

HMI course

Human-Machine Interaction

Bastien & Scapin ergonomic Criteria



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Bastien & Scapin's criteria

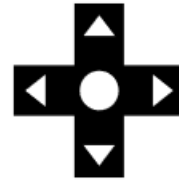
Bastien & Scapin's criteria



Guidance



Workload



Explicit Control



Adaptability



Error Management



Consistency



Significance
of code



Compatibility

1. Guidance

- User **Guidance** refers to the means available to advise, orient, inform, instruct, and guide the users throughout their interactions with a computer (messages, alarms, labels, etc.), including from a lexical point of view.
- **Good guidance** facilitates learning and use of the system by allowing the user: to know, at any time, where they are in a sequence of interactions, or in the accomplishment of a task; to know the permitted actions as well as their consequences; and obtain additional information (possibly upon request).
- The resulting ease of learning and use leads to better performance and fewer errors.

1.Guidance

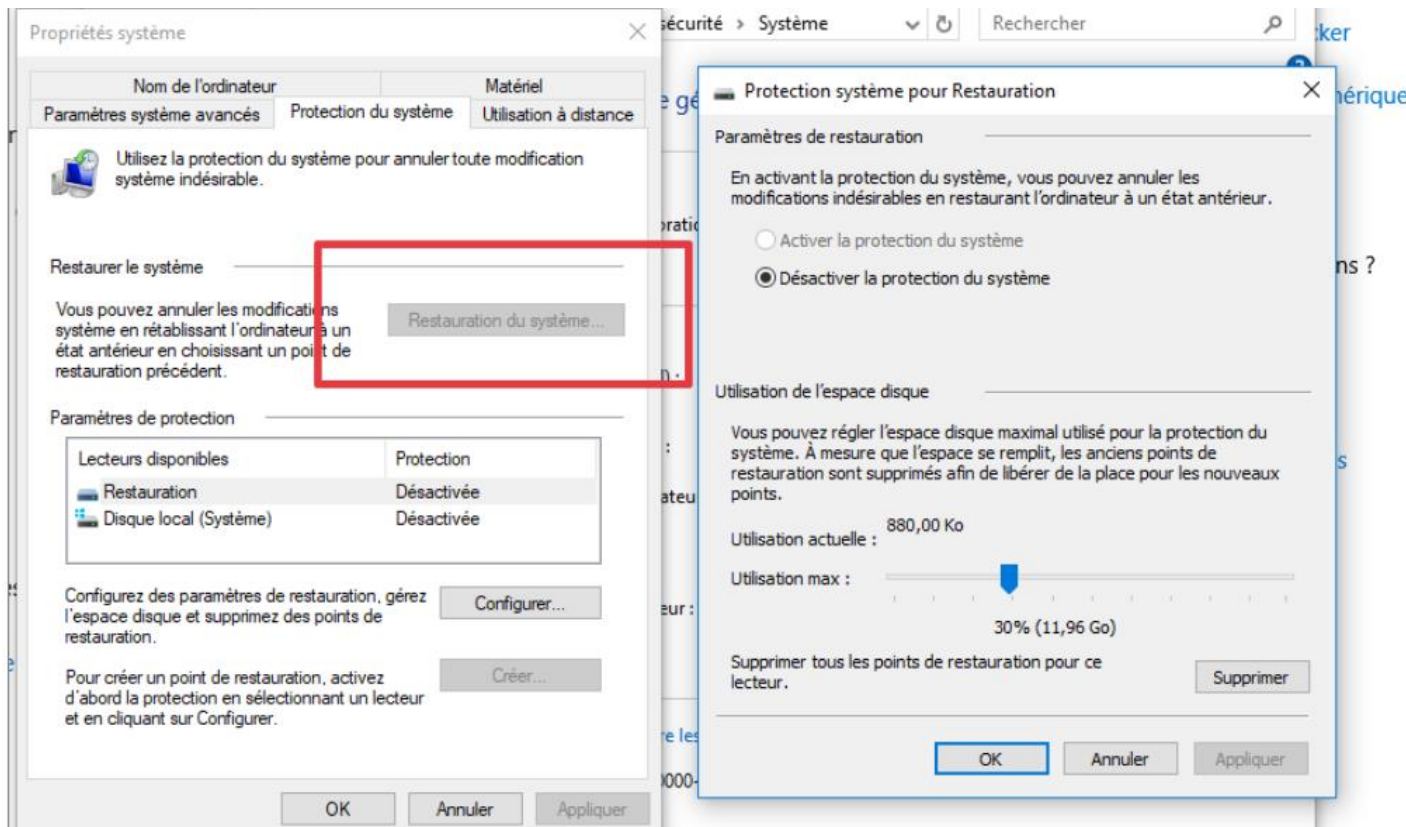
- The criterion *Guidance* is subdivided into four criteria:
 - *Prompting,*
 - *Grouping/Distinction of Items,*
 - *Immediate Feedback,*
 - and *Legibility.*

1.Guidance > Prompting

- *Prompting* is defined more broadly than usual. It refers to the means offered **to guide users** through certain **actions**, such as data entry or other tasks. This criterion also includes all of the aids that **assist users** in determining their options when many actions are conceivable depending on the circumstances. Prompting also includes **status information**, which is information about the system's **current** state or context, as well as information regarding **help facilities and their accessibility**.

1.Guidance > Prompting

- Grey out unavailable commands



1.Guidance > Prompting

Customize Regional Options

Numbers Currency Time **Date**

Calendar

When a two-digit year is entered, interpret it as a year between:
 and

Short date

Short date sample:

Short date format:

Date separator:

Long date

Long date sample:

Long date format:

OK Cancel Apply

Guide data entries by indicating the correct format and acceptable values

MOT DE PASSE

[Modifier le mot de passe...](#)

.....

.....

.....| 🔑

Votre mot de passe doit avoir :

- ✓ Au moins 8 caractères
- ✓ Des majuscules et des minuscules
- ✓ Au moins un chiffre

Sécurité : forte

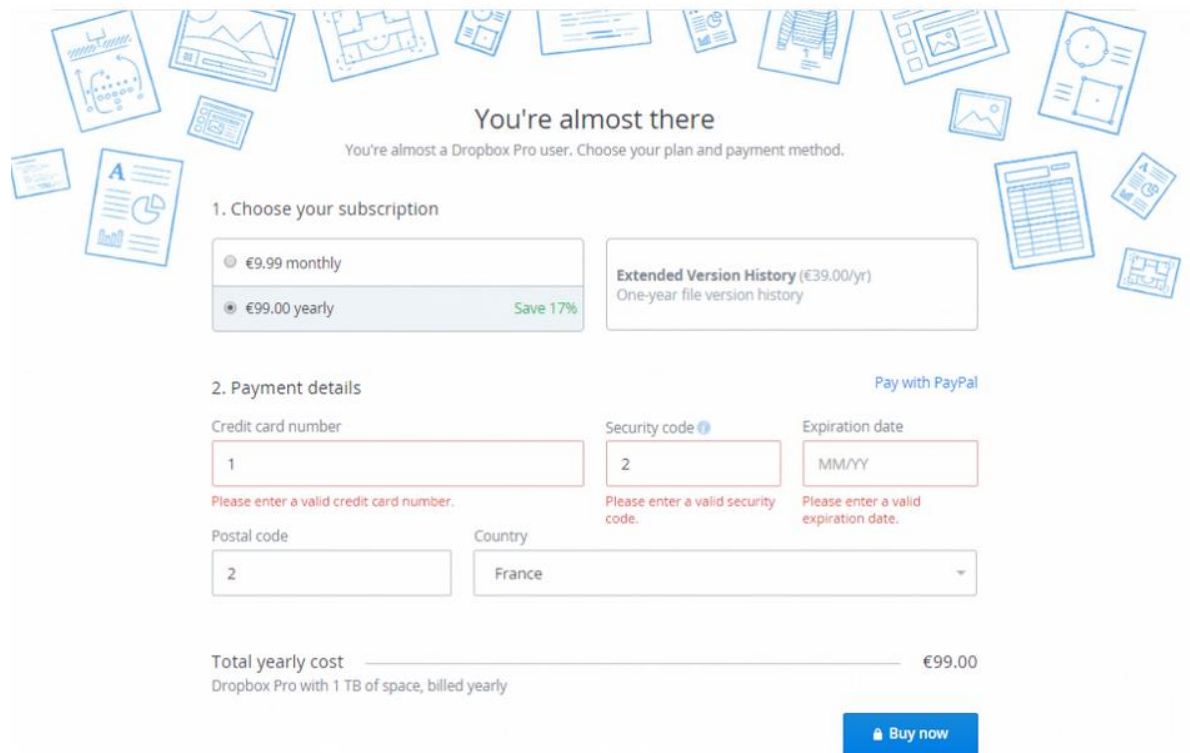
Évitez les mots de passe qui peuvent être facilement devinés ou que vous utilisez sur d'autres sites.

[Annuler](#) | [Modifier le mot de passe...](#)

Active field made visible at the time of entry

1.Guidance > Prompting

- Indicate all status information (e.g.: modes, values, etc.)



The screenshot shows a user interface for upgrading to Dropbox Pro. The page is titled "You're almost there" and includes a sub-header "You're almost a Dropbox Pro user. Choose your plan and payment method." The interface is decorated with various blue line-art icons representing different types of documents and data visualizations.

1. Choose your subscription

There are two radio button options for the subscription plan:

- €9.99 monthly
- €99.00 yearly Save 17%

Next to these options is a box for "Extended Version History (€39.00/yr) One-year file version history".

2. Payment details Pay with PayPal

The payment details section includes several input fields with red error messages:

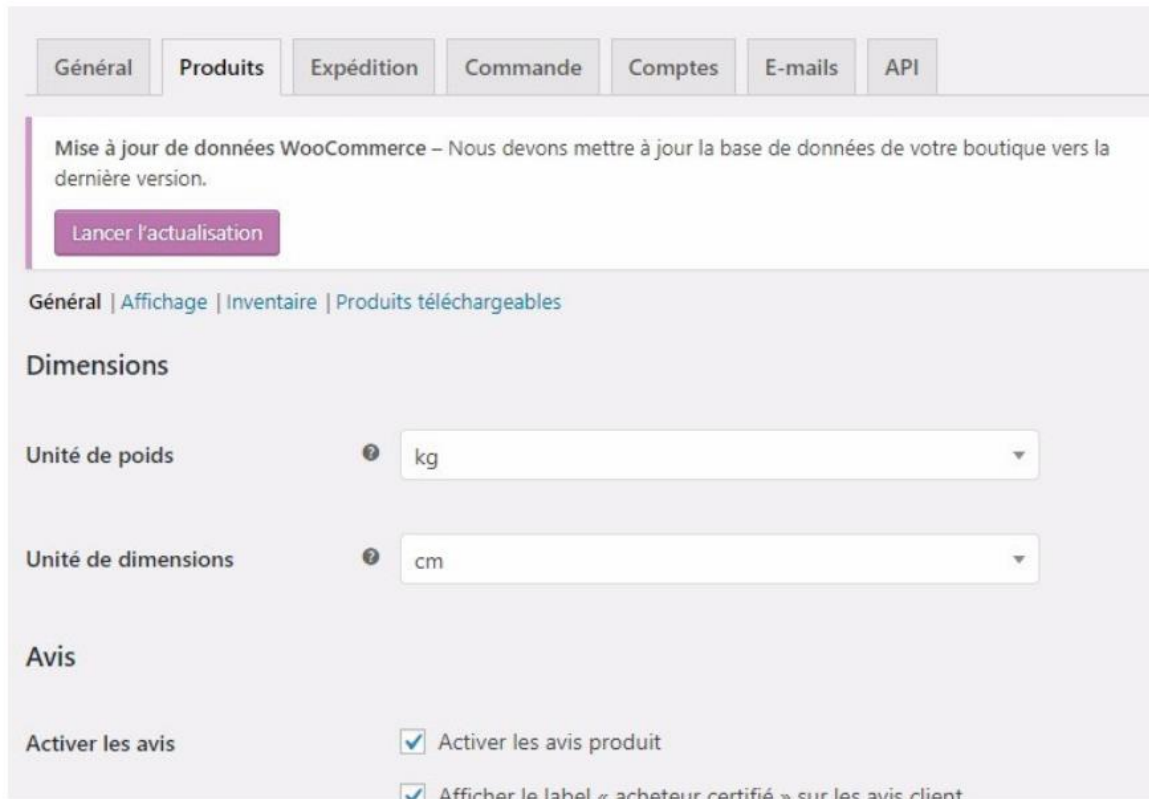
- Credit card number:** Input field contains "1". Error: "Please enter a valid credit card number."
- Security code:** Input field contains "2". Error: "Please enter a valid security code."
- Expiration date:** Input field contains "MM/YY". Error: "Please enter a valid expiration date."
- Postal code:** Input field contains "2".
- Country:** Dropdown menu set to "France".

Total yearly cost €99.00
Dropbox Pro with 1 TB of space, billed yearly

[Buy now](#)

1.Guidance > Prompting

- Display the units of measurement for the data to be entered



The screenshot shows the WooCommerce admin interface. At the top, there are tabs for 'Général', 'Produits', 'Expédition', 'Commande', 'Comptes', 'E-mails', and 'API'. The 'Produits' tab is selected. Below the tabs, there is a notification box with the text 'Mise à jour de données WooCommerce – Nous devons mettre à jour la base de données de votre boutique vers la dernière version.' and a button labeled 'Lancer l'actualisation'. Below the notification, there is a breadcrumb trail: 'Général | Affichage | Inventaire | Produits téléchargeables'. The main section is titled 'Dimensions' and contains two dropdown menus: 'Unité de poids' set to 'kg' and 'Unité de dimensions' set to 'cm'. Below this, there is a section titled 'Avis' with two checked checkboxes: 'Activer les avis produit' and 'Afficher le label « acheteur certifié » sur les avis client'.

