

Develop solutions with Azure AI Document Intelligence



Agenda



- Use prebuilt Document Intelligence models
- Train a custom Document Intelligence model

Develop a Document Intelligence solution



Learning Objectives

After completing this module, you will be able to:

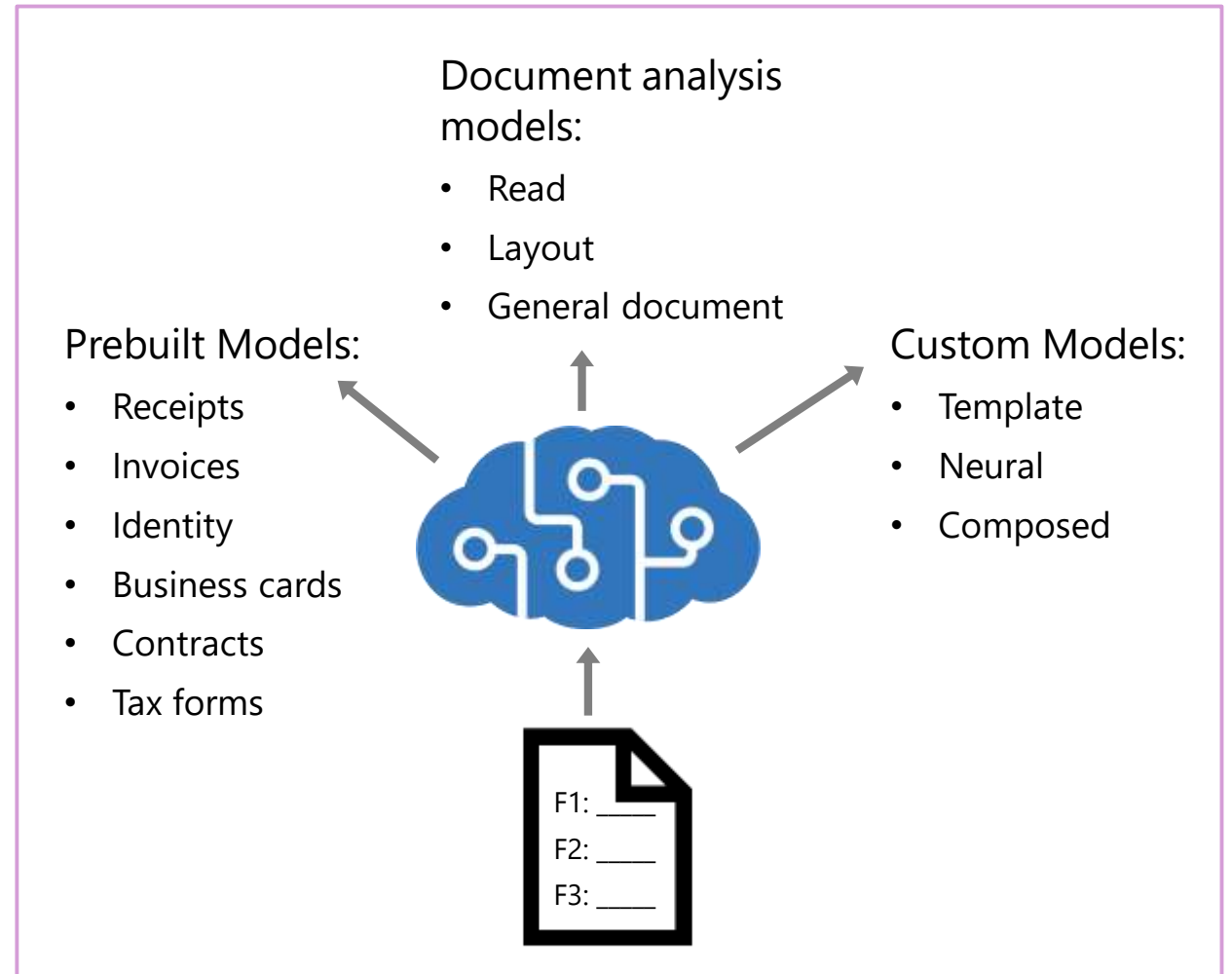
- 1 Understand models in Azure AI Document Intelligence
- 2 Train a custom Document Intelligence model
- 3 Connect an app to Document Intelligence APIs

The Document Intelligence Service

Data extraction from forms and documents:

- Document analysis from general documents
 - Read: OCR for printed and written text
 - Layout: Extract text and structure
 - General document: Extract text, structure, and key-value pairs
- Prebuilt models for common form types
- Train custom models for your own forms
 - Custom template: Extract data from static layouts
 - Custom neural: Extract data from mixed-type documents
 - Custom composed: Collection of multiple models assigned to a single model

