WAVESTONE

Digital workplace

Azza LASSOUED, Alexandre GUILLE

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Who are we ?

Charlotte BOUVET

Senior Consultant

Working for Wavestone since 2016

Studies :
ESIEE Paris
Tecnun – Univ. de Navarra

Azza LASSOUED

Consultant

Working for Wavestone since 2016

Studies :
MIAGE – University Paris Saclay

AGENDA

3h 

/ 01 Workstations & Devices

/ 02 OS

/ 03 Virtualization

/ 04 Endpoint management & Modern management

/ 05 New uses

/ 06 AD

/ 07 NWOW

/ 00 Introduction

Module's main goals

1. To get familiar with technical jargon used by most IT departments
2. To have an overall view of the market trends and main actors
3. To understand the "Consultant" job

Module principles

/ No need of your computers this afternoon

- Do not hesitate to listen to the course!

/ These slides will be posted on campus.ece.fr

/ Feel to interrupt and ask questions

The important thing to remember is the trend and the way the market is likely to evolve

Stakes and challenges for large companies

/ Their IT infrastructure evolves constantly because IT Departments seeks to :

optimize operation and performance of the IT

serve the firm's strategic objectives

become a "**business generator**"

/ IT Departments have to meet the needs of core business in terms of:

Service quality

Service's evolution capacity

Information availability

Implementation's speed & Agility

› Approximately 20% of IT systems are renewed each year

/ Moreover, editors and manufacturers technologies are **complex** and **evolve continuously**, and IT systems components are more and more **interdependent**

Making the digital Workplace an enabler of innovation and transformation

DIGITAL WORKPLACE

Thinking and building the Workplace technology platform

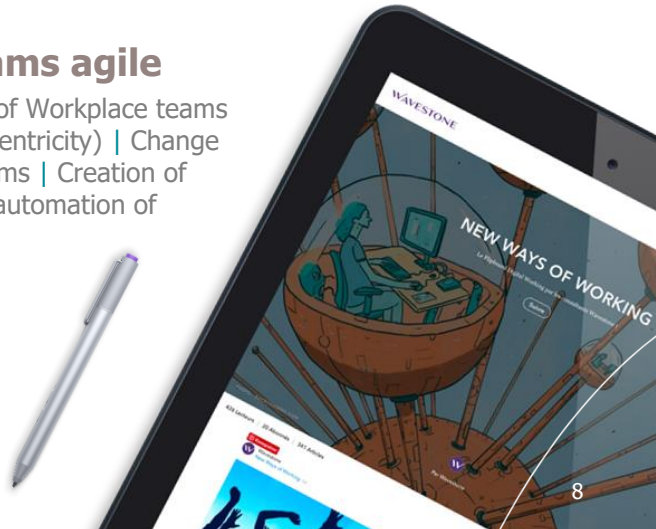
Workplace Strategy & Roadmaps | Decision-making dossiers (O365/Google Cloud, UCC, W10, etc.) | Workplace innovation committee | Architectural Design & Security | POC and testing | Workplace project management

Improving user experience, boosting adoption of digital tools and developing new ways of working

Voice of the Employee | Product Management | Digital innovation approach | Design Thinking | Communication & Change Management| Digital Learning | User experience simplification | Business lines and management onboarding to transform practices

Making Workplace teams agile

Organisation and operating model of Workplace teams (agility, industrialisation and user-centricity) | Change management within Workplace teams | Creation of feature teams | Simplification and automation of processes and tools



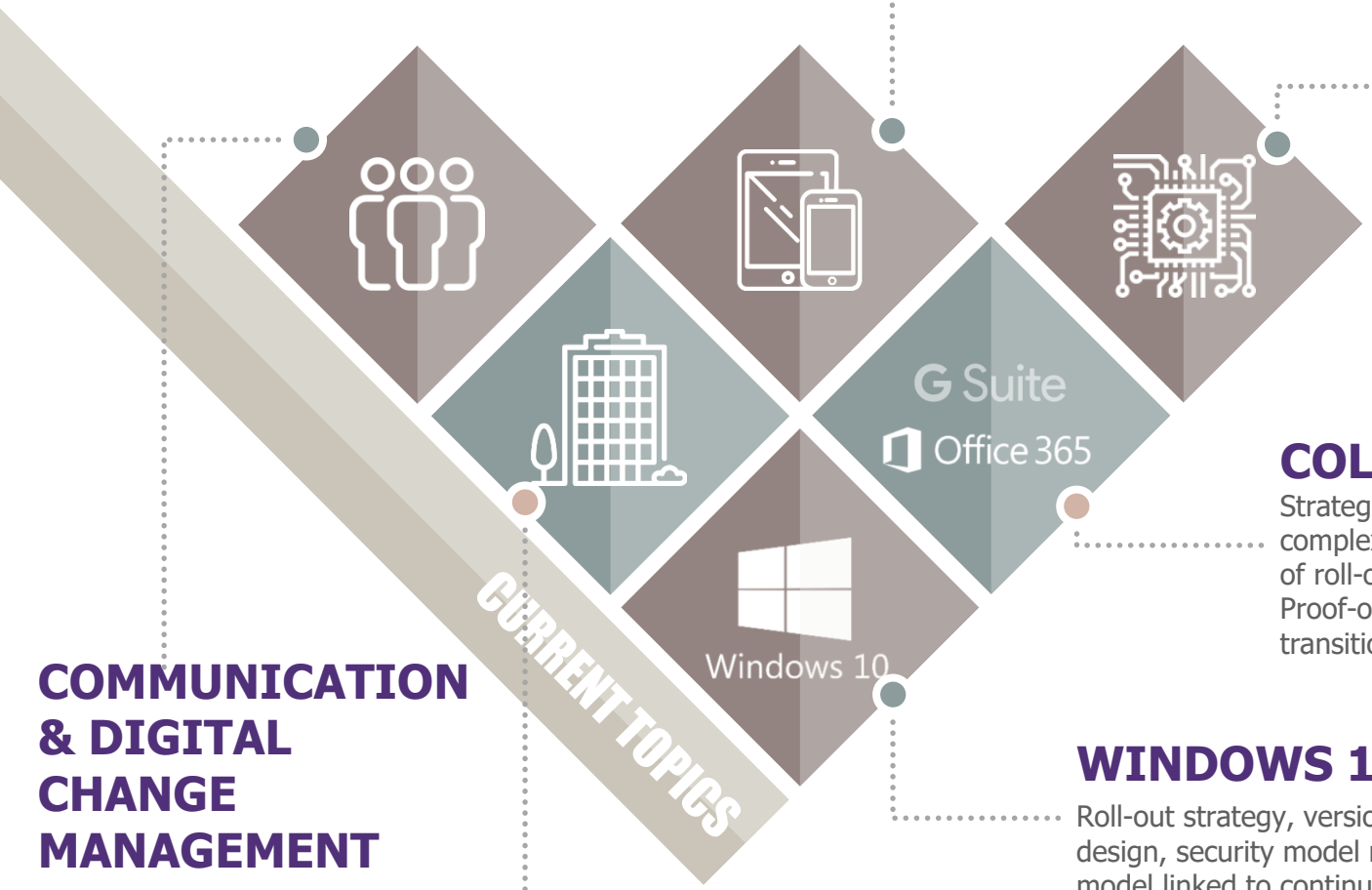
Current topics

MOBILITY

Support in the definition and integration of EMM policies, construction of CYOD offer, assistance in the construction of mobile applications, scoping of mobile use cases

SMART WORKPLACE

Artificial intelligence use cases (predictive support, individual productivity, security), bots experiments, process and repetitive tasks automation



COLLABORATIVE CLOUDS

Strategic opportunity studies, management of large complex programmes (global scoping and management of roll-outs), detailed studies (architectural design, Proof-of-Concept), operating model redesign (IT transition, continuous update management)

WINDOWS 10

Roll-out strategy, version upgrade plan, master definition and design, security model redesign, evolution of the organisational model linked to continuous delivery

COMMUNICATION & DIGITAL CHANGE MANAGEMENT

Change management for collaborative tools, marketing of Workplace services and multichannel communication, organisation of communities for collaborative tools champions, transformation of business collaborative uses, etc.

INNOVATING CAMPUS

IT Workplace strategy for new headquarters / premises, testing of innovative digital services (geoguiding, chatbot selfcare, automation, etc.)

Quizz

What is the first thing that comes to your mind when you hear the word "Workplace"?

To participate please go to following link :
www.beekast.com/eceparis

Quizz

Your answers

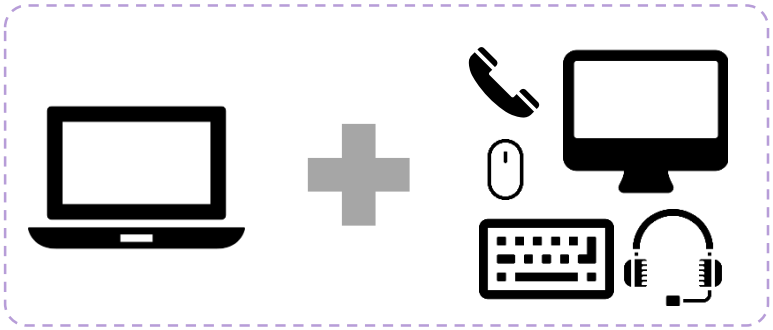
/ **01**

Workstations & Devices

Digital Workplace: hardware topic

The workstation is a tool that can be viewed from two perspectives…

- From a end-user perspective: the workstation is the mean of access to all the services offered by the IT department (business applications, productivity and collaboration tools, etc.)
- From an IT manager perspective: the workstation is a combination of hardware (physical: desktops, laptop, etc.) and software, provided to the users



…But goes further than the computer only

- Depending on the position of the employee, the workstation can be associated with a large panel of tools in his/her *workspace*
  - additional screen(s)
  - a dock
  - a mouse & a keyboard
  - a phone, a microphone, speakers, etc.

