## LEGIBILITY/READABILITY

**Legibility describes whether something visible is easily discernable. Legible typography, for example, is of sufficient size and spacing to be seen and to allow one letterform to be distinguished from another. When the design of text provokes our desire to read it and determine its meaning, we say it is readable.**

When we complete federal tax forms we want to do so with efficiency. We expect the form to tell us what financial and personal information is necessary to report, how taxes are to be calculated, what expenses offset the amount owed, and how to file the final outcome of our labor. The design of the form should orient us to these various activities. The *Simplification* division of design firm Siegel+Gale was asked by the United States government to redesign the 1040 tax form for print and screen (Figure 5.3). The designers addressed the language and configuration of the form, reducing error rates and completion time. Ultimately, a more legible design improved taxpayer attitudes.

Likewise, the nutrition label on food packaging carries important information that, when previously left to food producers, was not legible and varied from company to company. In 1992, Burkey Belser designed a label for the United States Food and Drug Administration that standardized the representation of caloric and nutritional content for all food packaging in the United States (Figure 5.4). The design of the label uses type weight, indents, and ruled lines to communicate legible information that encourages consumers to make healthy choices.

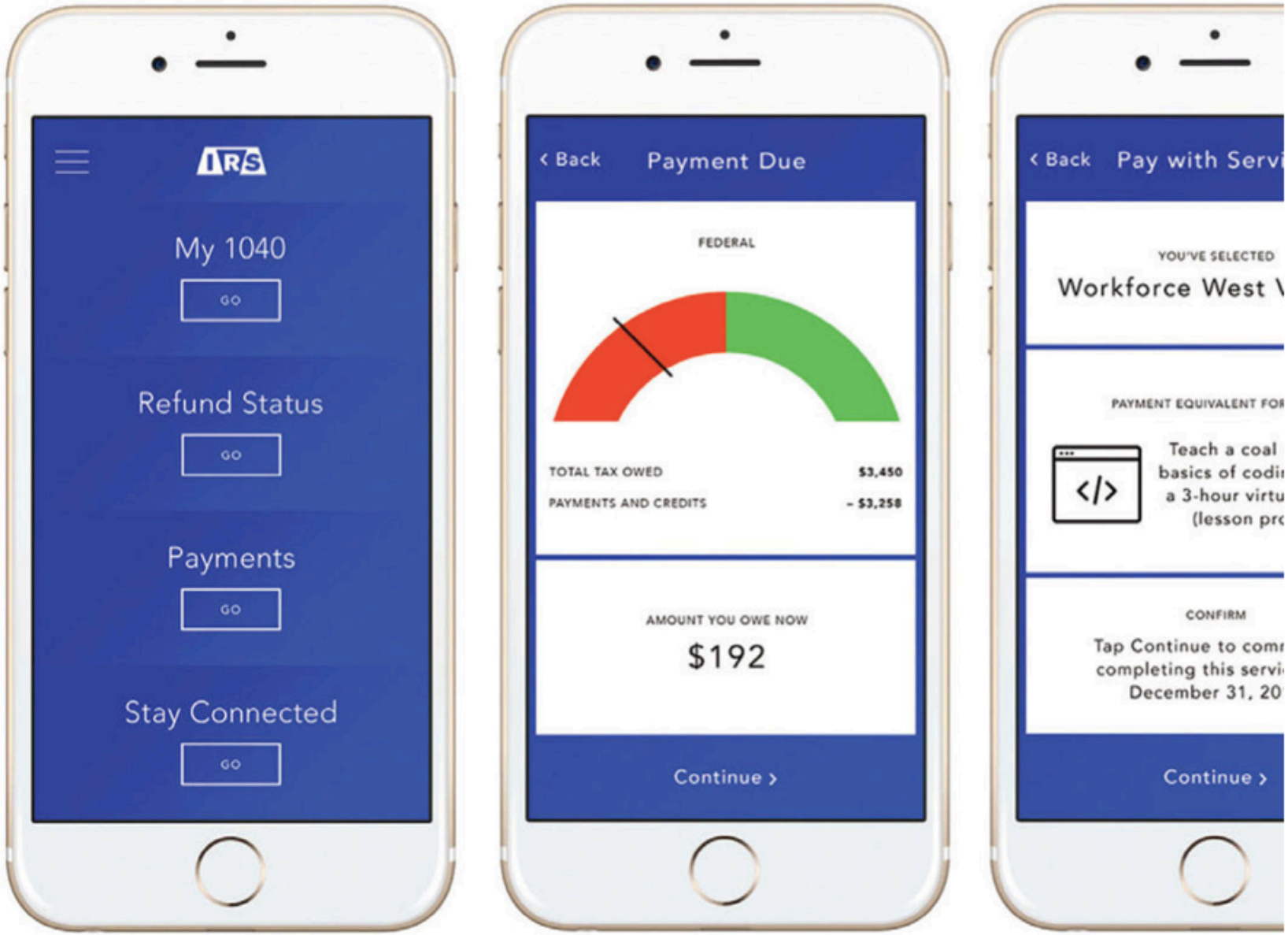



**Figure 5.3**
**1040 EZR Design Director: Mike Scott Digital Designer: Sierra Siemer Siegel+Gale**
Siegel+Gale designed an e-file tax form for mobile devices. The system pulls information from the

