

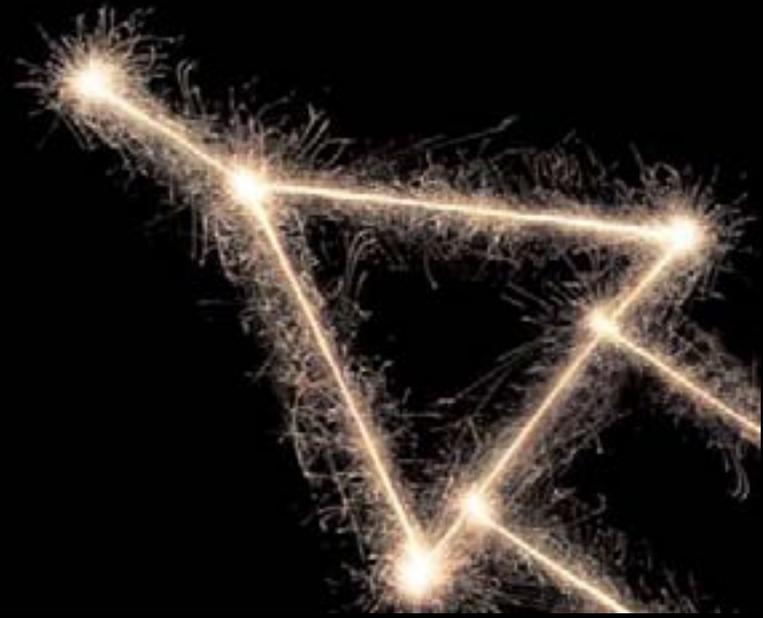


**DESIGNSPARK
MECHANICAL**

DESIGNSPARK MECHANICAL

Martin Keenan





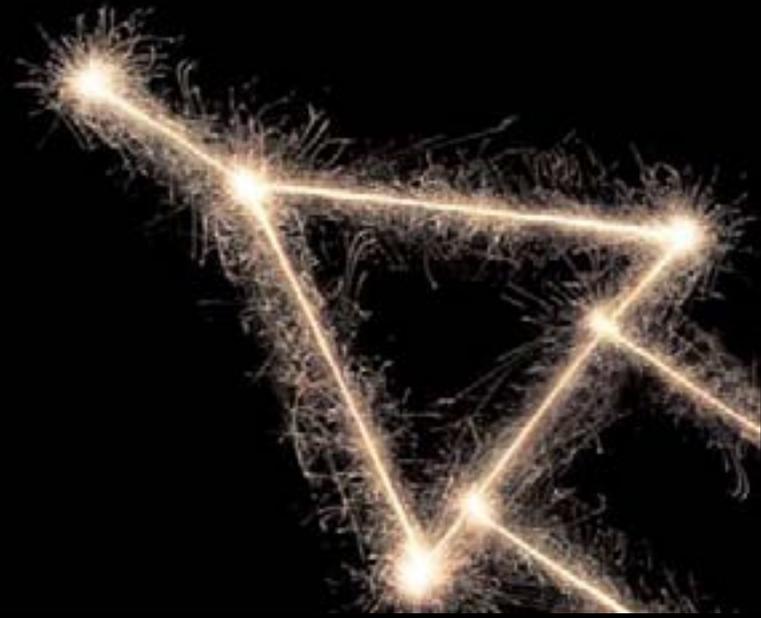
RUNNING ORDER

Group and
customer
overview

Introduction to
DesignSpark
Mechanical

Applying to
our customers

Demo
Q&A



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GROUP OVERVIEW



- £1.3B Revenue
- Over 1M Customers
- Operations in 32 countries

- Founded in 1928
- Coverage across N. America
- >300 world class suppliers

- Community of >250k engineers
- Engineering resources & tools
- Technical Support Forums

- Founded in 1937
- 2500 suppliers
- Coverage across EMEA & APAC

- Free, professional-standard PCB design tool
- Schematic capture, PCB layout & Autorouter
- 180,000 users globally

- Library of >35,000 3D models in 24 formats
- 80,000 PCB schematics & footprints in 21 formats

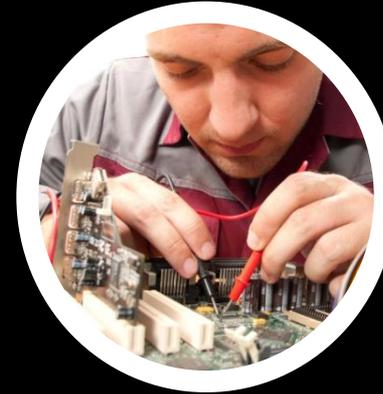
- Launched in June 2013
- Library of open source reference designs & projects