Général | Produits | Expédition | Commande | Comptes | E-mails | API

Mise à jour de données WooCommerce – Nous devons mettre à jour la base de données de votre boutique vers la dernière version.

Lancer l'actualisation

Général | Affichage | Inventaire | Produits téléchargeables

Dimensions

Unité de poids

Unité de dimensions

Avis

Activer les avis Activer les avis produit

Afficher le label « acheteur certifié » sur les avis client

1.Guidance > Grouping/Distinction of items

- The **visual structuring** of information items in respect to each other is addressed by the *Grouping/Distinction* between Items criterion. This criterion considers the **topology** (location) and certain graphic characteristics (format) to illustrate the **relationships** between the various items displayed, their membership or non-membership in the **same class**, or even to demonstrate the **distinction** between **different classes** of items. This criterion also applies to the arrangement of items within the same class.

1.Guidance > Grouping/Distinction by location

- As much as possible, items should be organized according to hierarchical lists

The screenshot shows a website navigation menu with a blue header. The main navigation bar includes: ACCUEIL, CRÉATION D'ENTREPRISE, ACTIVITÉS RÉGLEMENTÉES, FORMALITÉS, and EUGO. A dropdown menu is open under 'ACTIVITÉS RÉGLEMENTÉES', listing various categories. A red box highlights the following items in the dropdown: ALIMENTATION, NÉGOCE ET COMMERCE DE BIENS, TOURISME, LOISIRS, CULTURE, SECTEUR FINANCIER ET JURIDIQUE, EXPERTISE, ENSEIGNEMENT, SECTEUR ANIMALIER, and AUTRES SERVICES. Below the dropdown, there are three main content blocks: 'Bienvenue' (purple), 'micro-ur' (green), and 'Démarches en ligne' (pink). The 'Bienvenue' block contains the text: 'Simple, rapide et sécurisé : le service guichet-entreprises.fr vous permet de réaliser vos démarches en ligne.' The 'Démarches en ligne' block contains the text: 'Réalisez vos formalités liées à l'immatriculation (toute forme juridique), à la modification et à la cessation d'activité d'une entreprise.'

Navigation	Menu Item
ACCUEIL	ALIMENTATION
CRÉATION D'ENTREPRISE	NÉGOCE ET COMMERCE DE BIENS
ACTIVITÉS RÉGLEMENTÉES	TOURISME, LOISIRS, CULTURE
FORMALITÉS	AGENCE DE PRESSE
EUGO	AGENT ARTISTIQUE
	AGENT DE VOYAGES
	ARTISANS D'ART
	ARTISTE-AUTEUR
	CAMPING
	CENTRE ÉQUESTRE ET ASSIMILÉ
	CHAMBRES D'HÔTES
	DISCOTHÈQUE
	DISTRIBUTEUR DE PRESSE
	EDITEUR

1.Guidance > Grouping/Distinction by format

- Establish a visual distinction between areas with different functions (command, message, etc.)

Ma galerie photo !

Tirages photo & Posters A partir de 0,05 €

Boîtes à photos A partir de 9,95 €

Tableaux photo A partir de 15,95 €

Albums photo & Cadres A partir de 4,95 €

Tirages photo Classiques PROMO

- Papier épais Fuji Suprême (mat ou brillant)
- 19 formats au choix (9x13 au 20x30)
- Choix des finitions : marges, N&B, Sepia...

♥ On adore les tirages au format carré !

[> Je découvre ce produit](#)

A partir de ~~0,09 €~~
0,07 €

dès 0.07€

[JE COMMANDE MES TIRAGES](#)

Tirages photo Économiques

- Papier Fuji Crystal Archive
- Formats 10x15 et 11x15
- Retouche et recadrage automatiques

♥ Le prix le plus bas pour développer toutes vos photos...

[> Je découvre ce produit](#)

A partir de **0,05 €**

[JE COMMANDE MES TIRAGES](#)

Poster et Panoramique

- Papier photo Fujifilm (mat ou brillant)
- Format poster : du 30x40 au 76x115
- Format panoramique : du 15x38 au 50x125

♥ Le développement de vos photos en grand format !

[> Je découvre ce produit](#)

A partir de **1,95 €**

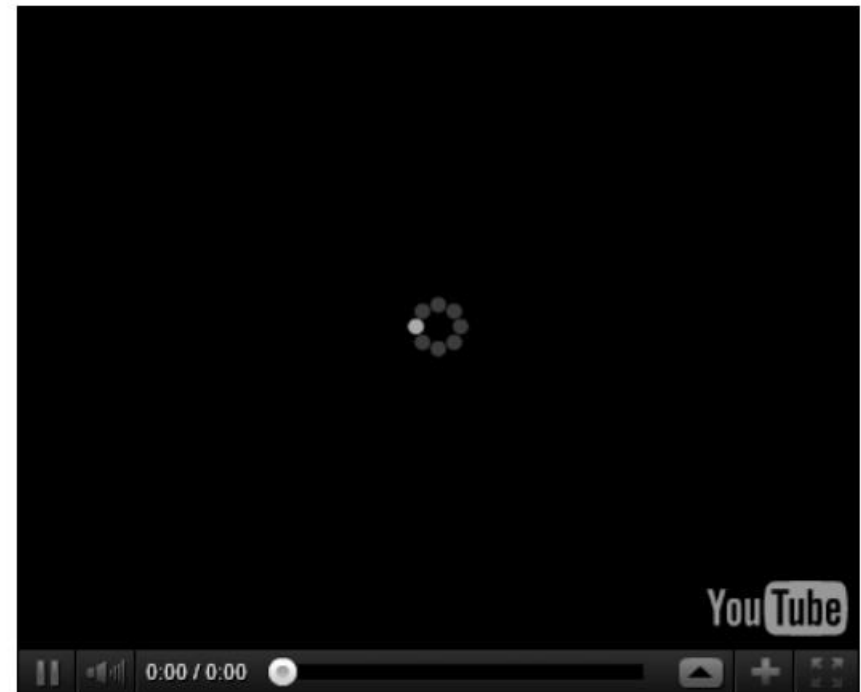
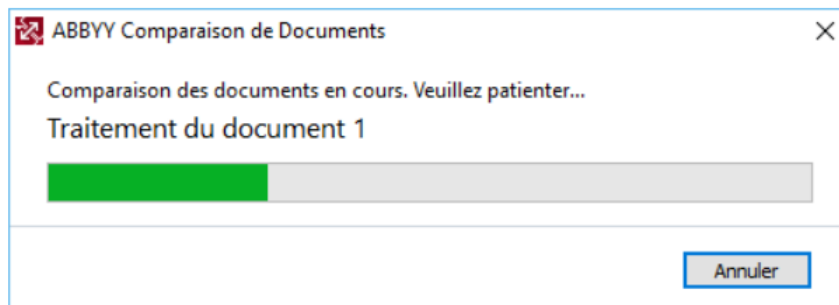
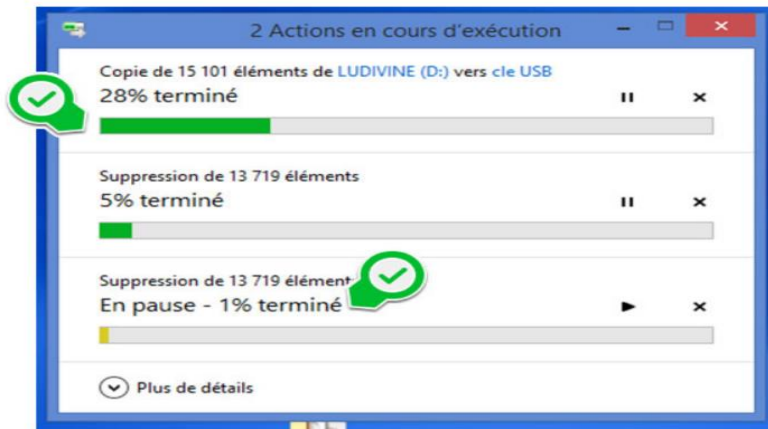
[JE CRÉE MON POSTER](#)

1.Guidance > Immediate Feedback

- *Immediate Feedback* means the **computer's response** following **user actions** or **requests**. It can be a simple press of a key or the entry of a sequence of commands, whatever the action, and in all cases, the computer must respond, within a time frame consistent with the request of the use.
- The quality and speed with which feedback is provided are two critical variables in developing user trust and happiness, as well as their understanding of the exchange. These elements provide users with a thorough understanding of how the system works.
- Expected feedback from the system:
 - quality
 - speed

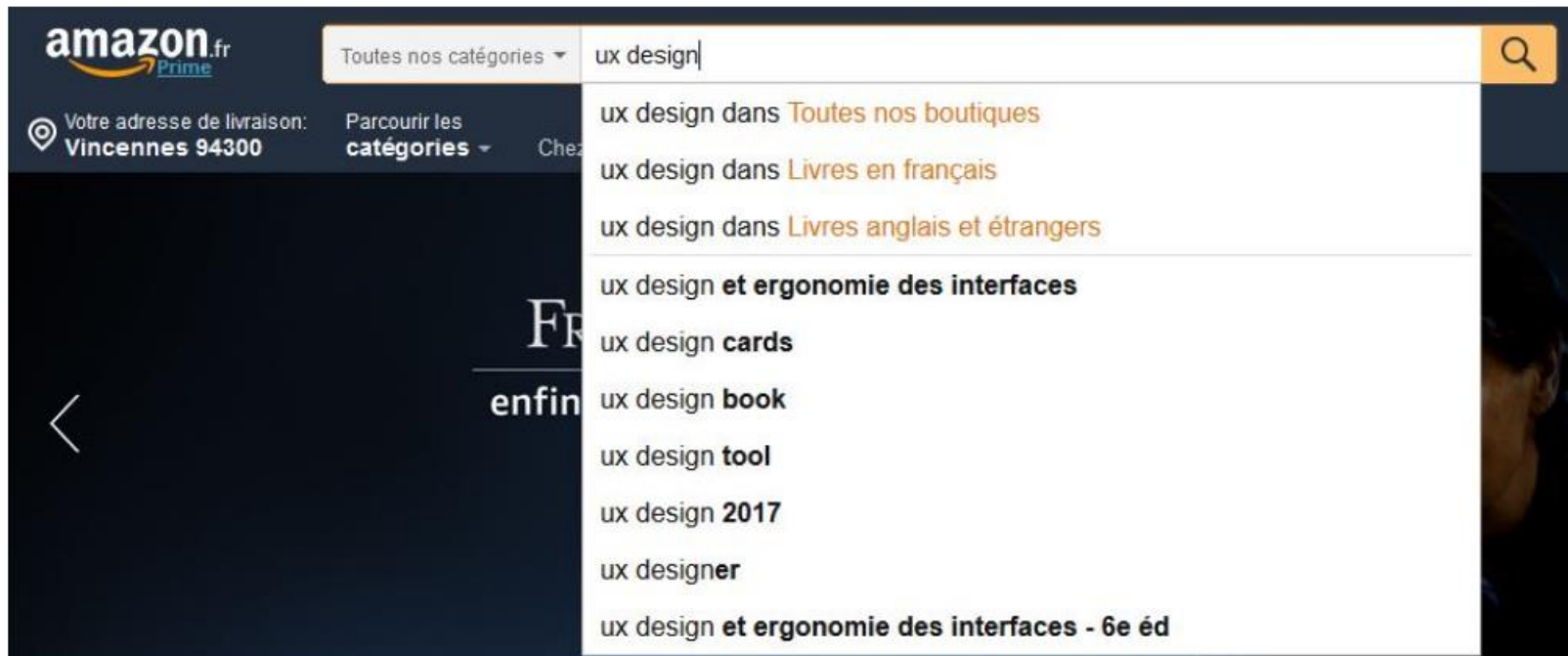
1.Guidance > Immediate Feedback

- Make the processing carried out by the application visible. Actions in progress must be indicated



1.Guidance > Immediate Feedback

- The search engine uses auto-completion



1.Guidance > Immediate Feedback

- In a form , the fields are directly checked upon entry

The image shows a registration form with the following fields and feedback:

- Prénom**: Input field containing "Salim" with a blue checkmark icon to its right, indicating it is valid.
- Nom**: Input field with an orange error icon and the text "Votre nom de famille est requis" (Your family name is required).
- Nom d'utilisateur**: Empty input field.
- Mot de passe**: Empty input field.
- Confirmez le mot de passe**: Empty input field.
- Adresse e-mail**: Empty input field.
- Quel format est le mieux ?**: Radio buttons for "14/02/07" (selected) and "02/14/07".
- J'ai lu et j'accepte les [conditions d'utilisation](#).
- Enregistrement**: Submit button.

1.Guidance > Legibility (Readability)

- The *legibility* of information on the screen is concerned with the **presentation of information on the screen** that may **hinder** or **facilitate** reading of this information (luminance of characters, background character contrast, size of letters, spacing between words, spacing between lines, spacing between paragraphs, length lines, etc.).
- By definition, the criterion *Legibility* does not concern feedback or error messages

1.Guidance > Legibility (Readability)

- Avoid writing entire paragraphs in capitals

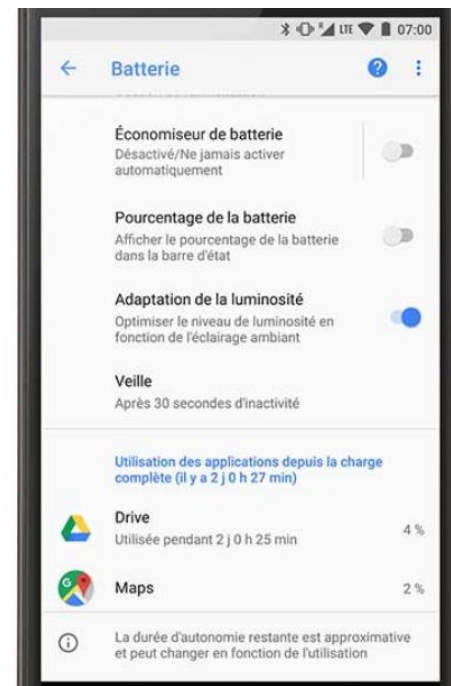
Writing in
capital letters



- ✓ Use capital letters for acronyms
- ✓ Use capital letters if necessary to highlight a key word
- ✓ Use capital letters if necessary for short titles (3/4 words max)
- ✗ Avoid capital letters on technical, English, Germanic words, etc.
- ✗ Avoid capital letters on buttons
- ✗ Avoid capital letters on navigation elements
- ✗ Never use capital letters for a line of text, instructions, paragraph

1.Guidance > Legibility (Readability)

- Use dark letters on a light background for better readability
- It is possible to distinguish the status of each text by sufficiently marked nuances of contrast



1.Guidance > Legibility (Readability)

- Pay attention to the colors!

