Design Guidance Exploration

Abbreviations and Acronyms in Free Text Input

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Prepared by
Microsoft

Microsoft

PREFACE

Documents replaced by this document

Document Title	Version
None	

Documents to be read in conjunction with this document

Document Title	Version
Design Guidance Exploration – Abbreviations and Acronyms	1.0.0.0

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1 INTRODUCTION

This document acts as APPENDIX C to the document *Design Guidance Exploration – Abbreviations and Acronyms* **{R1}**, and explores a possible design approach for handling free text input in clinical applications. This approach conforms to current practices within safety critical systems.

1.1 Design Suggestion

The suggested design is that, when a user enters free text into a clinical application, the application should:

- Alert the user to any unexpanded abbreviations and acronyms
- Avoid restrictions that could cause the user to circumvent the clinical application
- Warn other application users of any remaining unexpanded abbreviations and acronyms

This design would notify all users about any abbreviation and acronym ambiguities in free text input, and prompt them to take appropriate action.

1.2 Design Details

To conform to this design approach, clinical applications which provide free text input should:

- Alert a user to the presence of unexpanded abbreviations and acronyms in the text input after he finishes entering the information but before storing the text
- Offer potential expansions for unexpanded abbreviations and acronyms in a simple fashion
- Insert expansions for abbreviations and acronyms into the text once the user selects the correct term
- Avoid errors by not offering default expansions for abbreviations and acronyms, which the user could select by accident
- Preserve the flow of user input when offering expansions and alerts. For example, a background task could check text on entry but only alert the user to ambiguities when he stores the text or moves to the next input field
- Prevent the storage of known dangerous acronyms or abbreviations
- Alert users to the presence of unexpanded abbreviations and acronyms. These alerts make users aware of the risk, and prompt them to make an informed decision about the interpretation of the unexpanded acronym

1.3 Patient Safety

Unambiguous presentation of abbreviations and acronyms promotes patient safety by minimising the probability of confusion between similar terms. The approach that this document suggests significantly enhances patient safety by enabling clinical applications to:

- Display a warning when users enter text containing ambiguous or misleading abbreviations or acronyms
- Avoid display of ambiguous or misleading abbreviations and acronyms
- Display a warning when reading text that ambiguous items are present. This warning helps the user to avoid acting on an incorrect interpretation of the original author's intent, with possible undesirable consequences for the patient

2 Sample Views

Figure 1 shows an illustration of the design identified in this document.

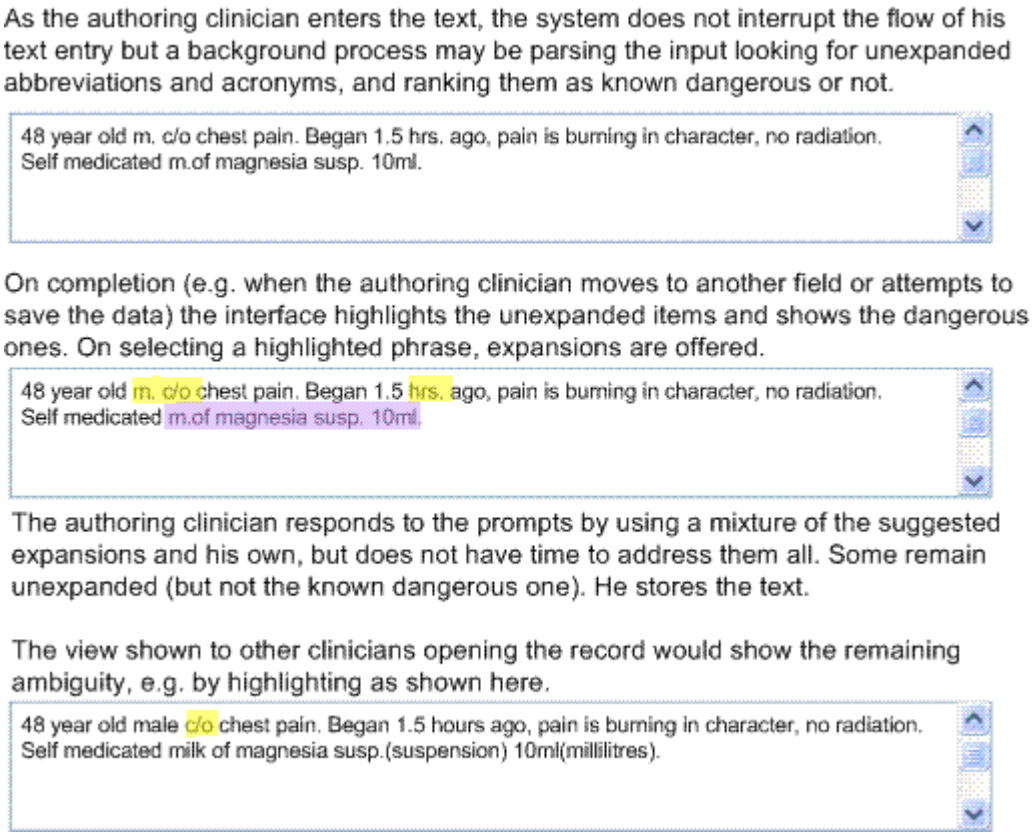

Figure 1: How Unexpanded Abbreviations and Acronyms May Be Handled

> **Note**
>
> Figure 1 is only a simple illustration of the design principles; it is not intended to prescribe any particular interaction. This design suggestion does not mandate the use of a text box or this highlighting style, nor does it specify the interaction for selecting the correct expansion for an abbreviation or acronym.

