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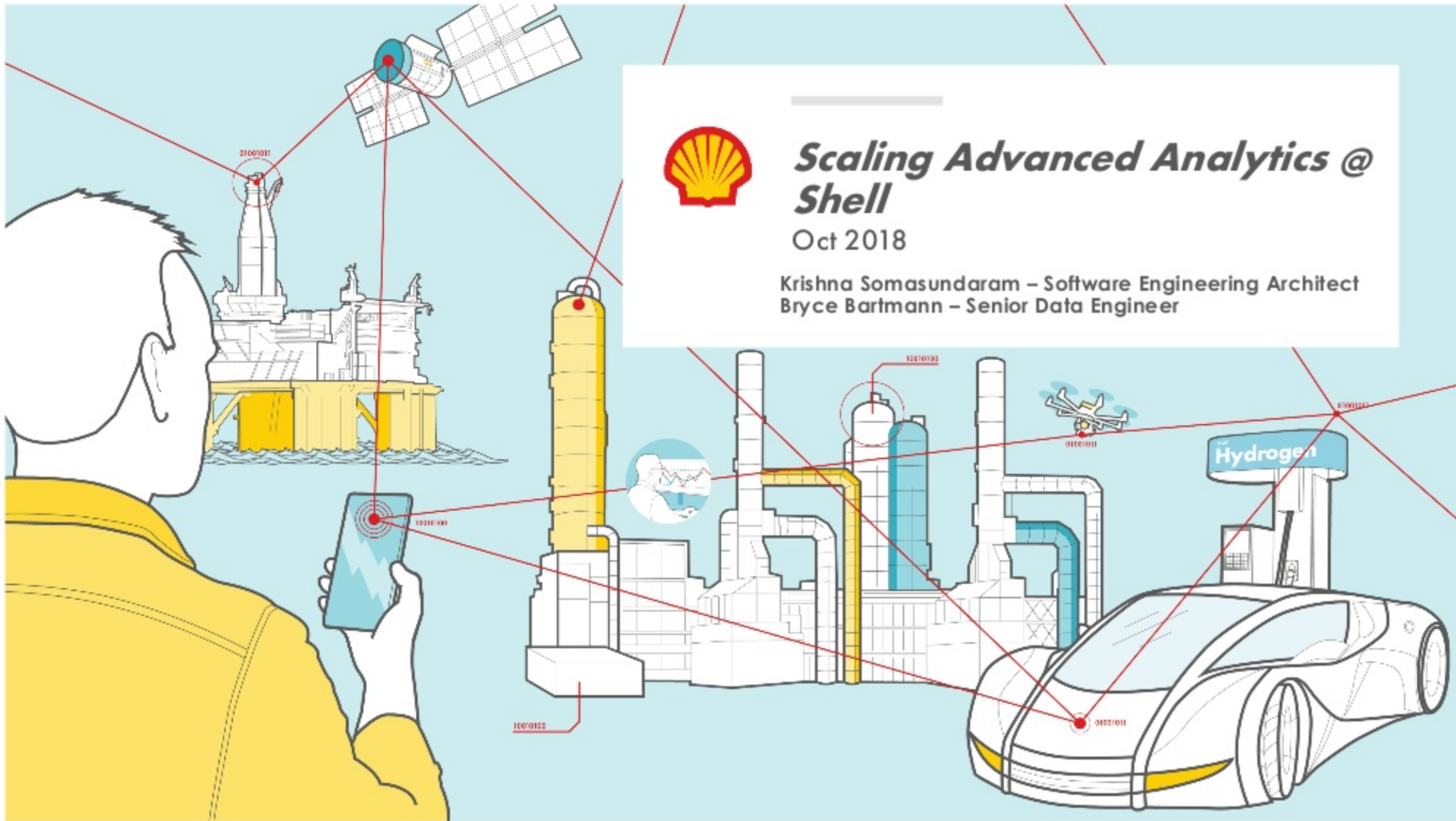
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# ***Scaling Advanced Analytics @ Shell***

Oct 2018

Krishna Somasundaram – Software Engineering Architect  
Bryce Bartmann – Senior Data Engineer





