Life-Cycle Reliability Improvement

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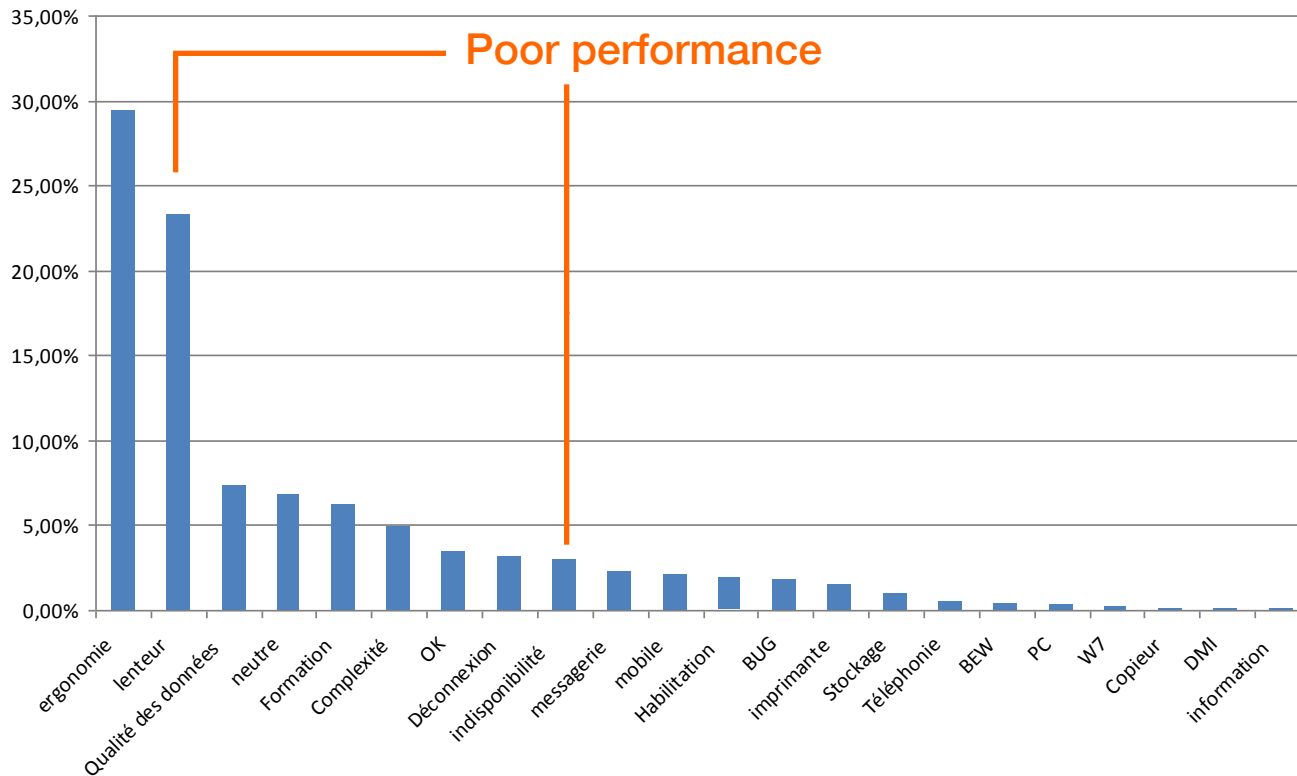
what issues did we address with L-CRI?

a few facts from research about performance of online systems

- 40% of visitors do not wait more than 3 seconds for a page to be displayed

- 80% of visitors never come back to a website following a disappointing experience
    - source: Forester Group research on impact of latency over e-businesses

- any extra 100ms of latency cut sales by 1%
    - source: Amazon survey

- beyond 500ms of response time, traffic routed by Google is down by 20%
    - source: http://www.webstrat.fr/web-technology/impact-de-la-latence-d-un-site-web-sur-le-business

what issues did we address with L-CRI?

