Tales of how IBM has been working to help in these challenging times

David Spurway
IBM Power Systems CTO, UKI

IBM

Agenda

- Two of the tales today come from the IBM Technical Consulting Group in the UK
  - IBM employees produce protective face visors for hospitals
    - A small group of IBMers was able to print and deliver nearly 7000 PPE visors, free of charge, to the NHS in just a few weeks
  - IBM, Red Hat and the Nightingale Hospitals
    - The Red Hat Engine Room builds Proof of Concepts on OpenShift
    - From a late night phone call on a Saturday evening, the team built a messaging application for the NHS Nightingale Hospitals in just a few days
- IBM Cloud Paks, built on OpenShift, can be ~6x less expensive on IBM Power Systems
- IBM Power Systems with IBM Visual Insights has a solution for when we eventually return to workplaces
  - The solution, from Dacha, can monitor for Social Distancing, PPE usage and more

UK Technical Consultancy Group

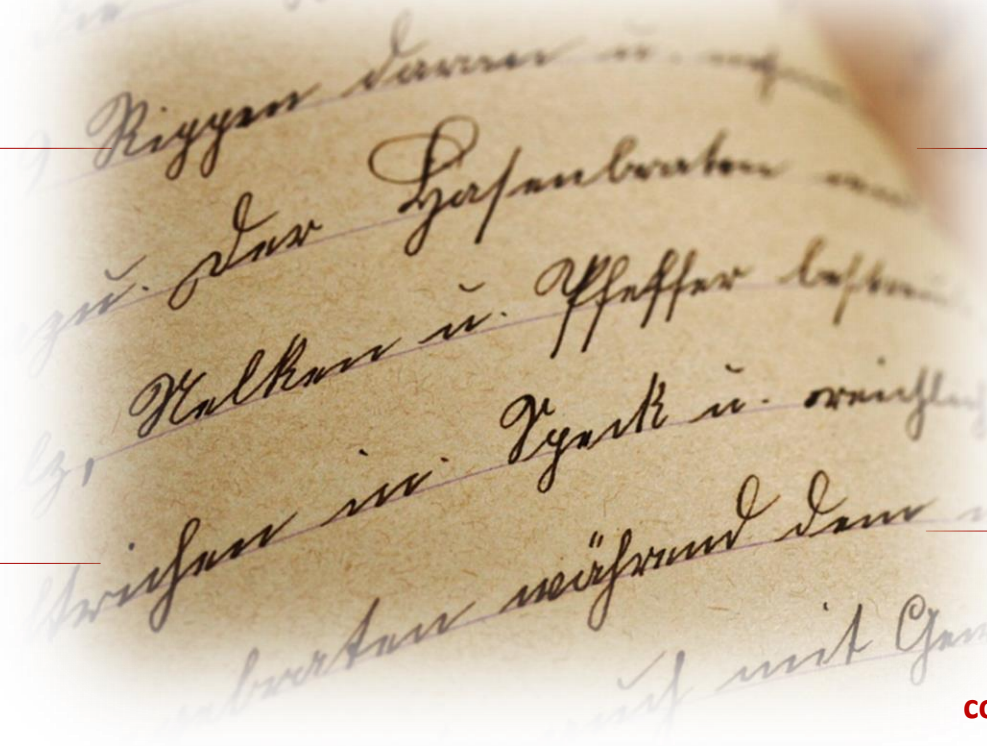
Andy Barnes, Chair (andy_barnes@uk.ibm.com) *@ıbarnes*
Mandie Quartly, Vice-chair (mandie_quartly@uk.ibm.com) *@ındieq*

AKA – Totally Cool Geeks

Who are we - the TCG Charter

Promote the **health and vitality of the technical community**

Facilitate **Technical Interchange**



Develop and maintain external contacts

Provide **cross-functional consultancy** to UK Executives

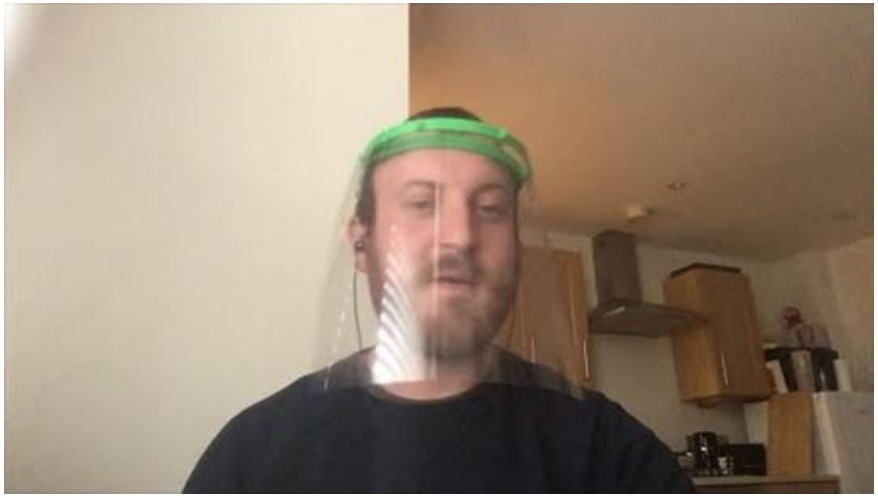
IBM employees produce protective face visors for hospitals

https://www.news-medical.net/news/20200410/IBM-employees-produce-protective-face-visors-for-hospitals.aspx

Apr 10 2020

“IBM staff with 3D printers are volunteering to turn their devices and skills to help alleviate the shortage of protective face visors for hospitals.”

Sean Tracey
IBM Developer Advocate

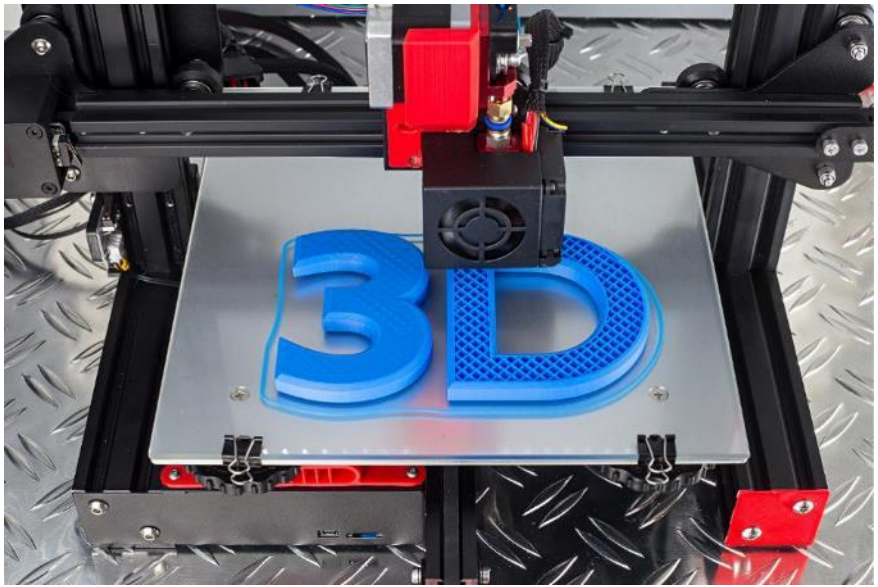


https://developer.ibm.com/profiles/sean.tracey/

“Sean is a Developer Advocate for Client, Partners, and Industry.”

The IBM Developer Advocacy is a graduate program that hones tech professionals to educate developers about a specific technology and grow a community of researchers, students, educators, and coders on the path toward achieving a unique advantage.

