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Develop an enterprise deep-learning product  
(Receipt Scanning)

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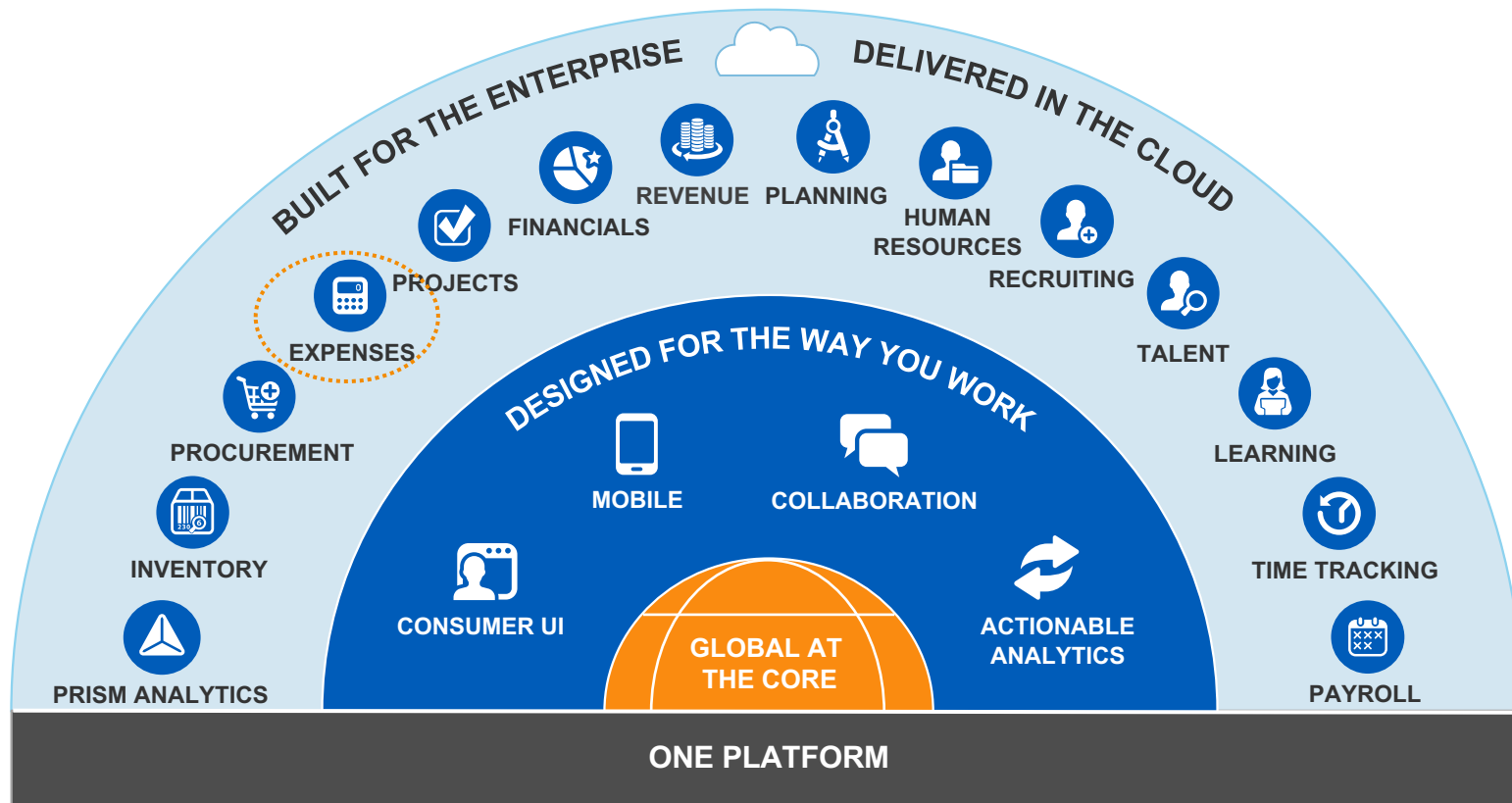
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# Introduction

