



ptc

# LIVEWORX

A NEW ERA IN PRODUCT LIFECYCLE INNOVATION

SESSION ID: CA1104C

# UPDATING YOUR CREO MORE FREQUENTLY

**Matt Burr**

*CAD Administrator at Solar Turbines Incorporated*

Wednesday, May 17, 2023

LIVEWORX.COM | #LIVEWORX

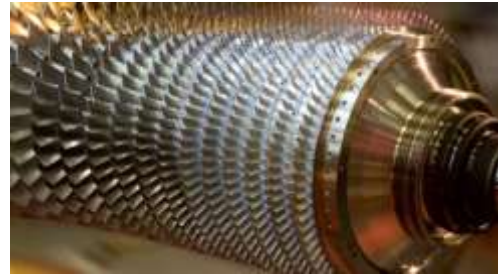
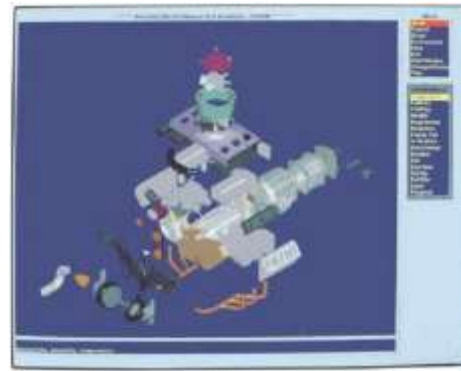
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# AGENDA

- About Me
- About Solar Turbines
- What is a Gas Turbine Engine
- RECAP: Legacy and New Upgrade Strategy
- Our Environment
- Questions

# ABOUT ME

- Graduated SUNY Morrisville 1992
- Using PTC Software since 1993
  - Started with PTC Pro/ENGINEER 10.0
- Other PTC Software Used
  - PTC Pro/PDM
  - PTC Pro/Intralink
  - PTC Windchill PDMLink
  - PTC Creo View
  - PTC Creo Illustrate
- Experience
  - Designer/Detailer – 9 years
  - System Administrator – 21 years
    - CAD Administrator
    - Software Deployment
    - Software Developer
    - Trainer



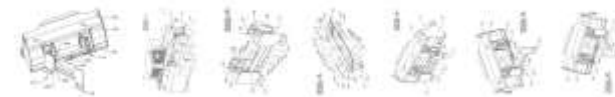
## Patents

### Side dump coupler assembly US 638822 B1

#### ABSTRACT

The present invention includes a coupler assembly connected between a standard bucket and a work machine. The coupler assembly converts the standard bucket to a side dump bucket. The conversion is possible through the use of a pivot assembly and actuating device. The pivot assembly includes an interface portion that is releasably connected to the work machine and a base portion. The base portion is pivotally and releasably connected with the interface portion via pins. The actuating device is connected between the interface portion and the base portion. The removal of one of the pins allows for the pivotable movement of the base portion outwardly and laterally via the actuating device to establish an angular relationship between the bucket and the work machine for dumping material within the bucket to one side of the work machine. Additionally, the coupler assembly is designed so that the actuating device may be easily relocated so that pivotable movement of the base portion will material within the bucket to be dumped to another side of the work machine opposite the one side.

#### IMAGES (7)



# ABOUT SOLAR TURBINES INCORPORATED

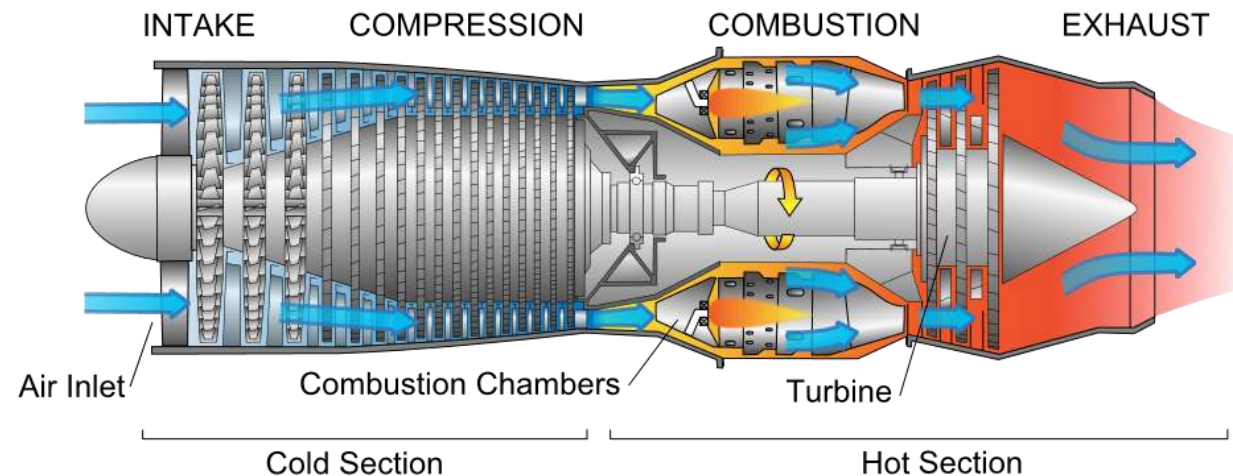
- Solar Turbines Incorporated is headquartered in San Diego, California, USA
- Subsidiary of Caterpillar Inc.
- One of the world's leading manufacturers of industrial gas turbines, with more than 16,000 units and over 3 billion operating hours in more than 100 countries.
- Solar manufactures the world's most widely used family of mid-sized industrial gas turbines, ranging from 1 to 39 megawatts.
- Solar's customers put the company's products to work in many areas
  - Production
  - Processing and pipeline transmission of natural gas and crude oil
  - Generation of electricity
  - Thermal energy for processing applications
- Solar Turbines employs more than 8,000 employees worldwide





# WHAT IS A GAS TURBINE ENGINE?

- A gas turbine engine is a type of internal combustion engine. Essentially, the engine can be viewed as an energy conversion device that converts energy stored in the fuel to useful mechanical energy in the form of rotational power. The term “gas” refers to the ambient air that is taken into the engine and used as the working medium in the energy conversion process.
- This air is first drawn into the engine where it is compressed, mixed with fuel and ignited. The resulting hot gas expands at high velocity through a series of airfoil-shaped blades transferring energy created from combustion to turn an output shaft. The residual thermal energy in the hot exhaust gas can be harnessed for a variety of industrial processes.



**VIDEO HERE**

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# RECAP: LEGACY VS. NEW UPGRADE STRATEGY

## ■ Legacy

- Long upgrade projects (9-12 months)
  - **Lots of testing**
  - **“Thorough” administrator and user testing**
  - Selected a build that would be 9+ months old before it was put into production
  - Bugs identified in testing
    - May or may not change builds based on discovered bugs
  - Awaiting fixes could stall upgrade projects for months
- Once in production ...
  - We had a “set it and forget it” mentality
  - **18+ months** between build updates
  - We may never put PTC Creo Parametric bug fixes into production
  - Lots of incremental customization changes throughout the lifecycle

## ■ New

- Initial upgrade project 6-9 months
  - **Lots of testing**
  - **“Thorough” administrator and user testing**
- Once in Production ...
  - Proactive upgrade to new maintenance release **every 3 months**
    - Transitioned from incremental changes to “block changes” or “product increments”
    - Minimized incremental changes

# RECAP: WHY THE NEW UPGRADE STRATEGY?

- Near the end of Solar's PTC Creo Parametric 3.0 Implementation ...
  - Stable and mature environment
  - Users started reporting performance issues with PTC Creo Parametric 3.0
    - Root cause identified as Windows patch and maintenance release combination
      - Newer maintenance release of PTC Creo Parametric 3.0 did not exhibit the same behavior
      - PTC Creo Parametric 4.0 did not exhibit the behavior
        - Upgrade Creo 3.0 maintenance release or upgrade to PTC Creo Parametric 4.0?
  - Over time, the "Stable" environment
    - Other things were changing
      - Window updates
      - Hardware changes
      - Graphics Drivers
      - ...
    - To fix other issues ...
      - Multiple PTC Creo Parametric builds in the eco-system

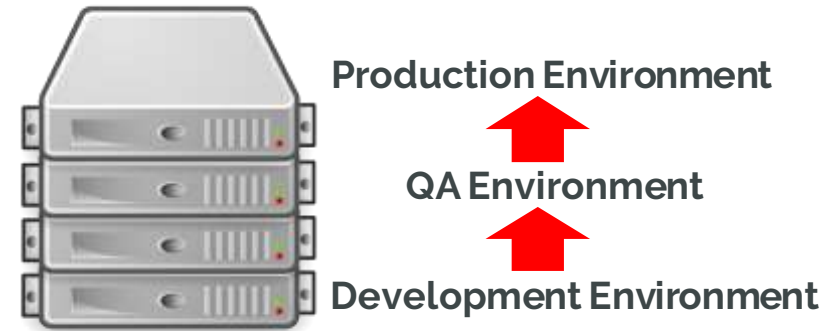


# RECAP: WHY WOULDN'T WE ADOPT A NEW UPGRADE STRATEGY?

- What if we miss something in testing?
  - Don't we already miss things?
    - What would be new?
- Slow and steady wins the race
  - Agile methods are common for other internal software development
  - Why not in our primary design tool?
- But what about all the changes we would need to do?
  - Stable environment, right?
    - Everything else is changing around us
      - Windows
      - Graphics Drivers
      - Hardware
      - ...
- We needed to be more proactive in upgrading
  - Our "stable" environment wasn't that stable

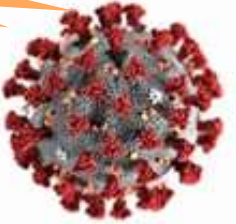
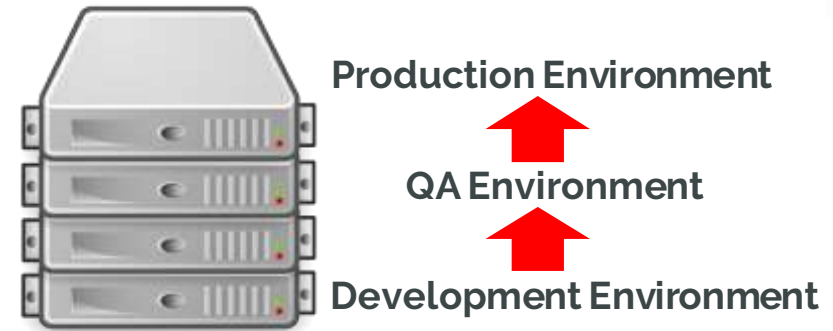
# RECAP: HOW WE MADE IT HAPPEN

- Took inventory of everything prior to PTC Creo Parametric 4.0 deployment
  - Config option master lists
  - Reviewed internal documentation
  - Was our launch mechanism working?
  - Nothing was “off the table”
- Defined Distinct Testing Environments
  - Development
  - QA
- Combining build with customizations updates using block changes (Product Increment)
  - Improved planning for updates



# RECAP: HOW WE MADE IT HAPPEN (AND STILL USING IT)

- Took inventory of everything prior to PTC Creo Parametric 7.0.0 deployment
  - Config option master lists
  - Reviewed internal documentation
  - Was our launch mechanism working?
  - Nothing was “off the table”
- Defined Distinct Testing Environments
  - Development
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- Combining build with customizations updates using block changes (Product Increment)
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# RECAP: IS IT WORKING?

