CASE STUDY

Online publishing solution for NRMA Insurance Limited

NRMA Insurance Ltd commissioned Step Two Designs to develop a leading online help documentation system built around XML.

This system has allowed NRMA Insurance Ltd to produce an online help resource containing more than 14,000 pages of information. They have done so, quickly and efficiently, rapidly adjusting to changing requirements and shifts in business focus.

The business need

In 1997, NRMA Insurance Ltd initiated a major project to create a new work environment for it's front-line staff. Called "the Workbench", this development project was the key component of an overall initiative to completely transform the way it did business.

With the development of this new interface came the challenge of training and supporting the staff in their use of it. Recognising this need, a parallel project was established for the deployment of a comprehensive online help system.

Business goals

The following goals were identified:

- Communicate procedural, underwriting and sales support information to 3,000 frontline staff in NRMA Sales and Marketing.
- Deliver this information in both online and paper-based formats.
- Update the content regularly.
- Be usable, accurate and relevant.

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Knowledge management consultancy • SGML, XML & HTML

System requirements

Early investigation showed that existing help authoring tools would not scale to meet these requirements. It was therefore determined that a new tool would need to be developed.

This tool would have to encompass many different aspects of content management:

- Creation of content (authoring)

  A powerful, but easy-to-use, interface is needed, to support multiple authors working simultaneously on very large repositories of information.

- Description of the content (metadata tagging)

  A considerable amount of information needs to be captured about each topic, including: title, location, index terms (keywords), related topics, and special layout options.

- Change and update of content (editing)

  It must be possible to rework and restructure the library, without difficultly, and without generating broken links.

- Display of information in a consistent format (template)

  All output is generated via a publishing system that is based around templates and stylesheets. This ensures consistency across all pages, and allows powerful navigation aids to be built-in without requiring any extra work by the authors.

- Output in three formats (flexible delivery)

  A single source (the XML) is used to publish three different outputs: Windows Help, HTML and Word. There must be support for additional formats as required.

Technologies

Several tools and technologies were identified as being able to support these requirements:

- Database

  The use of a database to store the content and metadata supports powerful searching, and allows the system to guarantee consistency across all topics (no broken links).

- SGML/XML

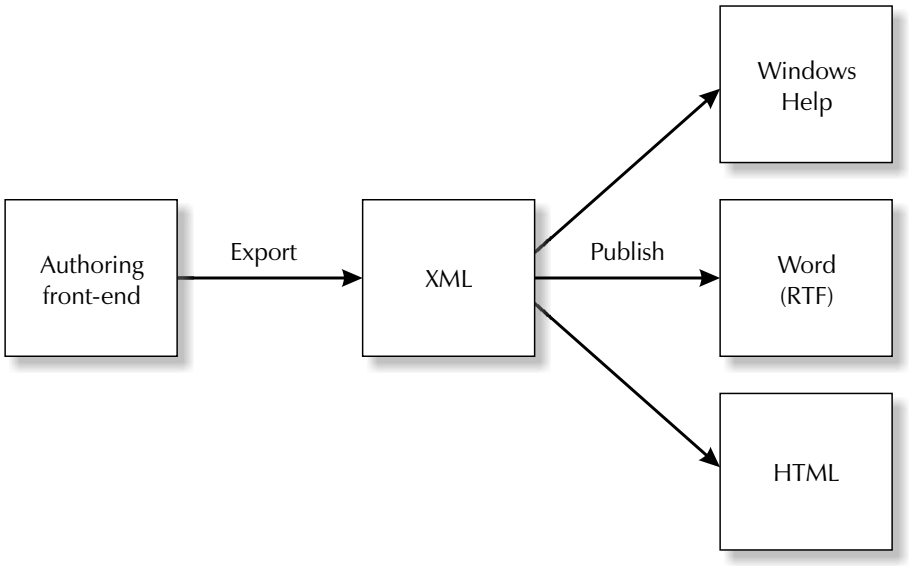
  XML is a highly structured format that is ideally suited to single-source publishing. By capturing all the information in a single file, it ensures that the publishing engine has all the required information at its fingertips.

- Omnimark

  This is the processing language of choice for SGML and XML. Using this tool, it is easy to create very different outputs (such as Windows Help and HTML), while supporting future enhancements and updates.

