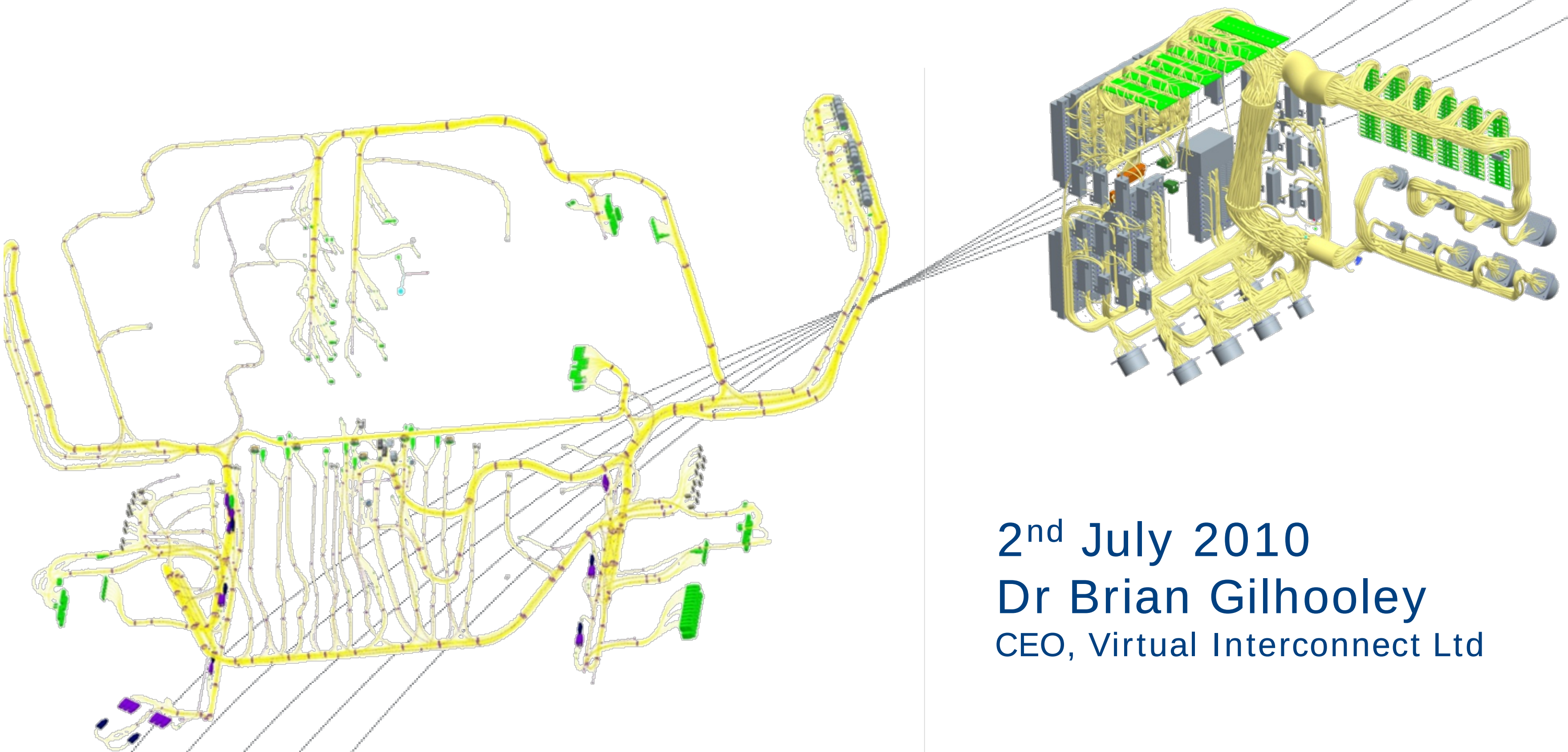
# Virtual Interconnect

## *The Role of University Collaboration in the Development of Virtual Interconnect*



2nd July 2010

Dr Brian Gilhooley
CEO, Virtual Interconnect Ltd

LET's WORK TOGETHER!

# AGENDA

## ❑Pre-History.

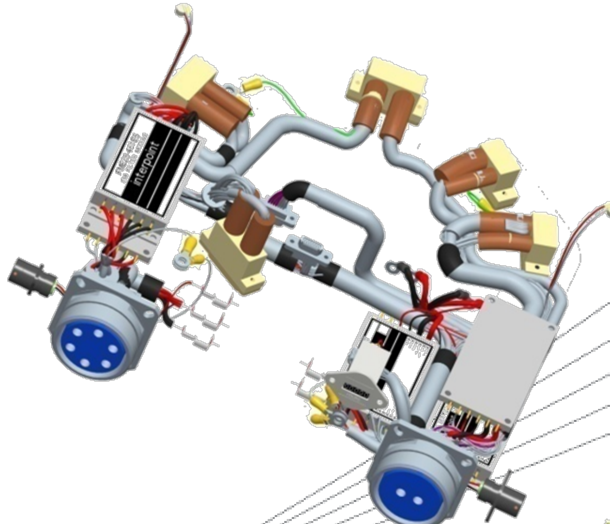
- ➢ Clairemont Electronics.
- ➢ SMEs & Universities.
- ➢ Necessity The Mother of Invention.
- ➢ Re-Engineering The Engineers.

