Overview
Adams/Machinery is a new Adams software solution that allows machinery manufacturers to efficiently build functional virtual prototypes of their machinery components and systems early in the design cycle, prior to committing to building physical prototypes. With this new solution, machinery manufacturers will reduce their volume of prototypes, decrease their design cycle times, and meet their functional specifications more reliably. All of these benefits drive costs down significantly.

Adams/Machinery is fully incorporated inside the Adams/View environment. With productivity tools for modeling and pre-processing chain, gear, and belt components, Adams/Machinery provides an extremely approachable, easy-to-use interface with in-line help and useful information about the components, their connections, and the applicability of various modeling fidelity options. Wizards help guide users through the model setup process and provide the ability to manipulate model parameters and modeling options with ease.

Value Proposition
- **Improve Engineering Productivity**: Enable direct, high-fidelity simulation of common mechanical parts, such as gears, belts, and chains, reduce dependency on macro-creation skills, and improve analyst efficiency
- **Accelerate Time-To-Market**: Gain faster, better insight into overall system design performance.
- **Reduce Manufacturing Costs**: Accurately predict and adjust design behavior much earlier in the design cycle; achieve an optimal design by analyzing multiple design variants faster
- **Achieve Lower Warranty Costs**: Predict system-level functional performance and accurately assess lifecycle service (safety, fatigue, durability); reduce risk by having better information at every stage of development

Product Attributes & Capabilities
Adams/Machinery comprises a suite of modules as described below:

**Gear**
This module is for engineers who need to predict the impact on system behavior of gear attributes, such as ratio, backlash, helix angle, etc. A variety of gear types are supported in the Adams/Machinery environment, and these include spur, helical, straight bevel, and spiral bevel configurations.
- **Choose gear type with the selection of Spur Gear (Internal/External), Helical Gear (Internal/External), Bevel Gear Straight and Bevel Gear Spiral**
- **Apply Detailed modeling method when friction is considered and study the backlash based on actual working center distance and tooth thickness**
- **Apply Contact modeling method to use geometry-based contact and to support shell-to-shell 3D geometry contact**
- **Use Geometry settings to define the location and geometric parameters of gears**
- **Choose the materials of gears by defining mass or density**
- **Create a planetary gear set by using the planetary gear wizard**
- **Generate gear-specific output in the postprocessor**
- **Use automated model parameterization as reference to perform design exploration**
Belt
This module is for engineers who need to predict performance of belt-pulley systems; attributes of interest could include transmission ratio, tension and load prediction, compliance, and general belt dynamics. One can examine planar dynamic behavior of belt-pulley systems for a range of belt types, including smooth, poly-V grooved, and trapezoidal-toothed variants.

- Choose belt type with the selection of poly-V grooved belt, trapezoidal-toothed belt, and smooth belt
- Use Geometry settings to define the location and geometric parameters of pulleys
- Choose the materials of pulleys by defining mass or density
- Apply tensioner pulley to the belt system to take up extra slack and control the routing of the belt
- Specify belt properties
- Generate belt-specific output in the postprocessor
- Use actuation wizard to apply force or motion to any pulley in the belt system

Chain
This module is for engineers who need to evaluate chain system attributes including drive ratio, tension, contact force, and general dynamics. One can model and evaluate the dynamics for both roller and involute, i.e., silent, chain types.

- Choose chain type with the selection of roller chain or silent chain
- Apply Linear, Nonlinear, or Advanced compliance to the roller chain
- Apply Linear compliance to a silent chain
- Use Geometry settings to define the location and geometric parameters of your sprockets
- Choose the materials of your sprockets by defining mass or density
- Apply Pivot, Translational, or Fixed guides to the chain system
- Specify chain properties
- Generate chain-specific output in the postprocessor
- Use actuation wizard to apply force or motion to any sprocket in the chain system

Adams/Machinery License Options (Token and Standalone Availability)

- Adams/Machinery Add-on Module
  (requires Adams Studio, i.e., Adams/View and Adams/Solver)

- Adams/Machinery Studio
  (includes Adams/Studio and the Adams/Machinery Add-on Module)