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Everything as a Service

Enterprise Service Management Architectures

REINOUD MARTENS
SERVICE MANAGER GENERAL SERVICES
CERN (Switzerland)

servicenow®

Agenda

CERN: Four Years of Enterprise Service Management Experience

'Islands' vs. 'Continental' Approach

Catch-All Processes vs. Specific Workflows and Apps (Spread Out Before Digging Deep)

Separating the 'How' from the 'What' Through a Two Dimensional Service 'Taxonomy'

Other Lessons Learned and Suggestions

CERN

- World's largest particle physics centre

- World's largest scientific instrument

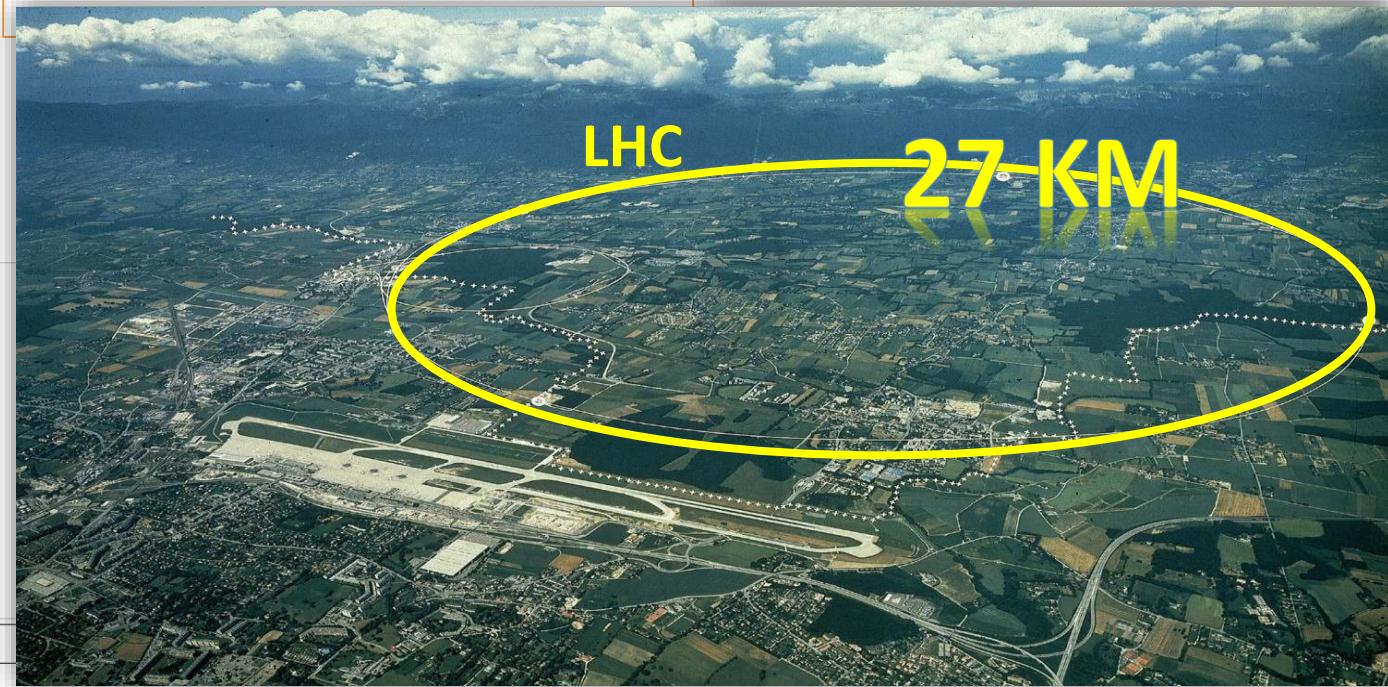- 1954 – Europe's first joint ventures

- 2014 – 21 member states

  Austria, Belgium, Bulgaria, Czech republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Israel, Netherlands, Norway, Poland, Portugal, Slovak republic, Spain, Sweden, Switzerland, United Kingdom

- Annual budget 1246.5 million CHF

- ~ 2,300 Staff BUT >> 10,000 Users
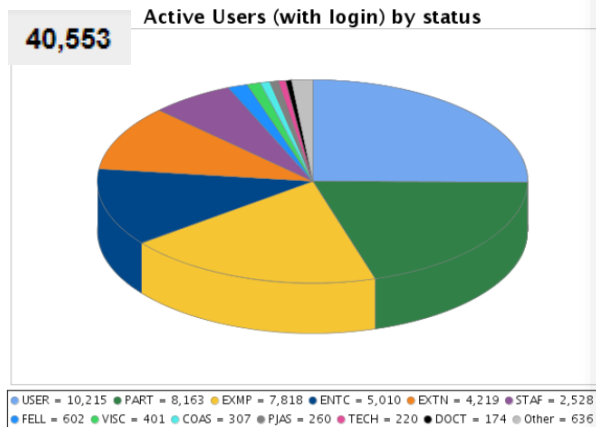
CERN opening the door…

- Membership for all countries independent of geographical location
- Associate Membership possible
- **Israel** welcomed to Membership by Council 12/2013
- **Romania** in accession to Membership since 2010
- **Serbia** Associate Member in the pre-Stage to Membership since 2012
- **Cyprus and Ukraine** Agreement concerning Associate Member (in the pre-Stage to Membership for Cyprus) in ratification process
- **Brazil, Russia, Slovenia, Turkey** Agreements under discussion
- **Pakistan** application received for associate membership

Active Users (with login) by status

40,553

- USER = 10,215
- PART = 8,163
- EXMP = 7,818
- ENTC = 5,010
- EXTN = 4,219
- STAF = 2,528
- FELL = 602
- VISC = 401
- COAS = 307
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- DOCT = 174
- Other = 636

LHC

27 KM

CERN's Mission

Seeking answers to questions about the Universe.
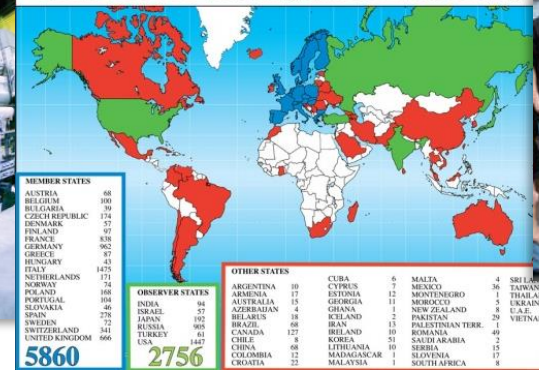What is it made of?
How did it come to be the way it is?

Advancing the frontiers of technology and engineering.

Uniting nations together through science. Today >10,000 visiting scientists from more than 100 countries.

