

**DesignLife™**  
Streamlining the Virtual Fatigue Engineering Process



Need to minimize the risk of product failure – and get better, lighter, products to market faster than now?

# Imagine

That you could rapidly predict fatigue hotspots and the lifetime of your product:

...using your existing CAE environment – but with much faster analysis, more realistic loadings, accounting for materials properties and manufacturing effects

...moving durability optimization to an upfront development process – minimizing uncertainties and getting results back in time to influence design decisions

...decreasing the dependence on physical prototyping to detect design flaws, and eliminating at least one expensive Test-Analyze-Fix cycle

...reducing warranty costs from unexpected failures in the field, protecting your brand reputation, and exposure to product recall

...getting lighter products to market that still meet durability targets – saving on production costs and helping to meet environment-aware goals

...speeding up mass production by intelligently reducing the number of spot welds

...enabling more engineers to run routine, company standardized analyses – freeing up your fatigue specialists for more added-value work

# Discover!

How DesignLife could pay for itself in under a year – and cut up to 90% of time out of key areas of your fatigue analysis process...

# A graphical workflow...

Introducing a radical concept in the CAE world...

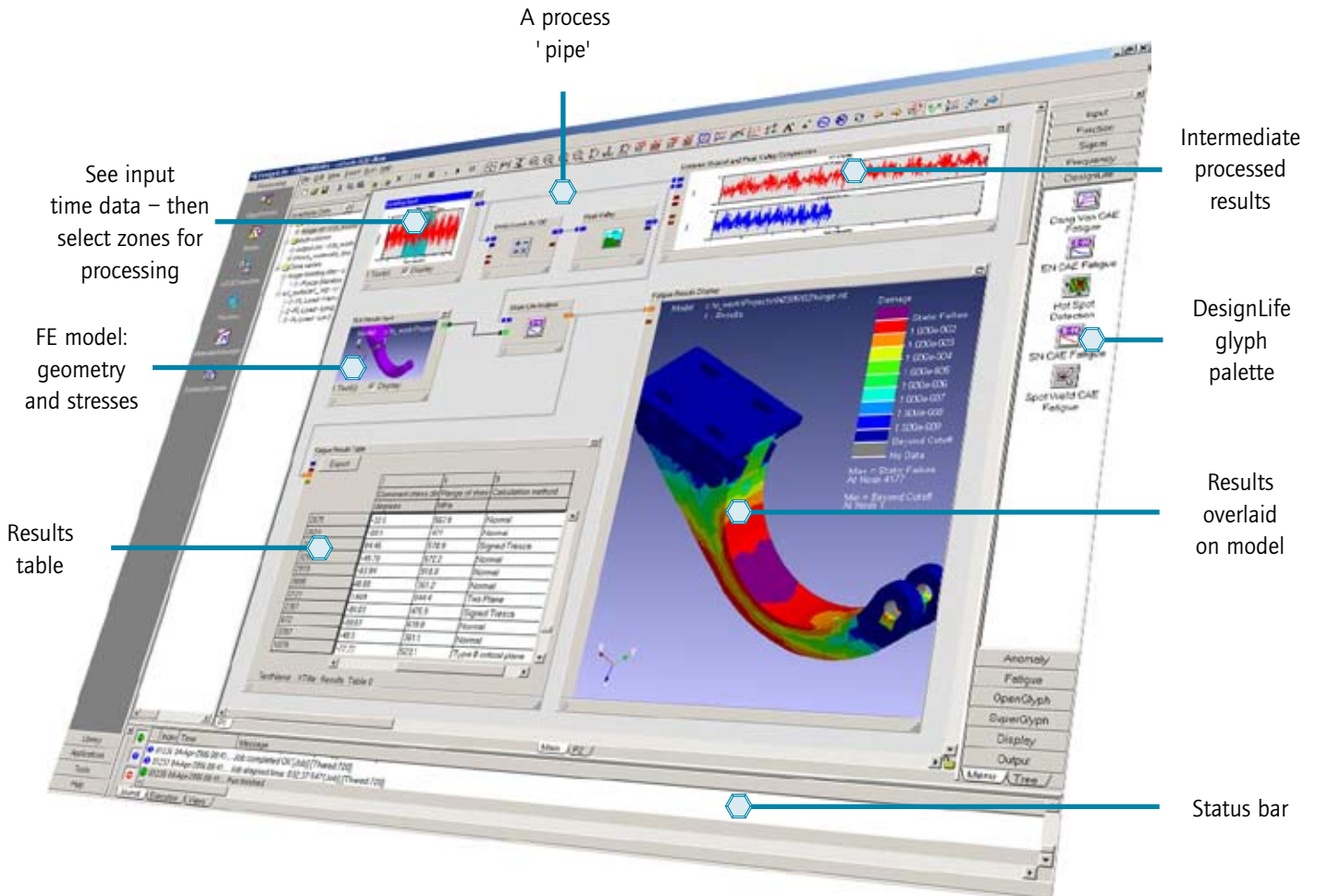
With DesignLife, you can run a standard workflow or interactively build one. Building one starts by connecting the various input, processing and reporting 'glyphs' into a sequence that can be as simple or as complex as you need. Even newcomers can develop processes in minutes that would have taken hours, if not days, to build before.

