



Non IT services using ITIL processes @ CERN

Reinoud MARTENS
CERN



About CERN

- World's largest particle physics centre
- World's largest scientific instrument
- 1954 - Europe's first joint ventures
- 2010 - 20 member states.

- 1.2bnCHF budget
- 2300 staff
- >10000 visiting scientists over 100 nationalities (half of world's particle physicists)



CERN's missions

Seeking answers to questions about the Universe.

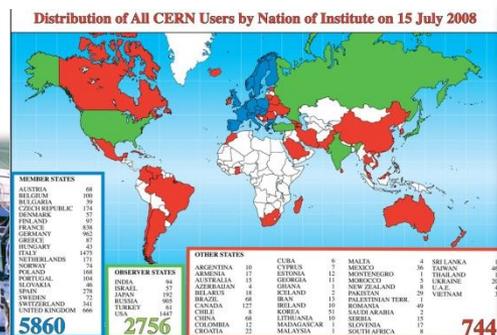
What is it made of?

How did it come to be the way it is?

Advancing the frontiers of technology and engineering.

Uniting nations together through science. Today >10000 visiting scientists from more than 100 countries.

Training young scientists and engineers who will be the experts of tomorrow.



CERN : Facts & Fiction

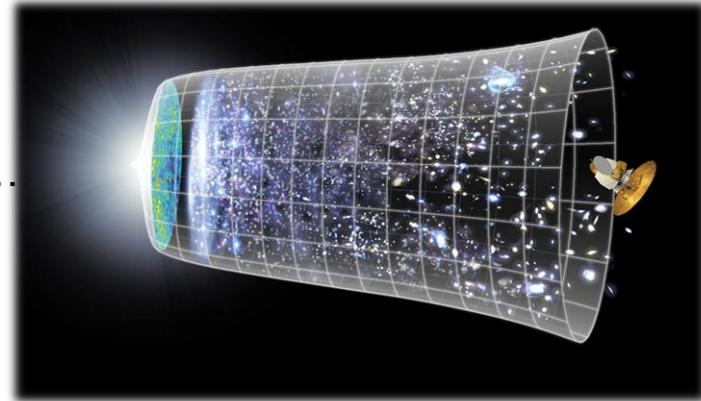
- The World Wide Web was invented at CERN in 1989 by the British scientist Tim Berners-Lee.
- Some of the spin-offs: Improving cancer therapy technology, medical and industrial imaging, radiation processing, electronics, measuring instruments, new manufacturing processes and materials,...
- CERN does unfortunately not own an X-33 aircraft as it was suggested in Dan Brown's book "Angels and Demons".



The Physics Challenge

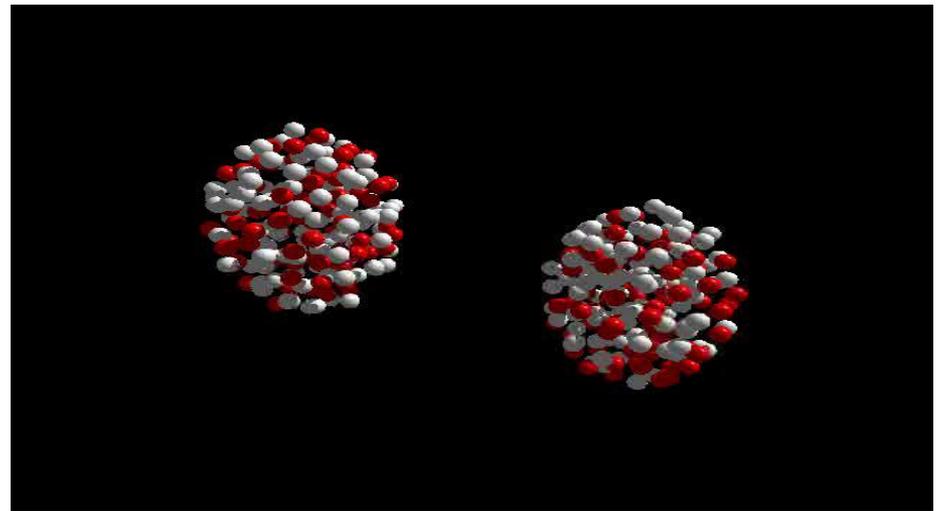
The Large Hadron Collider (LHC) helps to find answers to fundamental questions

- Which questions:
 - Why do particles have mass?
 - Newton could not explain it - and neither can we..
 - What is 96% of the Universe made of?
 - We only know 4% of it!
 - Why is there no antimatter left in the Universe?
 - Nature should be symmetrical
 - What was matter like during the first second of the Universe's life, right after the "Big Bang"?
 - A journey towards the beginning of the Universe will gives us deeper insight



The Physics Challenge

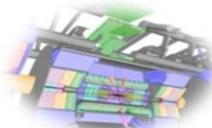
By smashing pieces of matter together, creating energies and temperatures not seen since the universe's earliest moments, the LHC could reveal the particles and forces that wrote the rules for everything that followed. It could thus help answer one of the most basic questions for any being in our universe: **What is this place?**



The particle physicist's toolbox



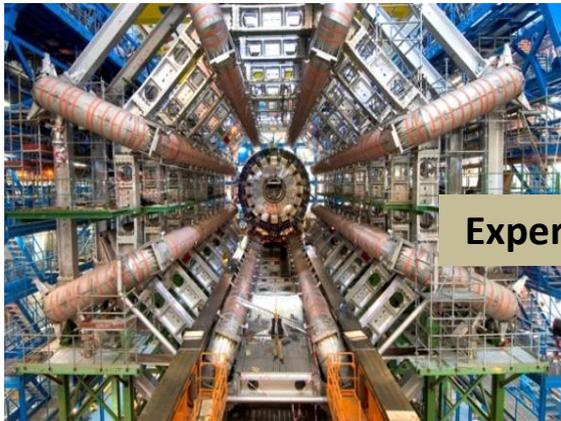
Particle accelerators



collisions



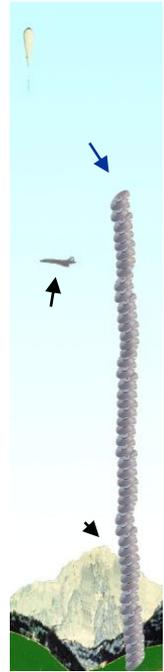
events



Experiments



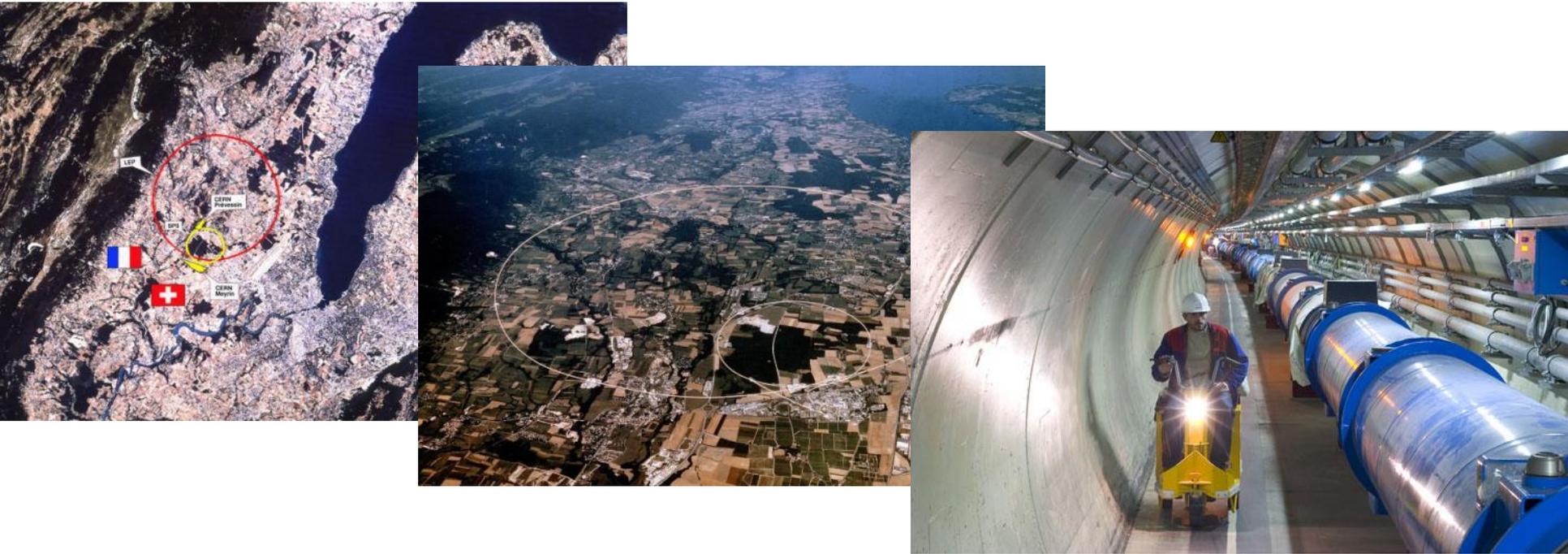
Analysis



Data

CERN, a place of extremes

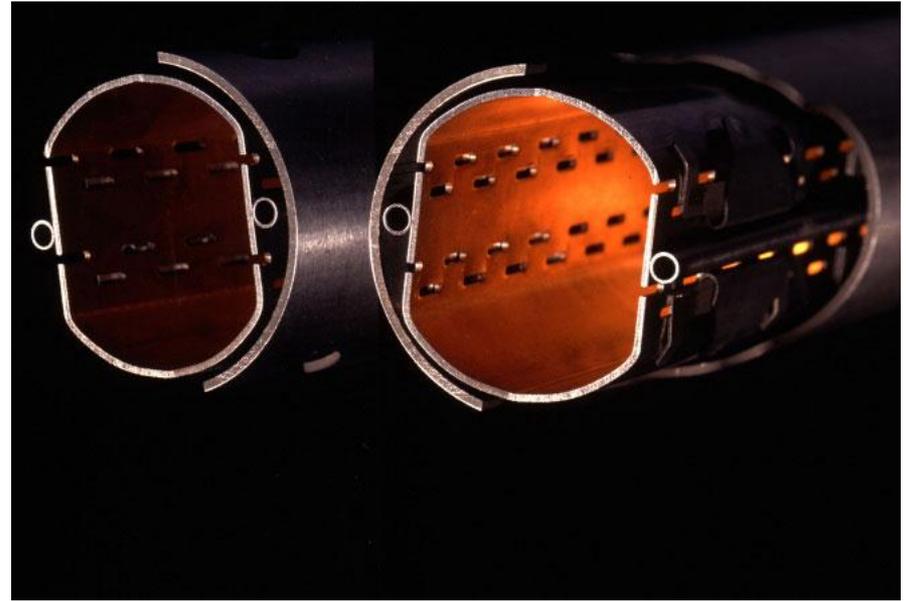
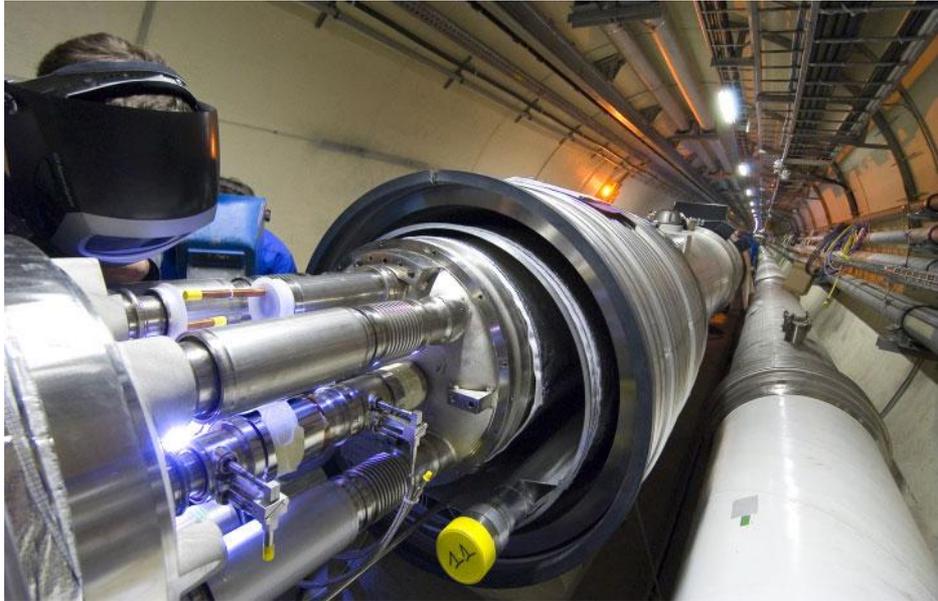
The **fastest** racetrack on the planet...



Trillions of protons race around the 27km ring in opposite directions over 11,000 times a second, travelling at 99.999999991 per cent the speed of light.

CERN, a place of extremes

The **emptiest** space in the solar system...



To accelerate protons to almost the speed of light requires a vacuum as empty as interplanetary space. There is 10 times more atmosphere on the moon than there is in the LHC.

