THE NATIONAL INSTITUTE OF ENGINEERING

(An Autonomous Institution)
TECHNICAL EDUCATION QUALITY IMPROVEMENT PROGRAMME PHASE-III
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Estd.:1946

Date: 06-09-2018

Invitation for Quotations

Quotations are invited for the procurement of the following equipments under TEQIP– III

1. **Equipment:** CAD & DM Software, Qty- 20 users

Sr. No	Item Name	Specifications
1	2.5 Axis Milling Add-on	The CAM 2.5 Axis Milling Add-On should provide the essential milling and drilling capabilities that are part of virtually every milling implementation. With CAM, you can make holes and planar cuts anywhere on the part, using any valid tool axis.Features are Hole making, Face milling, Boundary cutting,Generalized roughing, Z-level finishing
2	3 to 5 Axis Milling Add-on	You can significantly improve productivity of mold and die machining by using multi-axis cutting. With the automatic tool-tilting, you can efficiently machine molds and dies with deep cavities. It analyzes the tool path and automatically tilts the tool to avoid holder collisions. This 5-axis milling method enables you to use shorter tools to reduce vibration and tool deflection
3	5 Axis Machining Add-on	The CAM 5 Axis Milling Add-On should provide an extensive capabilities for simultaneous multi-axis cutting of complex surfaces. 5-axis milling in CAM includes multiple drive methods with a wide range of tool axis control options. 5-axis surface contouring and a set of tool axis interpolation options allow 5-axis machining on the most demanding of parts.
4	ABAQUS Environment	The Abaqus environment should provide the tools needed to build models, define Abaqus solution parameters and view the solution results. The environment speaks the Abaqus language in terms of element definitions, loads and boundary conditions nomenclature, etc. It allows the user to fully leverage the complete range of finite element model building and results visualization capabilities in Advanced FEM software to perform an Abaqus analysis.The Abaqus environment also enables bi-directional import/export capabilities from/to an Abaqus run-ready input file.
5	Advanced Durability	" Advanced Durability software should help to validate a product's structural integrity over its entire lifecycle under either simple or complex loading conditions. The durability meta-solution process can contain multiple static and transient events. An event is comprised of :•An

		imported stress analysis solution• Durability solver setting •Element and material ion"
6	Advanced FEM	Advanced FEM software is a comprehensive multi-CAD finite element modeling and results visualization product that is designed to meet the needs of experienced CAE analysts. It includes a full suite of geometry creation and editing tools as well as FE pre- and postprocessing tools and supports a broad range of product performance evaluation solutions. Advanced FEM provides 2-way association to design geometry, allowing users to rapidly iterate on design changes. Robust CAD translators, along with the embedded industrystandard Parasolid 3D modeling kernel, enable non-native geometry to be easily imported for use within the Advanced FEM environment.
7	Advanced Simulation - Add On .	Advanced Simulation should deliver a wide range of geometry editing capabilities that are needed to de-feature, abstract and idealize geometry for CAE purposes, such as: • Geometry healing and repair for gaps and other data inaccuracies • Mid-surfacing to create surfaces for thin walled components • De-featuring tools (geometry repair, feature suppression, stitch surface, remove hole/fillet and partitioning) • Non-manifold topology generation for volumes • Creating a surface from an orphan mesh • Split body and partitioning methods for dividing solid geometry into more manageable sections prior to hex meshing
8	Advanced Thermal Simulation	Advanced Thermal software should extend the modeling and simulation capabilities in Thermal to include advanced radiation effects, diurnal environmental solar heating, Electrical (Joule) heating, material phase changes, thermal ablation, charring and duct flow heat transfer. Heat transfer modeling capabilities can be explicitly combined with the fluid dynamics (CFD) solutions to allow a user to simulate strong and fully-coupled thermo-fluid interactions problems. Resulting temperature results can also be mapped to a separate Nastran finite element model for thermo-elastic analysis.
9	Aerospace Sheet Metal	Aerospace Sheet Metal software should gives you specialized tools for designing sheet metal parts typically found in airframes, including support ribs and brackets that are attached to outer and inner mold line surfaces, as well as other internal airframe structures. These nonlinear airframe parts are usually hydro-pressed or break-formed. With aerospace features, you can design these components in a fraction of the time required by general-purpose CAD or sheet metal design tools.
10	Analyze Shape	Analyze shape should give a broad range of shape analysis and validation tools. These include gap and flushness analysis, curvature and continuity