OUR ENGINEERING CUSTOMERS



MACHINE DESIGNERS

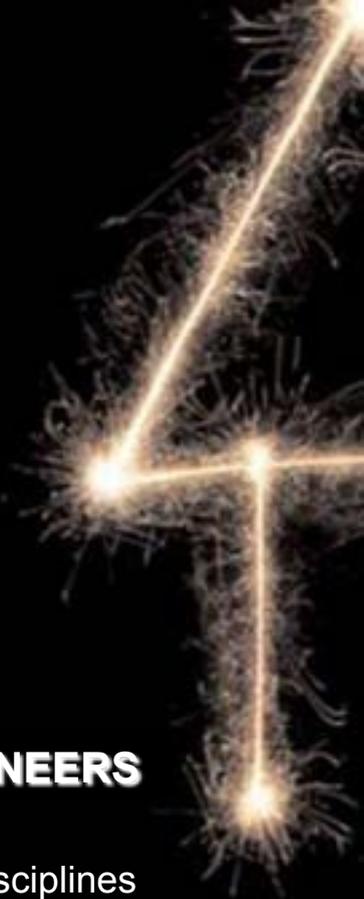
- Electrical & mechanical design disciplines
- Responsible for automation & control design
- Bespoke industrial machine development



ELECTRONIC DESIGN ENGINEERS

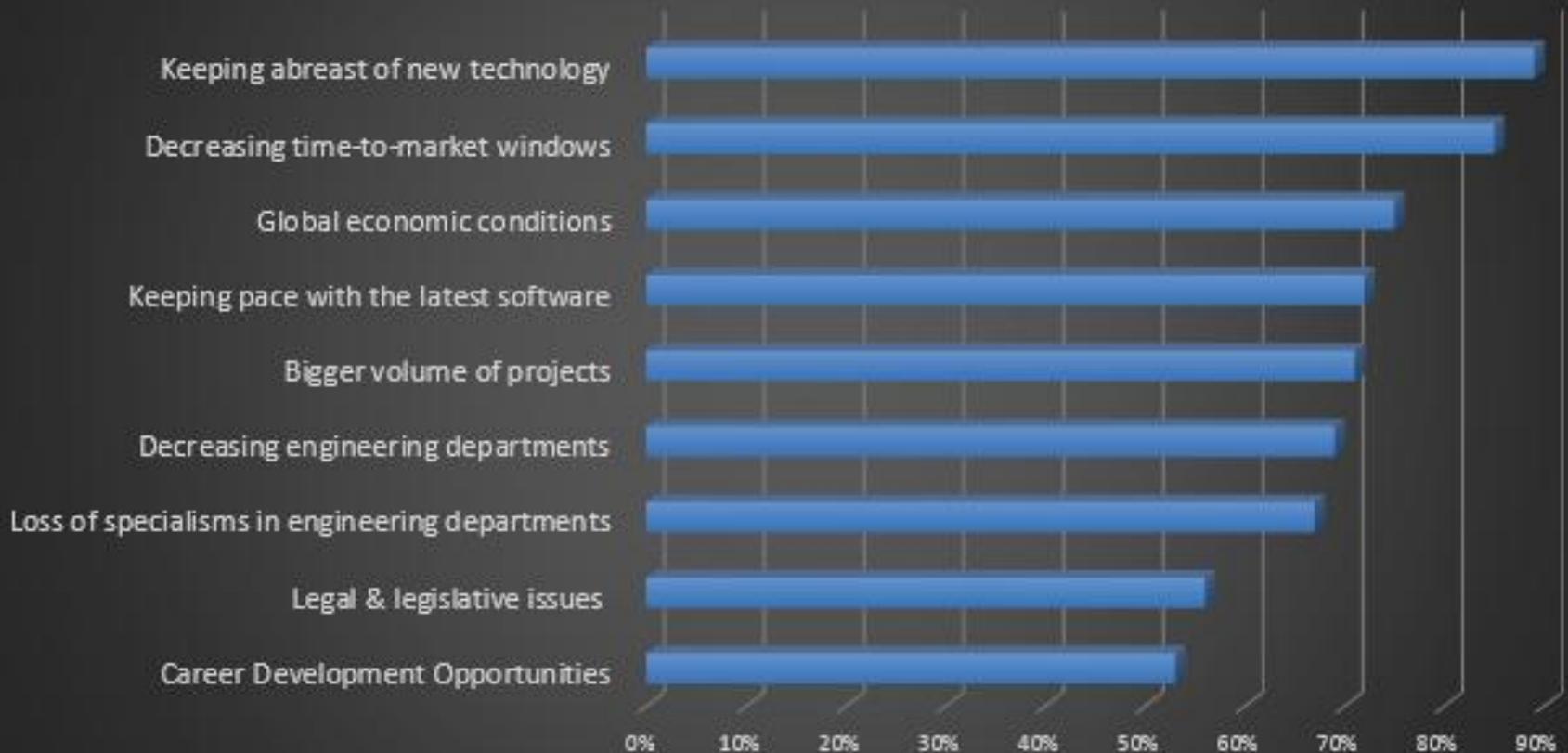
- PCB and mechanical design disciplines
- Responsible for electronic product design
- Driven by advancements in technology

TWO DISCIPLINES UNITED BY COMMON CHALLENGES



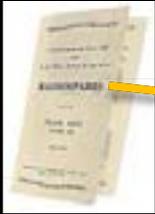
FEEDBACK FROM ENGINEERS

Challenges faced by Engineers



A TRACK RECORD OF SUPPORTING ENGINEERS

1941



1974



1994



1998



2008



2010



3D

2011



2012



2013

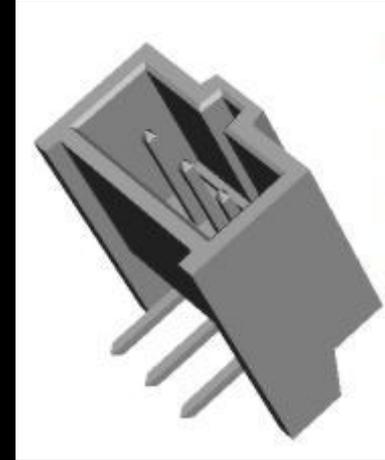


- We have been helping engineers for over 75 years, saving time & inspiring innovation

THE APPETITE FOR 3D DESIGN



- 3D model programme launched in 2010
- >35,000 models in 24 formats
- Over 500,000 downloads



FEEDBACK RECEIVED...