CERN, a place of extremes

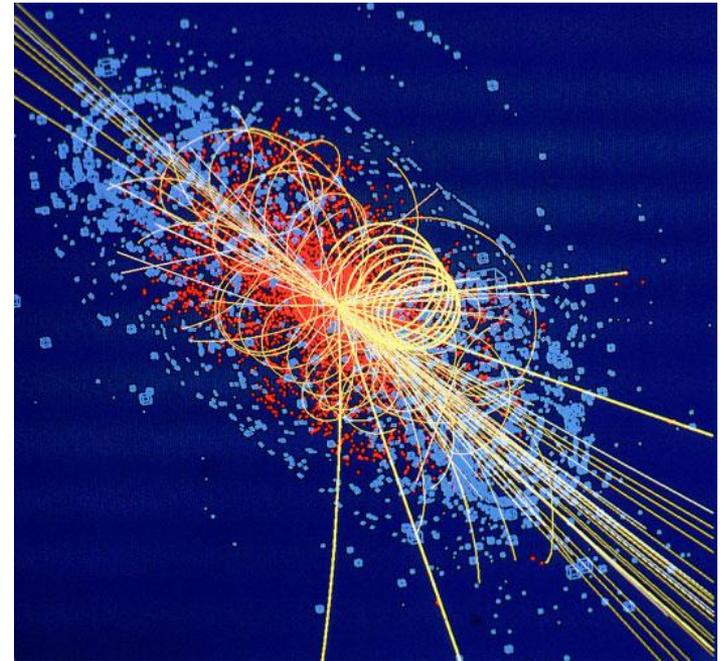
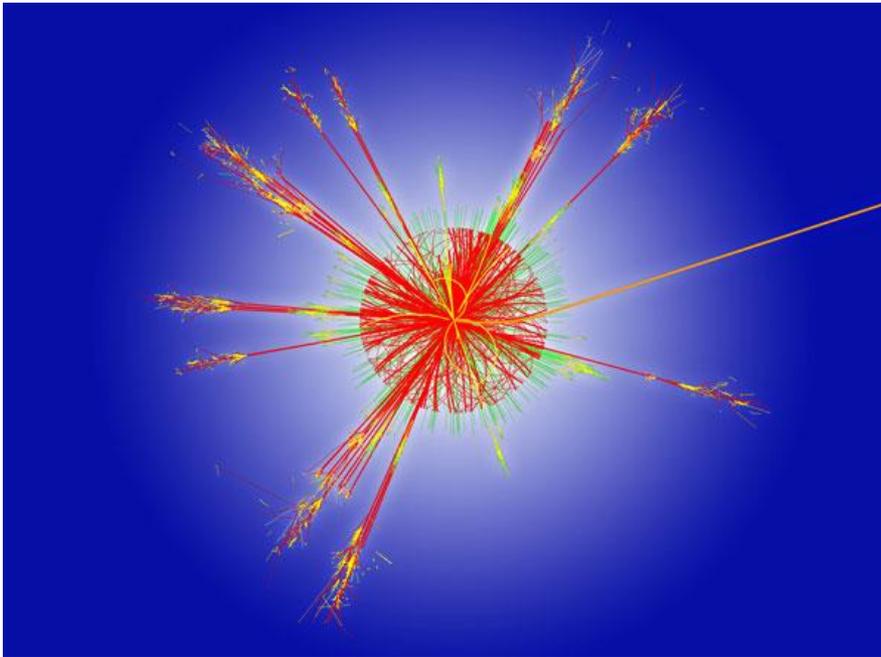
One of the **coldest** places in the universe.



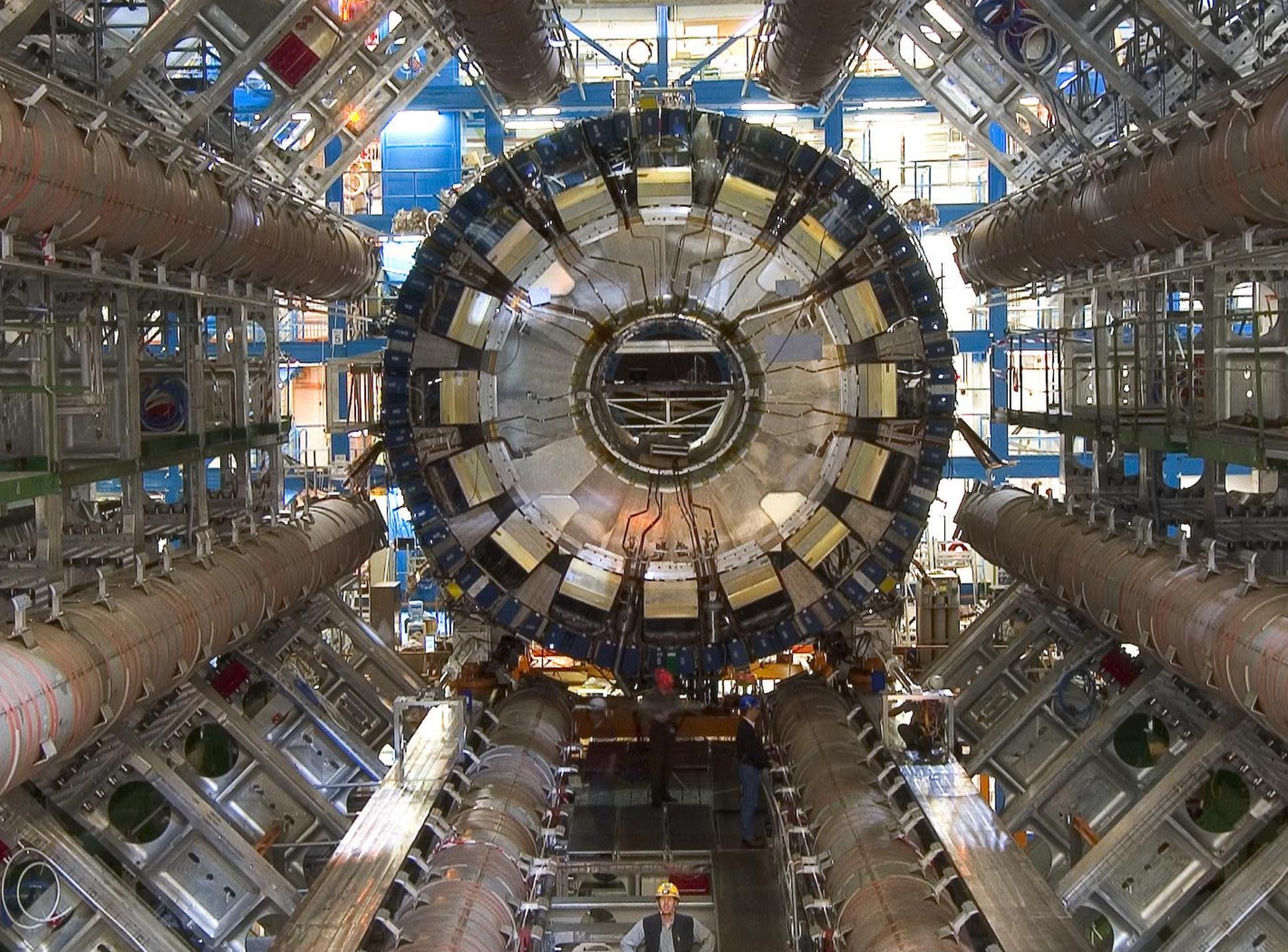
With an operating temperature of about -271 degrees Celsius, just 1.9 degrees above absolute zero, the LHC is colder than outer space.

CERN, a place of extremes

The **hottest** spots in the galaxy...

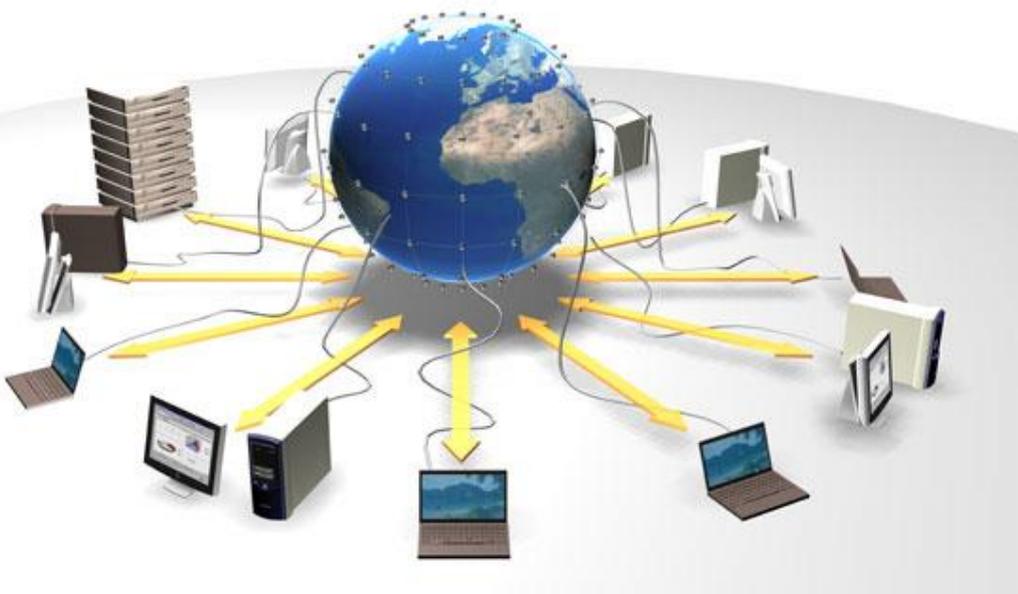


When two beams of protons collide, they generate temperatures 1000 million times hotter than the heart of the sun, but in a minuscule space.



CERN, a place of extremes

One of the most **extensive** computer systems in the world...

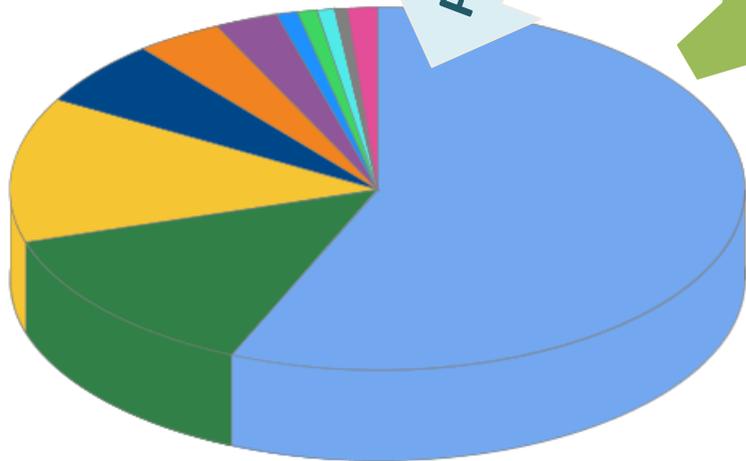
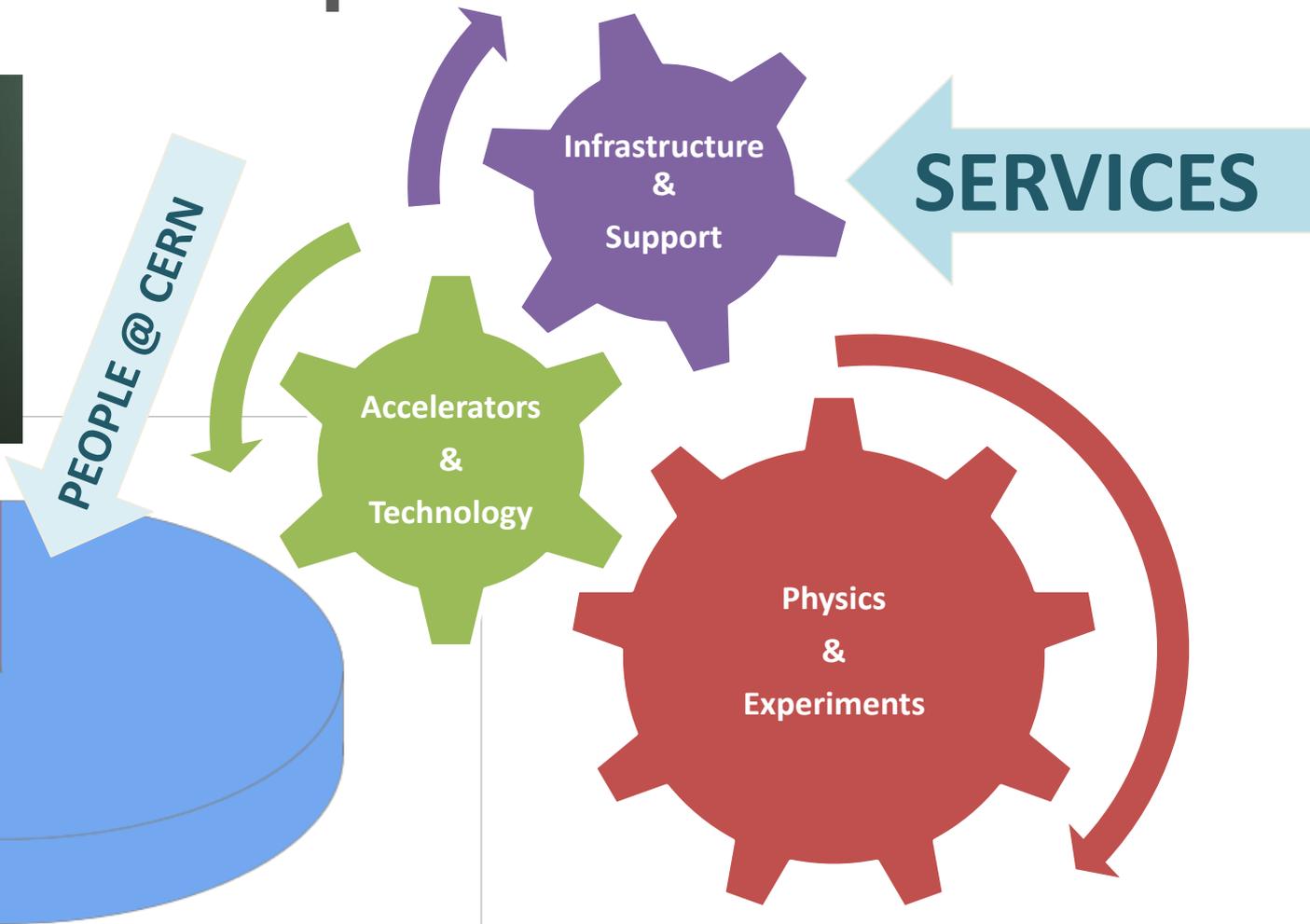
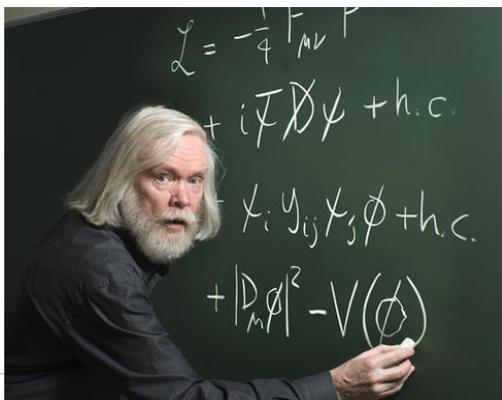


To store and analyze the data, tens of thousands of computers around the world are being harnessed in the LHC Computing Grid. The laboratory that gave the world the web, is now taking distributed computing a big step further.