		analysis, highlights, real-time reflection lines, curvature combs, draft analysis and real-time reflection mapping.
11	Ansys Environment	The Ansys environment should provide the tools needed to build models, define Ansys solution parameters and view the solution results. The environment speaks the Ansys language in terms of element definitions, loads and boundary conditions nomenclature, etc. It allows the user to fully leverage the Advanced FEM software's finite element pre- and post-processing capabilities to prepare for Ansys analysis. The Ansys environment also enables bi-directional import/export capabilities from/to Ansys run-ready input file data
12	Body Design .	Body Design should delivers advanced technologies for automotive Body in White design. The robust features of these applications significantly improve process automation and validation, promote best-practice design processes and reduce design time.
13	CAM Express 3 to 5 Axis Milling Add-on	You should significantly improve productivity of mold and die machining by using multi-axis cutting. With the automatic tool-tilting, you can efficiently machine molds and dies with deep cavities. It analyzes the tool path and automatically tilts the tool to avoid holder collisions. This 5-axis milling method enables you to use shorter tools to reduce vibration and tool deflection
14	CAM TeamCentre Client Add-on	Connecting to Teamcenter® software for data and process management should establishe a basis for an extended part manufacturing solution. All types of data from 3D part models to setup sheets, tool lists and CNC output files can be fully managed.
15	CMM Inspection Programming Add-on	"The CMM Inspection Programming Add-on should provide the full CMM Inspection capabilities when combined with a combination CAD/CAM Package. These packages provide much of the underlying support functions of the full CMM Inspection product. Software's CMM Inspection Programming capabilities provide a stateof-the-art solution for offline programming that reduces programming time, frees up expensive CMM machine resources and ensures fast responses to design changes."
16	Design Simulation	Design simulation should help manufacturers verify and validate the intended function of a product under development, as well as the manufacturability of the product. It includes a wide range of analyses that virtually test behavior of a product under various operating and environmental conditions. As opposed to trial-and-error, a smart simulation process allows targeted implementation of design choices in various stages of the development cycle.

17	Die Engineering	The stamping die design software application should automate the costly and time-consuming processes associated with the production of stamped sheet metal parts. It provides a comprehensive solution for planning, designing, simulating and manufacturing complete automotive stamping die press lines.
18	Die Structure Design	Die Structure Design should automate the design of die structures using a wide range of features for castings, trim steel and associated scrap cutters, flange steel, draw punch, upper draw die, lower binder, upper pad, and steel s.
19	DraftingPlus	DraftingPlus should be streamline 2D data migration, optimizes 2D design, provides a bridge from 2D to 3D, and offers an innovative, powerful solution for automating the production of drawings. These tools utilize your investments in other 2D CAD systems and eliminate the need for separate systems for 2D and 3D design.
20	EasyFill Analysis	" EasyFill Analysis, powered by Moldex3D, should be an integrated mold flow simulation tool for designers to analyze plastic part design for moldability during the early stage of the product development process. EasyFill Analysis provides all the capabilities product designers need to easily perform plastic flow simulations within the environment. EasyFill Analysis is a combination of Siemens PLM software and Moldex 3D technology that was developed to provide a powerful plastic mold flow analysis."
21	Electrode Design	The electrode design software application in streamlines electrode modeling and design for any tool project that requires electrical discharge machining (EDM). Electrode design software provides a time-saving, step-by-step solution that automates the entire EDM process from design through production. It can help you manage even the most complex and challenging electrodes.
22	Electronic Systems Cooling Simulation	Electronic Systems Cooling software should be an industry-specific vertical application that leverages the Flow and Thermal solvers as well as the PCB.xchange capabilities in an integrated multi-physics environment to simulate 3D air flow and thermo-fluid behavior in densely packed, heat sensitive electronic systems. Electronic Systems Cooling helps resolve thermal engineering challenges early in the design process and is a valuable aid in understanding the physics of fluid flow and heat transfer for electronic enclosures.
23	EPak	E/Pak should be a two way ECAD printed circuit board layout interface that connects most ECAD printed circuit board systems to Unigraphics. The