3 ACCESSIBILITY

The detailed accessibility considerations for this design guidance depend on the precise design adopted to adhere to the advice given. However this design must address several issues:

- The interface that alerts the user to the presence of unexpanded terms and allows users to select the next unexpanded term must allow use by screen reader users, and those who prefer or require keyboard or other input devices rather than mouse input
- The difference between non-dangerous and dangerous unexpanded terms must be apparent to users that cannot distinguish colours

4 RESEARCH

Freeform patient notes are one of the most common areas of medical record-keeping, and are likely to become increasingly computerised over the coming years. This change requires free text input handlers in clinical applications that can deal with abbreviations and acronyms.

The challenge of interpreting shorthand terms is particularly evident in handover scenarios in hospitals. In these scenarios, misinterpretation of abbreviations or acronyms can endanger patient safety.

V. Hoban **{R2}** makes the following observation:

"When handing over information between colleagues, the avoidance of jargon and explanation of abbreviations is essential".

The British Medical Association's Junior Doctor's Committee guidance on clinical handover for clinicians and managers **{R3}** echoes this advice. Clinical applications need to address this potential hazard and should reduce the possibility of misinterpretation.

Clinical applications should allow busy clinicians to use abbreviations during note-taking, while preventing or mitigating the consequences that could result from the display of abbreviations and acronyms which users can misinterpret. Research in safety critical systems by Professor James Reason **{R4}** presents a useful approach to thinking about how such systems work with people in those organisations with the best safety records. Professor Reason calls these "High Reliability Organisations".

"High reliability organisations are the prime examples of the system approach. They anticipate the worst and equip themselves to deal with it at all levels of the organisation. It is hard, even unnatural, for individuals to remain chronically uneasy, so their organisational culture takes on a profound significance. Individuals may forget to be afraid, but the culture of a high reliability organisation provides them with both the reminders and the tools to help them remember."

"For these organisations, the pursuit of safety is not so much about preventing isolated failures, either human or technical, as about making the system as robust as is practicable in the face of its human and operational hazards. High reliability organisations are not immune to adverse events, but they have learnt the knack of converting these occasional setbacks into enhanced resilience of the system."

This observation implies that computerised systems achieve the best safety results when they put "reminders and tools" in place which aid the organisational culture in helping clinicians remember when to be "afraid" at the right time.

Thomas Nolan extends this idea **{R5}** and states that:

"Although errors cannot be reduced to zero, the aim of the system should be to reduce to zero the instances in which an error harms a patient. A safe system has procedures and attributes that make errors visible to those working in the system so that they can be corrected before causing harm."

This statement leads to the conclusion that safe handling of abbreviations and acronyms should ensure that the application highlights potentially hazardous unexpanded items to the user. Even a time pressured user should then be aware of any ambiguity and be able to view possible alternative meanings.

5 Document Information

5.1 Nomenclature

This section shows how to interpret the different styles used in this document to denote various types of information.

5.1.1 Body Text

Text	Style
Code	`Monospace`
Script	
Other markup languages	
Interface dialog names	**Bold**
Field names	
Controls	
Folder names	Title Case
File names	

Table 1: Body Text Styles

5.1.2 Cross References

Reference	Style
Current document – sections	Section number only
Current document – figures/tables	Caption number only
Other project documents	*Italics* and possibly a footnote
Publicly available documents	*Italics* with a footnote
External Web-based content	*Italics* and a hyperlinked footnote

Table 2: Cross Reference Styles

5.2 References

Reference	Document	Version
R1.	Design Guidance Exploration – Abbreviations and Acronyms	1.0.0.0
R2.	"How to…handle a handover", Hoban V., The Nursing Times 99(9): 54-5	
R3.	"Safe handover: safe patients. Guidance on clinical handover for clinicians and managers", Junior Doctors Committee of the BMA, with the National Patient Safety Agency: http://www.bma.org.uk/ap.nsf/Content/Handover?OpenDocument&Highlight=2,handover	x.0.0.0
R4.	"Human error: models and management", James Reason, BMJ 2000;320:768-770 http://bmj.bmjjournals.com/cgi/content/full/320/7237/768	
R5.	"System changes to improve patient safety", Thomas W Nolan, BMJ 2000;320:771-773 http://bmj.bmjjournals.com/cgi/content/full/320/7237/771	

Table 3: References