The solution

Having evaluated the requirements and constraints, the following high-level design was developed:



Each of these components is summarised in this section, and then discussed in greater detail in the following sections.

Authoring interface

This is a complete authoring and management environment, developed using Borland Delphi. It provides a seamless interface in which the authors can enter content and metadata, as well as create, delete and restructure topics. It provides many tools, navigation aids, and reports.

All information is stored in the underlying database, which provides much of the searching and navigation in the front-end interface.

Using this interface, multiple authors can simultaneously work on the same library, without having to resort to cumbersome 'hand merging' of changes.

Publishing

The first step of the publishing process is to export the content out of the database into an XML format. This is 'cleaned up', and passed across to the publishing engine.

This engine is written using Omnimark. Using the features this language, it becomes possible to easily generate multiple outputs from a single source.

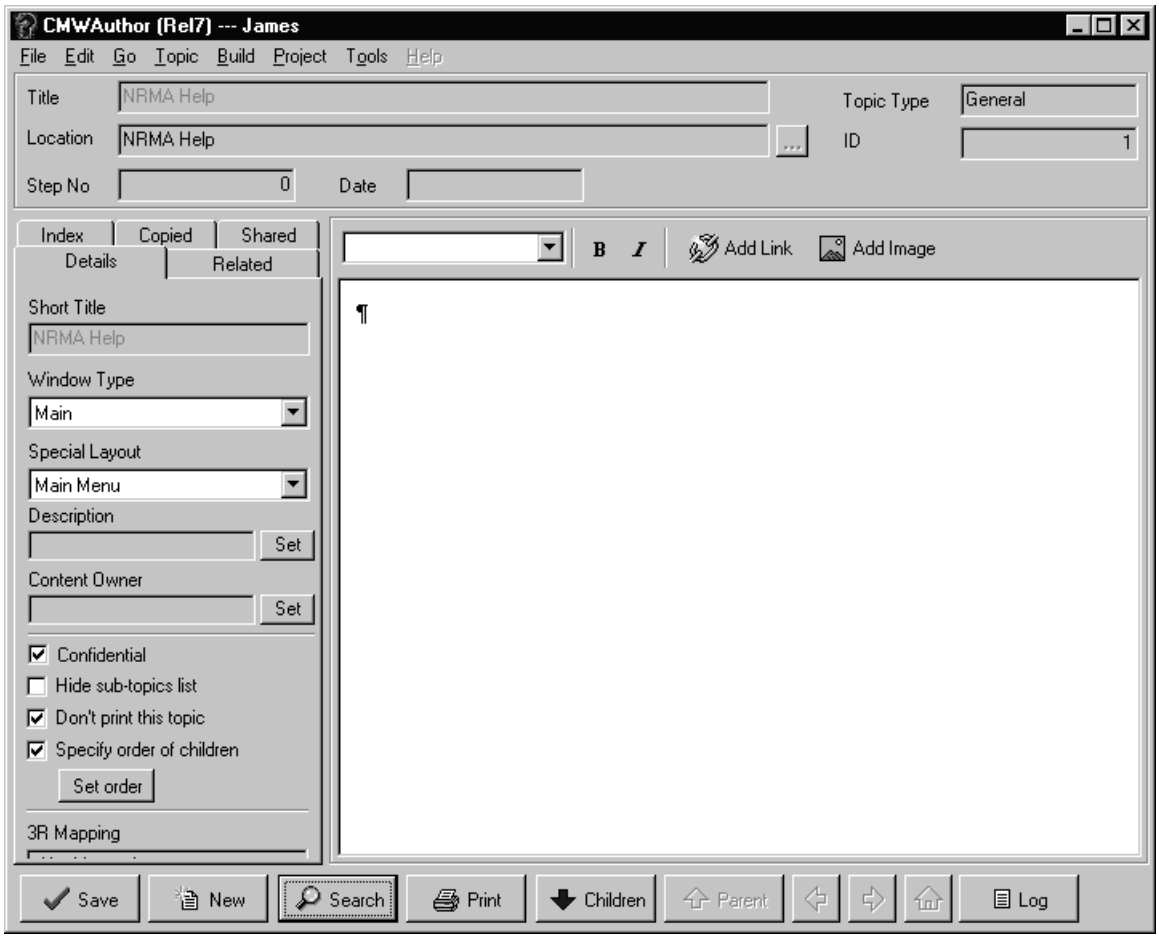
Through a combination of code, templates and stylesheets, considerable functionality is added to the output, without requiring extra effort by the authors. For example, many navigation aids are added to assist the end users, such as indexes and automatic cross-referencing.

