

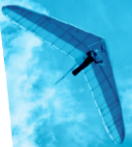


Cloud Computing

Un'opportunità per ridefinire i processi di produzione

Paolo Maggi <paolo.maggi@nice-software.com>

R&D Manager



Cloud Computing



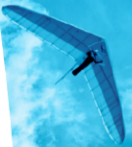
... but many believe “The Cloud” requires a rain coat!

Everyone is talking about cloud computing...

... me too!



Source: Citrix cloud survey conducted by Wakefield Research (August 2012)

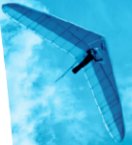


Cloud Computing

...but what is Cloud Computing?

Cloud Computing is a model for enabling **convenient, on-demand** network access to a **shared pool of configurable** computing resources (e.g., networks, servers, storage, applications, and services) that can be **rapidly provisioned and released** with **minimal management effort** or service provider interaction.

Source: The NIST Definition of Cloud Computing
<http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf>



Cloud Computing

...interesting... but how can I use it?



Social
Networking



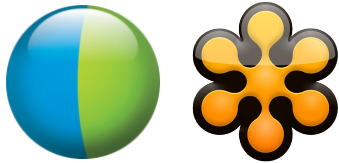
Virtual Office



E-mail
Management



CRM



Web-conference
Tools



Backup
Services



Cloud Storage



Extra
Computing
Power



Cloud Computing



END USER APPLICATIONS

Software-as-a-Service

<p>CRM</p> <p>RightNow, salesforce.com, SUGARCRM, NETSUITE, Assistly, ORACLE, satisfaction, InsideView, zendesk, uservice360, MarketTools, xactly, PARALIRE, Microsoft, LIVEPERSON</p>	<p>Marketing Demand Generation</p> <p>ELOQUA, KENSHOO, Marlin SOFTWARE, Constant Contact, unbounce, iContact, Bronto, Silverpop, CampaignMonitor, contact BY, MailChimp, VerticalResponse, SurveyMonkey, Marketo, ExactTarget, Infusionsoft, responsys</p>	<p>Human Resources</p> <p>Cornerstone OnDemand, LinkedIn, workday, SuccessFactors, HALOGEN, saba, bamboohr, echospan, SAP byDesign, Taleo, upm, tribeh, selectminds, BULLHORN, EPICOR</p>	<p>Finance & Accounting</p> <p>netScout, NETSUITE, Intacct, workday, intuit, Expensify, RECURLY, Chargeify, expensecloud, FreshBooks, Bill.com, zoho, coupa, Quip ERP, uora Adaptive Planning</p>	<p>Content Management</p> <p>box, SharePoint, WordPress, Dropbox, watchdog, yousendit, Drupal, Allresco, DocuSign, backupify, sendthisfile!, ShareFile, Scribd, bitcasa, WIX, slideshare, CARBONITE, CloudApp, mozy, SugarSync, EchoSign</p>	<p>Vertical</p> <p>MINDBODY, MEDIANALYTICS, DealerTrack, medfinance, REALPAGE, goldstar, navicure, CoreCloud, DEALER.COM, PointClickCare, Veeva, clio, OPPOWER, serviceMAX, pptolo, superderivatives, KINNSER, WebPT, activeNETWORK</p>
<p>Enterprise Social Media</p> <p>Yammer, hootsuite, chatter, gigya, radian6, jive, coTweet, Zuberance, jonrain, SOCIALCAST, facebook, Lithium, ELOQUA, involver, YouTube, hearst social, BUDYMEDIA, twitter, vitrue, WILDFIRE, EVERNOTE</p>	<p>Marketing Analytics</p> <p>convertro, COVARI, Google Analytics, VOCUS, GizaMetrics, searchmetrics, Keybroker, HubsSpot, BRIGHT EDGE, SIMULMEDIA, SEO MOZ, CLIC-TALE, WordStream, RAVET</p>	<p>Retail & E-Commerce</p> <p>ERPLY, shopify, ONESTOP, DELIVERYAGENT, RSi, PowerReviews, Retail Solutions, Magento, Bazaarvoice, veriSignr, WIX, volusion, yodle</p>	<p>Collaboration</p> <p>Atlassian, skype, Google Apps, 37signals, twilio, LogMeIn, TeamViewer, box, clarizen, PODIO, Teambox, RingCentral, GFI, GoToMeeting, DeskAway, asana, huddle, Cisco Webex, liquid, Zimbra, PERIMETER, COLLABNET</p>	<p>Business Intelligence</p> <p>SAP Business Objects, BI OnDemand, birst, ENDECA, RPX, INCHESQUARED, bime, JASPERSOFT, GoodData, EdgeSpring, visier, mJXPANEL, Cloud BI, LATTICE ENGINES, OMNITURE, kognitio, pivottek, pentaho, Datalmeer, Rosslyn Analytics, sumiAL, SpatialKey</p>	<p>Ad Tech</p> <p>facebook, doubleclick by Google, millennialmedia, appnexus, critool, admob, edap tv, OpenX, bizo, twitter, bluekai, bluefin</p>