CERN, a place of extremes

**CERN – a laboratory with extreme requirements in many domains;
has to achieve **excellence** in
service management**

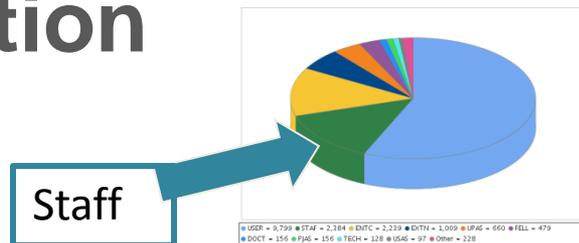
Activities and People at CERN



● USER = 9,799	● STAF = 2,384	● ENTC = 2,239	● EXTN = 1,009	● UPAS = 660	● FELL = 479
● DOCT = 156	● PJAS = 156	● TECH = 128	● USAS = 97	● Other = 228	



CERN organization



Services ~25% Accelerators ~45% Physics ~30%

Director-General - Rolf-Dieter Heuer ~ 6%

DG services (Safety, Legal, Audit, Planning, VIP, etc..) ~ 6%

X

Administration and general infrastructure - Sigurd Lettow ~ 14%

FP Finance, Procurement and Knowledge Transfer - T. Lagrange ~ 2.5%

X

GS General infrastructure services - T. Pettersson ~9%

X

HR Human resources - A.-S. Catherin ~ 2.5%

X

Research and scientific computing - Sergio Bertolucci ~33% + CERN USERS

IT Information technology - F. Hemmer ~9%

X

X

PH Physics - P. Bloch ~25%

X

Accelerators and technology - Steve Myers ~ 46%

BE Beams - P. Collier ~16%

X

EN Engineering - R. Saban ~14%

X

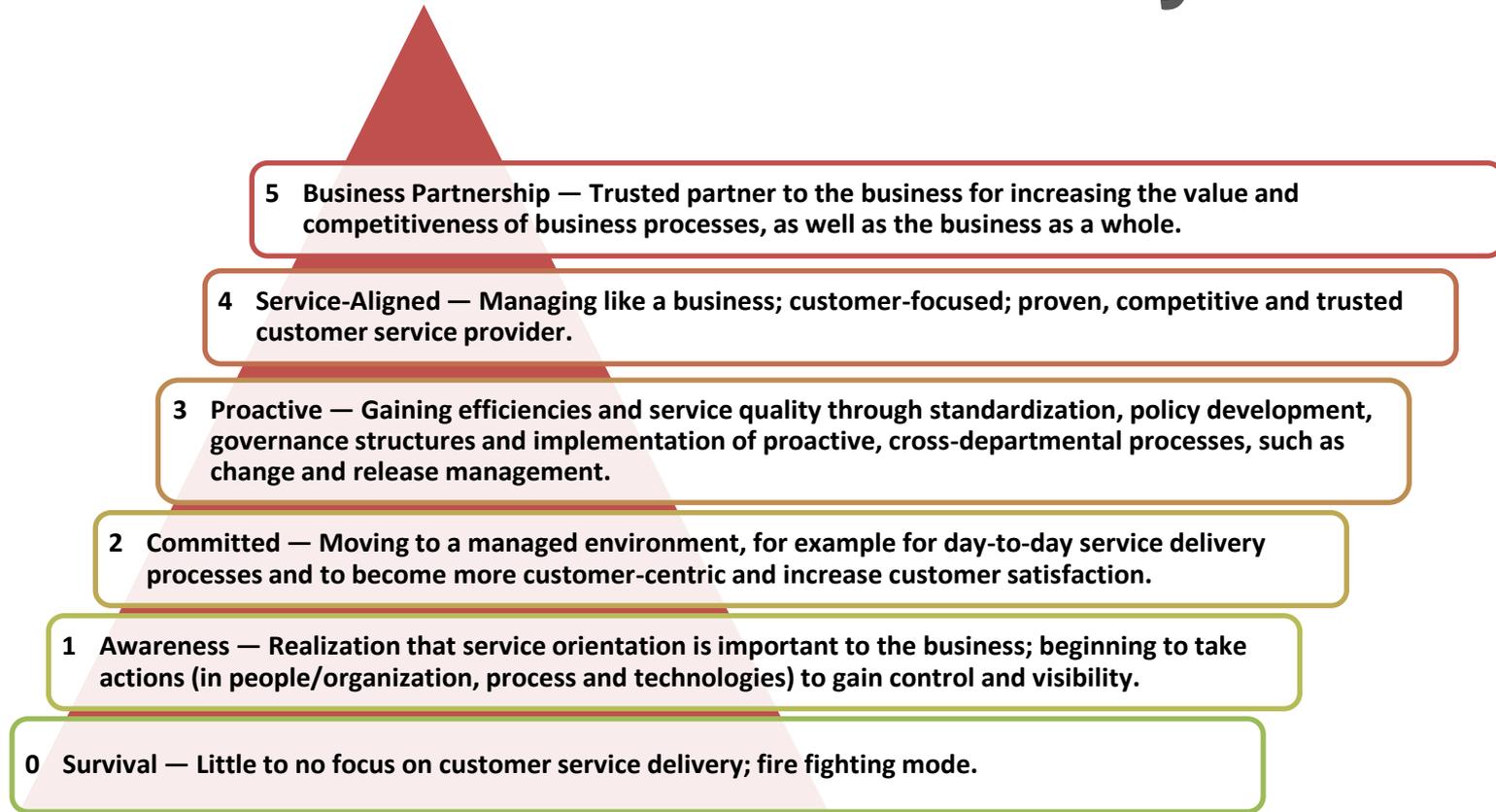
X

TE Technology - F. Bordry ~15%

X



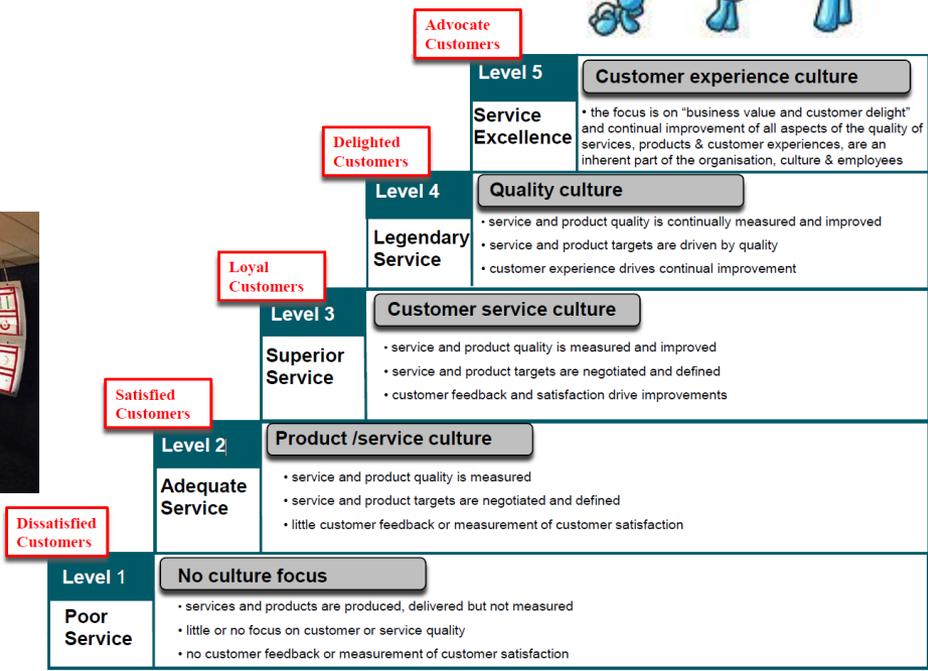
CMM for customer service delivery



Capability Maturity Model (CMM), developed in 1987; spawned numerous models since

CERN Situation 2 years ago.

- Resources under scrutiny
- CERN victim of LHC's success
- Realization of (lack of) maturity
- Infrastructure and services had been neglected in favor of LHC project



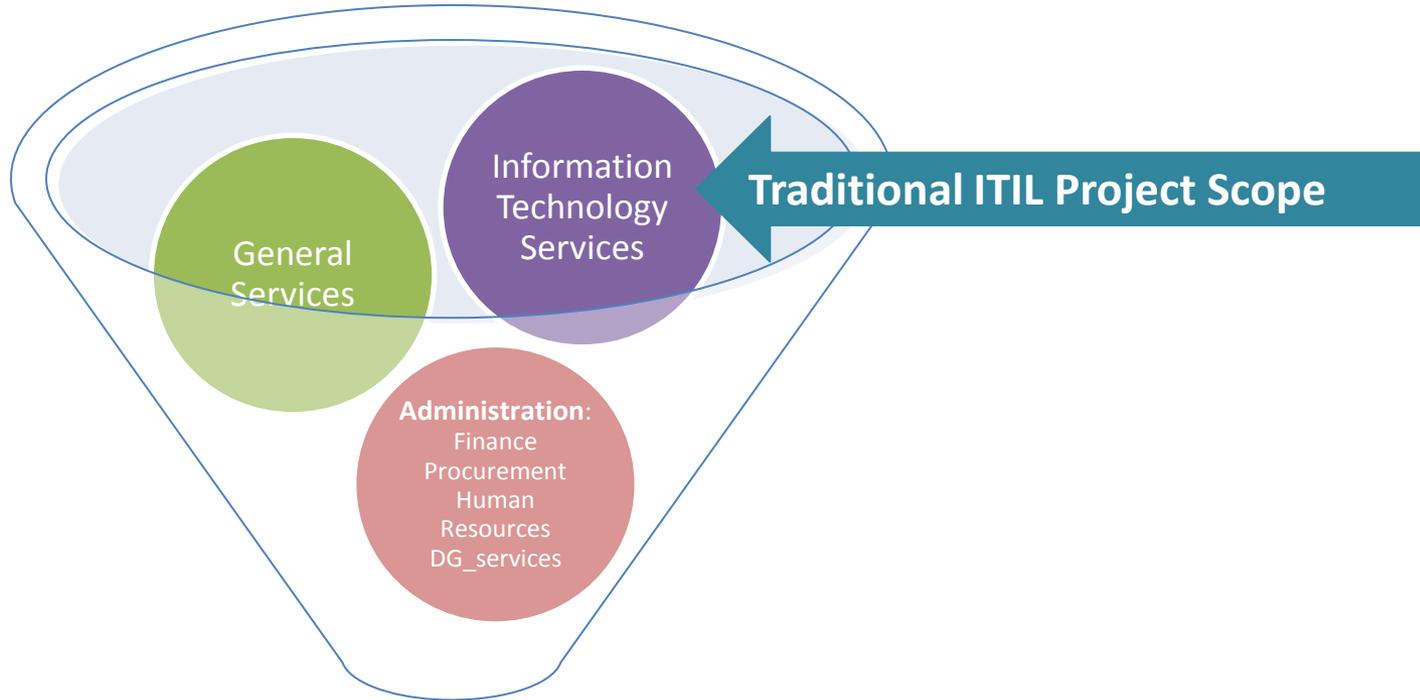
- Administration: Management Cockpit Project
- IT: ITIL consultant at annual 'check, plan, act' meeting (POW)

Service Management for whom?

