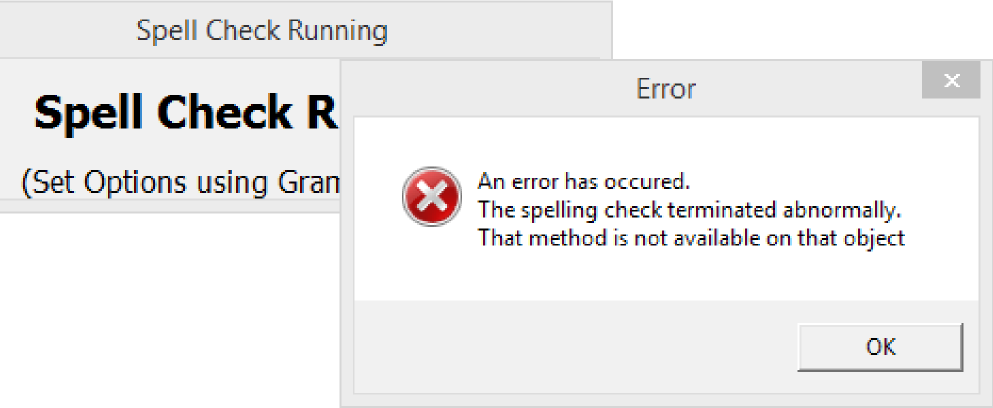
CPRS ENHANCED WITH OPEN SOURCE SPELL CHECKER

@ 31 WorldVistA Meet @ GMU, Fairfax, VA (01 June 2015)

a brief by Sunil Kumar Arora

The Issue

- CPRS depends upon MS Office for Spell-Check feature.
- With Office 2010, MS changed their Automation. Since than some of the errors encountered while invoking Spell-Check in CPRS with newer Office versions are like:



Spell Check Running

Spell Check R

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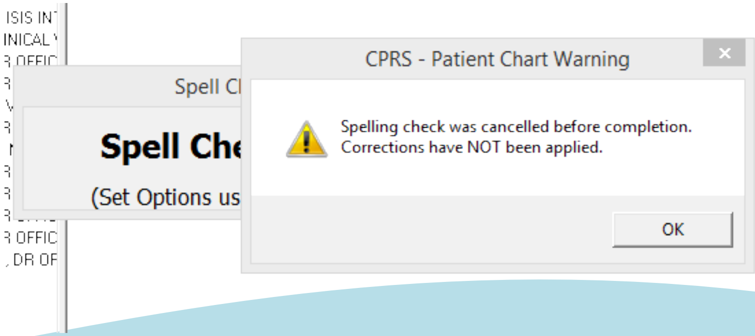
Error

An error has occured.
The spelling check terminated abnormally.
That method is not available on that object



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CPRS - Patient Chart Warning

Spelling check was cancelled before completion.
Corrections have NOT been applied.

Options

1. Easiest for a developer but least graceful: Ensure that older Office version is present and running on client system
2. If required MS-Office version is not found on system then “Disable” spell-check and let users take care of Spellings by themselves.
3. Find some other COM server and replace MS Office automation with that. It would solve the current issue but dependency on external application and point of failure would continue.
4. Find some Delphi Native library and implement it in CPRS source code. Most of the available ones are COTS and not preferable to be used in open source project like CPRS.
5. Explore as how other Open-Source projects were providing this feature & follow the same. Found that most such projects rely upon Open-Source project named HunSpell. Following this approach looked like most logical alternative.

http://hunspell.sourceforge.net

- Hunspell is a spell checker Library & morphological analyzer designed for languages with rich morphology & complex word compounding & character encoding.
- Its main developer is László Németh & its current version is 1.3.3.
- Its sponsors are OpenTaal Foundation & Dutch Language Union.
- Its original sponsor in 2003-05 was Budapest Technical University Media Research Center.
- It is relied upon by LibreOffice, OpenOffice.org, Mozilla Firefox, Google Chrome, Safari and many others. It is also part of Mac OS X (Snow Leopard and later versions) and has been ported to Android.
- Its C++ library available under GPL/LGPL/MPL tri-license.

