* Describe how AI FactSheets can achieve useful transparency by providing in a diverse collection of facts
* Recognize various features of AI FactSheets
* Explain the methodology for creating useful AI FactSheets

To be successful in this module, prior knowledge is recommended in:

* Module 1: Approaching an AI Transparency Initiative
* Data Science / Machine Learning Workflow
* Evaluation metrics

This link will take you to an Audio Classifier FactSheet. This document is a FactSheet accompanying the Audio Classifier model on IBM Developer Model Asset eXchange. FactSheets aim at increasing trust in AI services through supplier's declarations of conformity and this FactSheet documents the process of training the Audio Classifier model as well as its expected results and appropriate use.

Click <https://aifs360.mybluemix.net/examples/max_audio_classifier> link to open resource.

This link will take you to the Weather Forecaster FactSheet. This document is a FactSheet accompanying the Weather Forecaster service on IBM Developer Model Asset eXchange. FactSheets aim at increasing trust in AI services through supplier's declarations of conformity and this FactSheet documents the process of training the Weather Forecaster models as well as its expected results and appropriate use.

Click <https://aifs360.mybluemix.net/examples/max_weather_forecaster> link to open resource.

To begin the exercise you will need to download and open the "Methodology Exercise.docx" file to get started. In this exercise, you'll be walking through the first three steps of the FactSheet methodology. These first three steps are designed to help you develop a Template; the list of Facts relevant to your use case. Ideally, you'd be interacting with your FactSheet consumers and Fact producers, but for the purposes of this exercise, it's more of a thought exercise.

As you walk through the first three steps of the methodology, you'll be filling out questions to help you think about the needs of your users and the use case. You're free to use your own use case, but if you don't have one, we are providing an example one for you to use. The goal of this exercise is to familiarize yourself with the methodology and end up with a draft template.

At the end of this exercise please refer to “Methodology Exercise – Example Responses.docx” In this document we'll show an example answer for the below steps that you can use to better understand the intent of each step and compare it with your own response.

Keep in mind that responses should be written in such a way that they can be consumed by someone who is not only a data scientist and if possible, contextualized in the business use case of selling widgets.

#### Research Paper - A Methodology for Creating AI FactSheets

As AI models and services are used in a growing number of highstakes areas, a consensus is forming around the need for a clearer record of how these models and services are developed to increase trust. Several proposals for higher quality and more consistent AI documentation have emerged to address ethical and legal concerns and general social impacts of such systems. However, there is little published work on how to create this documentation. This is the first work to describe a methodology for creating the form of AI documentation we call FactSheets. We have used this methodology to create useful FactSheets for nearly two dozen models. This paper describes this methodology and shares the insights we have gathered. Within each step of the methodology, we describe the issues to consider and the questions to explore with the relevant people in an organization who will be creating and consuming the AI facts in a FactSheet. This methodology will accelerate the broader adoption of transparent AI documentation.

* Link to the research paper - <https://arxiv.org/pdf/2006.13796v2.pdf>

#### Experiences with Improving the Transparency of AI Models and Services

John Richards of IBM Research describes the contents of a paper at CHI'20 Late Breaking Works session.

* Link to YouTube video (7min 16sec) - <https://youtu.be/wk18pxCJkwM>
* Link to the research paper discussed in this video: <https://dl.acm.org/doi/abs/10.1145/3334480.3383051>

#### AI FactSheets - Website

The following link provides an overview of the FactSheet project, a research effort to foster trust in AI by increasing transparency and enabling governance.

* IBM AI FactSheets - <https://aifs360.mybluemix.net/>

Provided below is a summary of the entire module. For your convenience, below you will see a heading that matches the content topics that were covered in this module, followed by a bulleted list of key concepts covered.

**Lesson 1: Overview of AI FactSheets**

1. **Purpose of FactSheet for my AI model or service:** FactSheets capture useful Facts that might otherwise be lost during the development, deployment, and monitoring of an AI model or service. AI FactSheets provide information tailored for specific audiences and needs, supporting transparency, trust, and governance.
2. **Fact**: A Fact is a unit of information about an AI model or service. Facts typically include model purpose, datasets used for training and testing, model architecture, accuracy and fairness metrics, expected and realized performance including drift over time. Facts are generated throughout the entire AI lifecycle. Some Facts are automatically generated by tools. Other Facts are created by people performing various roles within the AI lifecycle.
3. **Difference between FactSheets and traditional logging**: Software logging generally captures only the execution behavior of a deployed service or system. A FactSheet contains information from the full lifecycle starting with the earliest stages of model creation through model deployment, execution monitoring, and potential modification. In contrast to software logging, FactSheets aggregates information arising from multiple people and tools, including information that is not currently found in logs. In contrast to logging, FactSheets also contain only a selected portion of the information that is typically recorded in any one software log.
4. **FactSheet Template**: There are potentially many Facts gathered during the AI lifecycle. A FactSheet Template provides a convenient way to select only the subset of Facts that are useful for a particular purpose and to answer specific questions.
5. **Multiple FactSheets for a single AI service:** An AI service can combine multiple models. Each model can have its own FactSheet, especially if that model can be used in other services. The service itself can also have a FactSheet describing how its multiple models are combined to produce an output.
6. **Relationship between Facts, FactSheets, and the different parts of the AI lifecycle:** Different phases of the AI lifecycle generate Facts that are associated with a model or service. The goal is to provide a mechanism to support the collection and storage of Facts so they can be retrieved and rendered as needed. FactSheets are simply different ways to select and view these Facts. The same Fact can also appear in different FactSheets to meet the information needs of various stakeholders at different points within the AI lifecycle.
7. **Different ways FactSheets can be rendered:** FactSheets can be rendered in whatever way fits the needs of the person viewing them. We have explored rendering Facts inside a Jupyter notebook, a tool dashboard, a summary web page, a pdf document, and a slide presentation.

**Lesson 2: Methodology of creating AI FactSheets**

8. Recommended steps in creating your own FactSheets :