Each model download saves the engineer between 2 hours and 2 days of manual creation

But...

Only 5% of the world's engineers have access to powerful 3D modelling tools

Engineers designing in 3D enjoy huge advantages over those still using traditional 2D methods

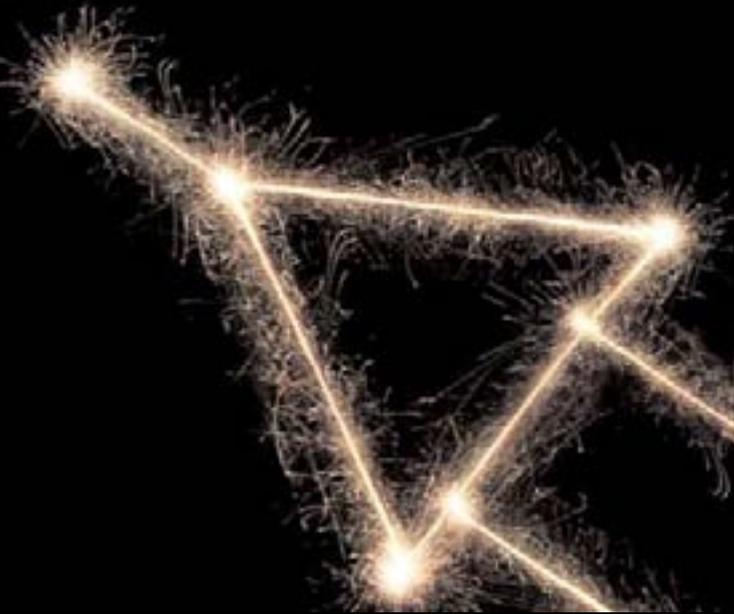


A NEW TOOL IS NEEDED TO HELP ENGINEERS

- A 3D design tool to address the needs of the *non-CAD* specialist
- **Complement** the existing feature-based CAD software by decreasing time to make changes
- Highly intuitive with low learning curve
- **Free-of-charge** to remove all financial barriers

TOGETHER WITH **SPACECLAIM** WE HAVE
CREATED A SOLUTION FOR THE
ENGINEERING COMMUNITY





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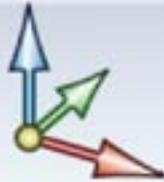
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INTRODUCING DESIGNSPARK MECHANICAL