What does it do

- It works like an automated dictionary.
- Application invokes it with one single word and it answers back if the given word is spelled correctly or not.
- If, it fails to find the word in currently loaded dictionary then it can analyze the word morphologically and return few suggestions, if available in dictionary.
- That is all, it does. It does not care as how users or applications display or loop-through or highlight or respond to responses or any events.

What It does **not** do

- It does not care about or get involve in any user interface or text manipulation.
-
- Nor it concerns itself with body of text; it just works on “Single-Word” inputs.
- Nor it worries as how application manages or uses the list of alternatives, it gives for any misspelled word.
- Also it does not care about newly added words by the users after its current sessions. If those new words need to be used in next session then application need to implement the functionality of saving and loading those custom words.
- There are no functions like “Change” or “Change All” or “Ignore” or “Ignore All” in the SpellCheck engine by itself.
- All these functions, if required needs to be taken care of by developer (like me) of calling application (like CPRS)..

Points of impact

As per my limited knowledge and understanding, following screens / forms in the CPRS expose the Spell Check feature and are the one where my modifications would have some affects:

- Consults
- Discharge Summary
- Notes
- Surgery
- Template Editor
- Template Fields Editor

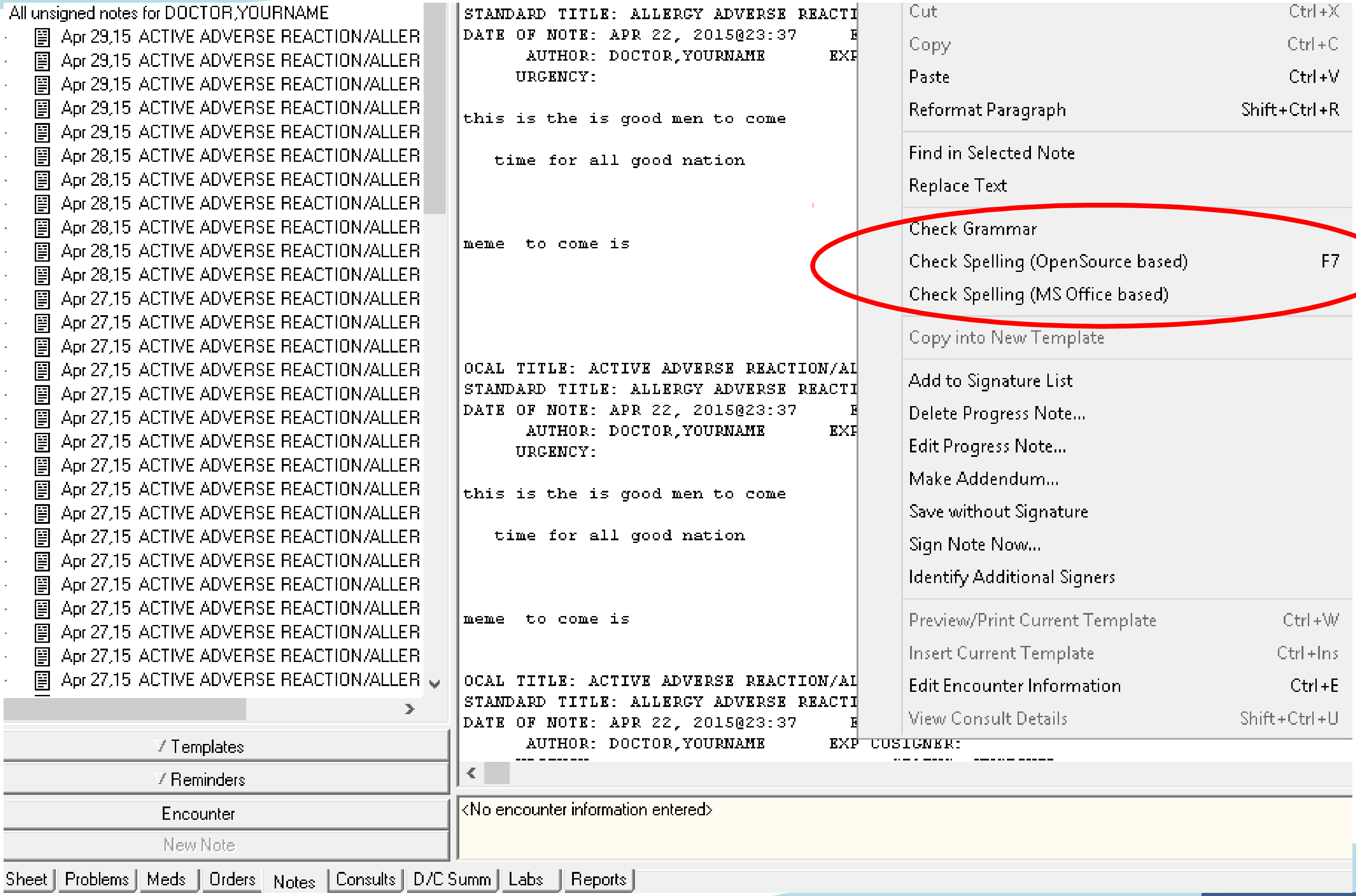
The route to fix & the alternative