Sean has two 3D printers



We had a session at a previous i-UG event about 3D printers:

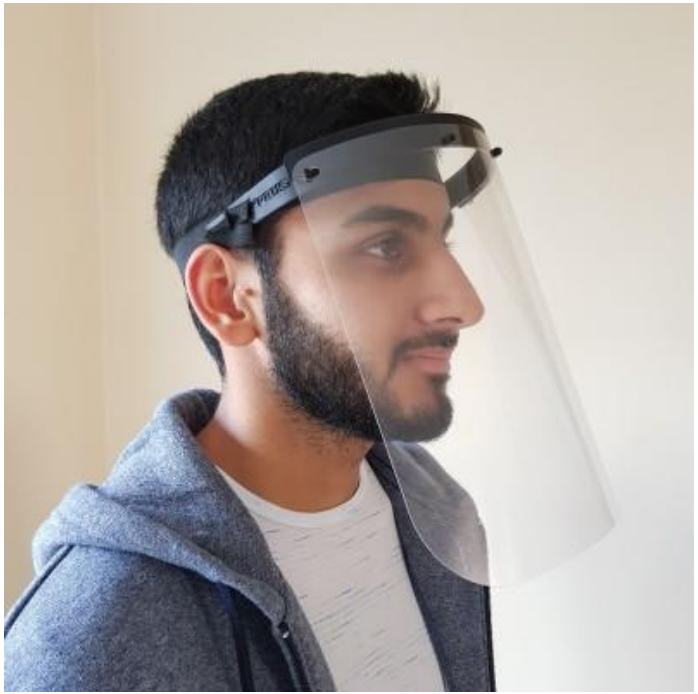
https://powerwire.eu/letter-from-i-ug

Letter from i-UG

June 12, 2015 by Colin Spofford

"…the most popular item on the agenda was a presentation outlining the incredible potential of 3D printing technology by Kevin Askew of GoPrint 3D"

There was an idea…



Dhiresh Nathwani, who had been an intern at IBM Hursley last year, contacted Sean with an idea.

https://www.linkedin.com/in/dhireshnathwani/

Founder and Chief Designer

Mar 2020 – Present

Due to the COVID-19 pandemic, I founded Makers4theNHS to help those in need of PPE visors. We provide 3D Printed PPE visors completely free of charge to NHS hospitals, GP's, care homes and more! Using purely the money that we are able to raise from our GoFundMe page.

A challenge of how to scale

Dhiresh Nathwani

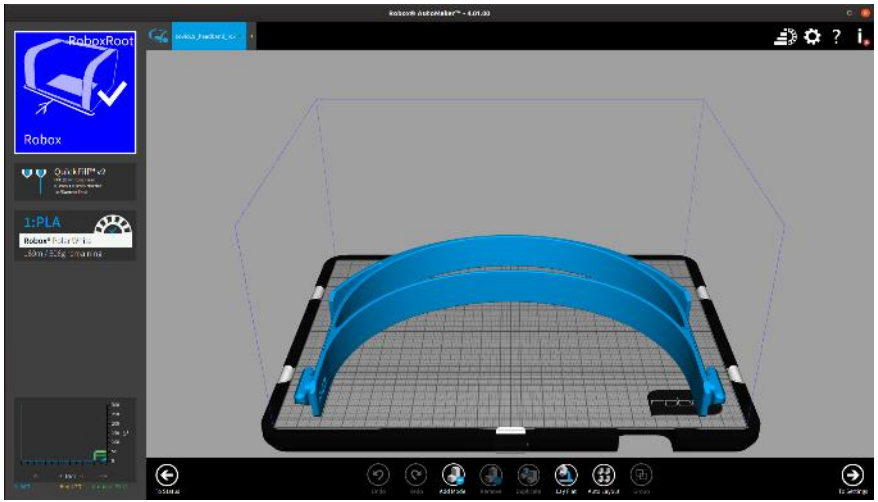
Sean Tracey

Andy Stanford-Clark

3 IBMers to being with, could print maybe 5 visors a day each, so 15 visors per day.

Maybe enough to cover a GP surgery each day.

How to print a visor



https://github.com/seanmtracey/PPE-Visor-Fabrication-Instructions

Required tools and materials for constructing the visor

A 3D printer with a print space of at least 187mm by 147mm by 21.5mm

At least 10 metres of either PETG, PLA, or ABS print filament. PETG is our preferred filament type, but both PLA and ABS are fine.

2 hour later, Sean had a visor in his hands!

A shout out on a team call

Alison Say

Chief Digital Officer, United Kingdom and Ireland at IBM

A shout out on a team call, which was mostly about how every one was doing led to 21 IBMers with 3D Printers stepping forward.

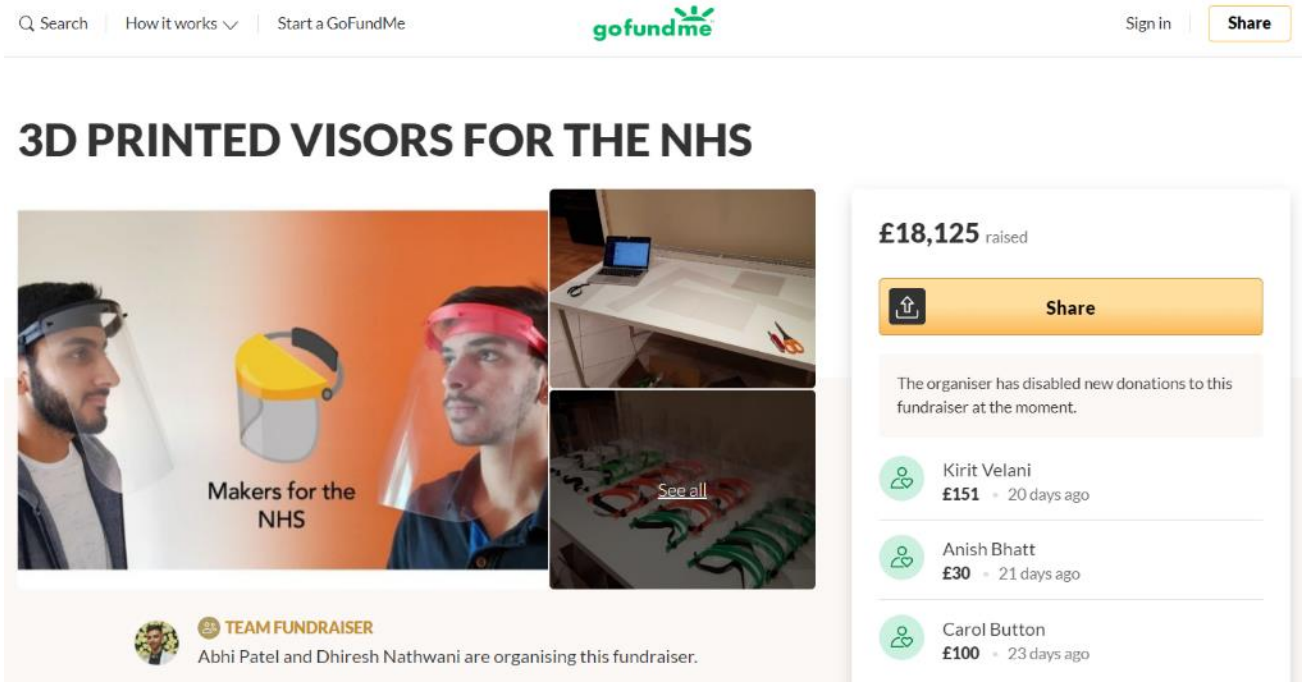
Then on to 68 people, all across the UK.

Since the end of March, ~7000 visors were produced out of 3 centralized distribution hubs and shipped to front line NHS staff.

How did this get paid for?

Over £18,000 was raised through GoFundMe, paying for:

- the filament
- the acetate
- the elastic (ordered by the kilometre!)
- a Cricut Cutter
- a 3D Printer
- 10 cutting mats



How were decisions made?

As the project scaled up, problems were encountered and decisions had to be made.

The team were all just a group of people collaborating together, but a group of 15 who were the core planning team, so decisions could be made quickly.

The team was regularly nearly out of materials, but were able to keep materials flowing, so they never actually ran out.

Clear, publicly available documentation was also very important, to keep everyone going, rather than answering questions.

Look after yourself

Given these interesting times, when we could not go out, and the nature of what was being built, there was a risk people would be reluctant to stop.

So the team were very clear that it was OK to stop, take the Bank Holidays, take a break, etc.

They scaled from 15 a day to 500 a day, and no one left, had an argument or go so tired they could not do it any more.

Because, taking breaks was OK, and getting sick would cause more harm than good.

Is it still going?

“On 7 May the UK Government published guidance for groups such as ourselves making personal protective equipment (PPE) for health workers aimed at protecting the health of the wearer during the COVID-19 outbreak.