Stakes

For the end-users

- Be able to fulfill the expectations of their position with functional and comfortable tools

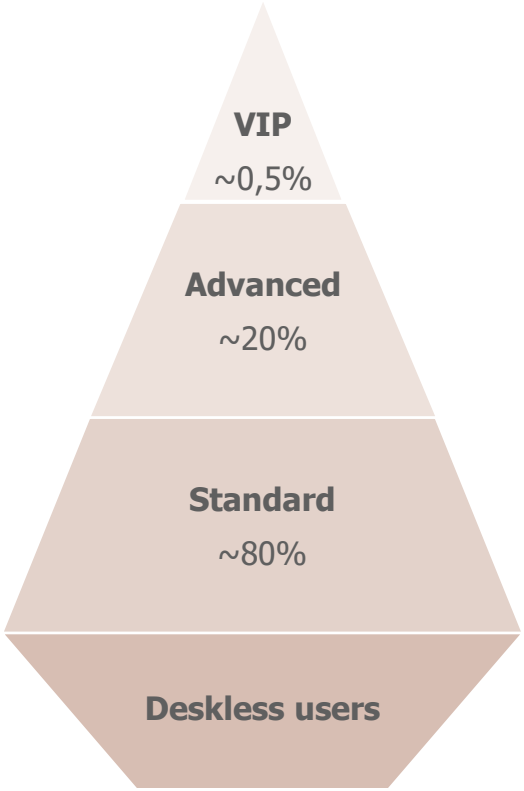
For the IT department

- Provide the proper tool to all the populations
- Be able to manage heterogeneous device fleets

Some of these tools also help in the "well-being at work" matters and good practices (good posture induced by a good desk and chair, height of the screens, weight of the computer, quality of the backpack…)

Current workstation offer is differentiated by user profile

4 types of users



Big companies

Various expectations

- / Highly mobile population
- / "VIP treatement"
- / Stake of reactivity / mobilization

- / Advanced use of the computing and collaborative tools
- / Needs for mobility

- / Needs for a simple, stable and functional workstation

- / Historically, population with very little or no access to the IS (field workers for ex)
- / New technologies are bringing the IS to them (mobile, virtualized workstation, …)

Mutualization approach

IT services are **mutualized by user profiles**:

- Common tools (as much as possible): master, profiles, support, …
- A few exceptions: "out of category" workstations

Some IT services are **mutualised for everyone**:

- Mail, calendar, SSO, data sharing in the network, …

Each user profile has its **SLA** (guarantees on the quality of service).

Editors and manufacturers on the market provide solutions / technological tools to allow IT teams to build the "basis" of the mutualized workstation and to supply them in the form of ranges of services.

Different tools for different purposes

Historically, the workstation was only built around the classic couple: desktop / laptop.
The later years have seen the arrival of many different devices that are answering more and more specific needs.

	Mobility	Type of use	Main use
 desktop	- +	produce — read, collaborate	Sedentary work, on the office and access to business applications
 Ultrabook /laptop	- +	produce — read, collaborate	Mainly mobile and collaborative work, with possible need for access to office or business applications.
 tablet	- +	produce — read, collaborate	Only mobile and collaborative work, requiring a strong innovative image but no "production" work
 smartphone	- +	produce — read, collaborate	"Read only" access to specific parts of the IS in any situation of mobility

Focus: what's inside your "smart-device"

Todays devices are based on similar technologies, on a different scale.
The same categories of components allow these machines to work.

Mandatory

CPU: The **Central Processing Unit** is the brain of your device. It's the part of your device which perform the "thinking," in the form of millions of calculations every second

Memory (RAM): The **Random Access Memory** can be seen as a short-term memory. It contains everything a device is thinking about right now. It's a holding spot for the most relevant and useful information a device needs in any given moment

Storage: Everything that your device "knows" but isn't "thinking about" is stored on the **HDD/SSD/memory card**. It is the permanent storage

Depending on the needs

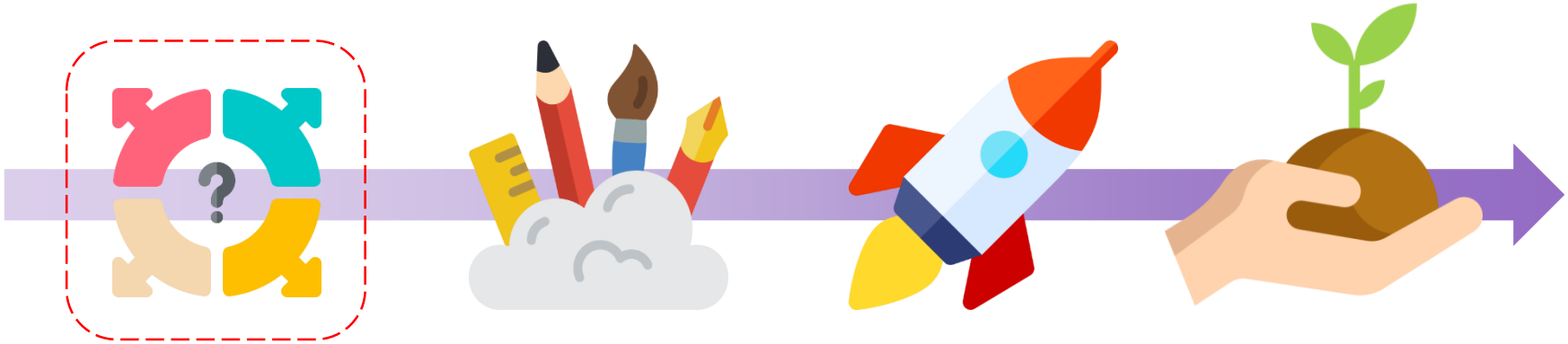
GPU: The **Graphics Processing Unit** handles everything that goes to your display. If you're working on anything that requires complex displays (videos, 3D, …), your CPU will send that information to your GPU, which is built specifically to process graphics.

Focus: what's around your "smart-device"

Devices are only the "tip of the iceberg", services provided internally and/or by external providers are the main investment cost for companies.

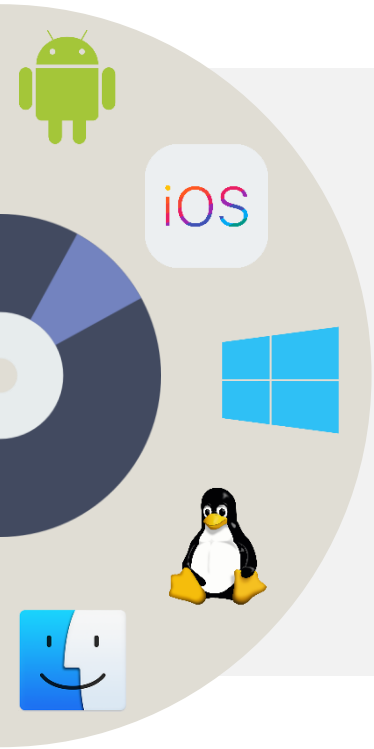
/ **02**

Operating Systems


Select your OS
Design your master
Deploy it
Make it live through time

The Operating System: how & why?

The Operating System (OS) is a set of programs that, in an electronic device – such as a computer or a smartphone –, provides the link between the hardware resources and the devices software



Operating Systems in a nutshell…

- There are plenty of alternatives for the different types of equipment (workstations, servers, smartphones...)
- Companies have a much more complex way to make OS available for their employees (contrary to personal use of them)
- By essence, OS get updates through their lifetime to add new features or increase the security levels

Stakes

For the end-users

- Be able to fulfill the expectations of their position

For the IT department

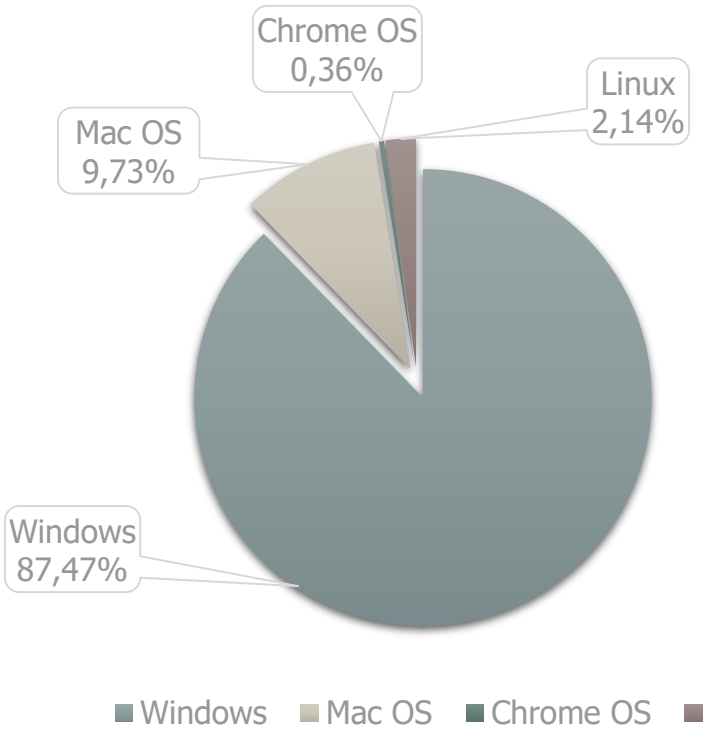
- Build a secure and evolutive basis that lives through updates
- Keep up with the new features and handle new use cases
- Provide an environment that adapts to users needs

Computer OS market overview

The Operating System (OS) is a set of programs which, in an electronic device – such as a computer or a smartphone – provides the link between the hardware resources and the devices software

OS	Device types
Microsoft Windows	PC
Apple macOS	Only Apple computer
Ubuntu Linux	Any computer
Google Android	Android compatible devices (mostly phones & tablets)
Apple iOS	Apple iPhone and iPads
Google ChromeOS	Chromebooks

*The above operating systems are considered **GPOS** (general purpose operating systems)*



Worldwide OS Market share (source: NetMarketShare Sept 2019)

This graph represents the global market share, not only the business segment

Windows 10 operating system is the most used computer OS by far (pro & consumer)

Computer OS market overview

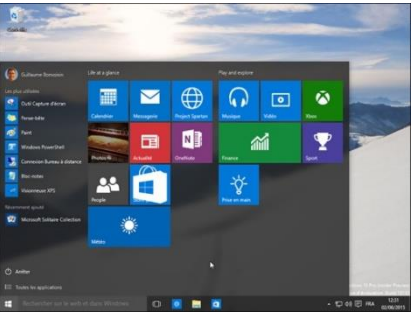
The open source: no clear trend of adoption

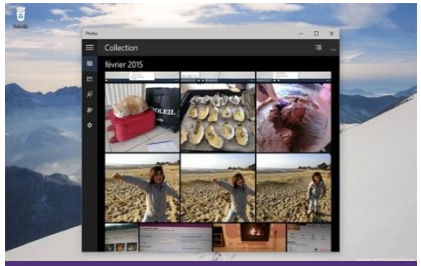
OS	Device types
Microsoft Windows	PC
Apple macOS	Only Apple computer
Ubuntu Linux	Any computer
Google Android	Android compatible devices (mostly phones & tablets)
Apple iOS	Apple iPhone and iPads
Google ChromeOS	Chromebooks

- Still important drawbacks…
  - Compatibility of business applications
  - Guarantee of support of the editors of business applications on Linux OS
- …and impacts to be taken into account
  - A new integration of the tools of exploitation and administration (tools of automatic installation, repair…)
  - A qualification / test of the existing applications on Linux

