

# COBALT™ v8

*The ultimate product design and development tool.™*

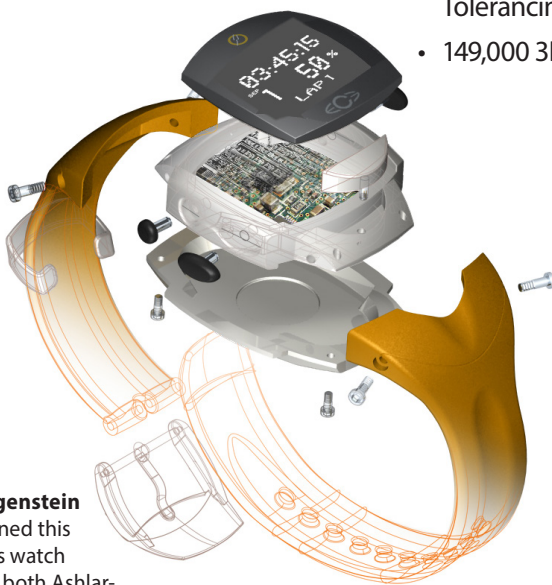
- Updated Interface
- Unified Associative, Dimensionally-constrained Parametric Drawing & Modelling Tools for Wireframe, Surfaces & Solids
- Vellum Drafting Assistant™ for Intelligent Snaps and Alignments in X,Y, & Z
- Unique Hybrid Mac/Windows, Office/Home Licensing
- Complete Set of Precision Import/Export Translators Including ACIS SAT, Parasolid, IGES, STEP, DXF, DWG, EPS, AI, and more
- Class-A NURBS Surface Modelling
- True Solid Modelling
- Surface Analysis
- Full Photo-realistic Rendering & Camera-based Animation
- Design Explorer History Tree
- Associative 2D View Generation with Auxiliary, Section, and Detail Views
- True Associative Dimensioning
- Bill of Materials
- License includes Graphite™ v8
- Dimensionally Constrained & Equation-driven Parametrics
- Associative Assembly Tools
- Object & Assembly Properties (CG, Volume, Weight, etc.)
- Mold Tools including Core, Cavity, Rib, and Lip
- Geometric Dimensioning & Tolerancing (GD&T)
- 149,000 3D Mechanical Parts Library

## General Features

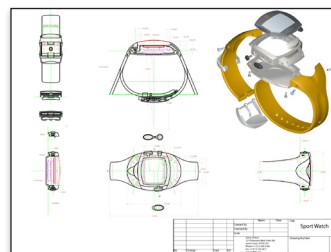
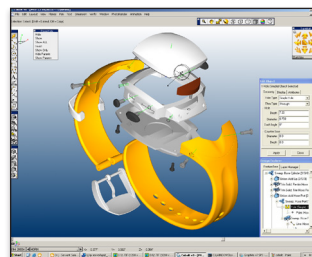
- Direct, Associative or Dimensionally Constrained 3D Modelling
- ACIS Modelling Kernel from Spatial
- 16 Place Floating Point Accuracy
- Hybrid Mac/Windows, Office/Home License
- 65,000 Hierarchical Layers
- Unlimited Colours
- Unlimited Number of Objects and Drawing Size
- Single File Holds Drawings, Models, Assemblies, etc.
- Direct Multi-sheet PDF Creation
- Universal Binary Support for Intel Mac

## User Interface

- Updated Intuitive Vellum Interface
- Drafting Assistant™ for Automatic Snaps and Alignments
- Smart Cursor Changes Shape Indicating Active Tool and Operations
- Strokes and Short Cuts Provide Instant Access to Commands
- Tear-off and Auto-hide Palettes
- Dockable Tools and Palettes
- Palettes can be Flipped Vertically or Horizontally
- Resizable Dialog Boxes
- Status Line to Specify Object Parameters
- Message Line Provides Tool Instructions and Options
- World and User-defined Coordinate Systems
- All Data Entry Fields can Perform Numeric Calculations
- TrackBall for View Selection and Dynamic or Step Rotation
- Show/Hide Palette
- Selection Mask for Easier Selection of Specific Entity Types, Layers, Colours
- Grid (User Definable)
- Object Editor
- Design Explorer™ Layer Tree
- Design Explorer™ History Tree
- History Manager
- Support for SpaceMouse Device on Mac and Windows
- Easy Update Installer



**Luc Heiligenstein** designed this sports watch using both Ashlar-Vellum drafting and 3D modelling software.



***"With Cobalt you can just extrude in any direction to get a product shape very quickly. It's as flexible as modelling clay. Unlike other design software, you don't have to calculate everything using parametrics, create a detailed assembly and add all the dimensions just to get something to show the client for interim approval."***

Read more about Luc's success at [www.ashlar.com/success](http://www.ashlar.com/success).

