-ray AI tool.
Objective: To train the algorithm for automatic identification abnormalities in chest PA X-ray.

Rationale:
Chest X-rays are the most commonly ordered diagnostic imaging tests, with millions of X-rays performed globally every year. If automated detection can be applied in low- resource settings as a disease screening tool, the benefits to population health outcomes globally could be significant. An example of the use of chest X-rays as a screening tool is in many pathology screening, where chest X-rays, in the hands of expert readers, are more sensitive than clinical symptoms for the early detection of such Pathology screening.
Over the last few years, there has been increasing interest in the use of deep learning algorithms to assist with Pathology identification on medical images. This is a natural consequence of the rapidly growing ability of machines to interpret natural images and identify objects in them. On chest X-rays, there have been a series of studies describing the use of deep learning algorithms to identify various abnormalities in Pathology screening.

Expected Benefit: The efforts will be reduced equivalent to percentage of normal chest PA X-ray, based on the current estimate the expected benefit will be to the tune of 65%. We also expect a reduction in time to review abnormal cases, however the actual benefit will be known post implementation.

Total Project Duration: 270 days (Tolerance /extension of 2 -3 months may be required as per our initial discussion)

Sensitivity and Specificity – Up to 90 % CI

Deliverable materials

FEATURES OF AUTOMATED IDENTIFICATION OF X-RAY ABNORMALITIES REGISTRY ALONG WITH TIMELINES:

Feature	Training start	Complete
Cardiomegaly (Cardiothoracic ratio > 0.5)	1-15 Days	120 days
Hilar prominence	1-15 Days	120 days
Blunted CP angle (CP angle blunted/obscured)	1-15 Days	120 days
Fibrosis (Lung fibrosis/ interstitial fibrosis/ fibro-cavitary lesion)	1-15 Days	120 days
Consolidation	Day 90	180 days
Pleural Effusion (Pulmonary consolidation)	Day 90	180 days
Pneumothorax	Day 90	180 days

Opacity (Lung opacity/ opacities/ shadow/ density/ infiltrate, mass, large nodules)	Day 90	240 days
Nodule (Any abnormal, small well-defined opacities in the lung fields smaller than 3 cm in diameter)	Day 90	240 days
Normal lung Xray vs Abnormal lung Xray	Day 90	270 days
Dockerizing	Day 260	270 days
Deployment and Handover	Day 260	270 days