		application must be oriented for the electrical and mechanical design sectors for the conversion of information between electronic board / component assemblies and plastics / mechanical packaging.
24	Fabric Flattener	straight-brake sheet metal design tools should be included in all Mach Series solutions for design, styling and tooling, as well as in the Mach 3 and 4 NC machining products. The advanced sheet metal and fabric flattener tools are available as an add-on package for Mach Series solutions.
25	Flow Simulation	Flow software should be a computational fluid dynamics (CFD) add-on solution that is fully integrated into Advanced FEM and Advanced Simulation. It provides sophisticated tools to model and simulate fluid flow for complex parts and assemblies. The integrated CFD solution enables fast and accurate fluid flow simulation and provides insight into product performance during all design development phases, limiting costly, time-consuming physical testing cycles.
26	Freeform Shape	With freeform modeling, should develop freeform designs using any combination of modeling techniques from a broad toolset. - Create conceptual layouts quickly from raster images or CAD sketches, using curves and sections to extrude, loft, revolve and extend the geometry. - Create surfaces from meshes of curves. - Use parametric, feature-based design tools to build details, with advanced features like styled blends. - Edit faces with synchronous freeform modeling, sculpting solids by moving iso-parameter curves and poles with push-and-pull simplicity
27	General Packaging .	General Packaging should be an suite of tools that automates many of the tasks associated with the mechanical and occupancy packaging of an automobile. General Packaging provides assistance to certify the vehicle for compliance to SAE standards and a variety of governmental regulations, including those in the US, Europe and Asia. The software helps users assess the accommodations and ergonomic performance of the vehicle.
28	Greater China Toolkit	API Toolkit
29	HD3D Visual Reporting	HD3D Visual Reporting software should blend information of interest from your company's data sources directly into the 3D product design environment. This helps users make easier unambiguous assessments, interpret information more accurately and synthesize product and process data rapidly into correct design decisions.
30	Human Modelling	Human Modeling software should enable designers to use 3D models of human beings to explore and verify how people of different sizes will interact with their product designs. Based on technology from Siemens'

		Tecnomatix® Jack software, Human Modeling allows rapid evaluation of fit, clearance and reach issues without leaving the design environment. With human modeling integrated into product design tools, companies can develop safer, more functional products that have greater user satisfaction.
31	Human Modelling Posture Prediction	Human Modeling Posture Prediction should extend human modeling with capabilities for positioning drivers, front passengers or rear passengers in seated positions inside an automotive vehicle. Designers can position the hands and feet in a specific location, such as the driver's hands and feet touching the steering wheel and brake pedal.
32	Integration to Geolus	Geolus Shape Search should quickly find parts with similar geometry, regardless of how they are classified. With Geolus Shape Search, a clear view of all the data gives you the ability to control and re-use parts which provides savings in design time, cost estimating, procurement, manufacturing, and inventory.
33	Issue Management	The corrective and prevention process should be managed by a CAPA business object. The CAPA object and process manages the resolution of the issue, independent of the issue itself. The advantages of different objects include: 1. Shielding the corrective measures from the issue, if that is desired by your company. 2. Resolving multiple issues/complaints by a single CAPA, reducing the need to replicate information or duplicate efforts. 3. Addressing a single issue with multiple resolutions, each managed by a separate CAPA business object.
34	Knowledge Fusion Author .	Knowledge Fusion should be an interpreted, object-oriented language that allows you to add engineering knowledge to a part by creating rules which are the basic building blocks of the language.
35	Laminate Composites	LC should be a fully integrated CAE product for finite element analysis of laminate structures. Its features include - •Laminate Modeling •Composite Materials •Optimization •Laminate Failure •Laminate Validation •FE Solver Interfaces •Laminates Post Reporting
36	LS-Dyna Environment	The LS-Dyna environment for CAE should enable engineers to build finite element models and define solution parameters for the LS-Dyna solver. The environment immerses engineers with familiar LS-Dyna language for element definitions, loads and boundary conditions, solution parameters and other common LS-Dyna nomenclature. In addition to model definition capabilities, the LS-Dyna environment enables bi-directional import/export capabilities that enable you to import current or legacy LS-Dyna data files and results, as well as export runready LS-Dyna input data files.

37	Mach 3 Progressive Die Design	Progressive Die Design should be a comprehensive solution for quality die design, supporting associativity with the part design at every stage of die development and including a variety of functions specific to progressive dies, including: • Sheet metal parts and blank design • Strip design and simulation • Die base, and assembly design • Electrode design • Tool validation • Design change management
38	Machining Wizard Builder	This capability should enable companies to capture standard machining procedures and company best practices in step-by-step wizards that help automate NC programming. The custom wizards should be re-used throughout the company to assist less experienced programmers and to promote standardization of NC machining practices.
39	Mechatronics Concept Designer	Mechatronics Concept Designer should provide an end-to-end solution that enables multi-discipline collaboration, reduced time-to-market, re-use of existing knowledge, and better decision making through concept evaluation. Using systems engineering principles, you can trace customer requirements all the way through to a finished design.Working from the functional model, you can quickly create basic component geometry, or add components from the re-use library. For each component, you can specify joints, motion, collision behavior and other kinematic and dynamic properties, and add sensors and actuators.
40	Mold Wizard	Mold Wizard should enable you to automate mold design including shrinkage, runners, gates, sliders, lifters and sub- designs. Libraries provide you with access to a wide variety of standard parts, component systems and mold bases. You can position mold components within the assembly based on simple ion, while downstream pocketing and clearance management is automated. The mold design process is assisted by powerful visualization and assembly management tools, making it easy for you to navigate a complex tool assembly.
41	Molded Part Validation	Mold Design streamlines should be the entire mold development process: from part design to tool assembly layout, tool design and tool validation. Mold Design excels at even the most challenging mold designs, providing advanced functionality, step-by-step guidance and associativity with part designs to ensure fast response to design changes and quality molds.
42	Motion Control Simulation	Motion Control Simulation should enable cosimulation of controller designs based on Simulink that have multibody dynamics models. Using this capability, mechanical engineers and designers can collaborate more effectively with their counterparts developing controller designs to find and fix integration issues and to optimize product performance.