Focus on windows 10 main new features

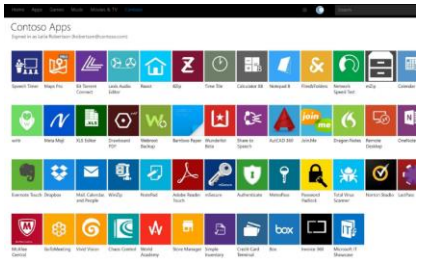
Start menu's comeback

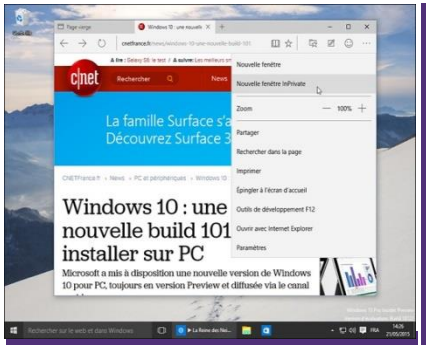




Universal applications

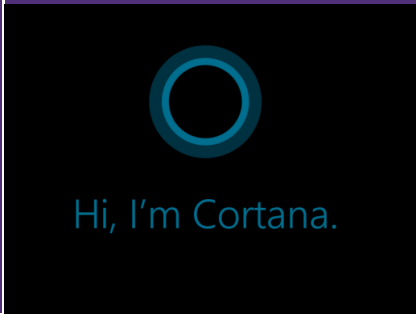
Windows Store

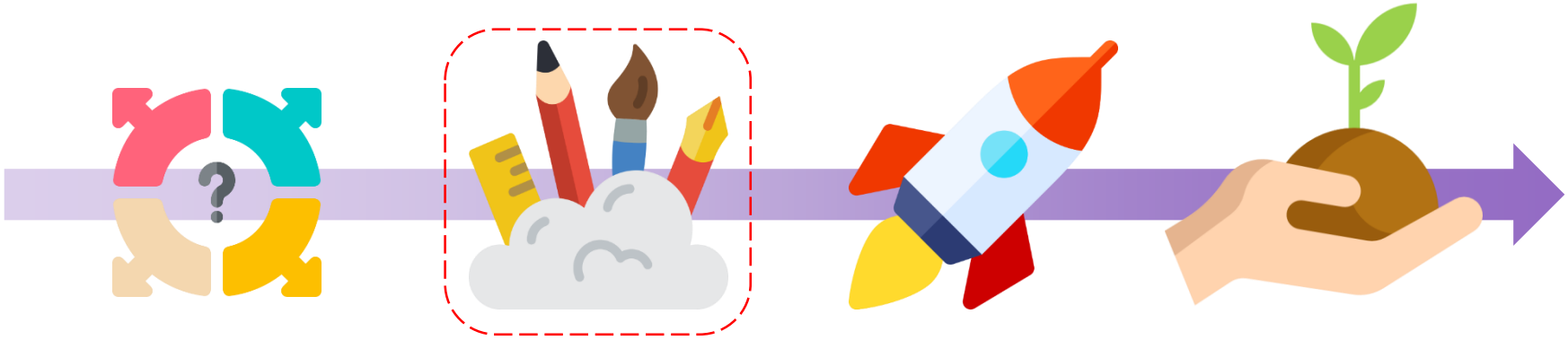




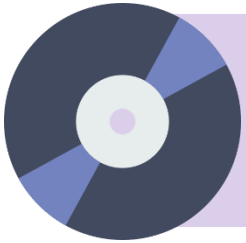
Edge browser

Cortana, the Virtual assistant




Select your OS
Design your master
Deploy it
Make it live through time

Designing an OS in a company



Out of the box, OS natively embeds plenty of features and programs and default configurations. Unlike on the consumer market, Operating Systems can't be deployed in their native build in companies.

To meet company needs and constraints, the IT teams build and configure a custom "image" based on the original OS, called the master

This master will be installed on all the company computers to unify the tools for all its collaborators.
This process of building a master is iterative, and requires the implication of many assets of the company.

Security teams

Ensure a proper security level (password policy, anti-virus, disabled services & apps)

End-users

Provide mandatory software (web browsers, office/collaboration suite, specific apps)

IT teams

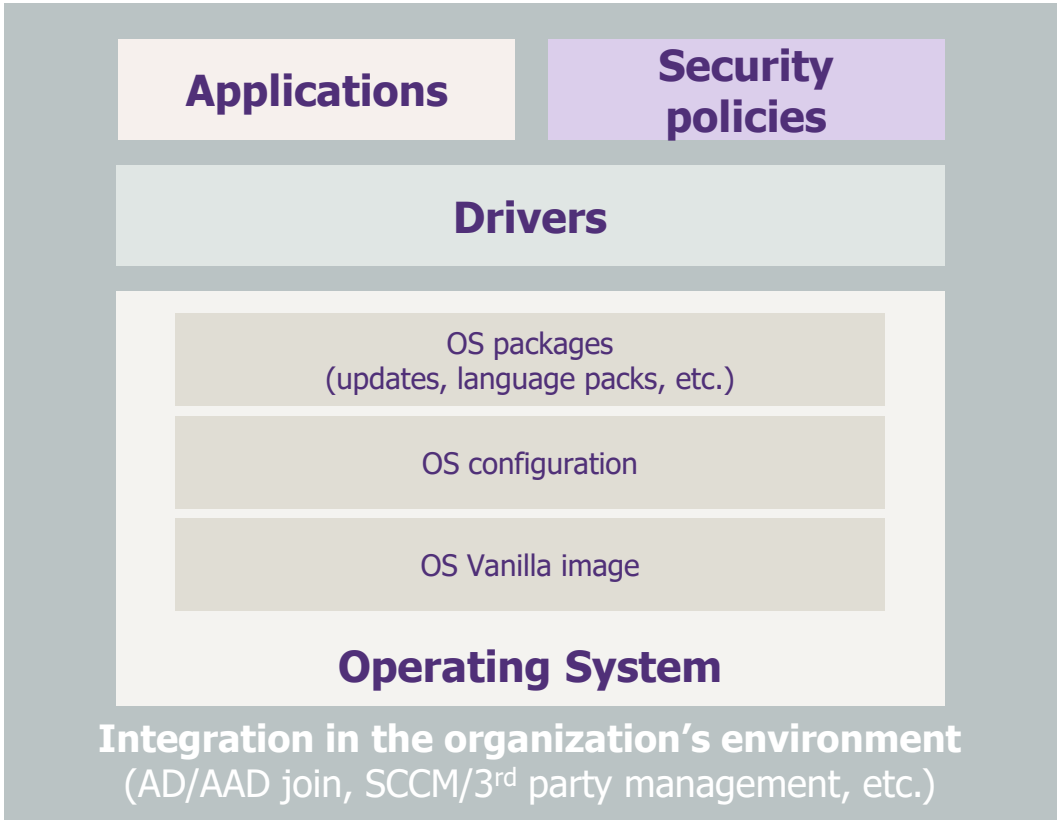
Handle the certificates, drivers and licenses (so that users can use their application and peripherals)

Communication teams

Provide the company identity (desktop background, office templates, languages etc.)

NB: One must keep in mind that lighter the master is (few apps, configurations), the easier and faster it is to deploy on computers

What is a master image?



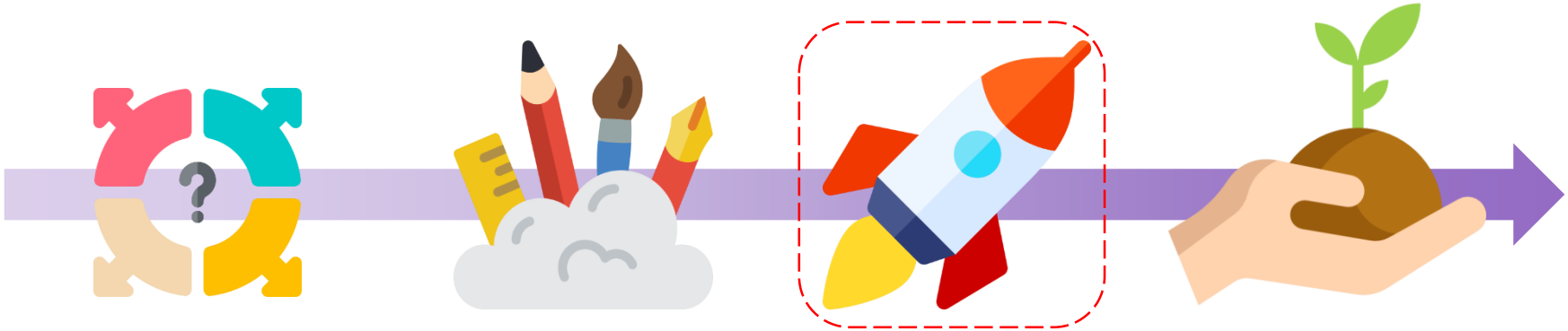
Why create a master image?

- **Industrialize** OS deployment for large organizations with specific needs (applications, security, domain join, OS)
- Gains: reduces errors by technician, automates deployment, makes it compliant to organization's requirements
- Cons: need to handle the master image lifecycle (new drivers, applications, OS) ➔ continuous evolution

Standard approach of creating a master image in organizations

Like many IT solutions, creation of master image follows common steps :

- **Design:** Defining the scope of the solution and its components
- **Build:** Executing the plan, putting the components together
- **Test:** Test functional and technical requirements
- **Validate:** Validate the image (minor defects acceptance)
- **M2R:** Move the solution to the run team (and apply its processes)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Deploying an OS in a company

Once designed, the master can be deployed in different ways, depending on the approach of the company

On an existing device

In-place Upgrade

Automated deployment method

- Conservation of user's data, parameters, applications and drivers
- Installation of Windows 10 standard image
- Restore the user's saved data

Masterisation

Traditional deployment method

- Manual export of user's data and parameters
- Deployment of Windows 10 custom image
- Manual data and parameters restoration