The publishing engine allows new formats to be rapidly produced, and existing formats to be evolved to meet changing business needs.

Windows Help This was the first output format developed, and is still the most widely used (by over 3,000 frontline staff). Windows Help provides a number of valuable built-in features (such as a full-text search and index), and the automated publishing code can be used to work around many of its bugs and limitations.

HTML To meet the growth of the intranet, an HTML output was developed. This has a similar layout to the Windows Help, but reworked to take advantage of some of the additional features provided by HTML.

Word (RTF) Originally intended to be used to produce paper manuals, this output has ended up being more valuable as an aid to the review and sign-off process. By producing paper drafts, it becomes easy for the content owners to mark their changes and updates.



The user interface is distinctive in that it seamlessly combines content creation with database management of topic information. This allows the user, within the one interface, to easily:

- Author new content, using an editor which is modelled on Word.
- Create, modify and delete topics.
- Edit topic details, such as title, related topics, and index terms.
- Re-structure the knowledge library.

The interface has been developed using Borland Delphi, a 'rapid application development' environment, which allows code changes and additions to be made quickly and easily.

Rapid updates

For example, the business requested that they would like to see the content owner displayed for each section of an online manuals. This would allow the end user to easily get in touch with the relevant owner, and notify changes or errors.

In a traditional system, the only option would have been for the authors to add this information, by hand, to every single page of the manual. Such a process would require literally a week of work.

Instead, a single field was added to the interface, and the publishing code updated. The total time spent: less than four hours. In this way, changes to a few lines of code save literally hundreds of hours of manual work.

System features

The authoring interface provides many time-saving tools for the authors:

- A simple editing tool, integrated seamlessly with the whole interface.

  It is worth noting that the authors are provided with only a few ways of controlling the appearance of the output:

  – paragraph styles (pre-defined by the authoring team)

  – bold & italic

  – hypertext links

  – images

  In this way, the authors specify the content, leaving the formatting to the publishing engine. This ensures that the authors are focussed solely on the words, and allows the outputs to be easily updated without requiring additional authoring.
- A very large number of search and navigation tools are provided. These features are vital to ensure that libraries as large as 14,000 pages are manageable.
- Built-in reports allow progress to be tracked, and issues highlighted.
- A number of tools assist in the restructuring of the topics. Through the design of the system, it is possible to substantially rework the design of a library without breaking links.

Database

All of the information (both the content and metadata) is stored in a database. This provides considerable speed benefits, and supports the extensive searching and reporting features outlined above.

Through the use of the database, it also becomes possible to ensure that there are no broken links, regardless of the actions of the authors. In a large project, this is of paramount importance.

Publishing

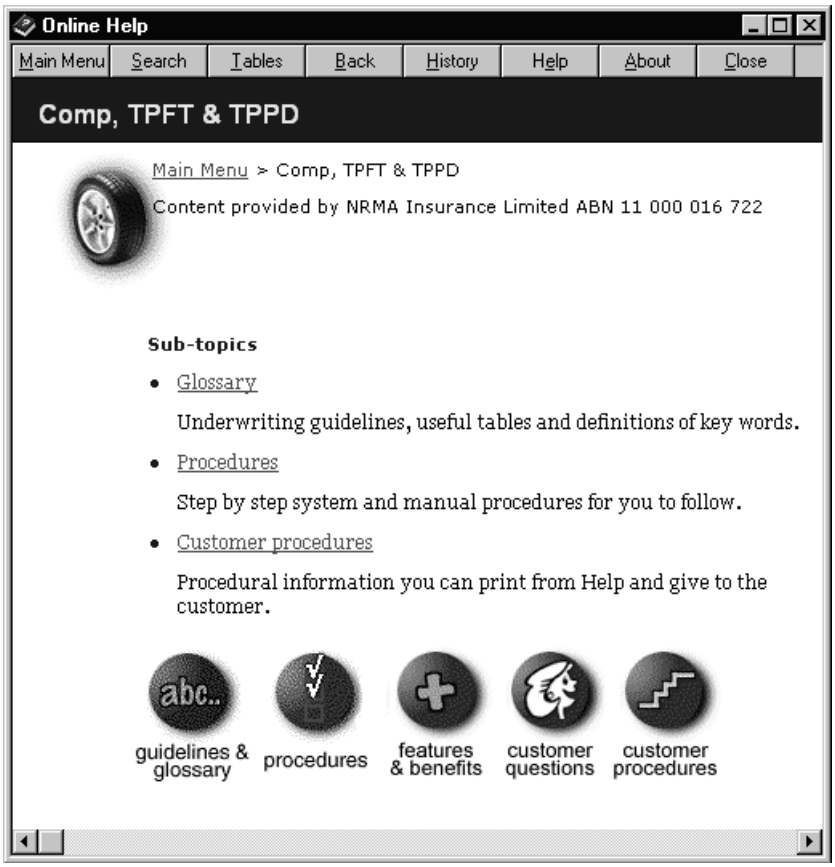
The publishing process is built around the use of XML. This is generated from the database, and provides a highly-structured format that supports a powerful publishing engine.