Ready to run? Just select the loads and models you want to process from the tree on the left, drop them onto the start of the process, click on 'Run' and watch as the data automatically flow through each stage of the analysis. Status indicators and timing information show what is happening at any time. And intermediate results can be seen at each stage – for example, showing local strain behavior for comparison with measured results. It's that simple and it's very, very effective!

## A new standard of simplicity

- ⬢ A dramatic reduction in the time to set-up and process long loading histories and large FE models
- ⬢ Comprehensive, end-to-end analysis from input to reporting
- ⬢ Easy for occasional user, flexible for the power user
- ⬢ Develop processes with 100s of steps, branches, multiple analysis types...
- ⬢ Seeing and interacting with intermediate results at each stage for greater confidence
- ⬢ Collapsing complex sections into a single Super Glyph
- ⬢ Publishing libraries of approved processes to enforce procedures across departments, contractors and suppliers
- ⬢ Linking to external routines to re-use certified methods

DesignLife: as simple as you want – as complex as you need

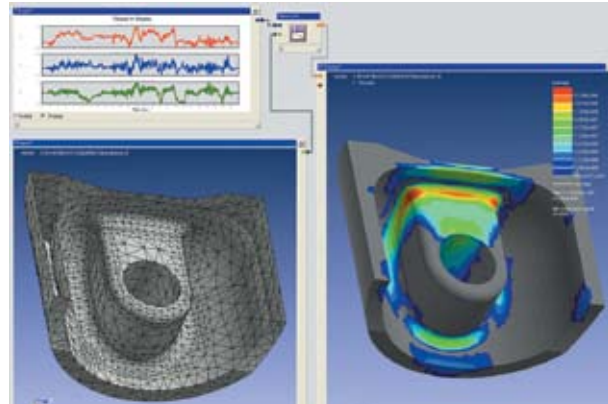


# ...powerful fatigue analysis technology

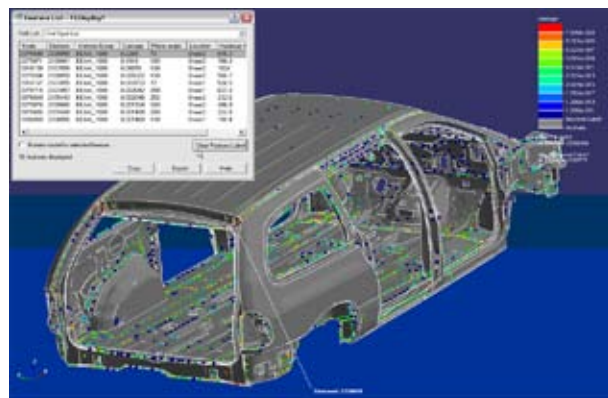
All the tools from safety factor analysis to advanced durability modeling

## Analysis features

- Works with NASTRAN, ANSYS, ABAQUS, LS-DYNA, UNV, etc.
- Web-enabled access to corporate load data
- Imports BOM to map material data to model
- Signal processing and loads analysis tools
- Graphical selection of FE model subsets
- Linear static, modal superposition, transient, vibration, and non-linear\* models
- Automatic identification of critical areas
- Load mapping, flight spectra, duty cycle preparation
- Stress-life (SN) and Strain-life (EN) analyses
- Hotspot analysis and ranking
- Multiaxial analysis (inc. Dang Van algorithm)
- Weld analysis (spot weld, seam weld...)
- Multi-threaded parallel processing
- Virtual strain gauge\* analysis for Test/CAE correlation
- Automatic reporting, inc. processing by part number
- Exports results to common postprocessors, e.g. HyperWorks, MSC.Patran, ABAQUS, etc.
- Powered by nCodeDT™: an open solver for fatigue analysis