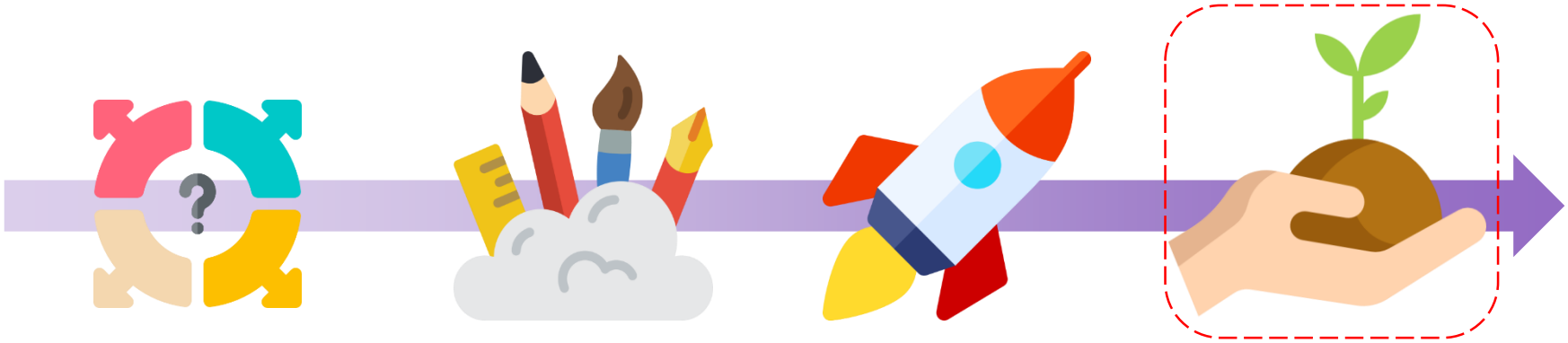
On a new device

Dynamic Provisionning

New terminal configuration

- Removal of by default elements (setup, apps..)
- Installation of business applications
- Implementation of the company custom settings

N.B. a last way of deployment exists, with **Autopilot**, but will be addresses during the **Modern Management** presentation



Select your OS **Design your master** **Deploy it** **Make it live through time**

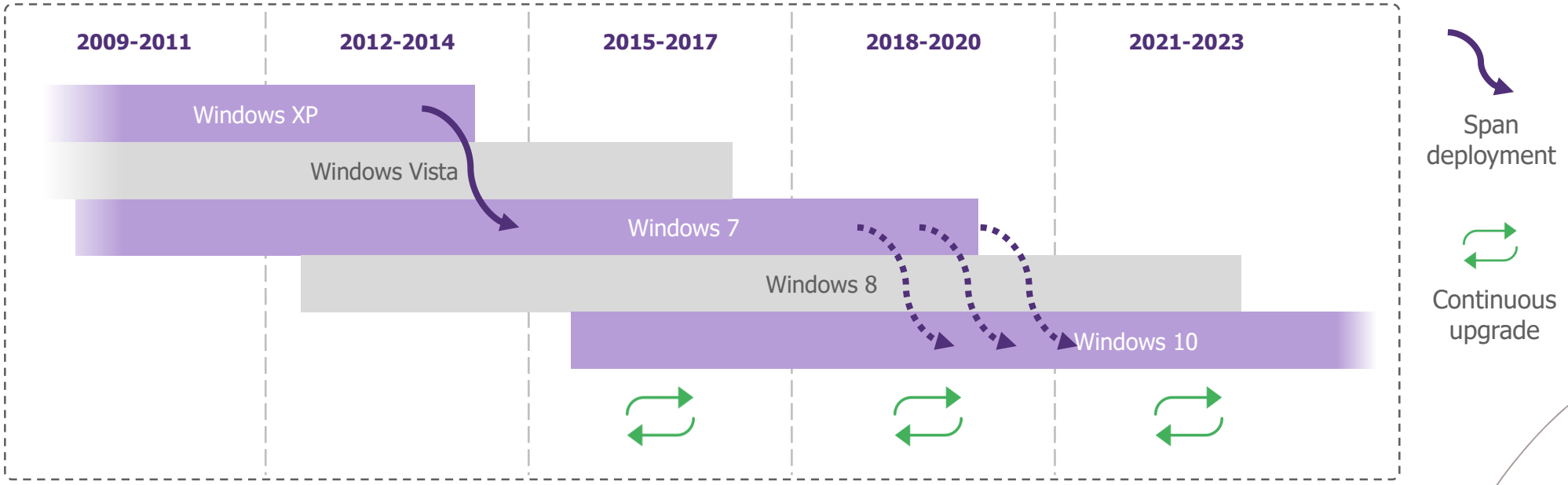
Windows 10's new paradigm

With the **last** big operating system release, Microsoft changed its deployment strategy. Windows 10 brings the new **"continuous upgrade"** strategy.

Instead of putting forward a major version almost every 3 years, new features (functional updates) are downloaded and (more or less) applied on the flow.

Microsoft uses the same strategy as for Office 365 & provides a **"Windows As A Service"**, enabling companies to have an updated and efficient OS continuously.

Mostly only one out of 2 versions in Windows' roadmap was adopted in companies:



The continuous upgrade paradigm

With Windows 10, Microsoft introduce the continuous upgrade strategy and also the concept of **BRANCHES** & their 4 **EDITIONS** (Home, Pro, Education, Enterprise).

	PROGRAM WINDOWS INSIDER	SEMI-ANNUAL CHANNEL (SAC)	LONG-TERM SERVICING CHANNEL
	INSIDER	SAC	LTSC
TARGET	Early adopters, beta testers	General public, schools and companies	Critical workstations
AVAILABLE VERSIONS	Home, Pro, Education, enterprise, etc.	Home, Pro, Education, enterprise, etc.	Enterprise
SECURITY UPDATE	Regular frequency, mandatory	Regular frequency, mandatory	Unlimited postponing
FUNCTIONAL UPDATE	Very frequently (~1 per week)	Every 6 month, postponing available	Every 2 or 3 years, unlimited postponing
UPDATE MANAGEMENT	Windows Update, WSUS, SCCM	Windows Update, WSUS, SCCM	Windows Update, WSUS, SCCM, 3rd party
INNOVATION MEDIUM	Full (Edge, Cortana, etc.)	Full (Edge, Cortana, etc.)	Basic features (no Edge, Cortana, etc.)
SOFTWARE SUPPORT LC	Latest Insider build is supported	18 months 24 months for Enterprise and Education	10 years (including 5 years of extended support)

The impacts of this new paradigm

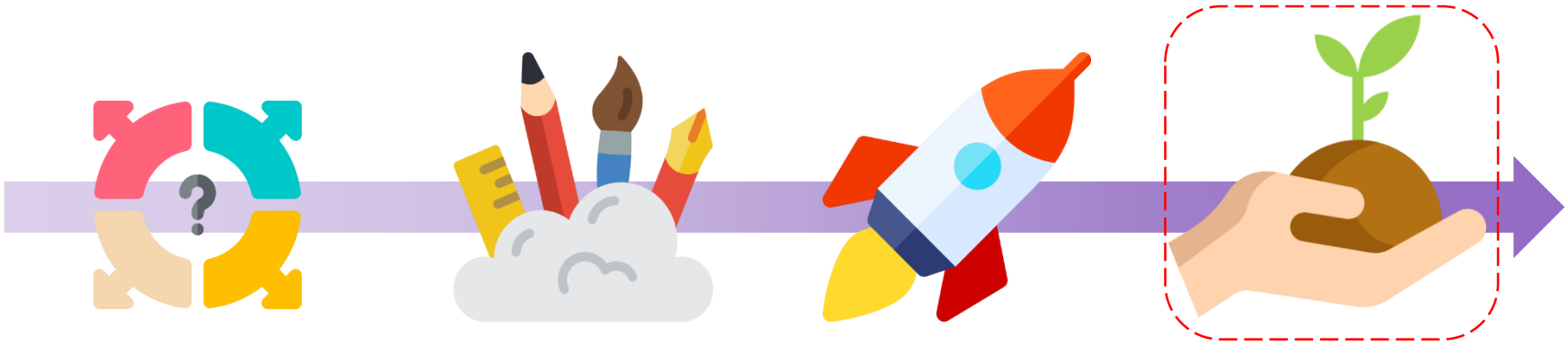
Transformation required of the IT departments

- A strong agility in the processes and organization of IT department
- A fragmentation of the versions to be managed in the fleet
- Regular updating of management solutions
- Acceptance of lack of visibility from Microsoft
- Management of 2 OSs with different paradigms during the transition phase

Organizational Impacts

- Simplification and automation of applications compatibility tests
- Pre-deployment of updates per cycle
- Capture of user's needs, difficulties
- Simplification and acceleration of rollback processes

➔ From a reactive to **proactive mode.**



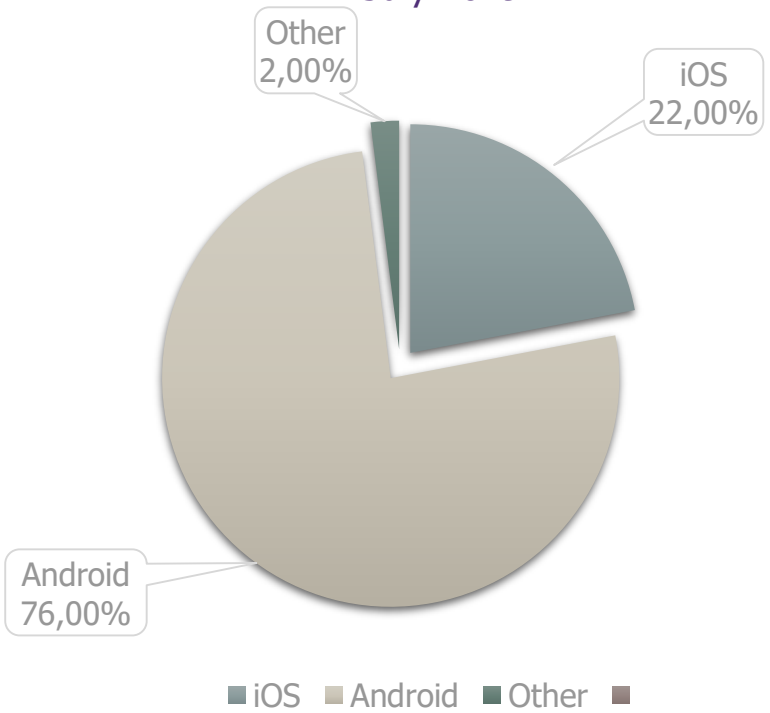
Select your OS **Design your master** **Deploy it** **Make it live through time**

What about mobile OS (iOS & Android?)

Mobiles OS market overview

With the emergence of smartphones, mobile OS lead to new challenges in the professional field: new specific OS to manage, new paradigms, new tools…

Worldwide OS Mobile **Global** market share in July 2019



Source: http://gs.statcounter.com/os-market-share/mobile/worldwide

Worldwide OS Mobile **Business** market share in 2017-2018

Source: Egnyte's study 2018

- While Apple is still a minor player for desktops in business, it has become the clear leader for mobile OS.
- Apple clearly dominates the business mobile OS market, nevertheless it is losing some enterprise shares to Android, particularly in industries and health
- Windows struggled to find its place among its competitors and decided to stop Windows Phones

Mobile OS features comparison

	iOS	Android
License	Proprietary	Opensource
Security	✓ User privacy protection (data encryption) Secure Access (Touch ID & FaceID)	✗ OS more permissive and more complex to secure, but improving
Interface & UX	✓ Simple, user-friendly design, High customization	✓ Simple, user-friendly design, High customization
Cost (OS & device)	✗ Top-of-range positioning	✓ Variety of devices (but heterogeneity of the mobile fleet)
Apps	✓ App Store (2.2M apps) Very important & good quality Easy to develop business applications	✓ Google Play (3.5M apps) Very important & good quality Easy to develop business applications Third party apps
OS Update	✓ Systematic (disadvantage for some companies that cannot block those made by users)	✗ Depending on manufacturers and operators, even if guidelines from Google

Let’s have a break … (15min)

/ **03**

Virtualization

Virtualization

Workplace virtualization is an **abstraction technology** that reduce/removes adhesions between hardware and/or software layers to build a **dynamic, nomadic, user-centric workstation.**

Virtualization is either **local** (on the user's workstation) or **centralized** and in this case remotely accessible.