- engineers
- physicists
- technicians
- administrators
- computer scientists
- craftspeople
- mechanics
- support personnel
-



Service Management Scope



'CERN Services'

Service Management Scope

Services we are covering (1) :

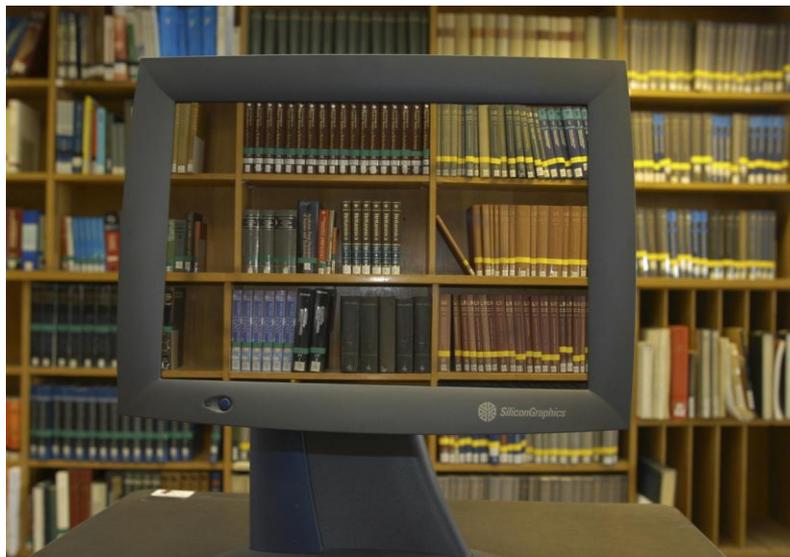
- General IT services
- Physics specific IT services (including Grid)
- Medical Services & Fire Protection Services
- Civil Engineering & Facility Management
- Registration, Access & Safety Services
- Alarm System Services
- Visits & Outreach Services



Service Management Scope

Services we are covering (2) :

- Material & Storage Services
- Mail & Shipping Services
- Library & Archive Services
- Housing Services
- HR, Finance & Legal Services



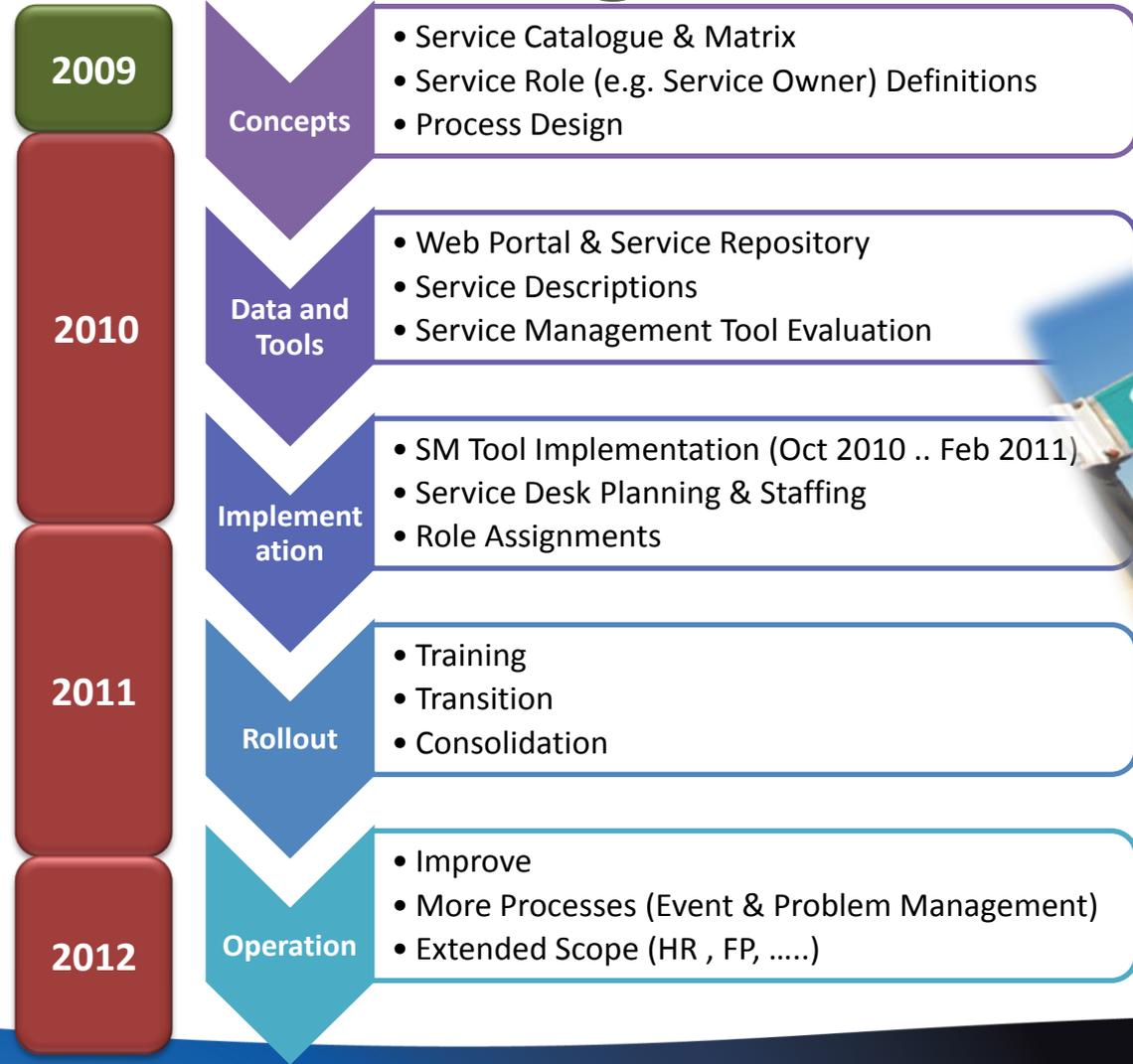
Service Management Scope

Some numbers

- 495 hotel rooms, 3 restaurants
- 2 Sites, 657 Buildings, 238 Barracks
- 15000 active access cards
- > 1000 cars
- 5500 PC's & 1500 MAC desktops
- 6900 servers with 41000 cores
- 14 PB disk space
- 48 PB tape storage
- 70000 network ports. feeding 34000 hosts



Service Management roadmap

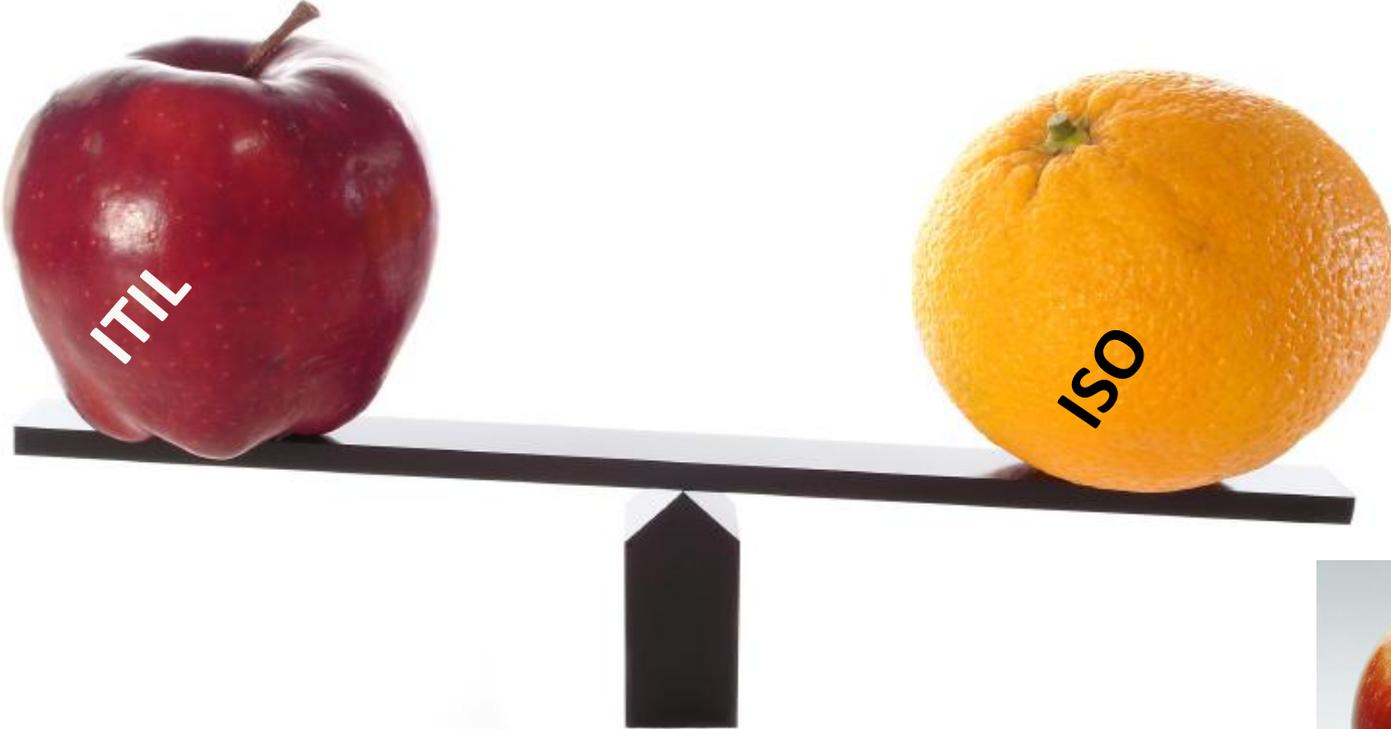


Eight Objectives

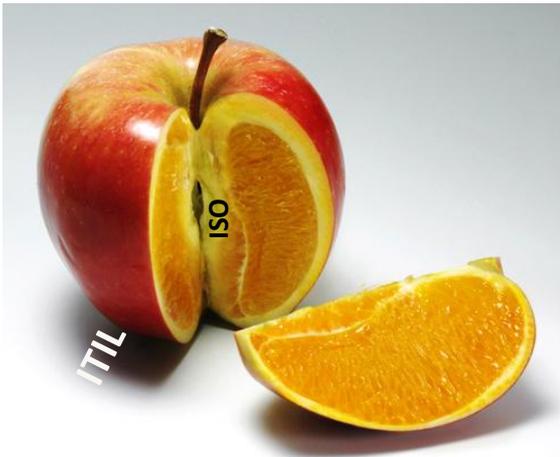
What are we (CERN) trying to achieve with Service Management?

- 1. One Service Desk for CERN (one number to ring, one place to go, 24/7 coverage)**
- 2. Standard Processes for all Service Providers at CERN (one behavior)**
- 3. Services defined from a User's point of view**
- 4. Services easy to find by everybody, without knowledge of CERN internal structures**
- 5. Service and process quality measurable**
- 6. Improved collaboration over the borders of sections, groups and departments (no silo's)**
- 7. Very high of automation of all known procedures**
- 8. Framework for continuous improvement in the fields of efficiency and effectiveness**

Which Standard

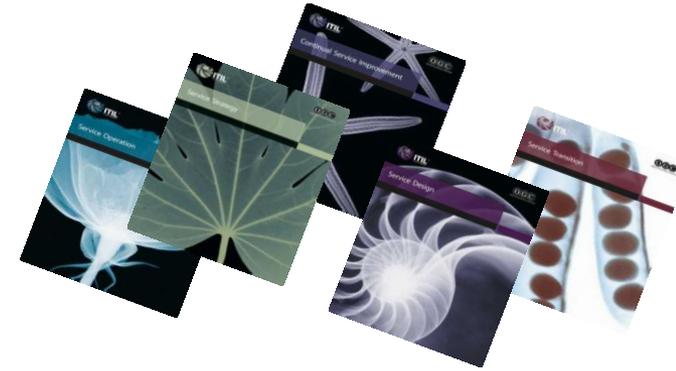
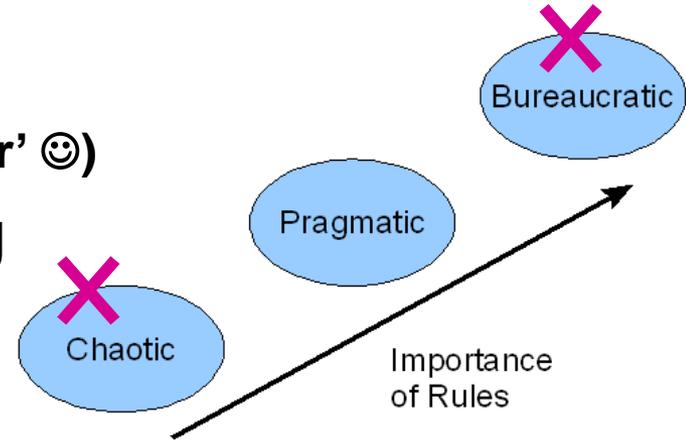


Different best practice for IT and NON IT services doesn't look a brilliant idea



How to adapt ITIL to 'non IT'

- 1. Remove all references to IT
- 2. Stay **PRAGMATIC**
(only take what is useful; leave the rest for 'later' 😊)
- 3. No Extremism, No over-engineering



How: Early Actions and Milestones Overview

- In IT: ITIL workshop during POW Nov 2008
- In GS: Creation department in 2009
 - Decision to test applicability SM philosophy in GS (April)
 - Choice of ITIL as 'bible' (May)
 - Workshops, training, etc.. (June→Dec)
- Creation of a GS service organization in Jan 2010.
- Decision of IT to do the same

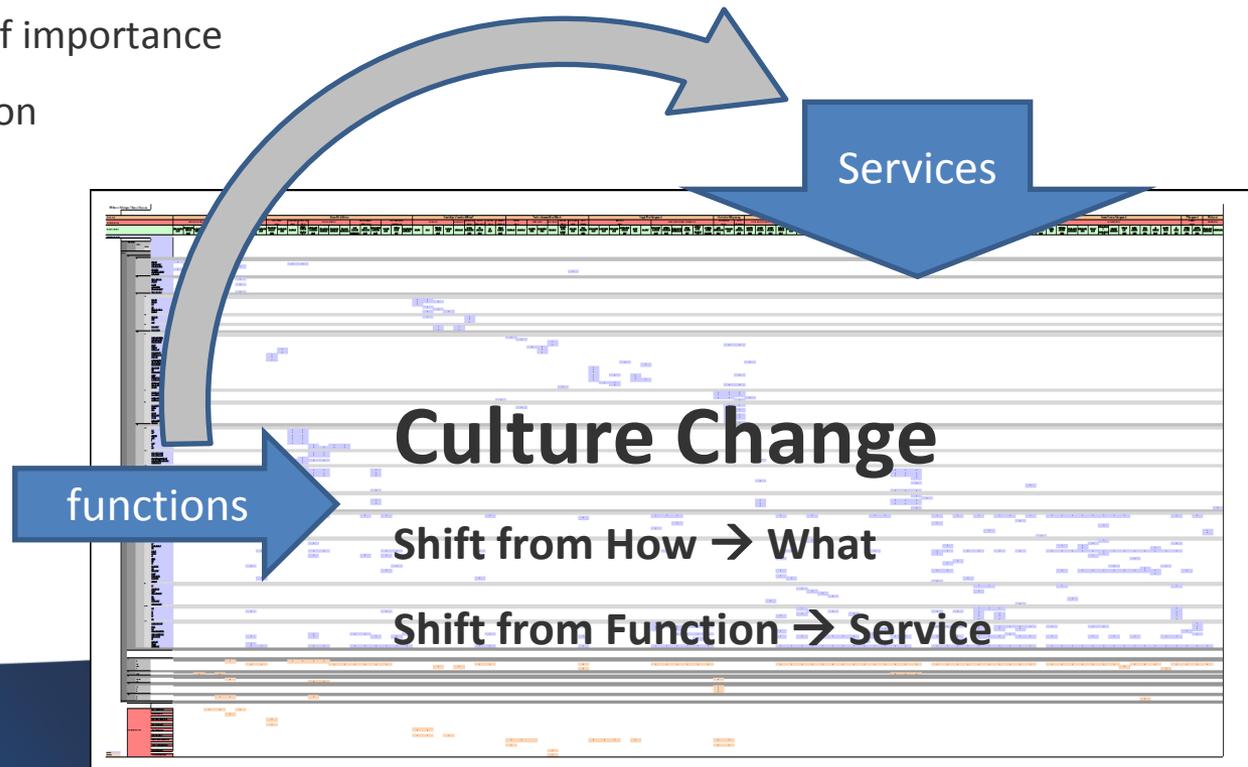


- Joined strong commitment of IT & GS to introduce service management best practice in their domains.