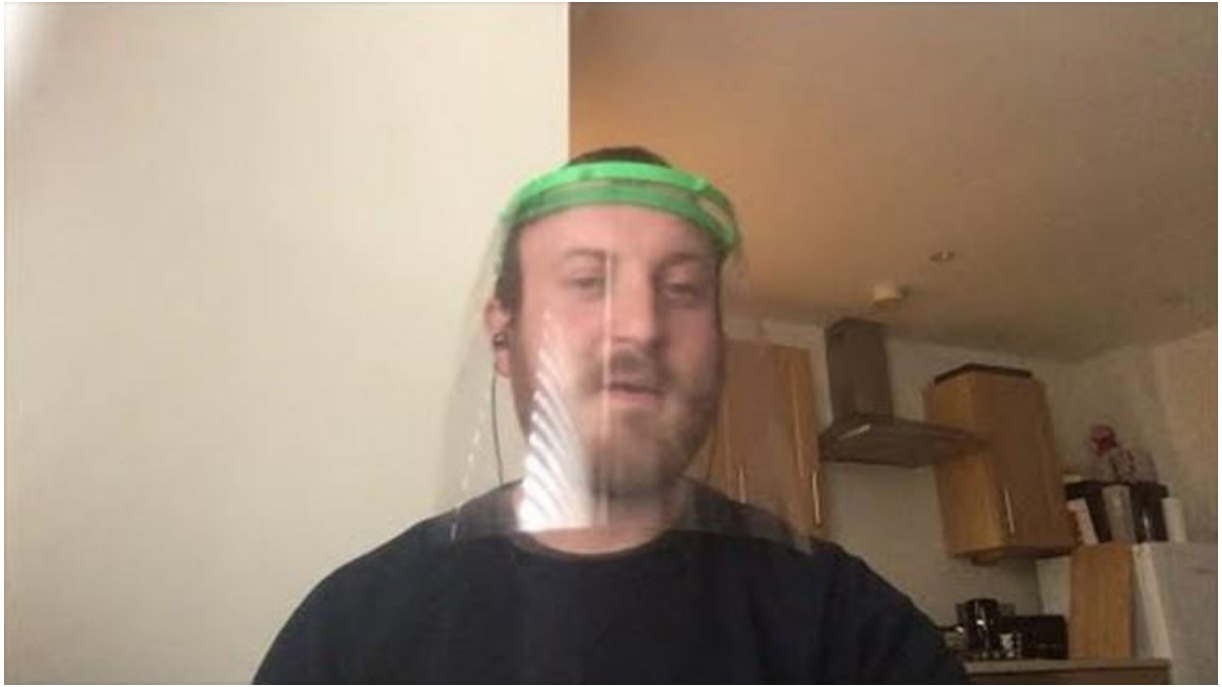
As a result, we have taken the difficult decision to wrap up Makers4theNHS and encourage our individual makers to join 3DCrowd UK, a larger scale group of volunteers producing PPE who are already in the process of gaining their CE certification. We will be donating the remainder of the money we have raised so far and remaining materials to 3DCrowd UK, to ensure it goes towards producing vital PPE for healthcare professionals.”

What to hear more?

Here is Sean talking about the project (linked YouTube on the next slide which is hidden in presentation mode).

Also, take a look at the blog here:

https://www.ibm.com/blogs/think/uk-en/ibm-employees-join-the-rallying-call-to-build-visors-for-nhs-staff/



IBM, Red Hat and the Nightingale Hospitals

If the Nightingale Hospitals had needed to be used in anger, no visitors would have been allowed.

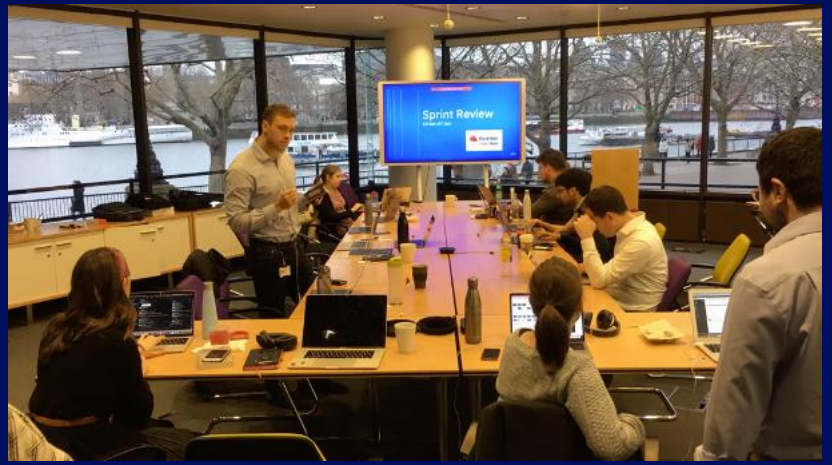
How would you have found out how your loved ones were doing, when you couldn't visit and the staff would have had to focus on giving care, not updating you?

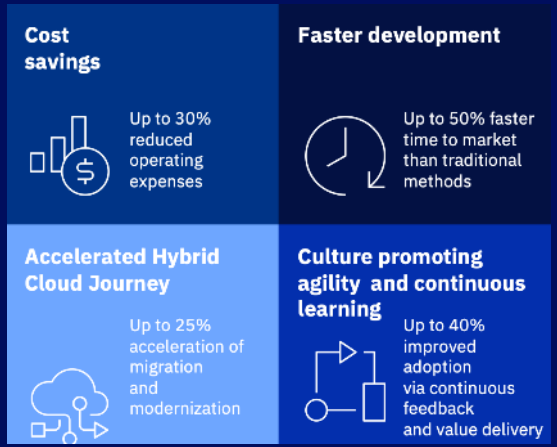
Red Hat

ENGINE ROOM

Introducing the Red Hat Engine Room

- Delivers PoCs using Red Hat OpenShift on any cloud
- Demonstrates how our cloud expertise and assets—together with Red Hat OpenShift—can simplify and accelerate application modernisation to speed cloud adoption for competitive advantage
- Centralised team to consolidate thinking in a ”Garage Studio” style set up
- Mostly a rotating team of early professionals backed by experienced architects and PMs
- Created as an approach to optimise the UK approach to meeting the OpenShift Everywhere PoC target (52 in Q1 for UKI)





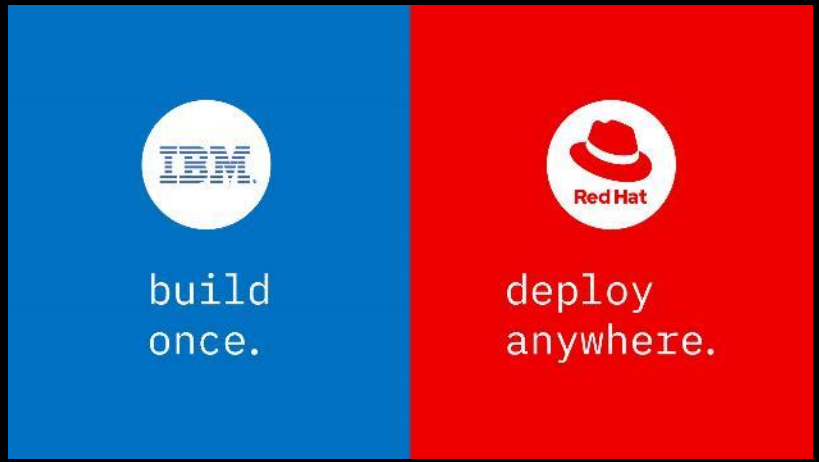
IBM and Red Hat

58%
of enterprises
have multicloud
environments*

92%
of enterprises
have hybrid environments*

50%
of enterprises will
have moved to ‘write
once, run anywhere’
hybrid and multicloud
environments by 2023*

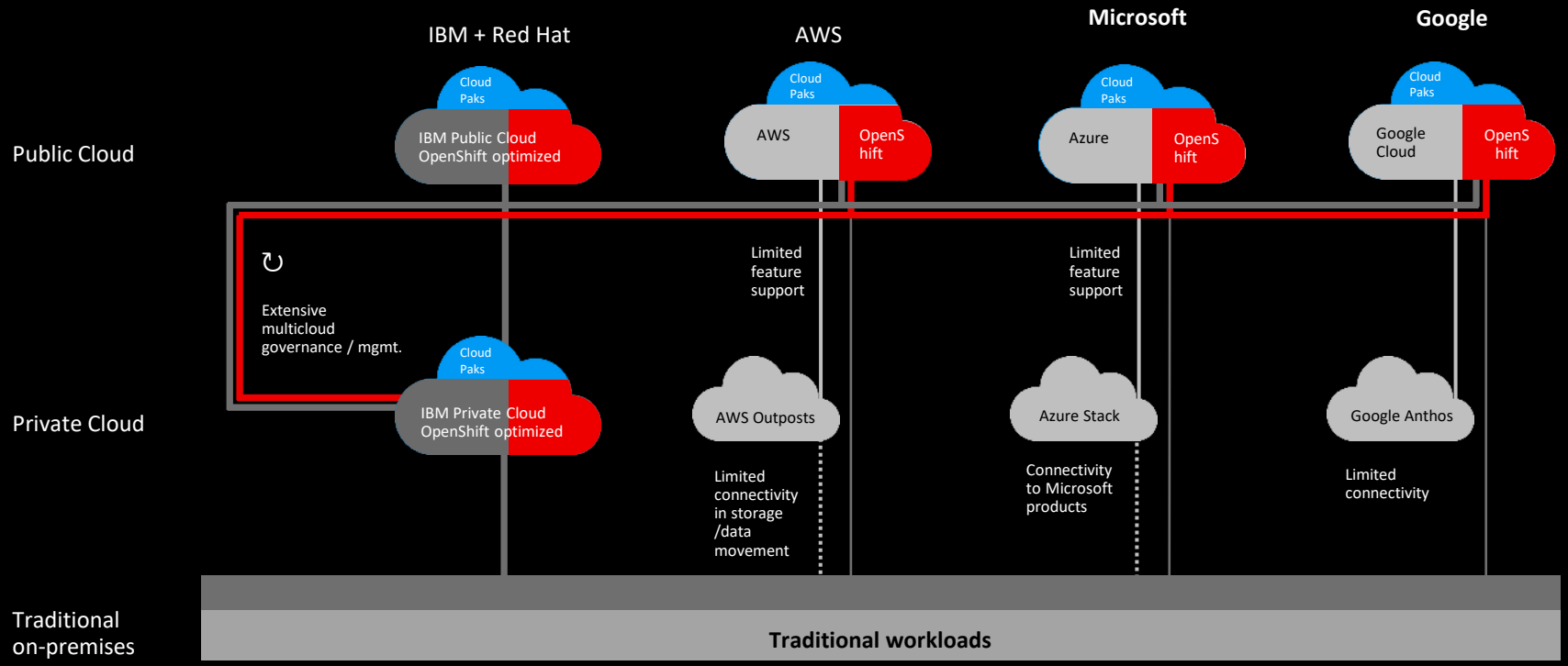
10%
of enterprises with
hybrid environments
are able to support holistic
management
and agile movement
of applications across
environments*