The engine itself is developed using Omnimark, a special-purpose SGML and XML processing language.

Some points of note about the system:

- The publishing is entirely 'hands-free', and doesn't require any tweaking or other effort by the authors.
- Through the use of XML and Omnimark, it becomes possible to add many powerful features to the output, such as indexes and automated cross-references.
- Templates and stylesheets are used to control the appearance of the output. These can be updated without requiring changes to the code.
- Each of the outputs is generated independently from the others. This allows the output to be customised according to the specific strengths and weaknesses of each format.

Overall, the publishing systems allows the output to be quickly updated by changing only a few lines of code, saving many hours of authoring.



The Windows Help is the primary output of the publishing system, and is used by over 3,000 users.

The main advantages of Windows Help are as follows:

- Shipped as a core part of Windows.
- Built-in full-text search engine and index.
- Integrates well with applications to provide context-sensitive help.
- Supports popup windows.

Windows Help is also plagued by a number of problems and limitations:

- It is a very old technology, that has very limited support for features such as images and tables.
- There are many bugs in Windows Help, and as it is no longer a supported product, these will never be fixed.
- The Help files are 'compiled' from Rich Text Format (RTF) source files, which must be carefully and accurately created.

The use of a fully automated publishing system provides many advantages when creating the Windows Help. The main benefit is that the various bugs and limitations can be worked around using 'cunning' coding.

For example, Windows Help does not support horizontal lines between rows in tables. By implementing some extra code, however, it becomes possible to simulate the same effect, without requiring the user to have any knowledge of the work-around.

Overall, the result is a Windows Help file that is highly structured, and very high quality.

The printed output was originally intended to support the continued production of paper manuals. While these manuals have been created occasionally, to a large extent, it has become possible to switch exclusively to the online version.

The Word output has, however, found a new use as part of the proofing process. When new content is written, a printed copy is created. This is provided to the content owners, who check that the meaning is accurate and clear.

The use of paper, makes it easy for the content owners to highlight errors and other updates. No electronic format provides the same simplicity and flexibility in marking up changes.