25% of employees spontaneously suffer from poor or irregular performance, making it the first reason for complaint

Poor performance

Chart categories (left to right): ergonomie, lenteur, Qualité des données, neutre, Formation, Complexité, OK, Déconnexion, indisponibilité, messagerie, mobile, Habilitation, BUG, imprimante, Stockage, Téléphonie, BEW, PC, W7, Copieur, DMI, information

Y-axis: 0,00% to 35,00%

what issues did we address with L-CRI?

poor IT quality has financial consequences for Orange France

- 50% of Q4 2012 incidents associated with poor performance instead of system failure

- 0.5% availability for 40 000 employees: €10 M / year

- 4 seconds saved on a click performed by 40 000 employees 20 times a day: €5 M / year

what issues did we address with L-CRI?
some true stories!

- the same issues occur from one application to another and from release to another of the same application, for instance:

  - "keep alive": apache parameter – if set with the wrong value, creates latency & disconnection

  - "production mode": weblogic parameter – if set to false, the production server is configured as a development server with poor performance
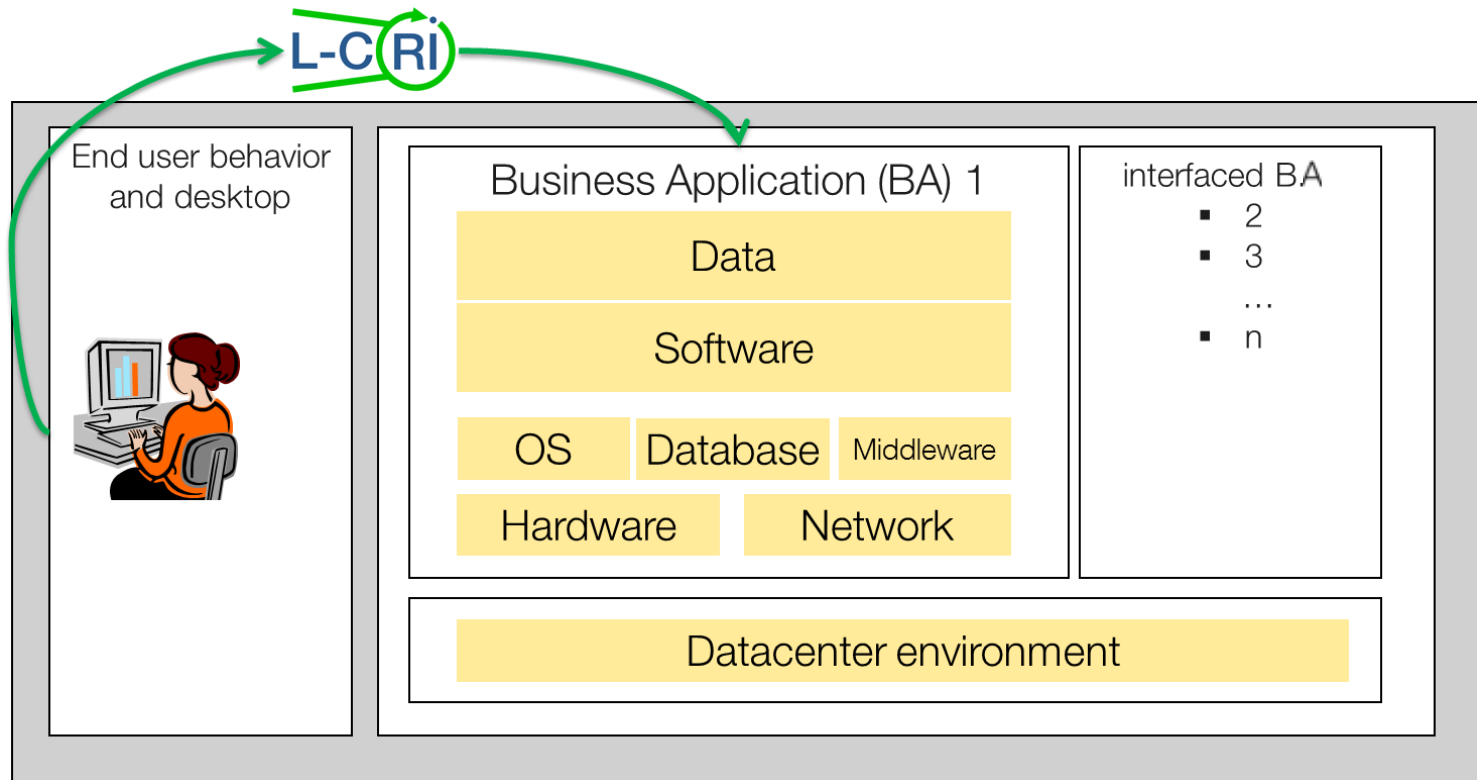
CA-PI-TA-LI-ZE