Source: IBM MD&I forecasts, *IDC CloudPulse survey, June 2019

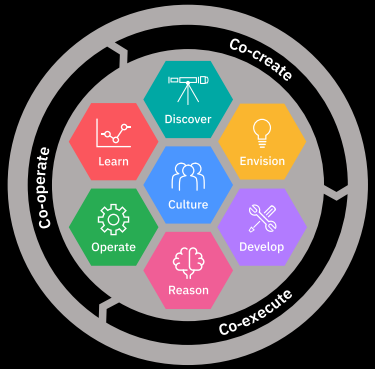
IBM | Red Hat

IBM and Red Hat deliver the industry's true hybrid multicloud platform



Creating an application modernization roadmap

IBM's Garage Method for Cloud applied to legacy portfolio to build Roadmap



20% Rationalize and decommission

10% Replace with "as a service" solution

50% Modernize and Migrate to Cloud

- 10% *Re-Host (lift & shift)*
- 10% *Re-Platform*
- 15% *Refactor*
- 15% *Re-Architect (Microservices /APIs)*

and for selected apps:

- Automate
- Containerise

20% Retain on Traditional

Hybrid Multicloud IT

Public SaaS Public

Dedicated off-premises

Private on premises

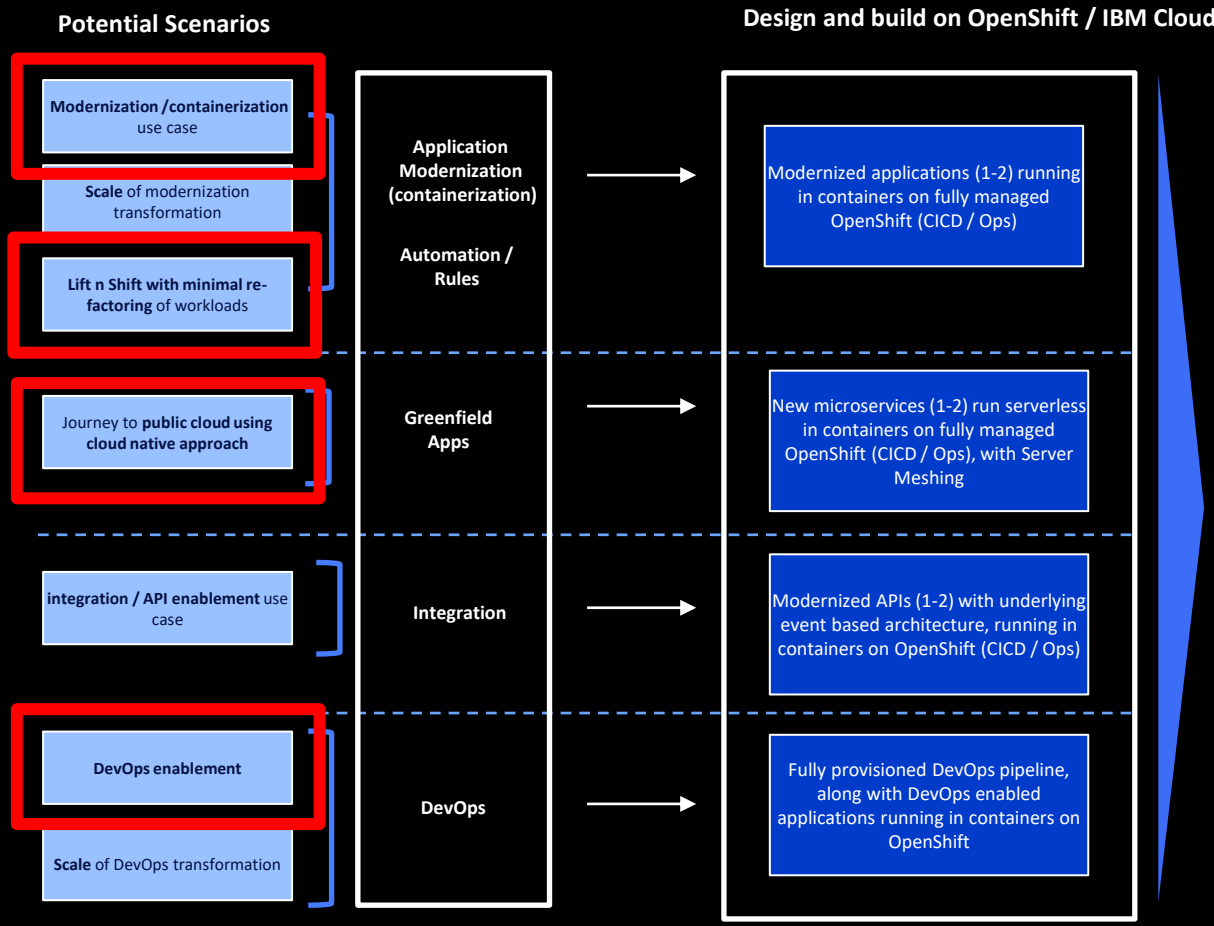
Traditional on premises

…on *any* cloud platform

IBM Cloud · Google · Oracle · Azure · AWS · Red Hat

IBM | Red Hat

Use-Case Driven Delivery Model



Deliverables Summary

- Light Application Assessment
- Working POC
- Cloud Value Model
- Next steps to execute the end state vision

Desired Outcomes

- Demonstrate benefits of Red Hat OpenShift as the container platform for Hybrid Multi-cloud
- Prove value of the IBM Services assets to accelerate, simplify and standardize cloud and application modernization

Around a week into UK Lockdown…

Richard Hopkins, who is the President of the IBM Academy of Technology, got a call from a Gold Commander of the NHS Nightingale Hospital, which were due to open later that same week.

Among other things, Richard is a Dr. Who fan, and lives and works in the UK.

https://twitter.com/hopkira/status/1170389807014514689

Patients on ventilators can't communicate or be visited

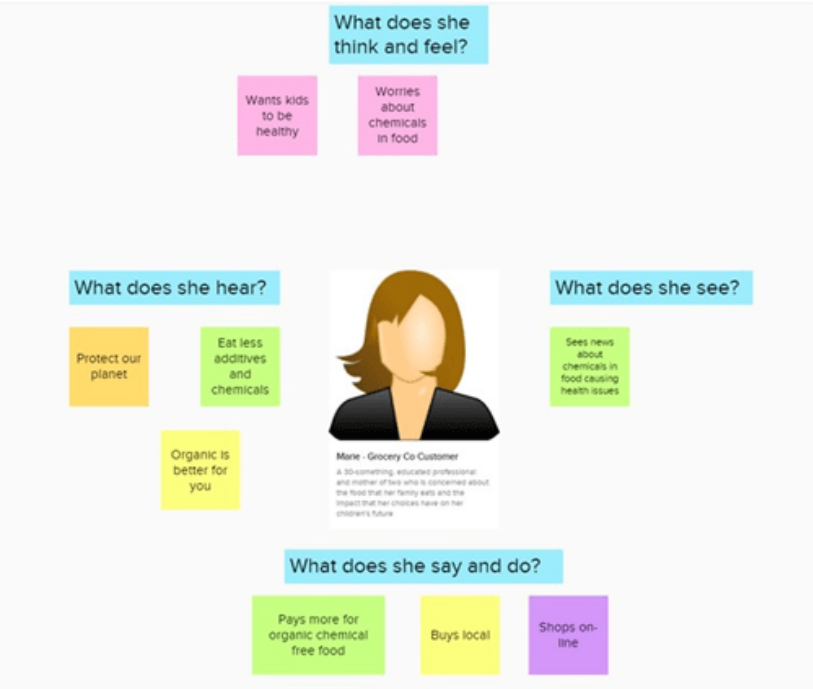
The plan with the Nightingale Hospitals was for no visitors to be allowed.