The screenshot shows a calendar application with a grid of colored cells. A red box highlights a section of the calendar. A red 'X' icon points to a yellow box containing placeholder text. Another red arrow points to a dialog box with 'Accepter l'invitation' and 'Rejeter' buttons.

Calendar Grid (Approximate Content):

Intervenants	14				15				16				17			
	Mje01	Mje01	Mje01	Mje01	Mje01	Mje01	Mje01	Mje01	Mje01	Mje01	Mje01	Mje01	Mje01	Mje01	Mje01	Mje01
COGNY Ludvine																
EBOUE Fabrice	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0
KRAUSSE Henry	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0	Geocof0
MICHEL Odile	Devweb	Devweb	Devweb	Devweb	Devweb	Devweb	Devweb	Devweb	Devweb	Devweb	Devweb	Devweb	Devweb	Devweb	Devweb	Devweb
PELLY Florence																

Placeholder text in yellow box:

>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed non risus. SUSPENDISSE LECTUS TORTOR, DIGNISSIM SIT AMET, ADIPISCING NEC, ULTRICIES SED, DOLOR.

Dialog box text:

Que souhaitez-vous répondre ?

Buttons: [Accepter l'invitation](#) [Rejeter](#)

2. Workload

- The "*workload*" ergonomic criterion reduces the quantity of actions required from the user. This involves decreasing the perceptual or memory load.
- The Workload criterion has two sub-criteria: Brevity (which includes the Conciseness and Minimal Actions criteria) and Information Density.
- The right questions to ask yourself:
 - Are perception and memory activities kept to a minimum?
 - Is the dialogue simple?

2. Workload > Brevity

- The *Brevity* criterion concerns the workload at the **perceptual** and **memory** level both for **individual input** or **output** elements and input sequences (ie, the sequences of actions necessary to achieve a goal, to accomplish a task).
- The aim here is to limit as much as possible the work of reading, input and the steps that users must go through.
- **The right questions to ask yourself**
 - Are the labels short?
 - Are seizures kept to a minimum?
 - Is the number of steps to achieve a goal minimal?
 - Are there any shortcuts?

2. Workload > Brevity > Concision

- Short-term memory capacities are limited. Therefore, the shorter the entries, the lower the risk of errors. Furthermore, the more succinct the items, the shorter the reading time.
- **Objective :**
Reduce perception and memorization activities
- **For what ?**
To reduce mental load and the risk of errors
- **How ?**
Limit the elements displayed to the strict minimum, use “progressive unveiling”

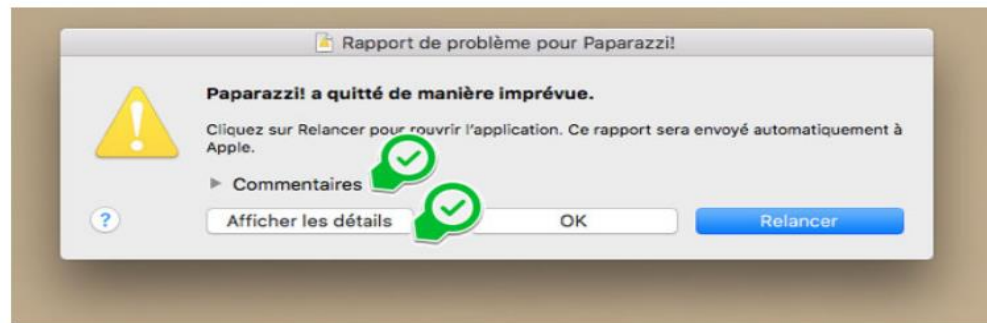
2. Workload > Brevity > Concision

- Avoid presenting too many buttons to the user

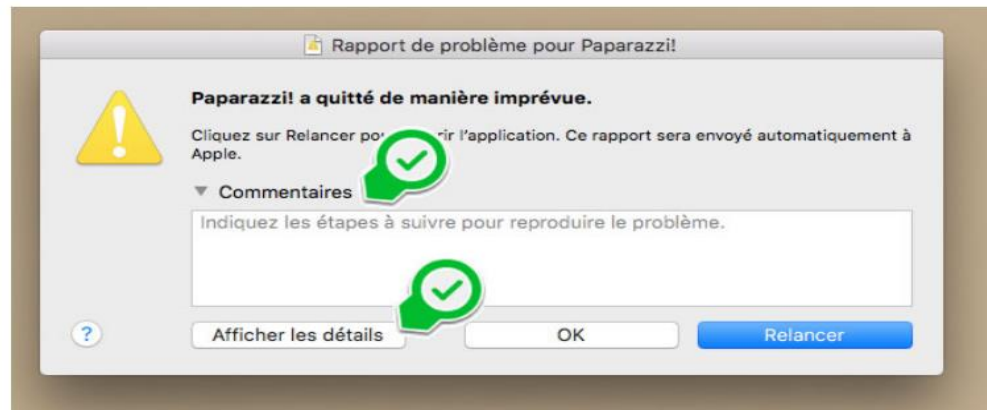


2. Workload > Brevity > Concision

The “comments” field and details are closed by default.



But it is possible to display these fields according to the use you wish.



2. Workload > Brevity > Concision

- A form that is too rich in input fields in no way respects the principle of conciseness which is essential here to complete the task in a reasonable time.

The screenshot shows a 'CONTACT' form on the Rody website. The form is enclosed in a red border and contains the following fields:

- Nom *
- Prénom *
- Date de naissance
- Adresse *
- Code postal *
- Ville *
- Pays *
- Téléphone portable
- Téléphone fixe
- Email *
- Objet *
- Centre Rody *
- Message *
- Voiture 1: Marqu, Modè, Années
- Voiture 2: Marqu, Modè, Années
- Voiture 3: Marqu, Modè, Années
- Recharger le CAPTCHA
- Envoyer

A red speech bubble with a white 'X' is positioned in the top left corner of the form area, indicating a warning or error. The website header includes the Rody logo, a search bar, and navigation links: ACCUEIL, PELES, ATELIER ET SERVICES, BOUTIQUE, PROMOS, NOS CONSEILS, PARTENAIRES, ENGAGEMENT, and RODY PRO. A red button labeled 'TROUVER MON CENTRE AUTO' is also visible in the top right.

2. Workload > Brevity > Minimal Actions

- *The **Minimal Actions*** concerns the workload regarding the **actions** necessary **to achieve a goal**, to accomplish a task. This involves delimiting as much as possible the stages that users must go through.
- The more numerous and complicated the actions necessary to achieve a goal, the more the workload increases and therefore the higher the risk of errors.
- **Objective**
Reduce the number of actions requested from the user
- **For what ?**
To limit user actions and the risk of errors
- **How ?**
Pre-fill fields, remember user preferences...

2. Workload > Brevity > Minimal Actions

Supprimer ce fichier ?


Voulez-vous vraiment supprimer ce fichier ?






Ne plus afficher cet avertissement


Succès

✓ Téléversement effectué

Ce message disparaîtra dans 8 secondes

ADRESSE(S) DE LIVRAISON À DOMICILE 

Produit	Description du produit	Prix unitaire	Quantité	Adresse de livraison
	APURIMA 75% Poids net : 75	3,90€	1	Choisissez Une Adresse De Livraison > Ajouter une nouvelle adresse
	TABLETTE 80% Poids net : 75	3,90€	1	Choisissez Une Adresse De Livraison > Ajouter une nouvelle adresse
	KOOHI 75 % Poids net : 75	3,90€	1	Choisissez Une Adresse De Livraison > Ajouter une nouvelle adresse
	LAIT AMANDES Poids net : 75	3,90€	1	Choisissez Une Adresse De Livraison > Ajouter une nouvelle adresse
	ORANGERIE 62% Poids net : 75	3,90€	1	Choisissez Une Adresse De Livraison > Ajouter une nouvelle adresse



Repeated
action!

2. Workload > Information Density

- This involves **minimizing** the **quantity of information** and **visual components**. In most tasks, user performance is negatively influenced when the information load is too high or too low. The probability of error increases. It is therefore necessary to delete elements unrelated to the content of the current task.
- It is also necessary to avoid imposing on the user the memorization of long and numerous pieces of information or procedures (short-term memory is limited)

2. Workload > Information Density

- Too much information density

LCL BANQUE ET ASSURANCE

Monsieur GUILLAUME GRONIER
Dernière connexion : lundi 11 juin à 10h09

Modifier mon code d'accès
Sécurité

Accueil | Consulter mes comptes | Effectuer une opération | S'informer | Souscrire | Mes données personnelles

Gérer mes services en ligne Mon contrat Banque en Ligne Options du contrat LCL Interactif Plafond de virement Liste des RIB préenregistrés Liste des comptes inscrits au contrat Suivi de facturation Modifier mon code d'accès Interdire l'accès Adhérer aux relevés et documents en ligne Bénéficier de la signature électronique Commander un certificat Retirer le certificat Modifier mes paramètres d'alertes SMS de LCL Avertis	Banque au Quotidien Effectuer un virement Immédiat, différé ou permanent Virement international et SEPA Modifier ou annuler un virement programmé Imprimer un RIB Commander Un chèque Des devises ou des chèques de voyage Faire opposition Sur un chèque ou un chèque Sur ma carte bancaire Gérer ma carte Bancaire Personnaliser ma carte Profiter des offres partenaires Epargner avec ma carte Utiliser ma e-Carte Bleue Programme Avantage®	Epargne et placements Gérer mon assurance vie Versement libre Versement régulier Effectuer un arbitrage sur mon contrat Simulateurs Bourse Effectuer une opération boursière Prêts Crédit renouvelable Utiliser ou rembourser Suivre ma demande Prêts Personnels Auto Budget Etudiants Suivre ma demande	Assuran Faire un d proposition Auto Multirisque Complément Garantie de Prévilon Editer une Espace Sa Demander u Transmettre
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ANPEC Association Nationale de lutte contre la Précarité, l'Exclusion et le Chômage

Bonjour et Bienvenue sur le site de l'ANPEC. Le contenu de ce site est à accès entièrement gratuit. Nous espérons que vous passerez d'agréables moments parmi nous. Les informations de l'Association, sont dans la rubrique: ANPEC A Bien sûr, L'équipe de l'ANPEC.

Nous mettons à votre disposition un Forum Général de Discussions. N'hésitez pas à aller y participer ou à poser vos questions. Vous pouvez, également, venir discuter en direct, grâce au LiveChat. Les Autres Forums de l'Anpec à accès libre et sans enrôlement: Cliquez ICI

Accueil | Forum | Contact

Libre D'Or | Comment nous aider? | Recommander ce site | Particularités Dpts/Régions | ANPEC

CONTACT
 > Faire un Don
 > Devenir Adhérent
 > Devenir Bénévole
 > Devenir Partenaire
 > Partenaires
 > Contactez-nous
 > Nos Logos

PRATIQUE
 Cette rubrique vous permet d'accéder rapidement à des Infos utiles sur différents thèmes. L'Anpec a pris soin de sélectionner que des sites à accès gratuits!

Offres et Demandes d'Emploi
 Sites d'Offres d'Emploi: Classés Par Régions et Départements, Par Secteurs d'Activité, Interim...
 Pour déposer votre demande d'Emploi: sur le Forum général, dans la rubrique Petites Annonces ou sur les autres Forums suivant le poste recherché.