43	Motion Flexible Body	Motion Flexible Body solution should enable designers and engineers to investigate design performance using higher fidelity models that combine elastic deformation and rigid body motion. Part flexibility is important because it changes the geometry of the mechanism and can lead to serious design issues that involve mechanism interference or performance. Motion Flexible Body is an add-on module to Motion Simulation-RecurDyn; it requires Advanced Simulation to model, simulate and post-process flexible bodies.
44	Motion Simulation-RecurDyn	Motion Simulation-RecurDyn software should help designers and engineers predict and understand the functional behavior of parts and assemblies. It delivers a complete and very robust set of capabilities to support all aspects of advanced dynamic, static and kinematics motion simulation. The early use of performance simulation is key to the evaluation of design options. It increases design confidence and reduces risk, thus enabling transformation of the design process.
45	Nastran Desktop Advanced	Advanced Simulation software should combine the power of an integrated Nastran desktop solver with Advanced FEM, a comprehensive suite of multi-CAD FE model creation and results visualization tools. Extensive geometry creation, idealization and abstraction capabilities enable the rapid development of complex 3D mathematical models that allow design decisions to be based on insight into real product performance. Advanced Simulation enables a true multi-physics environment via tight integration with Nastran as well as other industry standard solvers such as Abaqus, Ansys and MSC.Nastran.
46	Nastran Desktop Advanced Nonlinear Solver	The Advanced Simulation bundle should include a license of the Nastran – Basic desktop solver integrated with a desktop license of the Nastran Environment translator. The Nastran – Desktop Advanced bundle and/or individual modules for Nastran listed below should be added on to a seat of Advanced Simulation.
47	Nastran Desktop Optimization	Advanced FEM should allow the user to create an optimization solution process. The user should define a goal such as the mass of a part or component, a constraint such as maximum allowable Von Mises stress and the design parameter(s) to vary on the component. The optimization solution process should run based on the design criteria while varying the design parameters to enable the design engineer to determine if there is a better structural design native vs. the original baseline design.
48	Nastran Desktop Rotor Dynamics	Nastran Rotor Dynamics software should provide the capability to predict the dynamic behavior of rotating systems.With the Rotor Dynamics functionality now integrated into Nastran, users can now more easily

		simulate rotating system loads, perform synchronous and asynchronous analysis to generate Campbell Diagram data, predict whirl frequencies and critical speeds and detect instability in rotating components.
49	NC Simulation Add-on	The CAM NC Simulation Add-On should provide a complete kinematic machine environment for visualizing complex motion. Collision checking and multichannel synchronization are simulated at the g-code level for the most accurate results.
50	One-Step Formability Analysis	Progressive Die Design software should include One-step Unforming and Formability Analysis, a state-of-the-art FEM (finite element method) based unforming, flattening and analysis solution for tool and die makers. By combining industry knowledge, best practices and automation, One-step enables the rapid creation of flattened blanks and pre-forms from complicated freeform sheet metal part geometry.One-step Formability Analysis helps tool and die makers save time by effectively validating designs for thinning, stress/strain and springback
51	Open GRIP Author.	Open Grip Author should be an collection of APIs that allows you to create custom applications through an open architecture using well-known programming languages (C/C++, Visual Basic, C#, Java, and Python). You can automate complex and repetitive tasks, integrate third party applications, and customize the interface in your preferred programming language.
52	Open Toolkits Author	The Open Toolkits Author should be an license provides the libraries, documentation, and utility tools required to create custom applications using the Open C++, Open for .NET, Open for Java, Open Python Application Programming Interface (API)
53	Optimization Wizard	Optimization wizard should offer a tool that aids in understanding which parameters are key to design objectives. Users should identify candidate variable design parameters and a design goal. The Optimization Wizard then apply the sensitivity and filtering tools together with engineering constraints to identify the more critical design parameters and then optimize them. The step-by-step wizard should provide engineers with a method to ensure that their product designs are optimized to best meet design goals. It should also enable designers and engineers to capture engineering requirements, automate the exploration of natives and automatically identify optimized solutions.
54	Post Adv Kinematics Library	An advanced kinematics library should include in all the Mach Series Machining solutions. The advanced kinematics are required for postprocessing advanced machine tools with non-orthogonal hea