Training young scientists and engineers who will be the experts of tomorrow.
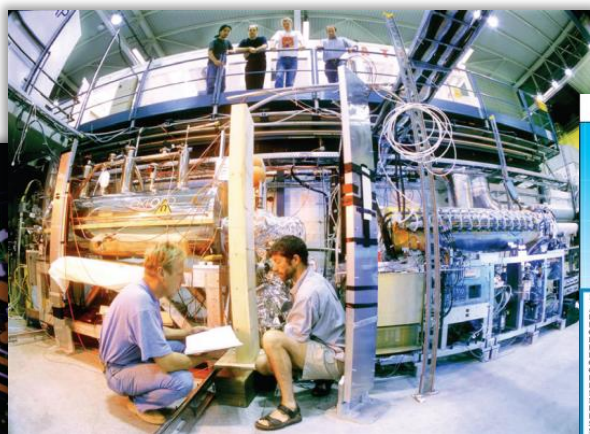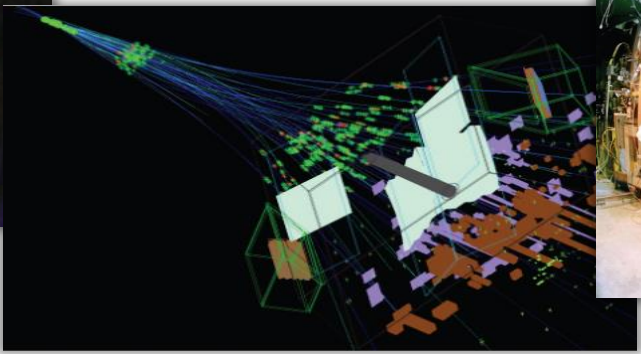
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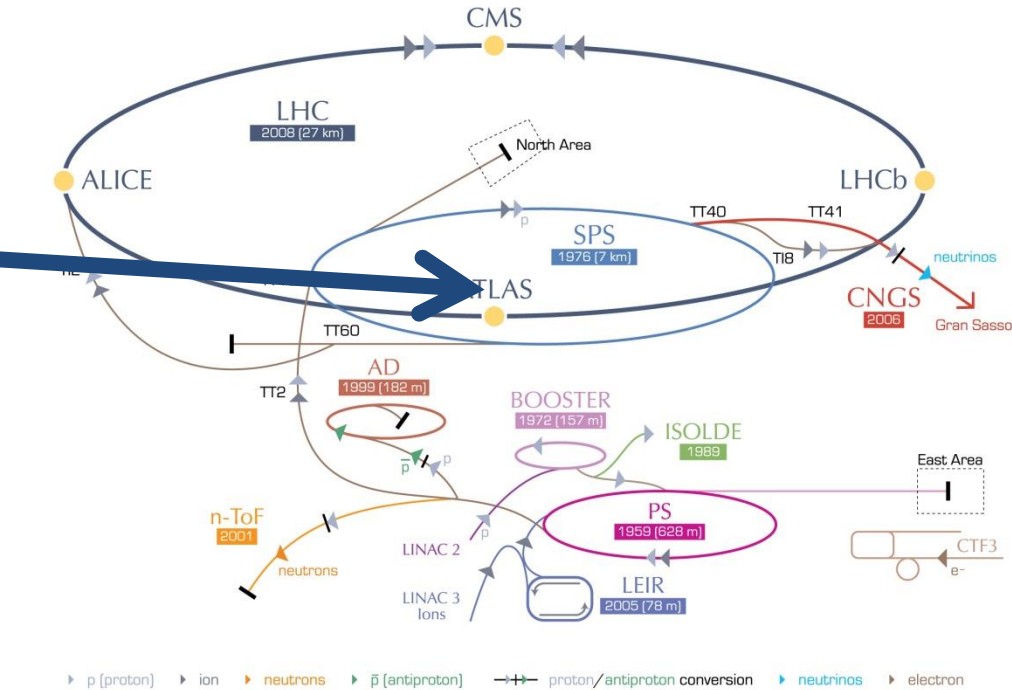April 19–24, 2015 • Mandalay Bay • Las Vegas, NV

4

CERN Experiments and Topics

EXPERIMENTS

- ACE
- AEGIS
- ALICE
- ALPHA
- AMS
- ASACUSA
- ATLAS
- ATRAP
- AWAKE
- CAST
- CLOUD
- CMS
- COMPASS
- DIRAC
- ISOLDE
- LHCb
- LHCf
- MOEDAL
- NA61/SHINE
- NA62
- nTOF
- OSQAR
- TOTEM
- UA9

CERN's accelerator complex

CMS

LHC 2008 (27 km)

North Area

ALICE

LHCb

SPS 1976 (7 km)

TT40 TT41

TT8 neutrinos

ATLAS

CNGS 2006 Gran Sasso

TT60

TT2

AD 1999 (182 m)

BOOSTER 1972 (157 m)

ISOLDE 1989

East Area

n-ToF 2001

PS 1959 (628 m)

CTF3

LINAC 2

neutrons

LINAC 3 Ions

LEIR 2005 (78 m)

e-

▶ p (proton) ▶ ion ▶ neutrons ▶ p̄ (antiproton) ▸▸ proton/antiproton conversion ▶ neutrinos ▶ electron

LHC Large Hadron Collider SPS Super Proton Synchrotron PS Proton Synchrotron

AD Antiproton Decelerator CTF3 Clic Test Facility CNGS Cern Neutrinos to Gran Sasso ISOLDE Isotope Separator OnLine DEvice
LEIR Low Energy Ion Ring LINAC LINear ACcelerator n-ToF Neutrons Time Of Flight

More than 3000 scientists from 174 institutes in 38 countries work on the ATLAS experiment (February 2012).

Antimatter
The big bang should have created equal amounts of matter and antimatter. So why is there far more matter than antimatter in the universe?
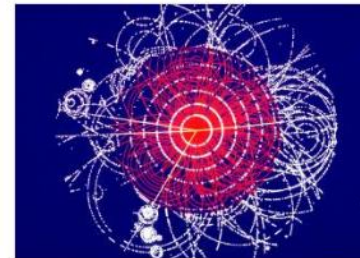
The Higgs boson
Elementary particles may have gained their mass from an elusive particle – the Higgs boson

The Large Hadron Collider
The 27-kilometre LHC is the world's largest particle accelerator. It collides protons or lead ions at energies approaching the speed of light

The birth of the web
The World Wide Web, invented at CERN in 1989 by British scientist Tim Berners-Lee, has grown to revolutionize communications worldwide
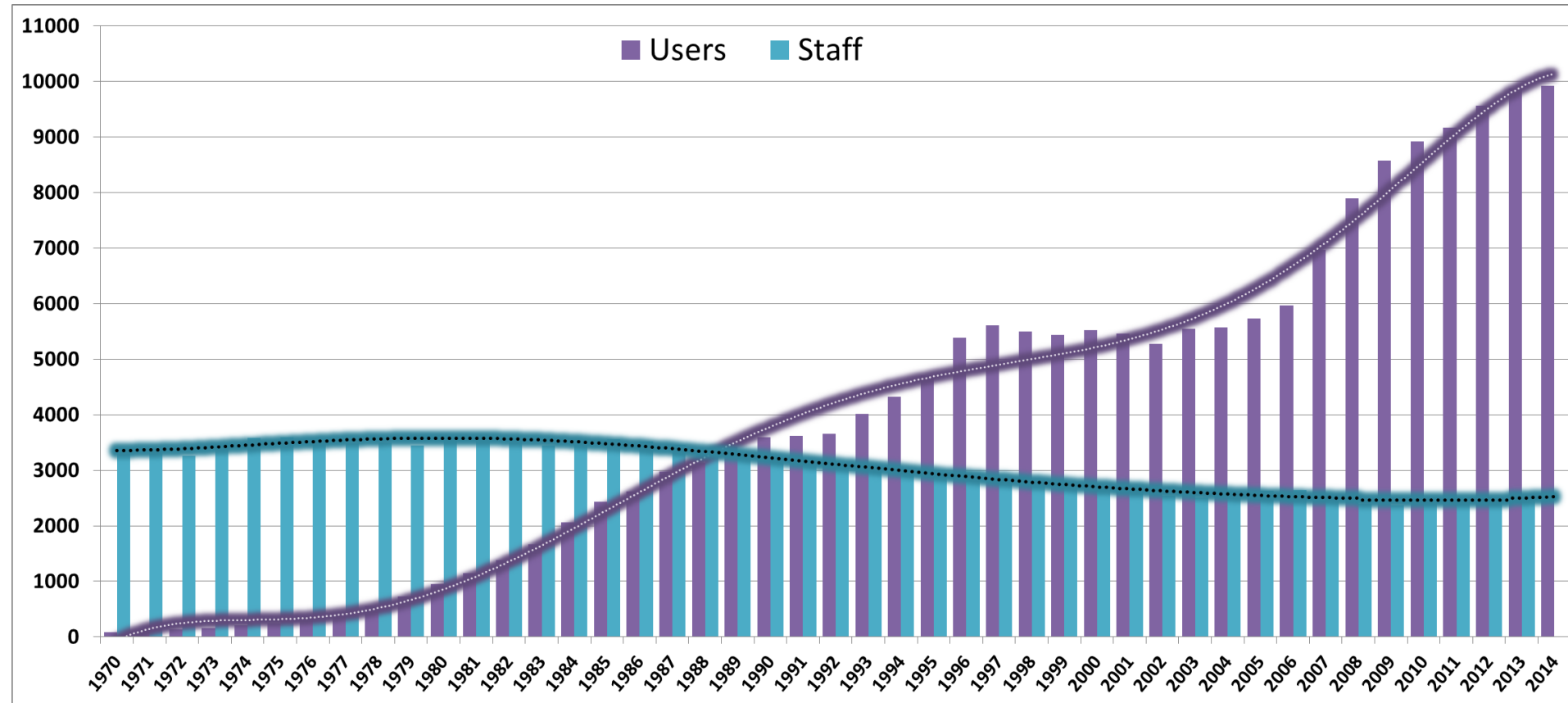
Service Management @ CERN