- Yes ...
  - It is a learning curve and it isn't always easy
- It does create more work for system administration ... but
  - Smaller chunks of work
    - Reduction in the number of tests run on maintenance releases vs. major release
  - It's on the calendar
    - No guessing when the next update is going to be
    - We're scheduling out to 2021 ...
- It helps to set obtainable goals
  - Incremental improvements to our launch program
    - Multiple language support
    - Multiple sessions connected to Windchill

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  - It's on the calendar
    - No guessing when the next update is going to be
    - We're scheduling out ~~2025~~1 ...
- It helps to set obtainable goals
  - Incremental improvements to our launch program
    - Multiple language support
    - Multiple sessions connected to Windchill

Learning how to leverage Agile methodologies more

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# WHAT HAVE WE SEEN SINCE MAKING THE CHANGE?

- More stability in the environment
  - Yes, we have more change, but we are seeing fixes in action
  - High ticket counts at initial release (as expected) with lower counts over time
- Better user feedback
  - Reporting issues
  - More user engagement
- Improved bug fix timeline
  - Users are seeing the issues resolved and that pays dividends
  - PTC and customer partnership which is helping us drive to solutions faster
    - Able to say “This is when we will put that into production”





# QUESTIONS?

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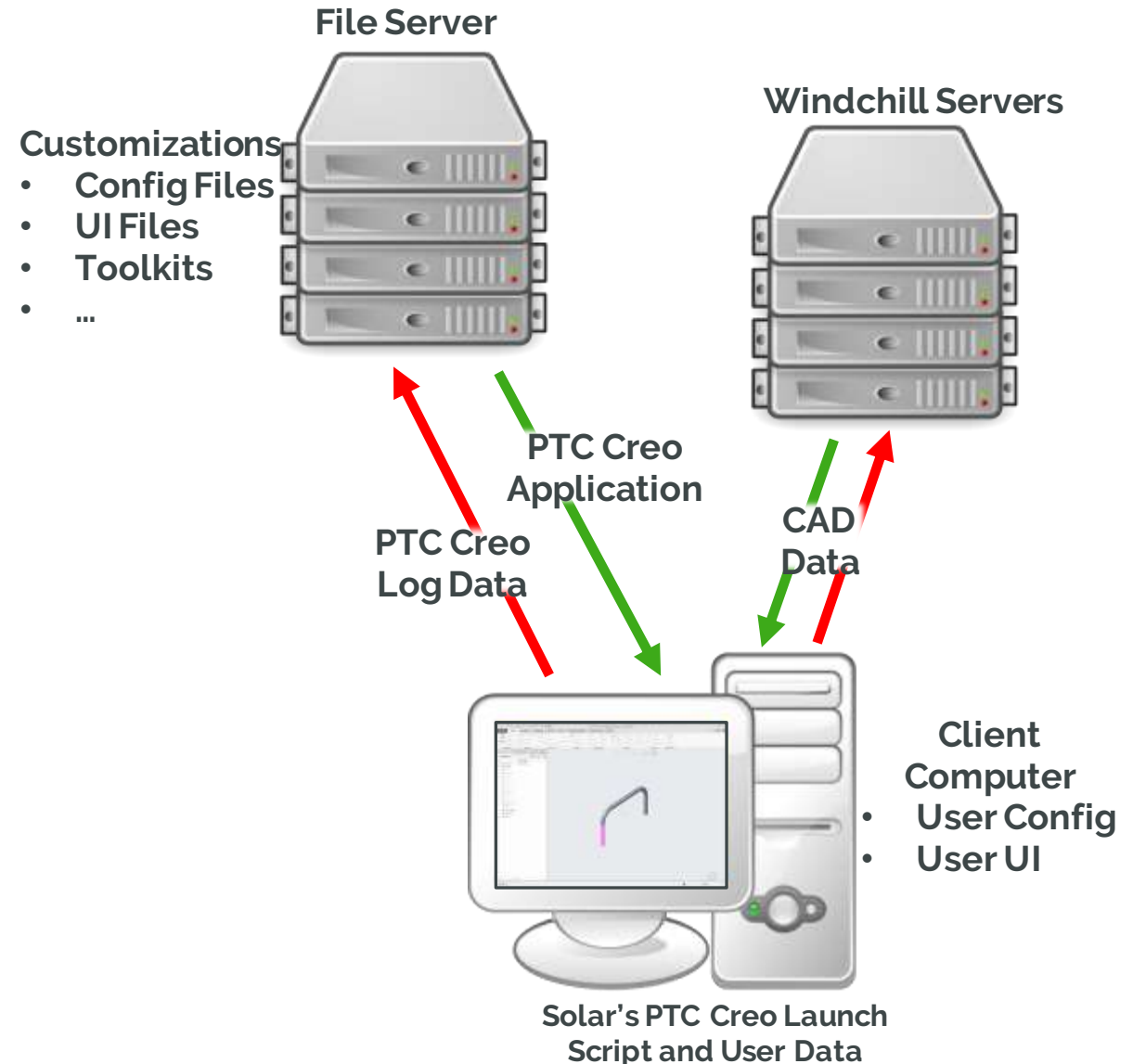
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# OUR ENVIRONMENT

- PTC Windchill PDMLink 12.0.2.10
  - Global deployment to CAD and non-CAD Users
- PTC Creo View 9.1.0.0
- PTC Creo Parametric 7.0.10.0
  - Global deployment
  - 11 different servers and locations
  - 1000+ unique users

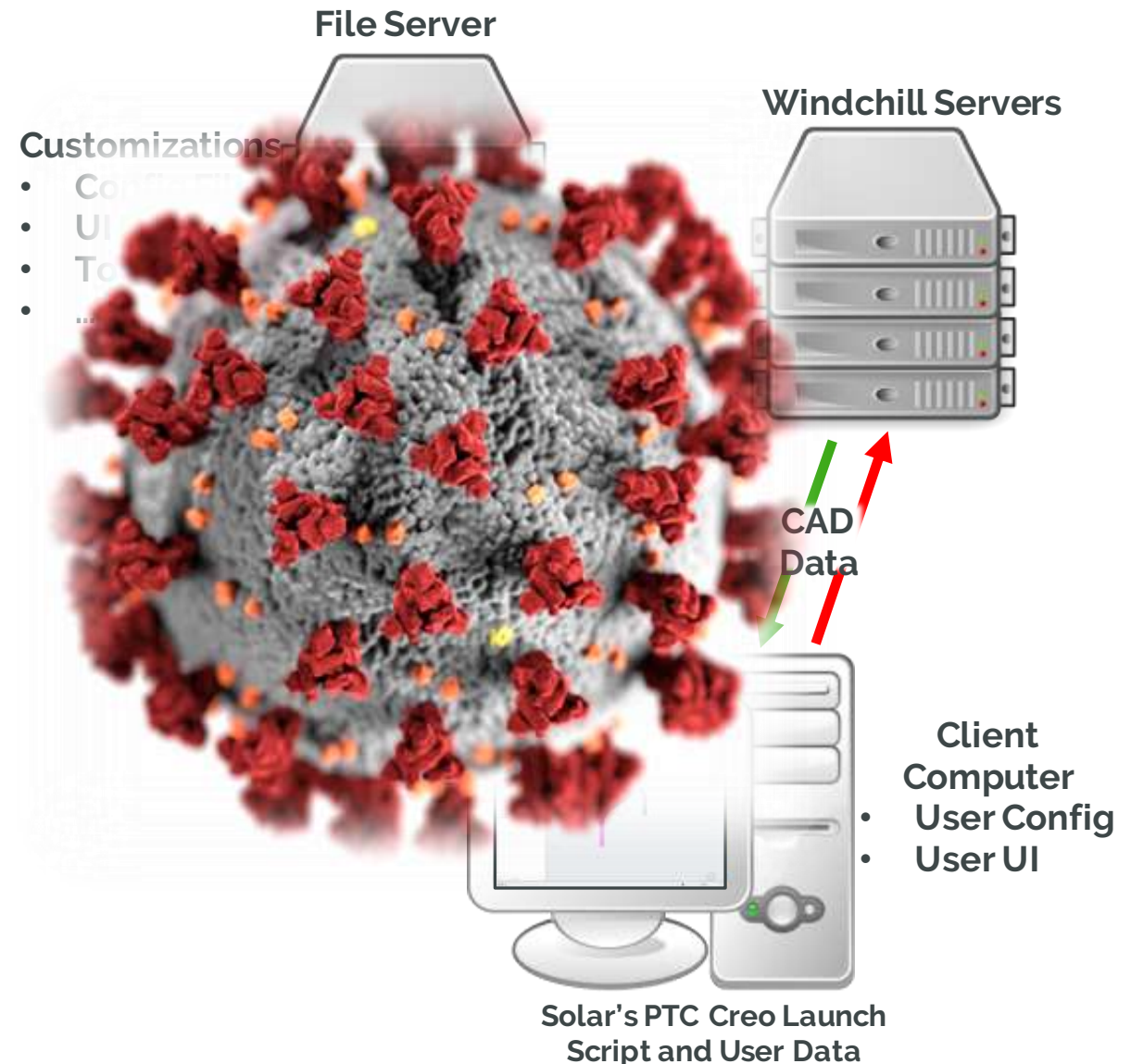
# OUR PTC CREO PARAMETRIC DEPLOYMENT

- Common (Network) installation for all client machines
  - Customizations remain on the server
  - “Small” launch script and user data remains on the client machine
  - Session log data collected and stored on the server
- PTC Creo and our customizations are in separate folders
  - Easy to change builds
  - Easy to share customizations with external vendors
  - Allows an out of the box experience



