Simulation Data Management
(What About my Spreadsheets?)

Introduction

- Vendors that provide SDM capabilities tend to focus on their existing analysis tools, not Excel, R, Python, MATLAB
- A 2018 NAFEMS survey revealed that
  - Excel is used extensively as a preliminary design tool
  - The usage of Excel is *increasing,*
  - Little consideration is given to capturing and/or re-using the data generated
- This talk will focus on a new capability from EASA that enables easy capture and sharing of users' data and spreadsheet models

What is SDM?

- "Simulation Data Management (SDM)" is a technology which uses database solutions to enable users to manage structures of simulation and process data across the ***complete product lifecycle***. SDM artifacts can be data, models, processes, documents and metadata relevant to modeling, simulation, and analysis.

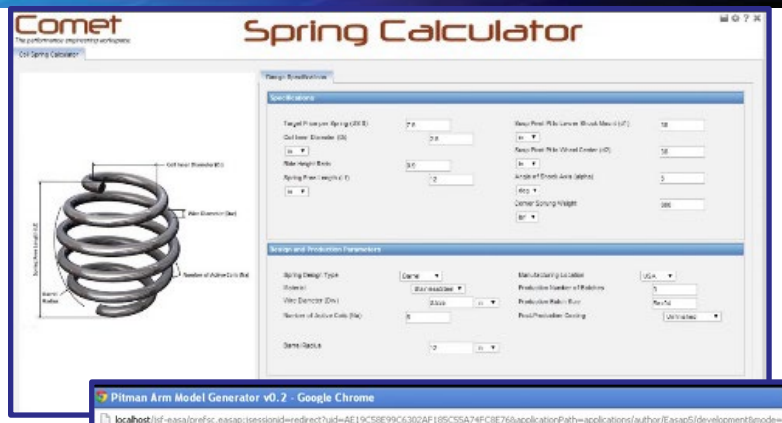
  - from https://www.nafems.org/blog/

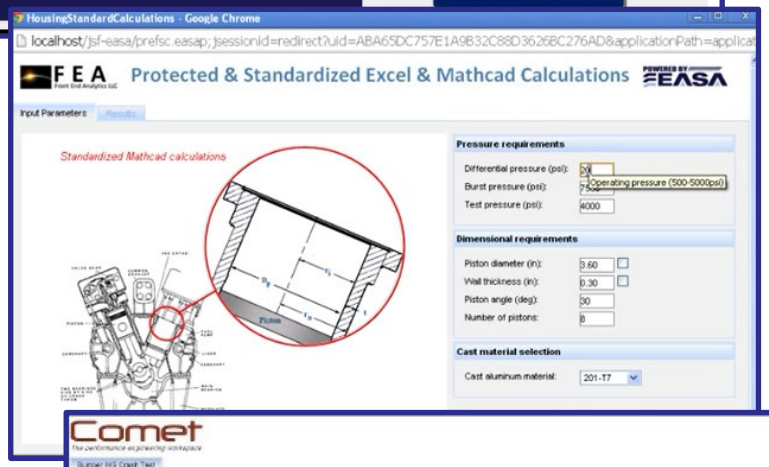
- ***"complete product lifecycle"*** – so by definition, EASA is NOT an SDM system

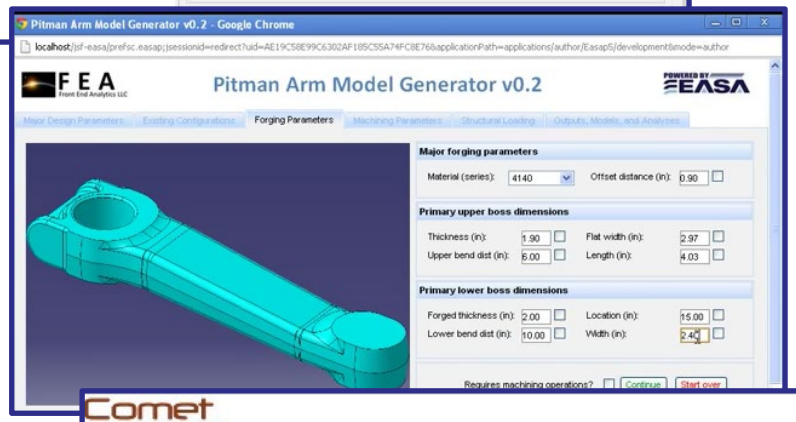
What is EASA?