taxpayer's W-2 form and shows the calculations simply in a legible sequence.

If typography is too small, too tightly spaced, or not arranged in a manner conducive to deciphering the important relationships among elements, it is ultimately illegible and fails us in executing the task and making appropriate judgments.

Typographic legibility is important in environmental applications as well. In the 1990s, the United States Federal Highway Administration addressed the problem of an aging population driving on America's roads, making the legibility of signs an important safety issue. Environmental communication designer Don Meeker and type designer James Montalbano proposed new typeface called *Clearview* (Figure 5.5). The design of the typeface addressed the small counterspace problem of Highway Gothic, which had been used since the Eisenhower administration and took its form from the mid-century technology for die-cut letters. It had never been tested.

# Nutrition Facts

Serving Size 1 cup (228g)
Servings Per Container about 2

**Amount Per Serving**

| | |
|---|---|
| **Calories** 250 | Calories from Fat 110 |
| | **% Daily Value*** |
| **Total Fat** 12g | **18%** |
| Saturated Fat 3g | **15%** |
| *Trans* Fat 3g | |
| **Cholesterol** 30mg | **10%** |
| **Sodium** 470mg | **20%** |
| **Total Carbohydrate** 31g | **10%** |
| Dietary Fiber 0g | **0%** |
| Sugars 5g | |
| **Proteins** 5g | |
| Vitamin A | 4% |
| Vitamin C | 2% |
| Calcium | 20% |
| Iron | 4% |

* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:

| | Calories: | 2,000 | 2,500 |
|---|---|---|---|
| Total Fat | Less than | 65g | 80g |
| Saturated Fat | Less than | 20g | 25g |
| Cholesterol | Less than | 300mg | 300mg |
| Sodium | Less than | 2,400mg | 2,400mg |
| Total Carbohydrate | | 300g | 375g |
| Dietary Fiber | | 25g | 30g |