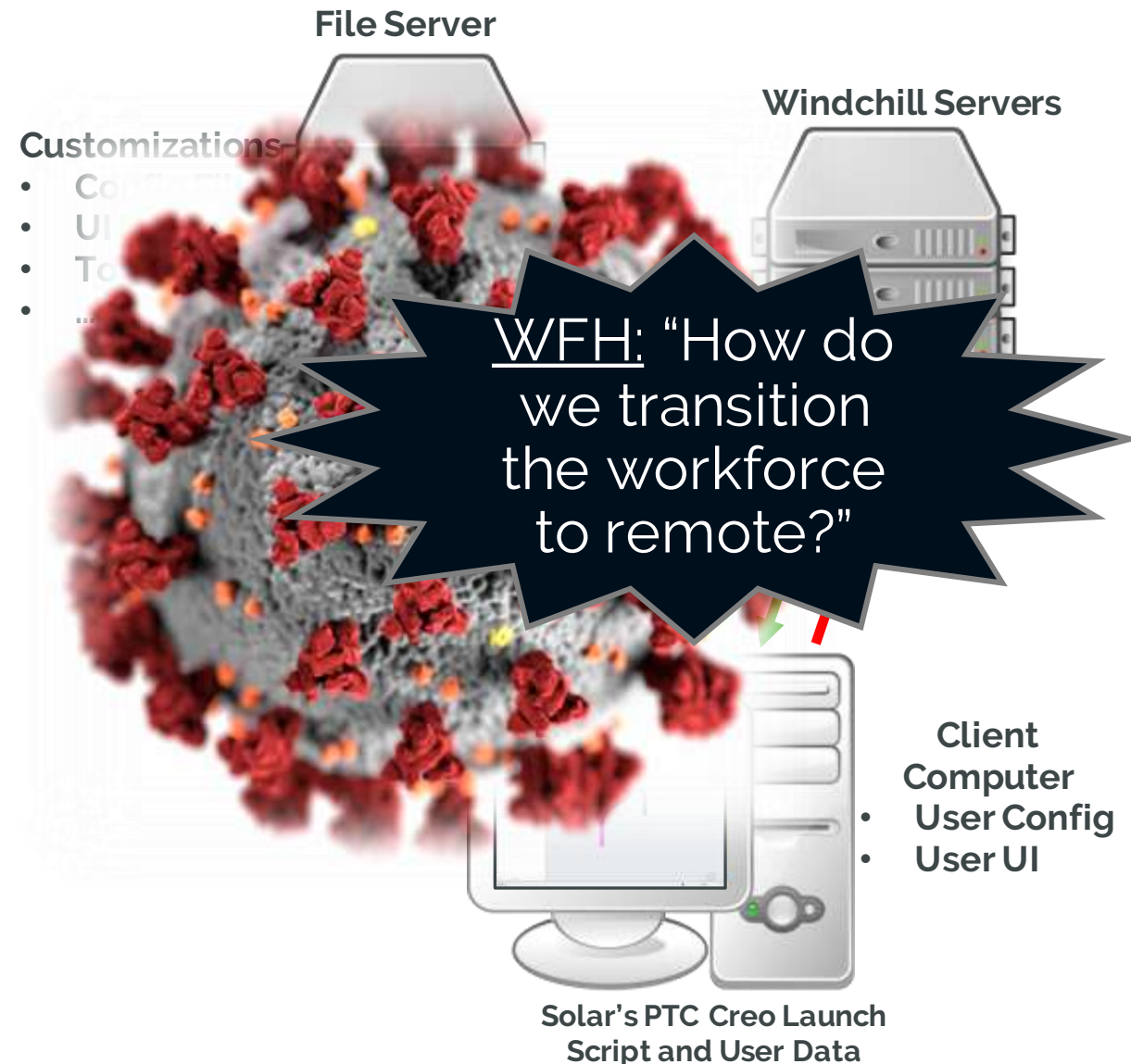
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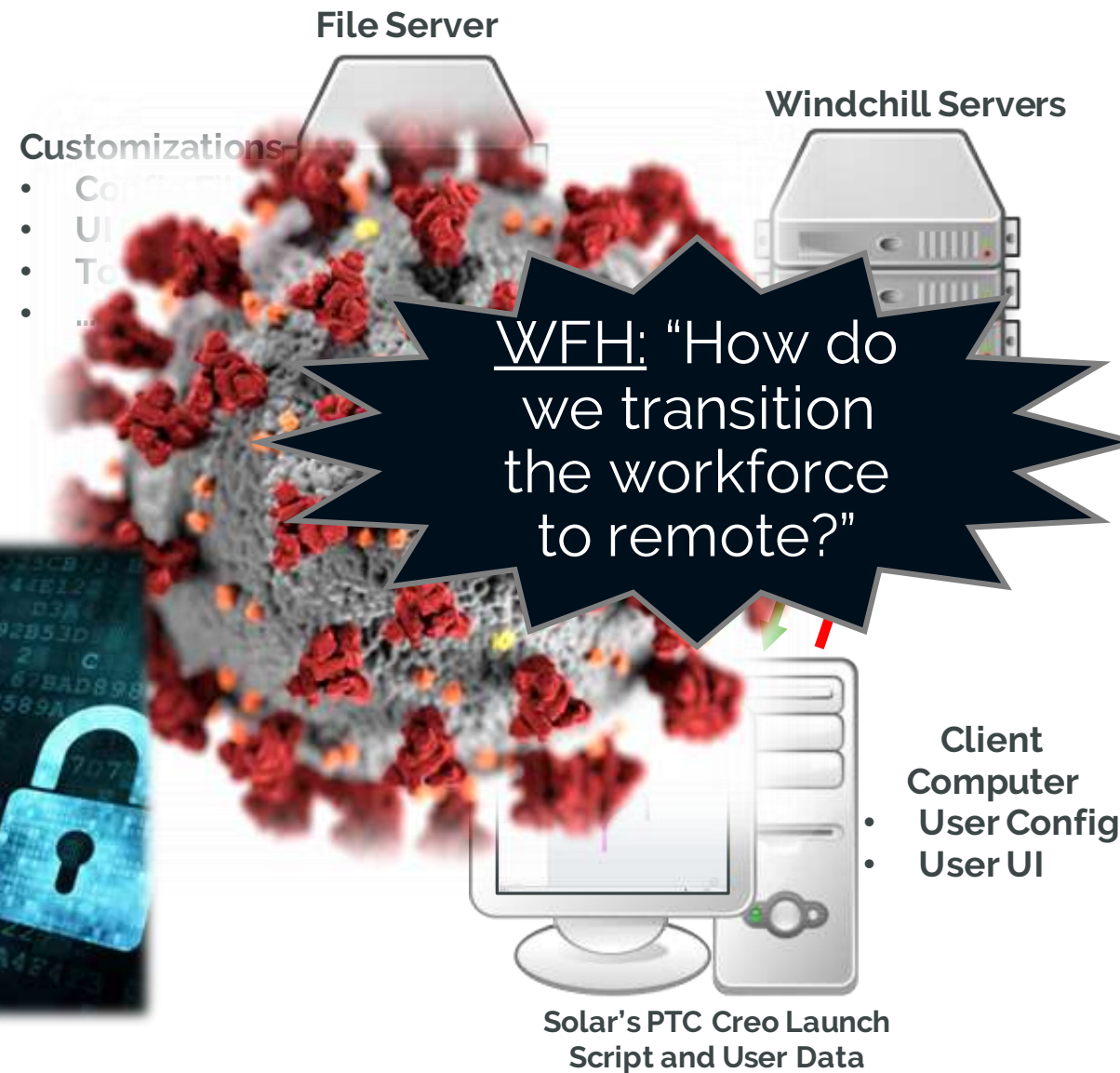
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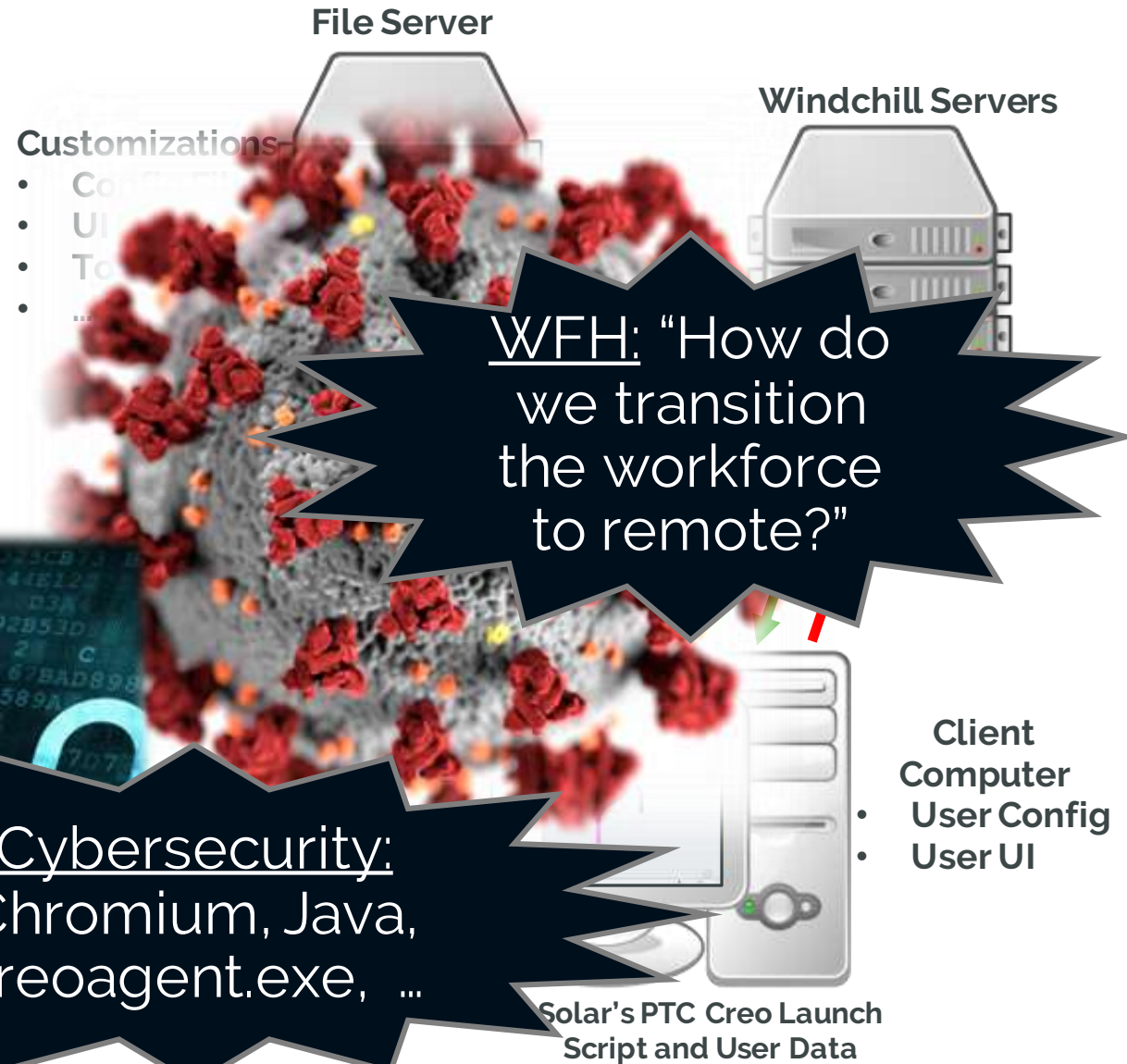
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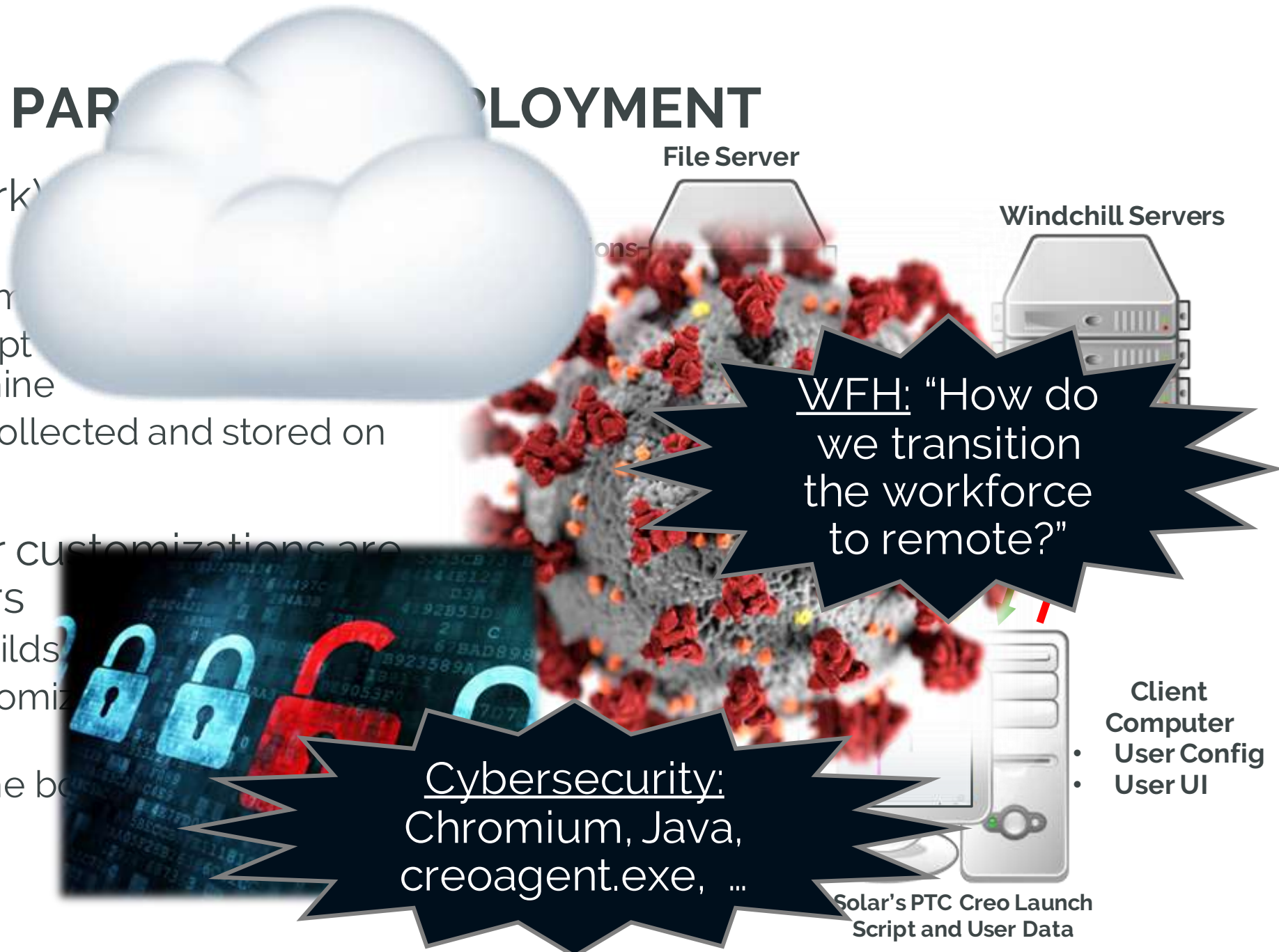
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Cloud: "What is your cloud initiative?"