And patients on ventilators need to be sedated, so they can't send any updates over Social Media or Messaging platforms.

Lack of communication could lead to a loss of trust and cause panic.

https://www.bbc.co.uk/news/health-52345177

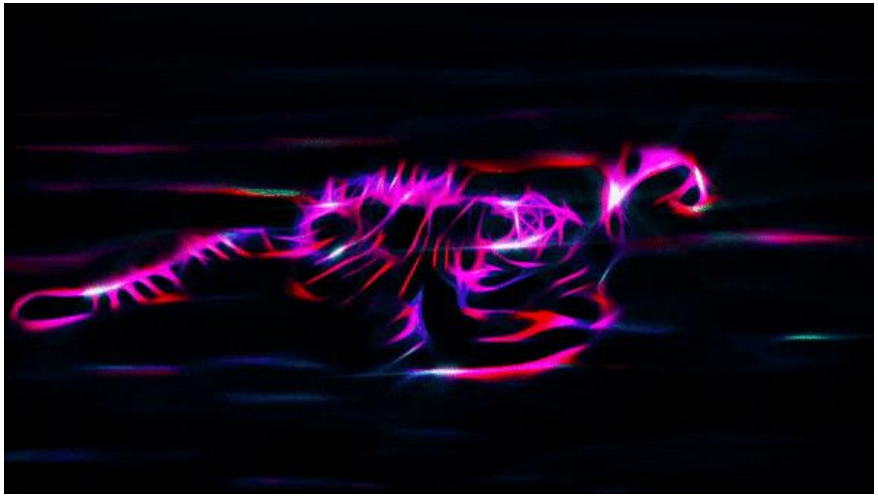
Kate Marshall and team used Mural for Design Thinking



https://www.ibm.com/garage/method/practices/culture/tool_mural/

Kate Marshall - IBM iX | IBM Q Ambassador

How fast?!



Kate and the team had been working on an application using biosensing to monitor COVID-19 symptoms at home.

Richard is called on the Saturday night.

My Monday morning, the team were ready to start building!

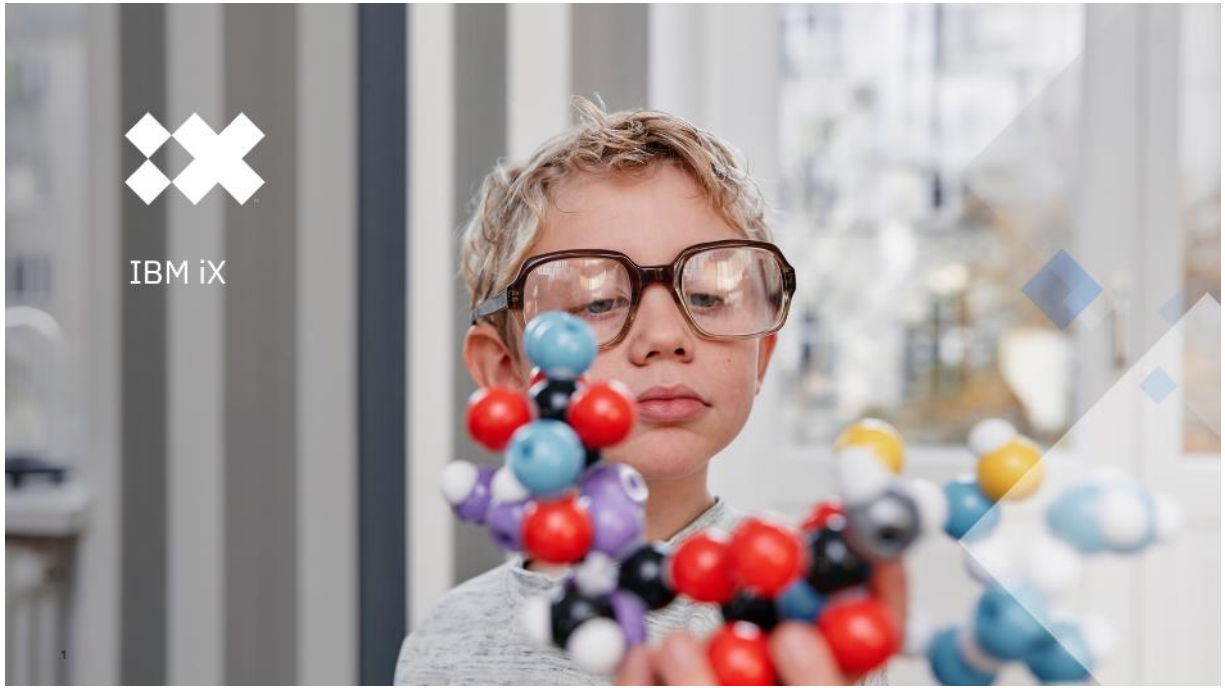
The idea was to build something that could take status updates written by the nurses, and communicate those to the families at home.

An OpenShift cluster was stood up within 24 hours, ready for an application to be deployed to it.

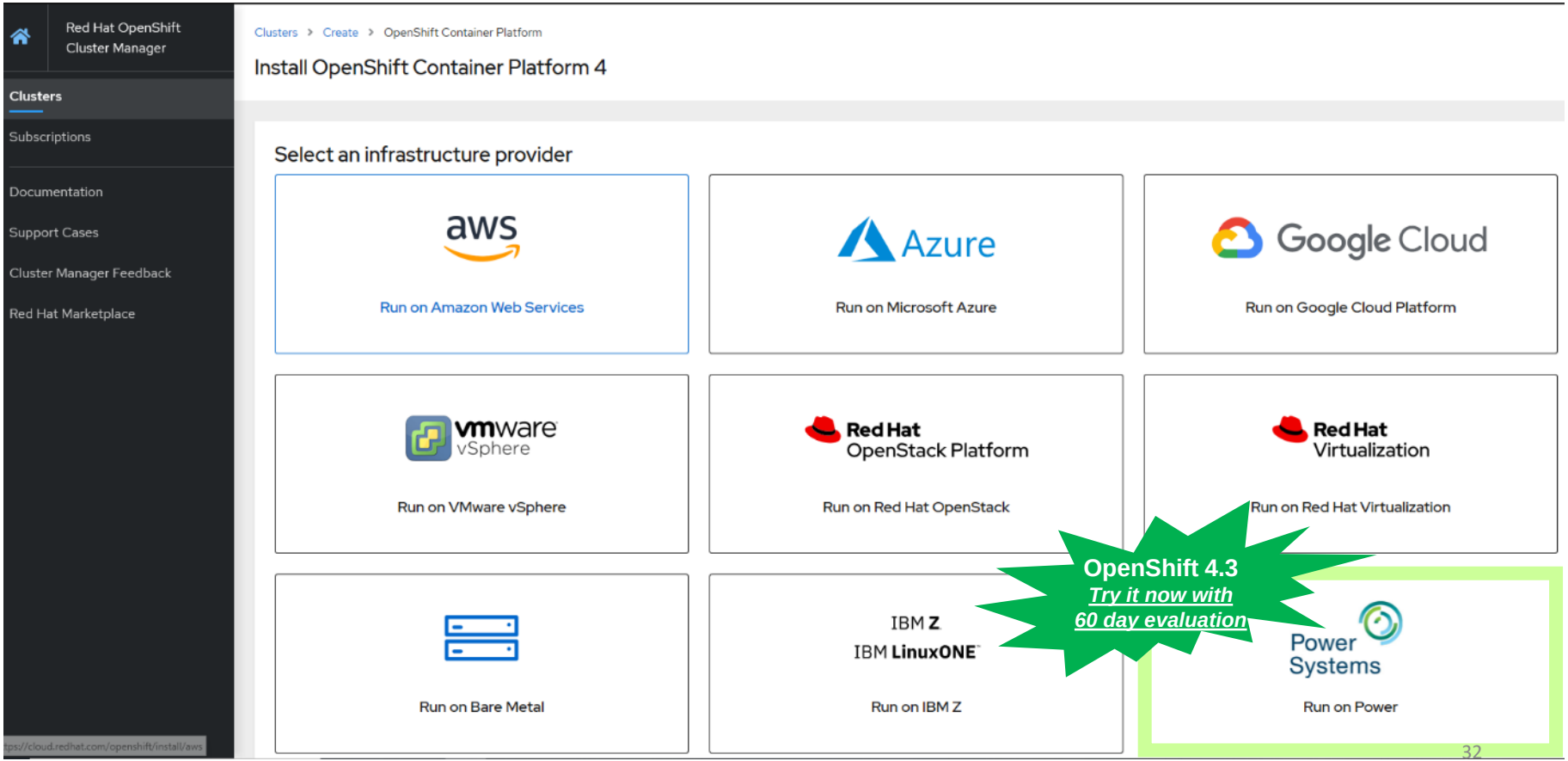
A demo was taken back to the customer after only 4 days!