# COBALT™ v8

## Display and Visualization

- Scene Display Modes:
  - Flat Shaded
  - Gouraud
  - Gouraud w/Edges
  - Phong
  - Phong w/Edges
  - Hidden Line Dimmed
  - Hidden Line Removed
  - Photo-realistic
- Scene Display Options:
  - Anti-alias
  - ZBuffer Curves
  - Clip at Eye Point
  - Transparency
  - Reflected Environment
- Real-time Object Display Options:
  - Display Iso Lines
  - Silhouettes
  - Transparency
  - Direction
  - Curvature Comb
  - Surface Analysis Display
    - (Gaussian, Mean, Min/Max, Zebra, Normals, Curvature, Draft)
  - Object Display Resolution
    - (Coarse, Medium, Fine, Very Fine, Super Fine)
  - User Definable Object Colours
- Adjustable Perspective
- Infinite Pan and Zoom
- Section Profiles and Cutaway View in the Edit Window
- Real-time 3D Display:
  - Curves
  - Surfaces
  - Solids
  - Meshes
  - Text
  - Bitmaps
  - Dimensions

## Object and Assembly Properties

- Material
- Centre of Gravity
- Volume
- Weight
- Density
- Moments of Inertia
- Principal
- Axis

## Dimensionally Constrained Parametric Sketches

- On-demand:
  - Automatic Inference
  - Manual Creation
- Can be Used to Create Wireframe, Surfaces & Solids
- Equation-driven:
  - Dimensional
  - Conditional
- Geometric Relationship-driven
  - Including:
    - Parallel to Sketch X or Y Axis
    - Coincident (Endpoint, Midpoint, Vertex, Quadrant, Centre)
    - Tangent
    - Parallel
    - Perpendicular
    - Concentric
    - Symmetric
    - Equal
    - Co-linear
    - Offset Distance
- Animation of Incremental Dimensional Variations

## Associative Parametrics

- Parametric Sketch-driven:
  - Direct Input
  - Dimensional
  - Geometric
- Modify:
  - Wireframe Creation
  - Surface Creation
  - Solids Creation
  - Mesh Creation
  - Surface Edits
  - Solid Edits
  - Mesh Edits
  - Solid Features

## Object Management Tools

- Design Explorer™
  - Layer Tree
  - History Tree
- Object Properties Dialog
- Show/Hide Palette

## General Transform Tools

- Move
- Copy Along Path
- Rectangular Array Duplicate
- Feature Array
- Rotate
- Polar Array Duplicate
- Scale (Uniform or Differential)
- Mirror
- Align

## Text Tools

- Normal
- Along a Path
- Keep Screen Horizontal
- At an Angle
- Set:
  - Font
  - Size
  - Style
  - Colour
- Thicken
- Extrude
- Revolve
- Sweep

## Wireframe Creation Tools

- Point
- Points on Curve
- Points on Surface
- Line
- Mid-point Line
- Connected Line
- Arc
- Circle
- Ellipse
- Conic
- Rectangle

- Polygon
- Arbitrary Polygon
- Star Polygon
- Sketch Spline
- Through-point Spline
- Vector Spline
- Bezier Spline
- Helix
- Spiral

## Wireframe Editing Tools

- Fillet
- Chamfer
- Trim
- Relimit/Extend
- Break
- Offset
- Join
- Extrude
- Revolve
- Project to Plane
- Extract Edge of Surface or Solid
- Increase Order
- Fair Spline
- Add/Remove Spline Points
- Modify Spline Slope
- Curve by Intersection of Plane and a Curve, Surface, or Solid
- Project Curve onto Surface/Solid
- Intersect Two Curves
- Create Points by Intersecting Surfaces or Solids

## Surface Creation Tools

- Surface Primitives:
  - Sphere
  - Block
  - Cylinder
  - Pyramid
- Infinite Plane
- Lathe
- Extruded Surface
- Sweep:
  - In Place
  - Perpendicular
  - Ridged
- Sweep Along One Rail:
  - Full Rail
  - To Entity
  - Between Rail Points
- Sweep Along Two Rails:
  - With Maintain Height
- Skin, Skin w/ Guide Curves
- Tangent Loft
- Cover Surface, Tangent Cover
- Net Surface
- Revolved Surface
- Tube Surface
- Offset Surface
- Drafted/Extended Surface
- Fillet Surface



***"It is a real trick designing a high performance motorcycle exhaust system. This is where Cobalt really comes into its own. Cobalt makes me better than I am."***

These cam shafts and engine assembly were designed by **Kelley Robert**, Racing Engine Components.