Two main categories to distinguish:

1. Desktop/Session virtualization

A. **Session virtualization** or SBC (Serveur Base Computing)

B. **Complete VDI workstation** (Virtual Desktop Infrastructure)

2. Application virtualization

Application virtualization or SBC

Those methods of access are not mutually exclusive and can be used jointly on a given workstation.

! It is not possible to access a virtualized environment in offline mode (i.e. when the user does not have access to a network).

Actors, Interests & Drawbacks

Advantages

- Increased security with centralization in Datacenter and secure access to data
- Simplified administration through a single, centralized infrastructure
- The introduction of new terminals possible and ATAWAD (Any Time Any Where Any Device) access to environments

Drawbacks

- Significant impact on the network
- Complex licensing management

Main actors

VMWare

Workspace ONE™

AppVolumes

Microsoft

Microsoft

Remote Desktop Services

Microsoft Azure

Citrix

CITRIX Cloud

CITRIX XenDesktop

CITRIX XenApp

Stakes & impacts on IT departement

workplace virtualization is a major challenge, for both users and It Department: find the right balance to provide the right quality service at an optimal cost

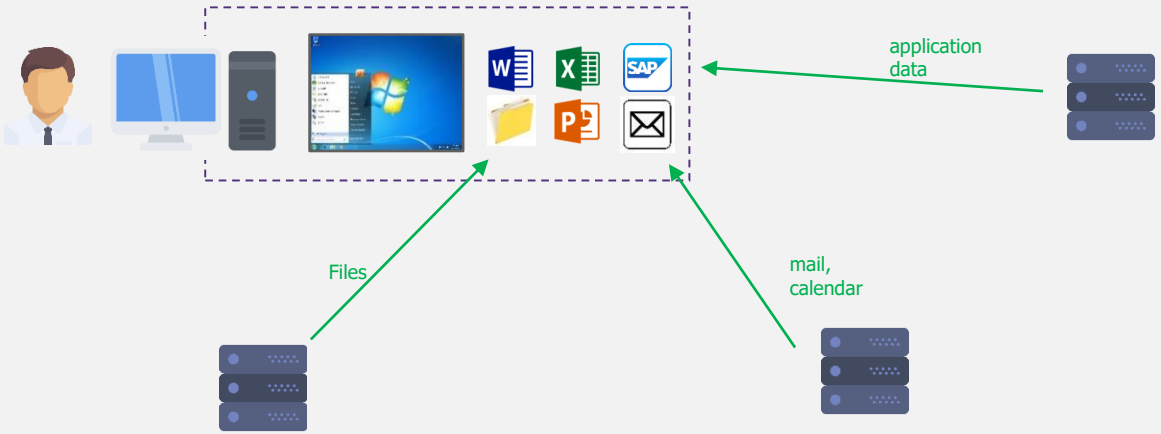
Workplace virtualization **changes significantly** the way workstations and applications are managed in comparison to a traditional approach of having everything locally on the user's terminal:

Mutualization of resources
Desktops or applications are hosted on servers that are shared.

Monitoring and scalability
With virtualization it is easy to have a clear and updated vision of the fleet and adjust allocated resources as needed (for example, add a new virtual machine to a fleet of remote desktops)

Simplification
Once an environment has been made available, adding new users or user groups is done in a few clicks. An OS upgrade/rollback can be done quickly for the entire fleet.

Standard local workstation



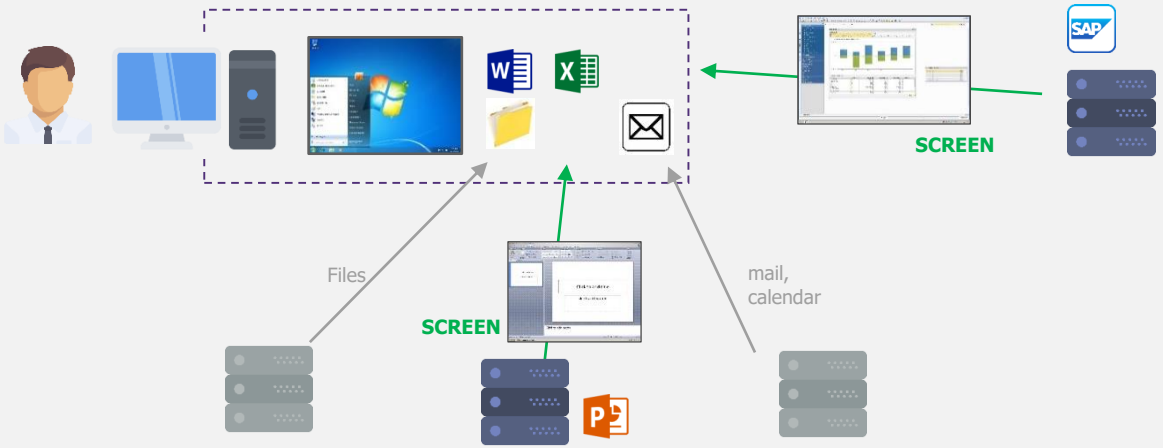
Interests

- / No network dependence
- / Widely deployment and mature solution
- / Compliant to all use cases: mobility, performances with different form factors (desktop, notebook…)
- / Better compatibility with market applications and devices

Drawbacks

- / More complex administration
- / Higher cost: purchase, support

Application virtualization



Interests

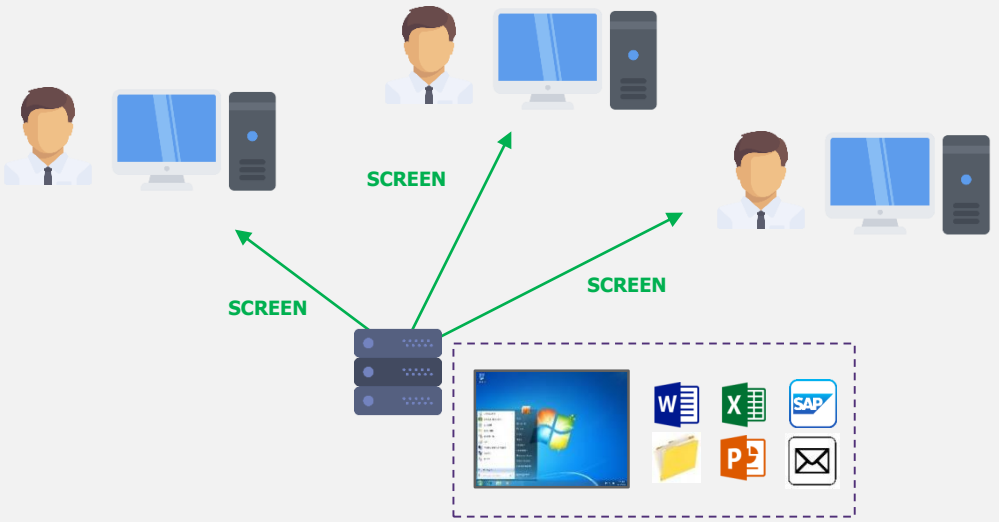
- / Suppression of the conflicts between applications
- / Easier provisioning of applications
- / Execution of the application without installation nor restart of the workstation
- / Reduction of time and costs linked to applications deployment in streaming mode
- / Optimization of the network load
- / Applications can be executed since the download of the first component

Drawbacks

- / Software with high adherence with the OS cannot be virtualized
- / Mutualisation with the existing remote distribution tool is impossible in a streaming mode
- / Support of virtualized applications by editors is blurry

vmware Microsoft

Session virtualization



Interests

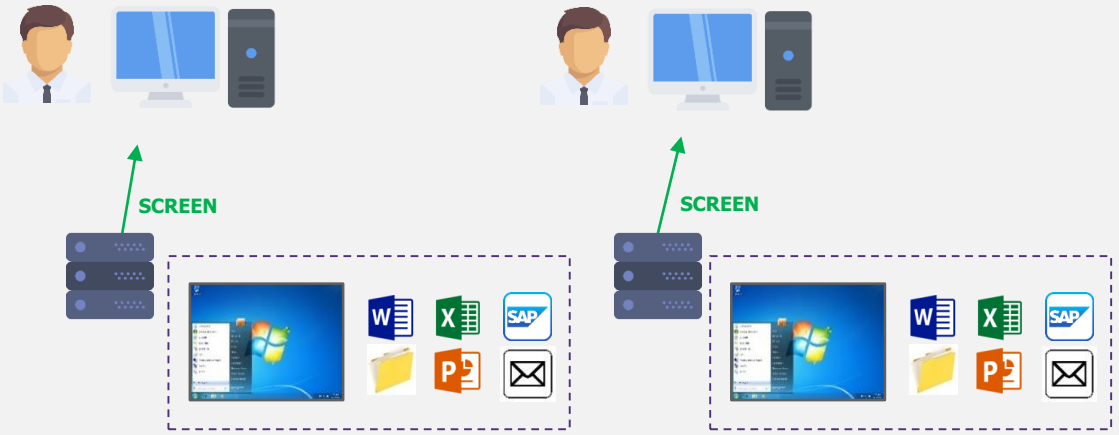
- Interests mainly concern the exploitation:
  - Centralized management of installations, licenses and updates
  - Simplified provisioning of applications and workstations
  - Reduced maintenance and sustainability of the terminal (thin client)
- Security: applications and data remain inside the Datacenter (with protection, back-up, management)
- Potential reduction of WAN traffic (exchanges between applications and file servers inside the Datacenter)

Drawbacks

- Strong dependency to network: availability / reliability and quality (bandwidth and latency)
- Incompatible with some applications that need high performances or important graphical works
- do not work on a OS server or a 'multi-users' mode
- Potential high cost of licensing and central infrastructure
- Complex administration of centralized infrastructures
- Printing workflows issue

vmware Microsoft CITRIX®

Desktop virtualization



Interests

- Administration of centralized infrastructures
- Reduced maintenance and sustainability of the terminal (thin client)
- Personalized desktop
  - A user experience closer to a standard workstation
  - Simpler integration of the applications and better compatibility of the applications
- A better insulation of the user environments

Drawbacks

- Strong dependence to the network (existence of an offline mode)
- More complex central infrastructure
  - Infrastructure of virtual machines to implement, broker connection, provisioning of the virtual machines, bays of storage for the virtual machines
- Initial investments
- No savings in term of OS licenses (1 license / virtual PC), but special conditions to study with the editors (evolution of the licensing models)

CHALLENGERS

vmware Microsoft CITRIX®

/ **04**

Endpoint management & Modern management

PC Management

A centralized administration through:

GPO (Group Policy Objects)

- GPOs allows to **precisely customize configuration** on the windows workstation (lots of parameters)
- …but does not allow to easily verify that the configurations have been correctly implemented

Device management tools (SCCM, ITCM…)

- These complete tools allow:
  - ✓ endpoint protection
  - ✓ compliance and settings management
  - ✓ software update management
  - ✓ asset intelligence
  - ✓ …

Mature tools allow IT teams to completely control the workstations, which often leads to heavy management workload, lack of agility and loss in user experience.

