

February 17 - 20, 2002

SolidWorks International User Conference and Exposition
Las Vegas, Nevada

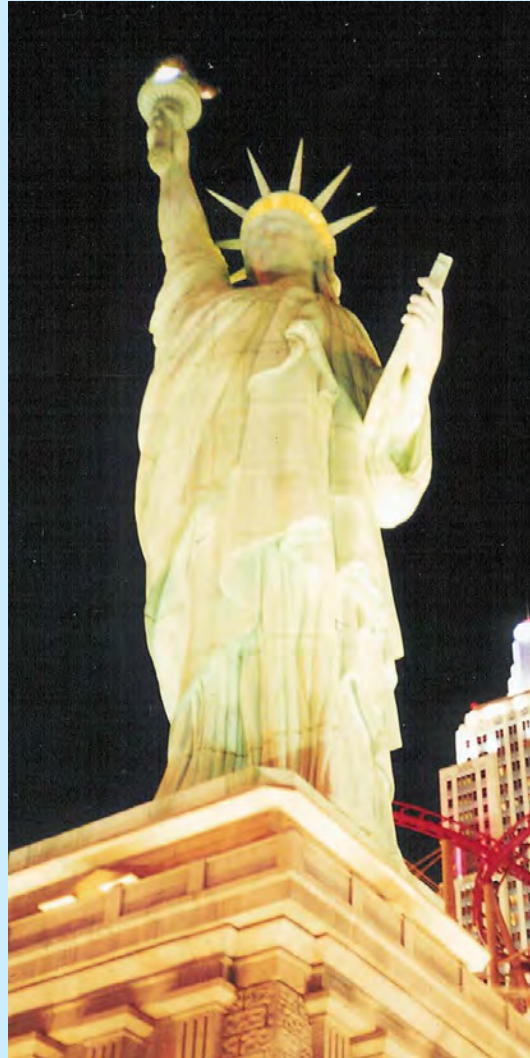


From A User's View

Lindsay Dalziel

Design SMART *Ltd*

Where?



New York, New York



No its - Vegas



Camelot



More Casinos



The Fountain @ Bellagio's



All to the Music of Bocelli



The Mandalay Bay



Sunday Morning

- COSMOS / Works seminar

I had three current design problems in mind:-

- 1/ Dynamic Balance.
- 2/ Fluid (air) flow.
- 3/ Plastic part deflection.

- Pre-registration required, however approximately only 12 people.
- Briefly demonstrated their modules, with questions and answers:-
 - Stress (Static)
 - Buckling
 - Motion
 - Frequency (Vibration)
 - Thermal
 - Flow
 - Electromagnetic
 - Optimisation
- I booked a consulting session for Tuesday evening for one of my design problems (more on this later).

Part Modeling Roundtable, Sunday 1 p.m.

- Hosted by Jim Wilkinson and Paul Chastell from SolidWorks.
- Pre-registration required, needed to supply your top 10 modeling issues.
- Limited to 20 people (some hardly said Boo).
- A wish list was generated, some of these listed below:-

A Stop button.

Cut Solid feature using a plane, currently must create a planar surface.

Better curve creation tools (including 3D curves).

Hyperbola curves and rho ratio values for parabolas.

Curvature constraints for Splines.

Offset splines in the same sketch.

More robust edge filleting, variable radius works where constant doesn't!

Variable radius face blend fillets.

Scaling surfaces with xyz ratios.

Better Offset Surface options, i.e. through point or vertex.

Combine Trimming and Knitting of surfaces.

Point cloud surfaces.

- The new Curvature Continuous fillets are in fact “elliptical-ish”.

Assemblies Roundtable, Sunday 3 p.m.

- Pre-registration required, needed to supply your top 10 assembly issues.
- Hosted by Mark Gibson, Gopal, and Kirk from SolidWorks.
- 20 people attended and this was a much more vocal group.
- A wish list was generated (performance and reliability given, excluded):-
 - A Stop button, (interference checking a good example).
 - Skeleton parts that have no mass and do not report in BOM, (not an envelope).
 - Better BOM and Balloon tools, Bulk Items (i.e. fasteners) for example.
 - Better visualisation tools for working with large assemblies, component display.
 - Choose which parts to display construction data for, Planes, Axis, & Temp Axis.
 - Reload a sub assembly and all parts of.
 - Change all selected instances of a specific part to a specific configuration.
 - Drawing performance would not go away so I have listed it.
- Other points of interest that came from this group:-
 - Discussion on the usefulness of light weight parts.
 - Use P4 for drafting, and AMD for everything else.
 - Windows XP does a good job of uninstalling service packs.
 - Update your templates to avoid bizarre problems. (Update wizard doesn't work).
 - Ensure you expand your folder search when using SW Explorer for renaming.
 - Reference to www.cadsense.co.nz web site wish list.

