

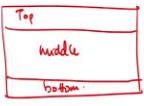
**Computer Aided Decision Systems**  
**Industrial practices using Big Analytics**  
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**Lecture 42**  
**Usability Principles**

Welcome back again to the lecture of User Interface in the Web-based Decision Support System course and we are continuing after that short break.

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*Web-based DSS*  
**Usability Principles: Layout & Content Awareness**

(1) **Layout:**  
*Rule of thumb: The interface should be a series of areas on the screen that are used consistently for different purposes.*  
Eg: top area for commands and navigation  
middle area for informative input/output  
bottom area for status information.



(2) **Content Awareness:**  
*Rule: Users should always be aware of where they are in the system and what information is being displayed.*  
eg: What stage of decision making  
What information is shown about what aspect of the decision, etc?

And, if you look at the screen, we wanted to talk about the Usability Principles for the Web-based DSS. And, the two major aspects that we are going to discuss today is Layout and Content Awareness.

- 1) So, let us first talk about the Layout part of it. So, what is the rule of thumb? What is it? So, the rule is this, the Interface should be a series of areas on the screen that is used consistently for different purposes. This is the rule of thumb. So, the Interface, the User Interface or the Web-based Interface, should be a series of areas on the screen. So, a bunch of series of the areas on the screen that are used consistently, the usage is consistent for different purposes. The areas are demarcated and designated for different purposes. So, like examples. So, top area for commands and navigation, that is one thing, middle area for information, input or output and bottom area for status

information so, this is an example. So, if you take a screen, then we are talking about the top, middle and bottom, and once you decide this is what it is going to do, then just be consistent throughout the entire aspect of the or design of the system.

- 2) Then, the second aspect we need to discuss today is Content Awareness. So, the guiding rule, the guiding principle here is that users should always be aware of where they are in the system and what information is being displayed. So, for example, what stage of decision-making, what information is shown about what aspect of the decision, etcetera. So, these are all parts of the usability aspect of Content Awareness.

The Layout and Content Awareness are two aspects of the Web-based Decision Support System. And if you remember these rules, then we implement these rules as part of the HTML system, that we built.

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### Usability Principles: Aesthetics & User Experience

- (1) Aesthetics  
Rule: Interfaces should be functional and inviting to the decision makers through careful usage of white space, colors, and fonts.  
Keep in mind:  
• There is often a tradeoff between including enough white space to make the interface look more pleasing without leaving much space so that important information doesn't fit the screen (find that balance).
- (2) User Experience  
Keep in mind  
• Although ease of use and ease of learning often lead to similar design decisions, there exists trade-offs between the two.  
What are these trade-offs?  
(1) Novice users (or) infrequent users of software will prefer ease of learning.  
(2) Frequent (or) expert users will prefer ease of use.

Now, let us look into the second one which is the Aesthetics and User Experience.

- 1) So, now let us take Aesthetics. So, the Aesthetics, the major rule is the Interfaces should be functional and inviting to the decision makers through careful use or usage of white space, colors and fonts, these are the three major aspects. So, it should be functional. Functional means, it should support the function of decision making, and should be inviting. The user should feel invited to use this one. So, the decision maker should be functional to the decision maker and should be inviting the decision maker. And, how do you make that happen? By carefully manipulating or carefully employing the white

space, colors and fonts. So, there are some aspects to keep in mind. You always need to keep these following things in mind.

- There is often a tradeoff between including enough white space, would not be good enough white space to make the Interface look more pleasing without losing much space so that important information does not fit the screen the idea is that. You have to strike a balance. You have to find a tradeoff between including too much of white space to make the Interface look more pleasing without losing so much space, so that important information cannot fit on the screen. So, you have to fit the important information on the screen, but also at the time you should not compromise too much or white space and you should not overdo the white space so that important information does not fit the screen. So, it is vice versa you have to find it to strike a balance. So, this is like finding that balance
- 2) User Experience- We mentioned this quite a lot. Keep in mind. There are other rules for this.
- Although ease of use and ease of learning often lead to similar design decisions. There exist tradeoffs between the two. Even though many times the ease of use and ease of learning these two aspects are two different things sometimes or often they lead to similar design decisions, but there are tradeoffs between the two. The design decision there could be a tradeoff between, so what are the tradeoffs?
    - a) Novice users or infrequent users of software will prefer ease of learning. So, ease of learning is preferred by novice or infrequent users.
    - b) Frequent or expert users will prefer ease of use. This is the major thing that you need to keep in your mind. If you are talking about ease of learning, if you are focusing more on ease of learning, then you are catering to the novice or infrequent user, if we are talking about ease of use, then you are catering to the frequent or expert user.