Why

1. Do **more** with **less**

2. Resources under scrutiny → Demonstrate optimization of **efficiency** and **effectiveness**

3. Shift from project (build LHC) to operate (run LHC) → Customer/User Service Orientation (**Culture Change**)

Service Management @ CERN

Goals

1. **For <u>users</u>** simplify life by providing a single point of contact for all services.

2. **For <u>supporters</u>** ease work by providing a single collaborative highly automated tool for all.

3. **For <u>management</u>** improve monitoring and control (**Dashboards!**).

4. **For <u>governance committees</u>** demonstrably improve efficiency and effectiveness.
   - Alignment with good practice (ITILv3 and ISO20k)
   - Framework for continuous improvement

AND DO THIS FOR <u>ALL SERVICES</u> (NOT ONLY IT)

ITSM

Service Mgmt. Beyond IT

Scope

- Civil engineering services
- Material Management & Storage Services
- Fire protection services (Fire Brigade)
- Registration, access & safety services
- Facility management services
- Business application services
- Alarm system services
- Mail, Removal & Distribution of Goods Services
- Transport, Shipping & Goods Reception Services
- Waste Management Services
- Person mobility services (Cars, Bicycles, Shuttles)
- Library & Archive Services
- Housing & Hotel Services
- Finance & Purchasing Services
- Human Resources Services
- …

Left Table

Service Area	Customer Services	Services Elements
Finance Services	Finance Service for Teams and Users	Collaboration Accounting and Invoic...
		Payment for Visiting Teams and Colla...
		Team Accounting and Invoice S...
	Financial Reports Service	Financial Reporting Service
	Procurement Service	Collaboration Agreements Ser...
		Industrial Liaison Services
		Procurement of Supplies and Se...
		Temporary Labour Service
	Remuneration and Claims Services	Claims and Indemnities Servi...
		Remuneration Payment Servi...
HR Services	HR Reports Service	HR Reporting Service
	Personnel Administration Services	Attestation Service
		Family Benefits Service
		Internal Tax Service
		Registration and Update of Personnel
		Swiss and French Cards Serv...
		Working hours, Pre-retirement and Le...
	Personnel Insurance Services	CERN Health Insurance Scheme –
		CERN Unemployment Insurance S
		Life Insurance Service
	Personnel Support Services	Career Advisory Service for Staff M
		Career Transition Measures
		Contract
		Diversity at CERN
		HR Policies and Process
		Internal Mobility
		Personnel Counselling
	Recruitment, Jobs and Integration Services	Apprenticeships at CERN
		Arrival and Integration Servic...
		Recruitment Outreach Servic...
		Recruitment Service
	Social Affairs Service	Social Affairs Service
	Staff Association Services	CERN Clubs
		CERN Nursery School
		Groupement des Anciens CERN – ESO Pensi...
		Staff Association Administrative S
	Staff Management Services	Competency Model
		Management Advising
		Performance Career
	Batch Services	Batch Service
		BOINC Service
	Collaboration Services	Audio Conferencing Service
		Conference Rooms Service
		Eduroam Service
		E-Mail Service
		Lync Service
		Sharepoint Service

Right Table

| Service Area	Customer Services	Services Elements
	Staff Management Services	Management Advising
		Performance Career
	Batch Services	Batch Service
		BOINC Service
	Collaboration Services	Audio Conferencing Service
		Conference Rooms Service
		Eduroam Service
		E-Mail Service
		Lync Service
		Sharepoint Service
		Video Conferencing Service
	Computer Security Services	Certificate Authority Service
		Computer Security Service
		Firewall Service
		Single Sign On and Account Management Services
	Database Services	Accelerator Database Service
		Administration Database Service
		Database on Demand Service
		Database Replication Service
		Experiment Database Service
		General Purpose Database Service
	Desktop Services	Linux Desktop Service
		Mac Desktop Service
		Public PC Service
		Windows Desktop Service
	Development Services	GIT Service
		JIRA Service
		SVN Service
	Engineering Software Services	Electronics Design Software Service
		Mathematics Software Service
		Mechanical Design Software Service
IT Services	GRID Services	File Transfer Service
		GRID Compute Element Service
		GRID Development Service
		GRID Information Service
		GRID Infrastructure Monitoring Service
		LFC Service
		MyProxy Service
		Tier-0 Support Service
		VOMS Service
		WLCG Support Service
	Interactive Services	LXPLUS Service
		Windows Terminal Servers
	IT Infrastructure Services	ACRON Service
		Configuration Management Service
		Load Balancing Services
		Messaging Service
		Monitoring Service
		Server Provisioning Service
	Network Services	Campus Network Service
		CIXP Service
		Datacenter Network Service
		Network Database and Registration Service
		Network Service for Projects and Experiments
		Technical Network Service

Service Mgmt. @ CERN

Numbers

- 495 hotel rooms, 3 restaurants
- 2 main Sites, 657 Buildings, 238 Barracks
- > 15,000 active access cards
- > 1,000 cars
- > 10,000 desktops & laptops
- 25,000 servers / 150,000 cores
- 95,000 disks 195 PB disk space
- 130 PB tape storage
- 30,000 network ports
- 1 Internet exchange point
- 2 Data Centers