Registration



Breakfast & Lunch



Breakouts and Pre-Registration

Monday, February 18th

7:00am – 4:30pm

Conference Registration

7:00am – 8:00am

Breakfast

8:30am – 10:00am

Keynote Speakers and General Session

10:00am – 1:30pm

SolidWorks World Partner Pavilion Open

11:00am – 12:00pm

Breakout Sessions

Collaboration: Beyond the Buzzword	Creating Layout Sketches for Use in Top-Down Design	Successfully Evaluate and Choose a PDM System	Solid Modeling for FEA	Using SolidWorks Toolbox: Hands-on*	Understanding Assemblies with Dynamic Designer: Hands-on*	Winning your Customers' Business with 3D Powered Catalogs	Collaborative Sourcing with SolidWorks
Why API?	The Art of Filleting	SolidWorks Piping: Hands-on*					

12:00pm – 1:30pm

Lunch

1:30pm – 3:00pm

Breakout Sessions

Assembly Organization Techniques	Beyond Tips and Tricks**	Effective Rendering with PhotoWorks: Hands-on*	Advanced Surfacing Techniques	Introduction to Programming SolidWorks API with VB	SolidWorks Office – Extending the 3D Solution: Hands-on*	Wire Harness Design with EMBassyWorks: Hands-on*	Design of a Portable Machine Tool
Design of the Mars Habitat	Isometrix Mold Design	Reducing Product Development Time Using 3D TeamWorks**					

3:00pm – 3:15pm

Break

3:15pm – 4:15pm

Breakout Sessions

Visualize your Products**	Interactive Visualization Technologies	Beginners Guide to Programming SolidWorks API Using VB	Design your Plastic Part or Mold for Manufacture: Hands-on*	Developing Consumer Products with Complex Surface Geometry	Extending SolidWorks Information to the Enterprise	FeatureWorks – Tips and Tricks: Hands-on*	Ground Rules for SolidWorks File Management
What do you need in a PDM Solution?		Morphing with a Control Slider: Hands-on*		Sheet Metal Molds	Introduction to Configurations**		

3:30pm – 7:30pm

SolidWorks World Partner Pavilion Open

4:30pm – 5:30pm

SolidWorks National User Group (SNUG) Meeting

6:00pm – 7:30pm

Reception Sponsored by IBM

7:30pm...

Free Night

General Sessions / Keynote Speakers



Breakout Sessions - Reverse Engineering



Immersion (66" Sphere) CMM and Scan2000 Software used



MAXNC 15CLZ 3 Axis Mill driven from DOS controller



Partner Pavilion Exhibit Hall



More Exhibit Hall, 82 Exhibitors in total.



The General Session Message & Keynote Speakers

- Wil Schoenmakers, from Procter & Gamble approx 200 SolidWorks seats.
- Stephen Wolfe, the editor of the CAD Report – lecture on FEA, Zzzzzzzz.
- John Hirschtick (the original CEO of SolidWorks).
John is ex ComputerVision and PTC (Pro/E).
1982 mission statement written at Computervision.
Design effort ratio then, 25% engineering, 75% driving software.
Current design effort ratio, 50% engineering, 50% driving software.
The goal is a design effort ratio of, 75% engineering, 25% driving software.
Fit and finish with today's 3D design tools are a given.
Design behavior, Analysis the next Step.
SolidWorks has taken the middle ground as it was there for the taking.
Very aware of squandering leadership like CV, AutoCAD, and PTC before them.
- Dave Cochran, Head of SolidWorks Development
5000 part assemblies are common and 40,000 part assemblies are required.
Top requests are:-
Performance and stability.
Pattern of patterned components in assemblies.
Auto balloons in assembly drawings.
More flexible BOMs in assembly drawings.
Flexible sub assemblies.
A stop Button.
Better surfacing and curve creation tools.

SolidWorks Highlights

- **Aron Kelly** (Black belt 7th Dan).
- **2001**
Physical dynamics, Smart fasteners, Large assemblies.
- **2001Plus**
3Dpartstream.net, Shaded views, progressive loft, Curvature continuous fillets, Zebra stripes.
- **Some 2002 features:-**
Auto creation of design tables.
Bi-directional design table modification.
From file linked design tables.
Better auto creation of drawings templates with more than 3 views.
Much faster assembly drawing performance.
Multiple solid bodies.
Select boundary shape when referencing layout sketches.
Mirror function single feature or all, if all order dependant (Pro/E like).