Read more at [www.ashlar.com/success](http://www.ashlar.com/success).

**Continued...**

## COBALT™ v8

### Surface Editing Tools

- Freeform Deformation (Push/Pull Surface Points)
- Deform to a Point, Factor, or Curves
- Add/Subtract/Intersect Planar Surfaces
- Join Surfaces
- Trim/Untrim Surfaces
- Match G1 and G2 Tangency
- Insert Control Points
- Elevate Degree
- Rebuild Surfaces
- Add, Remove, & Replace
- Curves of Associative Surfaces
- Imprint Profile Sketches for Surface Subdivisions

### Solid Creation Tools

- Solid Primitives:
  - Sphere
  - Slab
  - Block
  - Cylinder
  - Cone
  - Torus
  - Prism
  - Pyramid
  - Ellipsoid
- Lathe Profile:
  - With Draft
  - Non-planar Profile
- Extrude Profile:
  - Distance
  - Vector
  - To Entity
  - Mid Plane
  - Thin Wall
  - With Draft
  - Non-planar Profile
- Skin, Skin w/ Guide Curves
- Tangent Loft
- Sweep Profile Along One Rail:
  - In Place
  - Perpendicular
  - Ridged
  - Full Rail
  - To Entity
  - Between Rail Points
  - With Draft
- Sweep Profile Along Two Rails:
  - With Maintain Height
- Pipe Solid
- Thicken Surface into Solid
- Stitch Surfaces into Solid

### Solid Editing Tools

- Boolean Add/Subtract/ Intersect Solids
- Constant Blends:
  - Radial
  - Elliptical
  - Vertex
- Variable Blends:
  - Linear
  - By Position
  - To Curve
  - To Fixed Width
  - To a Hold Line
- Constant Chamfers:
  - By Length
  - Two Lengths
  - Length and Angle
  - Vertex
- Variable Chamfers:
  - By Lengths
  - Four Lengths
  - Lengths and Angles
  - By Position
  - To Fixed Width
- Holes:
  - With Bore
  - With Sink
  - To Depth
  - Through
  - First Blind
  - To Face
  - With Draft
- Bosses:
  - With Specified Fillet
  - With Draft
- Profile Cutout:
  - With Draft
- Profile Protrude:
  - By Vector
  - To Face
  - With Draft
- Split:
  - With Surfaces or Solids
- Trim:
  - With Curves, Surfaces or Solids
- Shell:
  - With Independent Face Offsets
  - With Core/Cavity Options
- Parting Line:
  - With Draft
- Local Operations:
  - Taper/Draft Face
  - Move Face/Edge
  - Offset Face
  - Remove Face
  - Replace Face
  - Match Face
  - Deform Face (By Factor, To Point, To Curves)
- Bend Solids
- Twist Solids
- Stretch Solids
- Lip:
  - With Add/Remove
- Rib

### 3D Mechanical Parts Library

- 149,000 Mechanical Parts
- Standards included ANSI, BS, ISO, JIS, & NF
- Includes:
  - Bearings
  - Bolts
  - Nuts
  - Pins
  - Rivets
  - Washers
  - Clevis Pins
  - Locknuts
  - Parallel Keys
  - Retention Rings
  - Seals
  - Sections

### Assembly Tools

- Associative Connect
- Associative Mate
- Associative Align
- Associative Insert

### Independent 2D/3D Drawing Creation

- Predefined and Customizable Layouts
- Complete Professional Drafting Available
- Create 2D/3D Drawings w/o Building Models
- Stored in Same File as Model

### 2D/3D Drawing Creation from Models

- Associative 2D or 3D Views from 3D Wireframe, Surfaces, and Solids
- Photo-renderings Accommodated in Views:
  - As Underlay
  - As Interleave
- Associative Detail Views
- Associative Section Views:
  - With Auto Hatching
- Automatic Hidden Line
- Predefined and Customizable Layouts
- Automatic Labels:
  - View Name
  - Scale



Creation of organic shapes with precision manufacturing make Cobalt ideal for medical applications, including these carts designed by **Glenn Polinsky** for Modco, Inc.