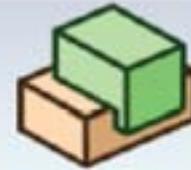
Pull



Move



Fill

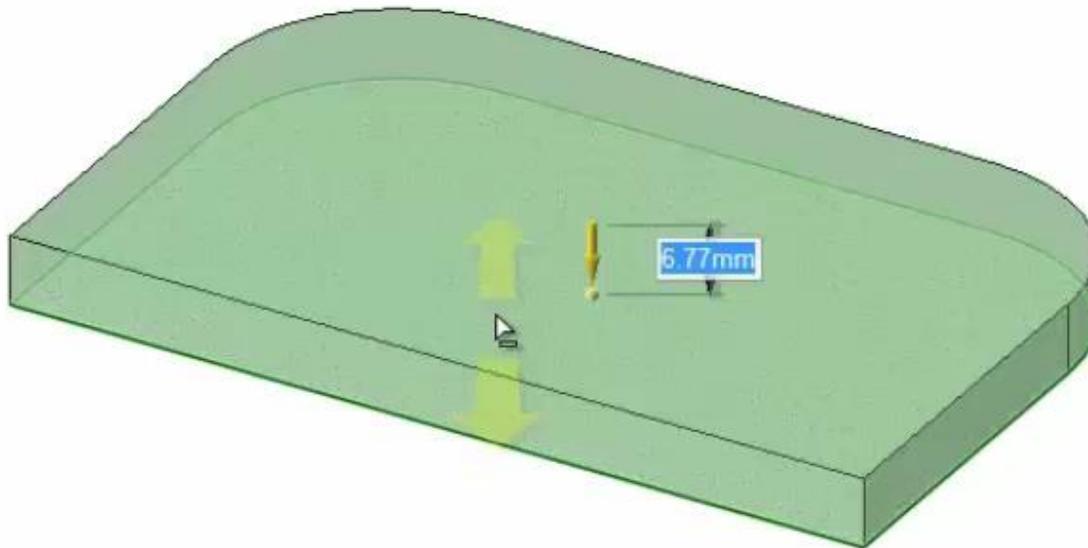


Combine

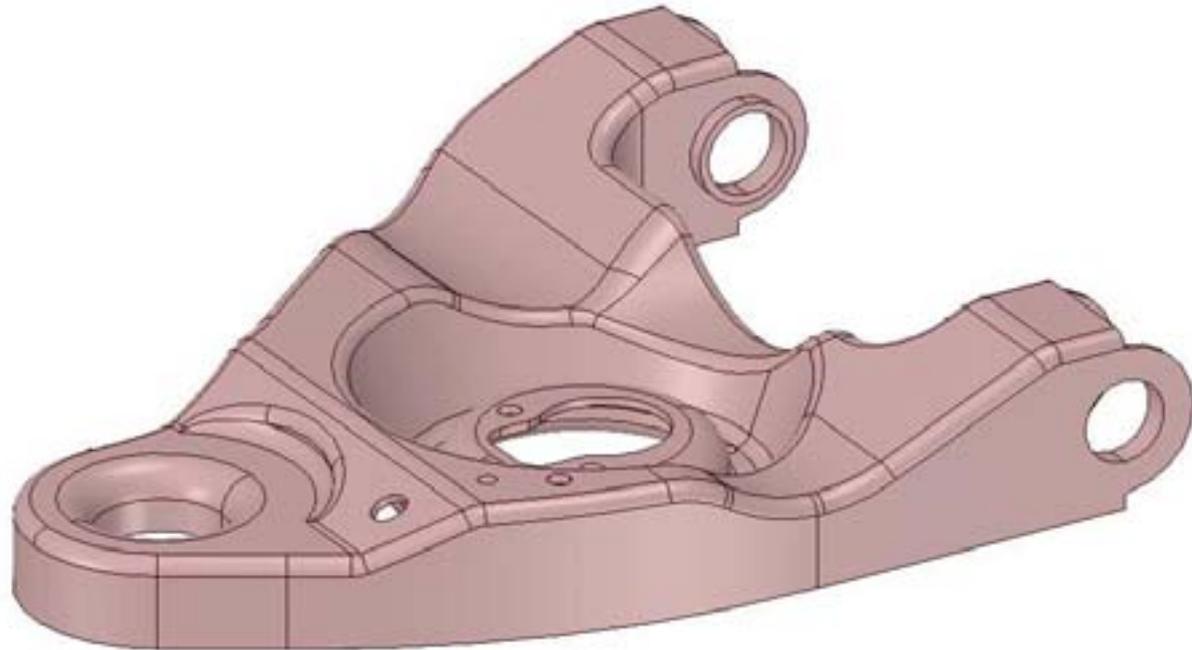
4 simple **gestures** putting geometry creation into
the hands of the *non-CAD* specialist