Windchill Servers



WFH: "How do we transition the workforce to remote?"



Cybersecurity: Chromium, Java, creoagent.exe, ...



Client Computer  
• User Config  
• User UI

Solar's PTC Creo Launch Script and User Data

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Cloud: "What is your cloud initiative?"

Other Issue 1

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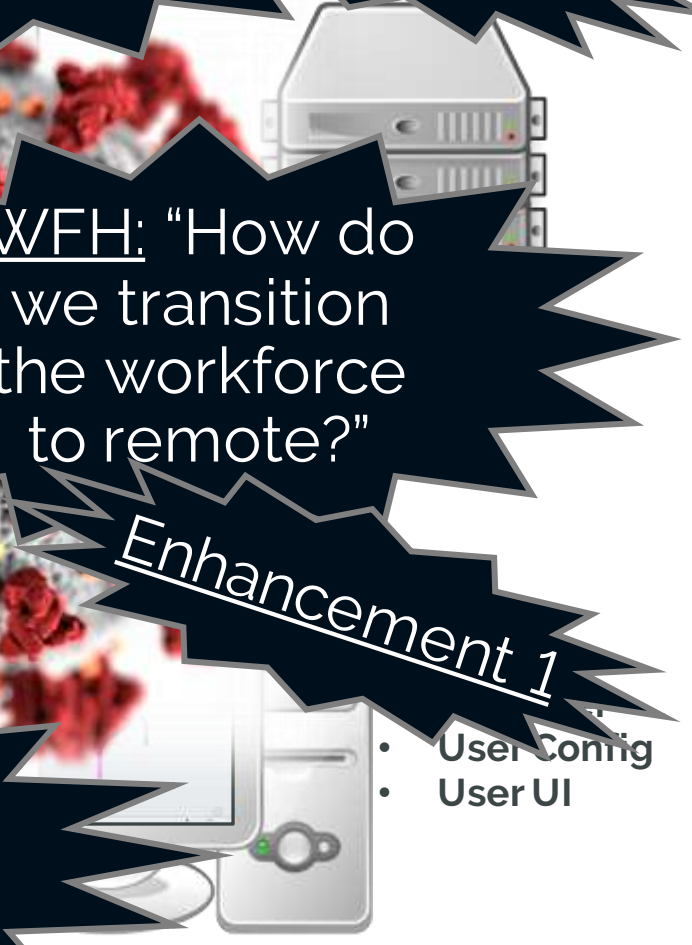
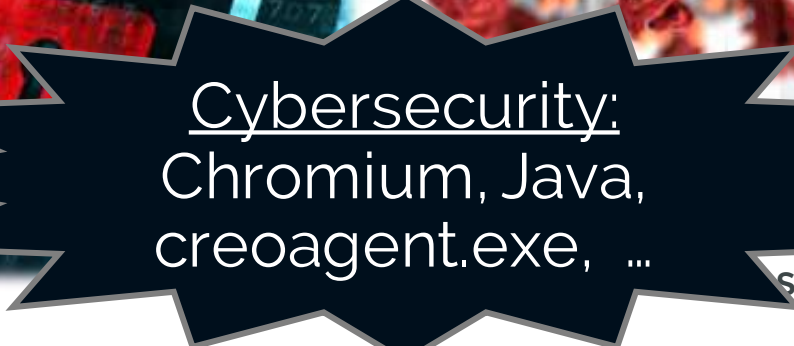
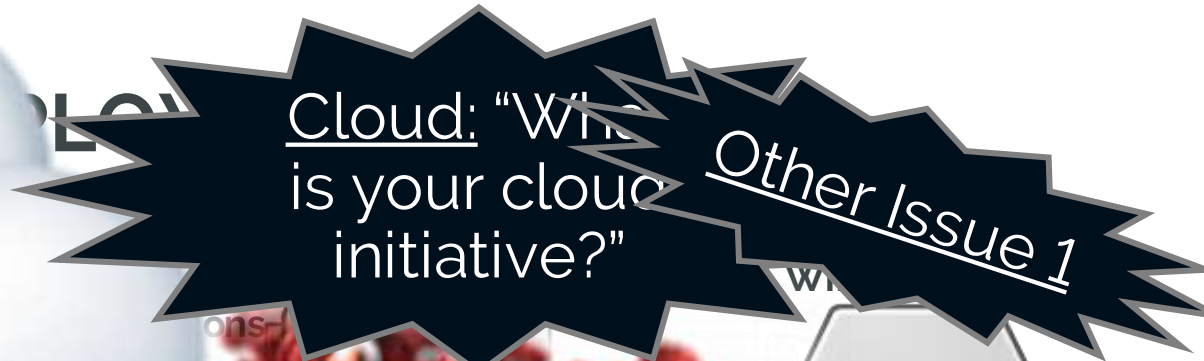
- Client Computer
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Solar's PTC Creo Launch Script and User Data



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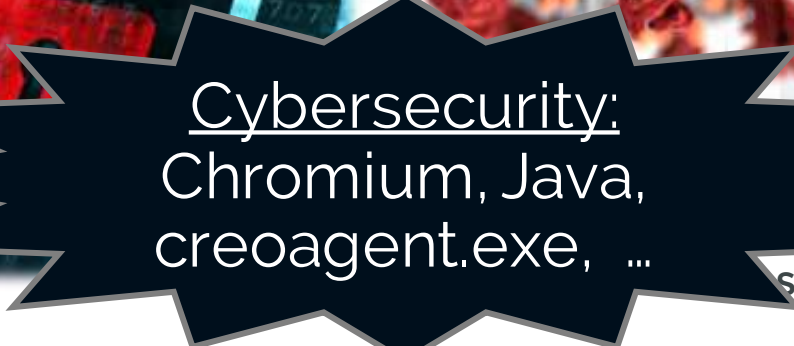
Other Issue 1



Other Issue 2

we transition the workforce to remote?

Enhancement 1



Cybersecurity:  
Chromium, Java,  
creoagent.exe, ...



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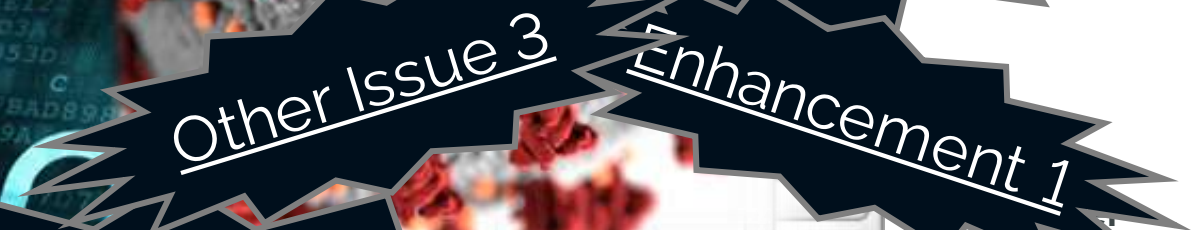
Cloud: "What is your cloud initiative?"

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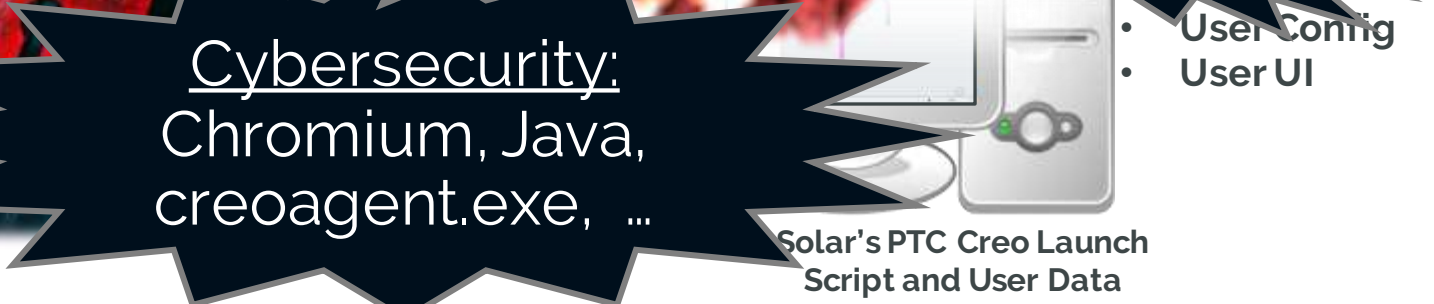
Other Issue 2

we transition the workforce to remote?"



Other Issue 3

Enhancement 1



Cybersecurity: Chromium, Java, creoagent.exe, ...

Solar's PTC Creo Launch Script and User Data

- User Config
- User UI

# OUR PTC CREO PAR

- Common (N client machine)
  - Customization
  - "Small" launch on the client
  - Session log on the server
- PTC Creo are in separate
  - Easy to change
  - Easy to share vendors
  - Allows an o



Cloud: "What is your cloud?"

Other Issue 1

Other Issue 2

Transition workforce remote?"

enhancement 1

chromium, Java, creoagent.exe, ...

Solar's PTC Creo Launch Script and User Data

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A cluster of red and grey particles, resembling a molecular or atomic structure, located in the center-right area of the slide.

Cloud: "What is your cloud initiative?"