DEVELOPERS & IT

Platform-as-a-Service

iOS, CLOUD FOUNDRY, Cloud9 IDE, CLOUDFLARE, Elastic Stack, heroku, piston, bmcsoft, apptio, PERIMETER, PiCloud, vaultive, catchpoint, loglogic, splunk, cloudkick, parse, twilio, github, bladelogic, openstack, CloudPassage, GIGASPACE, dotcloud, okta, LONGJUMP, RALLY, keynote, SOASTA, BROADSOFT, SCALEX TREME, RIGHTSCALE, service now, ELASTRA, CrowdFlower, Qrimp, enan, Simplified, Skytap, xeround, IgoMezz, New Relic, SaaS, aster data, Zerto, snapLogic, MarkLogic, determina, Developer, cloudshare, SendGrid, AUTHENTIC8, CloudLock, AppDynamics, Acronis

Infrastructure-as-a-Service

IBM, amazon.com, rackspace, salesforce.com, ORACLE, EUCALYPTUS, GOGRID, Parallels, terremark, SAVVIS, hp, vmware, Joyent, DynamicOps, Windows Azure, VERTICA

...and more!



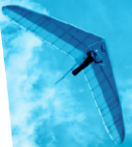
Cloud Computing and Smart&Green Factory

... wow... but what about the Smart&Green Factory?



Smart & Green Factory

- Maximizes production efficiency
- Reduces costs
- Saves energy
- Reduces waste
- Optimizes labor and human resources
- Uses latest technologies
- Enables data-driven decisions
- Utilizes mobile devices



Cloud Computing and Smart&Green Factory

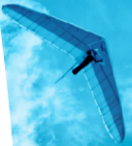
... tell me more... how can Cloud Computing help me to improve my production processes and be smarter?

Most of the classical "cloud services" are addressed to corporate sectors that are not directly connected to the "production" (such as Finance & Accounting, Marketing, Sales, Human Resource Management, Customer Service, etc.)

... but, recent technological advances have made the "cloud computing" also attractive for key areas of the company, such as the engineering or the design department

... please, welcome:

The Technical Cloud



What is a Technical Cloud?