The Service Catalogue & Matrix

- Covers all Services provided by IT, GS, HR & FP
- Lists all Functional Services
- Lists all Customer Services & Service Elements
- Connecting both sides of the catalogue
- Contains classification to shows of importance
- Foundation for Process Automation and the Service Portal

- Contains:
 - Services (240)
 - Functions (462)
 - Relations (~1800)

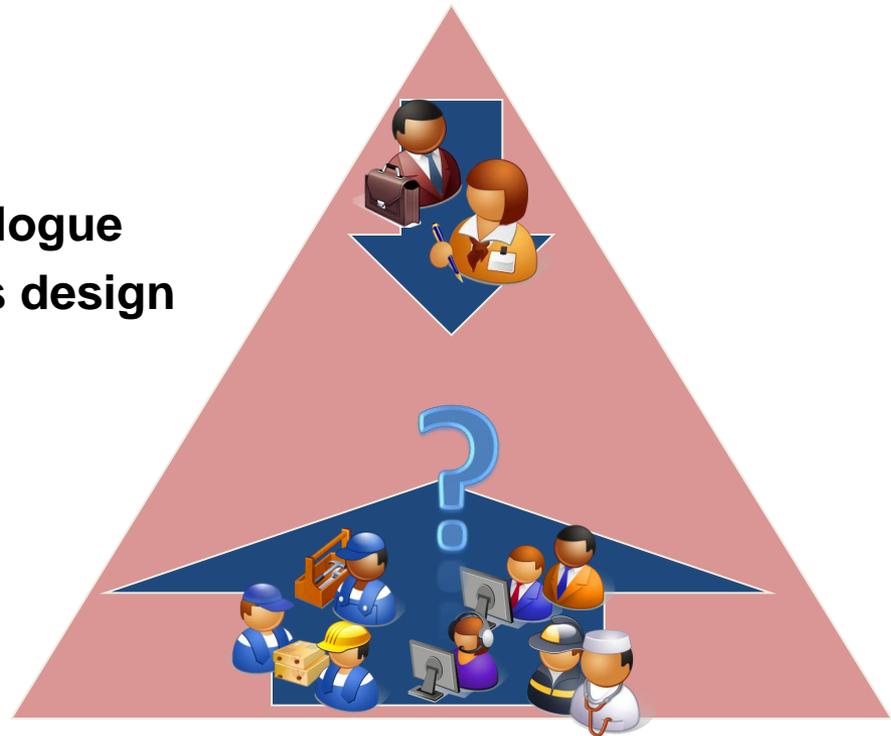


How to introduce these concepts in NON IT world

Preparation Phase

Top Down:

1. Preach and convince
2. Definition Service Catalogue
3. Workshops for process design



**Bottom up: Service Management best practice awareness training
(NO ITIL FOUNDATION COURSE)**

Messages:

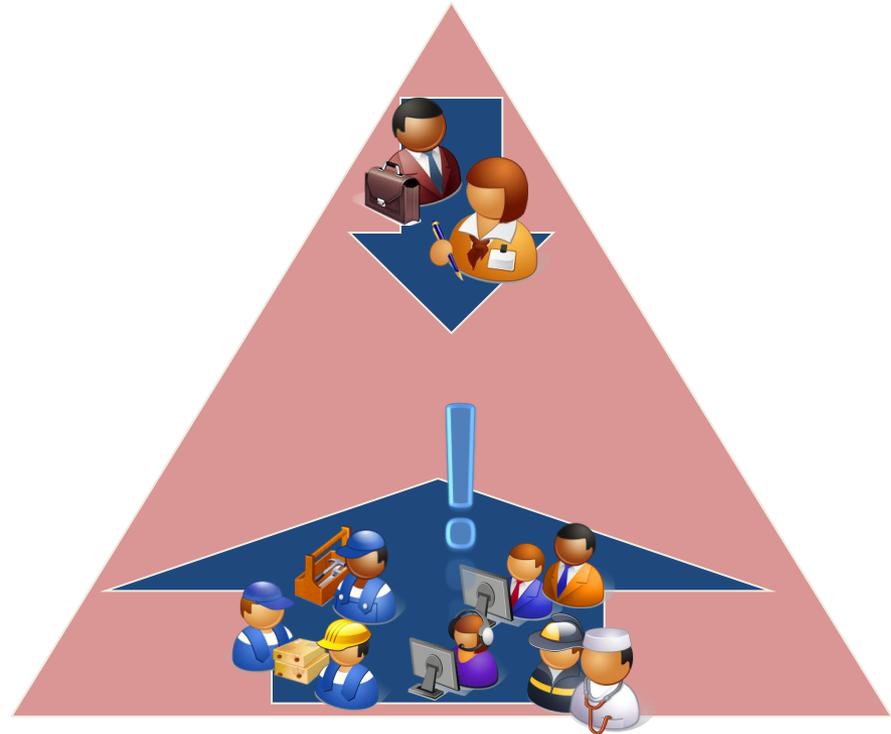
- What can it DO for YOU
 - **Improve** user experience with YOUR SERVICE through coherent/systematic handling and follow up on user requests and problems.
 - **Offload** YOU from recurrent and/or standard requests
 - **Protect** and **Help** YOU defend your service by collection of metrics (both operational and more strategic)
 - **Transparency** in dispatching and orchestration of requests
- What it will NOT DO to/for YOU
 - Put **Obstacles** between you and the users
You still can expose yourself to the users; service desk is not an obligation (but you should use the process and tool so you and users benefit from the follow up 😊)
 - **Spy/Police** on you
The aim is to maintain/improve **the service** from a user/customer perspective. We measure the service from an end user perspective, not the supporters.
 - Introduce additional **Bureaucracy**

How to introduce these concepts in NON IT world

Deployment Phase

Top Down:

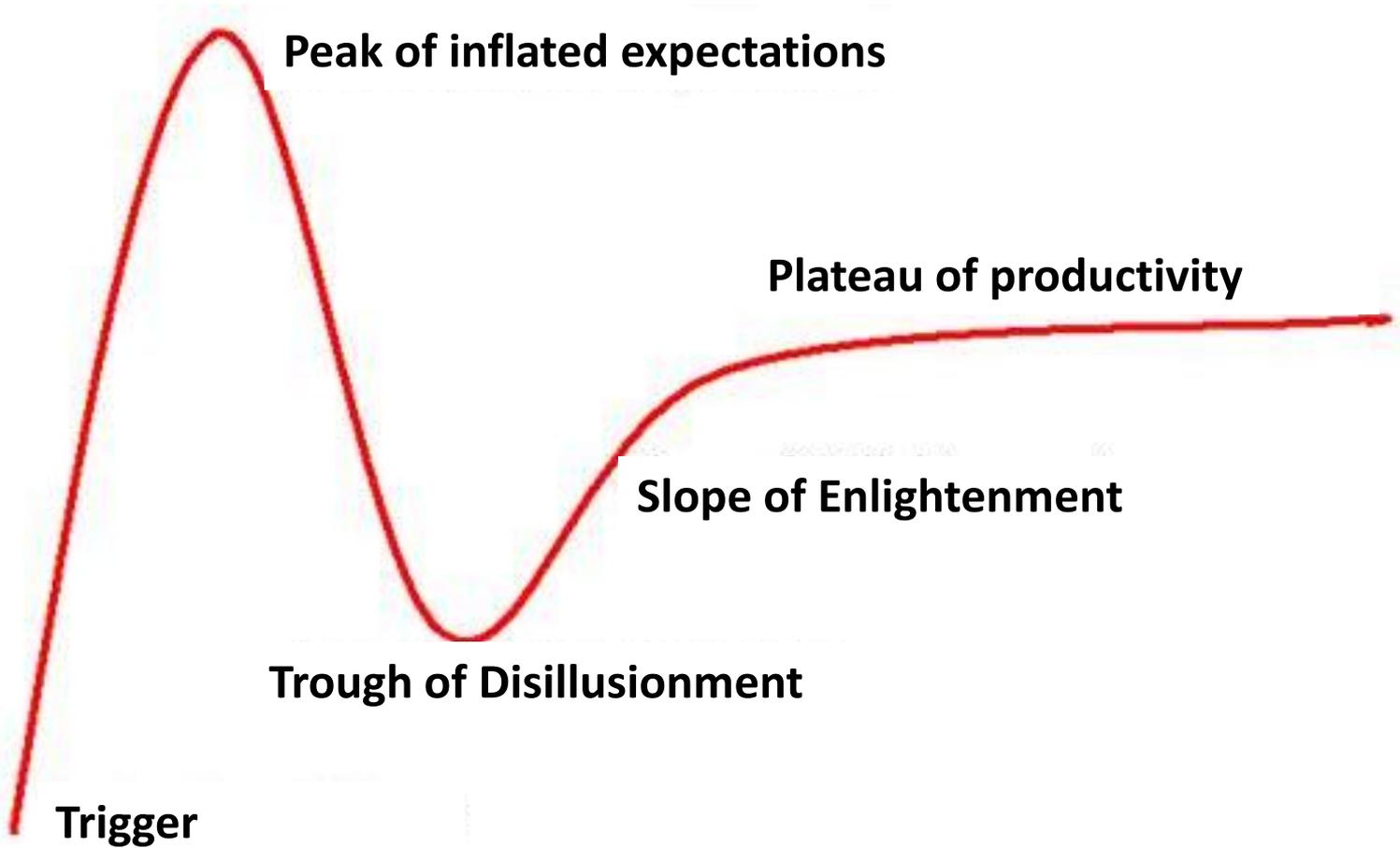
1. Preach and convince
2. New role assignments
3. New role training



Bottom up:

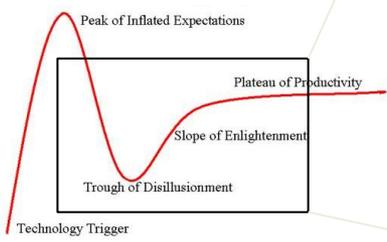
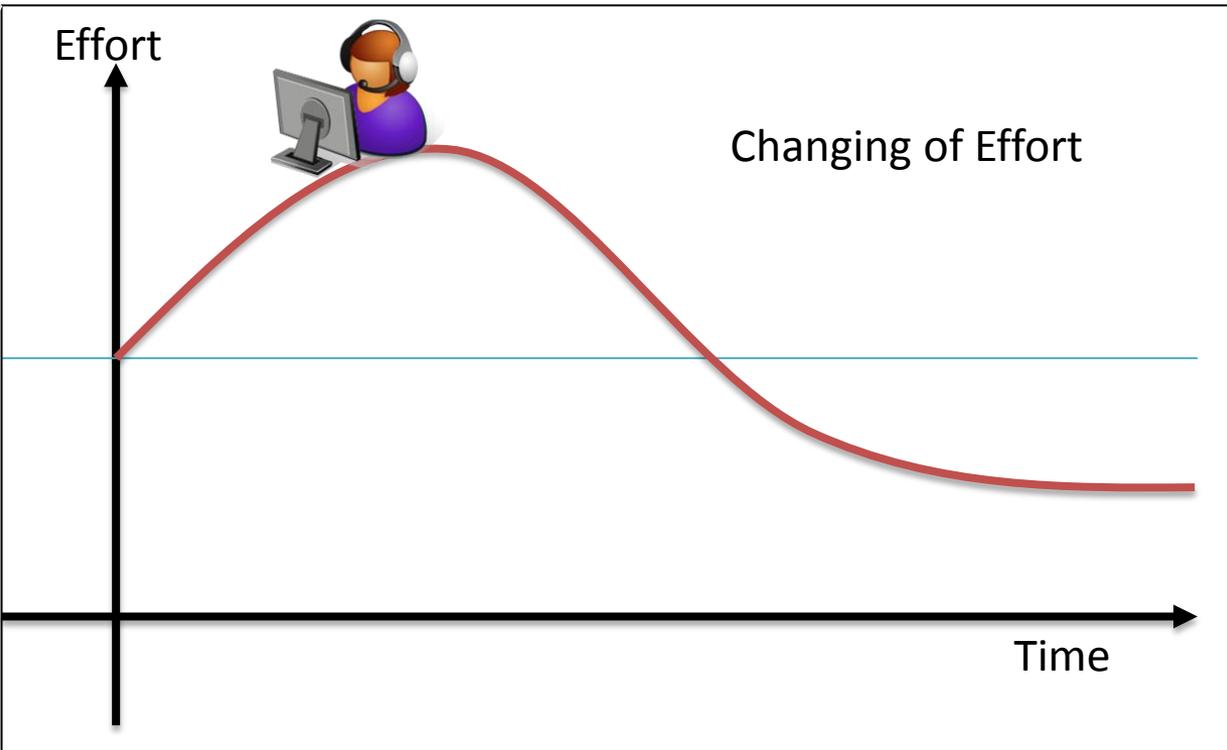
Process and tool training (through 'train the trainer')