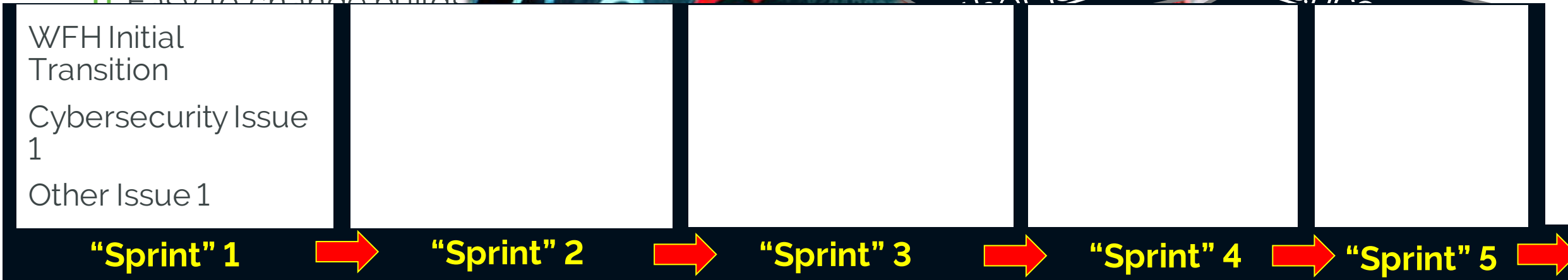
Other Issue 1

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Other Issue 3

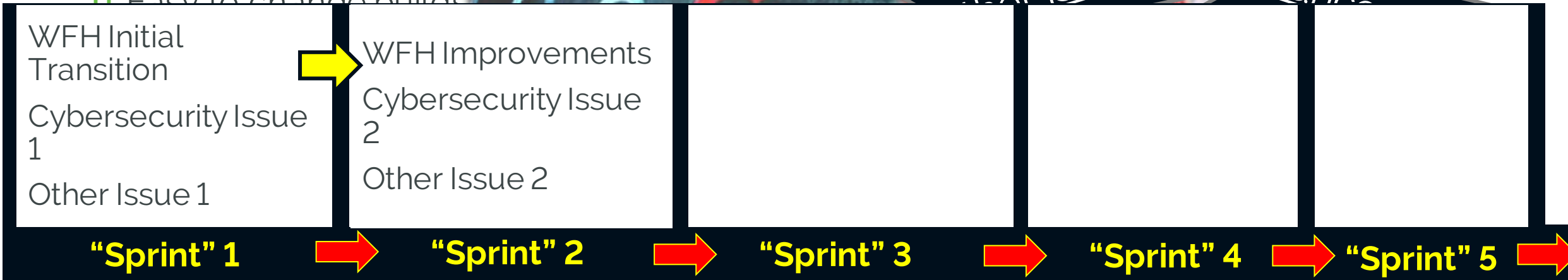
Enhance





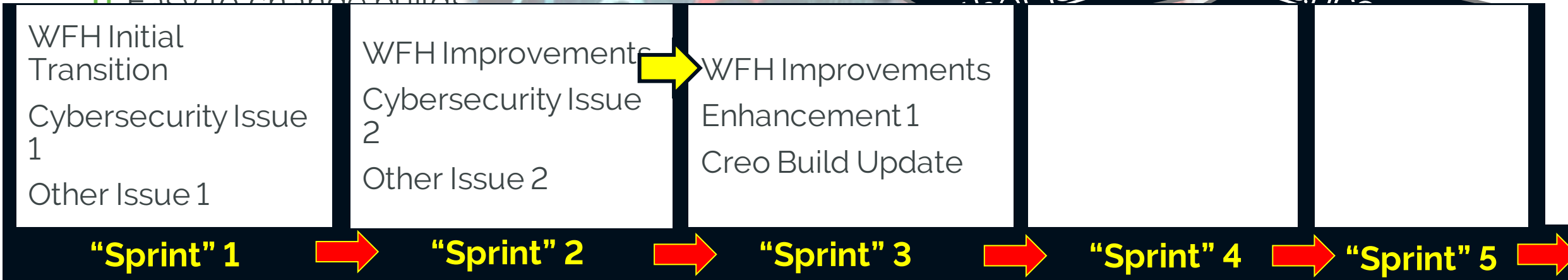
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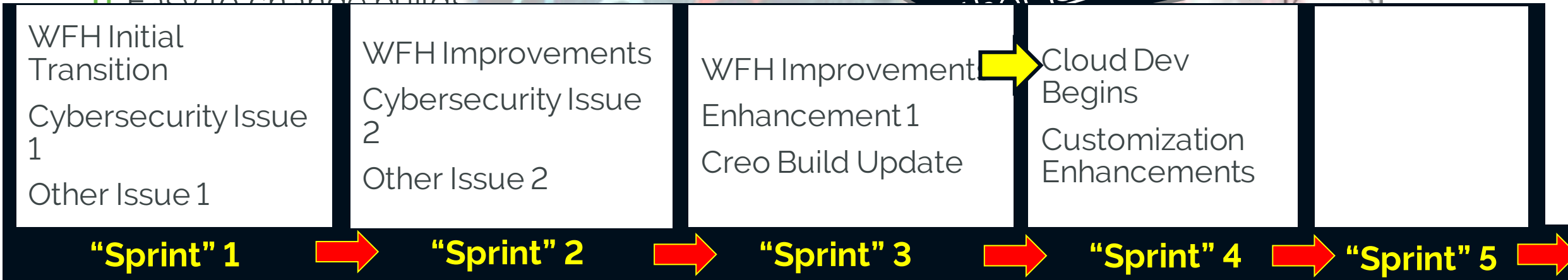
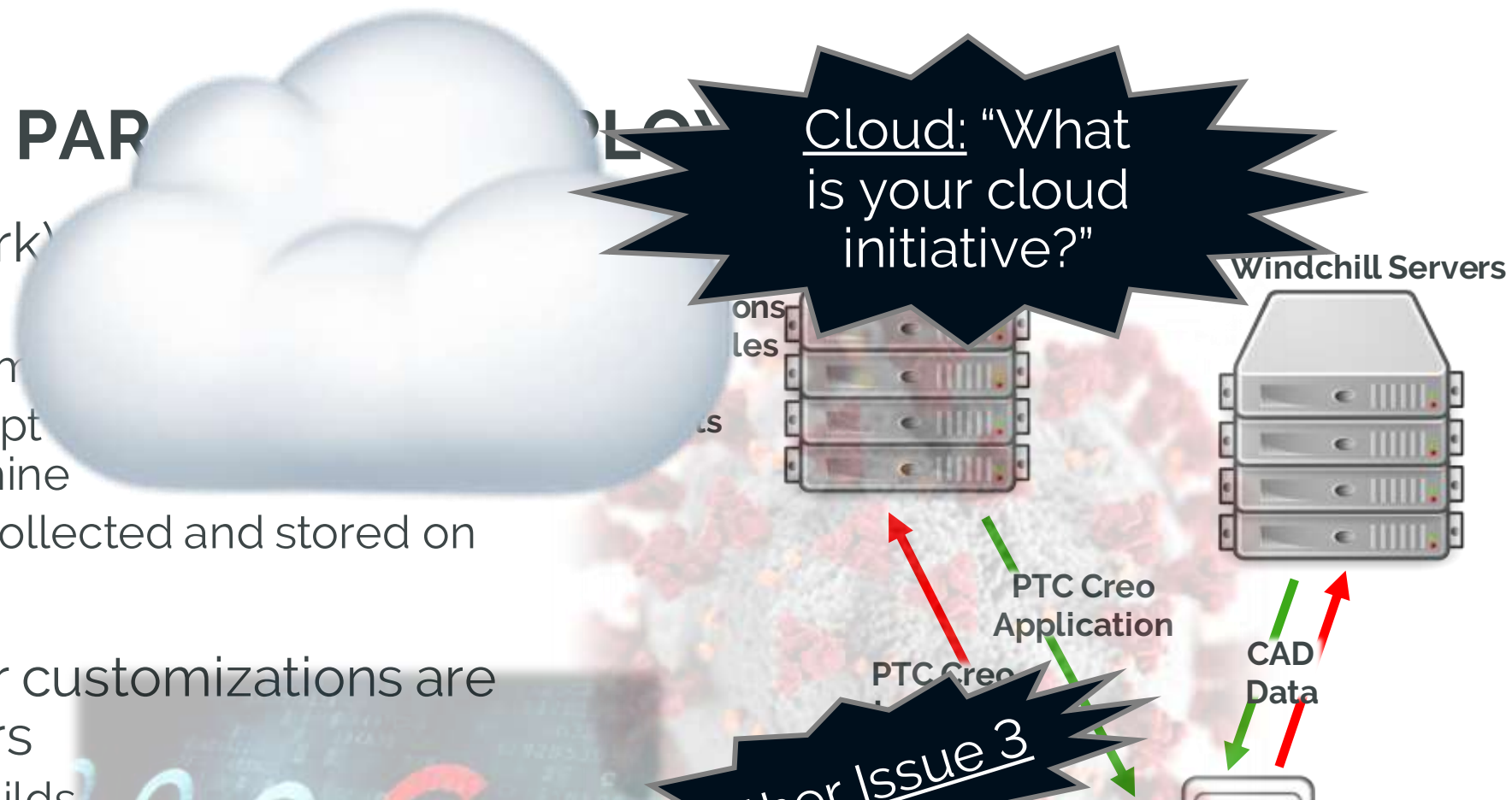
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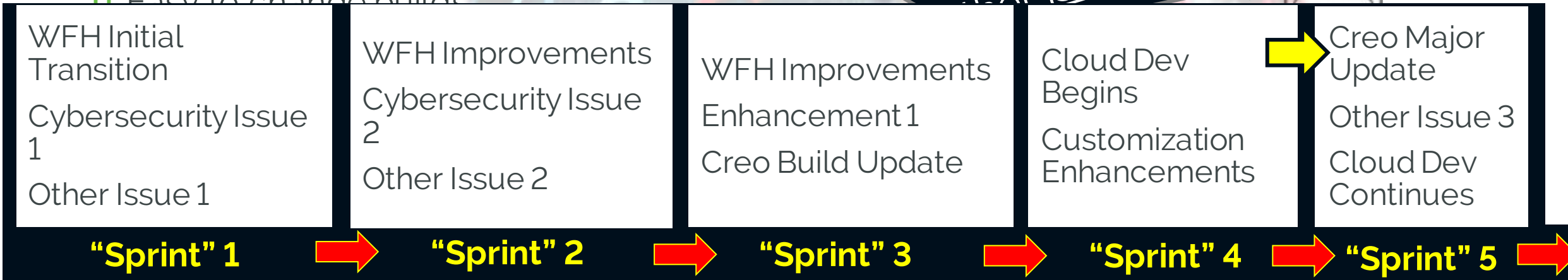
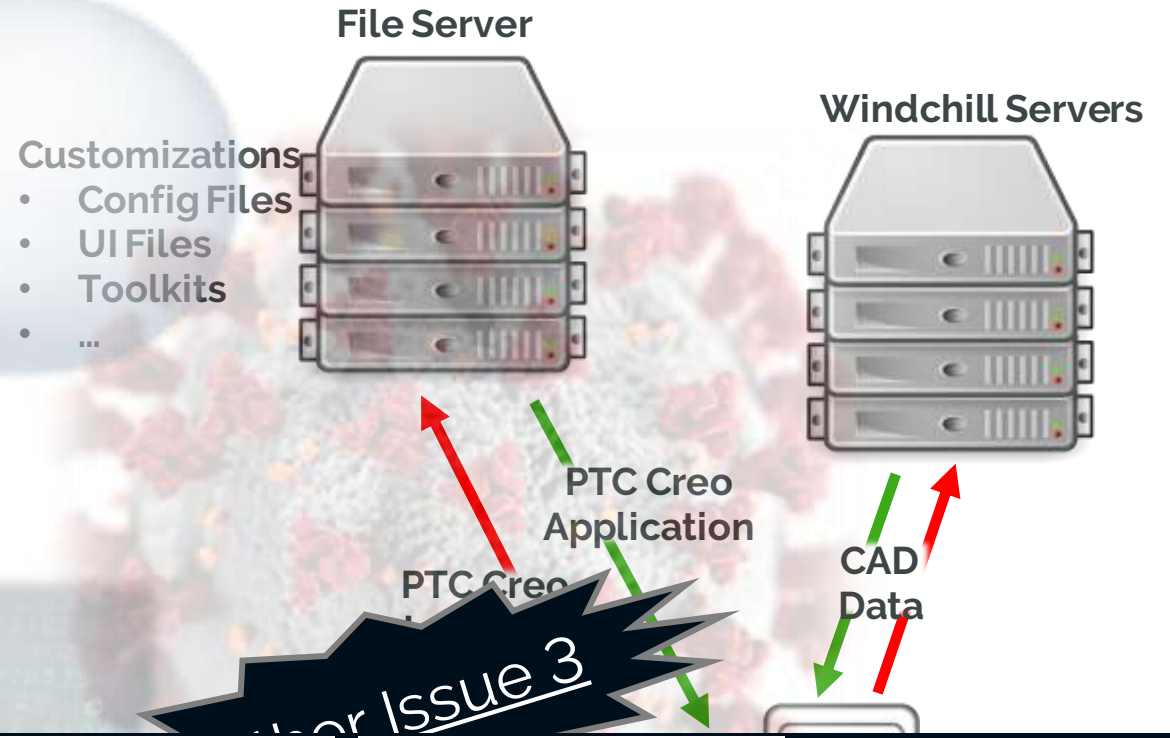
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# OUR PTC CREO PARAMETRIC DEPLOYMENT