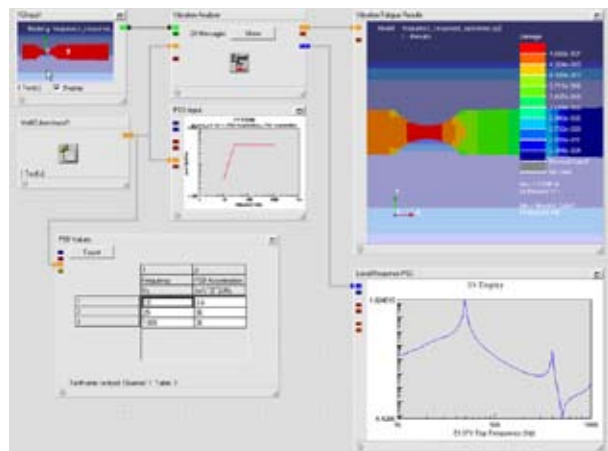


A basic fatigue analysis is as easy as this looks – once set up, just drop in new loads or new models and click 'Run' !



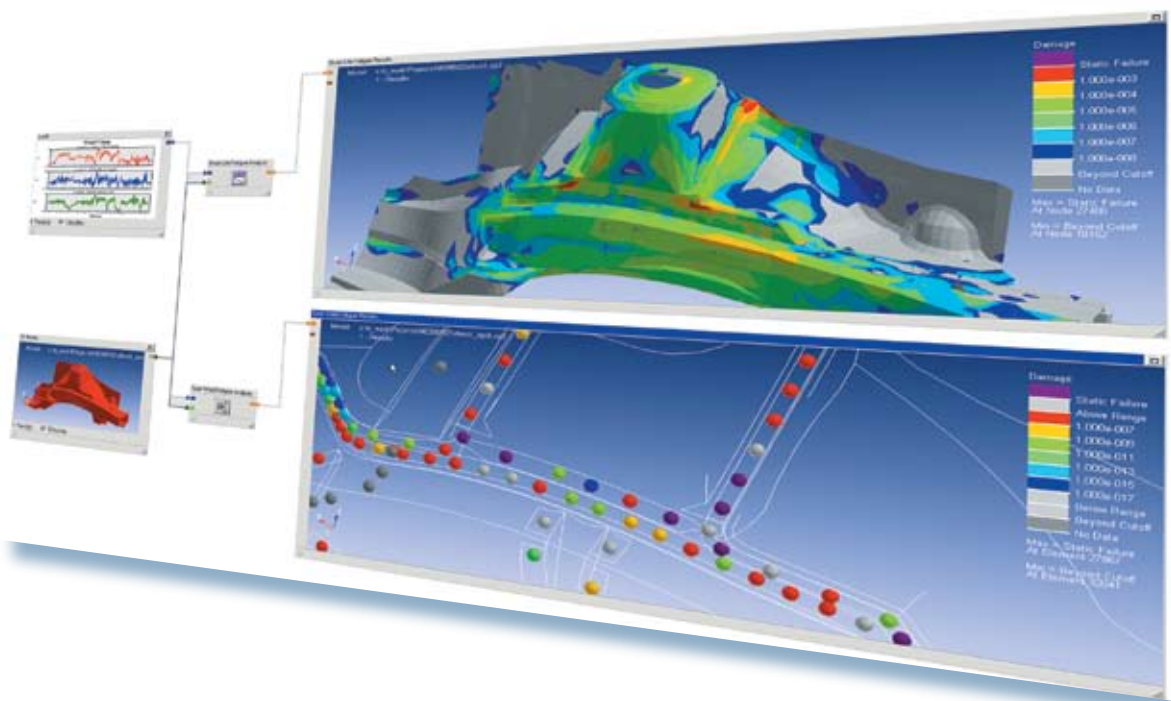
Hotspot analysis automatically ranks results and sets viewpoint so you quickly see them – no more hidden points!

Everything you need to see at a glance – coarse and fine detail, loading analysis in time/frequency/rainflow domains, intermediate results presented as the analysis proceeds...



# DesignLife™

The fatigue tool you need to make upfront design decisions



DesignLife is the next generation CAE fatigue analysis tool from nCode – it incorporates over 25 years experience and feedback from leading users and our partners in the industry.

Uniquely, DesignLife is based on an architecture that integrates advanced Test and CAE analysis tools within a simple-to-use graphical workflow environment. It's powerful, it's quick, and it produces all the information you need to make upfront design decisions!

Fatigue specialists will like the sophisticated analysis features – such as the ability to intelligently reduce complex areas of the design for more detailed analysis, performing multiple analyses in a single run, or linking into external programs for custom analyses, such as design optimization. General users will like the way that the analysis is built up graphically and that they can use pre-defined processes established by others. Managers will like the process repeatability, enhanced reporting, shortening the time to get to a decision, and the way that the Test and CAE environments are integrated and streamlined for better group efficiency.