>>> Forum de Discussions <<<

MENU

> Présentation de l'Anpec	> Petites Annonces	> Offres & Demandes d'Emploi
> Forum Général	> Annuaire	> Conseils et Modèles
> Blog de l'ANPEC	> Liens	> Conventions Collectives
> LiveChat	> L'Anpec recrute	> Fiches Pratiques
> Partenaires	> Témoignages	> Adresses et Infos Utiles

Offres & Demandes d'Emploi

> Par Régions	> Par Secteurs d'activités	> Sites Généralistes	> Job étudiant/été/Stage...	> Travailleurs Handicapés	> Interim	> Petites Annonces	> Freelance / Télétravail	> Cabinet de Recrutement	> Fonction Publique	> Annuaire Emploi Anpec
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Conseils et Modèles

> Cv, Lettres de Motivations	> Préparer son entretien	> Négocier son salaire	> Demande d'augmentation	> Lettres Types Diverses	> Documents à Télécharger	> Conventions Collectives	> Recherche par son N°	> Recherche par son Nom
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Pratique

> Actualités / Journaux	> Annuaire	> Assurance	> Auto	> Budget	> Banque	> Budget étudiant	> Cartes Virtuelles	> Citations / Proverbes	> Codes Postaux	> Cours, Exercices...	> Cuisine / Recettes
> Horscope	> Itinéraire, Carte, Plan	> Jeux en Ligne	> Logiciels Gratuits	> Mémo	> Banque	> Moteurs de Recherche	> Ressources	> Programmes TV	> Restriction Scolaire	> Ressources Webmasters	> S'Installer

PROGRAMME AVANTAGE®

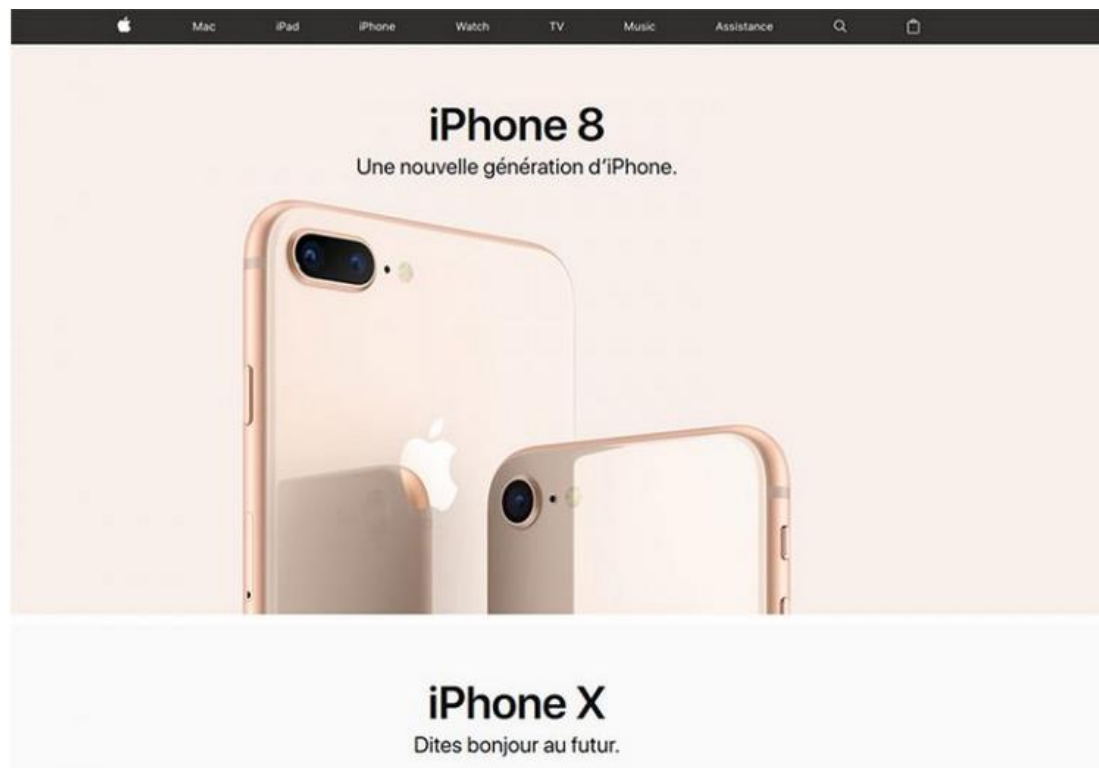
Découvrez les nouvelles offres "Spécial été"

Consulter les offres



2. Workload > Information Density

- the essentials on screen for maximum emotional impact



2. Workload > Information Density

- avoid overloading an email presenting an offer

Un nouvel ideao plus avantageux pour moi ? C'est top !

Cher Monsieur BORDES,

Bonne nouvelle, de nouveaux forfaits encore plus attractifs sont disponibles ! Aussi, nous souhaitons vous en faire profiter dans le cadre de votre Bbox (mobile + box), découvrez sans plus attendre l'offre que nous avons sélectionnée pour vous.

[Je veux en savoir plus](#)

Surfer plus librement avec le Forfait 2h 1Go

Forfait 2h 1Go*

- > 2h d'appels
- > SMS/MMS illimités
- > Internet 1Go, avec débit boosté
- > Un nouveau smartphone tous les ans** et à un prix Spécial Client tous les 24 mois**.

**+
Votre Bbox**

**=
Votre Idea à 44€/mois**

En nous renouvelant votre offre tous les 12 mois, non cumulable avec les autres offres actuellement disponibles. Ce prix ne tient pas compte de votre éventuel complément Bbox.

[Je change](#) [Je trouve un magasin Bouygues Telecom*](#)

Bon à savoir :

Avec les nouveaux forfaits Bouygues Telecom, la tarification est plus claire et plus transparente : les mensuels au titre du paiement du mobile sont distinctes du prix du forfait.

Aussi, bonne nouvelle pour vous Client :

- si vous changez seulement de forfait, vous ne payez aucune mensualité liée à votre mobile jusqu'à votre prochain renouvellement,
- si vous changez de mobile, vous bénéficiez d'une facilité de paiement simple et gratuite, distincte du prix de votre forfait.

Dans les deux cas, vous continuez à cumuler des points pour changer votre mobile tous les ans.

* Retrouvez-nous sur Facebook, Suivez-nous sur Twitter, Une question ? Découvrez les conseils des Wobbees.

Cher Monsieur BORDES,

Une nouvelle offre mobile plus avantageuse est désormais disponible pour vous :

Un nouveau forfait 2h 1Go

- > 2h d'appels
- > SMS/MMS illimités
- > Internet 1Go (débit réduit au delà)
- > Un nouveau smartphone tous les ans

**+
Votre Bbox actuelle**

**=
44€ / mois**

En nous renouvelant votre confiance pour 12 mois, non cumulable avec les autres offres actuellement disponibles. Ce prix ne tient pas compte de votre éventuel complément Bbox.

[Je change maintenant](#)

[Trouver un magasin Bouygues Telecom près de chez moi](#)

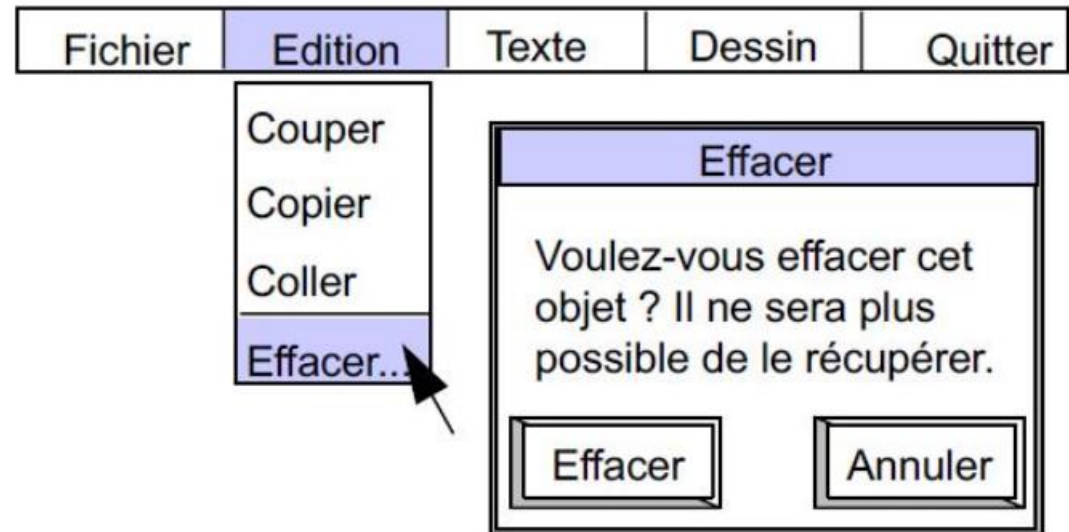
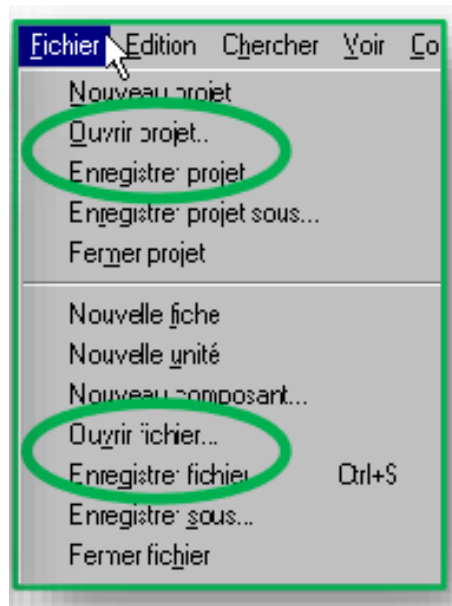
* Retrouvez-nous sur Facebook, Suivez-nous sur Twitter, Une question ? Découvrez les conseils des Wobbees.

3. Explicit control

- The criterion *Explicit Control* concerns both the system processing of explicit user actions, and the control users have on the processing of their actions by the system.
- Processing only takes place if the user requests it. This involves explaining the relationship between the operation of the application and the actions of the users.
- The relationship between user actions and system responses must be explicit, that is, the system must perform:
 - Only actions requested by the user,
 - The moment he asks for them.

3. Explicit control > Explicit actions

- The software must only perform operations requested by the user
- Add a clear or exit button to the form
- Physical validation action: “Ok” button or click



3. Explicit control > Explicit actions

- Avoid formatting or automatic downloads without settings by users



The screenshot shows a news article on the 'M PIXELS' website. The header includes the logo 'M PIXELS' and the tagline 'CHRONIQUES DES (R)ÉVOLUTIONS NUMÉRIQUES'. Navigation links for 'VIE EN LIGNE' and 'JEUX V' are visible. The article title is 'Windows 10 téléchargé automatiquement et sans avertissement sur certains ordinateurs', dated 'Le Monde | 11.09.2015 à 09h37'. The main text states that Microsoft automatically downloads Windows 10 on certain older operating systems, as revealed by 'The Inquirer'. A sidebar on the right contains a search bar and a 'Reinf' button.

M PIXELS CHRONIQUES DES (R)ÉVOLUTIONS NUMÉRIQUES

VIE EN LIGNE JEUX V

Windows 10 téléchargé automatiquement et sans avertissement sur certains ordinateurs

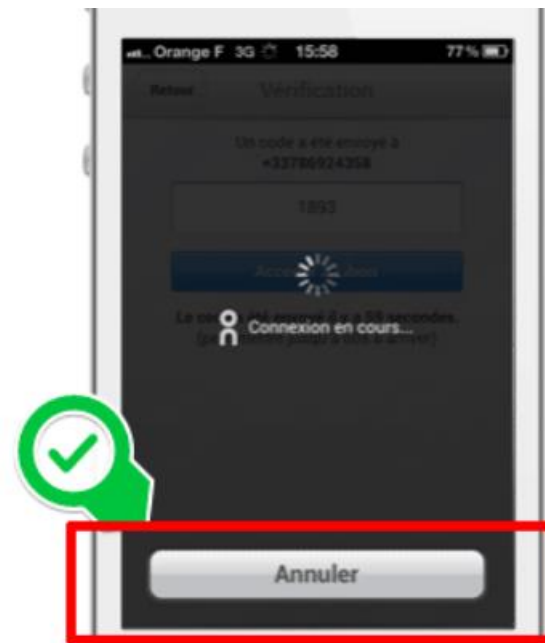
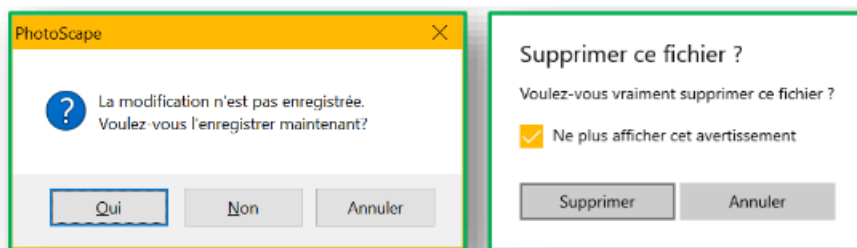
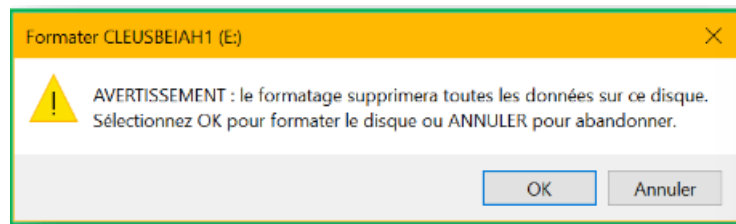
Le Monde | 11.09.2015 à 09h37

Microsoft télécharge automatiquement Windows 10 chez les utilisateurs de certaines anciennes versions du système d'exploitation, révèle le site spécialisé The Inquirer.