More in 4 days than in 2 years

The use of Open Source and Red Hat tooling, combined with Best Practice techniques enabled a results which impressed the Gold Commander so much that they said the team had achieved more in 4 days than they had managed in 2 years!



Create your own OpenShift 4 cluster – https://cloud.redhat.com/openshift/install



Cloud Paks and Red Hat OpenShift on Power Systems

Cloud Pak for Multicloud Management

- Multi Cloud Manager
- Cloud Application Management
- Cloud Event Manager
- Cloud Automation Manager
- ANSIBLE
- CLOUDFORMS

Red Hat OpenShift

Cloud Pak for Applications

- Open liberty
- Swift
- WAS liberty
- Spring
- Kabanero Enterprise
- JBoss
- istio
- jenkins
- node.j
- Transformation advisor

*UrbanCode Deploy
*Developer Team Orch
*Dev Team Governance

+ Add-on *

RHOAR - OpenShift Application Runtimes

Red Hat OpenShift

Cloud Pak for Data

- Cloudant
- DB2
- Cognos
- Streams
- MariaDB*
- Redis*
- MongoDB
- etcd

* PostgreSQL
* NetApp Persistent Storage
* Wand Taxonomies and Ontologies
* Knowis for Banking
* Lightbend Reactive Microservices
* Prolifics Prospecting Accelerator

+ Add-on * (including Watson AI, ...)

Red Hat OpenShift

Cloud Pak for Integration

- App Connect Enterprise
- API Connect
- Event Streams
- MQ
- RabbitMQ
- Aspera
- Integration explorer
- Watson Voice gateway *
- Datapower

+ Add-on *

Red Hat OpenShift

Cloud Pak for Automation

- Business Automation Workflow
- Operational Decision Management
- Business Automation Insight
- Business Automation Content Analyzer
- File Connect Manager
- Robotic Process Automation *

+ Add-on *

Red Hat OpenShift

Cloud Pak for Security

- Federated Search
- Case Management
- Universal Data Insights
- Security orchestration and Automation
- Development Framework

Red Hat OpenShift

Runs on choice of IBM Power Systems Infrastructure-as-a-Service (IaaS)

PowerVC
PowerVM

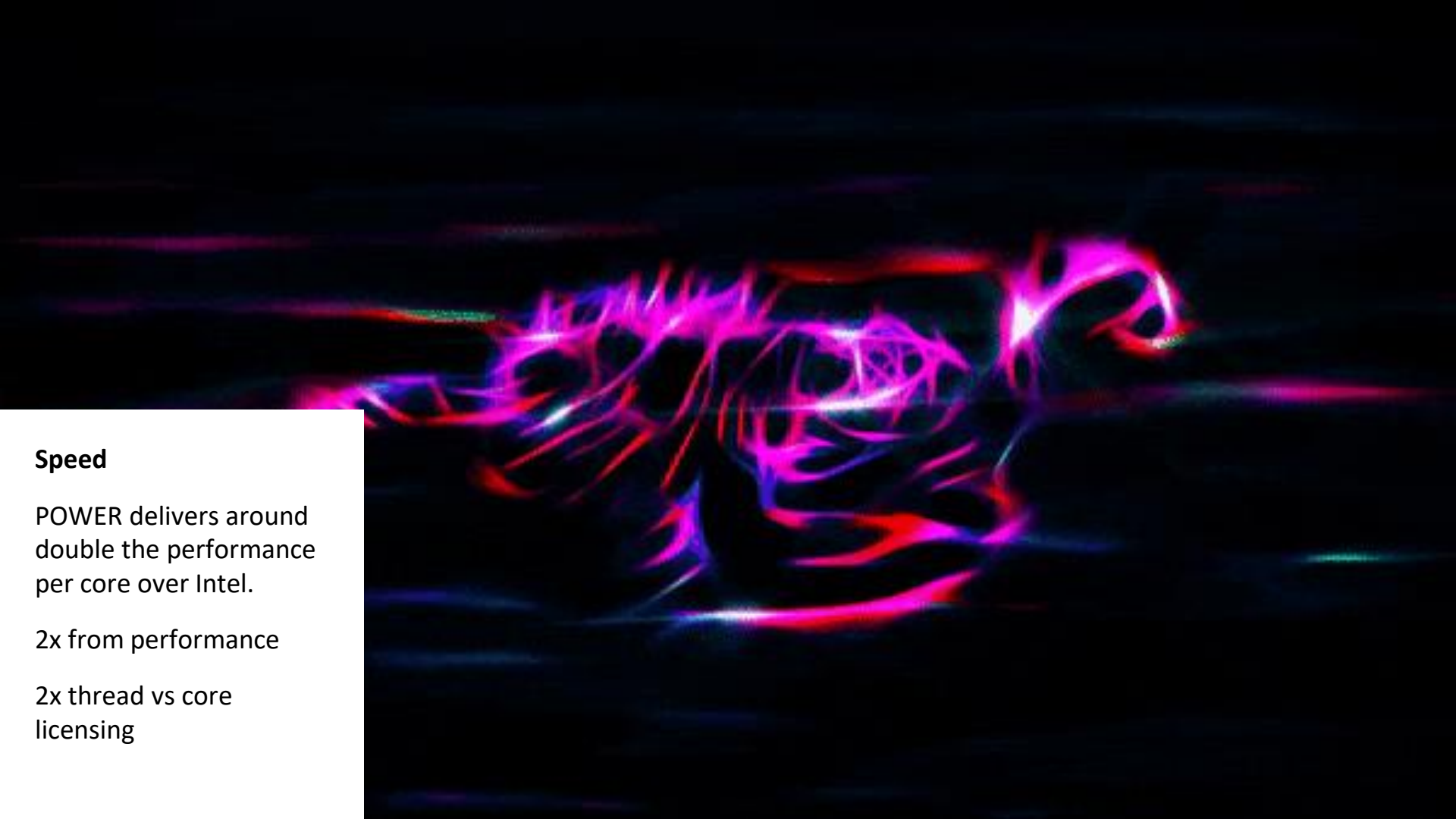
KVM
(dev only)
Red Hat Enterprise Linux

Red Hat Enterprise Linux CoreOS

Threads

Software like Cloud Paks are licensed by the “VPC”.

In Clouds like AWS and Azure, VPC=vCPU and Hyperthreading means vCPU=thread, not whole cores.



Speed

POWER delivers around double the performance per core over Intel.

2x from performance

2x thread vs core licensing

Consolidation

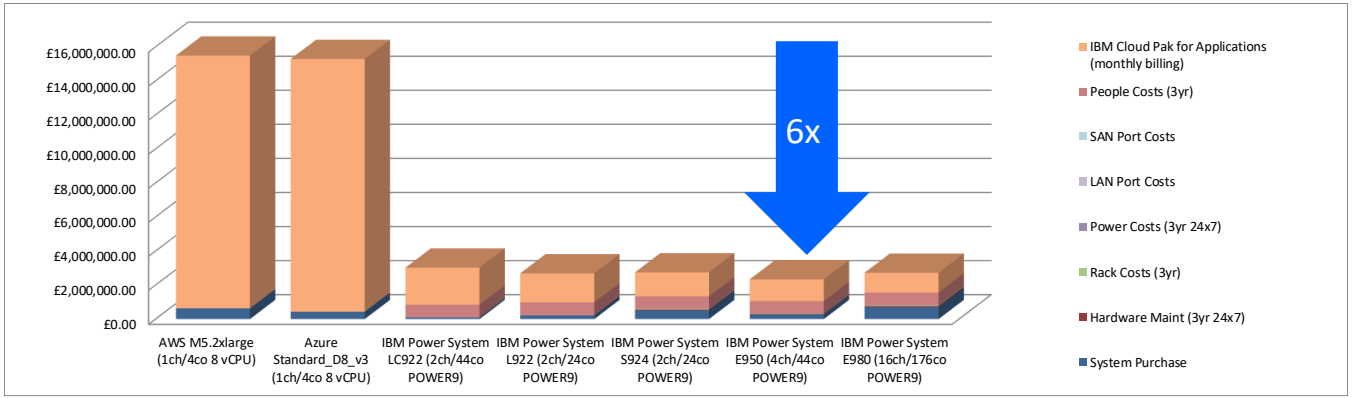
IBM Server customers pack workloads together every day, driving high utilisation and fewer cores.