40,553 — Active Users (with login) by status
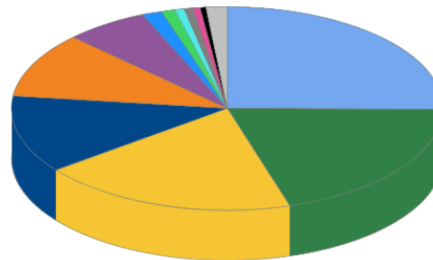
USER = 10,215 ● PART = 8,163 ● EXMP = 7,818 ● ENTC = 5,010 ● EXTN = 4,219 ● STAF = 2,528
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Simplify users and supporters life by providing
- ➡ ONE point of contact (ONE #, ONE URL, ONE place)
- ➡ ONE behaviour; unified processes for all services
- ➡ ONE tool shared by all service provides
- ➡ ONE definition/description (business service catalogue)
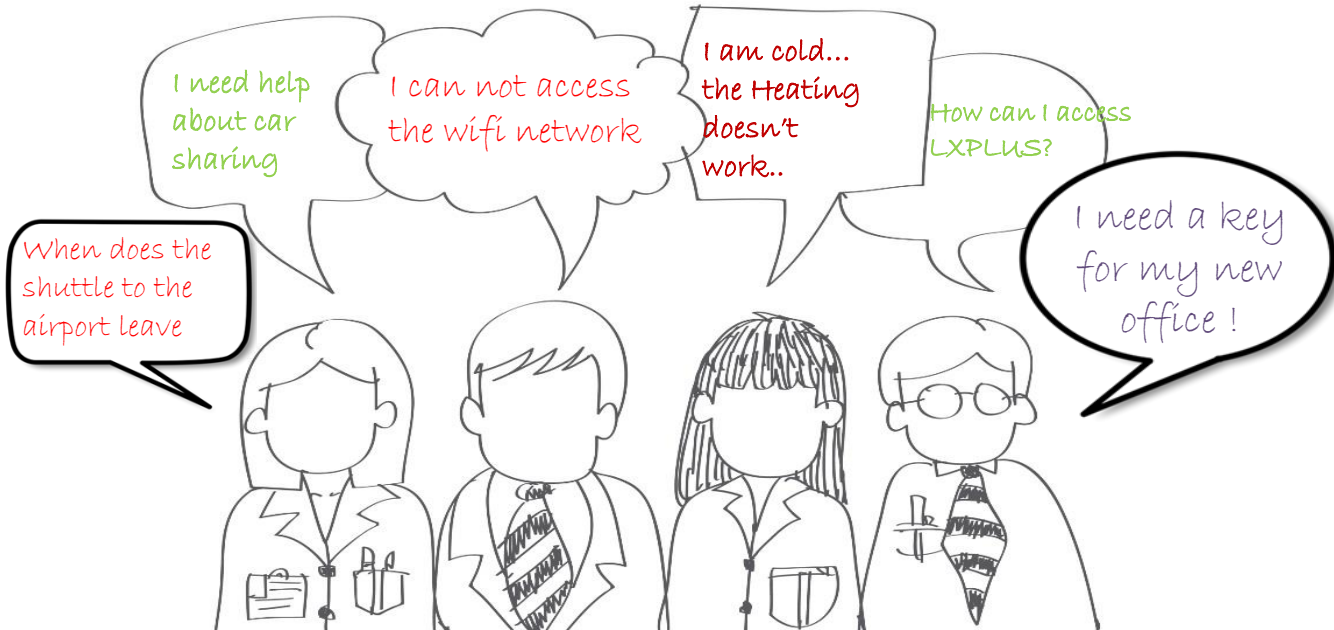
Service Management System SPOC

- Computer Account is blocked
- Wifi connexion request
- LXPLUS batch issue
- Car sharing vehicle has flat battery
- Heating makes 'glouglou' noise
- Need a door key for the office
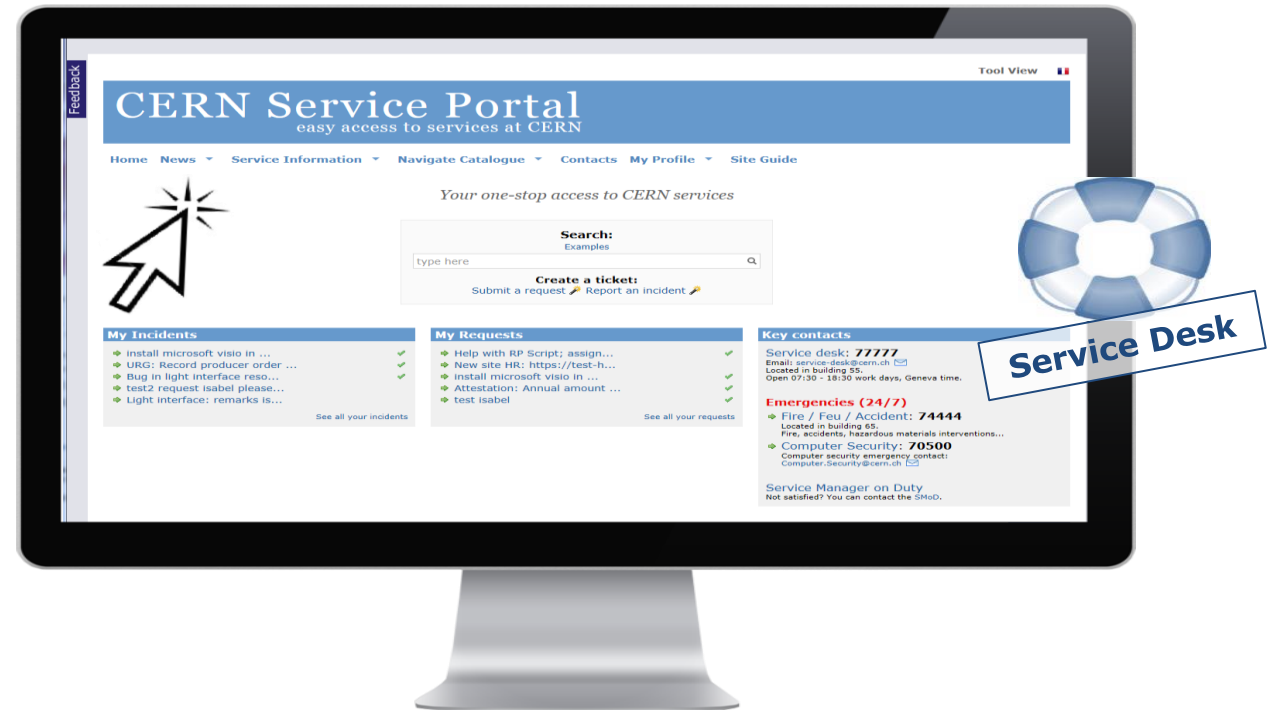
Service Management Collaboration

- Computer Account is blocked
- Wifi connexion request
- LXPLUS batch issue
- Help with Car sharing
- Heating not working
- Door key issue

- Identity management Service
- Networking Service
- Batch Service
- Car pool and Rental Service
- Heating, ventilation, Air Conditioning and Compressed Air Service
- Locks and Keys Service

Service Performance Management
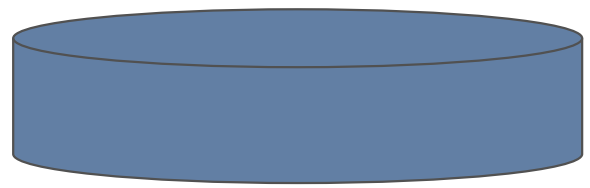
- Identity management Service
- Networking Service
- Batch Service
- Car pool and Rental Service
- Heating, ventilation, Air Conditioning and Compressed Air Service
- Locks and Keys Service

Trend information
Operational information

Enterprise Service Management Timeline

KPI's & DASHBOARDS !

