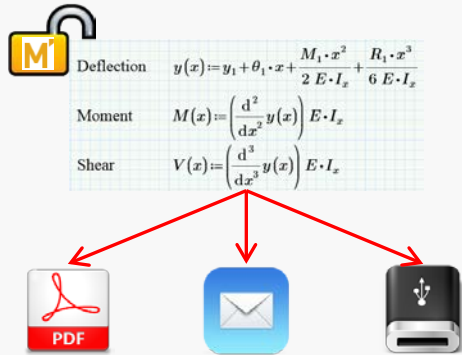


Market Segment Introduction

Engineering companies want to standardize on calculation best practices, but struggle to enforce them. In addition, these companies want to distribute certified calculations to every end user in their ecosystem without exposing sensitive and valuable IP. There is no common solution among internal employees, suppliers, partners, contractors, customers, and even the general public, making universal access difficult and costly.

Calculation best practices must be accessed by opening the physical file from a desktop computer. This exposes the content of the document to unauthorized distribution and modification.

Engineers are forced to squander valuable time searching for relevant engineering calculations and often end up performing calculations from scratch using methods that are offline and outdated.



PTC Mathcad Gateway Overview

PTC Mathcad Gateway is a calculation server that provides access to a company's certified engineering calculations for any user, anytime, on any device. Users can obtain quick calculation results for their specific scenarios without exposing valuable company IP.

PTC Mathcad Gateway combines the power of PTC Mathcad with the accessibility and security of the internet. Gateway's browser accessible Certified Calculation Hub gives companies the ability to empower users, within their ecosystem, with universal access to their securely hosted engineering calculations.

Command of the Message (CoM)

Current State

Engineering departments struggle to standardize and distribute certified calculations to every end user in their ecosystem without exposing sensitive and valuable IP.

- Traditional desktop software doesn't scale to tablets and smartphones
- Companies cannot control what tools and methods their suppliers, partners, contractors and customers use for engineering calculations
- Engineers struggle to identify, share and reuse engineering calculations and IP
- Calculations are filed away, stored, and misplaced
- Calculations are incomplete and difficult to understand (lack of assumptions, history, etc.)
- Engineering calculations are unmanaged and uncontrolled
- Engineers lack standardized tools and best practices to capture calculations and IP
- Critical engineering values are undefined, unmanaged, uncontrolled, and unrepeatable
- Inability to establish and enforce best practices

Negative Consequences

- Loss of IP.
 - Lack of standards and best practices to define and manage engineering calculations
 - The aging/changing workforce takes with them their knowledge and expertise
 - Inability to apply and learn from past experiences.
- Delayed and over-budget projects
 - Delays in getting new engineers fully up-to-speed and productive on design best practices
 - Users forced to use computers within the company's firewall to run calculation
 - Problems are found late in the process resulting in costly rework, errors and scrap
- Lost market share and revenue.
 - Engineering time is wasted 're-discovering' critical corporate IP
 - Engineering calculation errors result in costly rework, scrap, recalls, repair costs, etc.
 - Lost engineering effort delays time-to-market

"PTC Mathcad is reducing the overhead costs associated with preparing proposals. It freed me up to work on other bids and more creative projects"

Preston Gleason
Procurement Coordinator
DIS-TRAN Steel, LLC

"PTC Mathcad provides verification and validation of calculations providing added customer confidence in terms of results"

Jean-Marie Paille
Concrete Structures Expert
SOCOTEC

Desired State

In the desired state, PTC Mathcad Gateway provides a platform-independent tool that gives end users the ability to calculate results while restricting access to the methodologies and algorithms used (company IP) to designated content administrators.