55	Post Builder	The Post Building Techniques should acquaint with tools and techniques that are used for building custom, machine tool specific post processors using the Post Builder tool. Methods are shown for customisation and modification of the definition and event handler files that are used by Post.
56	Progressive Die Wizard Manufacturing Bundle	" Progressive Die Wizard should provide a complete environment for progressive die design. It must incorporate the industry's best practices within a step-by-step user interface to guide users through the steps of designing a progressive die. With Progressive Die Wizard you should • Dramatically shorten lead time for progressive die design• Minimize human error and increase design quality• Minimize design costs through optimal application of manpower• Easily accommodate changes to product design"
57	Render	Render should make real-time visualization and sophisticated rendering a valuable asset for everyone involved in the product development process. You should form a broad variety of display styles and visual effects to enhance clarity or improve interactive efficiency.Photorealistic rendering should allow you to make decisions about aesthetics, function, and materials of a product early in the design process when costs are low. The Lightworks Iray+ rendering engine should deliver progressive ray tracing in a fully integrated environment with Ray Traced Studio.
58	Response Simulation	"Response Simulation software should be an add-on module to the Advanced Simulation environment that predicts the dynamic responses of structural systems under various loading conditions. Augmenting the capabilities of Advanced Simulation, Response Simulation produces a broad range of XY plot results and color contour results that aid the user in determining the integrity and suitability of product designs subject to dynamic loads."
59	Routing Base	Routing Base should contain the global functions for creating, editing, copying and moving routing paths. In addition, this module should give the user the ability to build standard libraries and place the library parts interleaved on the laid paths.
60	Routing Cabling	Routing Cabling should provide the tools needed to route electrical cables in a product assembly via typical mechanical parts, and supports equipment such as conduits and raceways. The software should import a list of cable descriptions for connections between electrical devices. This connection list should be created from a 2D logical design application, such as Schematics or various other external ECAD-type applications.
61	Routing Harness	Rules-based routing tools should automate the creation of wiring paths and connections from logical designs, helping you optimize routing between

		components in crowded assemblies. Built-in design rules check and enforce standard practices and ensure connectivity to reduce production costs and assembly defects.
62	Routing HVAC	Routing HVAC should provide 3D tools to create, modify, validate and document heating, ventilation and air conditioning (HVAC) systems design. It enables the optimization of HVAC design workflows through intelligent path creation tools, specifications-driven part ion, smartpart placement, collision detection, weight calculations, duct splits, duct size calculator and knowledge rules that concurrently validate designs against company and industry standards
63	Routing P&ID	With Roouting P&ID Designer should quickly and easily create P&ID diagrams. A shared library for pipes and equipment makes placement fast and simple. Navigators for tracking runs and systems help to visualize how diagrams are organized. P&ID Designer helps you focus on the design and spend less time on diagram creation.
64	Routing Piping and Tubing	digital product development solutions should include an integrated suite of tools that facilitate the entire design process for routed systems, including wire harnesses, cables, piping, tubing, conduit, raceway and steelwork.These process-specific tools reduce detailed design time, improve product quality and transfer product information seamlessly between the logical design, physical design, analysis, manufacturing and service sectors.
65	Rules Based Structure Welding	With rules-based structure welding, should define arc welds in CAD models, generating lightweight representations that support very large numbers of welds to be defined and developed. Weld placement should be controlled by algorithms that analyze the geometry being welded and identify the most logical location. Should enter all weld specifications interactively, or use welding rules to control the weld definition. Welding joints should automatically drive edge preparation and weld symbol creation.
66	Schematics	Schematics should be an integrated 2D schematic layout package for Unigraphics, you should quickly layout your schematic design, verify its function, add detailed part information, and drive the downstream processes. You should create devices, define the wires and cables to connect them, and produce various reports including connection lists and parts lists.
67	Shape Optimization	Shape optimization should be used to automate the improvement of structural designs by, for example, minimizing weight while observing displacement or other constraints for either static or dynamic models.