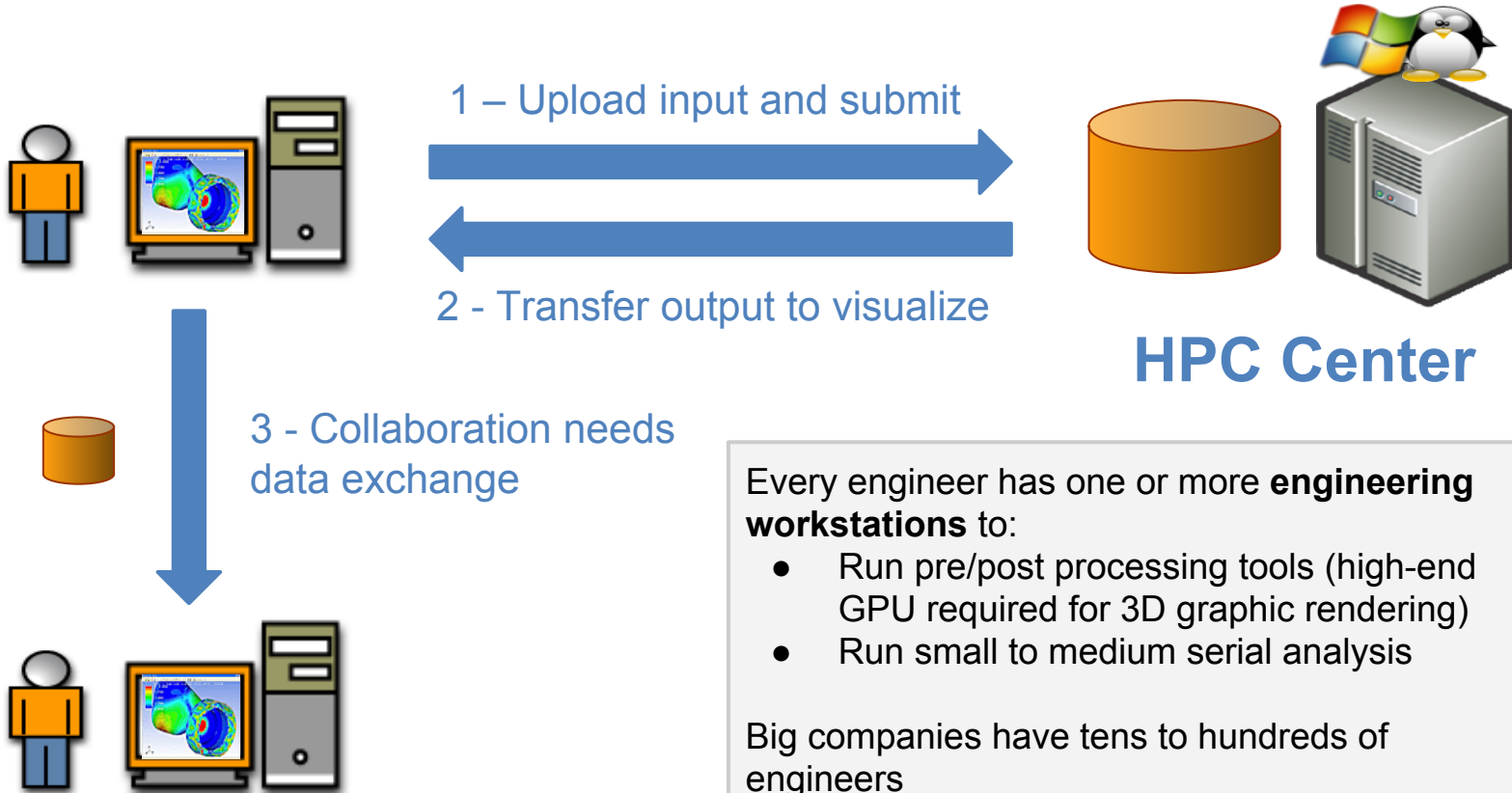
A technical cloud enables convenient, on-demand network access to a shared pool of computing resources that run:

- **engineering simulation tools** and other **HPC applications**
- **high-end 3D technical applications** (like visualization applications for scientific data, CAD applications, etc.)

... but how a Technical Cloud can help me?



A Typical Scenario in the CAE sector



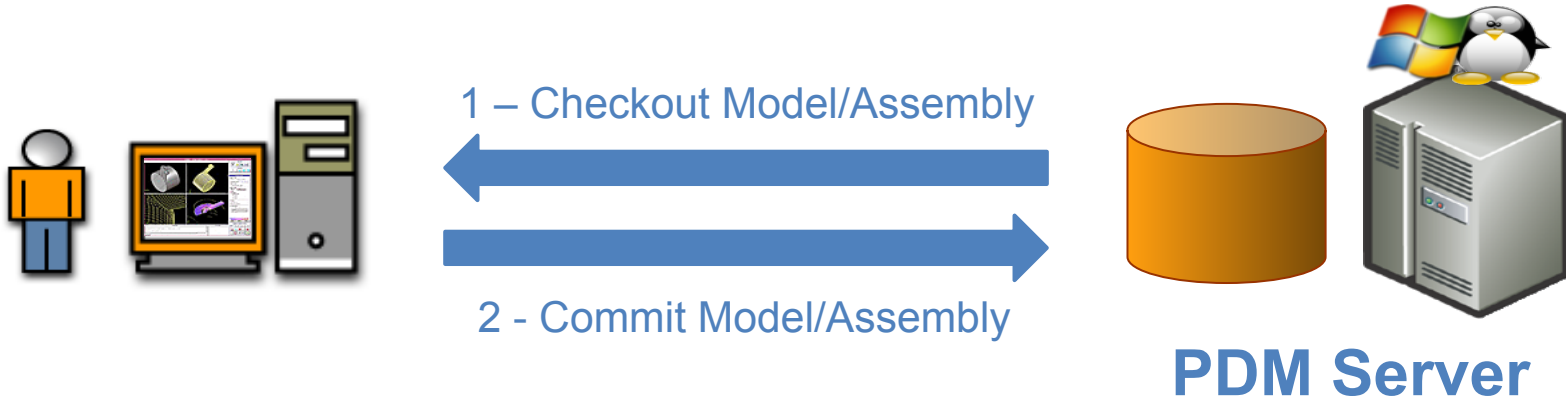
Every engineer has one or more **engineering workstations** to:

- Run pre/post processing tools (high-end GPU required for 3D graphic rendering)
- Run small to medium serial analysis

Big companies have tens to hundreds of engineers



A Typical Scenario in the CAD sector



Every designer has its own **CAD workstations** to:

- Run CAD software (high-end GPU required for 3D graphic rendering)
- Run analysis tools (e.g. clash)

Big companies have tens to thousands of engineers

Issues with the “workstation model”

I love my workstation... what is wrong with it?

NETWORK

Network overload leading to poor performance and response times all round

COST

Expensive, dedicated workstations (GPU, memory, ...) with short lifecycle

IT MANAGEMENT

Support, update and replace tens to tens of thousands of workstations

WORKSTATION SIZING

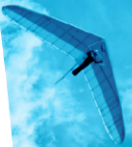
Workstations have to be sized for the largest expected models

SECURITY

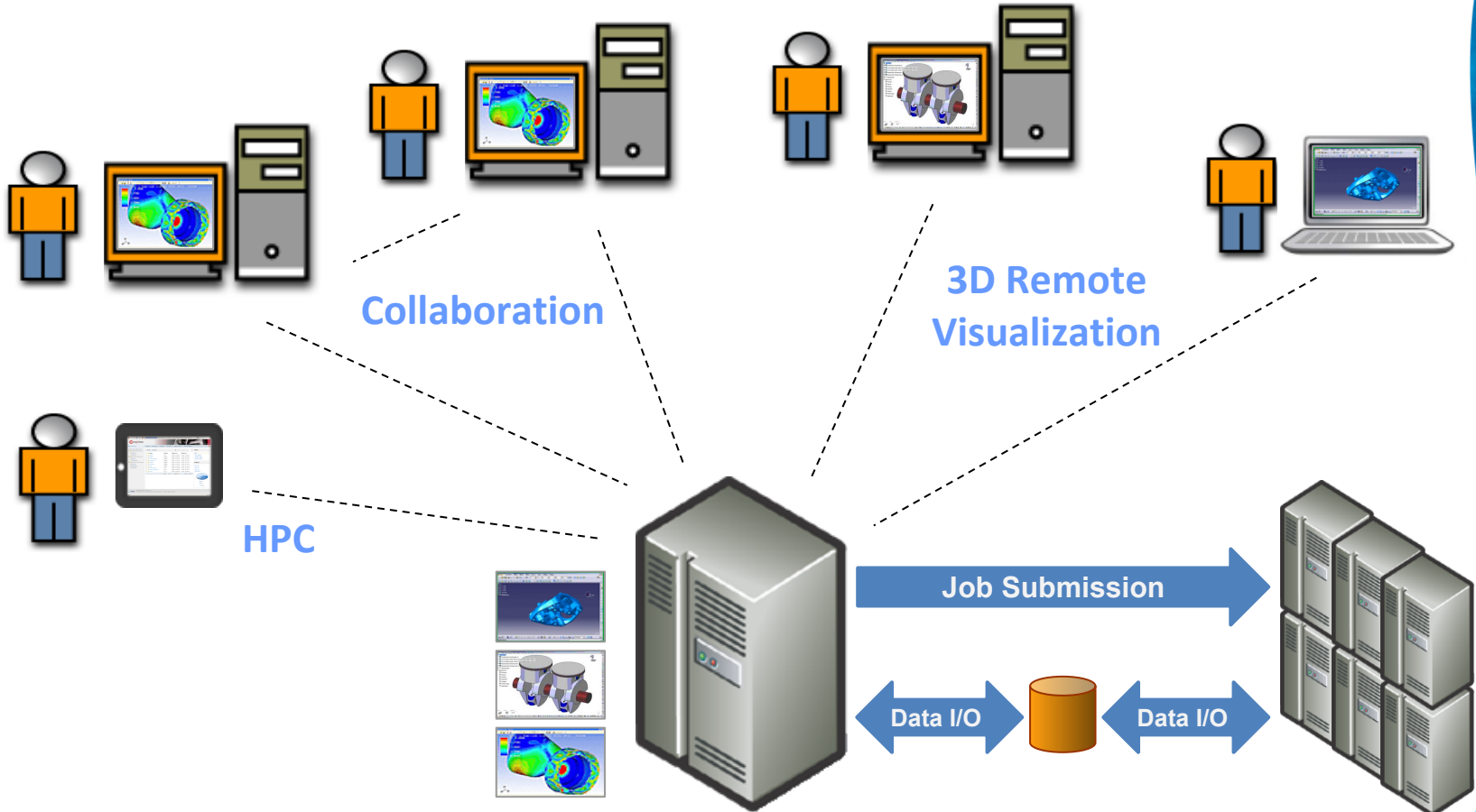
Moving sensitive data around (in/out organization) is always risky