Traditionnal Unified Endpoint Management

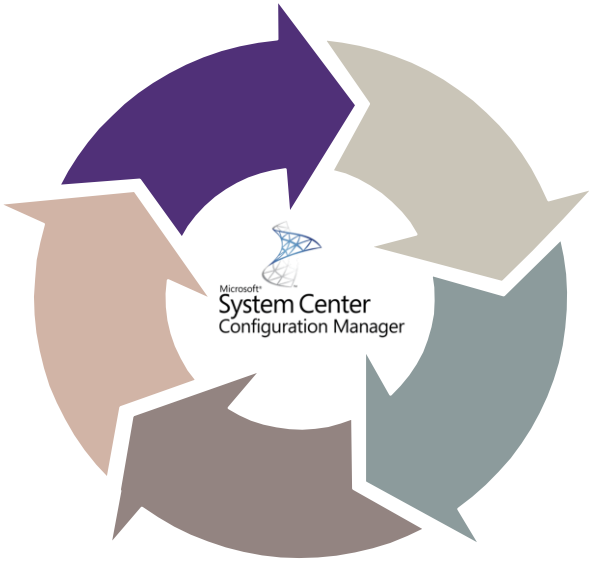
UEM is a 360° and centralized way to handle the IT endpoints

Device management & Inventoring

Get an exhaustive view of all the endpoints and tools to manage them: information about the device, remote support, troubleshooting, etc.

Application management & Delivery

A set of tools to manage end-to-end application provision: application packaging, versioning, SCCM offers remote deployment or self-service capabilities



Reporting

Gather and sort a company assets: get information and reporting about hardware, software, users, applications at any time …

Software update management

Manage all kind of software updates (OS, 3rd party apps, drivers…) to maintain a secure and functional

OS design & deployment

- Provides full support to Windows ecosystem: customize Windows images to answer company settings & configuration, keep pace with updates & upgrades
- Distribute operating systems to several devices (physical/virtual computers, mobiles devices…) through network

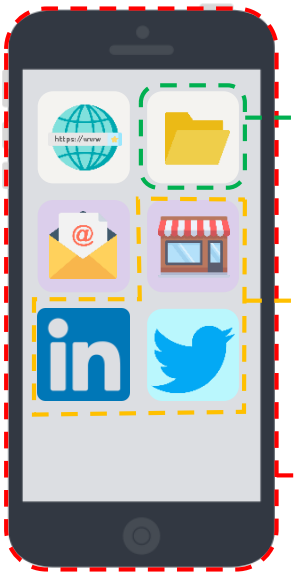
Entreprise Mobility Management

Stakes of Entreprise Mobility

Mobile devices integration in companies has posed new challenges for CIOs: manage the fleet, secure access to the IS from the outside and offer services adapted to these new formats.

Enterprise Mobility Management EMM solutions are designed to address these issues. They are divided into 3 main blocks dealing with specific topics.

➔ **ATAWADAC: Any Time, Any Where, Any Device, Any Content**



Ways for companies to enable mobile devices

CORP (Corporate)

The company buys and provides the device and the telecom subscription to the employee for business purpose only

BYOD (Bring Your Own Device)

Use of a personal device for professional use. This practice raises questions about information security and data protection, as well as social and legal issues

COPE (Corporate Owned, Personally Enabled)

The company buys and provides the device and the telecom subscription to the employee for his professional activities but allows a personal use

CHALLENGERS

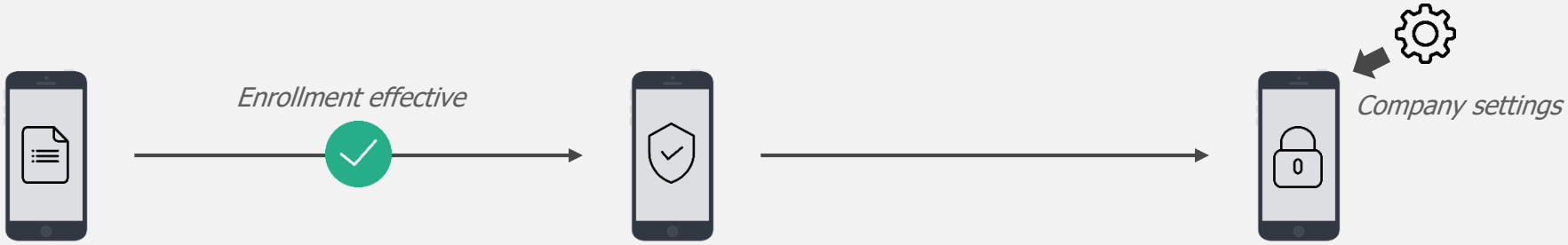
MobileIron

Microsoft Intune

airwatch by vmware

Good Powered By BlackBerry

Focus on EMM modules: MDM



Enrollment

The MDM must be able to take control of the device. The enrollment can be automated or require user interaction (app, URL). Often, a certificate is associated to the device to ensure its identity

Admin rights

Once enrolled, the MDM gains admin permissions to control built-in features

Configuration

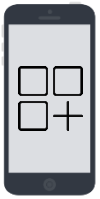
The MDM is now able to apply configuration and security profiles to comply to the company requirements

- Password Policy
- Features blocking
- Inventoring
- Monitoring of the device
- Entreprise WiFi configuration
- Device encryption
- Remote control, locking and wiping

Focus on EMM modules: MAM

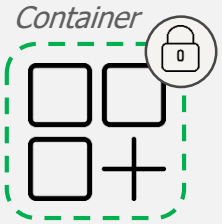
App management

The MAM takes control over the apps independently from the OS



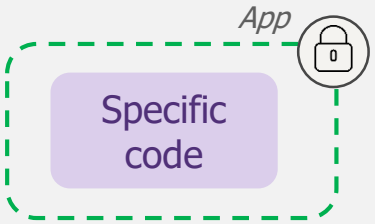
Wrapping

Wrap the application itself (code-wise) in a secured environment sandboxed from the OS



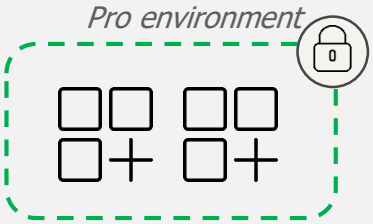
SDK

Develop or revamp the app to use only verified or in-house libraries



Built-in container

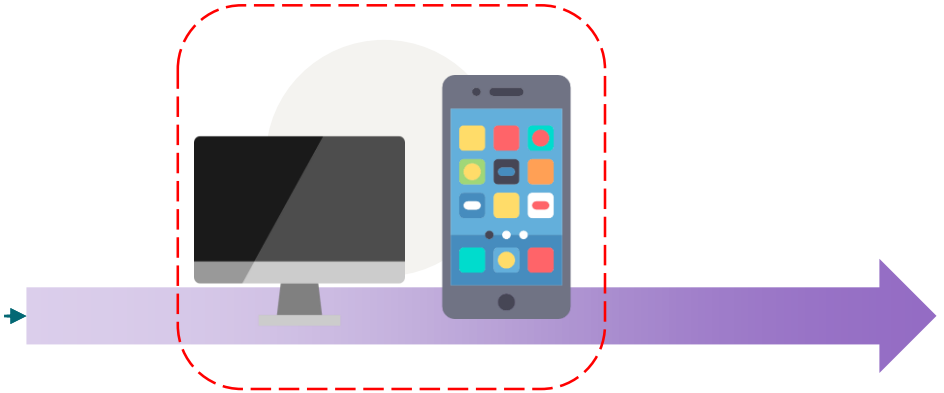
Separated environments for personal and professional apps



- Data sandboxing
- Application catalog
- Patching and lifecycle management
- App PIN
- Data encryption
- App flows through VPN

The traditional way to manage computers (Since late 90’s / early 00’s

Ways to manage mobile (since the 10’s)



Modern Management (20’s)

Modern Management in a nutshell

User-centric	1 team & 1 tool	SaaS based*	Intelligent security
« Out-of-the-box » deployment	**One tool** to rule them all	**Always up-to-date** infrastructure and **high availability**	**Identity & Access** Management
Self-service			**Information** Protection
Seamless experience across devices	**Unified operation model** between Mobile and PC worlds	**Device update on Cloud repositories** (e.g.: Windows update)	**Threat** Protection
			Security **Management**

Mobility support across all devices

* UEM tools exist in Cloud and on-premise. For security reasons, you may need to deploy an on-prem solution but you will loose many Cloud benefits

Modern Workplace brings innovation to the management of devices

Endpoint Management provide tools to handle and manage every aspect of the IT endpoints (depending on the solution). Although, traditional ways to manage the park are naturally shifting following the new stakes and usages

Traditional workstations management

2000-2010+

- Fix users working from business offices
- Single-device usage with Desktop or Laptop
- Always connected to corporate network
- Classic and mature but complex technologies such as imaging & domain policies

Mobile device management

2010-2015+

- Mobile users almost never connected to the corporate network
- Data accessed outside of offices' perimeter security
- New and standardized technologies for apps and devices management: EMM, MDM, MAM
- Device provisioning out-of-the-box (eg. Apple DEP)

In parallel, the evolution of **Cloud collaborative solutions**, the extended usage of **SaaS and Internet-facing apps**, and the emergence of new **0-trust network & security model**

Modern Workplace

- **A necessity** pushed by a global trend to open the IS to the Cloud and **an opportunity** to better handle the **mobility** of employees, realized by the management of their devices **over-the-air and with real-time status** of their health
- A **user-centric** model simplifying the IT workloads, bringing more **agility in operations** and improving **the time-to-market**, for instance with the out-of-the-box provisioning of new devices
- In target, a **self-running Digital Workplace** with updated security and more self-services

A market maturing around 5 main actors

Modern Workplace is a great opportunity to simplify device management…

Fast convergence to vendors' roadmaps & solutions always up-to-date

- Anticipation of On Premise products decommissioning
- Continuous update as-a-service for both client devices & back-end services

Improved time-to-market & automation

- Out-of-the-box provisioning
- No more Windows image maintenance
- Simplified release management operations (push over-the-air)

Focus on valuable activities

- No maintenance / upgrade of infrastructure
- Merge of 2 solutions for mobile & workstations into 1
- Removal of some workloads for device provisioning (time and logistic)

Facilitated global coverage

- Direct-shipping
- M&A projects facilitated by Cloud infra-less solutions

Some UX enhancements

- Self-service portals
- Seamless experience across devices (depending the vendor)

Modern security

- Patching over-the-air, always up-to-date
- Advanced solutions: EDR, real-time compliance, etc.