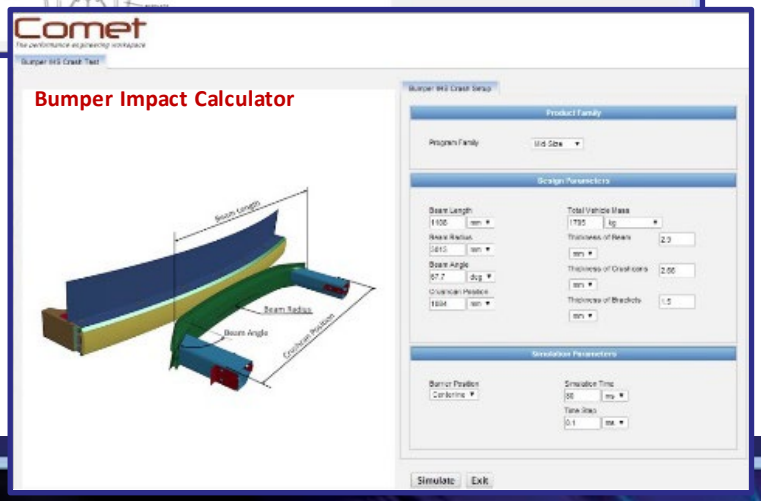
- EASA is a patented low-code development platform for "citizen developers" or "authors"
  - Enables "authors" to create and publish custom, fit-for-purpose apps
  - Leverage *existing tools* (e.g. spreadsheets and other assets) as web apps that authorized users can use on any device
  - Integrate multiple tools into a single app, simplifying and automating work flows
  - Integrate model-based apps into other enterprise systems
- Originally developed as an "*appification*" platform to deploy engineering and scientific models within an enterprise

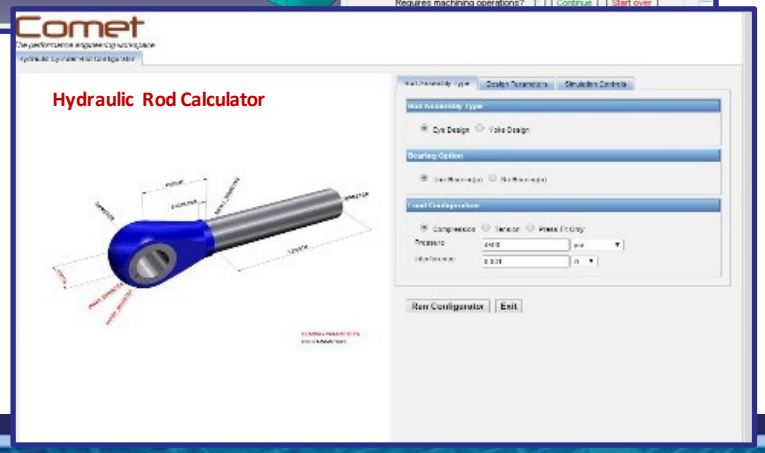
Some examples…











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- Today, by far the most common use-case is to deploy critical spreadsheets as enterprise-class web apps
- New areas include deployment of Machine Learning models