WORKFORCE

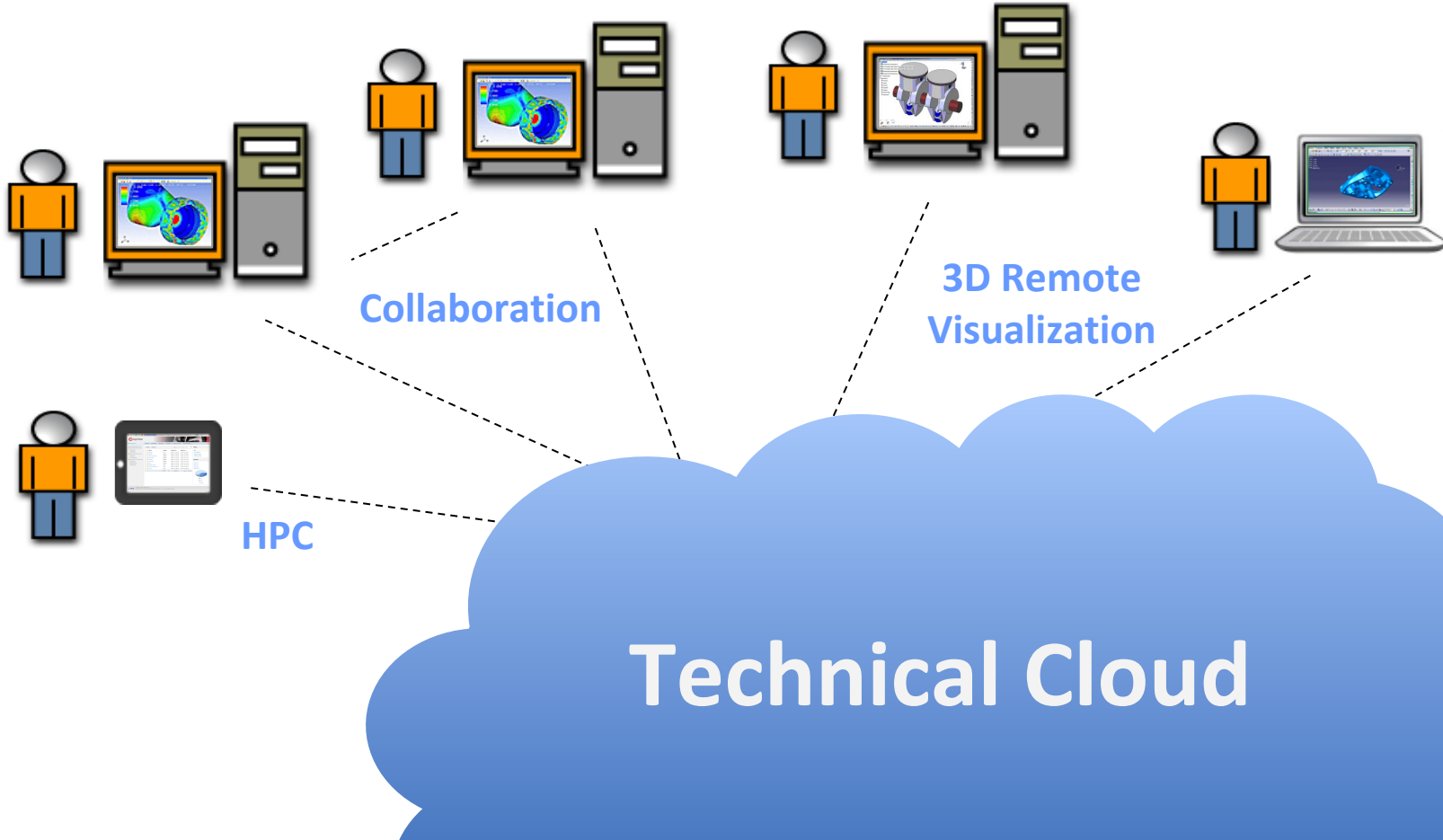
Current models do not support a diverse mobile workforce



Let's Think Different



Let's Think Different



Benefits of the Technical Cloud

... I'm impressed... why this approach is better?