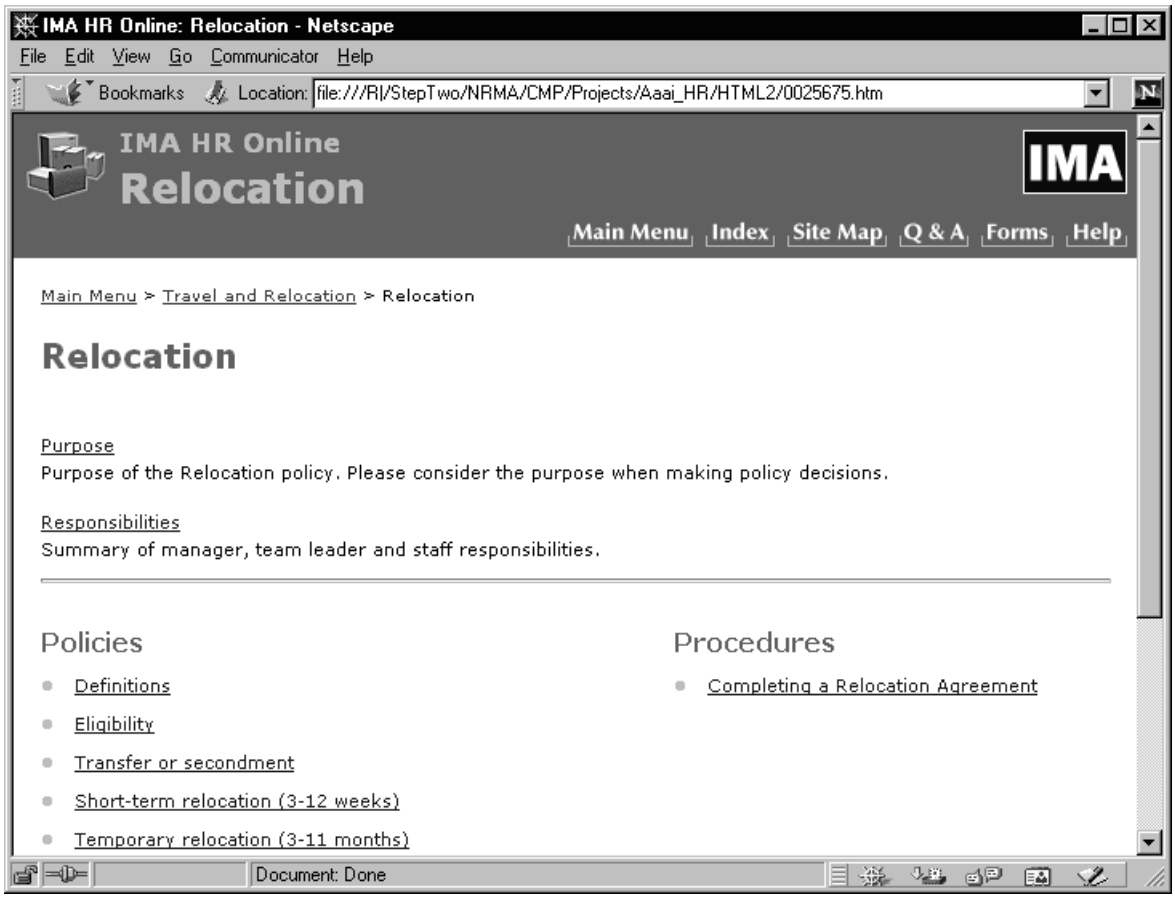
To a large extent, the Windows Help and Word files are formatted in a similar fashion. For example, the paragraph styles in Word (such as headings, bullets, etc) are the same as the Help, but in black-and-white, instead of colour.

There are a number of differences, however, between the Windows Help and the Word files:

- The content is reworked into a linear, page-by-page order.
- The overall page layout differs from the Windows Help, and incorporates headers and footers, for example.
- Cover pages, tables of contents and indexes are also generated.

These changes have been implemented to meet the particular needs of a paper output. Without hypertext links, it is necessary to support the user with other navigation methods, such as tables of contents and cross-references.

Like the Windows Help, the Word files are automatically created by the publishing system, without human intervention.



The third format generated by the system is HTML, for use on the intranet. For some knowledge libraries, the appearance of the HTML is very close to the Windows Help. For other libraries, however, the appearance has been customised to meet the needs of a different audience.

This flexibility is supported through the use of page templates and style definitions, which allow the HTML to be easily and quickly varied.

Other variations from the Windows Help have also been implemented:

- The navigation has been modified, to be consistent with standard HTML designs.
- A static index is also generated, to mimic the features built into the Windows Help format.
- The images are automatically converted from Windows Bitmap (BMP) format to GIFs.

Over time, it is expected that the HTML will surplant the Windows Help as the primary output.

Benefits

The publishing solution provides many benefits:

- The custom-written authoring interface is both simple to learn, and powerful.
- The authoring interface provides many tools for searching, reporting and restructuring. These deliver clear productivity improvements.
- The system supports very large content repositories.
- The use of structured technologies (such as XML and databases) ensures high quality output.
- All output is stylesheet-driven, allowing the appearance of paragraphs and topics to be maintained centrally.
- The appearance of the output can be updated across all pages by changing only a few lines of code. This saves hundreds of hours of manual changes by authors.