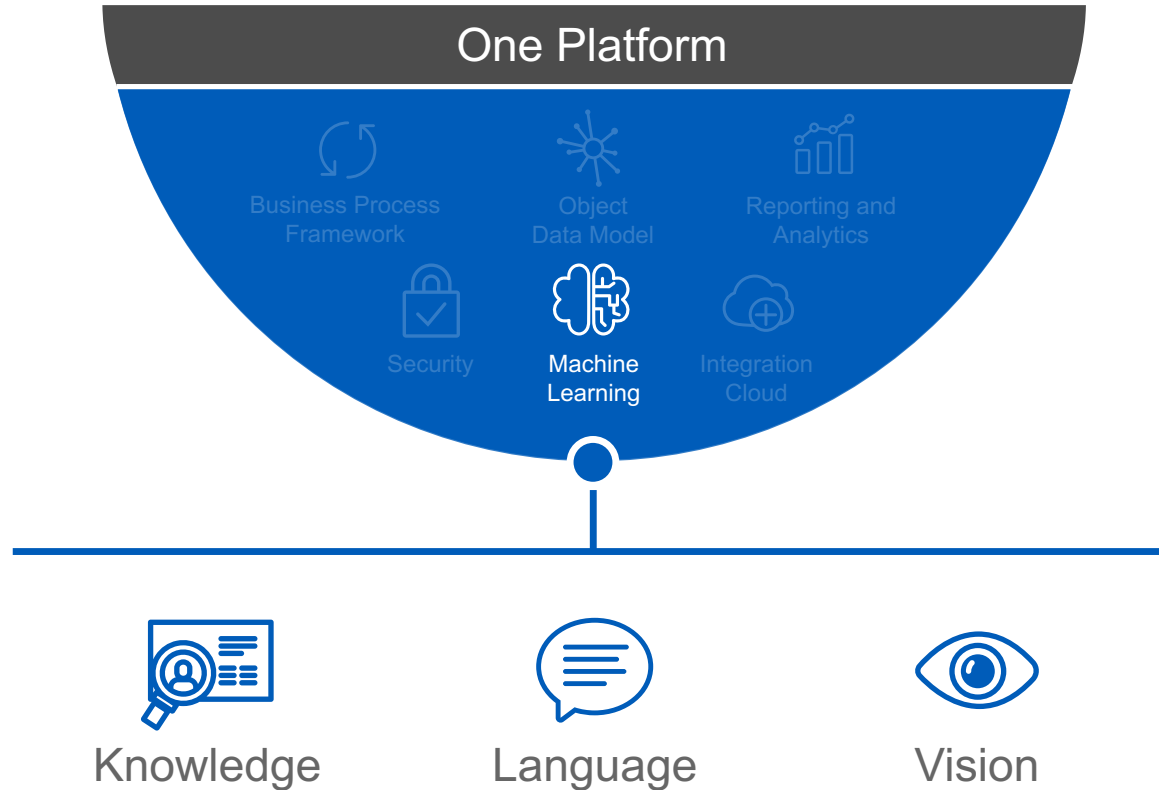


Hanlin Fang  
Director,  
Machine Learning Product Management  
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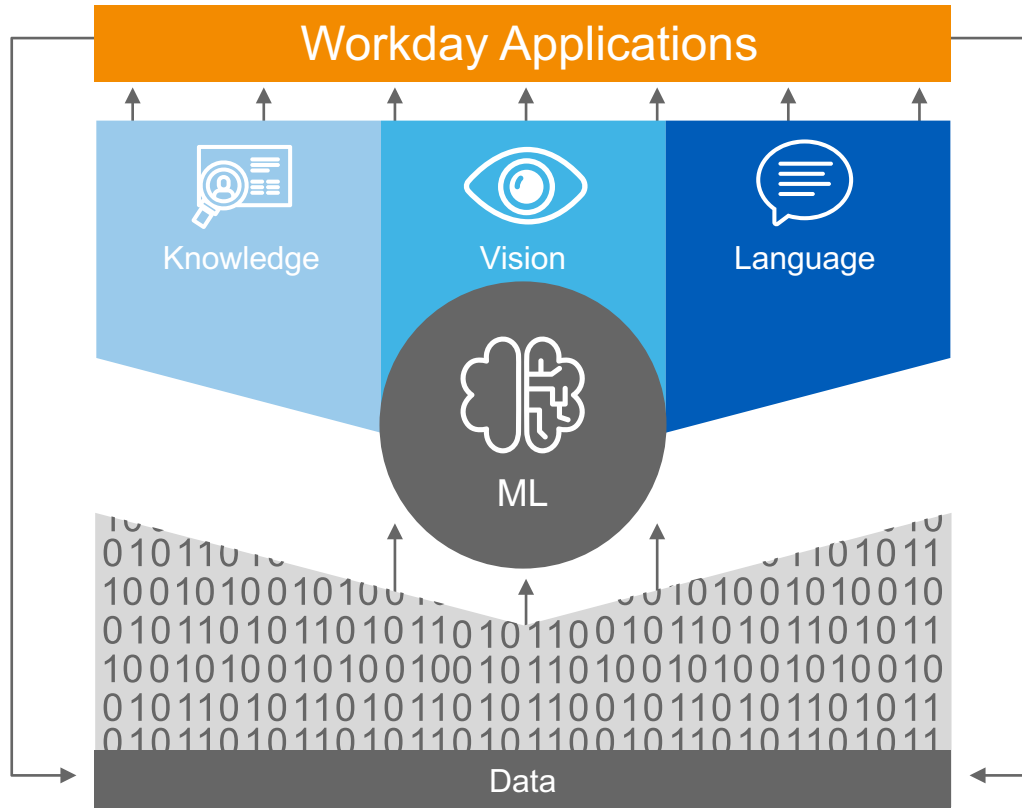
# The Enterprise Cloud for Finance and HR



# Workday Power of ONE



# Machine Learning Services



# Workday Machine Learning Products



**MACHINE LEARNING**

PERSONAL • CONTEXTUAL • CLEVER



Engine that  
Accelerates



Moment that  
Matters



Knowledge that  
Differentiates