NETWORK

Network is no more a bottleneck and data loads faster

COST

Centralized & Shared servers are less expensive to buy & manage

IT MANAGEMENT

Support, update and replacement are more efficient & do not affect users

WORKSTATION SIZING

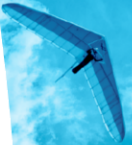
Resources are dynamically sized based on users needs

SECURITY

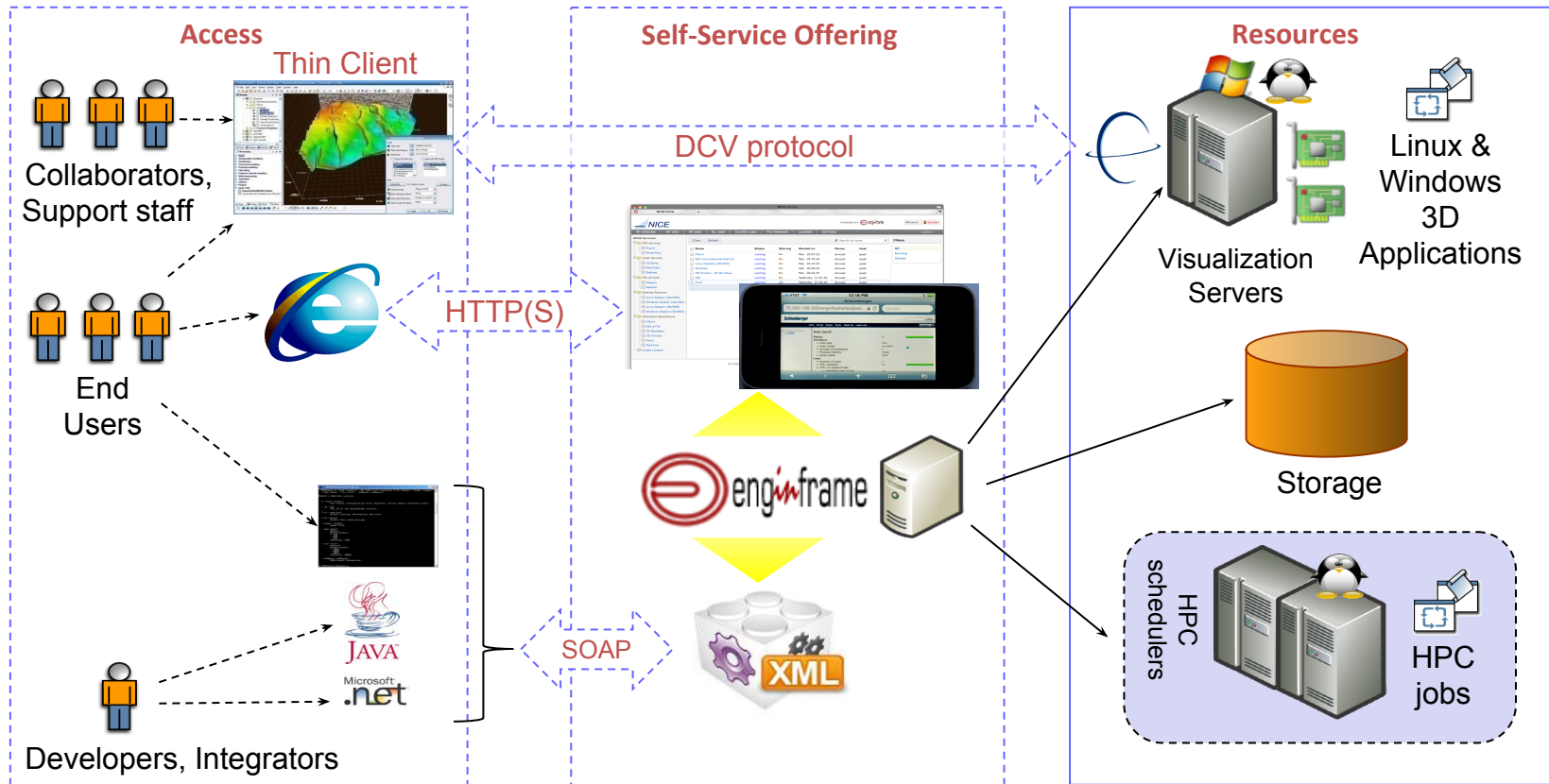
Sensitive data remain within protected data center with full access control