The expanding Service Management Universe
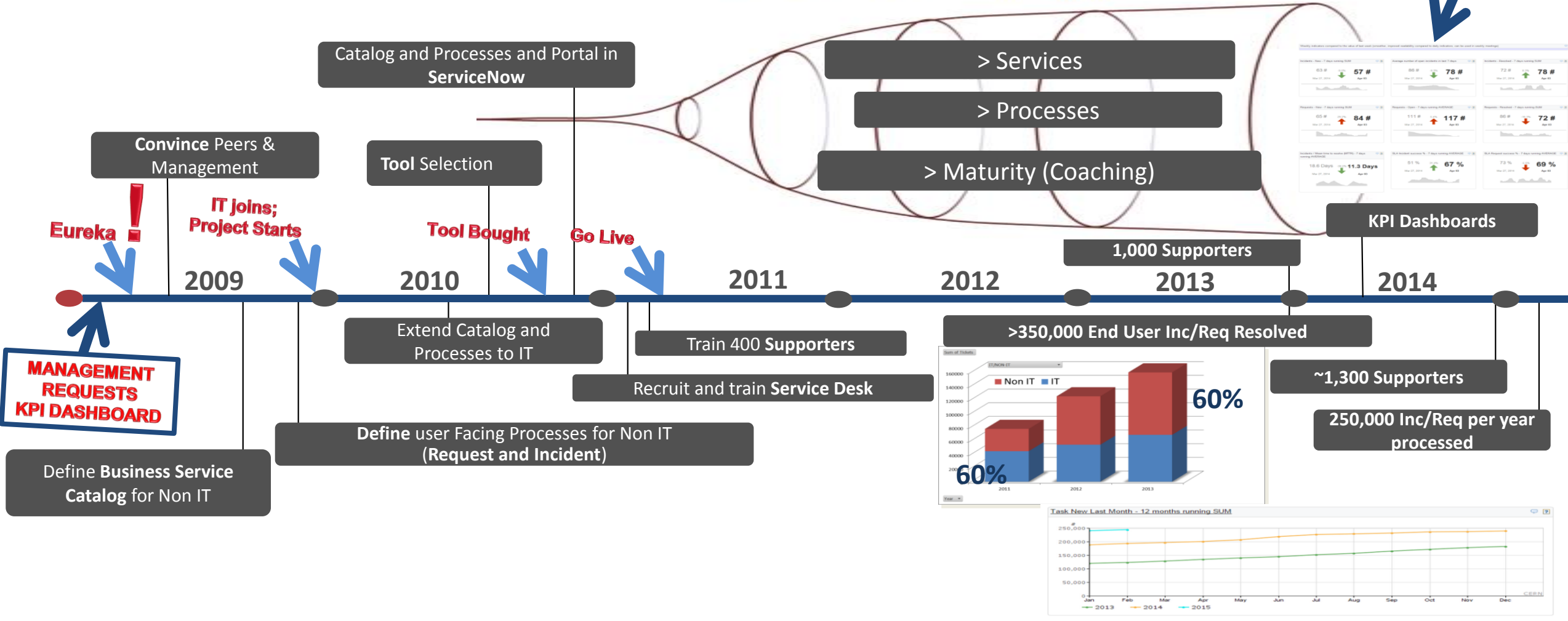
Catalog and Processes and Portal in **ServiceNow**

> Services

> Processes

> Maturity (Coaching)

Convince Peers & Management

Tool Selection

IT joins; Project Starts

Eureka !

Tool Bought

Go Live

KPI Dashboards

1,000 Supporters

2009   **2010**   **2011**   **2012**   **2013**   **2014**

MANAGEMENT REQUESTS KPI DASHBOARD

Extend Catalog and Processes to IT

Train 400 **Supporters**

Recruit and train **Service Desk**

>350,000 End User Inc/Req Resolved

~1,300 Supporters

Define **Business Service Catalog** for Non IT

Define user Facing Processes for Non IT (**Request and Incident**)

250,000 Inc/Req per year processed

60%

60%

Task New Last Month - 12 months running SUM

Islands or Continent

How: Customer Focus … Architectural Choices

From a user/customer perspective it is easier to do business with a 'partner' that has one currency, one set of laws, and no internal borders to cross – a dream?

– So skip the internal fighting and build a united service management framework with

  • One common set of processes (1 for request, 1 for incident, etc..)

  • One common tool

  • One business service catalog

  • One service portal

– This will also bring

  • Cost savings in operations with easy "border crossing" (reassignment) of tickets between services in different domains

  • Reduced maintenance cost (few workflows)

  • Scalability, as marginal cost to get another 'country' on board is very low

– HOW?

From a supporters & managers perspective benefits are less clear

– Countries (service domains) loose their autonomy

– Inhabitants (supporters) all have to follow same rules

– Absence of borders results in much more transparency

Is building a united service continent feasible for you or does your 'political' and 'historical' situation force you have to adopt a 'country' approach and maybe converge to a continental solution in a second phase?
(In this case carefully architect your 'national laws' to facilitate a future merge, or at least 'interoperability')

Note: Your favorite provider may find an interest in selling you domain specific solutions.

Continent

✅ Easy for users:

- ✅ Focus on **What** (customer view)
- ✅ Single point of contact
- ✅ Single shared processes
- ✅ One service catalog

✅ Facilitates 'collaboration' across borders

✅ Cheap to maintain and extend (scalable)

❌ Difficult to sell to supporters
(single solution suits all)

❌ Managers have to give up autonomy

Country

✅ Tailor made workflows for supporters

✅ Service Managers maintain full control

❌ Less user friendly

- ❌ More exposure on **How** services are organized
- ❌ Risk of confusing user experience in portal

❌ More complex and costly to maintain

❌ Scalability; adding 'countries' is expensive

❌ 'Border crossing' can be a pain

Go Fast (Flood the Continent)

How: Less Obvious Success Factors

- Be Quick and Agile, there are lots of "sceptics", be faster than the 'hunters'

  1. Focus on customer experience 1st ("itil" supporters experience 2nd)
  2. Cloud based SAAS solution for Fast initial rollout & Low investment
  3. Lean and fast, scalability is key (new service < 1 day)
     - Unified processes
     - Generic service management framework
     - Tool that allows rapid forms development
  4. Low profile at initial rollout