- Leverage the power of engineering calculations without unauthorized access or distribution
- Ability to run a calculation on-the-go from a smart phone or tablet
- A single point of entry provides access to all calculation best practices
- Effective team and global collaboration leveraging access to managed content
- Increased team productivity through common, standardized tools and processes

Positive Business Outcomes

Prevent loss of IP and improve knowledge capture

- Automatically capture engineering knowledge and best practices to ensure experience and intellect is not lost
- Eliminate the possibility of physical files being shared via email, pdf, USB, etc. to unauthorized personnel

Optimize critical design and engineering processes

- Dedicated tool and best practices to institutionalize the creation and sharing of engineering calculations
- Improved product quality
- Easily search and reuse certified engineering calculations and company IP
- Increase communication and sharing of intellectual property

Reduced time-to-market

- Maximize engineering productivity and efficiency to speed development and eliminate errors
- Enable certified calculations to be run anytime, anywhere, on any device
- Reduce or eliminate the need to re-engineer critical values for next generation products
- Avoid errors and rework using proven engineering calculations and best practices

Minimum Requirements

Protection of IP

- Prevent unauthorized access to proprietary calculations and algorithms

Ease of Access

- Platform independent tool
- Internet accessible

Centralized Calculations

- Single repository for all certified calculations

Value Proposition (How We Do It Better)

IP Protect

- Prevent unauthorized access of distribution
- Worksheets reside on server
- End users unable to access them

Universal Access

- Anybody, anywhere, on any device can run a certified calculation for their specific scenario
- Platform-independent tool
- Browser accessible



Certified Calculation Hub

- Standardize calculations across, and beyond, the organization

Timely and Trustworthy Results

- Single point of entry provides access to all calculation best practices
- Increase confidence by running up-to-date, verified engineering calculations

Unit Awareness

- Take full advantage of Mathcad's unit management system within Gateway

Graphical Results

- Easily add graphs to reports generated by Gateway

Input Controls

- Limit what users can enter as inputs to a calculation
 - Dropdown lists & radio buttons can be utilized by content admins to govern input values

Discovery Questions

- How do you currently prevent your Mathcad worksheets from being freely distributed to those that should not have access to them?
- Tell me about the process and tools engineers use to create and share engineering calculations.
- What value is placed on the ability to reuse proven engineering calculations and IP?
- Is reusing proven engineering calculations part of your engineering workflow?
- How does the inability to reuse engineering calculations and IP impact time-to-market
- How do you provide secure access your company's engineering knowledge and IP?
- What business benefits would you gain if engineers could access calculations anywhere, anytime, on any device?
- How would your organization benefit by giving people outside the engineering department (internal employees, suppliers, partners, contractors, customers & even the general public) access to your calculations?
- How vital is it that all engineers see the calculations and algorithms behind the result?
- What are you doing to preserve the knowledge and intellect of the aging engineering workforce?
- How often are new calculations or modifications to existing calculations created?
- How are those updates promoted to the engineering ecosystem, internally and externally?

Metrics

- Time-to-market
- % Engineering time spent on rework
- Product development costs
- Customer satisfaction
- Quality and innovation
- R&D expenses

Metrics and Proof Points



- Industry: Energy (Subsea construction vessels)
- Country: France
- PTC Mathcad minimizes errors and miscommunication, resulting in perfectly legibility of calculations
- Technip cuts proofing and verification time by factor of 3 using PTC Mathcad



- Industry: Energy (Wind turbines)
- Country: Germany
- PTC Mathcad calculations are developed once, saved in worksheets, and re-used
- ZF Wind completes projects 90% faster using PTC Mathcad

"Once an analysis or problem has been translated or captured as a Mathcad worksheet, it is **portable and reusable by every engineer.**"

-Tony Garcia, principal stress engineer, GKN Aerospace Engineering Services

"Using the Mathcad application helps to integrate the heads of department more effectively into the project because the calculations are depicted in a pure mathematical form, rather than an abstract programming language. This makes it much easier for everyone to understand the individual steps."

-Udo Peterson, Design Engineer, MAN B&W Diesel

"We have PTC Mathcad sample files for common designs. For example, if an engineer wanted to work with a bolted joint, they could simply enter parameters like bolt size and length, and run the calculations. Since the engineer doesn't have to enter and recheck all the data common to every bolt joint, the work is done faster."

-Dr. Bob Murray, Laboratory Associate, Lawrence Livermore National Laboratory