Cloud providers keep that benefit for themselves.

The result is that IBM Power is ~6x less expensive!

Applying the estimated monthly cost of $808 (converted to £687.48) for IBM Cloud Pak for Applications, and licensing for all those vCPUs and the smaller number of POWER9 cores shows the IBM Power Systems are considerably less expensive than AWS or Azure.

Subcapacity licensing also used, as PowerVM allows this.



This model uses prices that are for informational purposes only and which may vary. This example uses the Monthly Pricing for IBM Cloud Pak for Applications for 3 years, and assumes the use of SMT8.

dacha

safety • security • intelligence

Back to work project

As businesses resume operations there are a number of key challenges to address

- ❑ High Worker Density
- ❑ PPE Usage
- ❑ Containment of Infected Areas
- ❑ Monitoring of new safety requirements
- ❑ Quickly align to new policies/procedures

Our solution has the ability to use Video Analytics to aid business' get back to work.

Social distancing

Children in China have made their own Social Distancing hats to help keep them safe.

Ford’s return to work plan

"As we return to work at our two engine plants in the UK, our key priority is the implementation of Ford’s global standards on **social distancing** and strengthened health and safety protocols to safeguard the well-being of our workforce,” said Graham Hoare, chairman, Ford of Britain.”

https://uk.motor1.com/news/423341/ford-uk-factories-return-to-work/

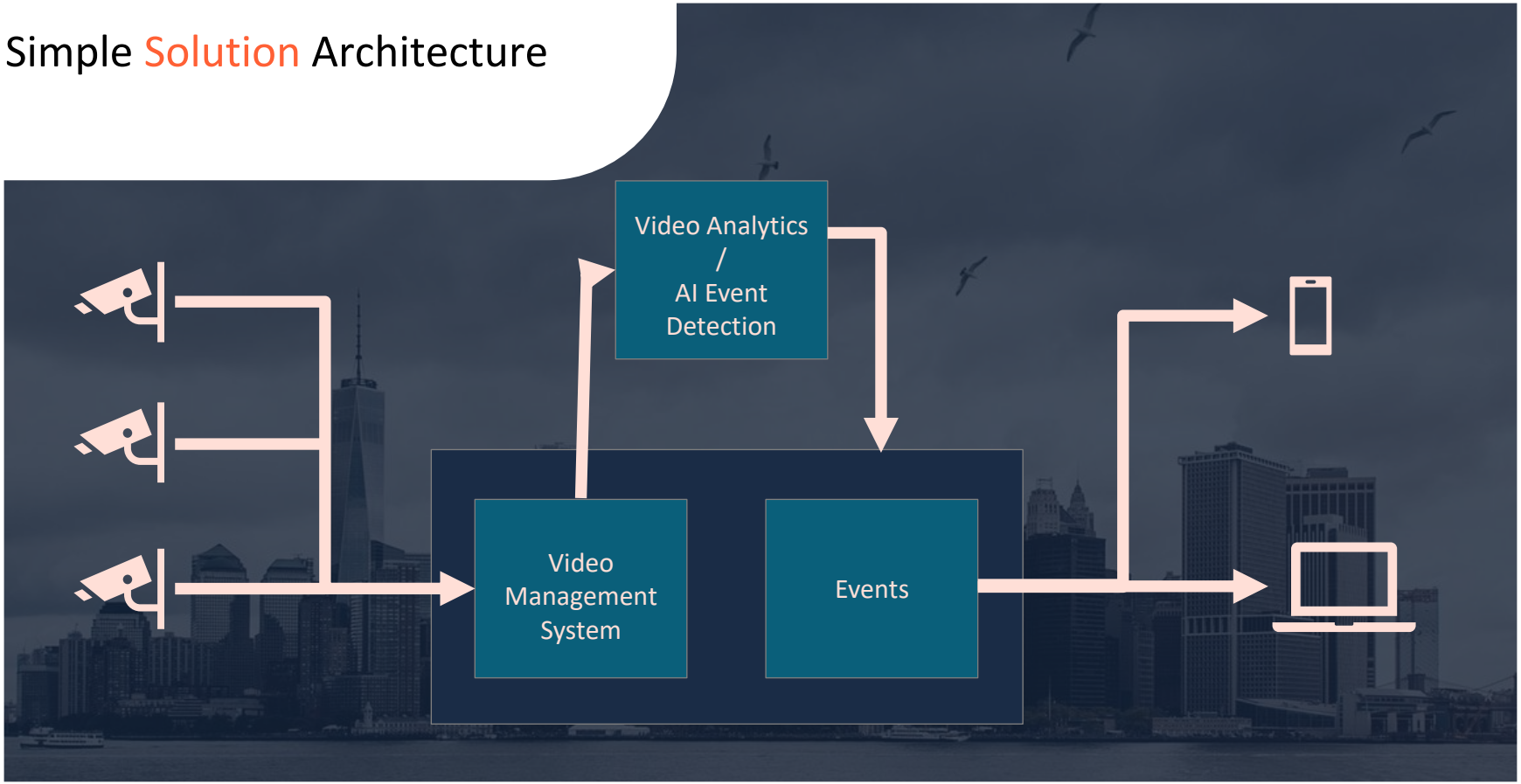
What we can do

Monitor Social Distancing

Monitor Correct PPE Usage

Monitor Temperatures

Simple Solution Architecture



IBM Solution Components

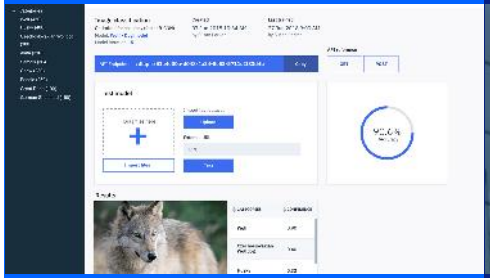
Custom Deep Learning – IBM Visual Insights for training deep learning models on your own data

Traditional Computer Vision – Video Analytics for implementing out-the-box models for common computer vision tasks such as person detection

GPU accelerated hardware – reduce model training time for rapid prototyping

End-to-end on-premises – Seamless integration with camera infrastructure, video management and event server for sending alerts in real-time to stakeholders.

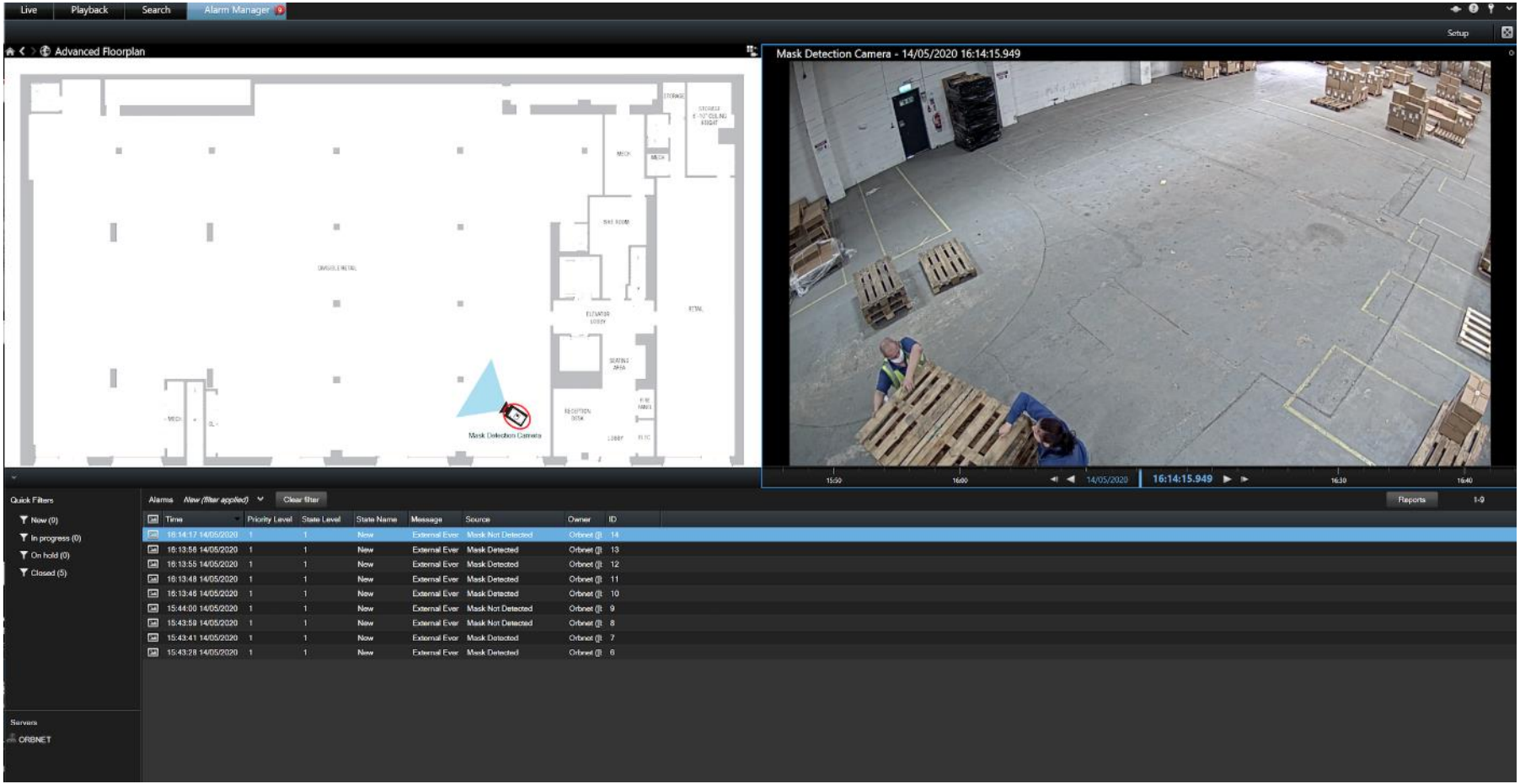
IBM Visual Insights (previously called PowerAI Vision)