3 months thanks to the cloud based SAAS solution

200 request/incident forms 1st year

Users & Customers

Managers

Supporters

Forms
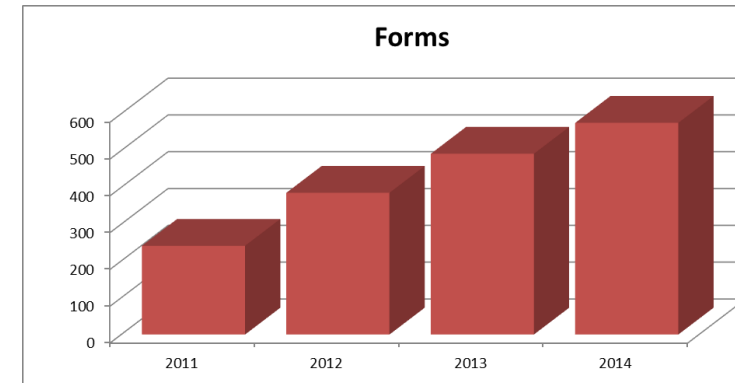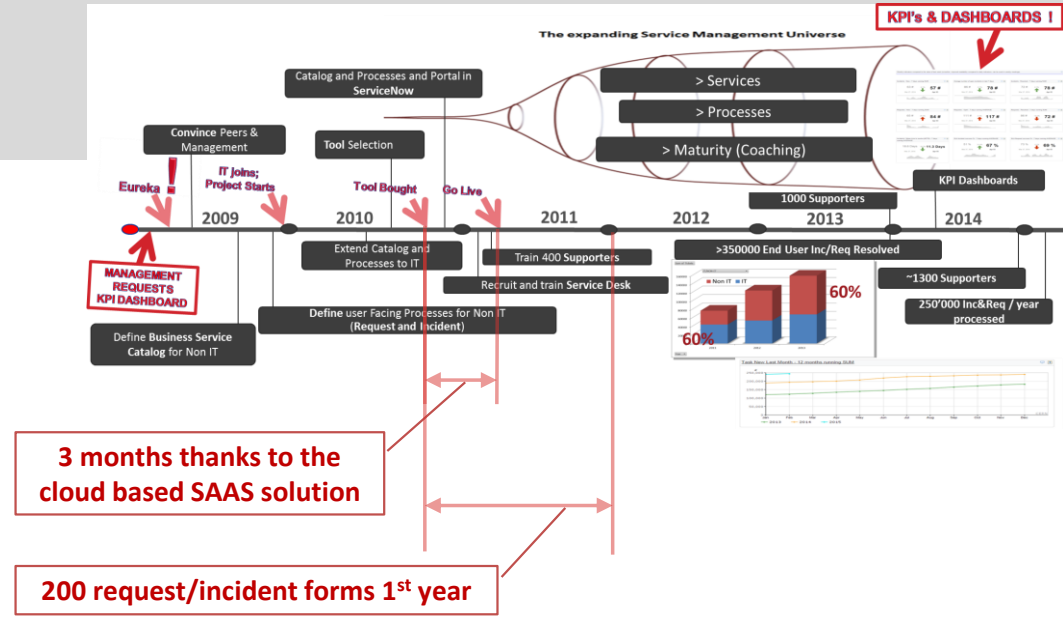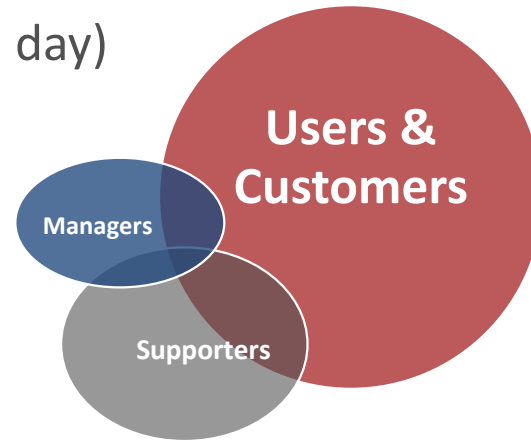
How: 1st Extend Wide, 2nd Drill Deep

- Phase 1: Cover a wide area fast with a simple unified 'horizontal' standard solution

- Phase 2: Add more sophistication and 'vertical' customizations

300 services
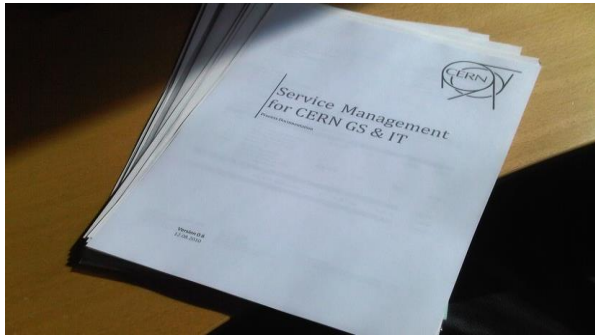
One single Req and Inc process

Phase 1: Add a Service in a Few Hours

1. Define the service in the business catalog – link to existing mail feeds, existing legacy forms if existing outside, existing legacy info, etc.

2. Assign support roles to supporters and management roles to managers

Now the service is advertised; end users can find it; create requests and incidents that will be automatically assigned to the correct support teams.
(as the ticket is created from this specific portal page)

Phase 2 Improve and Tune

1. Add forms, knowledge and support for more mail-feeds

2. Setup notifications, signatures, reporting, homepages, dashboards, etc.

3. Develop specific features (if justified and feasible)
   - Specific data (like car plates, lost items, other "CI's")
   - Specific task and workflows

500 Forms

200 forms in first 8 months
(~2 person team who also did the coaching and handholding)

Forms
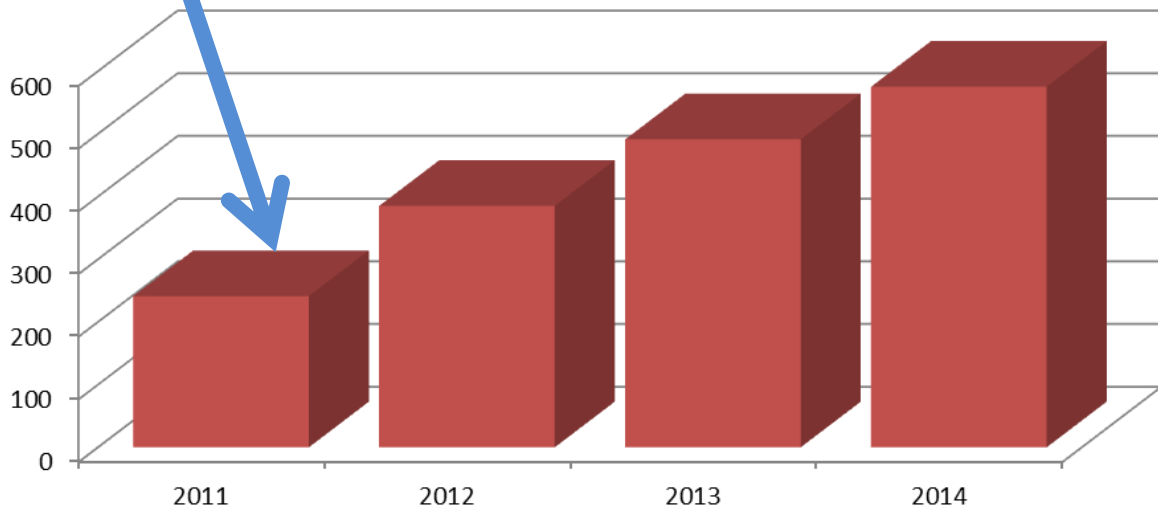
Request for a car rental   Attach file

In case of unavailability of other means of transport or in case of long official journeys, the Car pool service can arrange rental of cars or utility vehicles. This form must be completed and submitted **at least 48 hours in advance.**

Procedure: You will find detailed explanation at   Rental car pages

Invoicing: Rental requests may be cancelled up to 24 hours before the scheduled start of the rental period. Any cancellation beyond this limit will incur charges.

Restrictions (see Operational Circular No 4, further details at Admin e-guide: Official vehicles (belonging to or rented by CERN)):

- These vehicles are restricted to **official use only;**
- An **authorization to drive a CERN vehicle** is required (in EDH Access request selecting the option "CERN vehicle driving license (V)" from the list of the different types of access available.);
- A mission order is required for trips outside the CERN perimeter (in EDH Mission Order).

Service Catalog > Report a problem with network access   Attach file

Report a problem with network access

Use this form when you experience some problem with your network connection.

Depending where this form is selected inside the service portal the ticket will be automatically fiilled with the correct Functional Element and Service Element.