…yet to balance with solution's maturity

Hybrid approach coupled with **classic solutions stays required** to cover all use-cases

Modern solutions **are evolving very fast** – monthly releases – and all technologies are not mature yet

In short:

- Benefits sound promising but not adapted to all situations and populations
- We recommend to confront solutions' limitations with business expectations in early stage, by studies or PoCs

/ 05 New uses

ATAWAD: Any Time, Any Where, Any Device

Users needs evolve concerning their work tools

New ways and new places to work (teleworking, coworking, …)

Social change in the border between professional and personal life (BYOD, pro/perso, …)

A new generation (Y, Z, …) is arriving in enterprises with very different expectations

New devices that the user can carry everywhere

Public services (Dropbox, Gmail, …) put pressure on business services

And IS is forced to adapt as possible! It has to be …

Open

- Before, most resources and services were kept internally
- Now they must be published on the internet (example: mail)

Secured

- Avoid data leak, IS breach, denial of service, …

Accessible on any device

- IT use to know exactly where the services will be accessed.
- It is not the case anymore, resources can be accessed from any kind of device/OS (example: intranet)

BYOD: **B**ring **Y**our **O**wn **D**evice

Principle

- The employee **brings his own device to work**, and use it in professional and personal fields
- **No support or limited support** on the device for the company (bought, insured and maintained by the employee)
- The company can give a **financial participation**
- In USA, 43 % of corporate executives (in company >500 employees) already use personal equipment to connect to their company IS

Strong interest for companies

- Potential reduction of cost: a potential profits of 10 to 40%
- A growing request from users (Y generation, "consumerization of IT")
- A facilitating technical context (SaaS, virtualization)

Important obstacles

- Strong legal and HR issues:
  - Where is the limit for the company control over the personal device?
  - Where is the limit for the employee use of the company data?
- Strong security issue
- Reluctance of IT teams
- Loss of productivity in case of incident

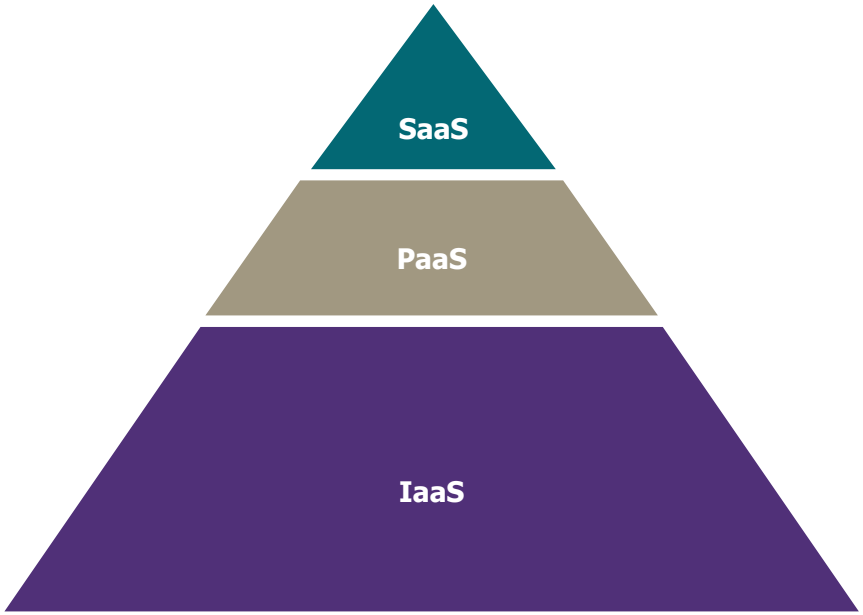
Even if some companies implemented BYOD, the maturity is still growing step by step. The implementation of this solution must be for some specific users' profiles (business need, level of autonomy) and have to be a voluntary action

Cloud computing

Cloud computing allows enterprises to access a service on demand, without installing all the necessary infrastructure

- **Applications**
- **Data**
- **Middleware**
- **OS**
- **Virtualization**
- **Servers**
- **Storage**
- **Network**

- Office, messaging, collaborative applications…
- Development platform in the web
- Hosting infrastructure



Managed by the Cloud provider

The services provider:

- Host the infrastructures.
- Manage the technical administration.
- Manage the infrastructures installation and maintenance.

- Provide the preconfigured middlewares.
- Propose hosting solutions for development platforms.

- Manage everything till the applications update…
- …but also provide back-up and integrated security solutions.

/ **06**

Identity management

Why Active Directory?

"The keys of the kingdom"

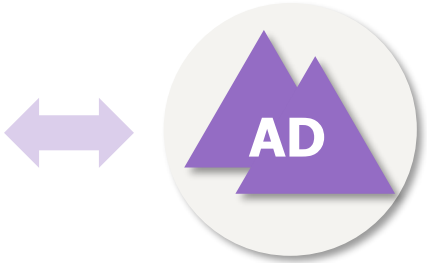
Active Directory is at **the heart** of most major companies' IS…

Devices

All corporate devices or machines, and possibly BYOD ones

IT identity

Link with HR systems



Administration

Helpdesk, contractors, technical accounts, etc.

IT resources

Mail servers, printers, file shares, app servers, firewalls, DNS/DHCP, etc.

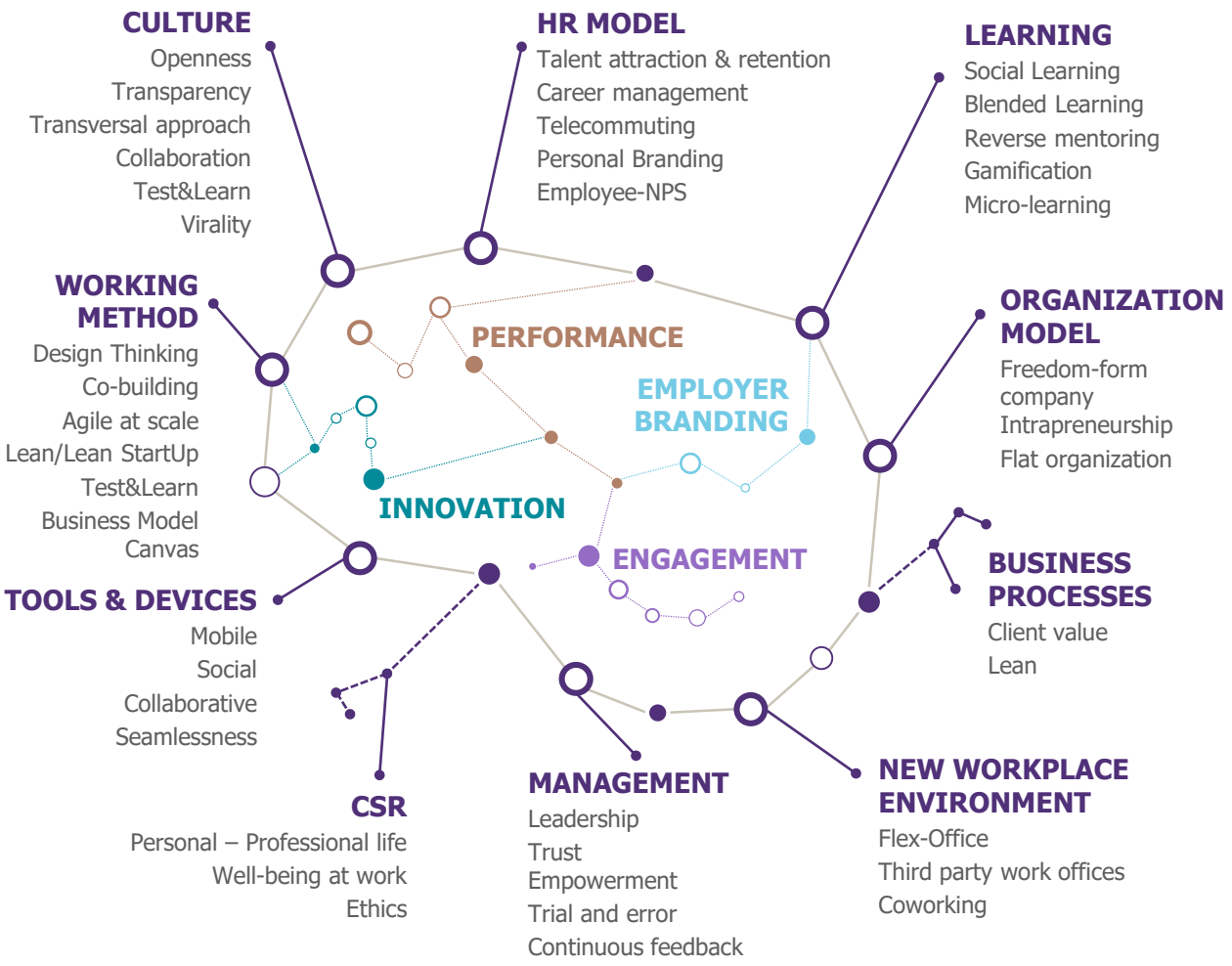
/ **07**

New Ways of Working

Our vision of the New Ways of Working

Let's reinvent the company !