Contractor responsibilities

GANTT CHART: FIRST QUARTER FROM DAY ZERO

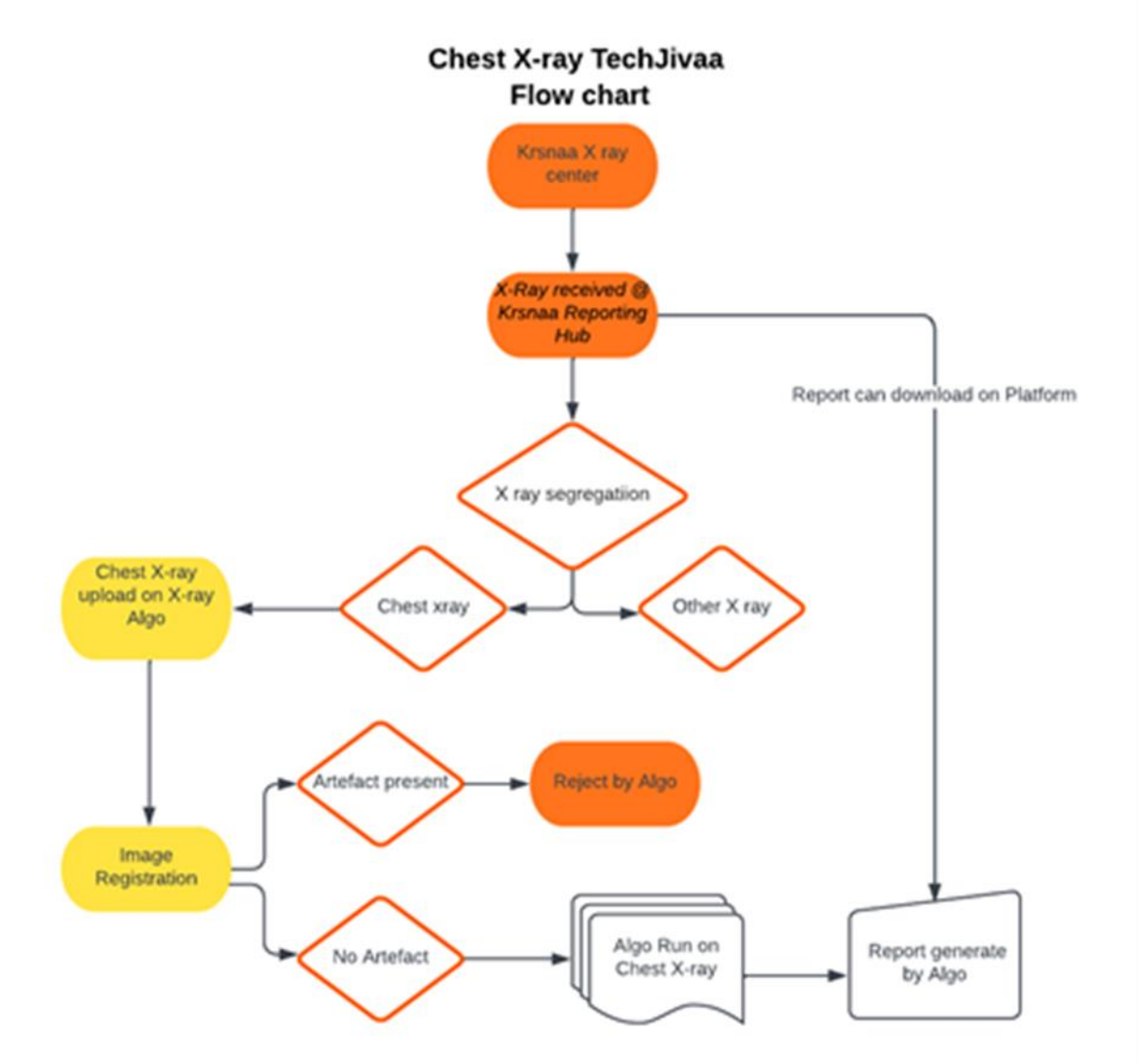
Tasks	Responsibility	Start Date	Submission date	Status
Cloud storage	TECHJIVAA	Day Zero	Day 1-15	
Server - Training	TECHJIVAA	Day Zero	Day 1-15	
Server - Production	TECHJIVAA	Day Zero	Day 1-15	
X-ray data				
• **Cardiomegaly**	TECHJIVAA	Day Zero	Day 1-15	
• **Hilar prominence**	TECHJIVAA	Day Zero	Day 1-15	
• **Blunted Cp angle**	TECHJIVAA	Day Zero	Day 1-15	
• **Lung fibrosis**	TECHJIVAA	Day Zero	Day 1-15	
• **Fibro-cavitary lesion**	TECHJIVAA	Day Zero	Day 1-15	
• **Interstilitial fibrosis**	TECHJIVAA	Day Zero	Day 1-15	

• **Consolidation**	TECHJIVAA	Day 90	Day 90+15	
• **Pleural effusion**	TECHJIVAA	Day 90	Day 90+15	
• **Pneumothorax**	TECHJIVAA	Day 90	Day 90+15	
• **GGO**	TECHJIVAA	Day 90	Day 90+15	
• **Lung mass**	TECHJIVAA	Day 90	Day 90+15	
• **Nodule**	TECHJIVAA	Day 90	Day 90+15	
• **Lung opacity**	TECHJIVAA	Day 90	Day 90+15	
• **Large Nodule**	TECHJIVAA	Day 90	Day 90+15	
Data preparation	VTSOP	Day 1-15	Day 15+15	
Algo training 1st iteration for Cardiomegaly, hilar prominence, Lung fibrosis, fibro cavitary lesions	VTSOP	Day 1-15	Day 15+45	
Algo training 2nd iteration for Cardiomegaly, hilar prominence, Lung fibrosis, fibro cavitary lesions	VTSOP	Day 45	Day 45+45	
Building production platform	VTSOP	Day 1-15	Day 15 +90	
Building Viewer for Platform	VTSOP	Day 1-15	Day 15 +90	
PACS Integration	VTSOP	Day 90	Day 90 +30	
Algo dockersation	VTSOP	Day 90	Day 90 +30	
Algo deployment on production server	VTSOP	Day 90	Day 90 +30	
Internal validation	VTSOP	Day 120	Day 120 +30	

SECURITY OF DATA AND PATIENT PRIVACY:

During the implementation of the Chest A tool. All data, regardless of form, including originals, images and reproductions, prepared by, obtained by or transmitted to VTOSPL in connection with this Agreement are confidential, VTOSPL agree to keep the security and patient data confidential, and a detailed annexure of the **NON-DISCLOSE / CONFIDENTIALITY AGREEMENT** shall be executed by both parties.