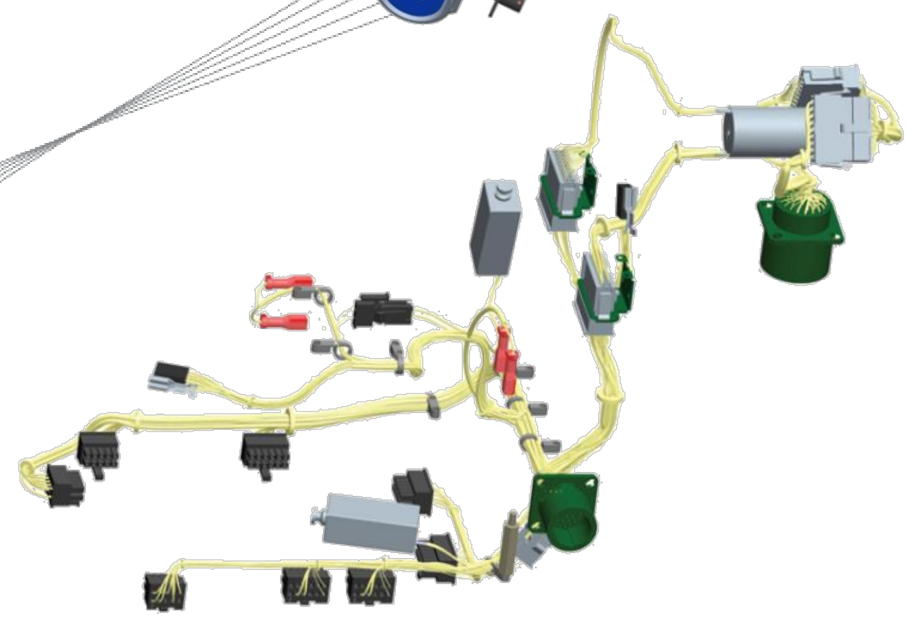
## ❑Roll The Dice!

- ➢ Virtual Interconnect is (Still?) Born.
- ➢ Early Casualties (The customers!)
- ➢ Universities & The Early Days.

## ❑Collaboration

- ➢ Martini Marketing
- ➢ Market Research
- ➢ SCORE
- ➢ CO-STAR
- ➢ EngD.
- ➢ META









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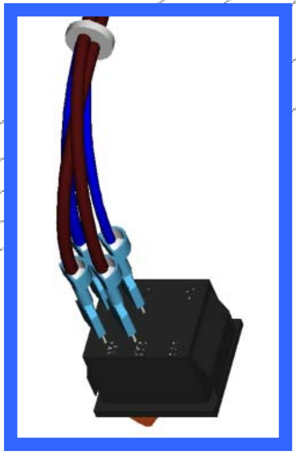
# Pre-History – Clairemont Electronics

CLAIREMONT ELECTRONICS

Circa 2000



- Indigenous subcontractor within Electronics Manufacturing Sector.
    - Low complexity Cable Harness + FA&T
    - Based in Greenock, Scotland, UK.
- Traditional Business Model.
    - Owner/Manager Model (Lithgows).
    - High Volume, low part count, labour intensive manufacturing.
    - Localised customer base dominated by single large OEM.
    - Low Engineering skill level.
    - Highly Profitable.
- The Times They Are a Changin'!
    - Owner bought out by Directors + 3i
    - Threatened by Low Wage Eastern Europe Suppliers.
    - Customer base Erosion. (£3M to 0 in one year!)



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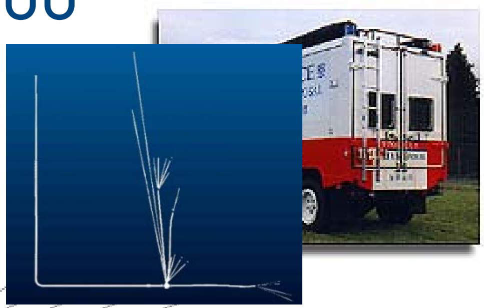
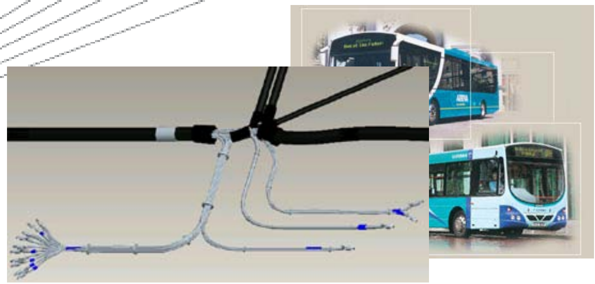
# Pre-History – Clairemont Electronics

CLAIREMONT ELECTRONICS

Circa 2000



- ❑Bus, Truck & Train Strateg.
  - ➢ Products which had to be manufactured in geography.
  - ➢ Low/Small manufacturing batch runs.
  - ➢ Complex Products.
  - ➢ High parts count (2000+ per harness).
  - ➢ High Rate of Change of product configuration.