IBM Video Analytics

IBM Power Systems AC922

Platform Overview



Example of PPE within a Distribution Environment

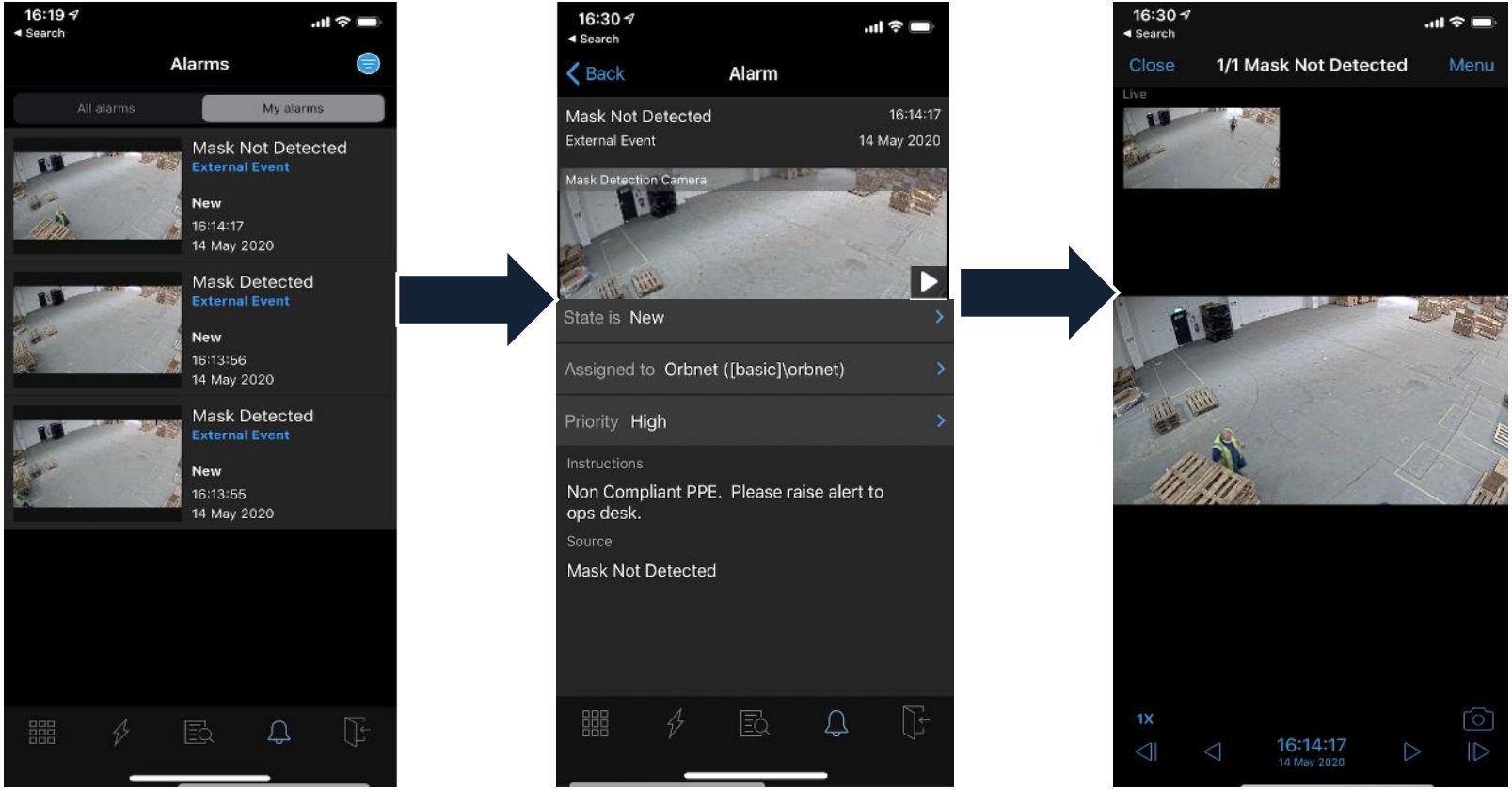
Social Distancing from GitHub

Taking from Tom Ferrand's GitHub, here is a video demo of how it works.

Tom is a member of our IBM Systems AI team here in the UK.

https://github.com/FarrandTom/social-distancing

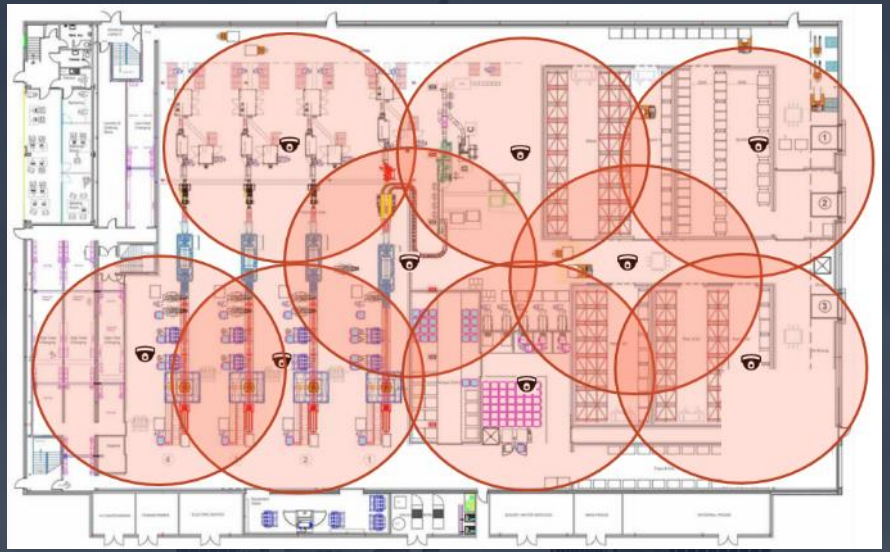
Available as ‘Push Notifications’ to a Mobile Device



How do we implement?

Each solution is specifically designed around the following considerations with consultation at a site visit:

- Required area of Coverage
- Potential Obstructions
- Analytic Requirements
- Risk Assessments
- Existing Processes



By using specialist cameras we can cover large areas with minimal interruption to service and infrastructure.

How to get started?

Thanks!

Tim Edmonds – tim@dacha-uk.com

Eddie Cutts – edcu@orbnetsys.com

Sean Greaves – sean.greaves@ibm.com

Mark Woolnough – mark.woolnough@ibm.com

Want more, over Brunch?

We have been running a series of Brunch and Learn sessions, on a range of topics over the last few weeks. Have a look at the video (linked in the next slide that is hidden in presentation mode)

This replay is here and the playlist of other replays are here.

Agenda

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    - A small group of IBMers was able to print and deliver nearly 7000 PPE visors, free of charge, to the NHS in just a few weeks
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- IBM Power Systems with IBM Visual Insights has a solution for when we eventually return to workplaces
  - The solution, from Dacha, can monitor for Social Distancing, PPE usage and more

Thank you!

David Spurway – IBM Power Systems CTO

Email: david.spurway@uk.ibm.com

Phone: 07717 892 896

Twitter, LinkedIn