what issues did we address with L-CRI?

are existing schemes really adapted to create an industrial approach to IT system quality?

Help!

IT project managers & architects

Can you guarantee it will fix the issue?

Working Software - Nobody in my team is qualified to control the quality of your code! - I have to trust you!

I'm busy – sorry!

Metrology? but it costs time and money!

What do you expect?

IT performance expert

Step 1- Set quality standards for integrators

System integrator - developer

Step 3 - Profiling expertise

It takes 3 months on average to solve an issue.

IT Operations

I wish you would take my findings into account – I have nothing but your word on this!

Metrology experts

Step 4- Problem (ITIL)

Step 2 - Metrology

what is L-CRI?

performance (customer experience & QoS) of the black-box, then "finger pointing" the right box

L-C(RI)

End user behavior and desktop	Business Application (BA) 1	interfaced BA

Business Application (BA) 1
- Data
- Software
- OS
- Database
- Middleware
- Hardware
- Network

interfaced BA
- 2
- 3
- …
- n

Datacenter environment

what is L-CRI?

collect ➔ analyze ➔ help in decision-making (predictable scores)

- L-CRI **inputs**:
  - **70%**: APM (Application Performance Management) data, for instance:
    - Introscope
  - **5%**: logs
  - **25%**: settings files
  - expert capitalization

- It is **algorithms**:
  - detecting what is good & what is bad
  - highlighting the impact of the detecting issues

- LCRI **outputs**:
  - dependability evaluation
  - disability & unreliability probability
  - Recommendation (when it is possible)

dependability evaluation

0   8   12   20

basics are not implemented   basics are implemented

disability & unreliability probability (to adjust and update with the SMC of each country)

0%   15%   40%   100%

All systems rated below 15% are fair or good

Behavior of all systems rated over 40% have crashed in the following week in production environment

what is L-CRI?

a cost-effective approach to optimize the number of tests

- 30 min to set up toolkit (CA Introscope) on system environment

- L-CRI in build
    - 5.5 man-days for 4 assessments.
        - workload and meetings for all the stakeholders.

- L-CRI in run
    - 3.5 man-days for an assessment.