Les utilisateurs qui ont activé le programme de téléchargement automatique de mise à jour voient donc les fichiers d'installation du dernier-né de Microsoft

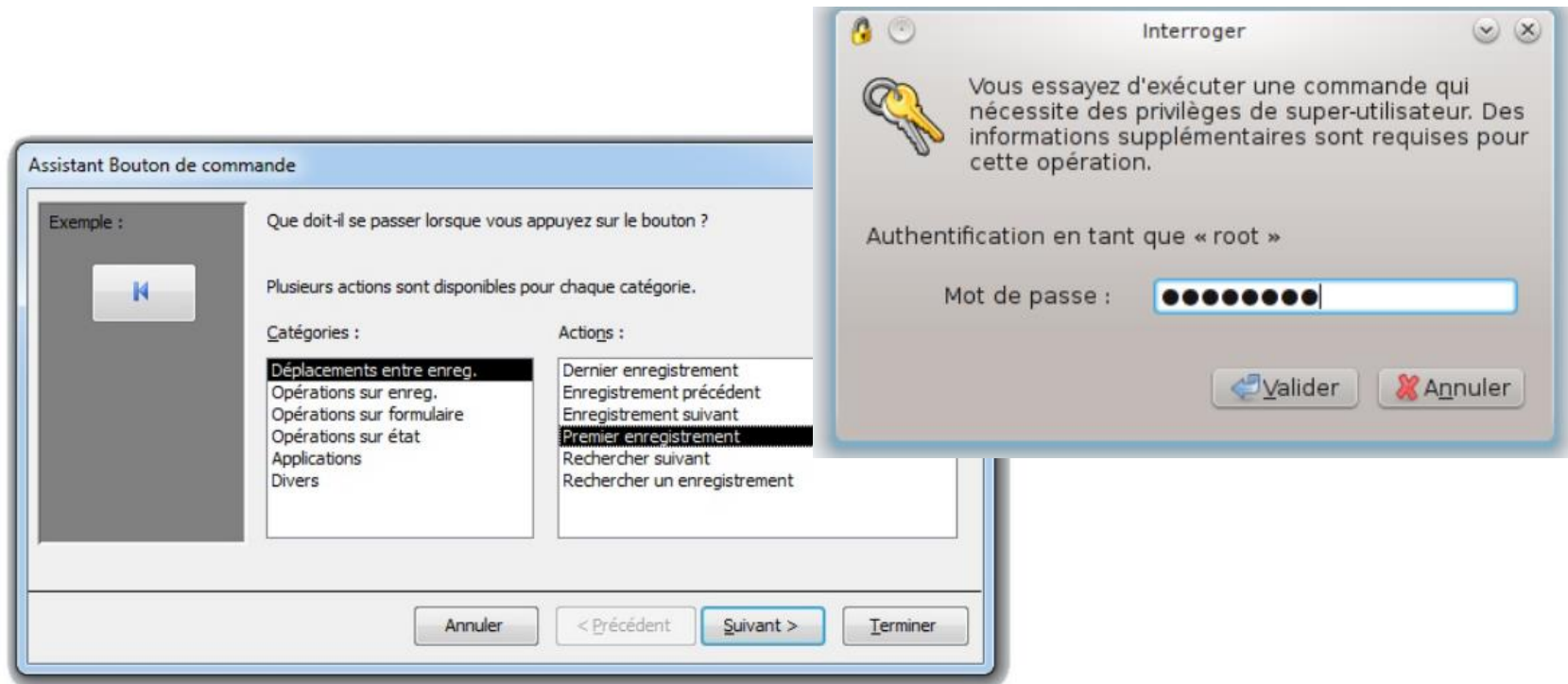
3. Explicit control > User control

- Reversibility possibility of retracing one's steps, of canceling one's actions.
- The user must be able to control the progress of computer processing in progress.
- It must be able to authorize the user to interrupt any processing in progress if they wish, for example.



3. Explicit control > User control

- Allow rollbacks
- Provide rollback capability leading to undoing current changes and reverting to the immediately previous version.



3. Explicit control > User control

- The user must be able to adapt the interface according to their preferences



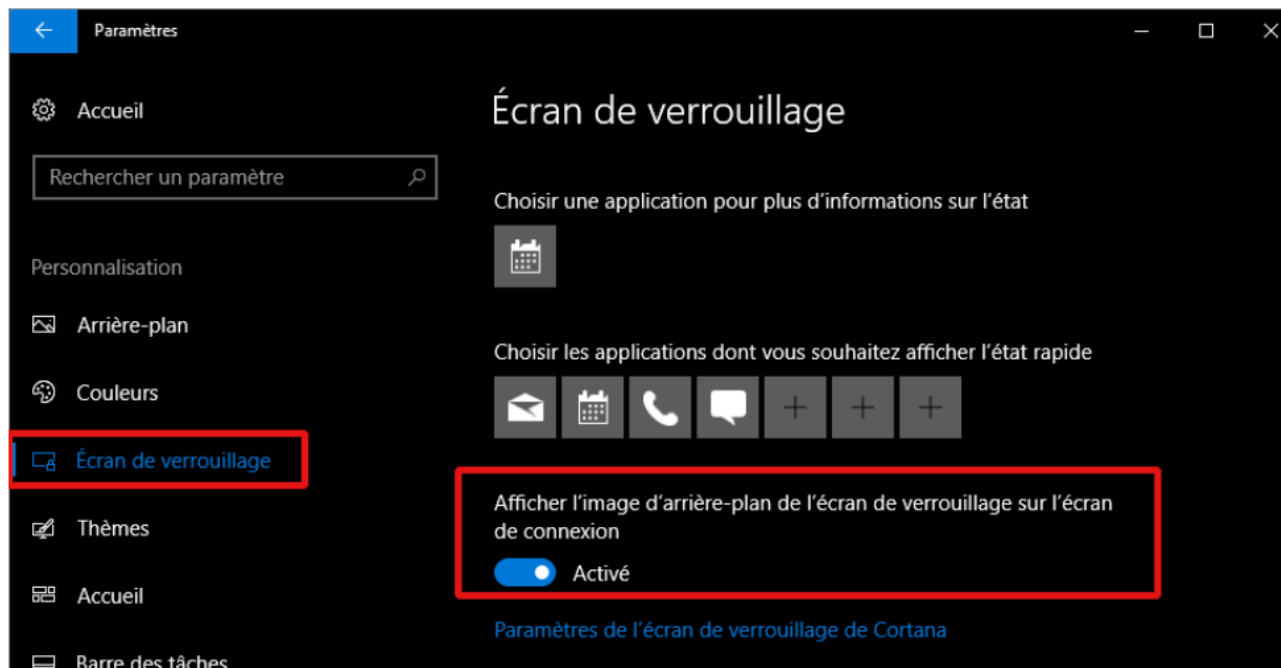
4. Adaptability

- The *adaptability* of a system refers to its capacity to behave contextually and according to the users' needs and preferences.
- Adaptability is therefore the ability of the HMI to adapt to a varied population of users:
 - Different types of users
 - Different usage strategies
- **Objective**
 - Allow customization of the interface by letting the user choose the procedure that suits them best
- **For what ?**
 - Different users have different needs
- **How ?**
 - Leave the default display, values and processing configurable...

4. Adaptability > Flexibility

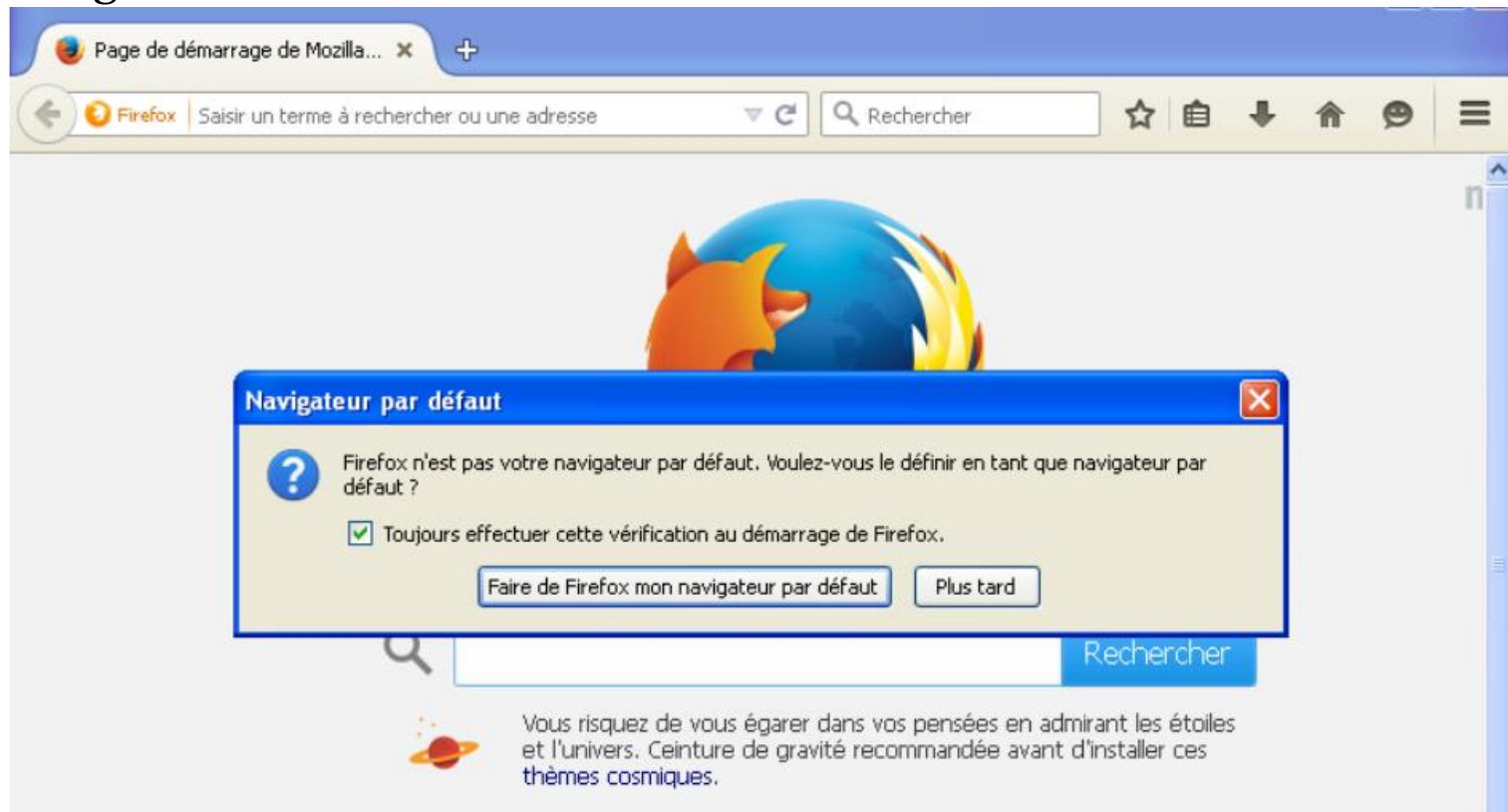
- The more diverse the ways of carrying out the same task, the greater the chances that the user will be able to choose and master one of them, during their learning.

Possibility of customizing its interface.



4. Adaptability > Flexibility

- Propose alternatives but always the possibility of returning to the default configuration.



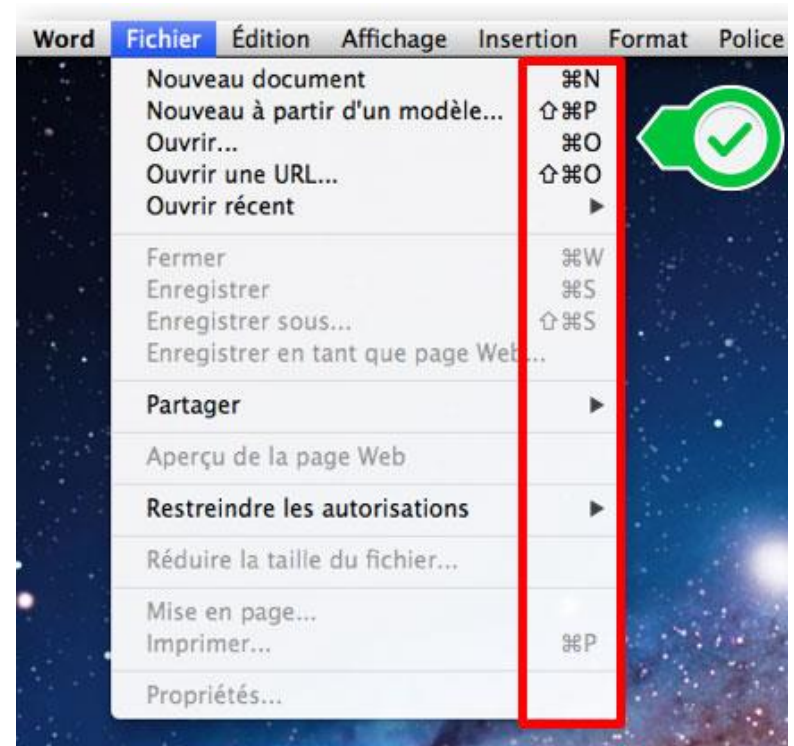
4. Adaptability > Flexibility

Other recommendations

- For data entry, when default values are not known in advance, the system must allow users to set, change or delete these values.
- When certain displays are unnecessary, users should be able to temporarily disable them.
- The sequence of data entries should be able to be changed to accommodate the order desired by users.
- When the format of a document cannot be specified in advance, users should be allowed to define one and save it for later use.

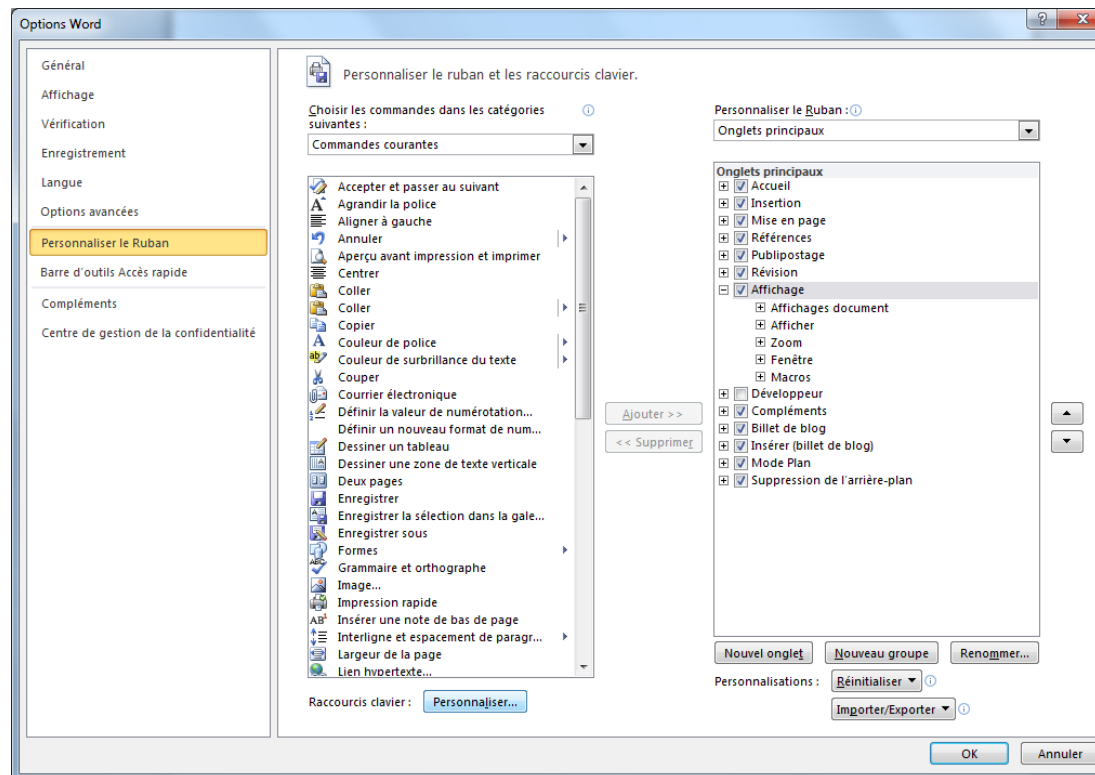
4. Adaptability > User experience

- The criterion *User Experience* refers to the means available to take into account the level of user experience.
- Experienced users do not always have the same information needs as novices. It may be desirable to provide very guided, step-by-step transactions for inexperienced users.