68	Ship Design	"Our ship design and engineering software should based on fully integrated with Teamcenter, and enables all ship engineering disciplines to be included in a homogenous software portfolio, such as -Ship structural design -Composites design -Outfitting design for piping; heating, ventilation and air conditioning (HVAC); and electrical systems -Mechanical design for machinery, accommodation and equipment -Integrated computer-aided engineering (CAE) and design validation, including linear and non-linear strength, multiphysics, thermal, noise, vibration, computational fluid dynamics (CFD) and ergonomics -Acoustics and vibration analyses"
69	Ship Drafting	Ship Drafting should provide functionality specifically for shipbuilders, such as a frame bar command, area centerline, drafting lines, symbols, weld symbols, annotation, inverse bending line and shipbuilding baseline dimension option.
70	Ship Structure Detail Design	Ship Structure Detail Design software should provide a focused environment for modeling the structure of a ship. Ship Structure enables the user to conceptualize and model the surfaces and landing curves of the hull, decks, transverse and longitudinal bulkheads. It provides the user with tools to easily create and detail the plates and profiles that make up the structure
71	Ship Structure Manufacturing Prep	Ship Structure Manufacturing Prep software should provide a focused environment for manufacturing the structure of a ship.It enables development of the production planning and generation of the structural manufacturing data.
72	Space Systems Thermal Simulation	Space Systems Thermal software should be the space industry vertical application that leverages the entire numerical capabilities found within the Thermal solver to provide a comprehensive set of tools to simulate orbital heating within the Advanced Simulation environment. Space Systems Thermal helps resolve thermal engineering challenges early in the design process and is a valuable aid in understanding the physics of orbital heat transfer for all space-bound as well as interplanetary-bound vehicles.
73	Thermal Simulation	Thermal Simulation should be an engineering analysis solution (fully integrated into the Advanced Simulation environment) that simulates thermal and heat transfer for complex products and processes within large ssemblies. It allows for thermal and heat transfer simulations and offers high fidelity simulation of radiative, conductive and convective heat transfer. Thermal addresses thermal analysis requirements in industries including automotive and transportation, consumer products and appliances, energy, medical, high-tech electronics and defense.

74	Three Axis Milling Add-on	The CAM 3-Axis Milling Add-on should provide an extensive fixed axis cutting capabilities for complex surfaces. The add-on enables you to achieve the smoothest tool path results in steep areas by specifying a projection vector different from the tool axis. You can output the smoothest raster, or zig-zag, cuts with special stepover moves and optimized point distribution to maintain high feed rates and fine finishes
75	Topology Optimization	Topology Optimisation should has an embedded Topology Optimisation for Designers plus Convergent Modelling Technology which enables the direct manipulation of the resultant facet/polygon optimised shapes plus includes the body as a full citizen of a feature based modelling process. Some of its features include: 1. Direct to AM machine for printing. 2. Direct to cast, mold or multi-axis machining. 3. Use for further Design or Simulation using Convergent models.4. Guidance for re-modelling using traditional CAD tools.
76	Turning	With the turning software module, easily program a full range of CNC lathe operations, including: - On-center hole making (spot, drill, peck, chip, ream and tap) - Roughing (face, turn, back turn, bore, back bore and undercut) with multiple patterns and depth of cut control and angle control. - Rough and finish grooving with auto left/right tracking point control - OD/ID (outside diameter/inside diameter) threading - OD/ID face - Cutoff operation and bar feed operation types
77	Visualize Shape	Visualize shape should give a broad range of shape analysis and validation tools. These include gap and flushness analysis, curvature and continuity analysis, highlights, real-time reflection lines, curvature combs, draft analysis and real-time reflection mapping.
78	WAVE Control	WAVE should be a geometry linking tool that enables designers to define interpart relationships for parametric assembly modeling. WAVE assembly control structures and constraints help simplify design changes and accelerate modeling of configurations, options and variants.
79	Weld Assistant	Weld Assistant should help you specify and model material joining through fusion welds, mechanical connections, and solid state connections. Weld types include edge, groove, fillet, plug, spot and seam welds, and you can also specify beads, tape, dollops and clinches. Weld Assistant also produces weld and connection information for use in finite element analysis (FEA) of the assembled product. Weld Assistant automatically creates accurate weld specifications, annotations and symbols for 2D drawings based on the 3D weld features.
80	Wire EDM Add-on	The wire EDM software module should offer a wide range of electrical

		discharge machining (EDM) operations including multi-pass profiling, wire reversing and area removal. The operations can be applied to curves, surfaces or solids.

General Specification

Software Suite should have integrated design, simulation and manufacturing solutions that enable to digital twin in the end-to-end process.

Software should have functionality and Leverage to create, build & modify convergent models and to be used for downstream applications like MBD, CAM, CAE Applications.

Software should have process specific tools to design lightweight parts and verify designs for additive manufacturing.