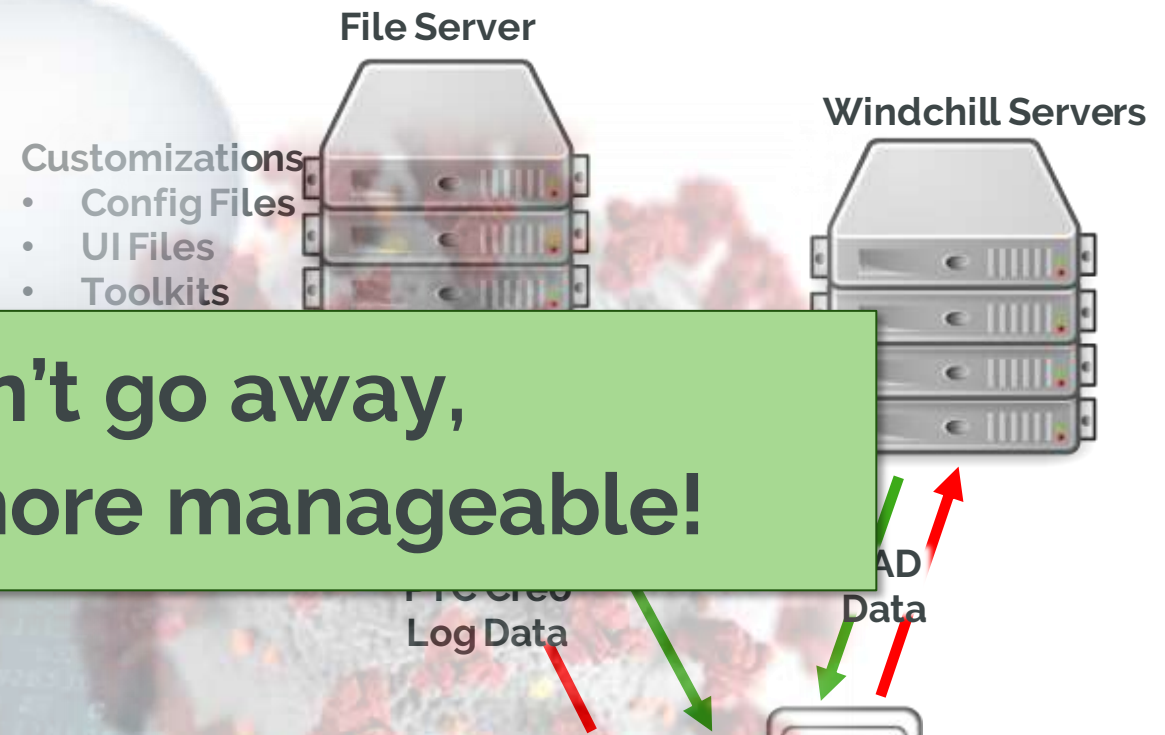
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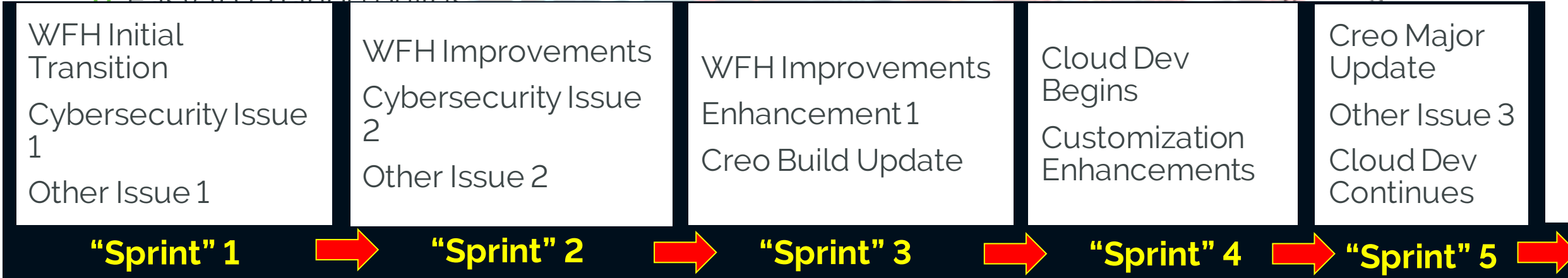


# OUR PTC CREO PARAMETRIC DEPLOYMENT

- Common (Network) installation for all client machines
  - Customizations remain on the server
  - "Small" launch script and user data remains on the client
  - Sessions are managed on the client
- PTC Creo and our customizations are in separate folders
  - Easy to change builds



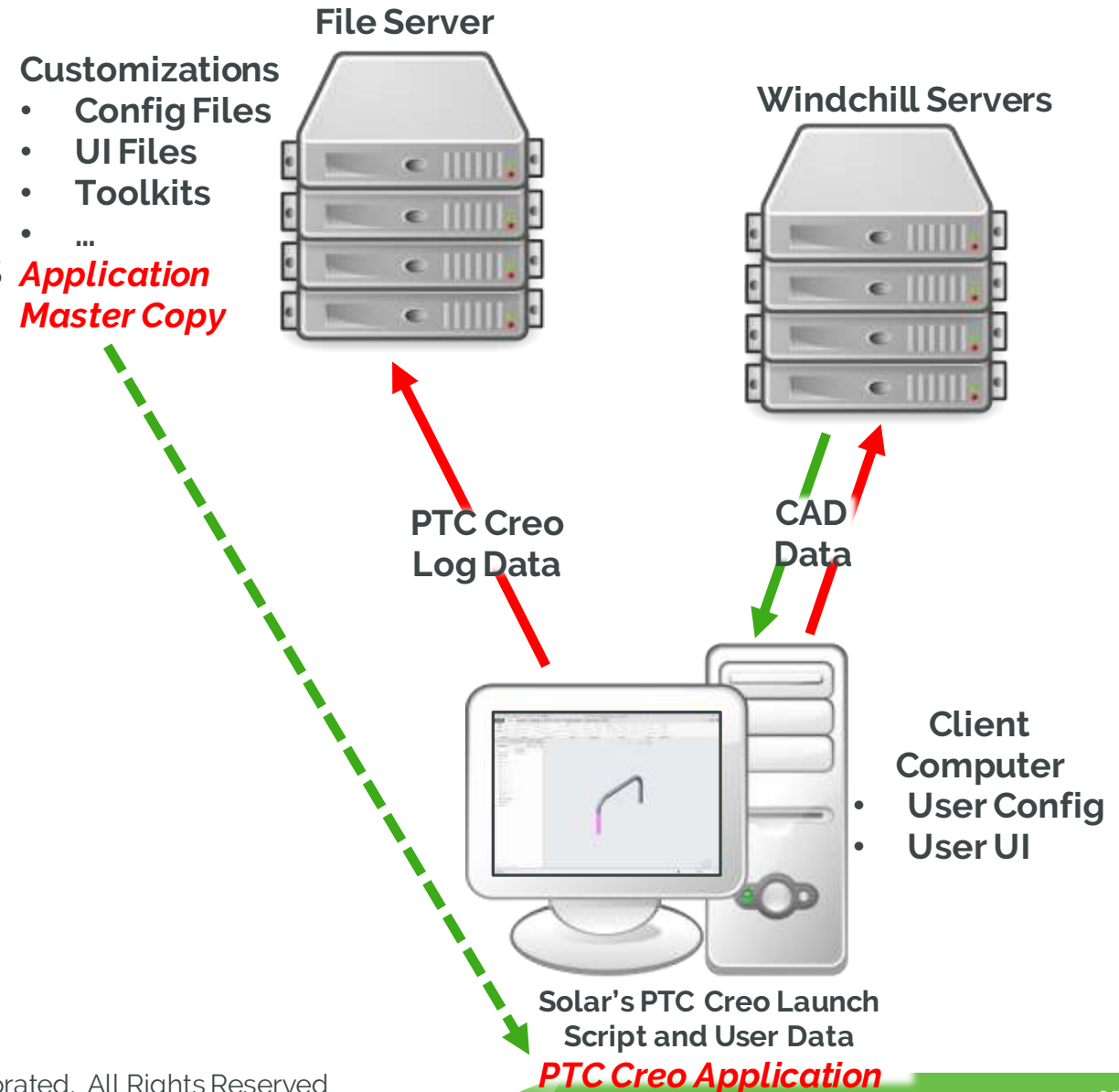
**The issues don't go away,  
They just become more manageable!**



Nothing was "off the table"

# OUR **NEW** PTC CREO PARAMETRIC DEPLOYMENT

- **Local PTC Creo Parametric installation for all client machines**
  - Customizations remain on the server
  - "Small" launch script and user data remains on the client machine
    - **Launch script used to manage local installations**
  - Session log data collected and stored on the server
- PTC Creo and our customizations are in separate folders
  - Easy to change builds
  - Easy to share customizations with external vendors
  - Allows an out of the box experience



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## SOME STATISTICS SINCE 2019

- 11 Separate Product Increments
  - Transition from network to local PTC Creo installs
  - 3 Creo 4.0 Maintenance Release Updates
  - Creo 4.0 to Creo 7.0 Update
  - 3 Creo 7.0 Maintenance Release Updates
  - Customization Bug Fixes and Enhancements
  - Windchill Upgrade
  - Windchill CPS Update
  - Cybersecurity updates
  - ...