4. Adaptability > User experience

- Allow power users to customize the software or application interface (show more or fewer settings)



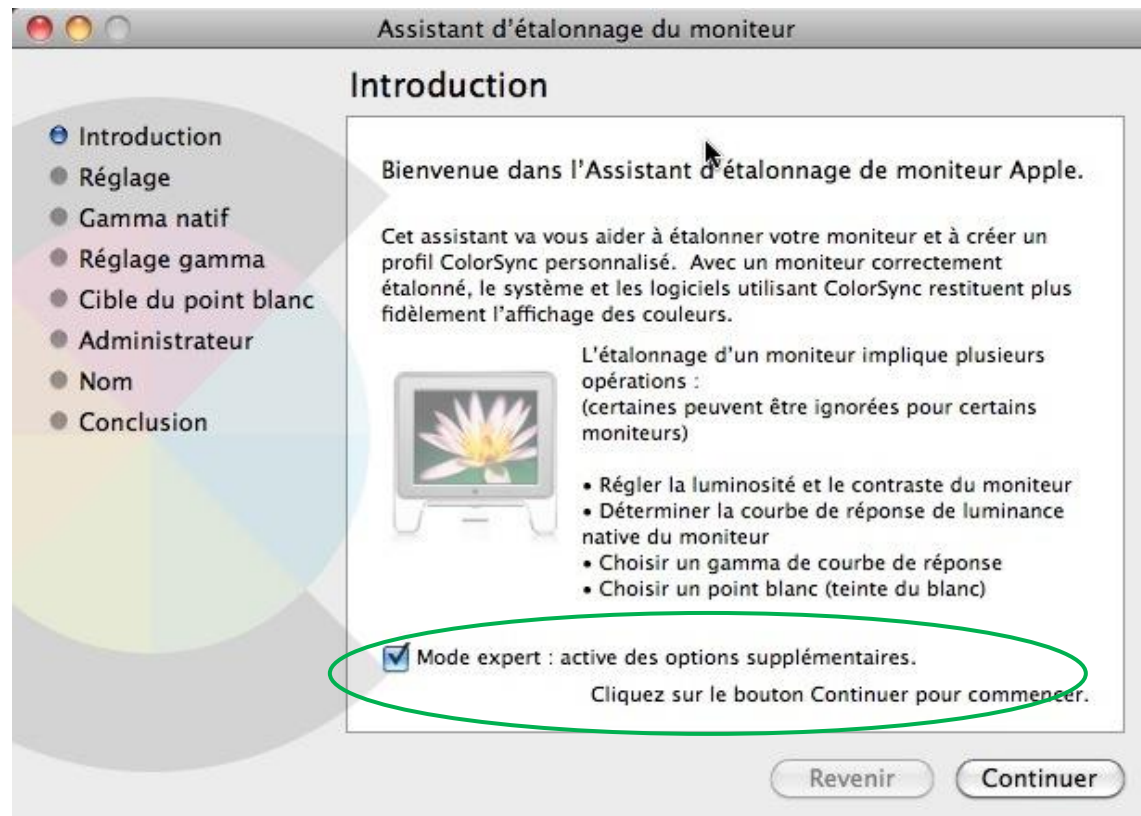
4. Adaptability > User experience

- Provide step-by-step or multiple input choices depending on user experience.

The screenshot displays the Swisscom Internet-Box web interface. The browser address bar shows 'http://internetbox'. The page features a navigation menu on the left with options like 'Aperçu', 'Réseau', 'WLAN', 'Téléphonie', 'Contrôle parental', 'Applications', 'Gestionnaire', 'Internet-Box', and 'Options d'économie d'énergie'. The 'Applications' menu item is highlighted with a blue box and a red '1'. The main content area shows 'Vos applications en un coup d'œil' with a 'Mode' selector set to 'Expert' (highlighted with a red '2') and an 'Applications' toggle set to 'On' (highlighted with a red '3'). Below this, there are several application tiles: 'Mémoire centrale', 'Accès aux données en déplacement', 'Speedtest', 'DNS dynamique de Swisscom' (highlighted with a red '4'), and 'Serveur VPN'. A 'Déconnexion' button is visible in the top right corner.

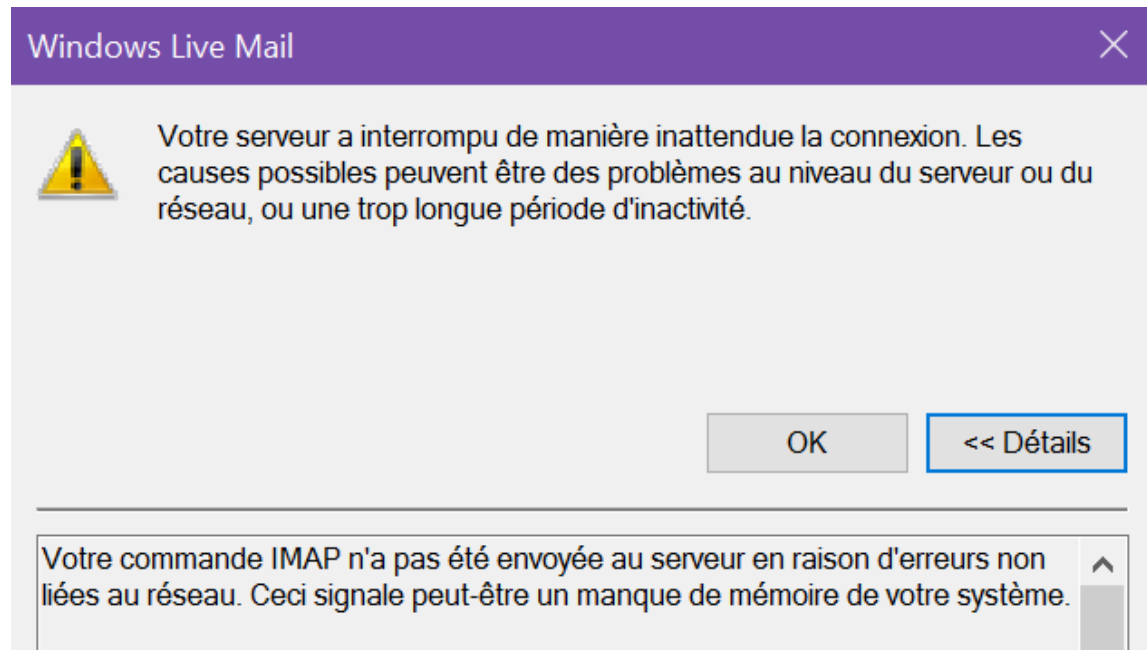
4. Adaptability > User experience

- Allow different dialogue modes corresponding to different user groups (example: allow an incentive adapted to the experience level of the users).



4. Adaptability > User experience

- Users should be able to request a level of detail in error messages that depends on their level of knowledge.



5. Error Management

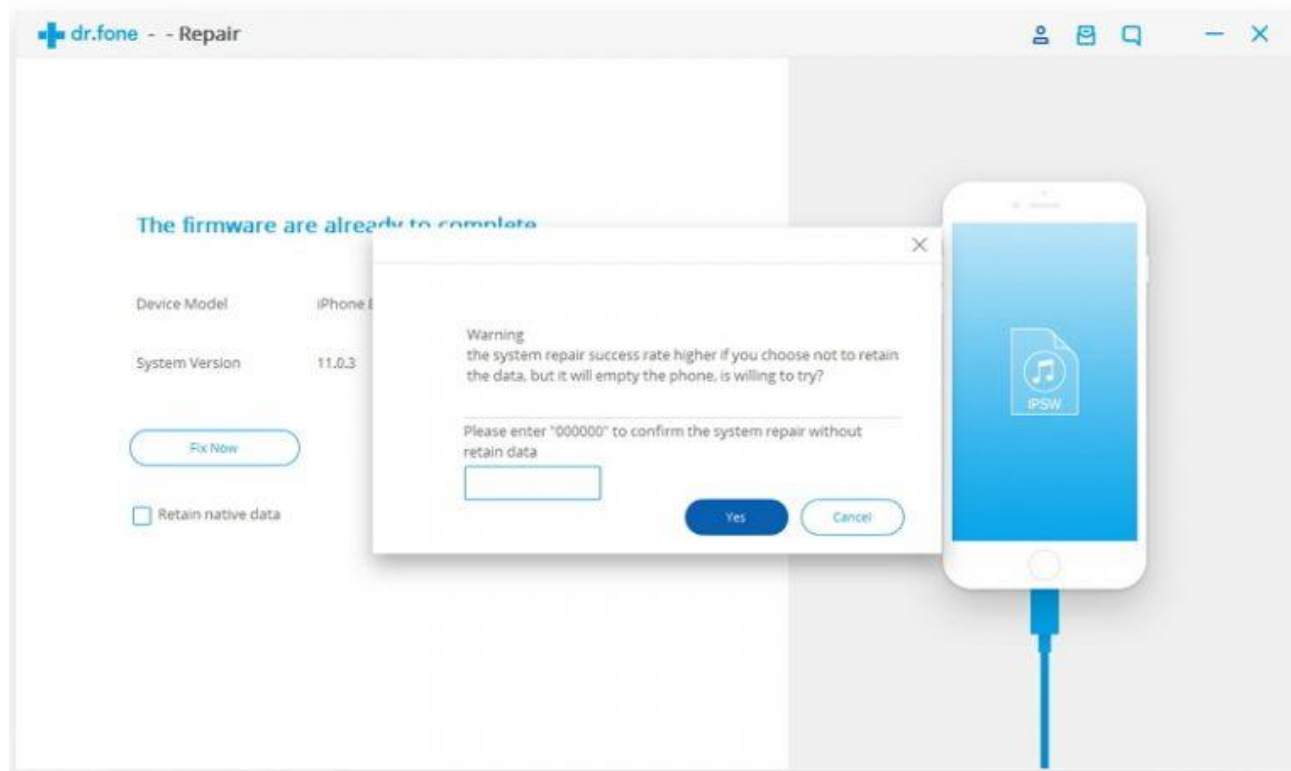
- The *Error Management* criterion concerns all the means allowing on the one hand to avoid or reduce errors, and on the other hand to correct them when they occur.
- Interruptions caused by errors negatively impact user activity
- Errors lengthen transactions and disrupt planning. The more errors are limited, the fewer interruptions there are during the completion of a task and the better the performance.
- Three sub-criteria participate in Error Management : *Protection Against Errors* , *Quality of Error Messages* and *Error Correction* .

5. Error Management > Error Protection

- The **Error Protection** criterion concerns the means put in place to detect and prevent data entry or command errors or actions with harmful consequences.
- To do:
 - Inform
 - disable unavailable orders
 - announce irreversible commands
 - protect sensitive actions
 - provide expected values, units
 - limit inputs
 - use adapted components
 - pre-fill forms (auto-completion)
 - control input

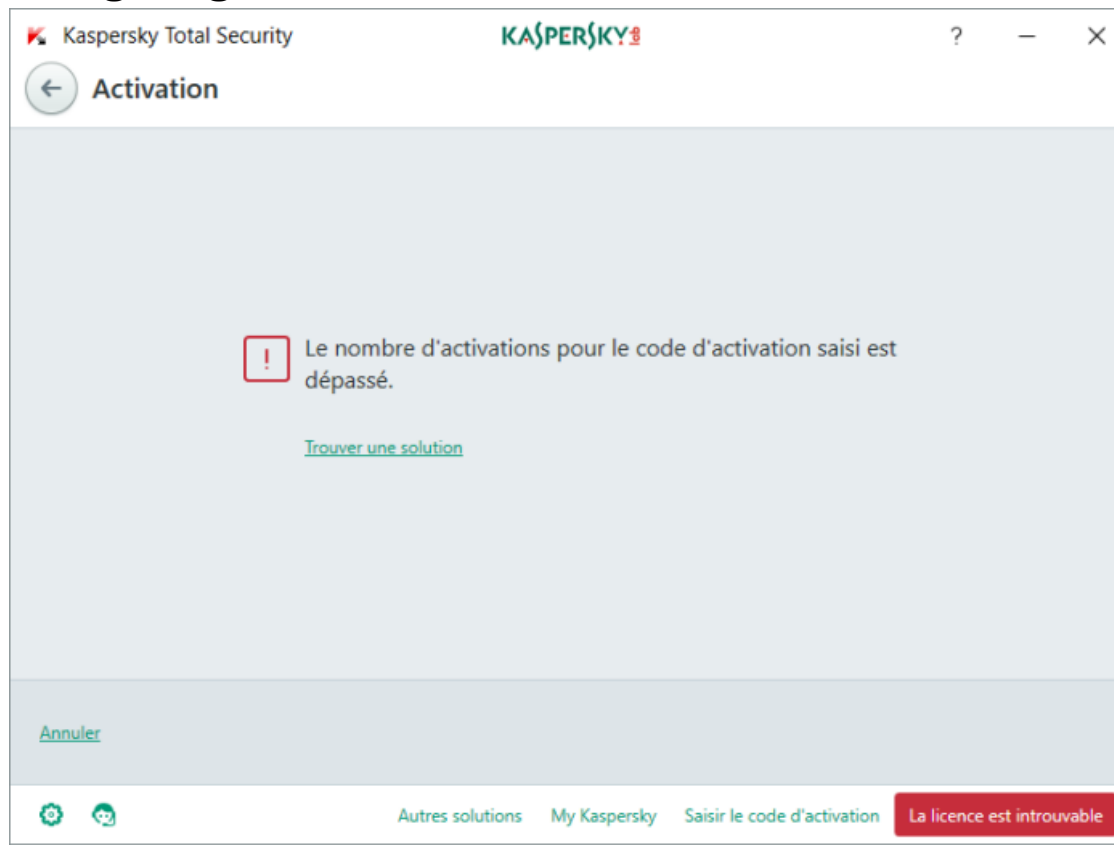
5. Error Management > Error Protection

- When users end a session and there is a risk of data loss, there should be a message indicating this and requesting confirmation that the session has ended.