CAD Software should have dedicated tools for process-specific design like Animation Designer and P&ID Designer

Software should have tools and be user friendly to create math-based models supports generative design.

Software should have tools & functionality for transition to drawing less work- flows with Convert to PMI

Software should have options for Display multiple windows in a single session to better facilitate multi-tasking and cross-checking.

Software should have Convergent Modeling tools that allows you to modify and work with facet geometry the same way you work with traditional CAD geometry.

Software should have Additive manufacturing product design tools which helps to design lightweight parts by filling a volume with a lattice structure, helping you optimize your design for additive manufacturing, reduce material use and meet weight requirements without compromising the strength or robustness of your design.

Software should have options and functionalities to bring legacy mesh data to life by converting it into editable, Convergent geometry.

Software should have functionalities to Simulate even more types of physics and complex assemblies with advanced solutions for structural dynamics, motion, acoustics and more

Software should be catering to industry-specific applications with enhanced workflows for air-frame, automotive, Ship building, Plant design and spacecraft engineering.

Software should have tools for Mechatronics Concept Designer (MCD) to be more power¬ful and easier to use. The Mechatronics Collaboration Structure enables auto-mation engineering for all designs

Software should have functionalities to Prepare complete 3D printing jobs for a range of industrial powder bed fusion printers

Software should have functionalities to Print functional plastic parts easier, faster and more accurately when HP 3D printers are combined with CAD Suite

Software should have Animation Designer which should be fully integrated tool that lets you animate almost any type of geometry, from sketches to part or assembly bodies, and even imported data. Example: simply define what can and can't move, define the joints, couplers, and motors, put the movements into a timeline structure, and press "play." Automatic collision detection helps you find kinematic issues with your assembly without the need to build costly physical prototypes, and because you can quickly change your geometry in the same environment and run the animation again, you can do multiple design iterations quickly, leading to higher-quality products.

Software should have option for CMM Inspection Programming of CMM machines, as well as visualization and analysis of measurement data in the graphical environment.

Software should have dedicated design mock-up (DMU) application with reviewing environment from the authoring environment, where designers can make changes to the mock-up without having to worry about modifying the base geometry.

Software should have Process-specific design applications which include Animation Designer, P&ID Designer, process automation, Mechatronics Concept Designer, joining and welding, sheet metal, tooling design, and shipbuilding. These areas have undergone extensive updates to improve workflow efficiency and versatility.

Software should have tools and functionalities which will allow to embed electronic design into your mechanical layout with the ability to view, mark-up, and cross-probe from either side. These tools make it easier and faster to design the next generation of products with integrated electronics.

Software should have integrated P&ID Designer software is a 2D piping and instrumentation diagramming tool that helps you create functional or logical designs of piping and instrumentation systems. It is easy to use, with drag-and-drop component and pipe placement and editing, and automatic placement of things like nozzles and jumpers.

Software should have Process automation tools more options and power for helping you create advanced math-based models and also it should allow properties of 3D model in the worksheets, for bi-directional communication.

Software should have "body by equation" feature lets you take advantage of the 3D plotting functions in the math-based tools to create a convergent body that remains associative to the worksheet.

Software should have weld transformation function to include all types of arc welds, you can move or mirror your welds more quickly. Feature groups of discrete joint types provide a way to organize your joint data that can be tracked in the part navigator, so you spend less time trying to find joint data. It's also easier to determine discrete joint types with 30 new marker symbols.

Software should have Sheet metal design for creating flat patterns, giving you more flexibility to work the way you want to. There are more options available when converting a solid part to sheet metal, leading to cleaner geometry and easier downstream use.

Software should have integrated design applications/utility for injection mold, progressive dies and transfer dies. This should be extended very best in modeling, assembly modeling and drafting technology is providing the foundation for these high- performance applications.

Software should be built on the latest architecture, a technology for the design and management of large classes of products having millions of components and spanning a massive volume of space. This technology should allows shipbuilders the flexibility to organize data in multiple views, and empowers designers to rapidly search, retrieve and work collaboratively on the end-to-end systems that pass through common ship spaces. And this should be seamlessly integrating with digital manufacturing solutions to ensure optimal manufacturing and assembly.

Software should have options for Multiple display parts allow you to display multiple parts in separate windows in a single session. This enables you to take advantage of all of your screen space and multiple monitors while quickly switching between parts using keyboard shortcuts or mouse selection. It is much easier to see how a change to a part will impact an assembly or compare two different parts with multiple windows.

Software should have functionality to 3D Design data is more secure and allow to set passwords for your parts and assemblies without any data management system is being used. It should also allow to apply different levels of access to each part or assembly.