- First to do the minor modifications in CPRS source, so that where ever possible, MSOffice based automation continues to work even with newer version (except Click-To-Run or Office 365 or such cloud based versions).
- As an alternative to MS office based solution and also to reduce external dependency of CPRS, implement the alternative solution using HunSpell library.
- As the HunSpell port to Delphi was minimal, so first create a Delphi based wrapper component/class with all the required functionalities as a separate task and keep everything compartmentalized. This would ensure that code changes to CPRS source base could not only be kept as simple and as minimal as possible, but more importantly are not disruptive for anything else.

Implementing the change

- First of all applied the small fix for newer Office versions in one single source unit of CPRS (uSpell.pas).
- Created a Native Delphi wrapper class for HunSpell library with all the required functionality, created a small Demo project and all together released it for general Delphi Developers community. This has nothing to do with CPRS.
- Pick up the above Delphi Wrapper and just like any other non-visual control available in any Object Oriented Development IDE, dropped it in a new Dialog screen (for 508 compliance) and hooked up few single liner functions.
- Added a new Menu-Item for all the related screens/dialogs to invoke this new Open-Source based Spell Check

Preview of HunSpell in CPRS



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All unsigned notes for DOCTOR,YOURNAME
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DATE OF NOTE: APR 22, 2015@23:37     E
      AUTHOR: DOCTOR,YOURNAME       EXP
     URGENCY:

this is the is good men to come

   time for all good nation



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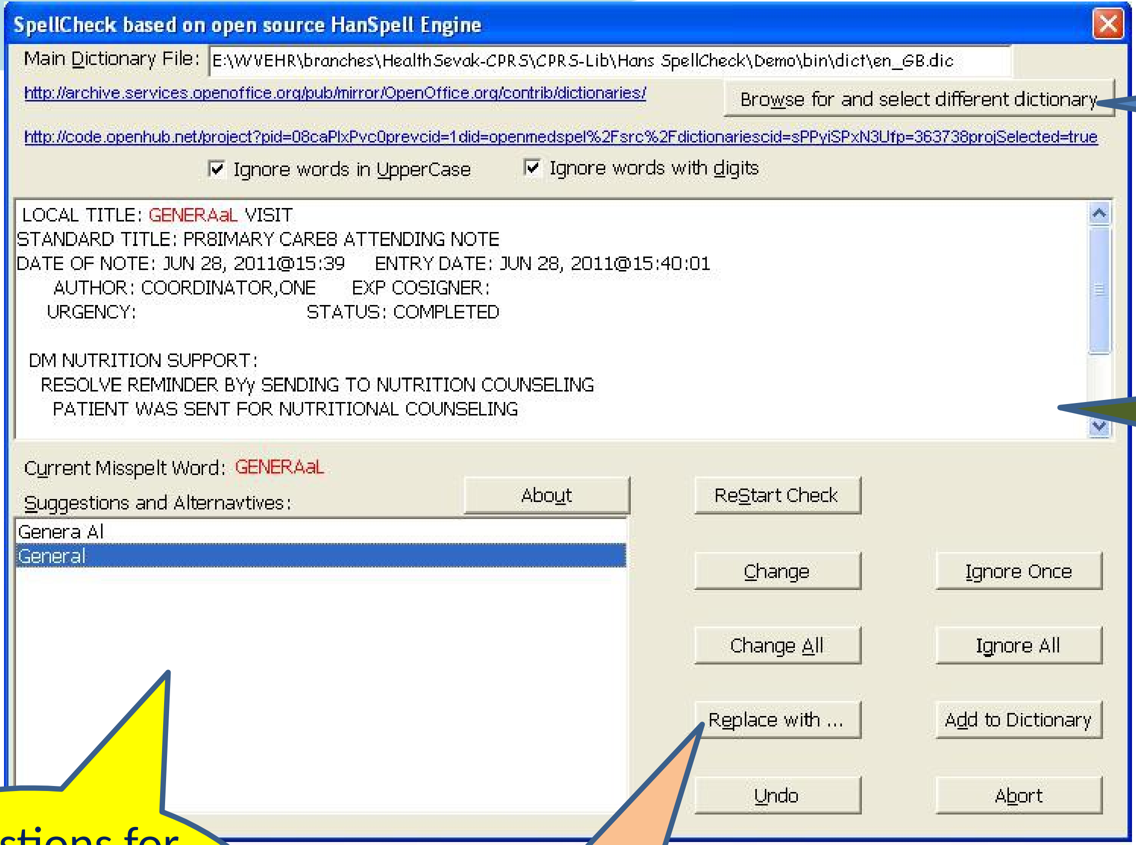
HunSpell in CPRS



SpellCheck based on open source HanSpell Engine

Main Dictionary File: E:\WVEHR\branches\HealthSevak-CPRS\CPRS-Lib\Hans SpellCheck\Demo\bin\dict\en_GB.dic

http://archive.services.openoffice.org/pub/mirror/OpenOffice.org/contrib/dictionaries/

Browse for and select different dictionary

http://code.openhub.net/project?pid=08caPlxPvc0prevcid=1did=openmedspel%2Fsrc%2Fdictionariescid=sPPyiSPxN3Ufp=363738projSelected=true

☑ Ignore words in UpperCase ☑ Ignore words with digits

```
 LOCAL TITLE: GENERAaL VISIT
STANDARD TITLE: PR8IMARY CARE8 ATTENDING NOTE
DATE OF NOTE: JUN 28, 2011@15:39     ENTRY DATE: JUN 28, 2011@15:40:01
      AUTHOR: COORDINATOR,ONE      EXP COSIGNER:
     URGENCY:                        STATUS: COMPLETED

  DM NUTRITION SUPPORT:
    RESOLVE REMINDER BYy SENDING TO NUTRITION COUNSELING
      PATIENT WAS SENT FOR NUTRITIONAL COUNSELING
```

Current Misspelt Word: GENERAaL

Suggestions and Alternavtives:

Genera Al
General

User can easily change dictionaries

Text to be spell checked: User can type in corrections too

Suggestions for correcting mis-spelt word, user can double click for speedy change

User can also specify their own words as corrections

.....a work in progress..........to be Continued...

On Drawing board

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- To provide Live Spell check while typing.
- May be, push user preferences and custom dictionary to server in some global. This would be something like roaming profile.
- Add support for grammar check.
- Add support for something like “Macro Words” or “dot Phrases”.

Thank you

HealthSevak

?Questions and suggestions please………

For any further information and/or clarification please do contact me:

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