## Features you want

- ⊕ Works with leading FE codes and post-processors
- ⊕ Linear and non-linear, static, dynamic, and frequency domain stresses
- ⊕ Tools for the manipulation of measured and/or synthesized loadings
- ⊕ Stress-life and strain-life approaches
- ⊕ Multiaxial assessment and analysis
- ⊕ Analysis of seam welds and spot welds
- ⊕ Graphical interface for interactive process development

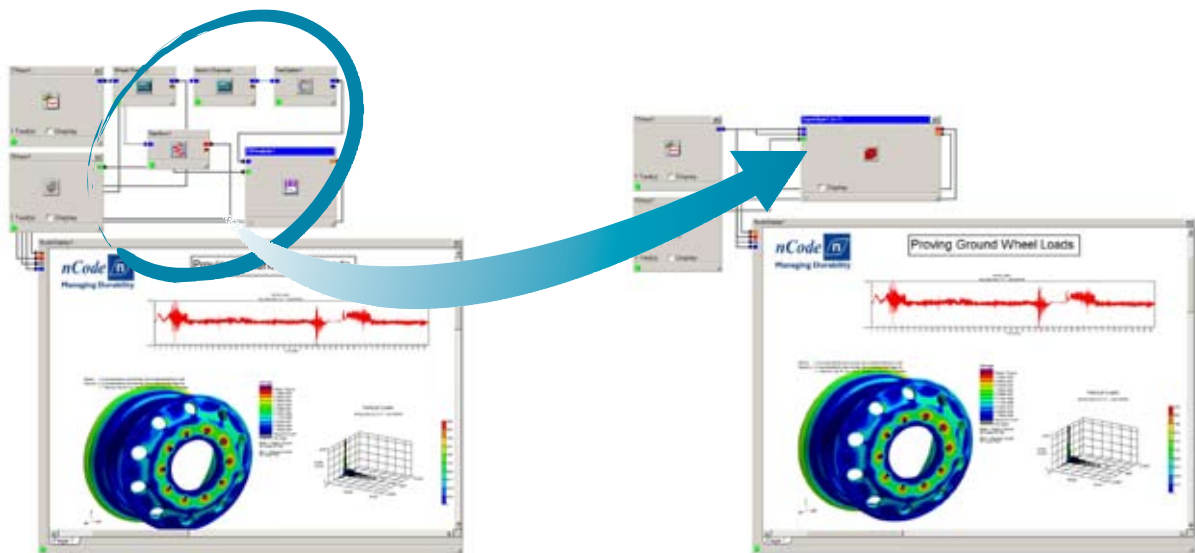
## Benefits you need

- ⊕ Compare and evaluate design alternatives virtually
- ⊕ Optimize for durability before physical prototype build
- ⊕ Better understanding of product performance
- ⊕ Get better products to market faster
- ⊕ Easier and faster fatigue life analysis
- ⊕ Helps remove walls between Test and CAE worlds

Streamline your current processes  
for improved productivity, lower  
costs and better product designs

# DesignLife™

Reporting and process encapsulation...



## Reporting: now part of the process

With DesignLife, reporting isn't something that happens offline at the end of the process – it's totally integrated into it! The reporting glyph combines high levels of functionality and ease of use for multi-window, multi-page report generation using your preferred report style. At the top left side of the reporting glyph, multiple input pads control dataflows to a specific area of the report. It is as flexible as you would wish, and setup is a matter of a couple of minutes even for something as complex as shown here.

Fatigue result sets can include discrete conditions such as static failure or beyond cutoff where no numeric value is appropriate – they are also best shown using a log color map, which few display tools can handle.



Eliminating the Unexpected

Based on ICE-flow DesignLife 4.1, or higher (features shown with \*). The features described in this document are summary in nature, subject to change, and may require optional modules. DesignLife is integrated into ICE-flow GlyphWorks®, which provides some additional functionality mentioned in this document. nCode reserves the right to modify product specifications without notice, please refer to specification sheets.

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## Process encapsulation

Some corporate processes can involve many complex steps. The Super Glyph option allows the most complex workflow to be condensed into one simple sub-process which can be saved for later re-use or for others to just pickup and use as part of a standardized process. For example, a 100 stage process could be reduced to an input, the reporting output, and the 'black box' glyph itself.

Managers can password-protect the process to enforce company procedures, then select whether the user can change (or even see) some operational parameters. Nothing could be simpler!

It's your corporate process from end-to-end – just easier, faster, and open to everyone!

nCode has worldwide offices, partners and agents

[www.ncode.com/offices](http://www.ncode.com/offices)