WORKFORCE

Users can virtually connect & collaborate from anywhere with any client



NICE Proposal for Technical Clouds



Solutions for Different Workloads

○ Remote 3D “Virtual Workstations” with *NICE DCV (Desktop Cloud Visualization)* & *EnginFrame Views*

- This model is ideal for 3D visualization and connecting remote users to 3D applications that run in a data center.
- Users access full desktop sessions through a web browser
- The 3D performance is significantly better than a traditional VDI



○ Full Featured HPC Portal with *NICE EnginFrame for HPC*

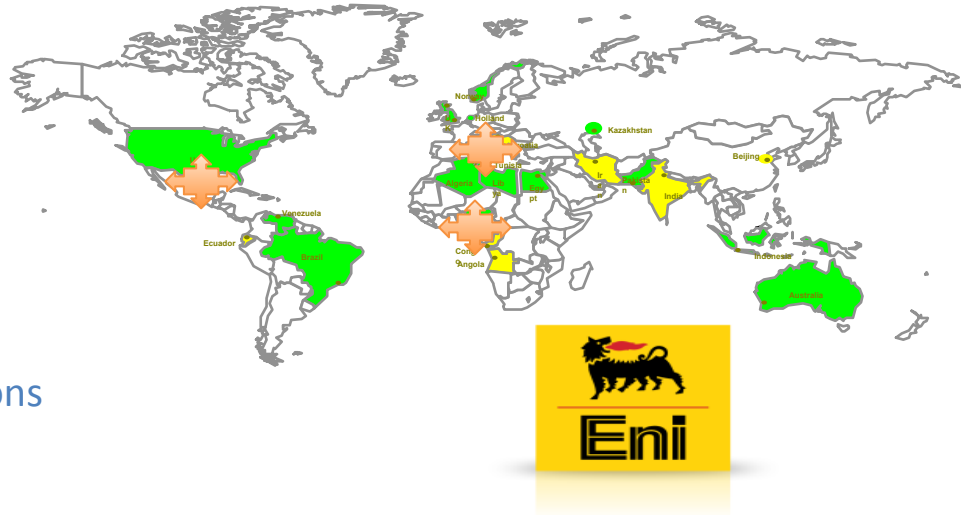
- This model is ideal for computational-intensive and/or parallel job submission, control, and monitoring
- Users access applications and data through a web browser



Case Study: ENI - Global Visualization Hubs

o Problem

- WW distributed operations
- Experts at HQ or travelling, many users at subsidiaries
- Very large models cannot be moved or synchronized
- Variable WAN latency
- Linux and Windows applications

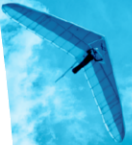


o Solution

- NICE DCV and HP RGS
- NICE EnginFrame 2013.0
- Multiple hubs with 3D and HPC resources

o Benefits

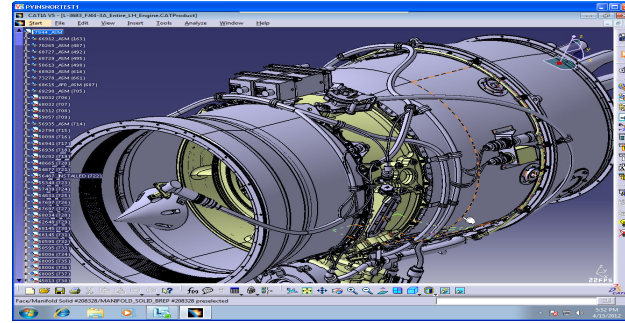
- Regional data/app consolidation
- Workstation-less services
- Full performance and mobility
- Regulatory compliance for data



Case study: NORDAM - Ultimate Flexibility

o Problem

- As a Tier 1 OEM supplier, NORDAM needs to match customers' Catia revisions and SP's
- Difficult on a workstation
- Need to support remote workers



o Solution

- NICE DCV 2013.0 for Windows on NVIDIA vGPU
- NICE EnginFrame 2013.0
- XenServer 6.2 with NVIDIA GRID K2
- VM and data on NetApp Filer



o Benefits

- CATIA Service Packs can be easily upgraded and tested
- OS is not tied to physical hardware, allowing for greater flexibility
- Home working over VPN



Case study: ANSYS - Regional Technical Clouds

o Problem

- Scattered HPC facilities
- Widely distributed users
- Large modes / mesh travelling over WAN
- Customer demand for centralization solutions