INTRODUCING DESIGNSPARK MECHANICAL

Based on intuitive 'Direct Modelling' techniques



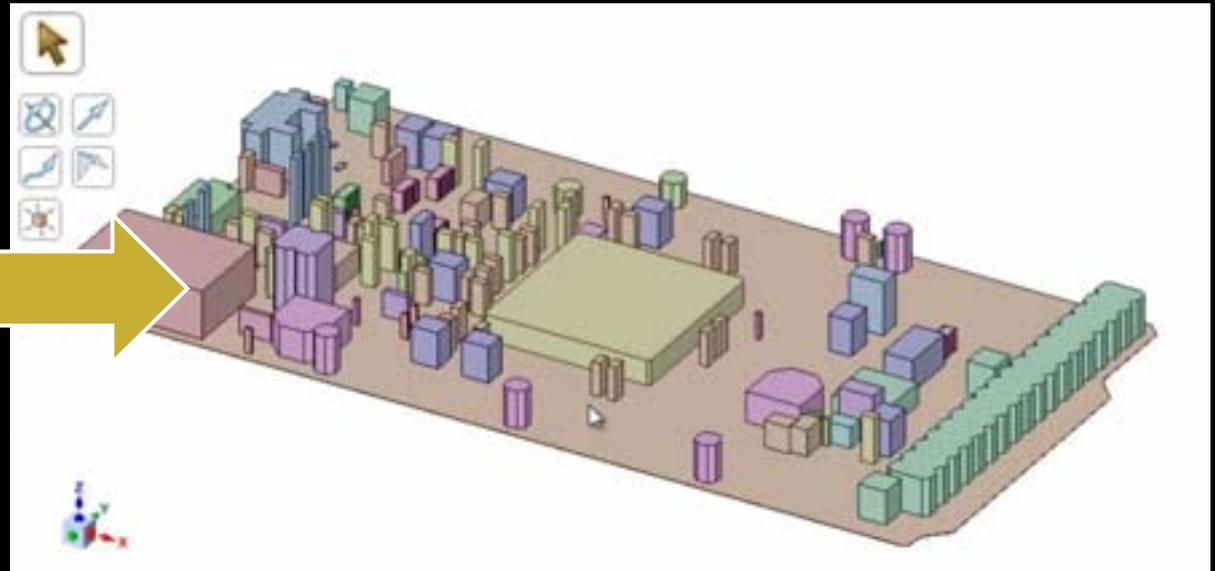
INTRODUCING DESIGNSPARK MECHANICAL



INTRODUCING DESIGNSPARK MECHANICAL

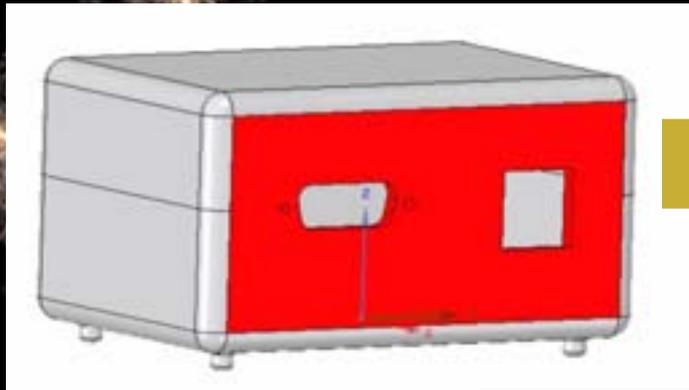
Import IDF files from PCB design tools

ORCAD
ALTIUM
PADS
DESIGNSPARKPCB
EAGLE...

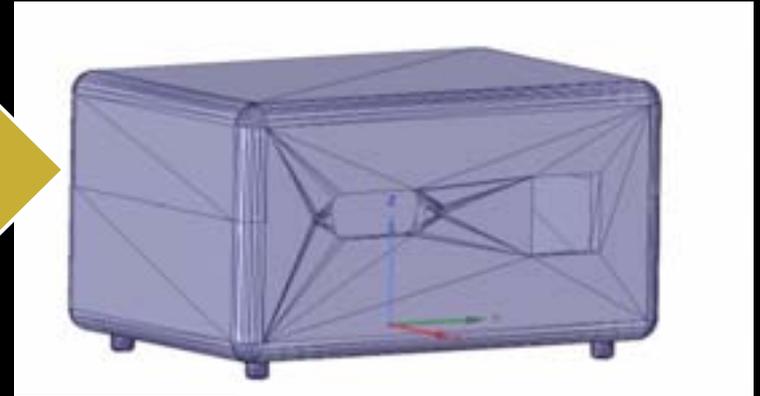


INTRODUCING DESIGNSPARK MECHANICAL

Create rapid prototypes with a 3D printer

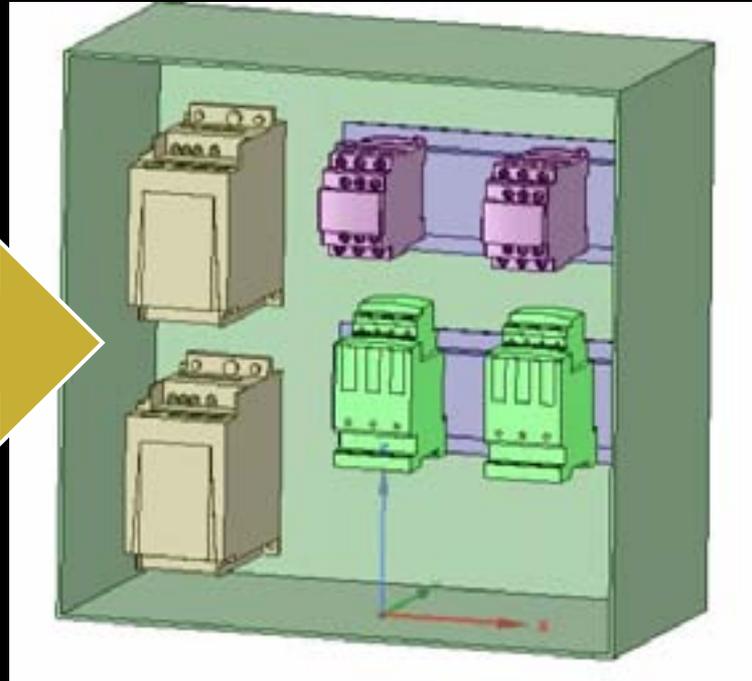
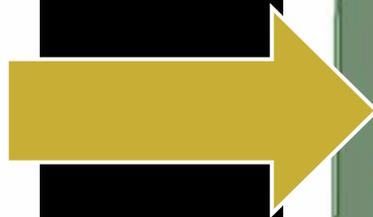


*.STL FILE



INTRODUCING DESIGNSPARK MECHANICAL

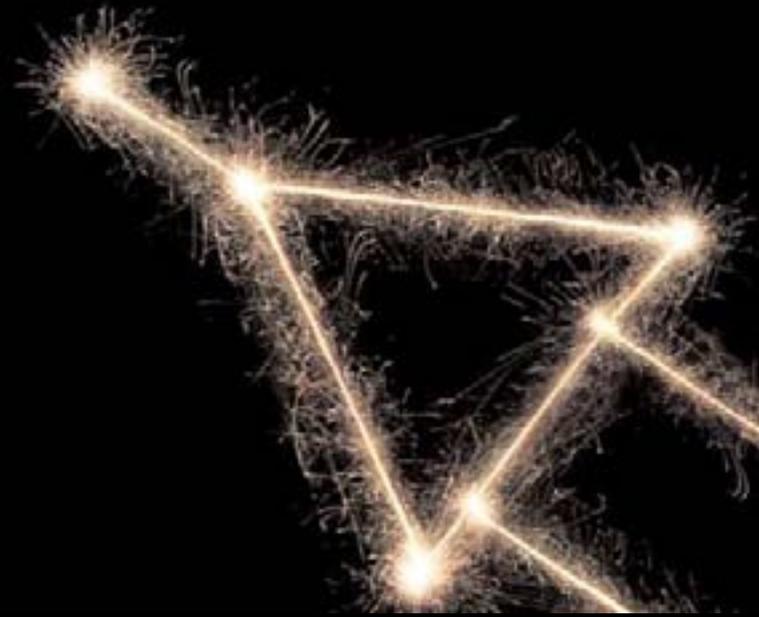
We've worked with Traceparts to make **100m+** industrial components available from day one