Design Analysis



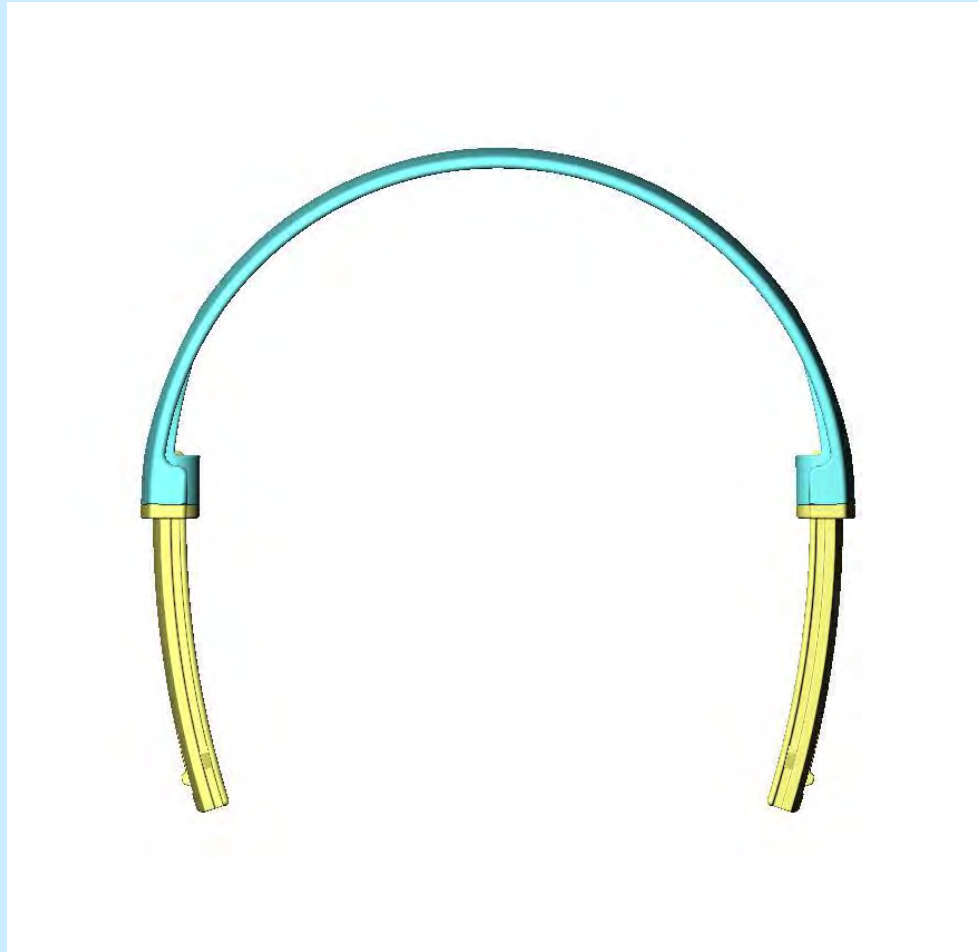
The original Headband



The new Headband

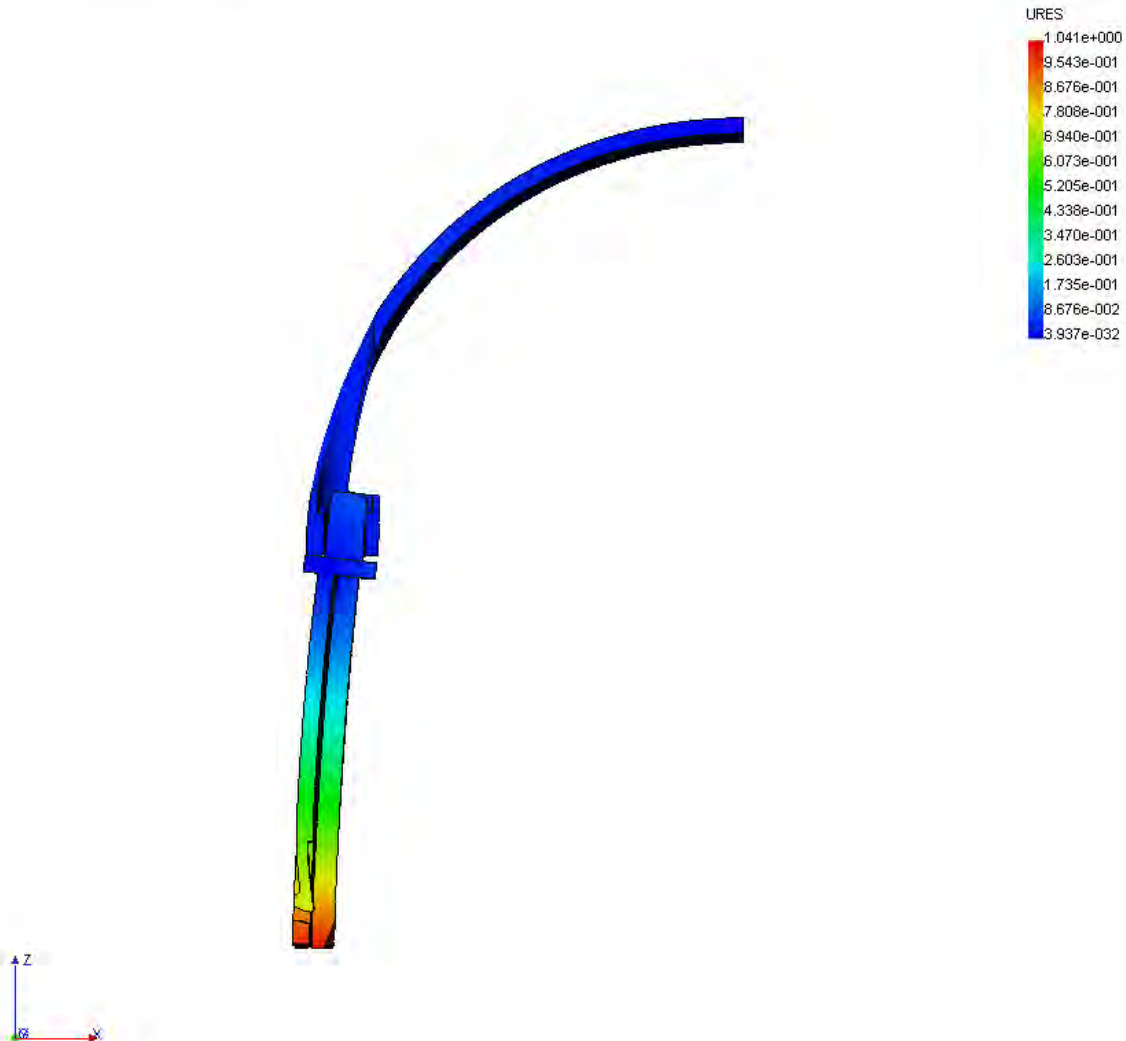


How will this behave?