So, that is the aspect that you need to decide, these are the things that you need to keep in mind when you are designing the User Experience in that mind. Even though the design may look the same. But the net effect, the user group that you are catering, whether it is infrequent novice user or expert frequent user, is that the system behaves differently as part of it.

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## Usability Principles: Consistency & Minimal User Effort

- (1) Consistency  
Rule: Consistency in interface design enables users to predict what will happen before they perform a function. (don't throw surprises)
- ⇒ very critical for
- ease of learning
  - ease of use
  - aesthetics.
- (2) Minimal User Effort  
Rule: The interface should be simple to use.
- Keep in mind:  
Most decision makers like to have no more than "three" mouse clicks from the starting menu until user requested work is performed.
- <sup>1</sup> Decision

Now, the Usability Principles, the last two aspects affect the Consistency and Minimal User Effort.

- 1) Now, let us talk about Consistency. So, the rule or guideline for us in this regard is it in Interface design enables users to predict what will happen before they perform a function, it is like, so that means, do not throw any surprises. So, the Consistency allows the user or the decision maker to predict what will happen before they perform a function, before they click something what will happen, before they go there is, what will happen. So, very critical for,
  - ease of learning
  - ease of use and
  - aesthetics
- 2) Then the last part of today's discussion is the Minimal User Effort. So, there is only one rule to this, very simple rule: the Interface should be simple to use. So, keep in mind,
  - Most decision makers like to have no more than "three" mouse clicks from the starting menu until user requested work is performed. What is the user requested work? The decision. So, most of these big decision makers prefer a maximum of three mouse clicks. Click, click and click within that time period, they would like the thing to be completed. So, when you are designing it, try to see whether we can actually finish everything within three mouse clicks. So, that is because that is from the start of the Start menu. Till the third mouse click or three clicks, the third mouse click, you would ideally like to see the results. That is how these top decision makers actually work as part of the system.

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Web-based DSS

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middle area for information input/output  
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(2) Content Awareness:

Rule: Users should always be aware of where they are in the system and what information is being displayed.

Eg: What stage of decision making.  
What information is shown about what aspect of the decision, etc?

## Usability Principles: Aesthetics & User Experience

(1) Aesthetics

Rule: Interfaces should be functional and inviting to the decision makers through careful usage of white space, lines, and fonts.

Keep in mind:

• There is often a tradeoff between including enough white space to make the interface look more pleasing without leaving much space so that important information doesn't fit the screen. (find that balance).

(2) User Experience

Keep in mind:

• Although ease of use and ease of learning often lead to similar design decisions, there exists trade-offs between the two.

What are these trade-offs?

(1) Novice users (or) infrequent users of software will prefer ease of learning.

(2) Frequent (or) expert users will prefer ease of use.

## Usability Principles: Consistency & Minimal User Effort

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Rule: Consistency in interface design enables users to predict what will happen before they perform a function. (don't throw surprises)

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• ease of learning  
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(2) Minimal User Effort

Rule: The interface should be simple to use.

Keep in mind:

Most decision makers like to have no more than "three" mouse clicks from the starting menu until user required work is performed.

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So, we just saw the three major Usability Principles: The Layout, and the Content Awareness. Layout is more about how to use the screen area and how to consistently do it. And, how do you talk about the Content Awareness at and where are you and what are you seeing at this point, we talked about Aesthetics.

And, we talked about the User Experience, Aesthetics, it is really functional and inviting to the user. We talked about that tradeoff between white space and important information. And, vice versa, we discussed that. And, we also talked about ease of use and ease of learning, what is the difference between them novice users versus expert users.

And then, the Consistency, what will happen, do not throw any surprises, that kind of thing. And then, the Minimal User Effort and three clicks rule, whatever. So, with that, today's topic before the HTML design, now we get into the HTML aspect of the system on how to use HTML forms to design this stuff. That is what we will do today.

But after the next lecture, that is what we will be doing. But for when you are designing this, keep all these rules in your mind, so that we can move forward without or we can actually design good Web-based Decision Support Systems. Thank you for your patient hearing. And, I will see you soon in the next class on HTML User Interface design. Thank you.