INTRODUCING DESIGNSPARK MECHANICAL



Presents



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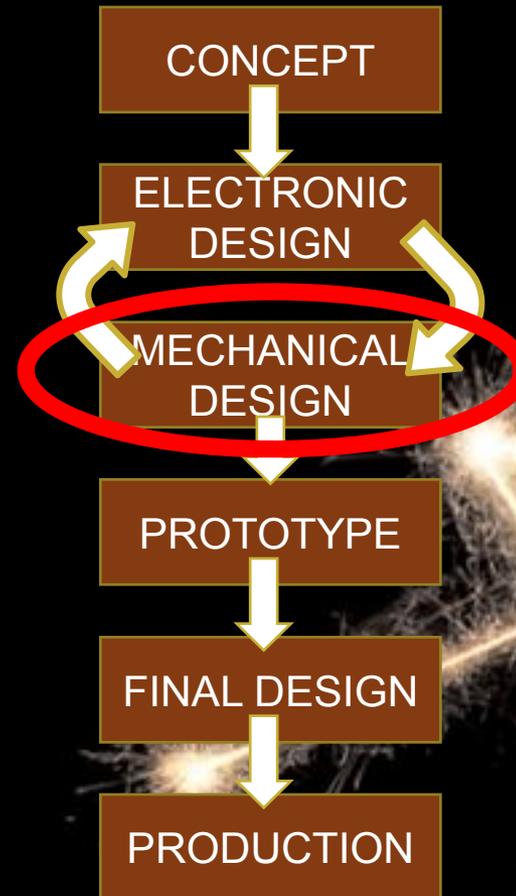
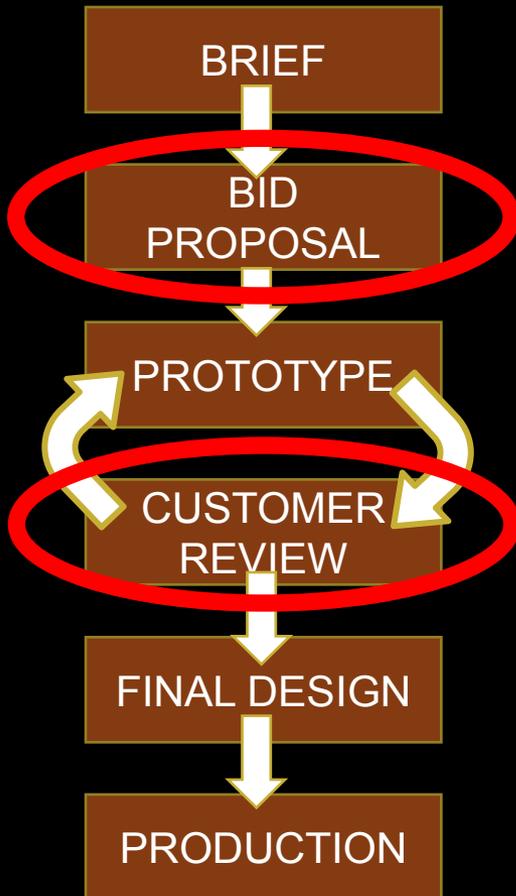
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DESIGN FLOW BOTTLENECKS

MACHINE DESIGNERS



ELECTRONIC DESIGN ENGINEERS



WHY IS 3D DESIGN IMPORTANT



ELECTRONIC ENGINEERS TELL US...

"ECAD & MCAD WORLDS ARE MERGING"

WHAT DOES THAT REALLY MEAN??!

15 YEARS AGO

An RS Customer told us...

The thermostat here was designed much like every other electronic product at the time

**1ST CIRCUIT
DESIGN**



**2ND CASE
DESIGN**

Electronic engineer passes circuit design to mechanical engineer to build case, buttons, dials around



WHY IS 3D DESIGN IMPORTANT



ELECTRONIC ENGINEERS TELL US...

"ECAD & MCAD WORLDS ARE MERGING"

WHAT DOES THAT REALLY MEAN??!

TODAY



An RS Customer told us...