A Sample of Customers Across Industries

Manufacturing

- CAT CATERPILLAR
- Gardner Denver
- GE
- GKN DRIVELINE
- JOHN DEERE

Pharmaceutical

- Pfizer
- Bristol-Myers Squibb
- Lilly
- BAYER

Chemicals & Materials

- CORNING
- P&G
- LafargeHolcim
- APPLIED MATERIALS

Technology

- Hewlett Packard Enterprise
- hp
- NCR
- Schneider Electric

Financial

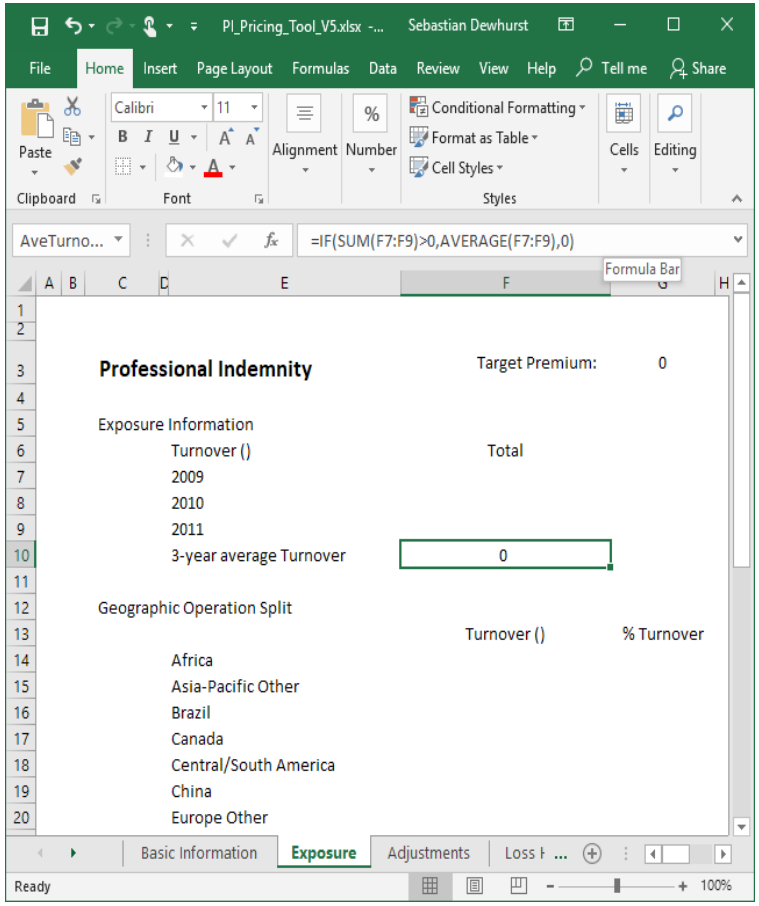
- AIG
- MARSH
- SOCIETE GENERALE
- VOYA FINANCIAL
- ZURICH

Similarities between EASA and SDM

- On the surface, it looks like EASA does some of the things that an SDM system does...
  - Capture of local data in a central searchable environment
  - Authoring and management of repeatable simulation processes
  - Assembly of models and load cases from 1 to 1000s of simulations
  - Launching simulations in an HPC environment
  - Sorting through data to get design insights
  - Report creation and comparison of …. test results
  - Traceability of simulation pedigree from model to report
- But – this is all within the context of encapsulating processes as (intentionally restrictive) web apps