# Machine Learning Values in Financials

*“AI will be **embedded** in targeted financial management application functionality to improve and **automate complex processes** with little or no human intervention.”*



“Impacts of Artificial Intelligence on Financial Management Applications.” November 2017



# Expense: Receipt Scanning

## Previously...

Take photos and  
upload receipt  
images

Enter dates,  
amounts, categories,  
etc.

Review and Submit  
expense

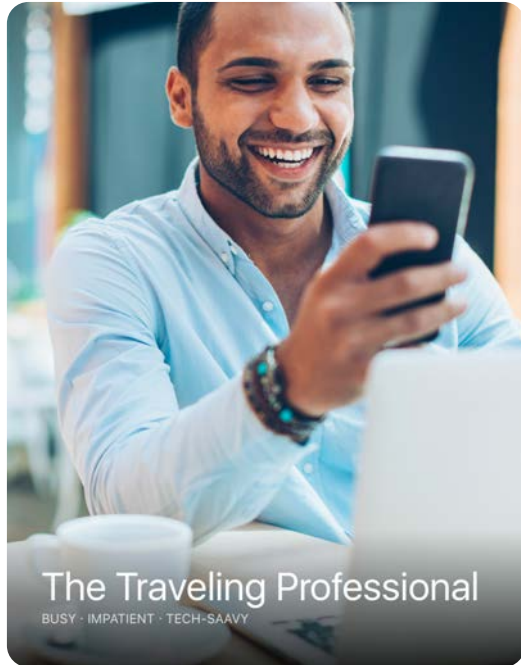
Many receipts to manage  
Hours spent on expense data entry