5. Error Management > Error Protection

- When an installation has failed or the deadline has passed, a message must warn the user giving them the means to decide what to do next.



5. Error Management > Error Protection

- The validation button is grayed out until all selections have been made.

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Démarrez ce qui vous plaît avec Windows XP

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- 4 Select your operating system language**

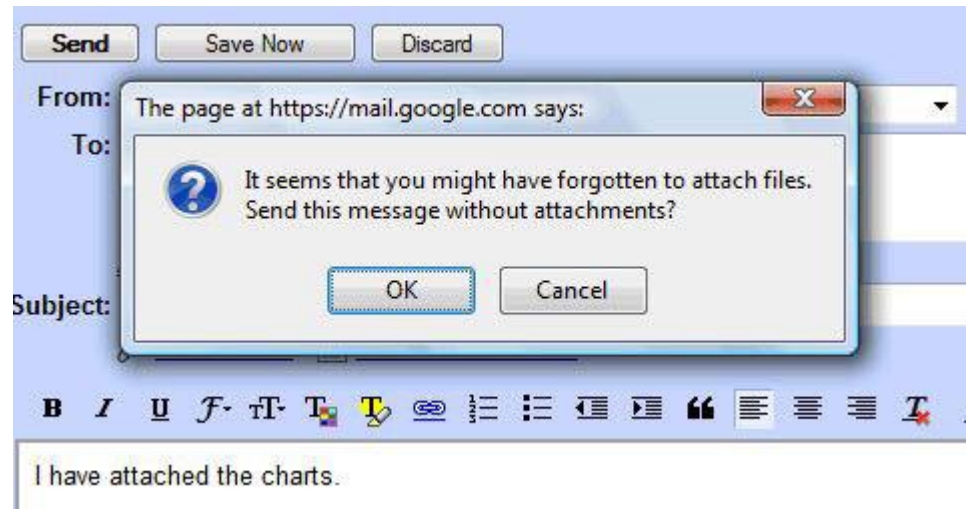
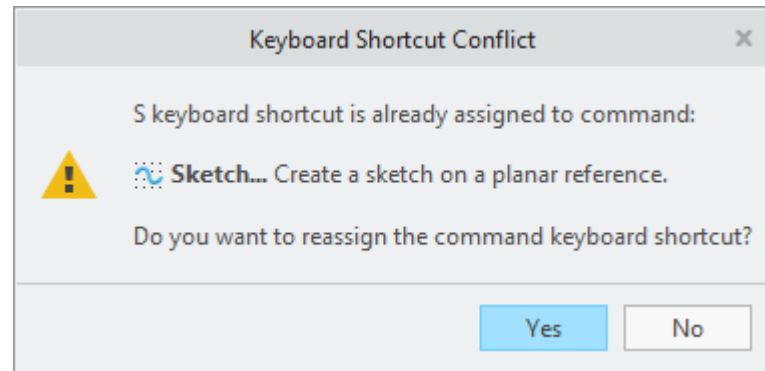
[Manage Your Profile](#)

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Microsoft

5. Error Management > Error Protection

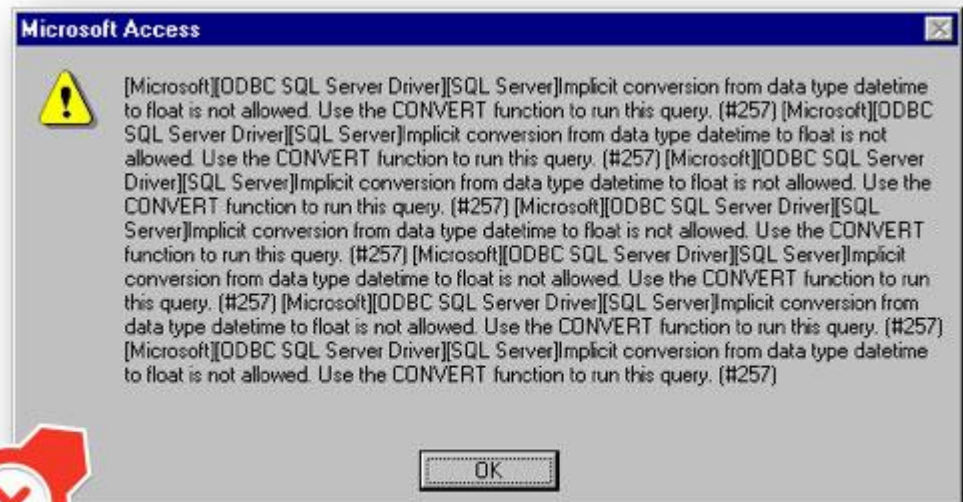
- All possible actions on an interface must be considered and more particularly accidental keyboard key presses so that unexpected inputs are detected.



5. Error Management > Quality of error message

- Message quality promotes system learning by telling users the reasons or nature of their errors and telling them what they should or should have done.

For example, The error message must be readable and perfectly understandable



5. Error Management > Quality of error message

- If the user selects an invalid function key, no action should result other than a message indicating the functions appropriate for that step in the transaction. Provide task-oriented error messages.

Code erreur : 401

Page protégée
Vous devez être identifié pour pouvoir accéder à cette page.

Accéder à mon compte

Accès non autorisé
Vous n'avez pas l'autorisation d'accéder à .

Nom d'utilisateur :

Mot de passe :

[Mot de passe oublié ?](#)

[» CONNEXION](#)

Pourquoi posséder un compte ?

Pourquoi posséder un compte ?

En créant un compte gratuitement sur notre site Internet, vous pourrez avoir accès à un maximum d'informations sur notre territoire et être tenu informé de l'actualité, recevoir notre lettre d'information électronique et des sms sur votre mobile, donner votre avis sur les sondages en ligne, voire participer à d'éventuels jeux concours.

Pour créer un compte sur notre site Internet, rien de plus simple !

Vous devrez saisir votre e-mail et choisir un mot de passe. Ils vous permettront ensuite d'accéder à votre compte pour le modifier ou le supprimer. Cet espace sécurisé vous permettra de gérer vos données personnelles.

N'hésitez plus, créez votre compte en seulement quelques minutes !

[» S'INSCRIRE](#)

Rapport de problème pour Paparazzi!

Paparazzi! a quitté de manière imprévue.

Cliquez sur Relancer pour rouvrir l'application. Ce rapport sera envoyé automatiquement à Apple.

Commentaires

[Afficher les détails](#) [OK](#) [Relancer](#)

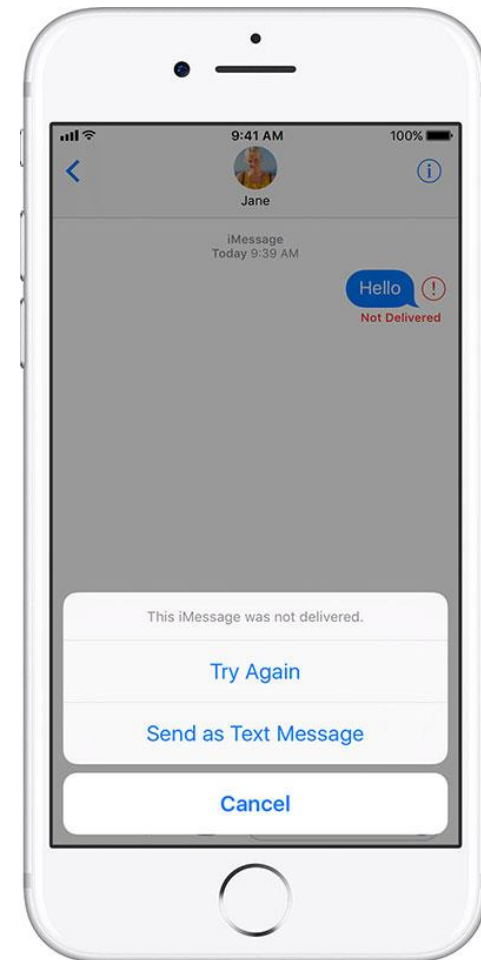
Confirmation

Vous devez saisir le nom du client

[OK](#)

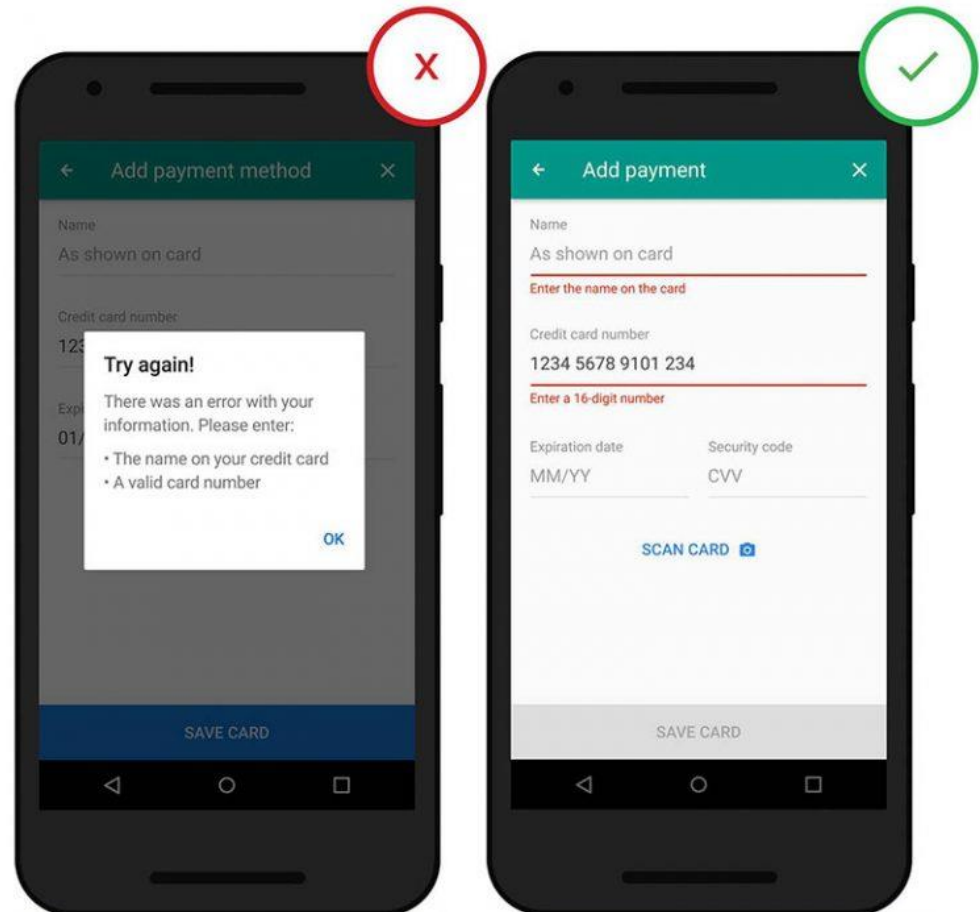
5. Error Management > Quality of error message

- Avoid messages inviting you to try again without indicating the reason for the failure.



5. Error Management > Quality of error message

- Adopt neutral, non-personalized, non-reproachful vocabulary in error messages.



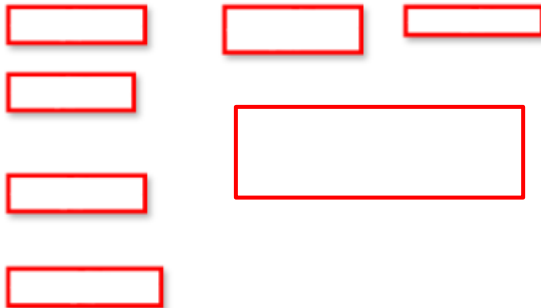
6. Consistency / Homogeneity

- The criterion *Consistency* refers to the way interface design choices (codes, naming, formats, procedures, etc.) are maintained in similar contexts, and are different when applied to different contexts.
- Procedures, labels, commands, etc., are all the better recognized, located and used if their format, location, or syntax is stable from one screen to another, from one session to another. Under these conditions the system is more predictable and the learning more generalizable; errors are reduced.
- Lack of consistency can significantly increase search time.
- Lack of uniformity is also an important reason for refusal of use.