Chest X-ray Flow Chart



TERMS & CONDITIONS

- Both Parties to Sign Non-Disclosure Agreement.
- Any disputes will be settled amicably.
- Jurisdiction of Pune is applicable.
- All tech developed would be in the best of VTOSPL expertise.
- Any modification, alteration, or change would be executed by VTOSPL and charged separately.
- VTOSPL is allowed to appoint external partners / contractors for execution of assignment.
- All communication shall be in writing.
- All Invoices to be cleared within 15 days to avoid late charges to the tune of 10% P.A.
- Both parties are independent contractors

EXCLUSIONS

- Publication support
- Any external licenses or subscriptions.
- Study conduct (site identification, EC approvals, recruitment, data collection etc.).
- Other than the Lungs part. e.g.- Bony parts, axilla, or any thorax soft tissue other than lungs (female breast, scapulary region, the lower part of the neck, Cervical spine / dorsal spine, esophagus, etc.
- Anything specifically not mentioned is excluded from VTOSPL Scope of Supply.
- After successful delivery of AI Tool below are excluded (After Sales Support)
- ○ Any application-level changes ○ Code Related Changes. ○ Code Based Optimization.
    - Segregation Of Database /Database Related Changes for Application Server.
    - Database Optimization.
- Any additional documentation, diagrams other than our standard.

Client responsibilities

DATASET REQUIRED FROM TECHJIVAA

Type of Data: Retrospective

Description: Individuals who were assessed for chest PA (pathologies and normal)

- Rational segmentation of all the chest PA by (Segmentation and quantum of each segmented data will be decide post kick off meeting)
    - Age > 18 years
    - Pathology of dataset requirements for 1st, 2nd & 3rd iteration
    - Gender
    - Indian Demography
- All X-ray should be Chest AP.
- All data should be from adult patients above the of age of 18 years.
- Data should be with proper labels (Rt / Lt)
- Proper exposure (clean images) with whole chest covered in X-ray- avoid all types of artefactual data, under exposure x-rays data, Over exposure X-ray data.
- X-ray data should be in DCM (Dicom) format.
- Radiologist Reports with pathology interpretation should be available with X-ray.

DATASET REQUIREMENTS FOR 1ST AND 2ND ITERATION:

Pathology				
	1st iteration	**Data require date**	**2nd iteration**	**Data require date**
Normal Chest X ray	10,000	Day Zero	Nil	
Cardiomegaly **(Cardiothoracic ratio > 0.5)**	5,000	Day Zero	2,500	Zero +45 days
Hilar prominence	5,000	Day Zero	2,500	Zero +45 days
Blunted CP angle **(CP angle blunted/ obscured)**	5,000	Day Zero	2,500	Zero +45 days
Fibrosis (Lung fibrosis/ interstitial fibrosis/ fibro-cavitary lesion)	5,000	Day Zero	2,500	Zero +45 days
Consolidation	5,000	Day 90	2,500	Day 90+60 days
Pleural effusion (Pulmonary consolidation)	5,000	Day 90	2,500	Day 90+60 days
Pneumothorax	5,000	Day 90	2,500	Day 90+60 days
GGO	5,000	Day 90	2,500	Day 90+60 days
Lung mass	5,000	Day 90	2,500	Day 90+60 days
Nodule (Any abnormal, small well-defined opacities in the lung fields smaller than 3 cm in diameter)	5,000	Day 90	2,500	Day 90+60 days
Opacity (Lung opacity/ opacities/ shadow/ density/ infiltrate, mass, large nodules)	5,000	Day 90	2,500	Day 90+60 days

Data requirement for 2nd & 3rd iteration:

The accuracy, precision, and confidence level (greater than 90%) of each feature will be taken into consideration when choosing the training for Iteration 2 & 3.

3rd iteration: A minimum of 1000 images each would be required.