- EASA makes Excel (& other models) into secure web apps

BEFORE



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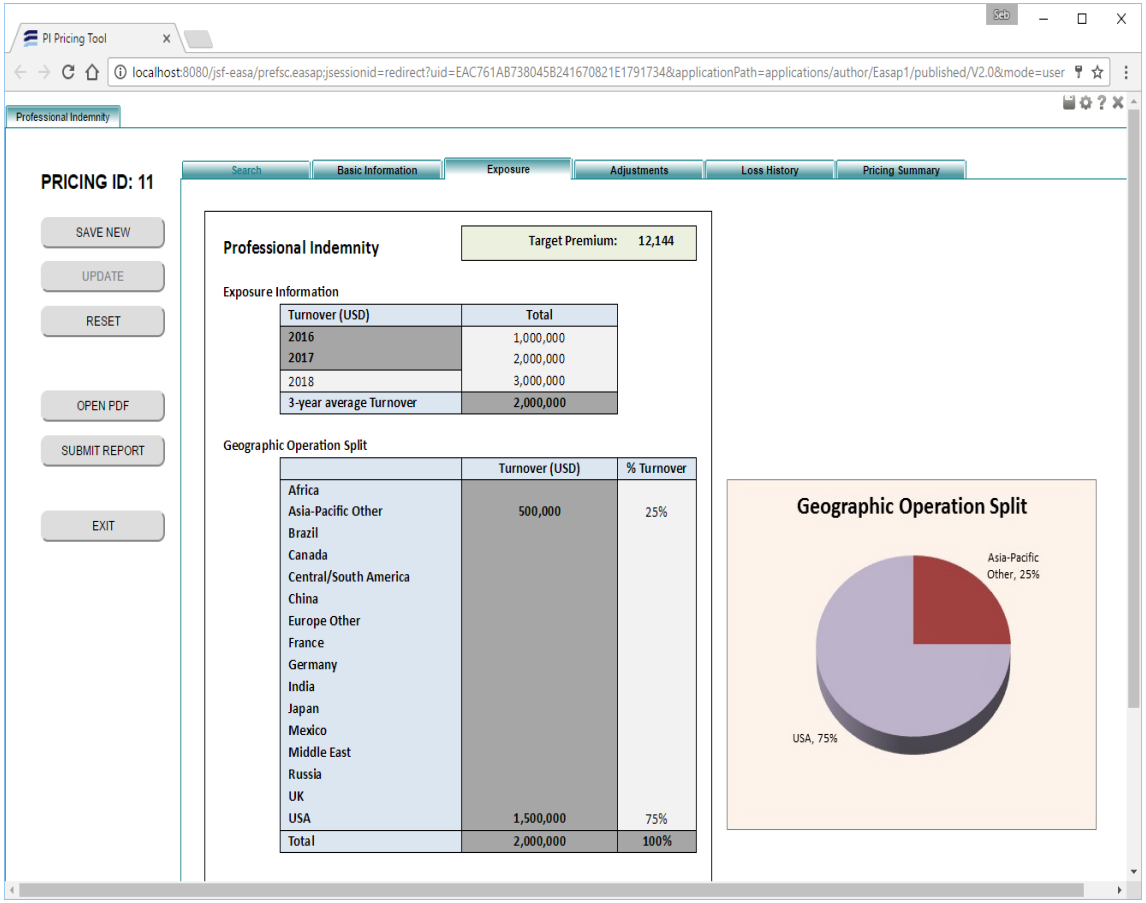
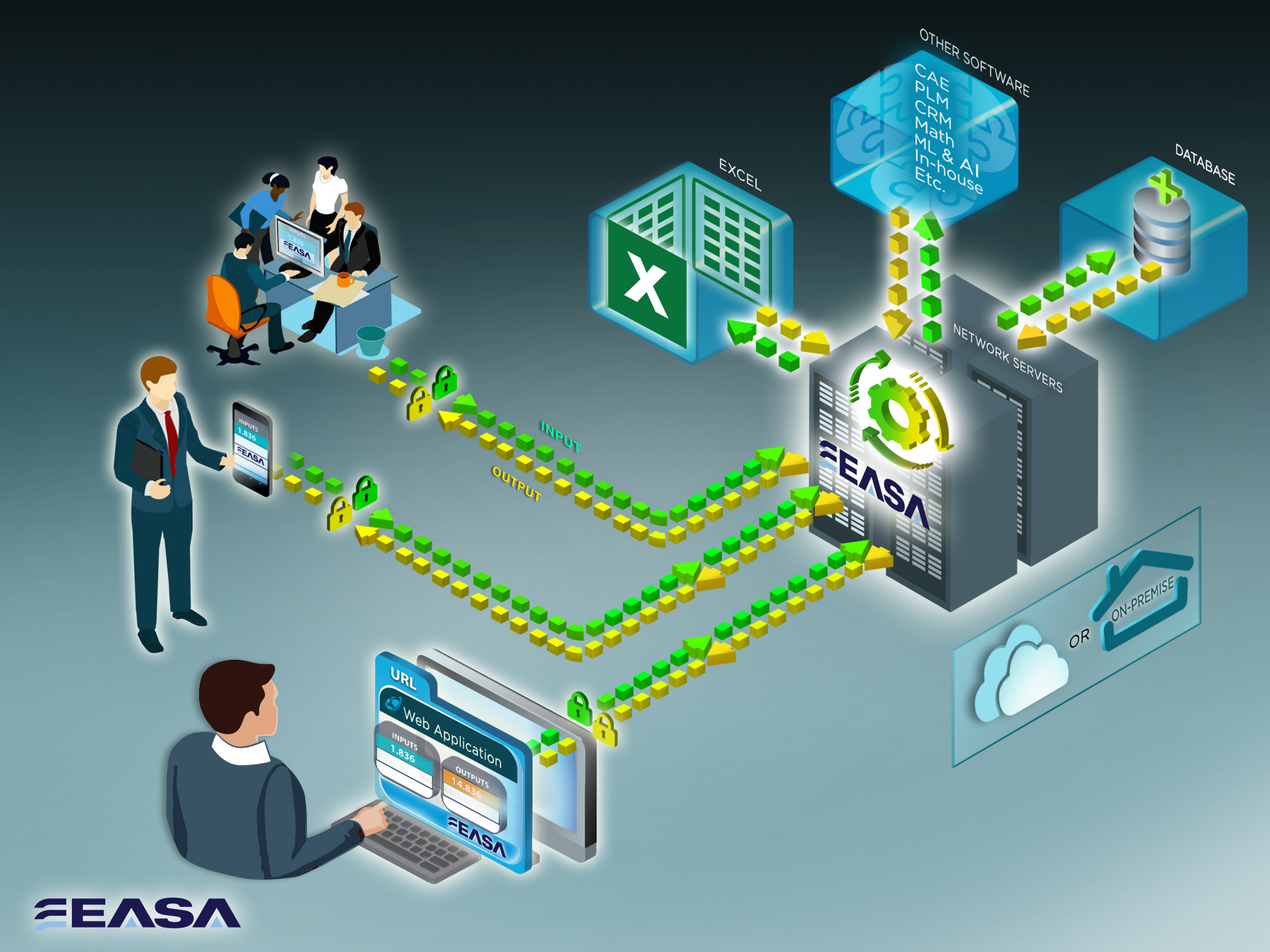
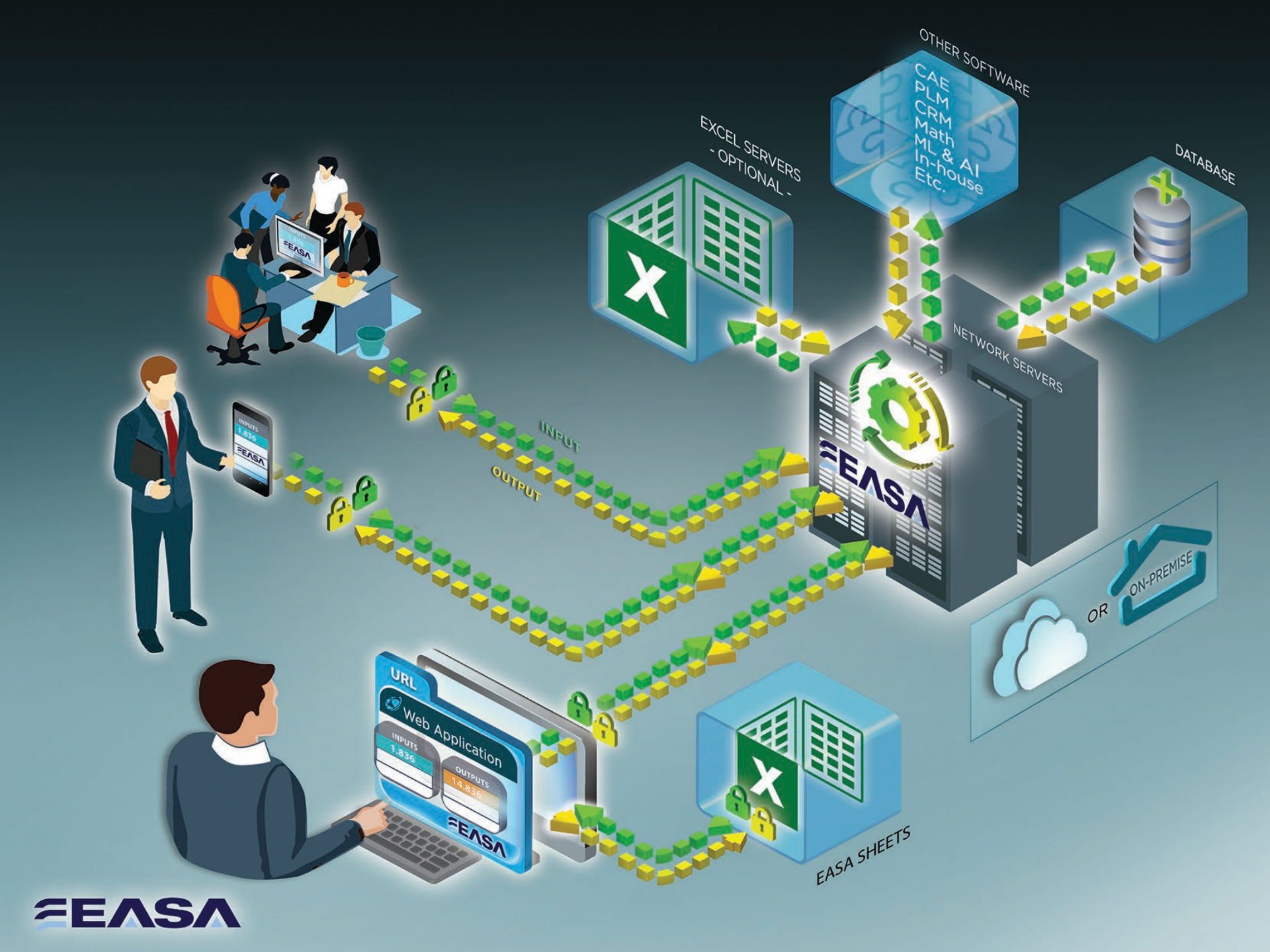


What is EASA?

- EASA makes Excel (& other models) into secure web apps
- But what if you don't have time to build a web app?
  - *"EASA has been great – we have rapidly deployed nearly 30 of our most critical spreadsheets in 2 years. But we can't justify building web apps for 300 less critical spreadsheets. Can you help?"*
- EASA Sheets (included in EASA 6.0)
  - Easy to add spreadsheet models to a controlled process - demo
  - Eliminates "Save As" version proliferation, captures models and data
  - For larger companies, can be incorporated into a larger SDM strategy
  - For smaller companies, can be the first step towards SDM


OTHER SOFTWARE
CAE
PLM
CRM
Math
ML & AI
In-house
Etc.
EXCEL
DATABASE
NETWORK SERVERS
INPUT
OUTPUT
INPUTS
1.836
EASA
URL
Web Application
INPUTS
1.836
OUTPUTS
14.836
OR
ON-PREMISE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EASA SHEETS
EASA

Demonstration