6. Consistency / Homogeneity

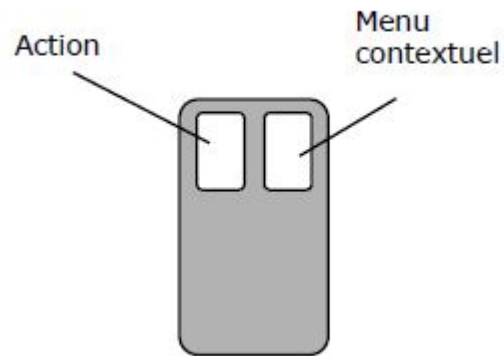


Chaos creates
stress



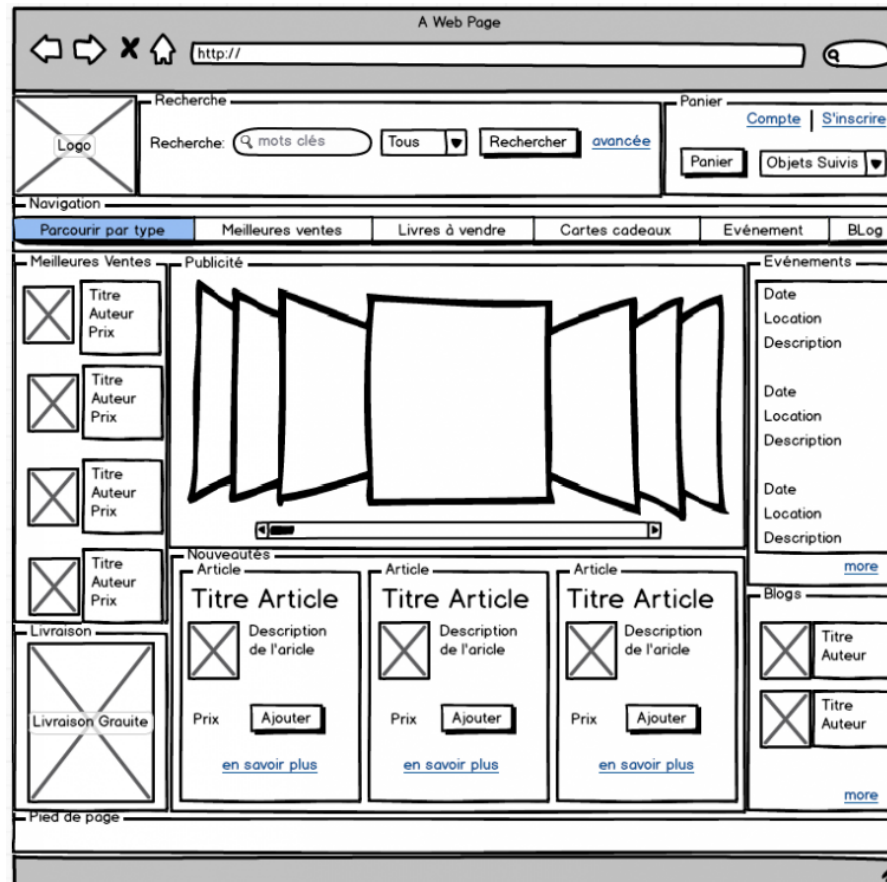
6. Consistency / Homogeneity

- Mouse button semantics



6. Consistency / Homogeneity

- Web page templates



6. Consistency / Homogeneity

- Are the data presentation formats consistent?

1. Poids et Taille

Poids 
53 kg
(Poids - 25/05/2012)

Taille 
190 cm
(Taille - 25/05/2012)



Evénement

Type

Titre

Lieu

Date de début : :
Date de fin : :
Fréquence Fin de répétition

Toute la journée

Description

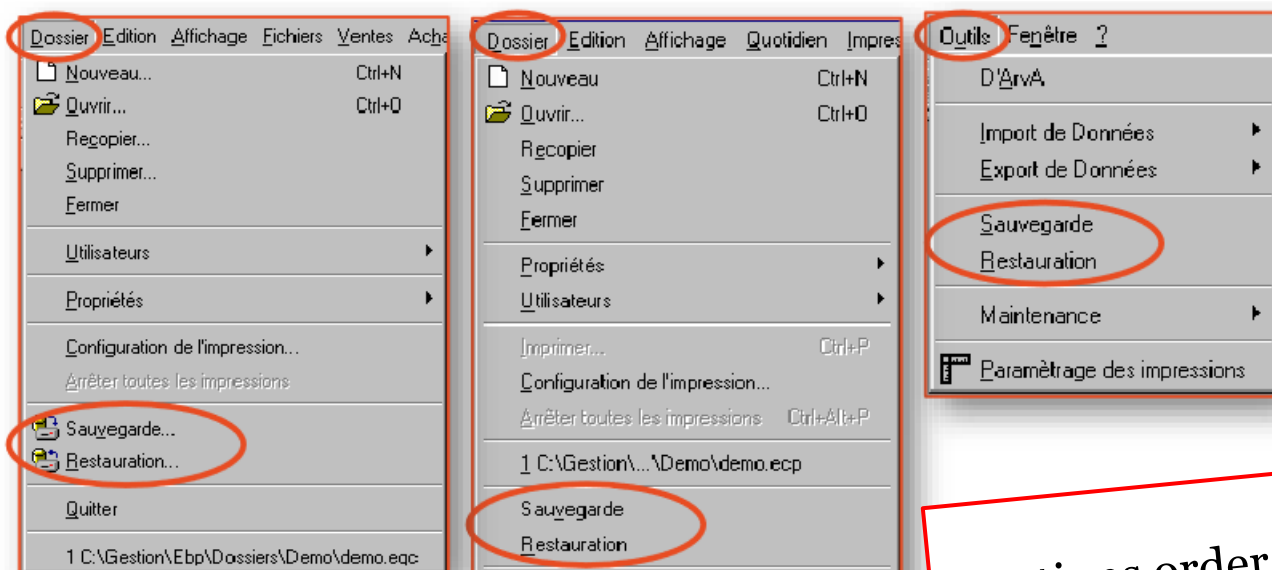
Présents



Buttons order

6. Consistency / Homogeneity

- Are the data presentation formats consistent?



6. Consistency / Homogeneity

- Warning: not moving commands
- Example Microsoft office



Office 2010



Office 2007



6. Consistency / Homogeneity

Other examples of recommendations

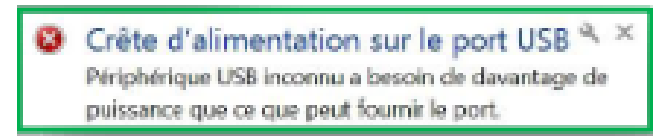
- The format of data entry fields must always be the same.
- Similar localization of window titles.
- Consistency between the window title and the item chosen in the menu.
- Similar procedures for accessing menu options.
- Similar screen formats.
- Is the window arrangement similar (model)
- Are colors, icons and fonts used consistently?
- Is a uniform vocabulary used across all windows?
- Is the mouse operation consistent?

7. Significance of code

- The criterion *Significance of Codes* qualifies the relationship between a term and/or a sign and its reference. Codes and names are significant to the users when there is a strong semantic relationship between such codes and the items or actions they refer to,
- When encoding is meaningful, recall and recognition are better. In addition, codes and names that are not meaningful to users may suggest inappropriate operations and thus lead to errors. .

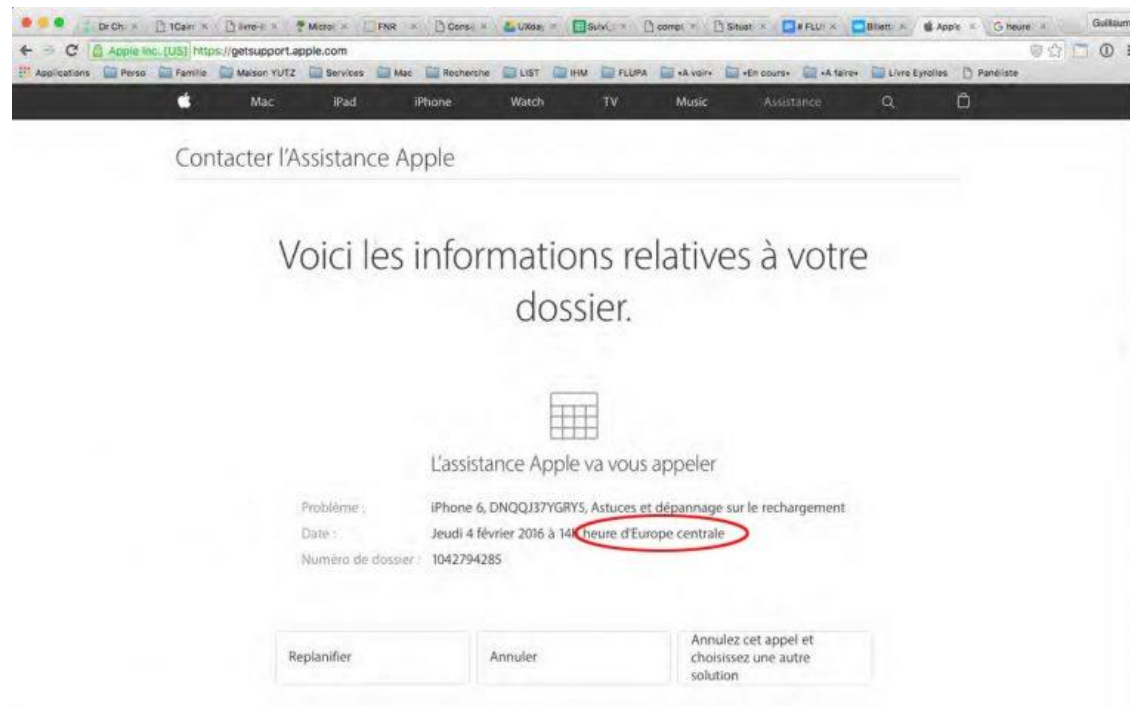
7. Significance of code

- Titles must convey what they represent, and be distinct.
- Make abbreviation rules explicit.



7. Significance of code

- Use meaningful and familiar codes and names rather than arbitrary codes and names. Avoid the mention below “Central European Time” which means nothing to most of us.



8. Compatibility

- The criterion *Compatibility* refers to the match between users' characteristics (memory, perceptions, customs, skills, age, expectations, etc.) and task characteristics on the one hand, and the organisation of the output, input, and dialogue for a given application, on the other hand.
- The criterion Compatibility also concerns the coherence between environments and between applications.
- **The transfer of information from one context to another** is all the more rapid and efficient as the volume of information to be recoded by the user is reduced.
- **Performance is best** when information is presented in a directly usable form.

8. Compatibility

- The left menu bar takes advantage of the functional similarity between commands, but it requires the user to open a new menu for each operation.
- On the contrary, the organization on the right, modeled on the task, allows you to find all the commands relating to a subtask in the same menu.

Éditer ▾	Imprimer ▾	Envoyer ▾
Ventes	Ventes	Ventes
Commandes	Commandes	Commandes
Stocks	Stocks	Stocks

Ventes ▾	Commandes ▾	Stocks ▾
Éditer	Éditer	Éditer
Imprimer	Imprimer	Imprimer
Envoyer	Envoyer	Envoyer

8. Compatibility

- The order of the input fields must correspond with the user's habits. **Compatibility problem:** a French user is likely to make a mistake when entering the postal code.

Company:	<input type="text"/>
Industry Sector:	Select One <input type="button" value="v"/>
Address:	<input type="text"/>
	<input type="text"/>
City	<input type="text"/>
State/Province	<input type="text"/>
Zip:	<input type="text"/>
Country:	United States <input type="button" value="v"/>

Note: We respect electronic privacy and will NOT give out your name and address under any circumstances.

8. Compatibility

- Adaptation of the interface according to user habits.

Taking into account the compatibility criterion : The form adapts according to the nationality of the user.

The image shows two versions of a shipping form, one for the United Kingdom and one for France, demonstrating how the interface adapts to the user's nationality.

United Kingdom Version:

- Radio buttons: Postage is not required (e.g. online download, Gift Voucher or payment for a service). Postage is required (Please enter address below).
- Country: United Kingdom (dropdown menu) [Select Country button]
- (Billing and postal address must be in the same country.)
- Form fields: First Name, Last Name, Postal Address 1, Postal Address 2 (optional), Town/City, County (dropdown menu: -- England --), Postal code.

France Version:

- Radio buttons: L'envoi n'est pas nécessaire (téléchargement en ligne, chèque-cadeau, paiement pour un service, etc.) L'envoi est nécessaire (veuillez entrer l'adresse ci-dessous)
- Pays: France (dropdown menu) [Sélection d'un pays button]
- Livraison et facturation doivent être dans le même pays.
- Form fields: Prénom, Nom, Adresse de livraison 1, Adresse de livraison 2 (facultatif), Code postal, Ville.

8. Compatibility

- Units **of measurement** should be those normally used.

SERVICES		Express	06 PAL								
Service	Express	EXPRESS									
Véhicule	06 PAL	MINI TRUCK Longueur intérieure : 3,43 m Hauteur intérieure : 1,96 m Largeur intérieure : 2,07 m Volume utile : 6 euro palettes - 15,09 m ³ Charge utile : 800 kg Poids max. Hayon : 700 kg									
<input type="checkbox"/> Bt. aux lettres											
SPECIFICATIONS		2 colis	3 palettes	420 Kg	FRAGILE						
		Nbr de colis	2	Nbr de palettes	3						
Poids	420.00	kg	Longueur	120	cm	largeur	100	cm	Hauteur	140	cm
<input type="checkbox"/> Contre remboursement											
Remarque :	FRAGILE										

8. Compatibility

Other recommendations

- The organization of the information displayed must conform to the organization of the data to be entered.
- Dialogue procedures must be compatible with the order as the user imagines it or is used to it.
- The terms used must be familiar to users and relative to the task to be performed.
- The display of text on the screen must conform to the conventions used for the presentation of texts on paper.

Summary

- Bastien & Scapin's criteria are references in computer ergonomics and in the design of user-centered HMI interfaces.
- These criteria adapt to different uses and are suitable for carrying out simple and rapid expert evaluations, even by non-specialists.
- These evaluation criteria are encapsulated in an analysis grid containing 8 ergonomic criteria, with the aim of revealing usability problems that make interaction with the UI interface less interesting and more complicated.



Questions?