RESOURCES REQUIRED FROM TECHJIVAA

- 5 No X-Ray tech will be required after 90 days to upload the images on the portal to test and validate the process which will be done at customer site using customer site login.
- Validation of the data connectivity between PACS and server to be executed by TECHJIVAA personnel.
- Radiologist will be required after 90 days for validation the algorithm output with clinical report.

PACS INTEGRATION

- We will require the IP, Port number and AE Title for your PACS so that we can test out the integration of production server with your PACS.
- The Production server (X-ray algorithm) is likely to be compatible with all PACS system, however we will work with TECHJIVAA IT team to validate the same. we will provide additional information for configuration wherever required.
- PACS integration and testing can start after 90 days as per below GANTT chart.

TURN-AROUND TIME (TAT)

- The expected time of the report generation will be 8 –10 minutes from start of algorithm.

Dependency for any TAT variation:

Specifications of the production server. If we have a Production server with more upgraded specifications

- Size: Standard_NC64as_T4_v3
- Vcpu: 64
- Memory: 440 GiB
- Temp Storage (SSD): 2880 GiB
- GPU: 4
- GPU Memory: 64 GiB
- Max data Disks: 32
- Max NICs/ Expected network bandwidth: 8/ 32000 Mbps) (Based on this it would take 4-6 minutes to process the cases)

IT REQUIREMENTS:

a) Domain + SSL enabled.
b) Training server and cloud storage will be needed before project start.
c) Production server will require after 30 days of project start.

Server Specification as follows: -

1. **Production server**: - followed specifications is needed:

- Size: Standard_NC8as_T4_v3
- Vcpu: 8
- Memory: 56 GiB
- Temp Storage (SSD): 360 GiB
- GPU: 1
- GPU Memory: 16 GiB
- Max data Disks: 16
- Max NICs/ Expected network bandwidth: 4/ 8000 Mbps.

2. **Training server: -** followed specifications is needed:

- Size: Standard_NC24ads_A100_v4
- Vcpu: 24
- Memory: 220 GiB
- Temp Storage (SSD): 1123 GiB
- GPU: 1
- GPU Memory: 80 GiB
- Max data Disks: 30000/1000
- Max NICs/ Expected network bandwidth: 2/20,000 Mbps.

3. **Cloud storage: -**

- Minimum 5 TB cloud storage require for data management.
- Azure Links for specifications: -

Production Server - https://learn.microsoft.com/en-us/azure/virtual-machines/nct4-v3-series

Training Server - https://learn.microsoft.com/en-us/azure/virtual-machines/nc-a100-v4-series

Commercial Terms

This statement of works has been prepared based on our understanding and subject to confirmation of above documented works.

Fee schedule

This engagement will be conducted on a time & materials basis. The total value for the services pursuant to this SOW shall be $ 1,10,00,000.00 unless otherwise agreed to by both parties via the project change control procedure, as outlined within. A PCR will be issued specifying the amended value.

This figure is based on 42,410 hours of professional services. Contractor will provide up to 42,500 resources based on the following functional/rate structure.

ITEM DESCRIPTION	NUMBER OF RESOURCES	HOURLY RATE	NUMBER OF HOURS
Process/Analysis/BPR/Technical Architecture - Principal Consultant	20	Rs.2500.00	41600
Project Manager/Program Manager	1	Rs.3500.00	450
Engagement Director	1	Rs.4500.00	150
Sr Consultant (Process Mapping/Documentation/Data Collection)	1	Rs.4500.00	150
Overarching Transformation/BPR Expert	1	Rs.6000.00	60

Upon completion of this performance period, contractor and client will have the option to renew this agreement for an additional then-stated number of hours at the then-current hourly rate for those resources identified.

BILL TO ADDRESS	CLIENT PROJECT MANAGER	CLIENT COST CENTER
ValueTime Online Services Pvt Ltd	Dr. Girish Srinivasan	Chief Technical Officer
ValueTime Online Services Pvt Ltd	Premanshu Chaudhary	Project Director
ValueTime Online Services Pvt Ltd	Balaji Naidu	Operations Director
ValueTime Online Services Pvt Ltd	Rahim	Project Manager

Out-of-pocket expenses / invoice procedures

Client will be invoiced monthly for the consulting services and T&L expenses. Standard contractor invoicing is assumed to be acceptable. Invoices are due upon receipt.