## Now...

Take photos and  
upload receipt  
images

~~Enter dates,  
amounts, categories,  
etc.~~

Review and Submit  
expense



# Machine Learning Service Development Process



Solution  
Exploration



Model  
Development



Model  
Deployment

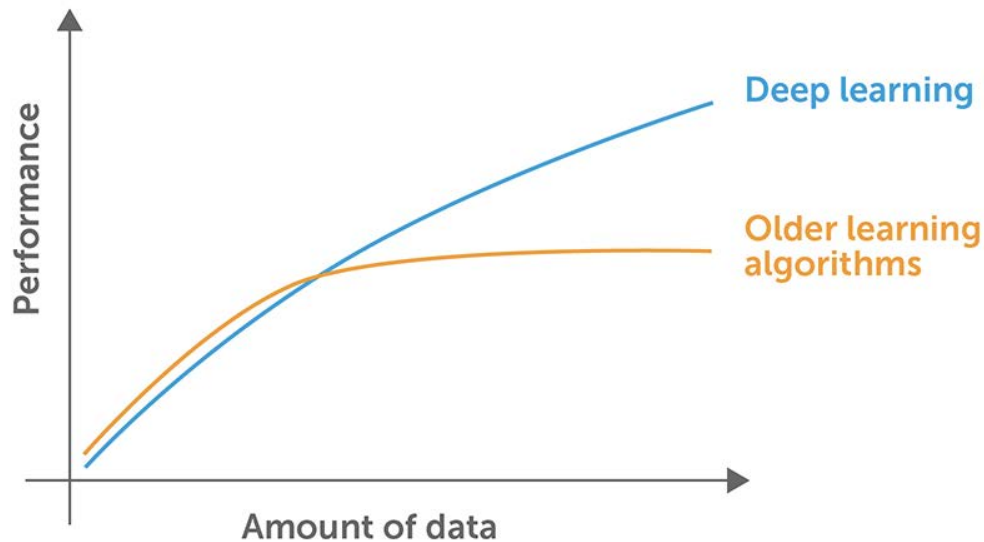
# Machine Learning Service Development Process



Solution  
Exploration

- **WHY** do we build an in-house solution?
- **HOW** do we choose ML techniques and model training environment?
- **WHAT** can be extended?

# Deep Learning



- Available data volume
- Accuracy requirements
- Accessible hardware
- More powerful models

# Machine Learning Service Development Process

Machine Learning Models:

Field of Interest  
Detection



Text  
Recognition



Parser

Annotation Process:

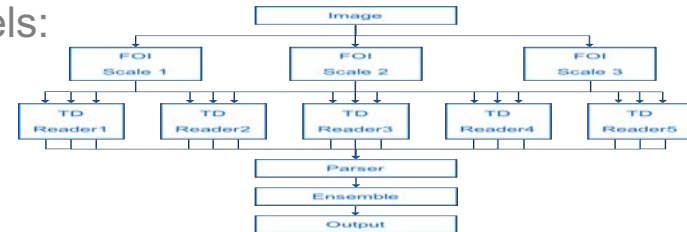


HOTEL MDR - A DOUBLE TREE BY HILTON 11/2/2017 1:58:4

DATE	REF	DE
11/9/2017	10374037456	GL
11/9/2017	10374037456	RC
11/9/2017	10374037456	LA
11/10/2017	10374037739	CA



Ensemble Models:



Model  
Development

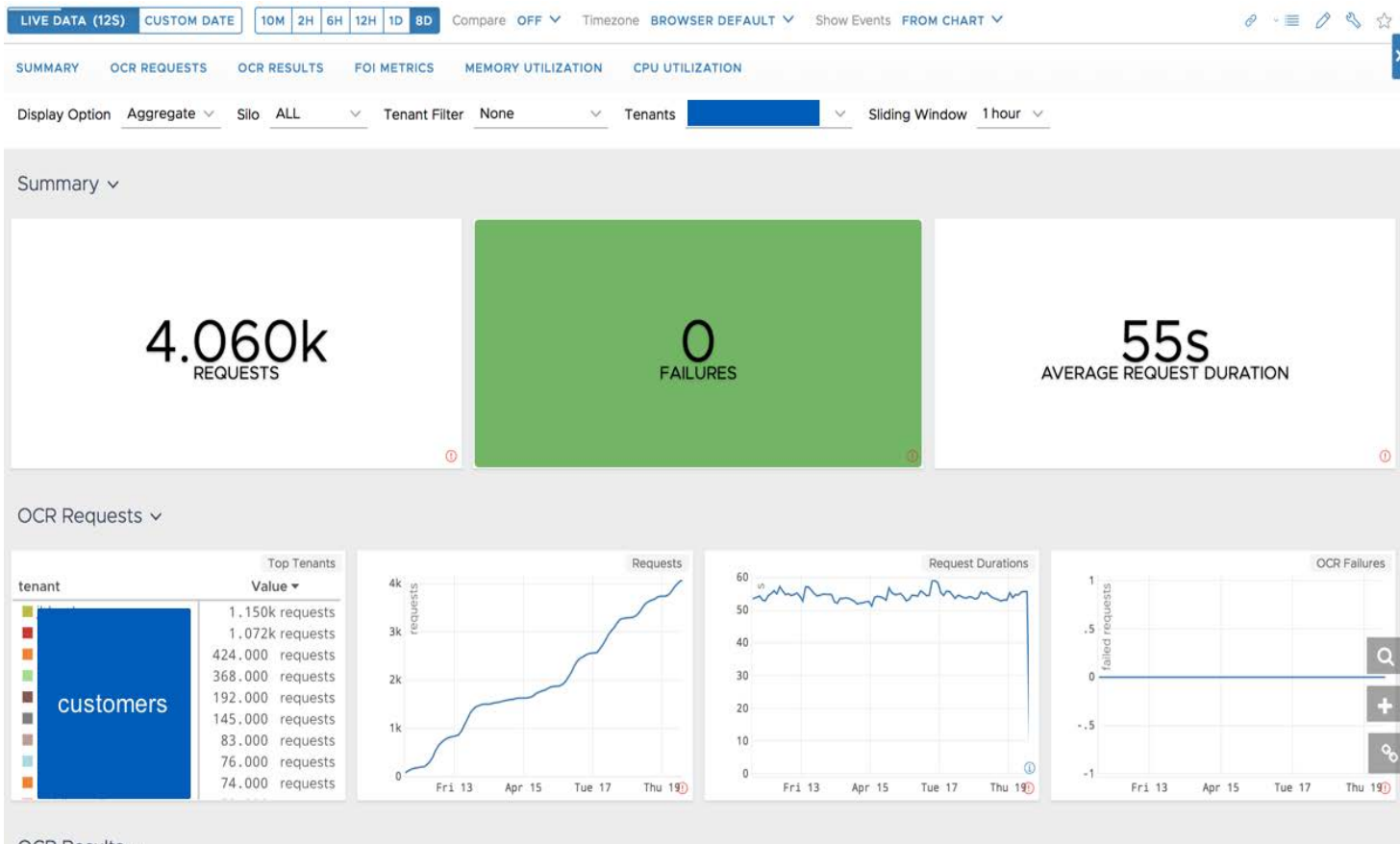
# Machine Learning Service Development Process



Model  
Deployment

- **WHAT** should be the deployment model?
- **HOW** should the models be deployed?
- **What** operational KPIs should be defined?

# Operation Snapshot Example

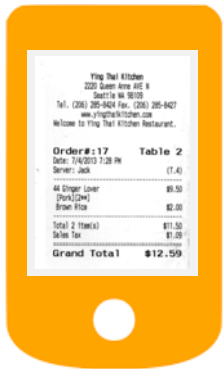


# Expense: Receipt Scanning Summary

Raw image  
(resizing, contrast, filtering,  
etc.)