Beyond the technology

The integrated system described in this paper is only one aspect of a successful documentation project. Beyond the technology, there are skills and processes that are in many ways more important to the delivery of quality information. These include:

- Skilled staff, such as professional technical writers, editors, indexers and project managers.
- Authoring standards and processes to ensure that the authors produce consistent content across the entire library.
- Liaison with the content owners, to guarantee that all published information has been reviewed and signed-off.
- An effective feedback process, to ensure that end users are able to easily notify authors of updates or omissions.
- Rigorous application of information design and usability processes.

The future

The online publishing system has now been in place for over three years, and its use is still growing. The largest knowledge library, for example, now has over 14,000 pages of content.

With the rate of change within NRMA Insurance Ltd showing no signs of slowing, it is expected that improvements will continue to be made to the system, to allow the authoring team to meets its business needs.

In late 2000, Step Two Designs successfully competed for an open tender at the RTA, for the implementation of a Knowledge Management System (KMS).

The tender bid was built around the solution developed for NRMA Insurance Ltd, customised to meet the RTA's specific requirements. With a proof of concept phase completed, the project is well on the way to meeting its first delivery of online information to the RTA's frontline staff.

Some statistics

The largest library of information contains the front-line support information, such as policies, procedures, context-sensitive help and common questions. Some statistics on this library may be of interest:

- 14,500 pages of information (and still growing)
- 20,000 keyword entries
- 250 changes per week
- 1,200 feedback items (from end users) per annum

Postscript

The following tools and technologies were used to develop this solution:

- Windows NT 4
  (client platform)
- Borland Delphi
  (for developing the front-end)
- Microsoft Access
  (for storing the authored content)
- SGML/XML
  (as an intermediate publishing format)
- Omnimark
  (for publishing the SGML into WinHelp, RTF and HTML)
- Microsoft Windows Help compiler
  (for generating the Help file)
- MKS Source Integrity
  (tracking version changes to the source code)

About the author

James Robertson is the managing director of Step Two Designs, a knowledge management consultancy based in Sydney, Australia. James specialises in XML development, information management and systems design.

CAN WE HELP?

We believe in letting our work speak for itself, which is why we have written so many articles sharing our techniques and approaches.

Beyond these articles, we can provide a range of services with the same integrity, independence, clarity and practicality.

As the leading independent knowledge management and content management consultancy in Australia, we are available for both long and short-term engagements.

Our services cover these complementary areas:

INTRANETS

* Intranet evaluation

It can be very difficult to assess the state of an intranet, without an external perspective. Using expert evaluation and usability testing, we can determine key intranet strengths and weaknesses.

* Intranet strategy

Working closely with you, we can apply our well-tested approach to identifying an intranet strategy that matches your unique environment.

CONTENT MANAGEMENT

* Content management strategy

Content management is more than just implementing the right package. Beyond the technology, the people and process aspects must be addressed if the project is to succeed.

* CMS requirements

We can help you to identify a practical and realistic set of business requirements for a content management system. Our experience and knowledge will give you confidence that all the issues have been identified.

* Evaluating CMS options

As we are entirely vendor-neutral, we can help you to assess which of the many CMS products best fits your requirements. Let us act as your advocate, asking the difficult questions, and probing key functionality.

KNOWLEDGE MANAGEMENT

* Knowledge audits

Practical techniques for identifying the key knowledge and processes in your organisation

* KM strategy

An integrated knowledge strategy ensures that individual projects (such as implementing a CMS) are consistent with overall business strategy.

USABILITY & IA

* Usability testing

We can conduct low-cost usability testing to ensure that your site is delivering real business benefits.

* Information architecture (IA)

Poor site structure is one of the biggest causes of user complaint and inefficiency. Practical IA activities will help you to determine a workable site design.

TRAINING & SEMINARS

In addition to our regular seminars on intranets and content management, we can run in-house training sessions to give you the skills and knowledge you need.

PRODUCTS

* Content Management Requirements Toolkit

Use this downloadable information package containing 112 fully-developed CMS requirements to slash your tender preparation time, and to ensure no key requirements are missed.

* An Introduction to XML for Knowledge Managers

Written by James Robertson, and published by Standards Australia, this supplement provides a practical introduction to using XML in knowledge management projects.

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