Alchemi
.NET GRID COMPUTING FRAMEWORK

Alchemi is an open source software framework that allows you to painlessly aggregate the computing power of networked machines into a virtual supercomputer (desktop grid) and to develop applications to run on the grid. Its main features include:

- Enterprise grid runtime machinery to create a high-throughput computing environment by harnessing distributed resources
  - .NET-based (Windows)
  - Voluntary execution (cycle stealing) or
  - Dedicated execution
  - LAN or Internet
- Programming environment
  - Independent grid threads (.NET API)
  - File-based jobs (input, executable, output)
- Web service for interoperability with other grid middleware
  - File-based jobs
- Monitoring, administration tools

This document contains some pointers to some case studies of applications and projects that have used Alchemi successfully to accelerate applications and benefit from Grid computing. For more information on Alchemi please visit http://www.alchemi.net/

Large Scale Document Processing [Tier Technologies, USA]

Tier (http://www.tier.com/) is a premier provider of financial transaction processing solutions that help citizens pay their obligations (such as bills, income taxes, child support) electronically and help public agencies pay entitlements and other benefits to their constituents. Tier technologies have applied Grid computing, using Alchemi, to high volume document processing and OCR, and achieved throughput in excess of 150%. *More information* :
http://www.gridbus.org/~alchemi/files/docProcessingTierTech.PDF

Natural Resource Modelling [CSIRO Land and Water, Australia]

CSIRO L&W (http://www.clw.csiro.au/) is a scientific research enterprise that undertakes research and technology diffusion that aims to position Australia as a leader in land and water resources management, and ranks in the worlds top 1% R&D organisations. Researchers at CSIRO Land and Water are using Microsoft .NET to develop and utilise an application framework for the creation of environmental simulation models, named TIME (http://www.toolkit.net.au/TIME). An extension to this framework, DIME, makes use of Alchemi to allow for the parallel execution of models across a network. *More information*:
http://www.gridbus.org/~alchemi/files/hydrogrid.pdf

Asynchronous Excel Tasks using ManagedXLL and Alchemi .Net Grid Computing framework [stochastix GmbH, Germany]

stochastix (http://www.stochastix.de/) is a consulting company that provides services and solutions for investment banks and hedge funds. Their main product, ManagedXLL, is a RAD environment for Excel that integrates (possibly real-time) data and numerical calculations, designed for finance, derivatives trading and engineering. ManagedXLL provides a seamless integration with the .NET managed run-time and worksheet functions can be exported to Excel 97-2003 in a non-intrusive way. The Asynchronous Excel Task feature implemented by ManagedXLL 2 is designed for more complex scnenarios utilises the Alchemi grid computing to support functions that show poor performance when called in the standard synchronous order. For more information please contact stochastix - http://www.stochastix.de/contact?show=all&referer=/solutions/

Patterns of transcription factors in mammalian genes [The Friedrich Miescher Institute (FMI) for Biomedical Research, Switzerland]

FMI has developed a program for looking for patterns of transcription factors in the regulatory regions of mammalian genes. Previously this program took hours to complete its searches but by farming out the tasks in parallel on an Alchemi grid of 10 PCs we can now complete the analysis in only a few seconds.
More Information:
http://promoterplot.fmi.ch
http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1160174

FoxFix - HF Location [Correlation Systems Ltd. , Israel]

Correlation Systems has developed FoxFix2 - an Alchemi-based tool for estimating the location of an HF radio transmitter using SSL technology. Fox-Fix performs fast and accurate calculations of HF radio wave propagation models based on ionosphere behavior predictive models, without performing ionosphere height measurements which require expensive ionosounder systems.
More information: http://www.correlation-systems.com/

Micro-array data processing and other commercial applications [Satyam Computers Ltd., India]

Satyam Computers in India develops commercial applications for its clients, including a micro-array data processing application for early detection of breast cancer, using the Alchemi framework.
More Information:
http://www.thehindubusinessline.com/2005/08/31/stories/2005083100950400.htm