Client will be invoiced all costs associated with out-of-pocket expenses (including, without limitation, costs and expenses associated with meals, lodging, local transportation and any other applicable business expenses) listed on the invoice as a separate line item. Reimbursement for out-of-pocket expenses in connection with performance of this SOW, when authorized and up to the limits set forth in this SOW, shall be in accordance with client's then-current published policies governing travel and associated business expenses, which information shall be provided by the client project manager. The limit of reimbursable expenses pursuant to this SOW is estimated to be 15% of the fees unless otherwise authorized in writing and agreed to by both parties via the project change control procedure outlined within.

Invoices shall be submitted monthly in arrears, referencing this client's SOW number to the address indicated above. Each invoice will reflect charges for the time period being billed and cumulative figures for previous periods. Terms of payment for each invoice are due upon receipt by

client of a proper invoice. Contractor shall provide client with sufficient details to support its invoices, including time sheets for services performed and expense receipts and justifications for authorized expenses, unless otherwise agreed to by the parties. Payments for services invoiced that are not received within 30-days from date of invoice will be subject to a 5% penalty per calendar month.

Payment Terms

1. **50%** of total order value payable along with order
2. **30%** of total order payable upon submission of First Draft for testing.
3. **10%** of total order payable upon submission of Final testing.
4. **10%** of total order payable upon ValueTime submitting all final project documents

Documentation:

This offer includes for standard ValueTime Project documentation and supporting data sheets for the safe operation of the Automated Pathology Registry for Chest X-Ray tool.

Taxes:

The above price quoted excludes GST or any other statutory taxes and duties applicable at the time of invoices.

Validity

The offer is valid for 30 days from submission.

Conditions of Sale

Unless agreed to in writing, any order resulting from this offer will be subject to ValueTime standard terms and conditions.

Delivery Time

Delivery time is about 40-50 weeks after receipt of all technical details and commercial terms.

Completion criteria

Contractor shall have fulfilled its obligations when any one of the following first occurs:

- Contractor accomplishes the contractor activities described within this SOW, including delivery to client of the materials listed in the section entitled "deliverable materials," and client accepts such activities and materials without unreasonable objections. No response from client within 2-business days of deliverables being delivered by contractor is deemed acceptance.
- Contractor and/or client has the right to cancel services or deliverables not yet provided with 20 business days advance written notice to the other party.

Assumptions

- It is assumed that all necessary insurance like product liability, etc. shall be covered under the policy of TECHJIVAA Diagnostics for the product, as it's owned by TECHJIVAA.
- Pricing is based on our understanding of the scope and the study specifications.
- Changes to scope may require revisions in the commercials.
- Any support required for data gathering from the TECHJIVAA team will be informed and the adequate Chest X-ray data the ground truth and pre-study will have to be provided.
- Any external data load/import/integration shall be charged at actuals +10%.
- The pricing mentioned is exclusive of taxes – GST and will be charged as applicable.
- Any travel and other incidental expenses incurred in the fulfilment of the engagement, especially when TECHJIVAA requires some clinical inputs and during validation will be additional and borne by TECHJIVAA.
- The proposal is valid for a period of 30 days from the proposal submission date.

Project change control procedure

The following process will be followed if a change to this SOW is required:

- A project change request (PCR) will be the vehicle for communicating change. The PCR must describe the change, the rationale for the change, and the effect the change will have on the project.
- The designated project manager of the requesting party (contractor or client) will review the proposed change and determine whether to submit the request to the other party.
- Both project managers will review the proposed change and approve it for further investigation or reject it. contractor and client will mutually agree upon any charges for such investigation, if any. If the investigation is authorized, the client project managers will sign the PCR, which will constitute approval for the investigation charges. Contractor will invoice client for any such charges. The investigation will determine the effect that the implementation of the PCR will have on SOW price, schedule and other terms and conditions of the agreement.
- Upon completion of the investigation, both parties will review the impact of the proposed change and, if mutually agreed, a change authorization will be executed.
- A written change authorization and/or PCR must be signed by both parties to authorize implementation of the investigated changes.

IN WITNESS WHEREOF, the parties hereto have caused this SOW to be effective as of the day, month and year first written above.

TECHJIVAA INDIA PVT LTD		VALUETIME ONLINE SERVICES PVT LTD	
Name:	_____	Name:	_____
Signature:	_____	Signature:	_____
Title:	_____	Title:	_____