ML techniques for Optical Character Recognition  
(deep learning techniques)

MVP in  
Workday 30

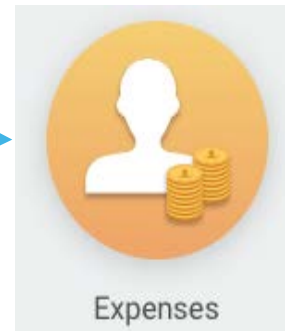


4. Document categorization

3. Making sense of values

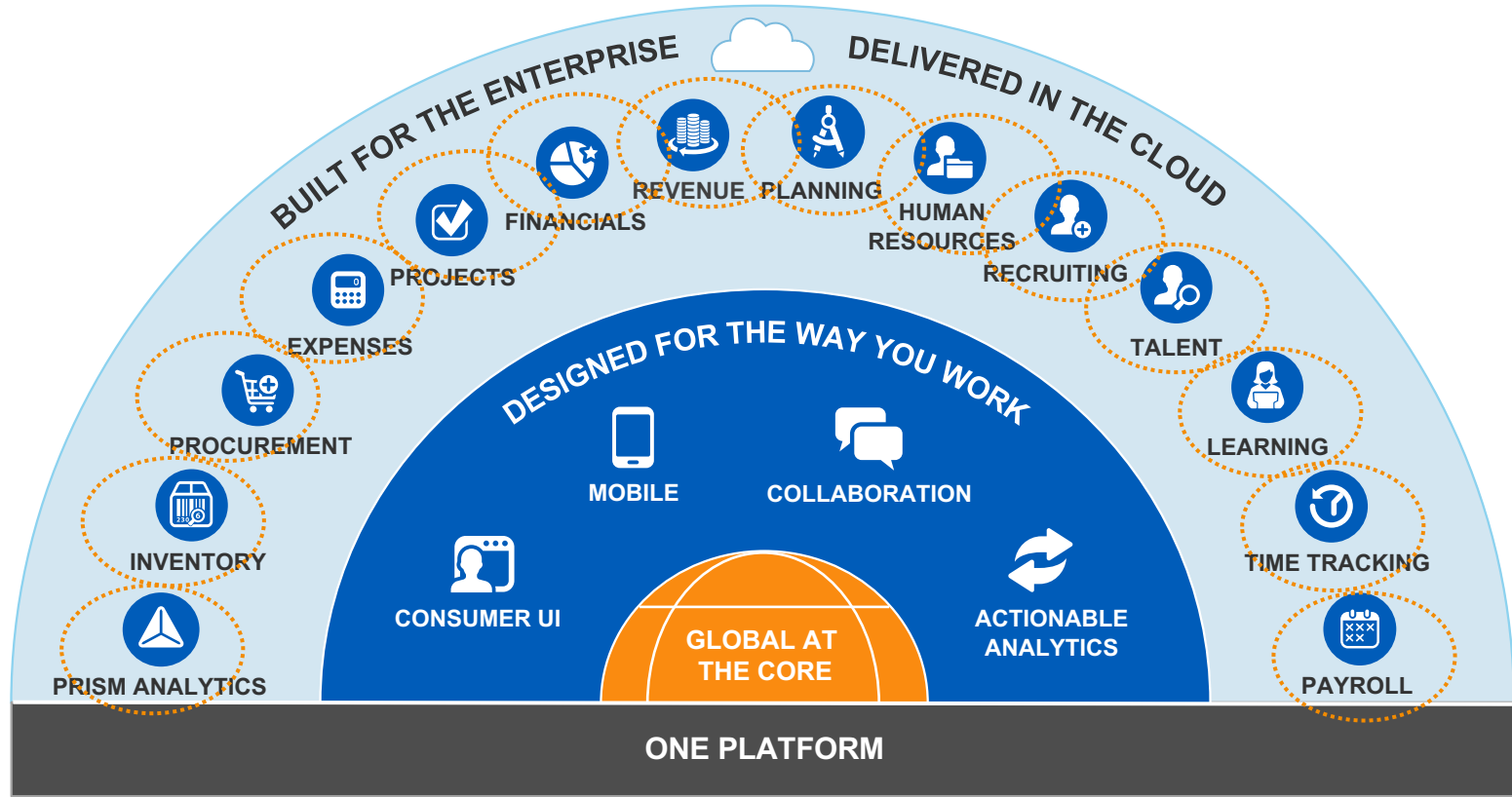
2. Bounding box value/text  
detection/reading

1. Bounding boxes detection





# The Intelligent Enterprise Cloud for Finance and HR





Built for the future.®

Q&A