## Shell's Digital Strategy

A coherent approach across Shell to realise and accelerate value through digital led by business and supported by Digital COE

### FIVE DIGITAL DESIGN PRINCIPLES



CUSTOMER/USER IS CENTRAL

010101  
110011  
100100

DATA IS AN ASSET



BUSINESSES OWN DIGITAL



BUILD IN-HOUSE CAPABILITY



ACT OUR WAY INTO THE FUTURE

UNDERPINNING  
CRITICAL SUCCESS  
FACTORS



CAPABILITIES



OPERATING MODEL  
AND WAYS OF  
WORKING



LEADERSHIP, MIND-SETS AND  
BEHAVIOUR



## Role of the Data Science CoE

1

Select Foundational Technologies

2

Showcase 'Art of the Possible'

3

Facilitate Best Practice Sharing across Shell

Strategic Objective



Enablers



Innovation Remit



External Partnerships  
and Developing the  
Eco System



Core Team with  
Technical &  
Commercial Skillset



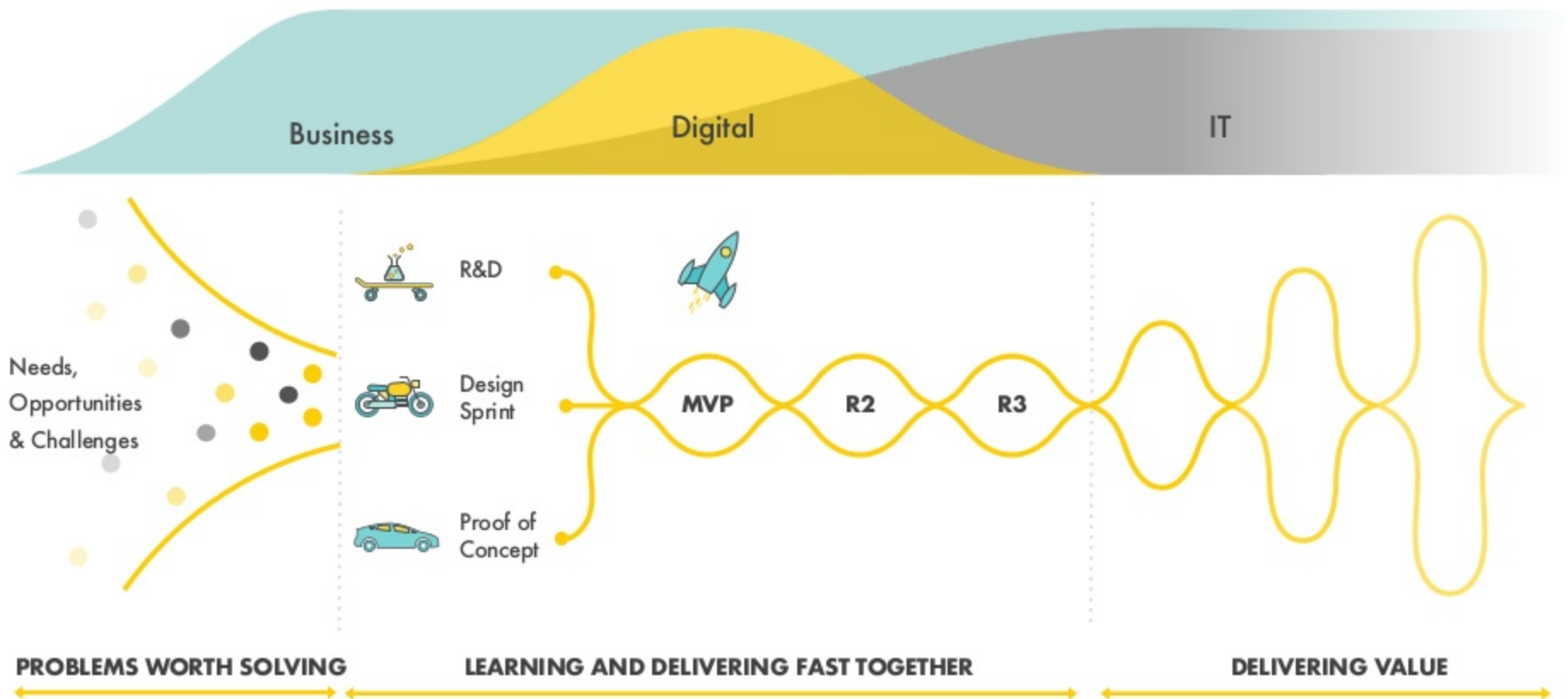
Development of  
Digital  
Networks



Creation of Digital  
Labs for  
Experimentation



## From an idea to an embedded business capability







## Digitalisation Lab

Digitalisation  
playground & PoC  
incubator sandbox  
environment

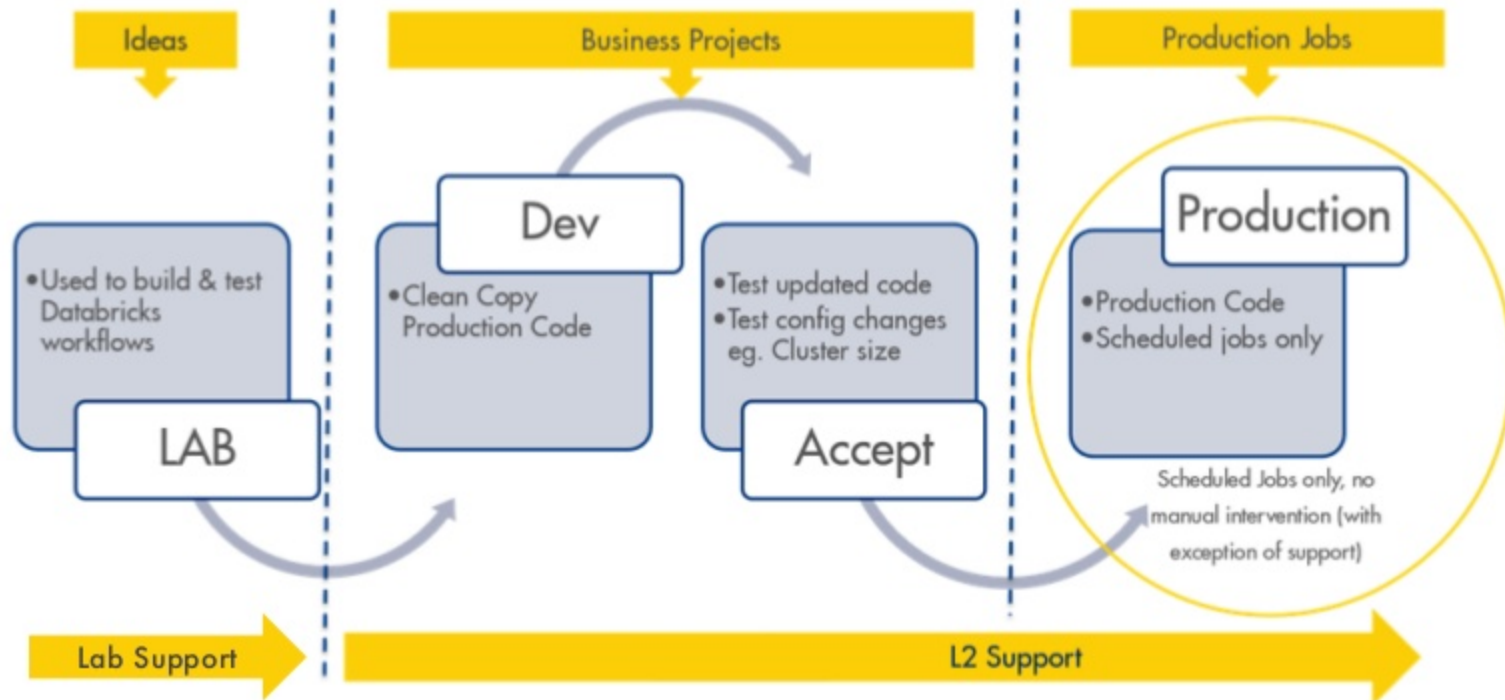
500+ users  
across Shell  
Businesses

We want as close  
integration between  
all offerings as  
possible





## Operationalise - Databricks






Making  
the most of  
existing  
data

Rightsizing  
inventory

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Machine  
Learning to  
enable 'grey  
stock'  
identification