The thermostat here was designed much like every other electronic product today

CIRCUIT DESIGN



CASE DESIGN

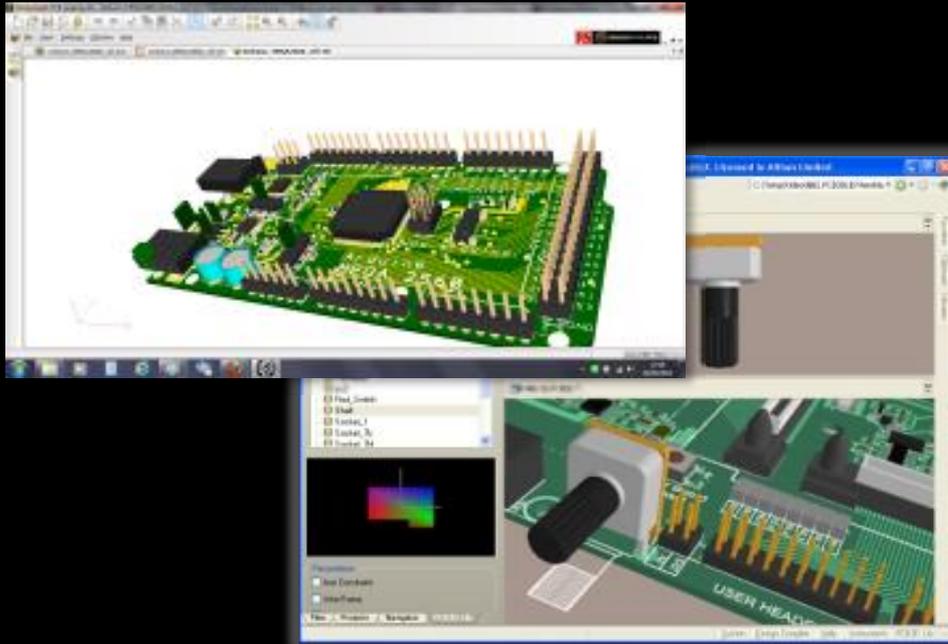


FINAL PRODUCT

Product design is far more aesthetically focussed meaning circuit and mechanical design are done in parallel

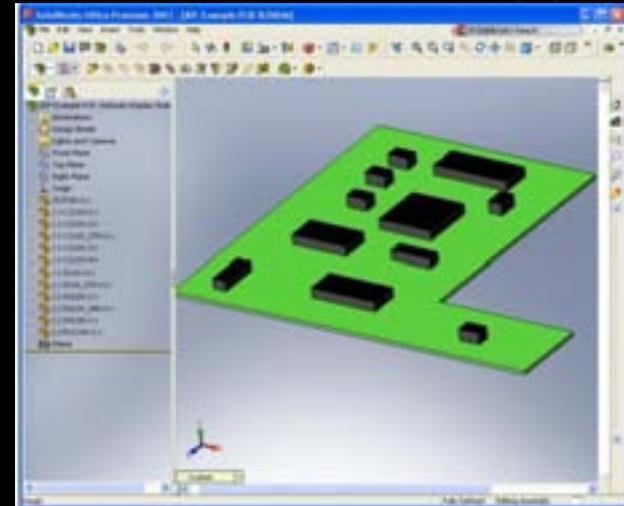
HOW IS THE MARKET ADAPTING?