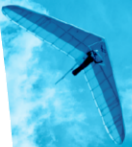
o Solution

- NICE DCV multi-platform
- NICE EnginFrame
- Single visualization & HPC cluster refresh
- Certification of DCV for ANSYS main products



o Benefits

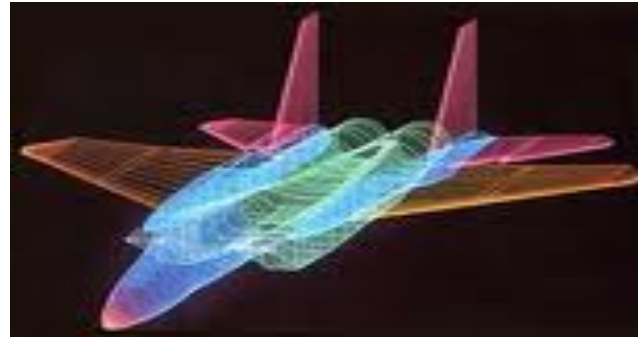
- Regional data/app consolidation
- Minimize WAN data transfers
- Home working over VPN
- Standardized support for customer solutions
- Public Cloud foundation



Case Study: Major EU Aerospace - Delmia mobility

○ Problem

- Maintenance and trainer building requires full aircraft assembly access
- Traditional approach include in-hangar workstation + plotter and large paper printouts
- Inefficient and expensive



○ Solution

- NICE DCV on KVM
- Windows tablets over WiFi

○ Benefits

- Full mobility, including tablets
- Full assembly access at workstation class performance
- Savings on HW and consumables
- Better productivity and personnel efficiency



Research Project: Nuvola3D

Goal

- Developing **enabling technologies for Technical Cloud** (with focus on high-end 3D applications):
 1. **Remote visualization** technologies: providing secure remote network access to interactive 3D applications leveraging server-side graphic hardware acceleration
 2. **GPU virtualization** technologies: for executing high-end 3D application in a virtualized environment with workstation-class performances, including GPU sharing among multiple VMs
 3. **Remote sessions management** technologies: to allow end-users to easily launch and access remote interactive applications and to manage and load balance applications and desktop sessions among the available computational resources

Partners



Contacts

www.nuvola3d.org



NICE Customers and Market Segments

Energy & Chemical

Anadarko, BGP, British Gas, Cairn Energy, ConocoPhillips, Daqing Oil Field, Dow Chemical, Dupont, ENI/AGIP, EOG Resources, FMC, GEA Process Eng., GXT, Huabei Oil Field, Maersk Oil, Nova Chemical, Pentair, PetroChina, Tuha Oil Field, Tullow Oil, Xinjiang Oil Field

Life Sciences and Medical

Baxter, Eli Lilly, Howard Hughes Medical Institute, Institut Pasteur, Novartis, Ontario Cancer Institute, Shanghai Inst. for Biological Sciences

Research & Education

CINECA, DLTM, Insis, NCSA, South Dakota State University, TU Ilmenau, TU Ostrava, Uni Birmingham, Uni Buffalo, Uni LETI, Uni Liverpool, Uni Nagoya, Uni Padova

Aerospace & Defense

1st Aerospace Institute, Alenia Aermacchi, AVIC, BEMEI, Boeing, DLR German Aerospace, Procter&Gamble, P&W Canada, SelexGalileo, Gulfstream, MBDA, NORDAM, NGC, Parker Hannifin, Sikorsky

Automotive & Manufacturing

3M, ABB, Audi, BMW, Bosch, Continental, Daimler, Delphi, Emerson, Global Castings, Hyundai, JLR, Knowbe, Liebherr, Magneti Marelli, Mazda, McLaren, Panalpina, Rolls Royce, Scania, Toyota, Volkswagen

Others

Ansys, AWE, BlueCloud, CADFEM, CFX Berlin, Silicon Labs, Samsung, Tycoelectronics, Westinghouse

Key Partners



Thank You

Thank you for listening... any question?



NICE Global Headquarter

Via Milliavacca, 9
14100 Asti (AT)
ITALY

Phone: +39 0141 90.15.16



NICE R&D Office in Sardinia

Edificio 1 Loc. Piscinamanna
09010 Pula (CA)
ITALY

Phone: +39 070 9243.2612



NICE USA Headquarter

2500 Citywest Blvd - S. 300
Houston, TX - 77042
USA

Phone: +1 (832) 699-0110

www.nice-software.com