Collective transformation to foster the association of performance, innovation, engagement and employer branding



OUR 3 BELIEFS TO TAKE ACTIONS

ACTIVATE A « NWOW-READY » ENVIRONMENT

Catalyse new practices by providing innovative technologies and spaces

INSTALL CORPORATE HACKING

Authorize and encourage the roll-out of radically simplified processes

DISRUPT CULTURE AND PRACTICES

Move to new behaviors and mindset to transform the employee experience

OUR NEW WAYS OF WORKING OFFER

Our NWOW Know-How

BRICKS

RETHINK WORKSPACES

BYTES

TRANSFORM DIGITAL WORKPLACE & DIGITAL EMPLOYEE EXPERIENCE

BEHAVIOR

SHAKE UP ORGANIZATIONS, SKILLS DEVELOPMENT AND MANAGEMENT STYLES

BRANDING

BOOST ENGAGEMENT AND EMPLOYER BRANDING

Examples of missions

- Workspaces strategic vision and operational roadmap co-design (via Design Thinking)
- Smart Building Digital and IT strategy definition
- Learning and inspiring expeditions organization
- Sourcing management (architect, furniture, services, facility management, etc.)
- Project Management (operational moving, communication, change…)
- Work councils and Employee Unions relationship management
- Financial engineering study

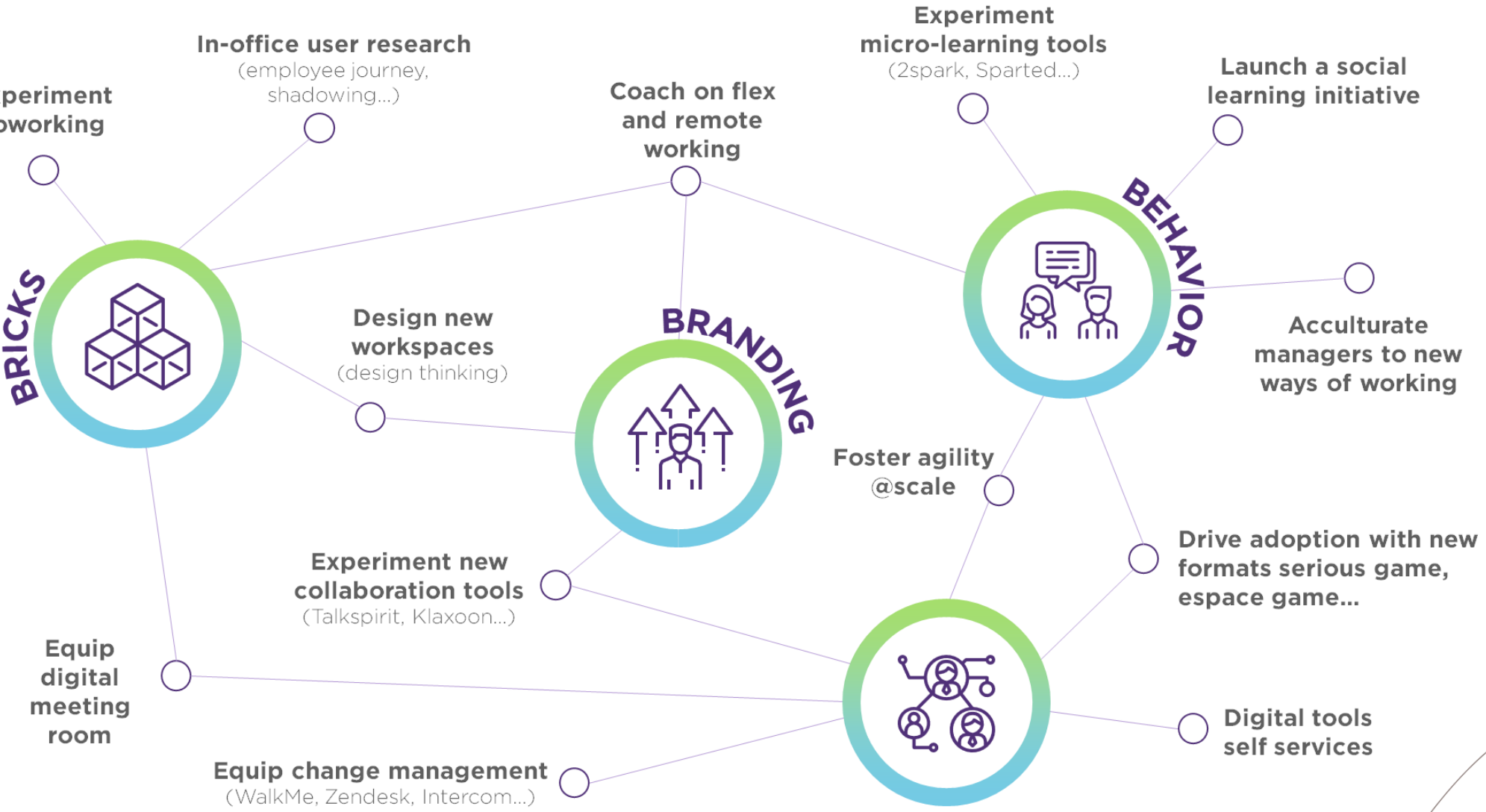
- Voice of the Employee and improvement plan
- Digital Workplace strategic vision and roadmap co-design
- Digital Workplace sourcing management and decision file development
- Technical architecture design and security study
- Viral Communication & Change Management
- Program management
- End-users and internal process corporate hacking and digitizing
- Digital maturity assessment

- Blended Learning strategy definition and implementation
- Training, individual & collective coaching, codevelopment
- Managerial support and management practices evolution
- Change maturity assessment and diagnostic
- Telecommuting policy definition and development
- Collective, transversal and participatory dynamics development
- Reorganization support and change management

- Internal and external communication strategy definition and implementation
- Corporate branding and labelling management
- Quality of life and well being at work approaches
- Employee satisfaction, engagement and mood measurement
- "Symétrie des attentions" strategy definition and implementation plan

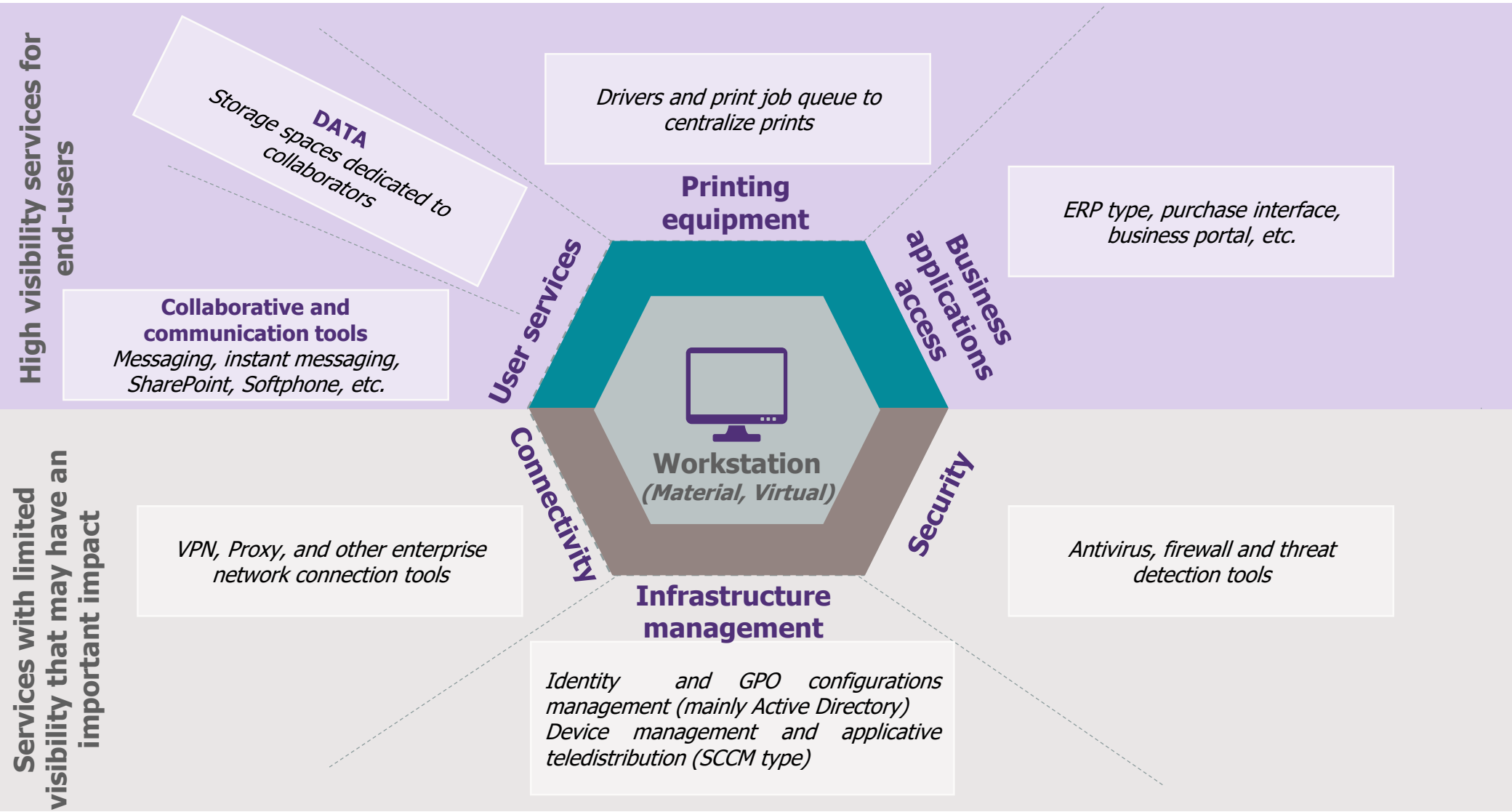
A unique capability to combine NWOW know-how to drive transformation

Examples of combinations



Conclusion

Infrastructures' adherences with the Workstation



Every project related to Workstation require to take into account the infrastructure component that represents the hidden side of the « Workstation » iceberg

Workstation: good practices and cautions

Limit devices heterogeneity to reduce management costs

For the purposes of **providing an optimal workstation management** within the IS, it is essential to:

- **Moderate the acquisition of administrator rights** to collaborators that express a real need,
- **Limit the number of physical workstation models**,
- **Limit the applicative variety** and **avoid functional duplicates** (for example an unzip tool: propose WinZip or WinRAR).

Ensure workstation lifecycle

It is highly recommended to position **regular and periodical update lifecycles** by targeting an update deployment on several devices at least every 6 months.

This frequency enable to **maintain a certain level of security, performance** and access to **new features**. It also enables to limit issues related to obsolescence that push to verify applications and infrastructures on new workstation versions.

Limit the workstation customization

In order to **provide an optimal workstation performance**, it is important to **limit workstation customization launching scripts and strategical group objects** (GPO). Indeed, it may slow down workstation launching and create adhesions difficult to qualify.

Ensure a proper change management

A workstation **modification**, **minimal or global**, may have a **significant and major impact** on the enterprise.

The change management pattern must be **adapted to context** and to the specific modification but resume generally the following phases: **definition** of populations, **creation** of contents, **steering and generalization** of change management.

It is important to **integrate the whole IT teams** in projects, mainly because of strong adhesions between workstation and enterprise management infrastructures.

Thank you!

Any question?

WAVESTONE

Azza LASSOUED

Consultant

Mail: Azza.LASSOUED@wavestone.com

Alexandre GUILLE

Senior Consultant

Mail: Alexandre.GUILLE@wavestone.com