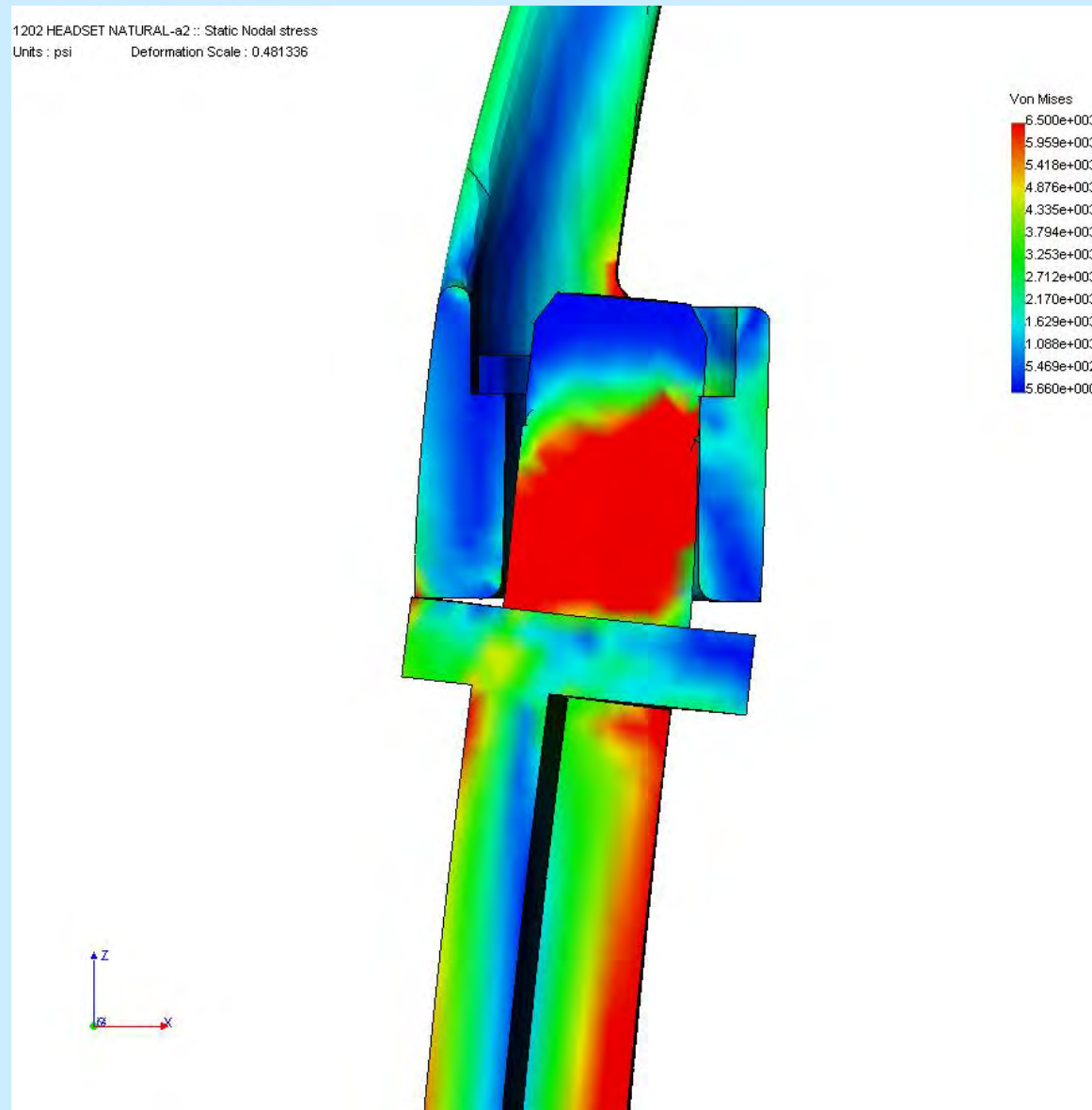


Deflection

1202 HEADSET NATURAL-a2 :: Static displacement
Units : in Deformation Scale : 0.481336



Stress Plot



The Real Prototype



Reality



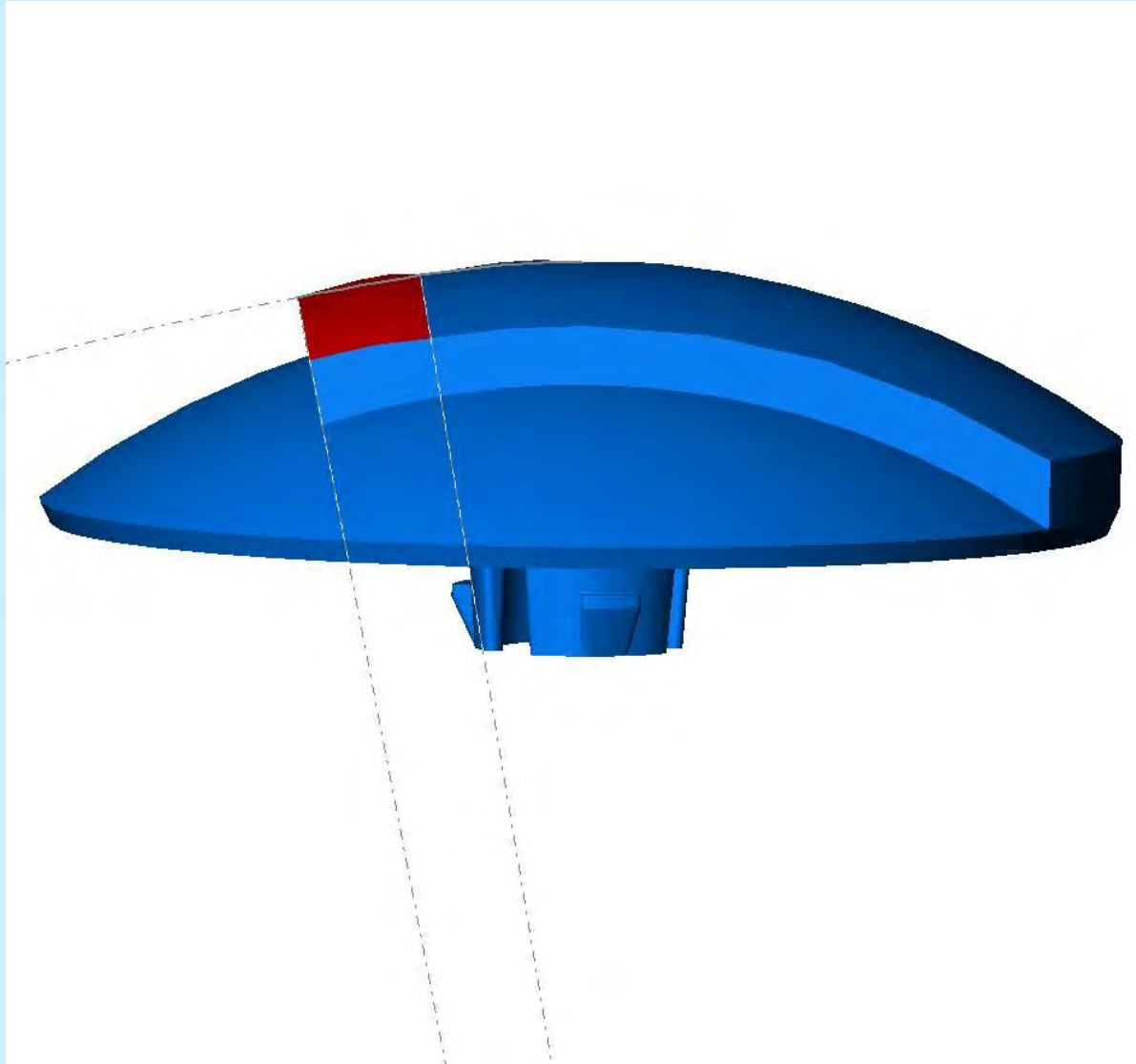
TeamWorks 3D

- You can use any SolidWorks supported file format.
- No software required other than IE5 or later and a license.
- Fast graphics streaming, cached on a SolidWorks server.
- Can be marked up and sent to whoever.
- People can be invited to join a net meeting type session, they also require a password.
- You can see who, what, when info, with threaded discussions.
- It is not PDM, Workflow management but a tool for collaboration.
- Bundled separately approx \$1000 U.S.
- Lots of questions unfortunately I had to run to catch a plane.