*"The great thing about Cobalt is that it lets us sketch out our ideas as easily as if we were working with a pencil, and then simply tighten them up when the time is right to produce a fully defined 3D model."*

**Bob Parks**, aeronautical engineering consultant.

*Continued...*

## COBALT™ v8

### 2D/3D Drafting & Detailing

- Available for Independent and Model-driven Drawings
- Smart Dimension Tool Automatically Creates the Appropriate Dimensions
- Dimensions:
  - Linear
  - Angular
  - Diametric
  - Radial
  - Spline Length
- Standard and User-definable Tolerances and Settings:
  - ANSI
  - DIN
  - ISO
  - JIS
  - Dual
  - Architecture
  - Stacked Fraction
- Geometric Dimensioning and Tolerancing (GD&T)
- Balloon and Callout Dimensions
- Predefined and User Created Hatch and Fill Patterns
- Predefined and User Created Line Weights, Colours, and Styles
- Associative Bill of Materials
- All Dimensions can be Associative, Dynamic, or Static

### Photo-realistic Rendering

- Drag and Drop Materials
- Drag and Drop Decals (with Alpha Channel)
- 3D Wireframe Interleave
- Realistic Texture Maps and Procedural Textures:
  - Wood
  - Marble
  - Granite
  - Leather
  - Plastic
  - Glass
  - Metal
  - Brushed Metal
  - Automotive Paint
  - and more

*“Cobalt was able to handle both the mechanical and ID aspects of our project in one integrated package. I can’t think of another product that has such a nice combo of industrial and mechanical design.”*

**Dave Kindlon**, motion picture product engineer for XTD Research.

- Advanced Material Editor:
  - Colour
  - Reflectance
  - Specular
  - Diffuse
  - Ambient
  - Roughness
  - Bump
  - Transparency
  - Refraction
  - Texture Orientation
  - and more
- Interactive Materials Display
- Environment Maps
- Customizable Scene Presets
- Editable Light Sources:
  - Spot
  - Bulb
  - Distant
- Photo-realistic Sunlight (Location/Date/Time)
- Photo-realistic Tube and Area Lights
- Adjustable Hard and Soft Shadows
- Visible Volumetric Light Effects
- Sketch Effects (SP1)
- Fog Effects
- Backgrounds
- Raytracing with Anti-aliasing
- Production Quality Resolution & Output (bmp, tga, tif, lwi, eps)
- Multiprocessor Photo-realistic Rendering (Mac SP1)
- User-defined Presets

### Camera-based Animation

- Fly-by
- Walk-through
- Sunlight Timeline
- QuickTime Object VR
- QuickTime Panoramic VR
- Direct Event Journal Recording and Playback
- QuickTime Event Recording and Playback

### Import/Export

- ACIS SAT
- PDF (Export Only)
- DWG/DXF
- IGES
- STEP
- Pro/E (via SAT)
- Parasolid X\_T (Windows Only)
- SolidWorks (via SAT)
- Catia v4
- 3D Studio (Import Only)
- Rhino 3DM (Import Only)
- Facet
- STL
- Adobe Illustrator
- EPS (Export Only)
- CGM
- VRML
- ShockWave 3D (Export Only)
- Bitmap:
  - BMP (with Alpha Channel)
  - JPEG
  - PNG (with Alpha Channel)
  - PPM
  - XPM
  - XBM
  - GIF
- PICT (Mac Only)
- Spline (Import Only)
- RAW Triangle (Export Only)
- ASCII Text
- Grid Surface (Import Only)
- Other Ashlar-Vellum Products

### Localized User Interface

- English US
- English UK
- French
- German
- Italian
- Portuguese
- Russian (Windows only)
- Swedish

### PDF Integration

- Directly Generates Non-tessellated Arcs and Splines (SP1)
- Multi-sheet (SP1)
- Imbedded Exports Optional

### Available Accessories

- Graphite v8 (included)
- Cobalt Share™ for Viewing, Printing and Exporting at Client or Manufacturing Site (Free)
- Vellum:environments™
- Vellum:tracks™
- Vellum:materials™
- Vellum:decals™
- Tutorials (Free)

### Recommended System

- Windows / Macintosh
- Windows XP/7
- Mac OS X 10.4 (PPC), 10.5 (PPC or Intel), 10.6, 10.7, 10.8, 10.9, 10.10 (Intel Only)
- Pentium 4, Xeon, Athlon / G4 or G5
- 32 MB Accelerated Video Card w/ Open GL (Standard on all business-class systems since 2005. Additional RAM will not improve performance.)
- Medium- to High-performance Workstation-class Graphics Subsystem Recommend for Real-time Environment Mapping on Complex Files
- 512 MB RAM
- 250 MB Free Hard DriveSpace / 1 GB Allocated Virtual Memory
- DVD Drive or High Speed Internet Connection



Product designer **Francois Charron** uses Cobalt to design products with consumer appeal such as this irrigation system and remote control key fob.

**Creative Intuition**  
Powered by **Vellum™**