Provision as single-service **Document Intelligence** resource or multi-service **Azure AI Services** resource



Prebuilt models

Receipt

Fourth Coffee		
1/1/2021: 09:34		
Latte	1	\$1.29
Cake	1	\$2.46

Total:		\$3.75

Analyze Receipt

Get Analyze Receipt Result

```
{
  "MerchantName": "Fourth Coffee",
  "TransactionDate": 2021-01-01,
  "TransactionTime": 09:34,
  "Items" [
    ...],
  "Total": 3.75
}
```

Invoice

Contoso		
Invoice No: 1234		
Date: 1/1/2021		
Item	Qty	Unit
X12	1	1.00
Q30	1	2.99
Total: 3.99		

Analyze Invoice

Get Analyze Invoice Result

```
{
  "VendorName": "Contoso",
  "InvoiceNumber": 1234,
  "InvoiceDate": 2021-01-01
  "Tables" [
    ...],
  "TotalInvoiceAmount": 3.99
}
```

Business Card

Fabricam	
Hank Zoeng	
Sales director	
hank@fabrikam.com	
555-123-4567	

Analyze Business Card

Get Analyze Business Card Result

```
{
  "ContactNames": [
    {
      "FirstName": "Hank",
      "LastName": "Zoeng"
    }
  ],
  ...
}
```

Calling the API

- Each request is configured with your resource endpoint and needs your resource key
- Send the request, which when successful returns a poller to get the results
 - REST returns it in Operation-Location header
 - SDKs return an object from the request
- Query the poller received for the extracted data

REST

Request POST:

```
{endpoint}/formrecognizer/documentModels/prebuilt-layout:analyze?api-version={version}
```

Operation-Location:

```
{endpoint}/formrecognizer/documentModels/prebuilt-layout/analyzeResults/ab12345c-12ab-23cd-b19c-2322a7f11034?api-version={version}
```

C#

```
AnalyzeDocumentOperation operation = await  
client.AnalyzeDocumentFromUriAsync(WaitUntil.Completed,  
"prebuilt-layout", fileUri);
```

```
AnalyzeResult result = operation.Value;
```

Python

```
poller=document_analysis_client.begin_analyze_document_  
from_url("prebuilt-document", docUrl)
```

```
result = poller.result()
```

Training Custom Models

- 1 Create project and upload training files to your project, or connect to blob storage containing files
- 2 Add data type (such as field or signature) to start labeling your dataset
- 3 Select a word in the document, and assign one of the fields to label it
- 4 Repeat for all fields and files in your dataset
- 5 Layout and auto label (using a prebuilt model) can assist in this process
- 6 Train the model, providing a Model ID used in API requests

The screenshot shows the 'Label data' interface in Document Intelligence Studio. The breadcrumb path is 'Document Intelligence Studio > Custom extraction model > customextract > Label data'. The interface includes a 'Train' button in the top right. On the left, there's a file upload section with a 'Form_5.jpg' file selected. The main area displays a document with the following content:

Bozeman MT 83839 Phone: 938-294-2949

Shipped From
Name: Wesley Smith
Company Name: We Sew
Address: 998 N Groove Road
Seattle WA 83838 Phone: 334-244-2949

Details	Quantity	Unit Price	Total
Black Sweats	20	10.00	
Black Yoga Pants	20	10.00	
White Sweats	20	10.00	
Yellow T Shirts	20	10.00	
Iron Stickers	20	5.00	

Wesley Smith
Wesley Smith
Manager

Additional Notes:
We love to Print! Contact us about special offers on personalizing your future orders with company logos, cool designs, signatures, or pictures! We can put anything on clothing look forward to you being a return customer!

At the bottom right, there is a summary table:

SUBTOTAL	\$
TAX	\$
TOTAL	\$1

The interface also features a 'Draw region' tool, an 'Auto label' dropdown, and a search bar for existing labels or creating new ones.

Analyze document using custom model

- Requires endpoint and key from deployed resource, similar to prebuilt models
- Needs to also include the ID of your deployed custom model
- Query the poller received for the extracted data

C#

```
AnalyzeDocumentOperation operation = await  
client.AnalyzeDocumentFromUriAsync(WaitUntil.Completed,  
{modelId}, {fileUri});
```

```
AnalyzeResult result = operation.Value;
```

Python

```
poller = document_analysis_client.begin_analyze_document(  
    model_id={modelId}, document={fileUri}  
  
result = poller.result()
```

Learning Path Recap

In this learning path, we:

Explored available prebuilt models, and how to use them in Document Intelligence Studio

Trained and deployed a custom model

Connected an app to use Document Intelligence APIs