Caller
▶ More information
Reinoud Martens Admin

Short description
▶ More information

Affected device (if applicable)
▶ More information

I have a physical connection (e.g. the network card is blinking, no broken link is reported by the operating system)
n/a

I sent a connection or change request for this device recently
▶ More information
n/a

I can access CERN.ch (if applicable)
▶ More information
n/a

I can access the Internet (if applicable)
▶ More information
n/a

Please precise when the incident has occured the first time (date/time)
01-10-2013 15:53:43

How can we reach you?
○ I have access to my emails
○ I do not have access to my emails, please contact me by phone

Further details

Impact
▶ More information
Disruption
○ Less than 100 km

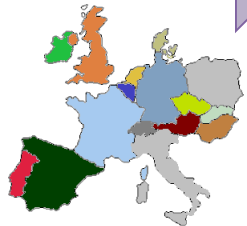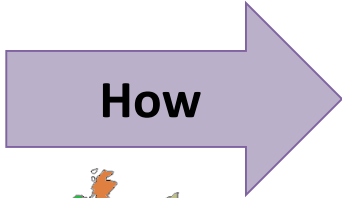# Service 'Taxonomy' to Manage a Wider Scope

Business Service Catalogue

Matrix structure with 2 dimensions:

- Columns: Services (What, User View) (today **297** operational)
- Rows: Functions (How, Supporters View) (today **567** active)

Service Area	Customs and Fiscal Advice		Site Infrastructure Services								
Customer Se	Car Plates Provision				Material Lifecycle Service				Passenger Mobility Services		Registration and Access Services
	Confidential Mail Management										
	Conventional Waste Collection & Classification										
	Dangerous Waste Collection and Classification										
Services Elei	Goods Internal Distribution		ce	Material Request Service	Sales and Recuperation Service	Storage Service	Waste Management Service	Bike Sharing Service	Car Pool and Rental Service	Shuttle Service	Dosimeter Distribution Service	Guards Service	Locks and Keys Service
	Goods Reception										
	Mail Office										
	Relocation										
	Shipping Management										
	Storage Area Operation										
	Transvoirie										

| Car Pool |
| Car Pool Management |
| Car Registration |
| Car Rental |
| Car Sharing |
| CERN Apartments |
| Cleaning Management |
| Contractors' personnel and Biometrics Registration |
| DGS-Dosimeters |
| Entrance Control & Guards |
| Exhibitions at CERN |
| Green Space management |
| Hotel Management |
| Hotel Operation |
| Housing Operation |
| Locks and Keys |
| ONET Cleaning |
| Shuttle Management |
| Shuttle Rental |
| Topnet Cleaning |
| Visitor access card |

How

What

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One Business Service Catalog

- Drives automation

- Enables service desk to cover unlimited scope

- The two dimensions allow support teams to keep some of their 'culture'

Service Portal

- Easy access to all services

- Search function

- Browse the catalogue

- Report issues

- Follow-up issues

- Access knowledge base

- Access to service status info

servicenow

December 06, 2011 12:08 ET

CERN Wins ServiceNow 2011 Innovation of the Year Award for Development of the CERN Service Portal That Provides More Than 650 Services to 10,000 Users

Finalists at ServiceNow's Knowledge11 Europe Event Included Fermilab, Inchcape, Queensland Department of Transport & Main Roads, Swiss Re and VeriSign

Knowledge (for Self Help and Business Continuity)
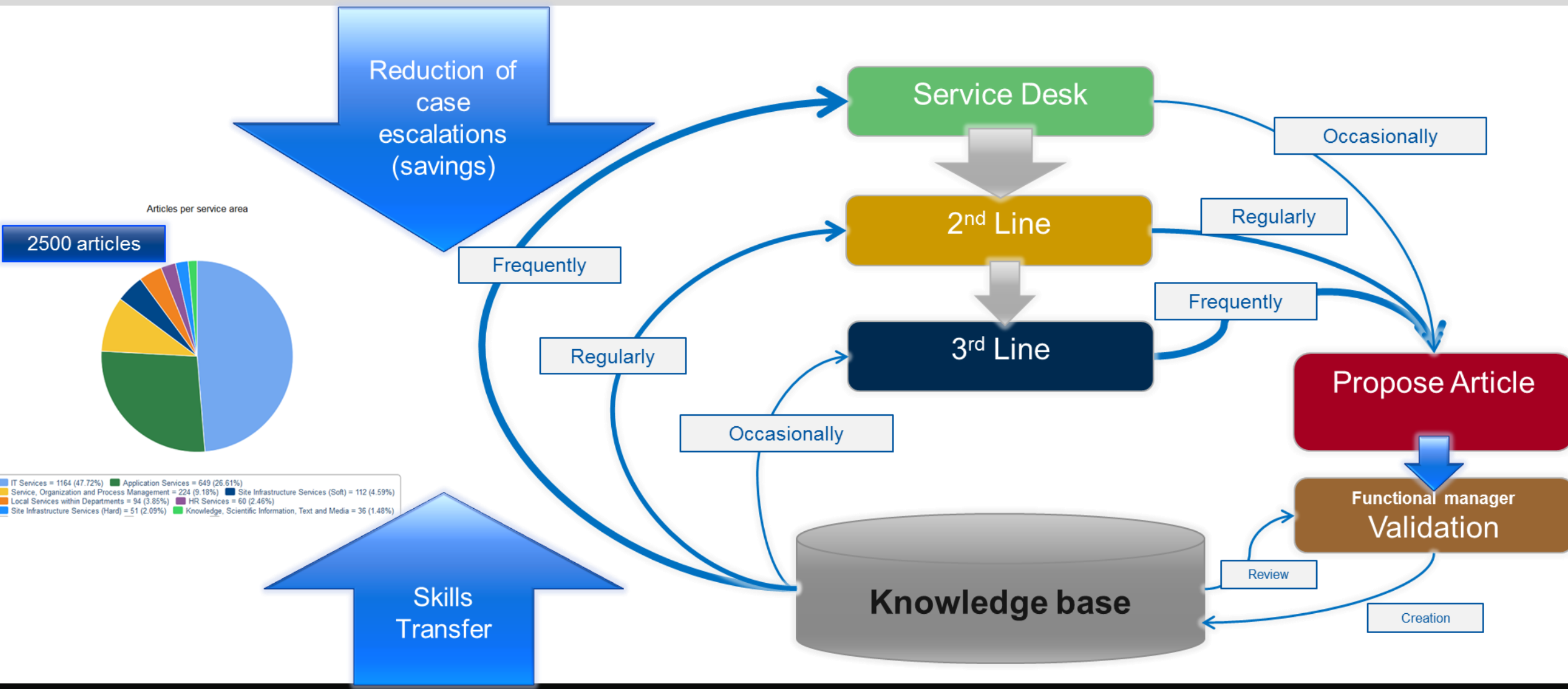
Other Lessons Learned