How to survive the Hype Cycle



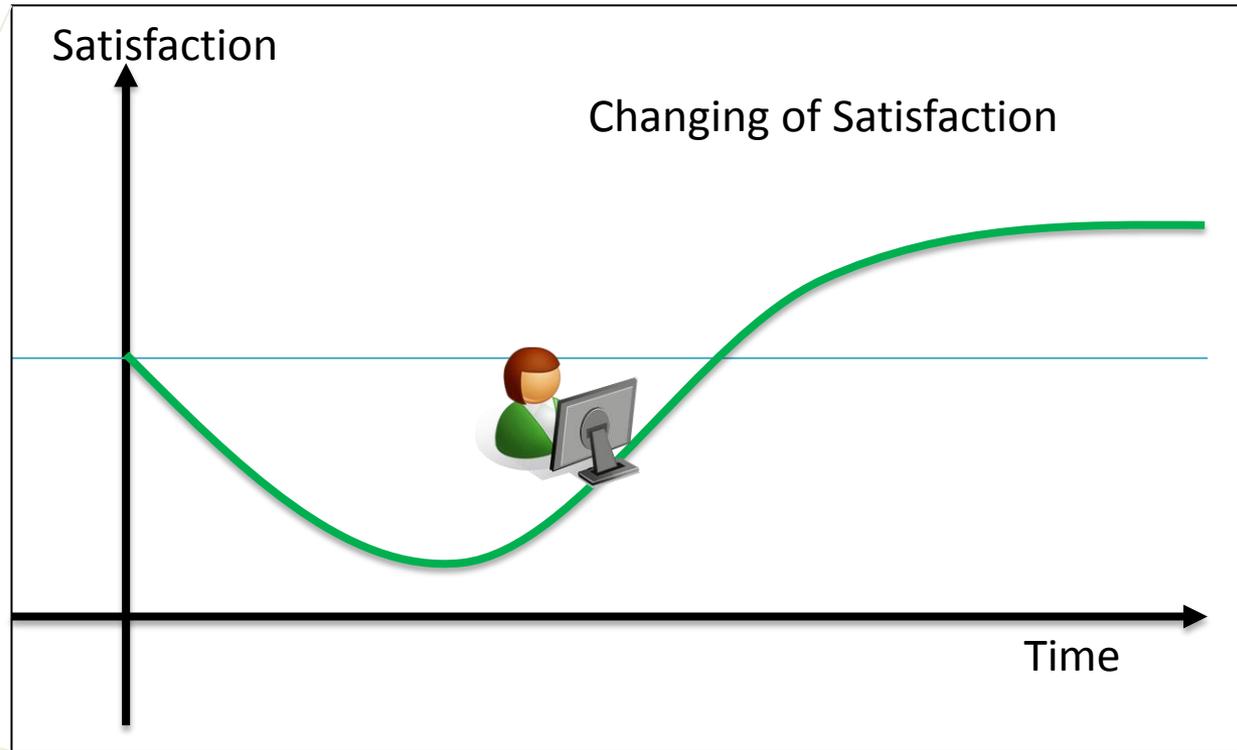
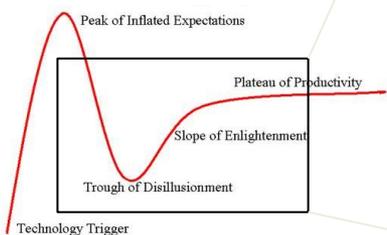
The “trough of disillusionment”

We'll have to cope with some initial extra 'effort' requested from supporters
(inherent to change)

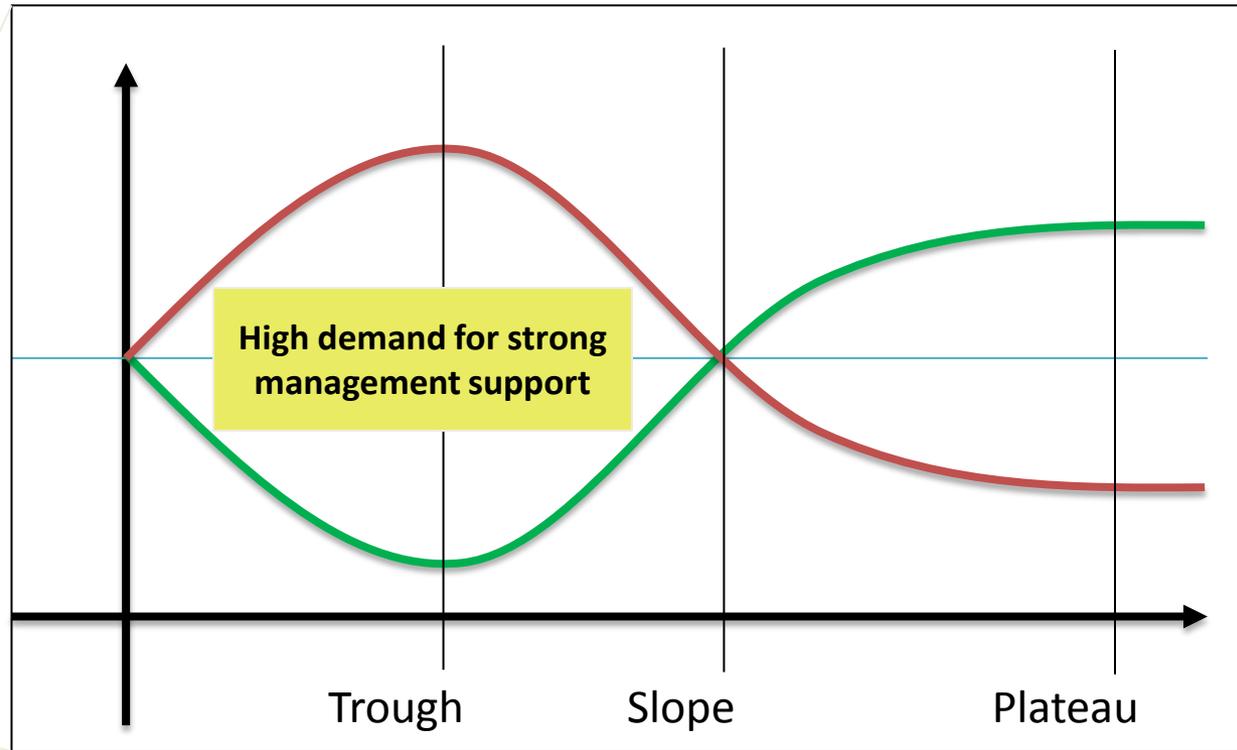
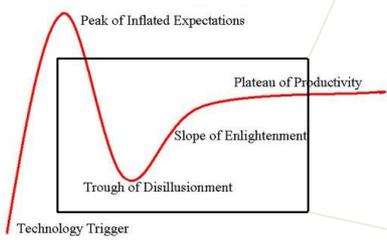


The “trough of disillusionment”

We'll have to cope with a 'through of satisfaction' of some users
(inherent to change)

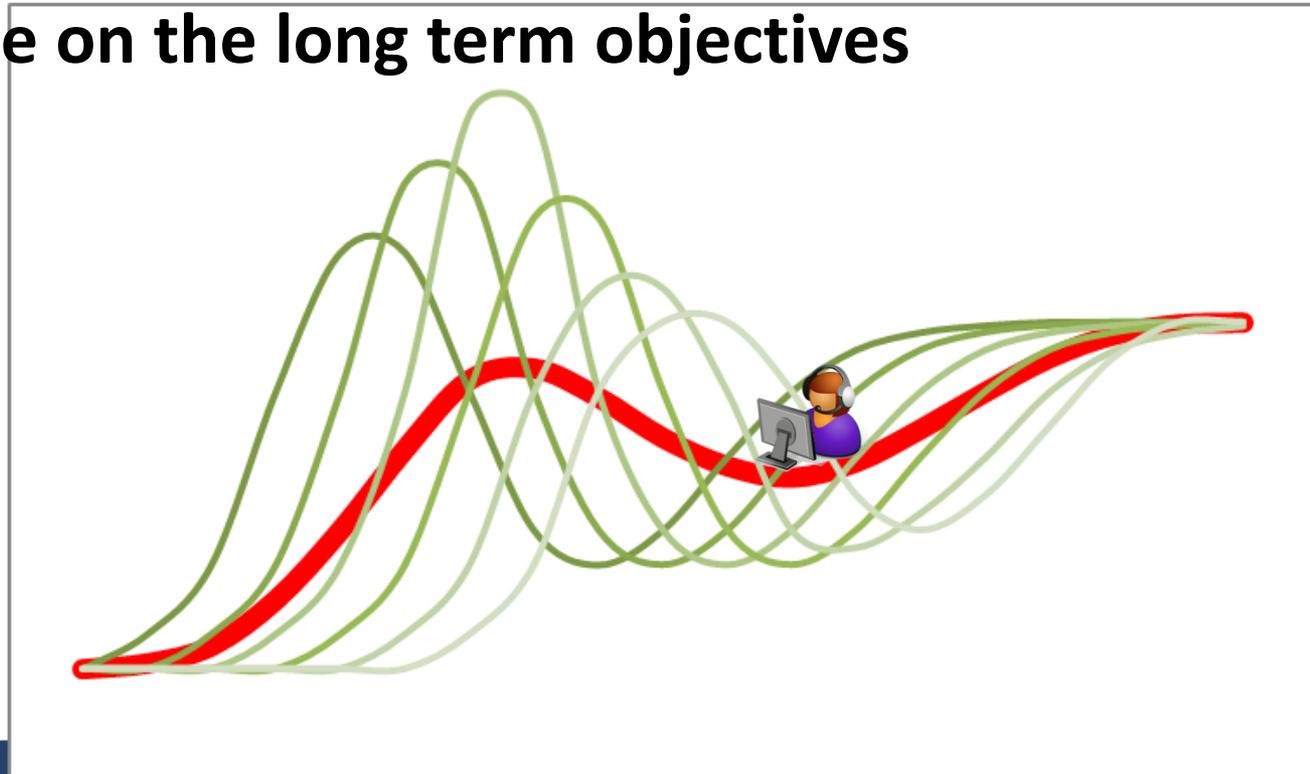


Strong support is critical



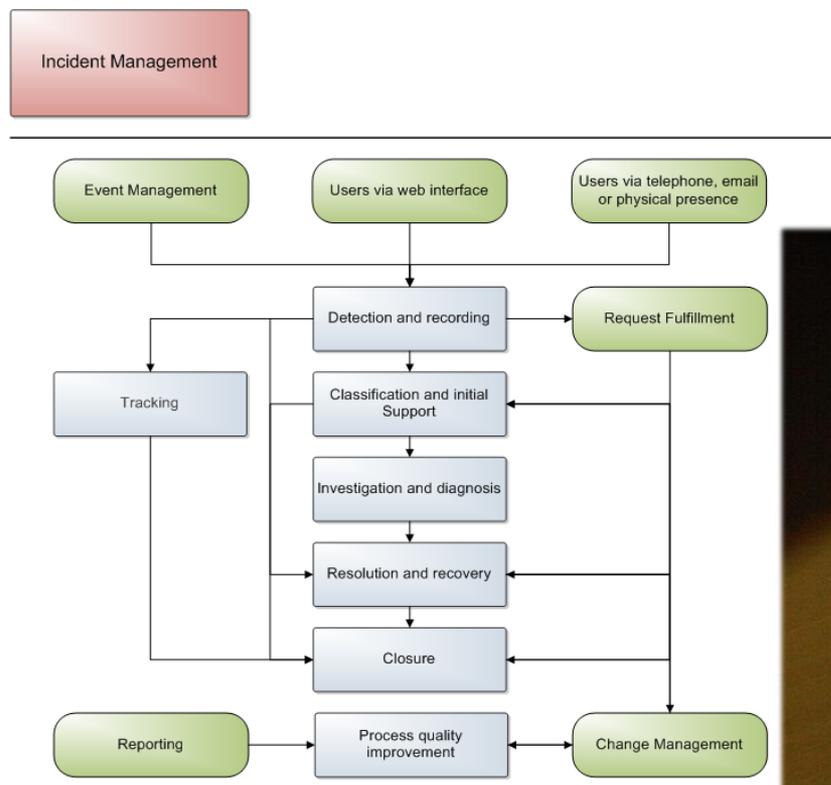
Smoothen the hype curve

- Reduce expectations (of some)
- Staged implementation
- No compromise on the long term objectives



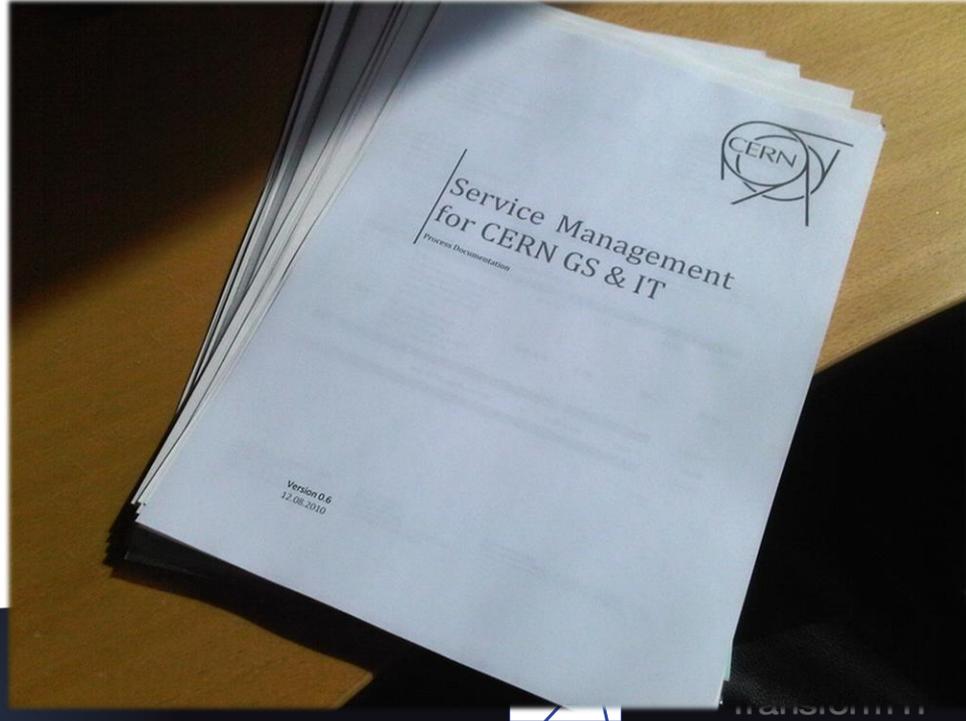
Incident

- Incident: Something is broken (from user point of view)