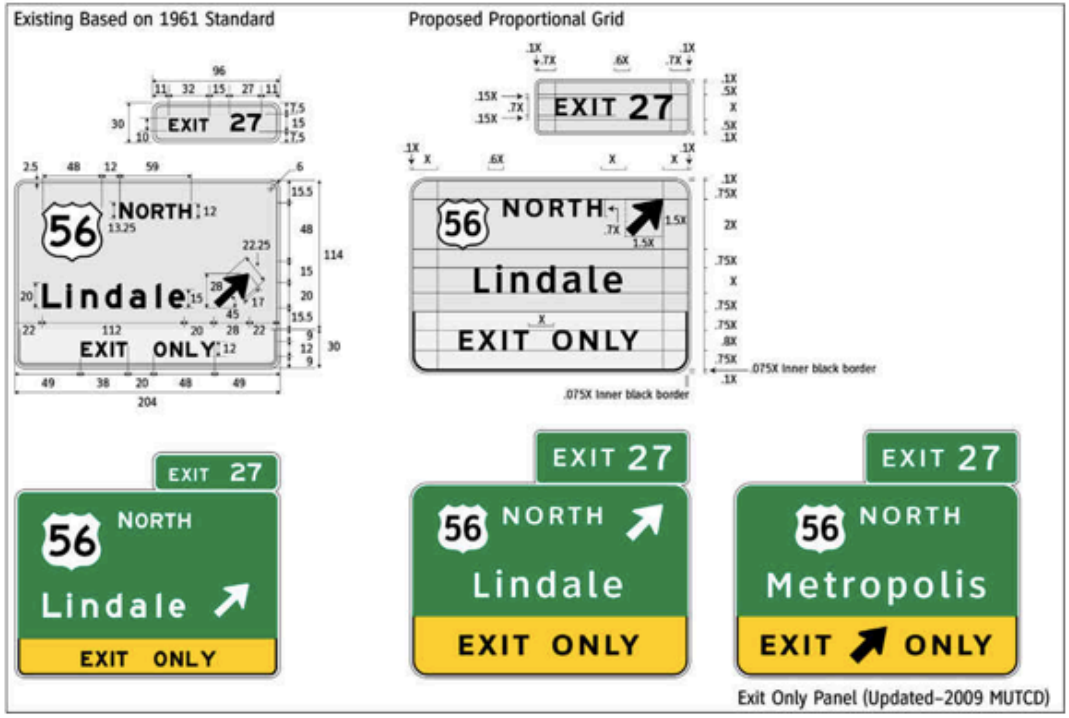
For educational purposes only. This label does not meet the labeling requirements described in 21 CFR 101.9.

**Figure 5.4**
**US Food and Drug Administration Nutrition Facts Label, 1990 Burkey Belser**

The US Food and Drug Administration nutrition label arose from government concern over the obesity

epidemic in the United States. Designer Belser set the label in eight-point type and surrounded it with a border to keep food manufacturers from interfering with the legibility of the label.

| | |
|---|---|
| Clearview-6-W | Clearview-6-B |
| Clearview-5-W | Clearview-5-B |
| Clearview-4-W | Clearview-4-B |
| Clearview-3-W | Clearview-3-B |
| Clearview-2-W | Clearview-2-B |
| Clearview-1-W | Clearview-1-B |
| Positive Contrast Version | Negative Contrast Version |




Exit Only Panel (Updated–2009 MUTCD)

**Figure 5.5**
**Clearview highway signage, 1992 Top: ClearviewHwy™ cascade of weight in both positive and negative contrast versions Bottom: Proportion-based grid system for layout of freeway and expressway guide signs Meeker and Associates, Inc.**

The Clearview typeface was originally designed to help older drivers. The typeface improves legibility for all drivers by about 20 percent with no change in the size of the sign. It creates greater distinction between similar letterforms (the lowercase "I" and "l", for example), which improves legibility in poor light conditions and at high speeds and long distances.


**Figure 5.6**
**Verdana typeface, 1996 Matthew Carter Microsoft**

Carter's Verdana was designed for computer screens. It has wide letterspacing and a large x-height to ensure that letters are legible on a backlit screen.

A major study in 1994 recommended a 20 percent increase in letter height to accommodate the viewing distance and reaction time of older drivers (Terminal Design, Inc., 2004). But such increases meant a 40 to 50 percent increase in the overall size of the sign panel (Terminal Design, Inc., 2004). *Clearview* increases the x-height of lowercase letters without increasing the capital height, thus occupying roughly the same space as the older Highway Gothic. The typeface was developed through rigorous user testing. Unfortunately, the Federal Highway

Administration quietly withdrew its support for the typeface in early 2016, returning to the 58-year-old Highway Gothic.