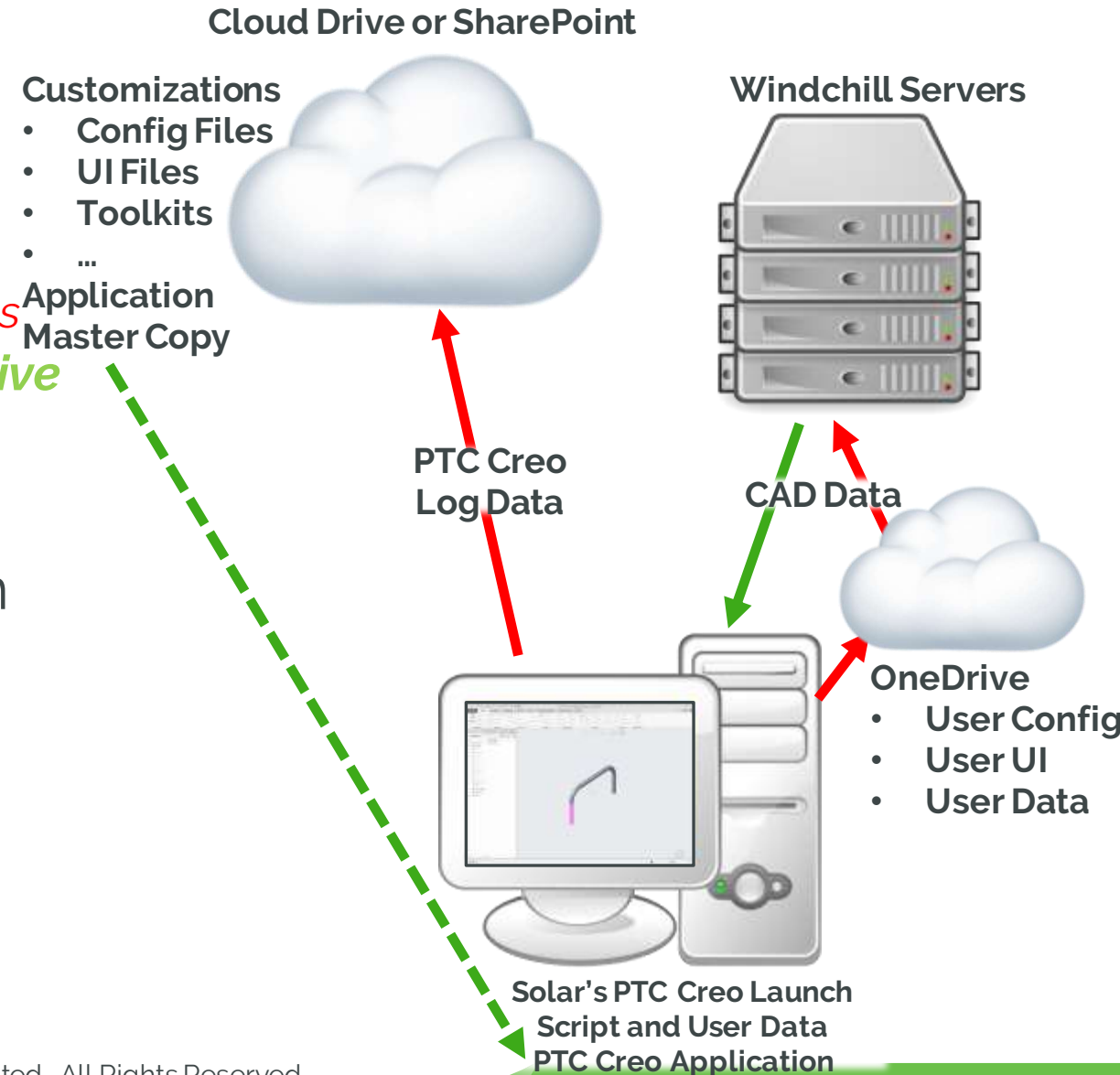
# OUR "DREAM" PTC CREO PARAMETRIC DEPLOYMENT

## ■ *Local PTC Creo Parametric installation for all client machines*

- Customizations remain on the server
- "Small" launch script
  - *Launch script used to manage local installations*
- User data and personal configs are *in OneDrive*
- Session log data collected and stored *in the cloud*

## ■ PTC Creo and our customizations are in separate folders

- Easy to change builds
- Easy to share customizations with external vendors
- Allows an out of the box experience



# OUR PTC CREO PARAMETRIC DEPLOYMENT

- All the Config Files used
  - Creo Installation
    - System config.sup file
  - Home Directory Files
    - System config file (stitched together and copied at launch)
  - Local Cache Directory Files
    - System .ui file (copied at launch)
    - *Using the option **load\_ui\_customization\_run\_dir yes***
  - Working Directory Files
    - User config.pro
    - User .ui file



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# THE MULTIPLE ENVIRONMENT CONUNDRUM

- We have 3 unique major environments (business unit “needs”)
  - Fairly straight forward
- 11+ unique licenses (i.e. DEX, Layout, AFX, ...)
  - Now it is starting to get complicated
    - Env 1+ DEX
    - Env 1+ Layout
    - Env 1 + DEX + Layout
    - ...
- How do you manage all of the variances?
  - License information is typically called out in a PSF

***BUT ....***



# THE MULTIPLE ENVIRONMENT **TRANSITION**

- We have ~~1~~ unique major environments (~~business unit "needs"~~)
  - ~~Fairly straight forward~~
- 11+ unique licenses (i.e. DEX, Layout, AFX, ...)
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**Nothing was "off the table"**



**BUT ....**

# PSF VS. ENVIRONMENT VARIABLES

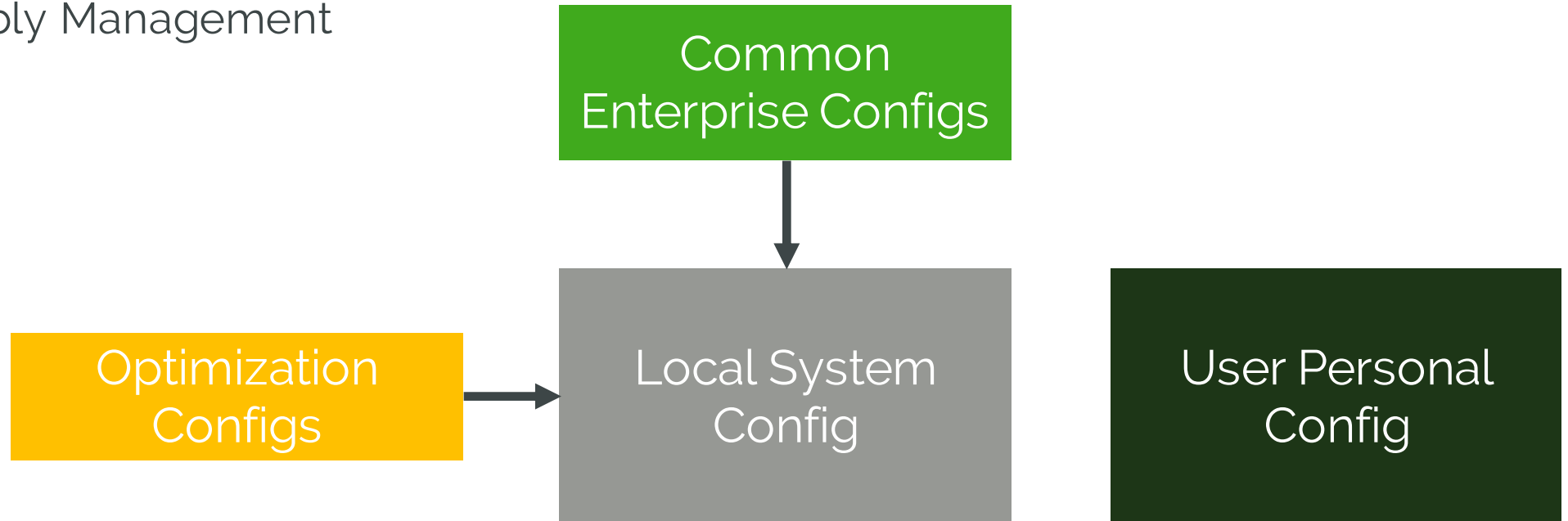
- The PSF file in the bin folder
  - Sets specific application information
    - Default license
    - License location
    - ...
- Each item in the PSF can be set as a Windows environment variable to be used when Creo is launched and commented out of the PSF file
  - // At the beginning of the line indicates it is a comment line in the PSF file

```
1 // PTC - PSF file: parametric
2 //
3 PRODUCT=Creo Parametric
4 DESC=Creo Parametric (default)
5 SHIPCODE=M070
6 CREO_COMMON_FILES=Common Files
7 //
8 ENV=MECH_LP=%PRO_DIRECTORY%\mech
9 ENV=MECH_HOME=%MECH_LP%\%PRO_MACHINE_TYPE%
10 ENV=PRO_MECH_COMMAND="%CREOAPP_DIRECTORY%\bin\parametric.exe" "%CREOAPP_DIRECTORY%\bin\parametric.psf"
11 ENV=RPC_TIMEOUT=31536000
12 ENV=MEDI_HOME=%MECH_HOME%
13 ENV=PATH+=%PRO_DIRECTORY%\%PRO_MACHINE_TYPE%\deflib
14 ENV=PATH-=%PRO_DIRECTORY%\%PRO_MACHINE_TYPE%\lib
15 ENV=PATH-=%INTRALINK_DIR%\%PRO_MACHINE_TYPE%\illib
16 ENV=PATH+=%PRO_DIRECTORY%\libs\dfor\lib
17 ENV=PATH+=%CREOAPP_DIRECTORY%\bin
18 ENV=NMSD_TIMEOUT=300
19 ENV=PRO_COMM_MSG_EXE=%PRO_DIRECTORY%\%PRO_MACHINE_TYPE%\obj\pro_comm_msg.exe
20 ENV=PROE_START=%CREOAPP_DIRECTORY%\bin\parametric.exe
21 ENV=CDRS_DATA=%PRO_DIRECTORY%
22 ENV=PRO_IMAGE_CONVERTER=%PRO_DIRECTORY%\%PRO_MACHINE_TYPE%\obj\convert_image.exe
23 ENV=PROGUIDE_DIRECTORY=%PRO_DIRECTORY%\uifdoc
24 ENV=SPG_DIRECTORY=%PRO_DIRECTORY%
25 ENV=PRO_USRMAIN=%PRO_DIRECTORY%\usrprog\umain\usrmain.c
26 ENV=PROTABLE_DIRECTORY=%PRO_DIRECTORY%\protable
27 ENV=MOZILLA_FIVE_HOME=%PRO_DIRECTORY%\%PRO_MACHINE_TYPE%\obj\MOZILLA
28 ENV=PROTAB=%PRO_DIRECTORY%\%PRO_MACHINE_TYPE%\obj\protab.exe
29 ENV=ZIP_EXEC=%PRO_DIRECTORY%\%PRO_MACHINE_TYPE%\obj\zip.exe
30 ENV=CLHOME=%PRO_DIRECTORY%\text\pcldata
31 ENV=PVIEW_PROEPVIEW_HOME=%PRO_DIRECTORY%\apps\prodview
32 ENV=CV_ENV_HOME=%PRO_DIRECTORY%\%PRO_MACHINE_TYPE%\CV140
33 ENV=DEBUG_HLP_DLL_PATH=%PRO_DIRECTORY%\%PRO_MACHINE_TYPE%\lib\dbghelp.dll
34 ENV=PTC_D_LICENSE_FILE-=1234@yourtriadserver1;1234@yourtriadserver2;1234@yourtriadserver3;;
35 ENV=CREO_APP=PMA
36 //ENV=CREOPMA_FEATURE_NAME=Primary License (Other)
37 RUN="%MECH_LP%\install\nt\pro_mech_env.bat"
38 RUN="%PRO_DIRECTORY%\%PRO_MACHINE_TYPE%\nms\nmsd.exe" -noservice -timeout %NMSD_TIMEOUT% &
39 RUN="%PRO_DIRECTORY%\%PRO_MACHINE_TYPE%\obj\xtop.exe"
40 ENV=DBG_NCPST_PATH=%CREOAPP_DIRECTORY%\bin
41 ENV=PRO_ALLOW_EARLY_RETURN=TRUE
42 // USER - PSF
```

```
ENV=CV_ENV_HOME=%PRO_DIRECTORY%\%PRO_MACHINE_TYPE%\CV140
ENV=DEBUG_HLP_DLL_PATH=%PRO_DIRECTORY%\%PRO_MACHINE_TYPE%\lib\dbghelp.dll
ENV=PTC_D_LICENSE_FILE-=1234@yourtriadserver1;1234@yourtriadserver2;1234@yourtriadserver3;;
ENV=CREO_APP=PMA
//ENV=CREOPMA_FEATURE_NAME=Primary License (Other)
RUN="%MECH_LP%\install\nt\pro_mech_env.bat"
RUN="%PRO_DIRECTORY%\%PRO_MACHINE_TYPE%\nms\nmsd.exe" -noservice -timeout %NMSD_TIMEOUT% &
```