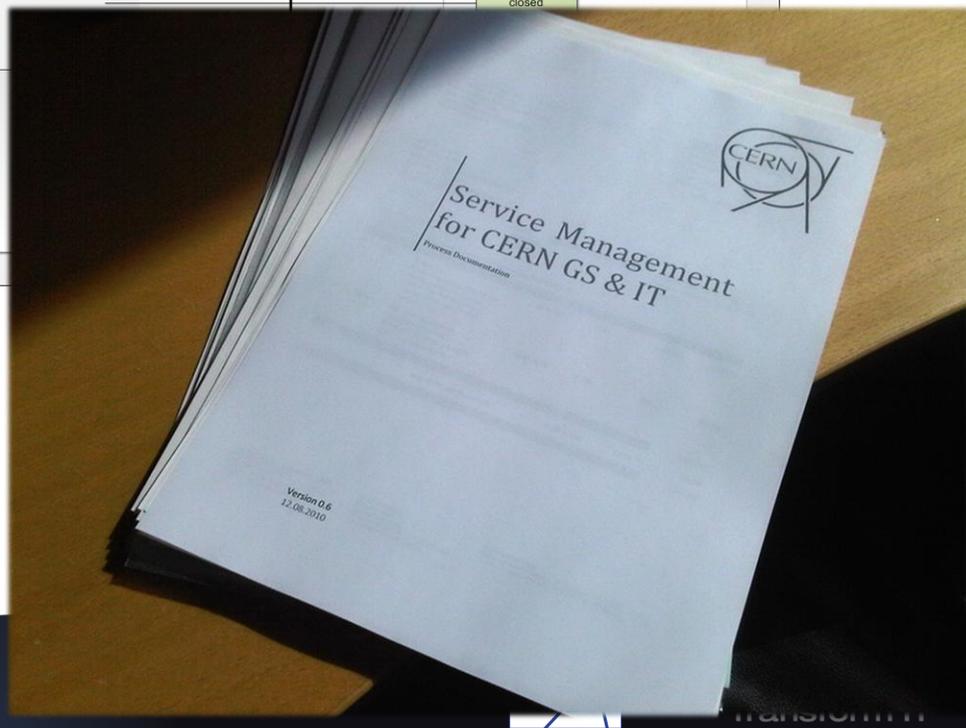
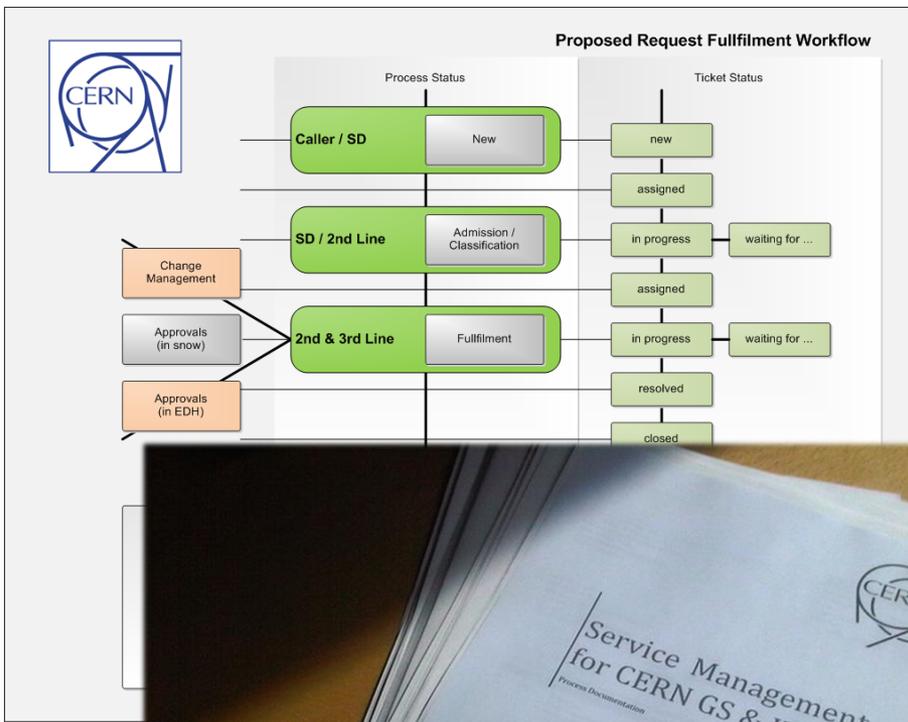
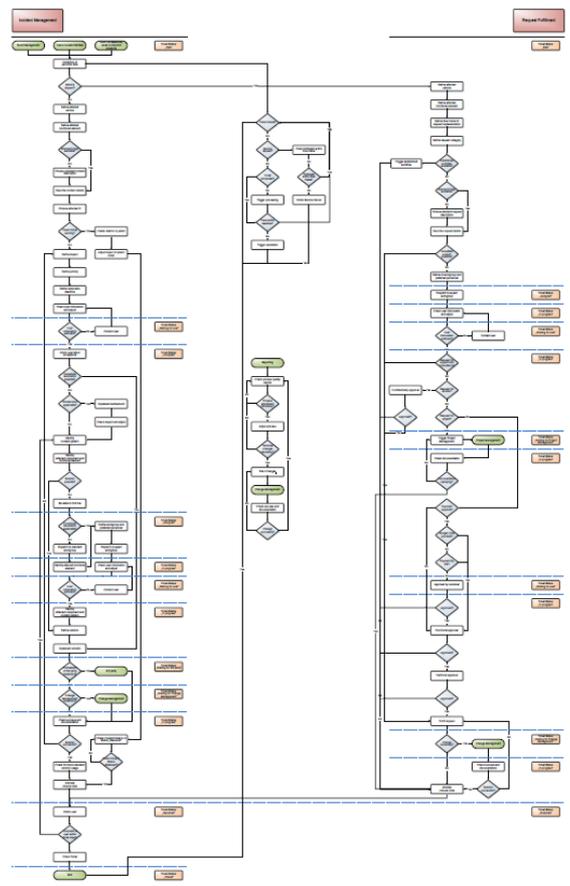


Priority Matrix

		Impact			
		1	2	3	4
		>5 users affected	2-5 users affected	1 user affected, service down	1 user affected, service degraded
Urgency ↑	1 - High	1 Major	2 High	3 Moderate	4 Low
	2 - Medium	2 High	3 Moderate	4 Low	5 Planning
	3 - Low	3 Moderate	4 Low	5 Planning	6 Very Low

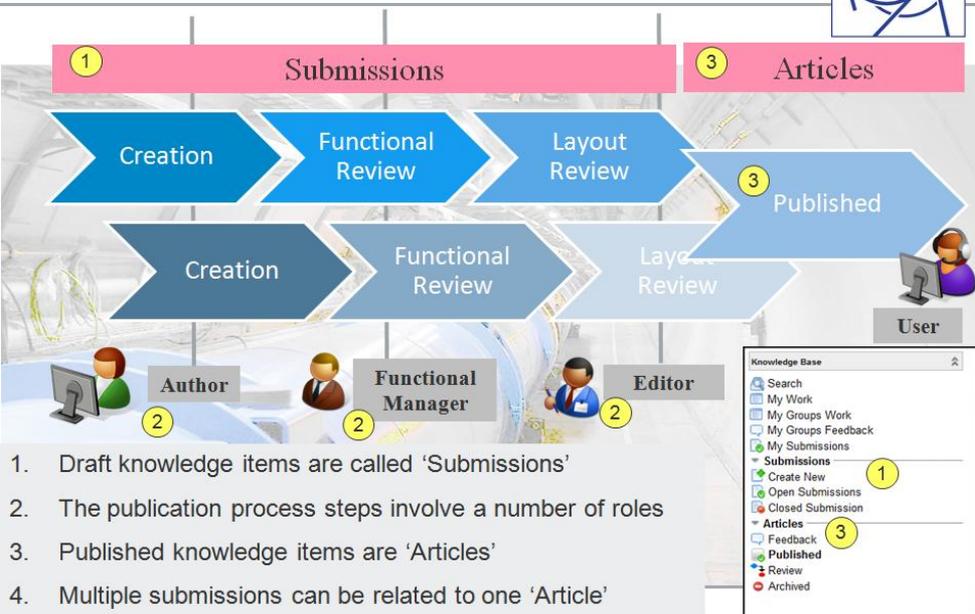


Request



Knowledge

Knowledge Management



1. Draft knowledge items are called 'Submissions'
2. The publication process steps involve a number of roles
3. Published knowledge items are 'Articles'
4. Multiple submissions can be related to one 'Article'

Knowledge Usage within task (advanced)

This block contains four numbered screenshots of the Knowledge Base interface. Screenshot 1 shows search results for 'windows 7'. Screenshot 2 shows the details of a knowledge article, including its title, author, and creation date. Screenshot 3 shows the 'Additional comments' section of an article. Screenshot 4 shows the 'Email Message' section of an article. The screenshots are annotated with numbered callouts (1, 2, 3, 4) corresponding to the list below.

1. Knowledge can include graphics (like screen shots) and html tags
2. This rich layout will pop up when using the 'book icon' search in ticket creation
3. If you attach knowledge with rich layout to a ticket, the tags will be visible initially
4. The formatted image will only appear after saving the ticket

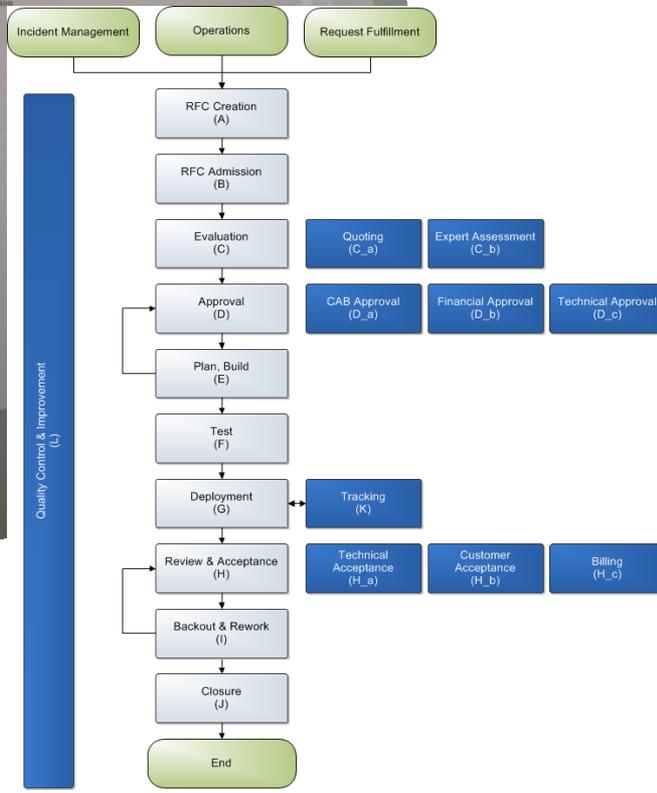
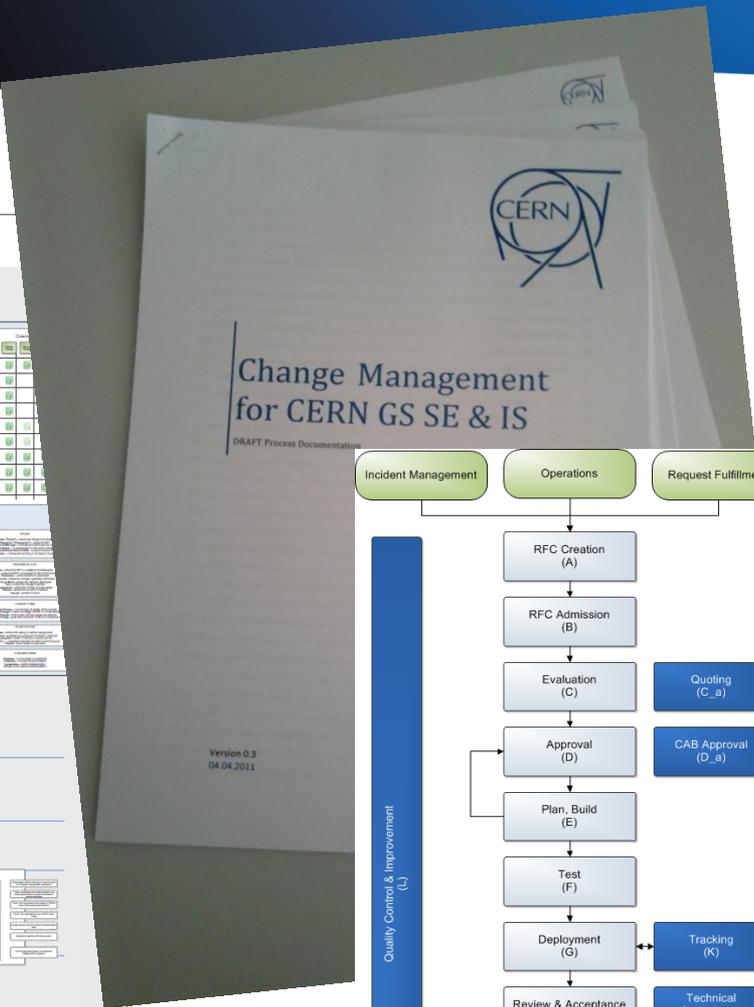
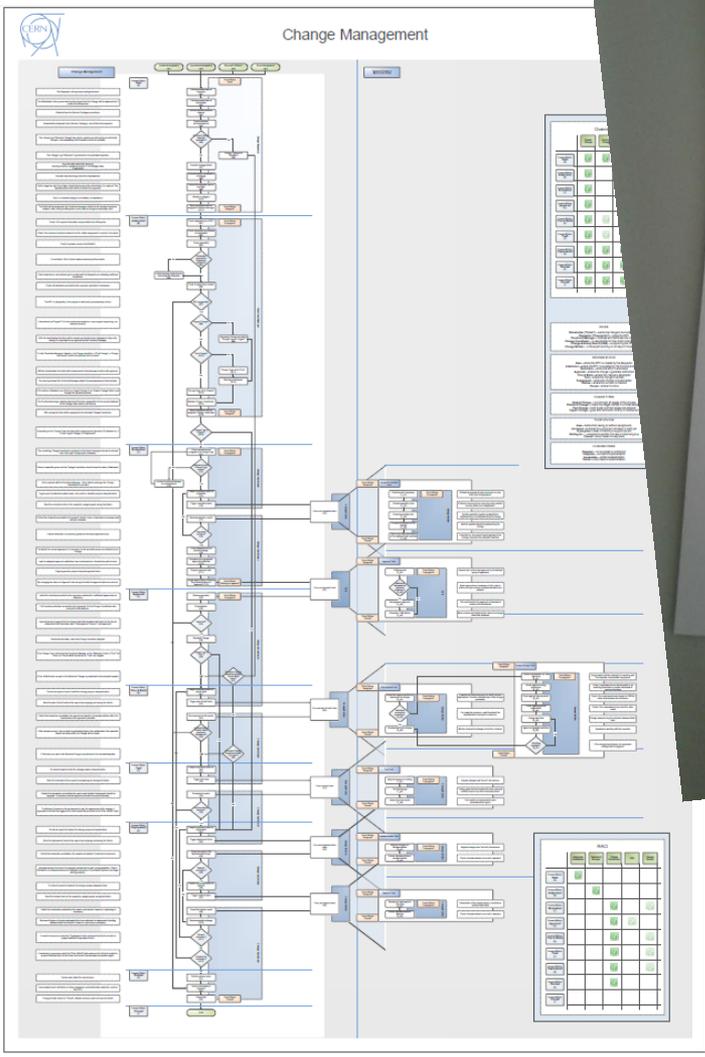
Knowledge Usage from portal