Type designer Matthew Carter designed *Verdana* to overcome the coarseness of computer screen displays of the time (Figure 5.6). He shaped the typeface on the basis of pixels, rather than pen strokes. The relationships among different types of strokes (straight, curved, and diagonal), large counterspaces, wide letterspacing, and large x-height ensure that letterforms are readable on backlit screens. Commonly confused characters, such as the upper and lowercase *i*, *j*, and *l* and the numeral *1* are carefully drawn for maximum contrast. Various weights in the typeface family are distinctive, making clear differences even at very small sizes.

It would be helpful if there were rules designers could follow to make things most legible, but typography is *relational*; change in one variable produces an entirely different relationship among the other variables. For example, we may improve our ability to read text set in Helvetica by increasing the space between lines of type, allowing us to better see the shapes of letters and words. But the same amount of space may be too much for Garamond, in which the height of lowercase letters is much smaller than in Helvetica. Too much space between lines of Garamond could make it more difficult to find the next line of text when our eyes return to the left edge of the paragraph. Bold white type on black paper may be perfectly legible, but bold white type on a black computer screen may produce a glow that fills in the tiny spaces inside and around letterforms. Legibility, therefore, depends on the particular relationships among typeface, point size, type weight, line spacing, and the surface on which letters sit.

Type designers typically classify typefaces into two groupings: text and display. Typefaces designed for body text are meant to function well at point sizes between six and fourteen

points, and to ease the task of reading long, repeating lines of text. Display typefaces are optimized for larger point sizes. They often grab our attention successfully in small amounts, but are awkward to read in long lines of text. There are many typefaces that designers use for both text and display, and it is up to the designer's creativity to follow and to sometimes break these rules. The readability of typography has everything to do with context. We don't want to read the 560,000-word English translation of Tolstoy's *War and Peace* set in a Stencil typeface, but may be perfectly happy with a poster set in the same typeface. And we are likely to be comfortable with hand-drawn signs advertising a yard sale but find the individuality of the same letterforms awkward in regulatory highway signage. In other words, what we see as readable has much to do with the nature of content and the circumstances in which it is read.

Typography is not the only kind of form in which readability is important. Successful interpretation of charts and diagrams depends on the match between content and form. When design forces information into a form that is inconsistent either with the perceptual nature of the content or the task it supports, we spend extra effort in deciphering meaning. Over the years there have been many attempts to explain what constitutes a healthy diet. The United States Department of Agriculture Food Pyramid has undergone a number of transformations. Early versions asked consumers to discriminate among differently sized wedges of a polyhedron (Figure 5.7). However, we don't plan meals first by volume. The truly useful information is in text in the margins describing the recommended number of servings in each food group (Davis, 2012). In this case, the use of numbers is a better match for the nutrition task. A more recent design attempts to integrate exercise with descriptions of food groups, another difficult perceptual task under a highly abstract form.