Many PCB design tools have integrated **3D viewers**



Example 3D viewers in Altium Designer & DesignSpark PCB

Many PCB design tools have IDF outputs for use in MCAD tools



Example of an IDF import into SolidWorks

BUT THESE DO NOT FULLY ADDRESS THE CHALLENGES

FEEDBACK FROM ELECTRONIC ENGINEERS

Mechanical design stage increasingly coupled with PCB design

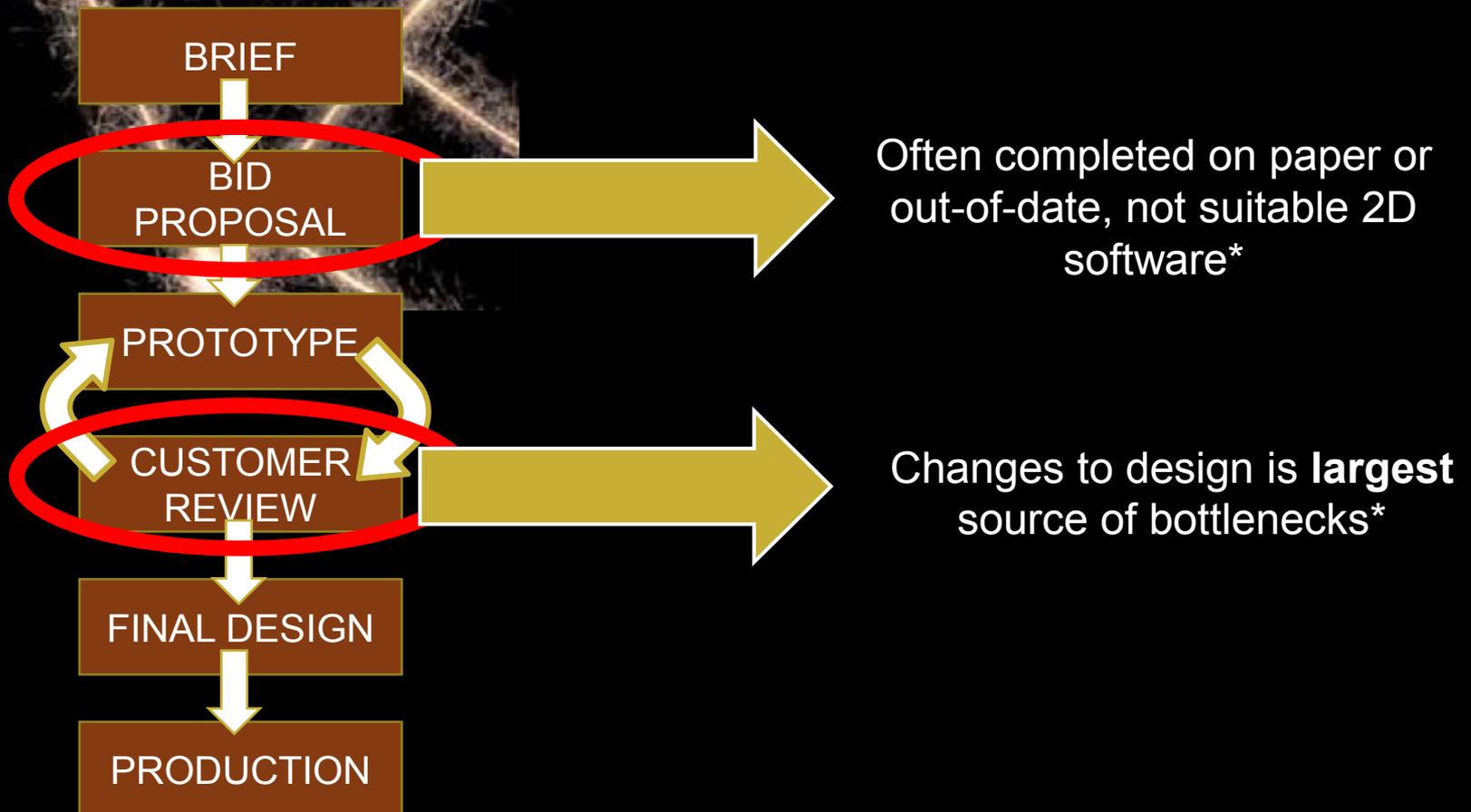


It typically takes a week for the CAD guys to make even small changes

I want to be able to model as quickly as my brain's creating

There's a real need for some common ground between us and the mechanical engineers

MACHINE DESIGNER CHALLENGES



* CUSTOMER SURVEY CONDUCTED BY RSM 2012

FEEDBACK FROM MACHINE DESIGNERS

“

We tend not to deviate from previous designs, we don't have the time to create concepts from scratch

”



“

We're losing business to companies able to invest in modern mechanical design software

”

“

Our ability to innovate is limited due to the lack of time we have available

”

“

The mechanical design process is a major bottleneck and can add weeks to a build

”

LIMITATIONS OF FEATURE-BASED CAD



Feature-based CAD constructs designs from smaller, interdependent parts

Parent-Child relationships created to enable multiple engineers working on same design

**THE OUTPUT IS A HIGHLY ACCURATE SET OF BLUEPRINTS
ESSENTIAL FOR THE MANUFACTURING PROCESS**

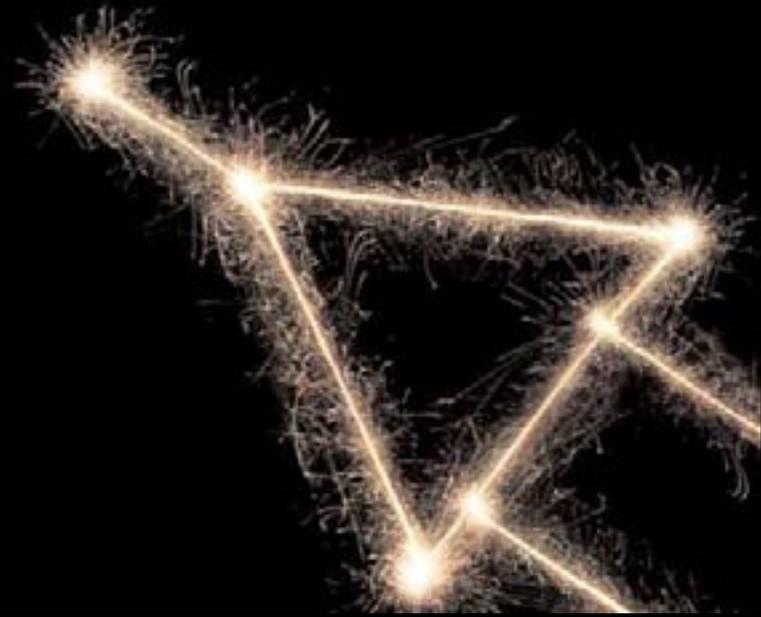
LIMITATIONS OF FEATURE-BASED CAD



However the limitation is when an engineer needs to make **changes**

A **change** to one feature leads to a **change** to the connecting features and there is soon a ripple effect across the whole design

FEATURE-BASED CAD IS NOT SUITABLE FOR EVERY TASK



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SUMMARY

DESIGNSPARK MECHANICAL...

- Direct manipulation of models
- IDF import from PCB design tools
- STEP, STL, OBJ, SKP (Sketchup) import
- AutoCAD (DXF), OBJ, STL, 3D pdf, XAML, jpg, png outputs
- 3D printer compatible
- Access to 100M+ 3D models from Traceparts



**DESIGNSPARK
MECHANICAL**



SUMMARY

DESIGNSPARK MECHANICAL...

- Extensive support and video tutorial documentation
- Technical support forums at **Designspark.com**
- Free to access for all engineers
- Share & collaborate on projects with **Designshare**



**DESIGNSPARK
MECHANICAL**





QUESTIONS