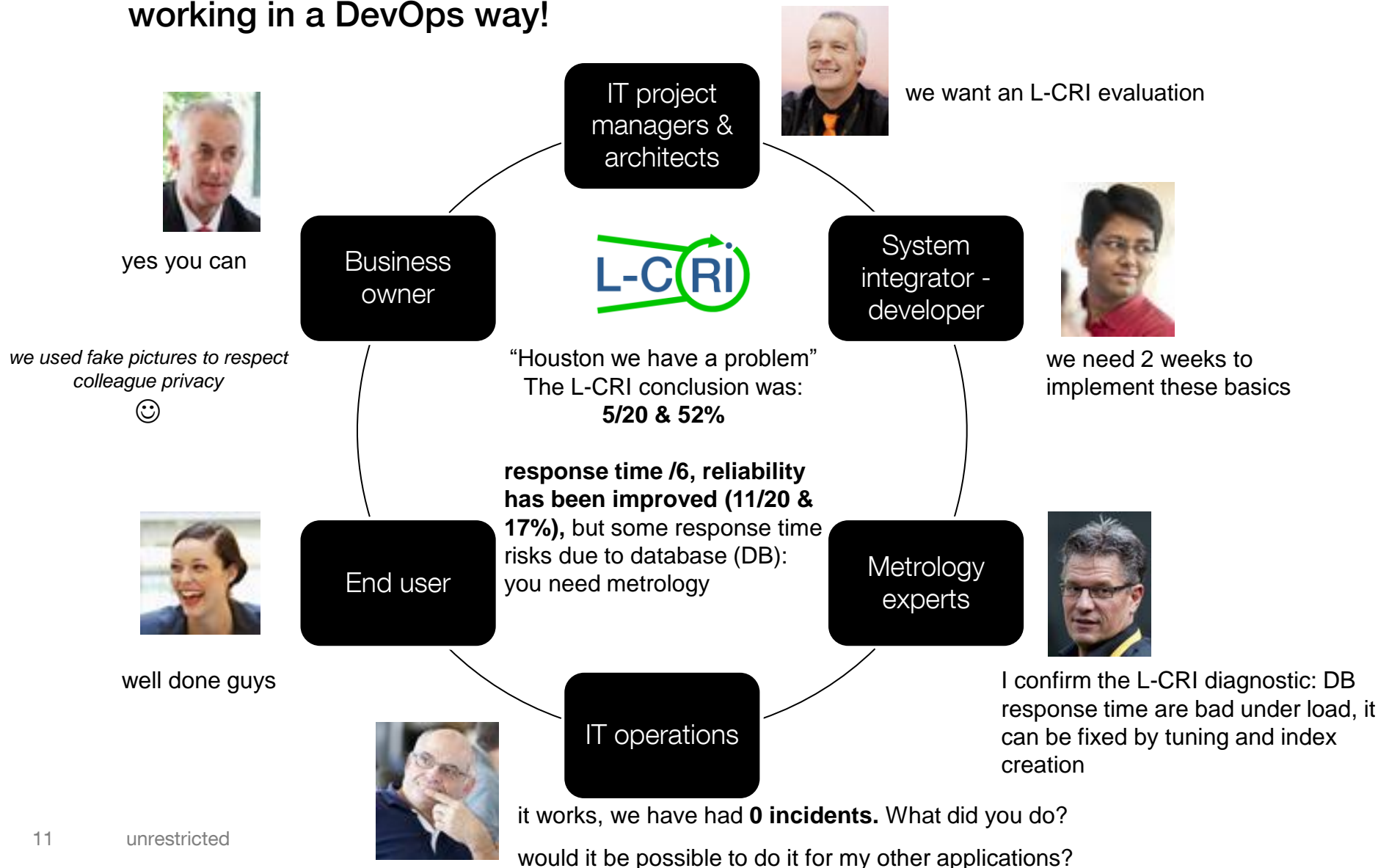## Less than 1 day

Strong ROI

Easy fix implementation

what is L-CRI?
L-CRI's assets

- won the Orange Innovation Award 2013 in the field Performance and Architecture.
- is based on facts.
- used during development (continuous integration included) and testing, avoids deploying non-robust applications (scope: Java, .net, PHP).
- contributes to define the RUN perf. and reliability requirements
- analyzes binary execution but not the source code.
  - if an issue is isolated within a binary, code analyses would be used.
- will integrate the future capitalization of performance and reliability problems (in RUN and BUILD).
- provides facts & figures.
  - integrated in sub contractor contract.
  - avoids multiple opinions of specialized experts on different technologies.
  - allows responsibilities for poor performance to be identified without playing the blame-game.
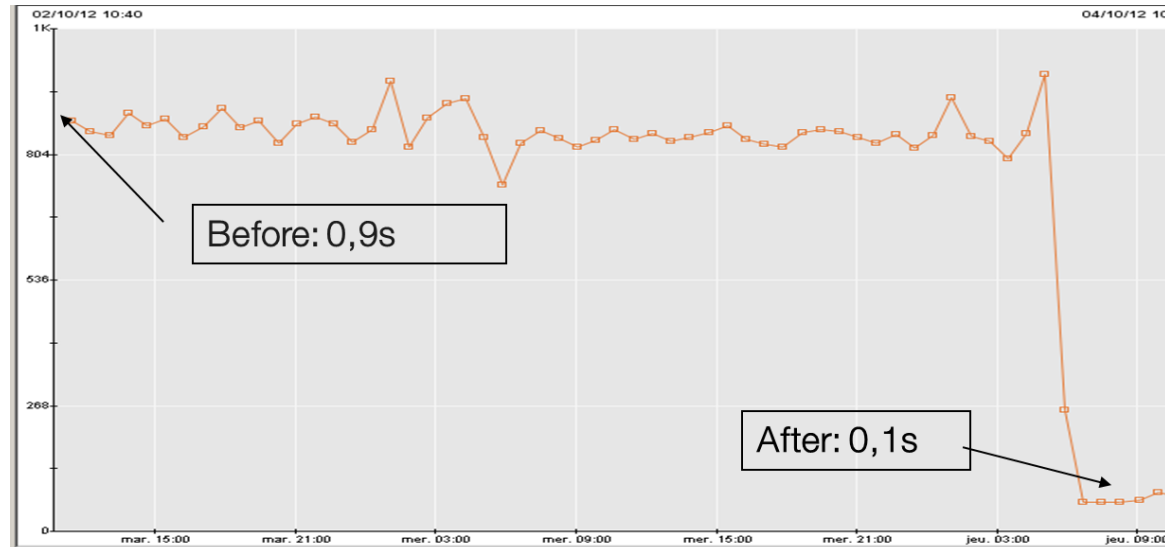
results

how we deployed in production a 0 incident first release by working in a DevOps way!

we want an L-CRI evaluation

yes you can

we used fake pictures to respect colleague privacy