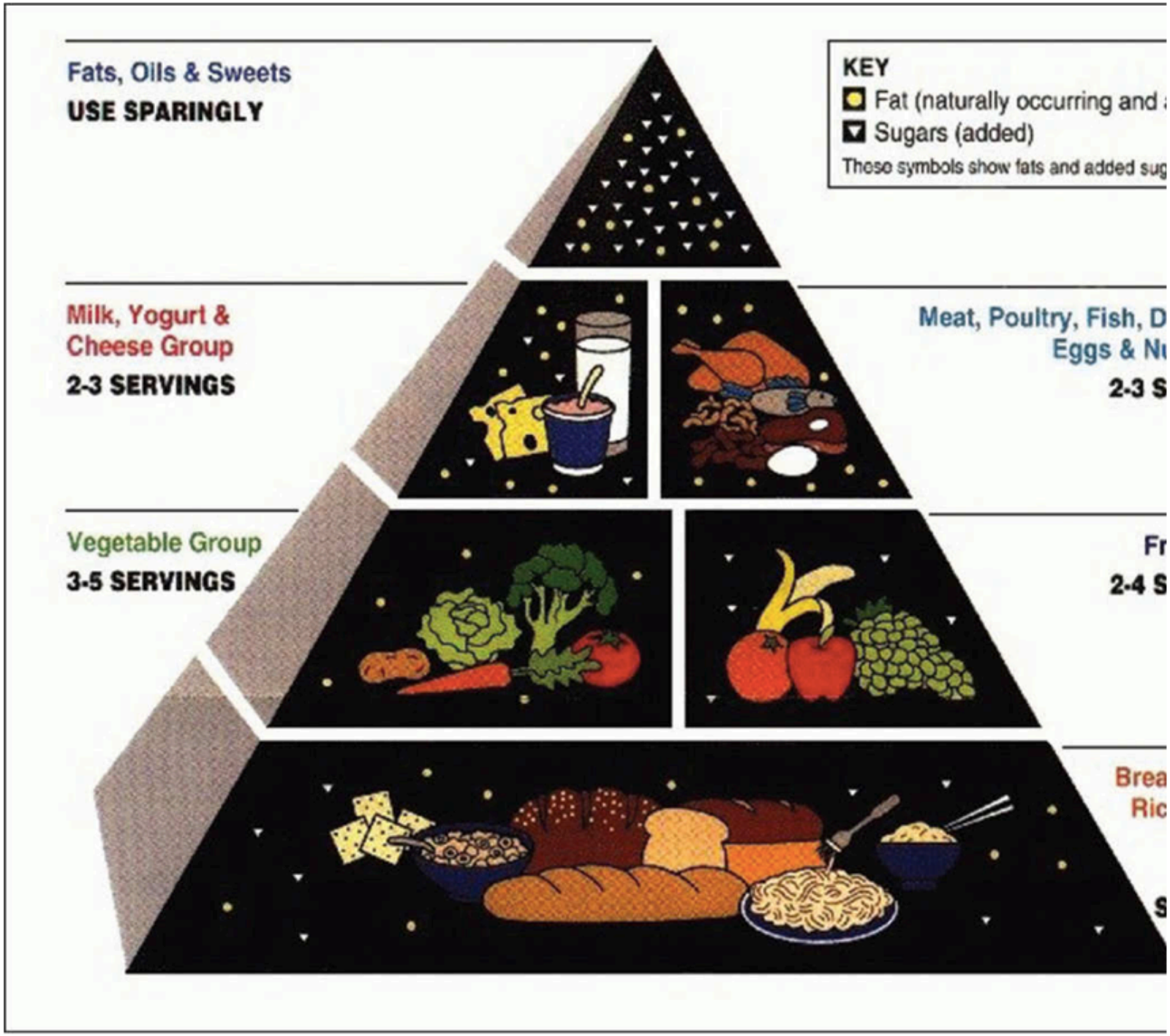

Fats, Oils & Sweets
USE SPARINGLY
KEY
Fat (naturally occurring and
Sugars (added)
Those symbols show fats and added sug
Milk, Yogurt &
Cheese Group
2-3 SERVINGS
Meat, Poultry, Fish, D
Eggs & Nu
2-3 S
Vegetable Group
3-5 SERVINGS
Fr
2-4 S
Brea
Ric
S

**Figure 5.7**
**Food Pyramid, 1992 US Department of Agriculture**

This older version of the Food Pyramid presented food groups as differently sized wedges of a polyhedron. Few people, however, plan meals by volume or surface area, and the truly useful information is in the text outside the pyramid, which tells consumers how many daily servings of each food group are advised.

Legibility and readability are not the only criteria for success in design, however. But in cases where efficient and effective communication is paramount, designers must pay careful attention to the task of reading and processing information. Legibility, in the end, leads to readability. That is, well-set type draws the reader in and creates a fit between the design, the reader's expectations, and the task at hand.