This block shows a screenshot of search results for 'windows 7' from the Knowledge Base portal. The results list various articles, including 'Can I install FileMaker Pro', 'Change default path when saving Office files (on Windows)', 'Information', and 'FAQ (47)'. The 'FAQ (47)' result is highlighted with a yellow circle. Below the search results, there is a 'Question Details' section with a question and an answer. The screenshot is annotated with numbered callouts (1, 2) corresponding to the list below.

1. Searching from portal returns knowledge articles (FAQ)
2. User can provide feedback from the portal.

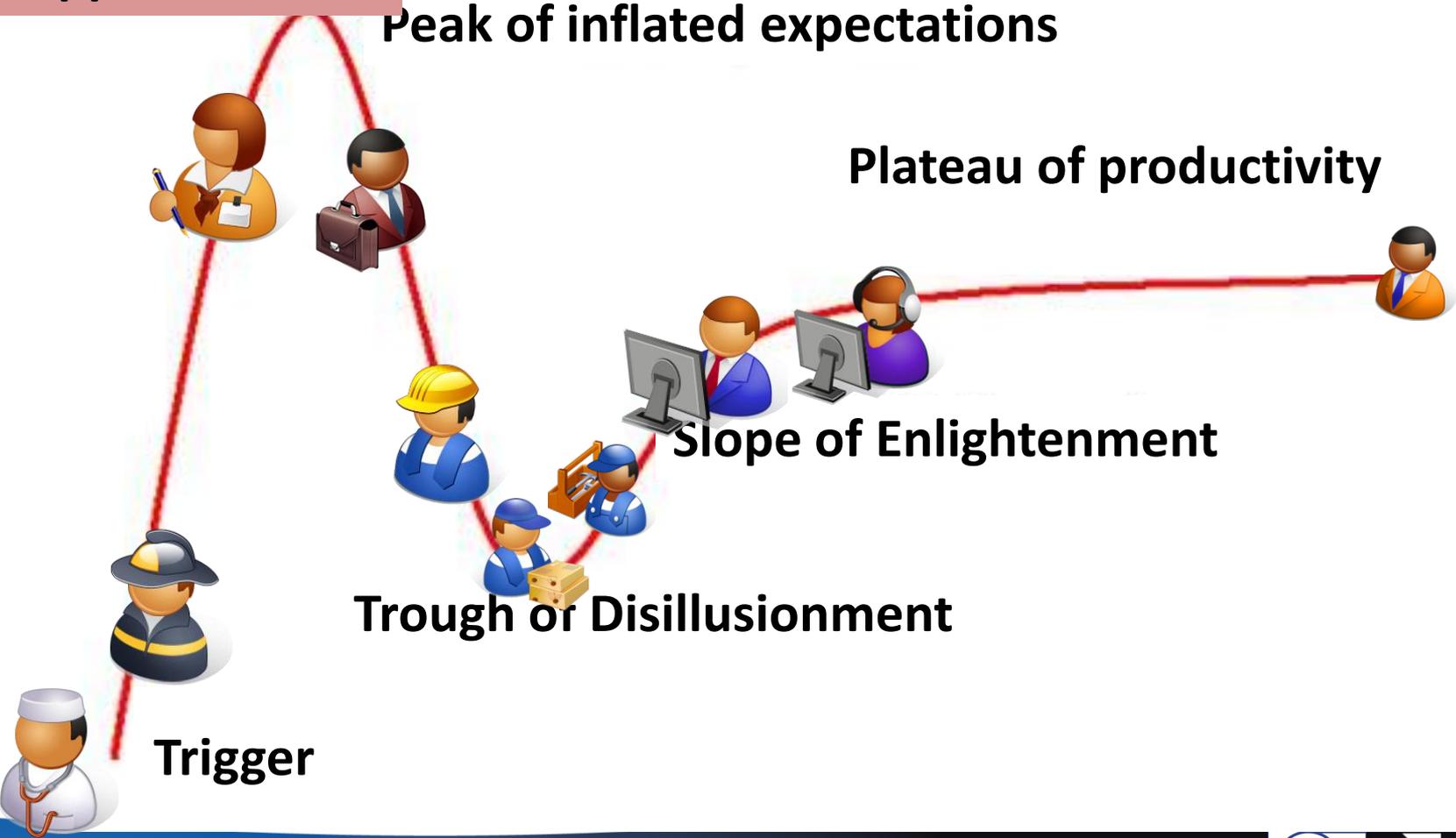
Knowledge	Go to	Updated	Search							
All > Workflow Published			Number	Author	Published	Title	Active	Roles	Updated	Updated by
<input type="checkbox"/>	KB0000407	Thomas Baron	28-04-2009	How can I change my affiliation in Indico?	true	public	23-09-2011 23:04:36	tbaron		
<input type="checkbox"/>	KB0000432	Bernard Antoine	19-06-2009	my ubackup directory contains today's ve...	true		22-09-2011 15:08:02	dmartinc		

Change



Where do we stand TODAY?

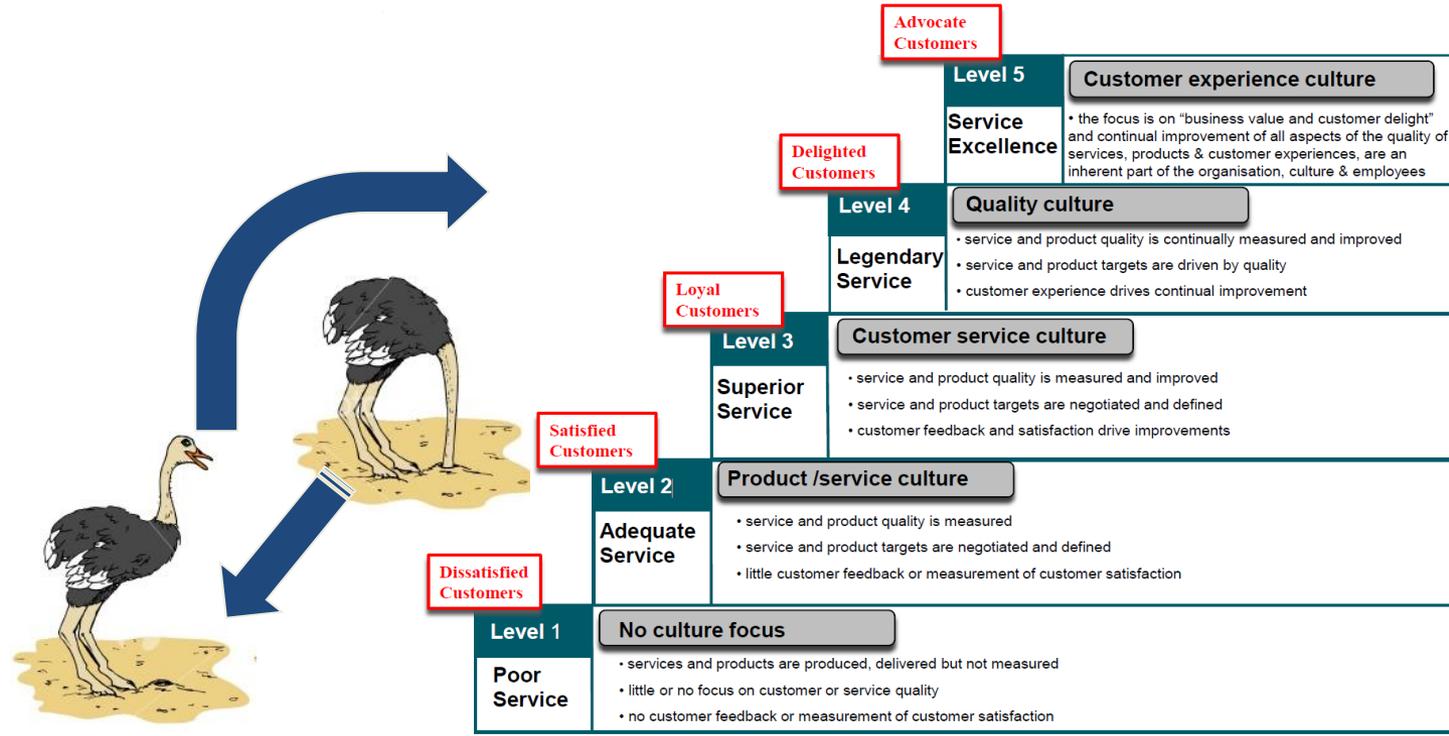
Supporters view



Where do we stand TODAY?

Managers view

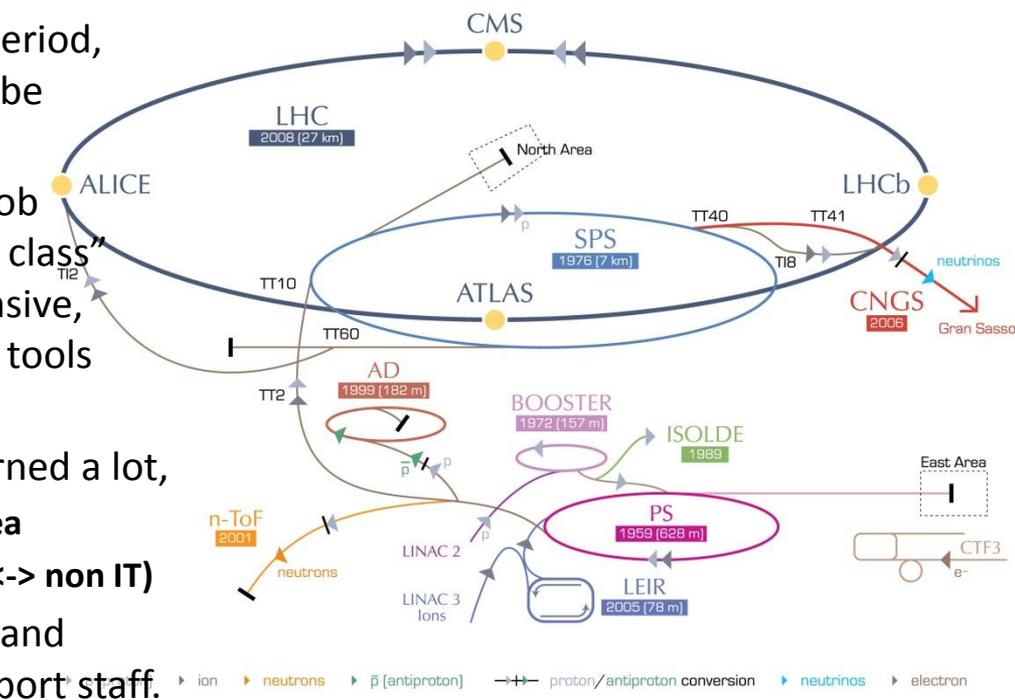
- We learned more about our true maturity AFTER GO LIVE
- We pulled our head from the sand, and we now have to work our way up the scale....



Conclusion

- CERN's mission is to provide tools and infrastructure to its 'users'; the particle physicists of the world
- This infrastructure was build over a 50 years period, represents an enormous investment, and will be exploited for many years to come
- In order for our 'users' to be able to do their job efficiently they must be supported by "best in class" service organization, using simple, comprehensive, coherent, smooth and efficient processes and tools (both IT services AND NON IT services).
- While trying to implement this 'vision' we learned a lot,
 1. Higher than expected benefits for the non IT area
 2. Underestimation of the cultural differences (IT <-> non IT)
- We are convinced the result will be a positive and necessary change for CERN, it's users and support staff.

CERN's accelerator complex



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



Thank You



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