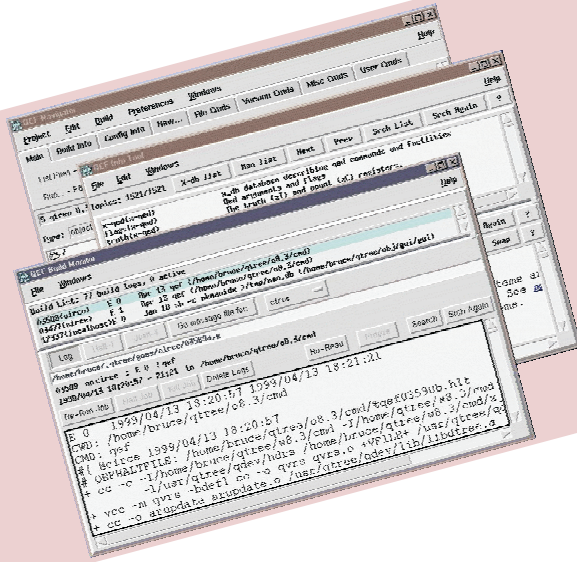# The QEF Construction System

QEF is the only software product available today designed with the single purpose of simplifying the software build process. Other products make this claim but only **QEF really** delivers. **QEF** provides comprehensive support for automating all aspects of the software construction process starting from raw source files all the way through to the finished product.

Who can benefit from QEF?

Developers, maintainers, build specialists - anyone responsible for building products whether from few or thousands of files.With its sophisticated auditing and logging it can greatly benefit industries that have strong regulatory requirements or need to meet standards like ISO 9000. Easily handling large systems with many thousands of files, **QEF** is ideal for projects with complex and/or multiplatform construction requirements.

Product Overview

A True High-Level Construction System

With **QEF** you say what you are building not how to perform each individual step. The use of high-level specifications allows an order of magnitude reduction in the size of build scripts. This results in far fewer errors and much faster deployment. Also, because you use a high level specification, it is possible to create a truly portable multi-platform build environment.

Reliable, deterministic recipe generation and configuration inspection tools guarantee that you will always know what is being built and why.

Finally, high-level specifications allow dependency generation, build auditing, logging and view-pathing to be completely transparent to the user.

Build Management

Multiple linked workspaces and build batch management tools allow multiple simultaneous builds on all platforms monitored from a single location through a simple graphical interface. Remote build facilities allow builds to be launched locally or on one or more remote machines.

QEF also includes a project server which records all locations of all workspaces automatically.

Version Control Support

The **QEF** construction suite can integrate any version control tool set. Beyond simple integration, **QEF** provides a common interface that allows you to insulate your developers from the details of any specific VC system. This insulation allows you to migrate to different version control systems as your requirements grow with little impact on your development team.

Unique Advantages

High-Level Construction

You say what you are building - a program or a library - not how to build it allowing you to truly abstract the construction process. Multi-platform support becomes trivial and, unlike *make*-style inference rules, QEF does what you expect. There are no surprises.

Hierarchical Configuration Database

QEF provides a hierarchical database of construction information that is used by **ALL** tools. This database is easy to inspect. You can always find out where, when and why a construction parameter is set, quickly and easily.

Pure, Uncontaminated Construction Environment

All construction information is taken from the configuration database including tool and library paths. The result? Builds that are immune to contamination from a particular developer's environment. All details of the build environment are well known.

True Dynamic Dependency Tracking

Dependencies are tracked with every build, through all levels of includes, not just the first one.

Complete Automatic Build Auditing

Audit trail generation is explicitly built into the tools and framework. These audit trails include full command lines with all options and full pathnames for all files recorded. All constructions are journalled so even changes in where a file is found, or in the options used to build the file result in a rebuild. And the best part? No extra effort is required on the part of the developer to set it up or to use it. It's all just built in!

Automatic Support for Separate Development Trees

The framework automatically supports separate baseline, working source, and multi-platform object and install trees without explicit programming on the part of the build engineer and without requiring you to install a new file system.

How do you build your software today?

If you ask most developers how they build their software today, they'll say "we use *make*" as though that were all there was to it.

A more accurate picture:

In practice, developers use a huge variety of tools such as batch processors for scripting, resource compilers, preprocessors and so on. The simple picture is now more complicated. An additional complication is that many of these tools are designed for general purpose use. As a consequence, they are more difficult to apply to the software construction process.

Of course, the tools don't exist in isolation and in practice you end up writing 90% of the process as a set of custom scripts and programs. For a large project, this is a major development effort that is not properly documented, debugged and *is never included in the project estimates!*
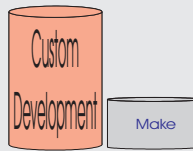
How QEF helps:

The **QEF** Construction system includes a large set of specialized tools for building software. But beyond the tools, **QEF** provides a unique framework that is designed to support large software projects. Instead of writing a custom construction environment from scratch for each project, you simply extend this framework to suit your needs.
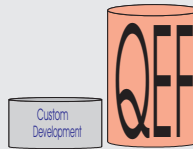
System Requirements:

Hardware Platforms:
> Compaq (DEC) Alpha AXP
> IBM RISC System/6000 family of systems
> Intel Pentium personal computers and servers
> Sun Microsystems SPARCstations and SPARCsystems
> Hewlett-Packard 9000 Series 700 and 800

Operating Systems:
> Digital UNIX 3.2
> Digital VMS/POSIX
> HP-UX 10+
> IBM AIX 4.1+
> Microsoft Windows NT 4.0
> Solaris 2.3+
> UnixWare 2.0
> Linux
> *(Other Unix/POSIX systems supported on request.)*

Memory Requirements:
> Non-RISC Systems: 32-64 MB
> RISC Systems: 64+ MB

Disk Requirements:
> 25 MB

Features:

✓ Plug-in support for all major version management systems and integrated development environments (IDEs).

✓ Complete separation of source and object (build) trees.

✓ Allows simultaneous builds for all supported platforms from a single source tree, including parallel builds for accelerated development.

✓ Centrally configurable.

✓ Build environment that guarantees which tools are used to construct your product.

✓ Has full commercial support including documentation and training.

✓ Allows the build engineer/administrator to build the product from scratch.

✓ Allows a developer to incrementally build product components safely and reliably.

✓ Explicitly identifies any contamination of the build environment that might affect product integrity.

✓ High-level construction specification supporting true single-source build specifications for multi-platform environments.

✓ Command-line and GUI user interfaces including graphical file comparison utility.

✓ True dynamic dependency tracking for all levels of include files.

✓ Includes a complete, consistent set of tools optimized for performing software construction tasks.

QEF

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