Software should support Generative design is a computational process in which a design takes shape based on rapid modification and evolution of design parameters based on performance of that design and a set of goals.

Adaptive milling is a new high-speed cutting strategy that can reduce machining cycle time by up to 60 percent. This intelligent roughing method enables deep cuts and constant tool load that increase material removal rates while extending tool life. Although ideal for cutting hard materials such as steels used for tooling, adaptive milling can be used for high-speed machining of a range of materials, including production machining of aluminium parts.

Software should provide a complete set of in-orbit thermal analysis tools, and also provide enhanced physical modeling of orbital heat transfer.

Software should have Solutions for airframe engineering Extending solutions for airframe engineering. For example, you can now create sub mechanisms within your full aircraft motion model to include individual working subsystems like landing gear.

Software should have solution for airframe engineering to accurately predict how composite material is shaped and performs after its manufacturing processes.

Software should have intelligent roughing method, which enables deep cuts and constant tool load that increase material removal rates while extending tool life. Although ideal for cutting hard materials such as steels used for tooling, adaptive milling can be used for high-speed machining of a range of materials, including production machining of aluminium parts.

Software should have options with Robotics for part manufacturing which will allow to program robots to perform precise machining-type tasks including trimming, de-burring, grinding, and polishing.

Software should allow the user to easily program a robot to do pick-and-place operations, including machine tending and tool loading.

Software should have capability and powered by Materialise technology, includes facilities for creation of support structures as well as for the setup of the build tray, positioning and patterning of parts in the build tray, and a build processor framework for connection to powder bed printers.

Software should work with HP Multi Jet Fusion printers addition to the hardware landscape for plastic printers is HP with their Multi Jet Fusion technology.

Software should allow to design, optimize, simulate, prepare print jobs and inspect processes for HP Multi Jet Fusion 3D printers.

Software should have Shape Search quickly finds parts with similar geometry, regardless of how they are classified. With Shape Search, a clear view of all the data gives you the ability to control and re-use parts which provides savings in design time, cost estimating, procurement, manufacturing, and inventory.

Software should have functionality for Mechatronics Concept Designer provides an end-to-end solution that enables multi-discipline collaboration, reduced time-to-market, re-use of existing knowledge, and better decision making through concept evaluation. Using systems engineering principles, you can trace customer requirements all the way through to a finished design. Working from the functional model, you can quickly create basic component geometry, or add components from the re-use library. For each component, you can specify joints, motion, collision behaviour and other kinematic and dynamic properties, and add sensors and actuators.

Delivery Period: 60 Days from the date of issue of purchase order. Warranty Period: 12 Months

Terms and Conditions

i. Quotation should be invariably in the prescribed **format enclosed**; otherwise it is **liable to be rejected.**

ii. Quotation should be sent in a **sealed cover superscribed as "Quotation for the supply of CAD & DM Software under TEQIP III" to The office of the Principal (TEQIP- III), The National Institute of Engineering, Manandavadi Road, Mysore 570 008.**

iii. Last date and time for submission of quotation **21-Sept-2018, 17:30 hours.**

iv. Installation and demonstration shall be at **Department of Mechanical Engineering, NIE, Mysuru.**

v. Quotation should be valid for **45 days** from the last date of submission of quotation.

vi. Equipment should be delivered at **Department of Mechanical Engineering, The National Institute of Engineering, Manandavadi Road, Mysore - 570008.**

vii. **100% payment on installation, demonstration, successful completion in all respects and final acceptance by the Purchaser.**

viii**. Authorized Dealer/ Channel Partner Certificate from the company** should be enclosed along with the quotation.

ix. The Purchaser reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of contract.

FORMAT FOR QUOTATION SUBMISSION

(In letterhead of the supplier with seal)

Date: _____

To:

_____

_____

Sl. No.	Description of goods (with full Specifications)	Qty.	Unit	Quoted Unit rate in Rs. (Including Ex Factory price, excise duty, packing and forwarding, transportation, insurance, other local costs incidental to delivery and warranty/ guaranty commitments)	Total Price (A)	Sales tax and other taxes payable	
						In %	In figures (B)
	Total Cost						

Gross Total Cost (A+B): Rs. _____

We agree to supply the above goods in accordance with the technical specifications for a total contract price of Rs. ———————— (Amount in figures) (Rupees ————————amount in words) within the period specified in the Invitation for Quotations.

We confirm that the normal commercial warranty/ guarantee of —————— months shall apply to the offered items and we also confirm to agree with terms and conditions as mentioned in the Invitation Letter.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

Signature of Supplier

Name: _____

Address: _____

Contact No: _____