Why participate in a user group?

- Stay up to date.
- Make sure they don't go off the rails, this is my 4th CAD system.
Smart fasteners.
Hole Wizard, ***no cosmetic thread option problem.***
BOM reporting.
Surfacing.
- CADsence.co.nz web site?
This is currently not up to date perhaps a New Zealand user group can help?

Sweep Problems, can't JPEG Zebras

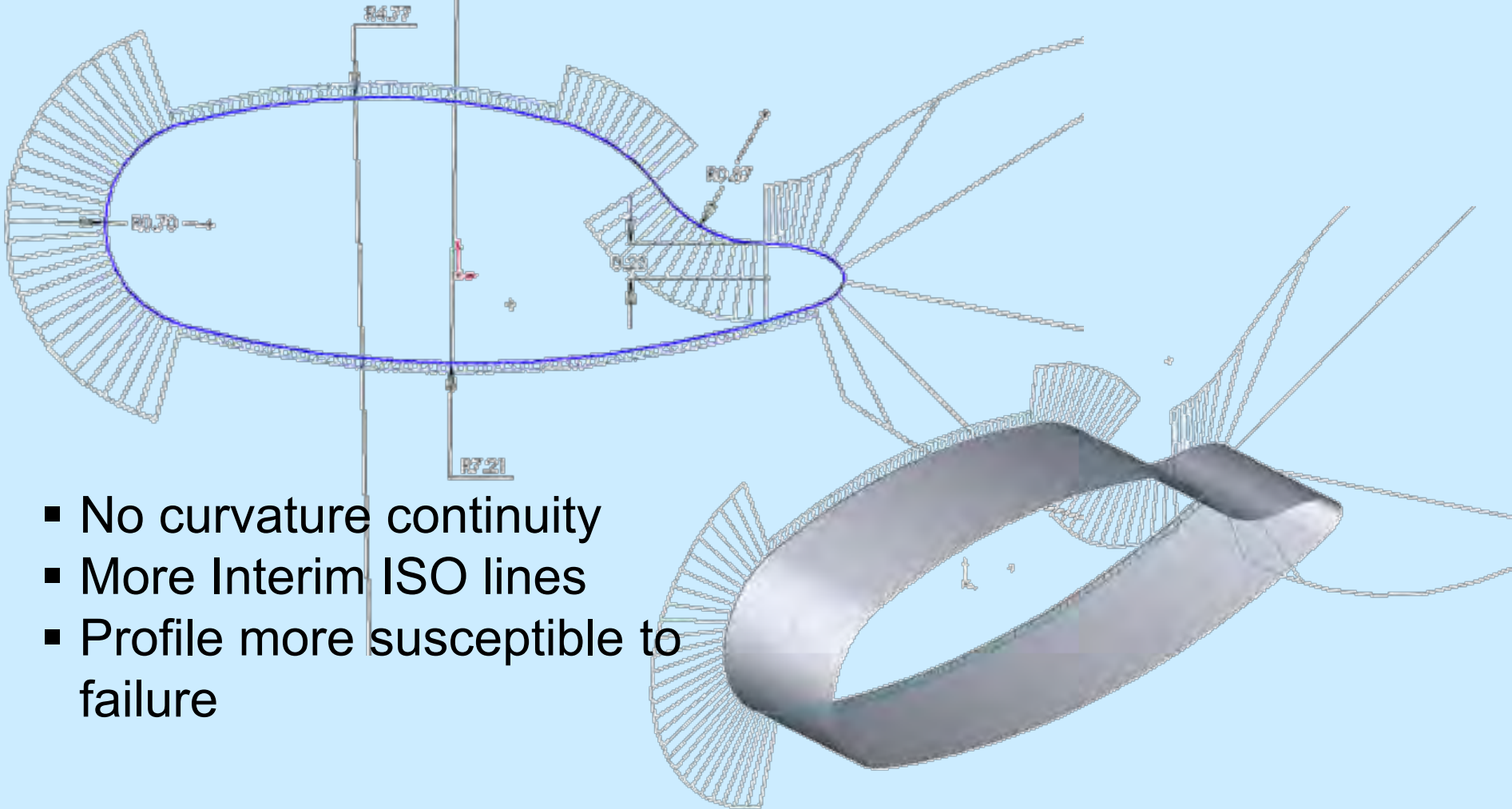


Work around



Construction Curves – Keep Sketches Simple

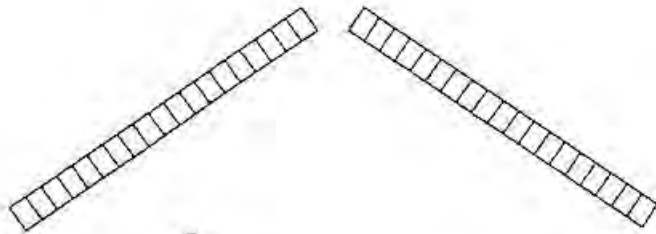
- Multiple arc segments shown here



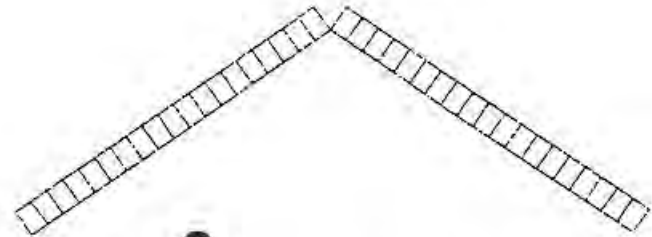
- No curvature continuity
- More Interim ISO lines
- Profile more susceptible to failure