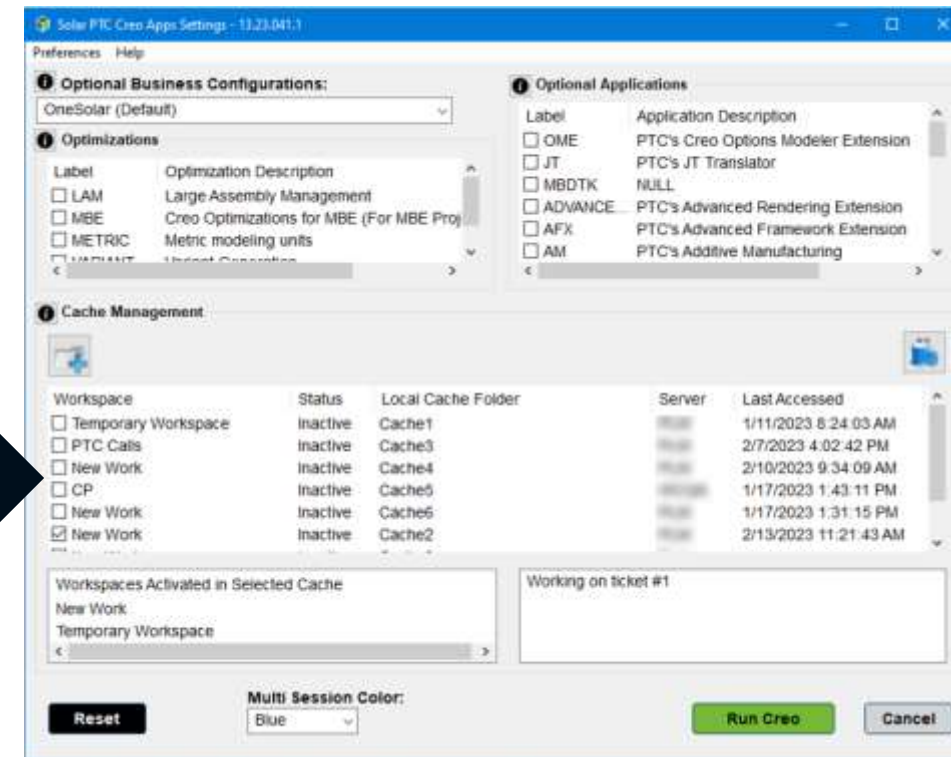
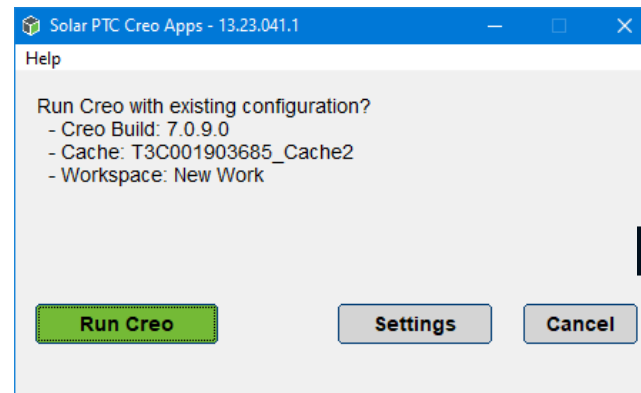
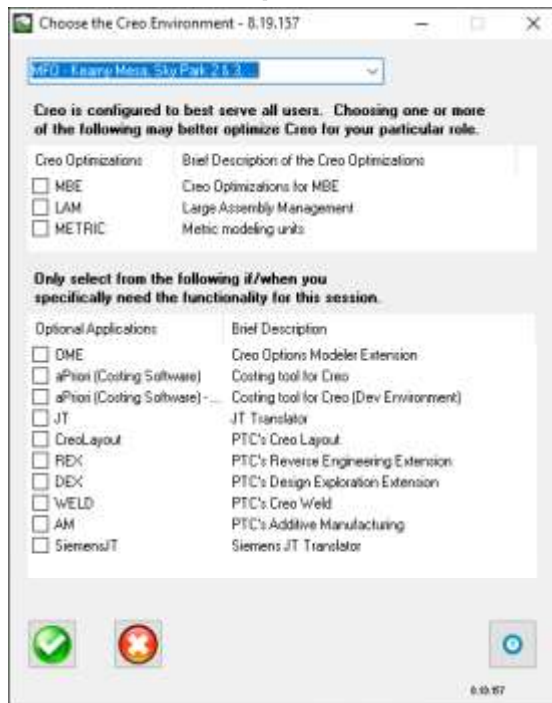
# HOWEVER, ONE SIZE STILL DOES NOT FIT ALL

- Special options for specific needs
  - Model Based Projects
  - Large Assembly Management
  - ...

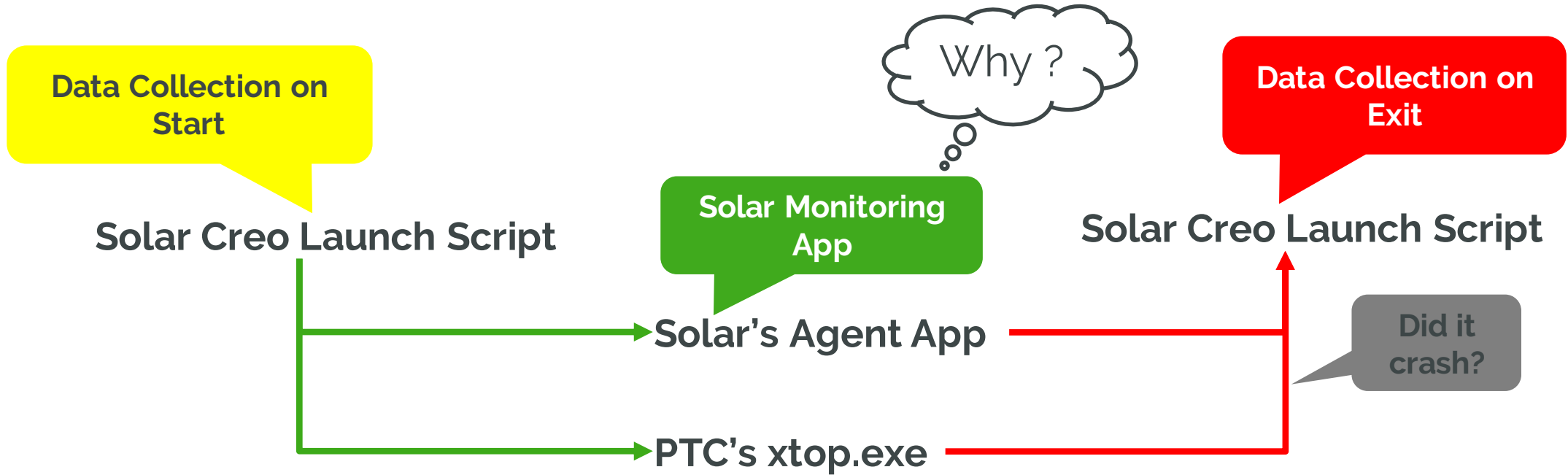


# THE NEW WAY OF GETTING INTO PTC CREO

- Simplified UI and Workflow for 80%+ user community
- Optionally: User chooses options and launches the PTC Creo application\*
  - Optimizations
  - Add ons
- The script sets the environment variables



# SOME ADDITIONAL NOTES ...



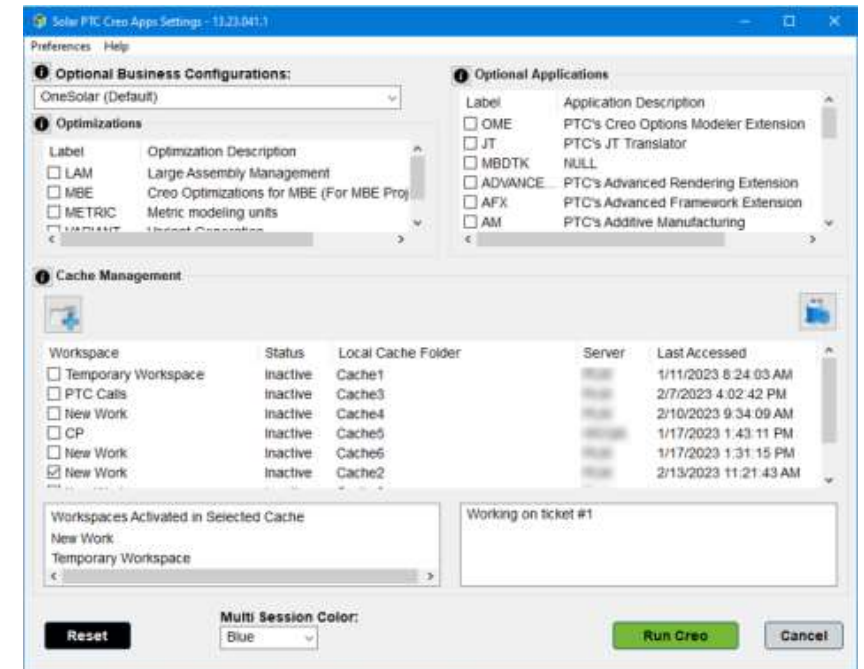


# MULTIPLE PTC CREO PARAMETRIC SESSIONS

**Problem Description:** Inability to launch multiple sessions of PTC Creo Parametric to different PTC Windchill Workspaces on the same machine at the same time

- Issue since moving to PTC Creo Parametric 3.0
  - Number one most requested enhancement since upgrading in 2017
- It's a complex issue
  - There are lots of moving parts

**Solar's Agent App:**  
I monitor the local cache directories for the user!



# SOME FINAL OBSERVATIONS AND SUGGESTIONS

- When you install the software, install it all
  - Disk space is cheap
- **The launch script is important!**
  - It's the user's gateway into the software
  - Make it simple for the user, even if it is more complicated for the administrator
    - There are 6000+ lines of code in our launch script
- **Collect data if you can**
  - We collect launch time, machine info, environment, graphics driver, ...
    - Data mine the data to help identify trends
  - Make the data available to the user to review
    - We allow users to see how many sessions they have run and how many sessions have crashed in an HTML report
- **Make it all flexible!**
  - We test and evaluate different maintenance releases or different major releases using the same program
  - Just know that other things will change and you will need to adapt

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# QUESTIONS?

**Thank you! You can find me at:**



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N/A



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