☺

IT project managers & architects

Business owner

L-C(R)I

System integrator - developer

we need 2 weeks to implement these basics

"Houston we have a problem"
The L-CRI conclusion was:
5/20 & 52%

response time /6, reliability has been improved (11/20 & 17%), but some response time risks due to database (DB): you need metrology

End user

Metrology experts

well done guys

I confirm the L-CRI diagnostic: DB response time are bad under load, it can be fixed by tuning and index creation

IT operations

it works, we have had **0 incidents.** What did you do?

would it be possible to do it for my other applications?

results

a complex example among many
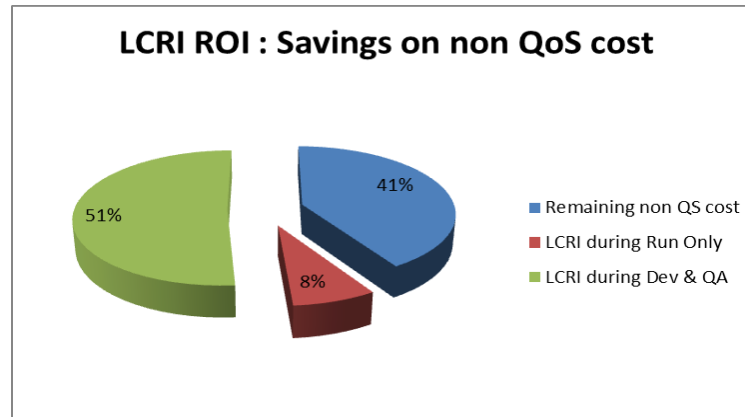

Online mobile subscription

- workload : 1 hour of analysis + 1 hour of development
- delay: 1 release (3 months)
- value :
  - OPEX: audience + 40% ; sales +8% (cf slide #2)
  - CAPEX: avoids delay and workload of useless/speculative actions

results
commitments, training

- **commitments**
  - proactive savings: 10x reactive savings
  - global savings: non-QoS cost divided by 2 in 3 months