Pipe  
Counting

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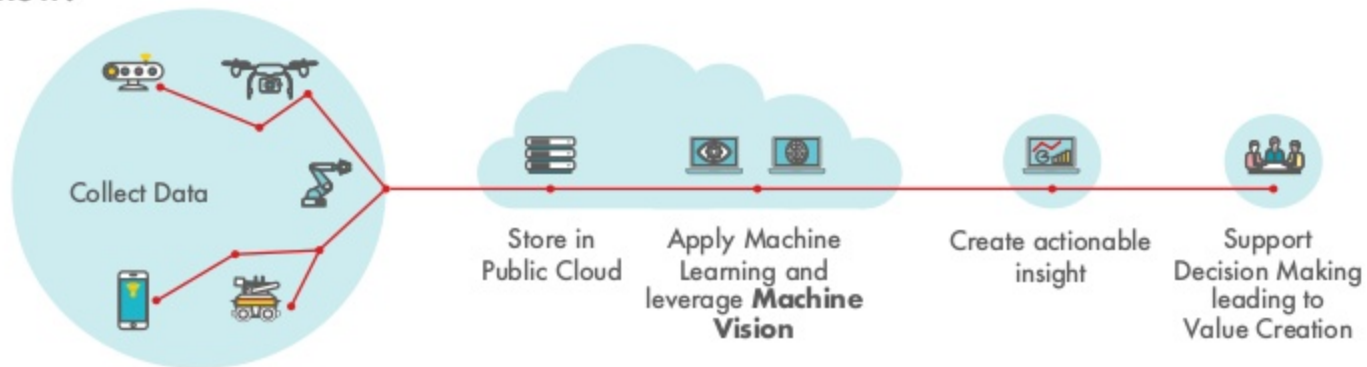
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# Augmenting pipe counting & grey stock identification using MV techniques

Primary value-flow:



Algorithm performs with >90% accuracy




101 PIPES



220 PIPES



A photograph of a Shell employee in a red uniform and cap handing coffee to a customer in a car at a drive-thru. The employee is smiling and the customer is also smiling. The background shows a Shell gas station with a yellow and red sign.

# Optimizing HSSE

## Video Analytics for incident tracking & management

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# Combination with Robotics

Asset  
monitoring



**Business challenge: how can we 1) consistently identify equipment & 2) maintenance history without significant manual effort?**



**LABOUR &  
OPEX COST  
REDUCTION**



**PRODUCTIVITY  
INCREASE**



**SAFETY  
INCREASE**



## Other Machine Vision Possibilities

Leak Detection

Volumetric

Abnormal Heat Signatures

Site Security and Surrounding Conditions

Corrosion Detection

Plume Detection

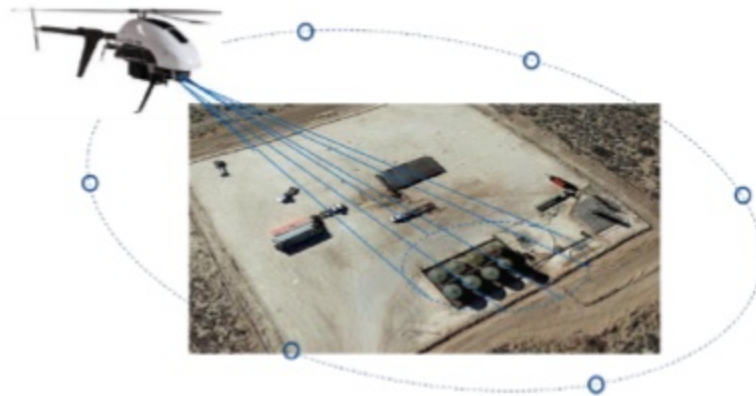


Figure 5: Orbital Flight Pattern Representation



Figure 2: Examples of CLAIR Checklist Inspection Areas or Tasks

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# Q&A