C1 versus C2 Explained

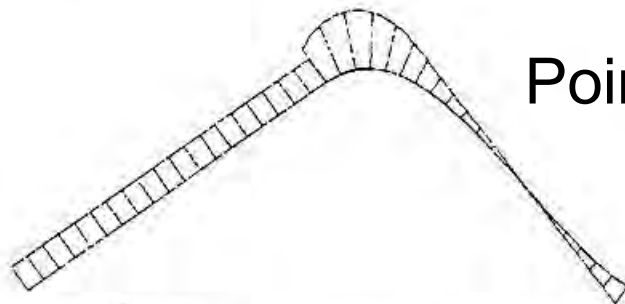
Tangency versus Continuity



G^{-1} Un-matched

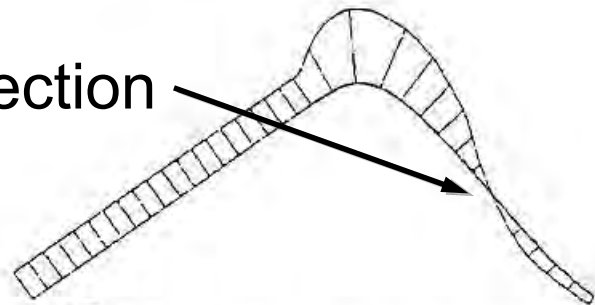


G^0 matched



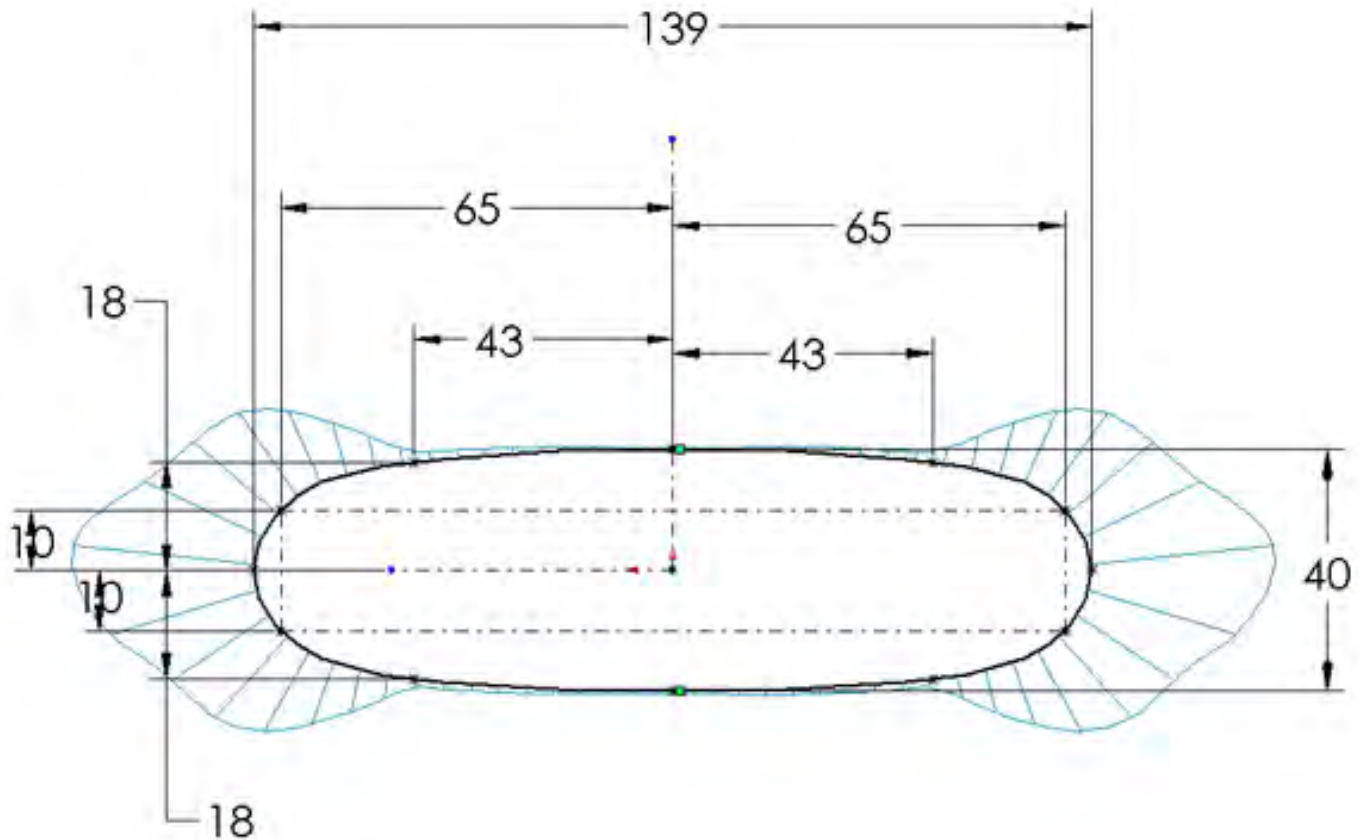
G^1 Tangent Join

Point of inflection



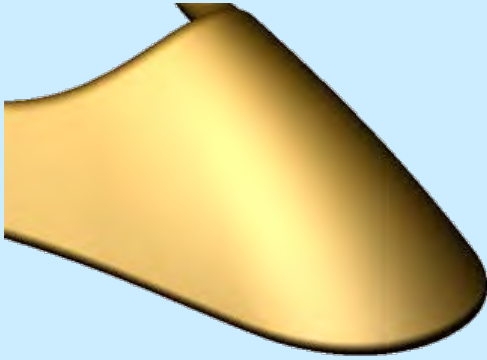
G^2 Curvature Join

Use Construction that is curvature continuous that's fine but, users were saying things like use single spline guide curves. It really