LCRI ROI : Savings on non QoS cost

- Remaining non QS cost — 41%
- LCRI during Run Only — 8%
- LCRI during Dev & QA — 51%

- **training**
  - provided by OBS
  - contact: Aurélien HOUEE

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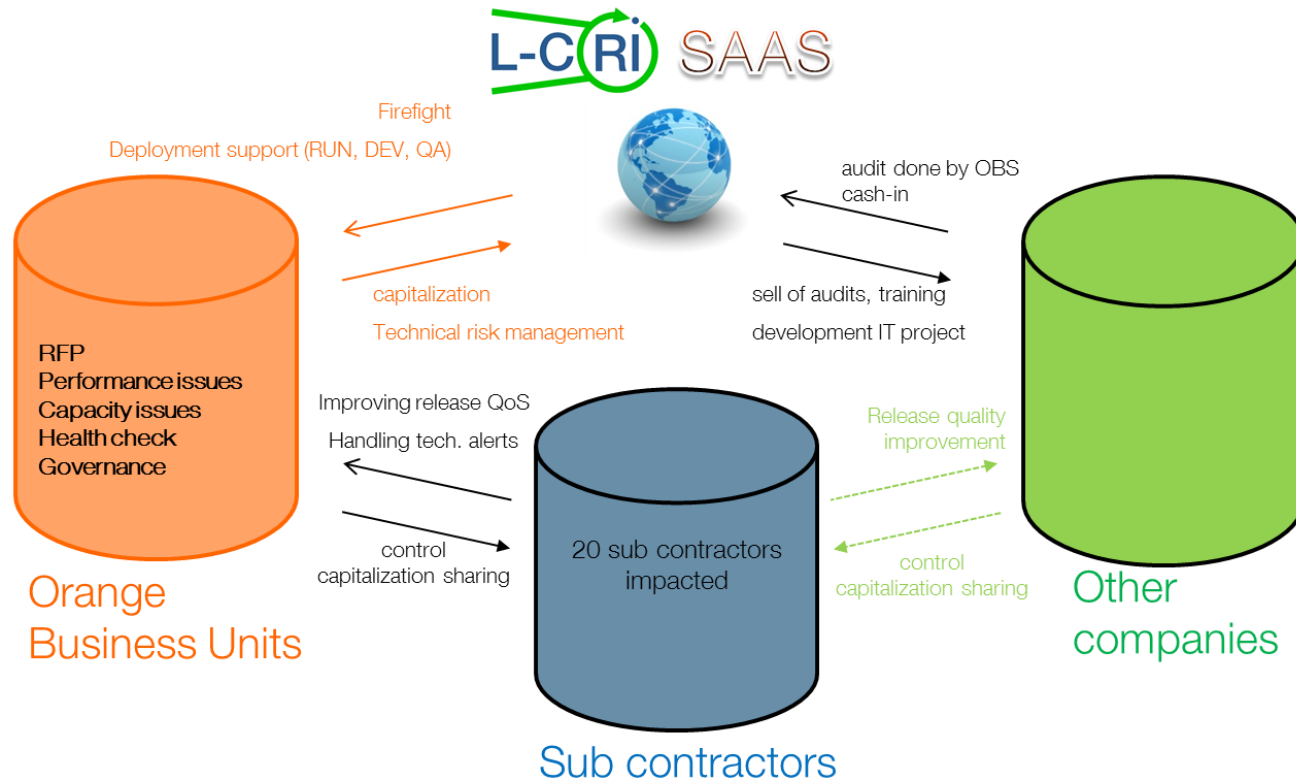mob. 06 48 78 30 78
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results

adoption by peers is the best measurement of success

- team of system performance experts from several organizations within Orange contributed to L-CRI.

- over 100 assessments conducted in 2012 at Orange France & OBS.

- IT integrators are required to commit on L-CRI assessment.

- 7 Orange countries expressed interest in L-CRI.

results
deployment strategy

thank you

orange™