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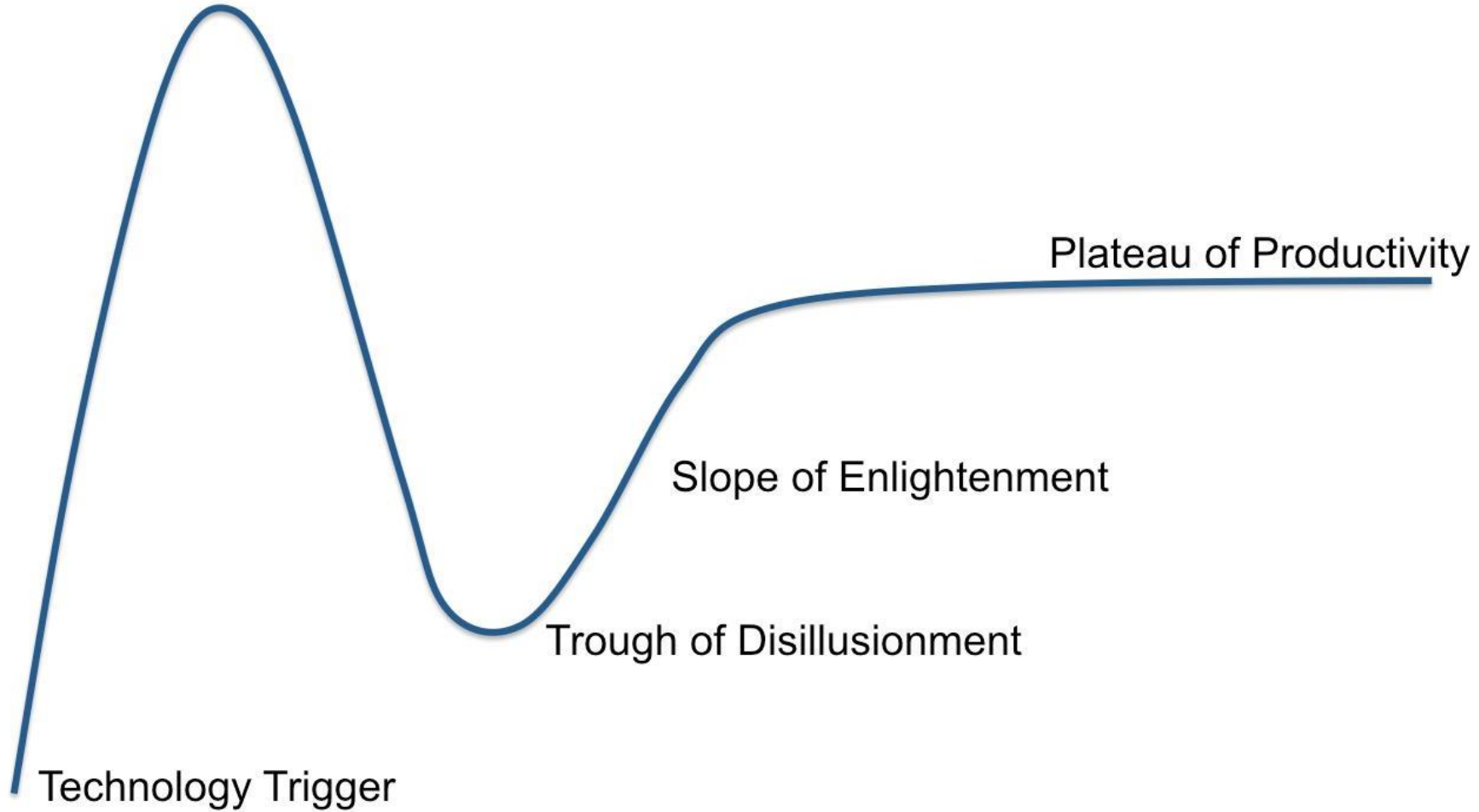
- Hide the notion of 'incident' and 'request' under the notion of 'case' is a good idea
  - Incident and request are notions grounded in ITIL V3 and ISO20k and need to be treated differently; however outside the technical domain they lead to 'misunderstandings'
  - Transition between incident and request must be hidden (in particular in the admin domain)

- Offer the equivalent of an ITIL foundation training to non IT support staff (shorter and no references to 'IT'; a 'service management awareness' event)

- Set resources aside for handholding and coaching; non IT is less 'ticket literate'

Source: Gartner Hype Cycle

When Strong Support Is Critical

Plateau

User Satisfaction

Support Effort

Slope

Trough

Peak of Inflated Expectations

Plateau of Productivity

Slope of Enlightenment

Trough of Disillusionment

Technology Trigger

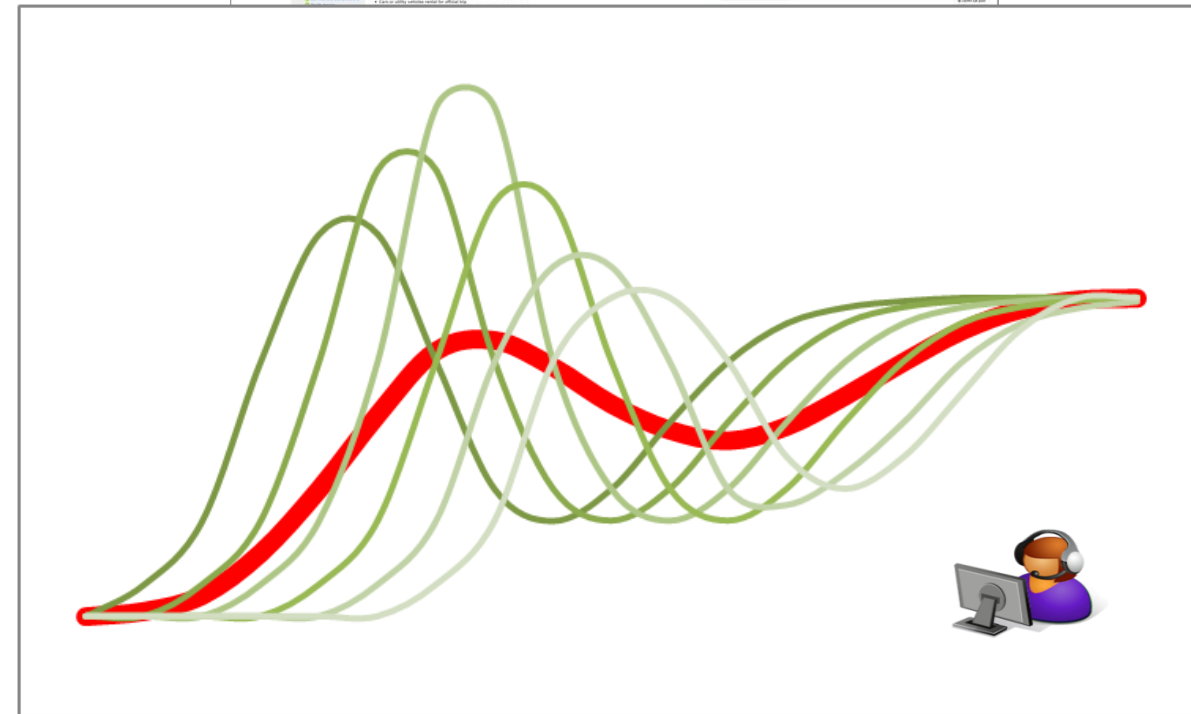**High demand for strong management support**

What we tried to do

- **Reduce expectations (no publicity)**

- **Staggered implementation (mainly of "phase two" objectives)**

- **No compromises on the vision**

Top Takeaways

1   Push for a 'continental approach' (tear down silos, aim for a united continent)

2   Business service catalog and service portal are key (and not necessarily a big investment)
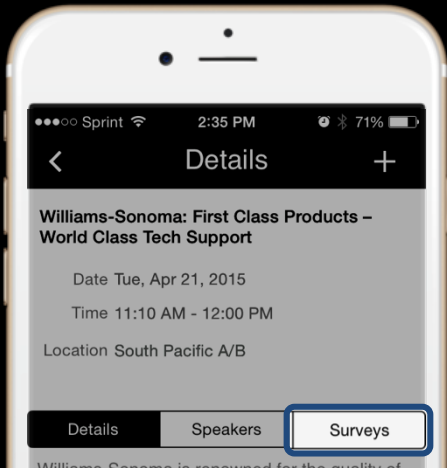
3   Be fast and 'agile' to reduce risk of being shot down at takeoff

How Did We Do?

Your feedback on this session helps us deliver great content.

Please take a moment to complete a session survey in the Knowledge15 app or use the survey forms at the back of the room.

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Thank You

Reinoud Martens

Service Manager General Services

CERN

Reinoud.Martens@cern.ch

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