shouldn't have to be this way, tangency should be enough to avoid surface rippling, however you will still get reflection lines.

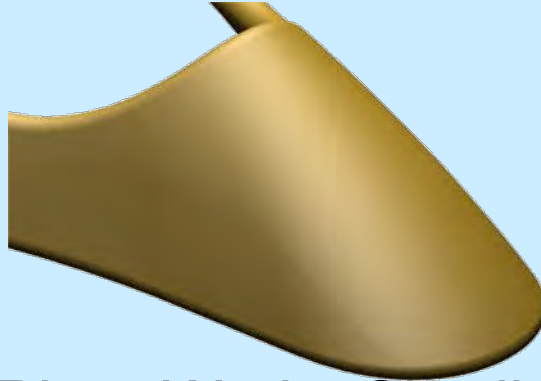



Example

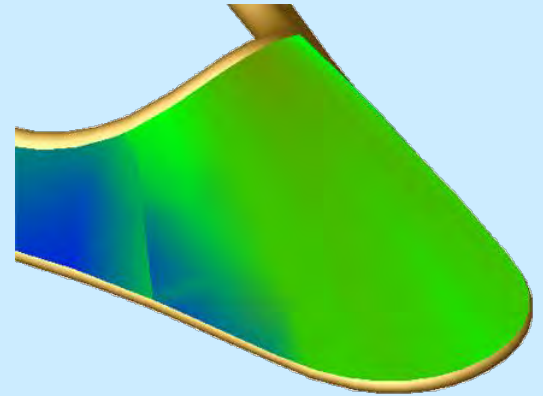
Curve and Surface Analysis



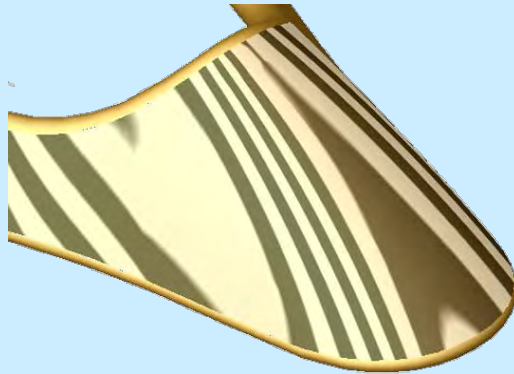
Open GL Shading



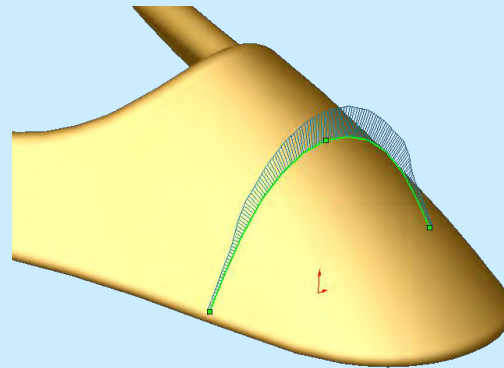
PhotoWorks Shading



Face Curvature



Face Zebra Stripes



Inspect Curvature (intersection curve)