- ❑Challenges: Systems.
  - ➢ Islands of technology!
  - ➢ MRP system: parts ordering, no real scheduling.
  - ➢ Manual ECN System.

- ❑Challenges: Engineering.
  - ➢ Engineering Skill Base: Not Fit for purpose.
  - ➢ Estimators + Pre-production Engineers.
  - ➢ Time to Manufacture.
  - ➢ No real added value.



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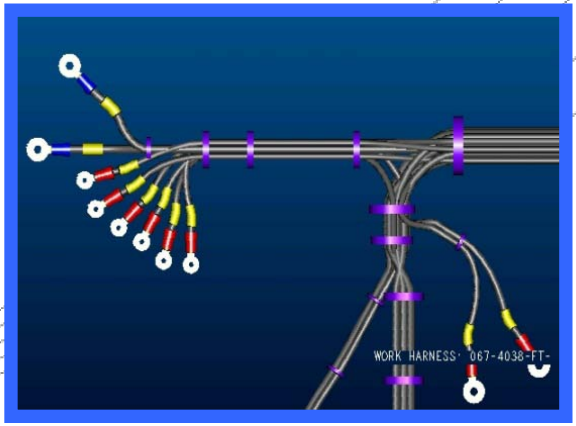
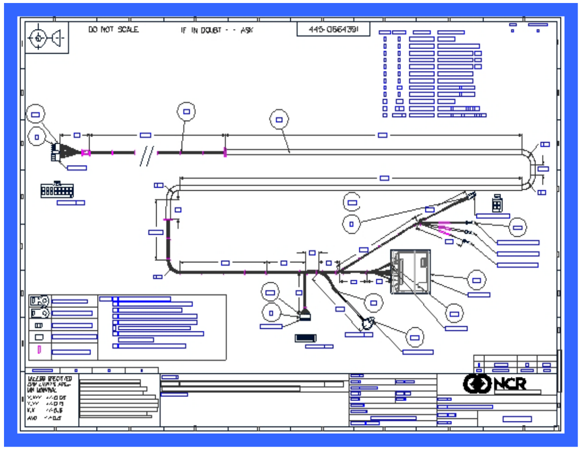
# Pre-History – Clairemont Electronics

CLAIREMONT ELECTRONICS

Circa 2000




❑Re-Engineer The Engineers.

- ➢ Required Engineering skill level.
- ➢ Talk "Toe to Toe" with customer Engineers.
- ➢ Add Value to the product.

❑Traditional SME View of Universities (+ Professional Engineers).

- ➢ Only one beneficiary of the relationship: University.
- ➢ High cost for little or no return.
- ➢ Not interested in tactical projects, only long term.
- ➢ Too removed to drive any benefit.
- ➢ Waste of money!

❑The Hard Sell!

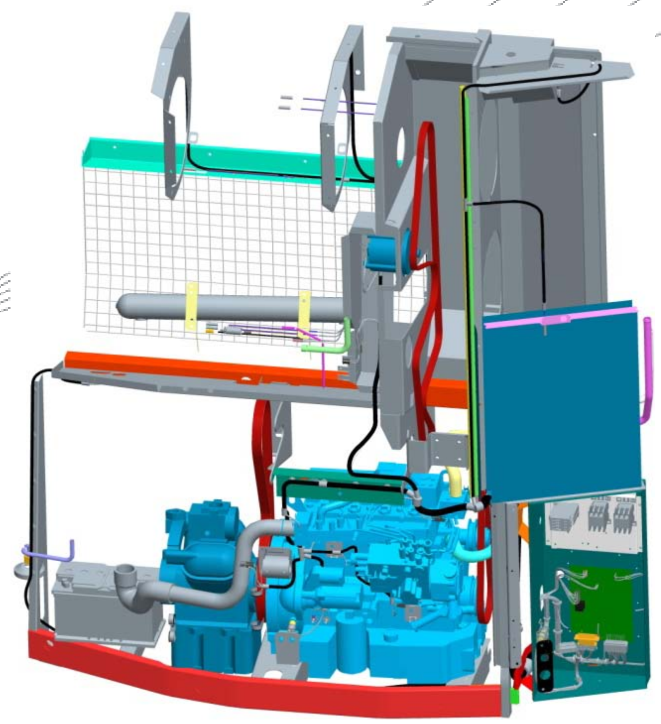
- ➢ Recruit Professional Engineers or shut the place.
- ➢ Gain Confidence of the customers.
- ➢ Improve the manufacturing process in terms of cycle time & data integrity.

# "Do you know What You're Talking About!"

CLAIREMONT ELECTRONICS

Circa 2000

- ❑Recruited 4 Professional Engineers
  - ➢ Recruitment Fees.
  - ➢ Bedding in time inefficiencies.
  - ➢ Test System Development
- ❑After approx 6 months
  - ➢ Only one left!
  - ➢ Cost approx £20K.
- ❑Issues:
  - ➢ Retention!.
  - ➢ Cost.
  - ➢ Completing with Motorola etc.
  - ➢ Sub contract NOT where you're career wants to be!



# "Last Chance Saloon!/First Contact"

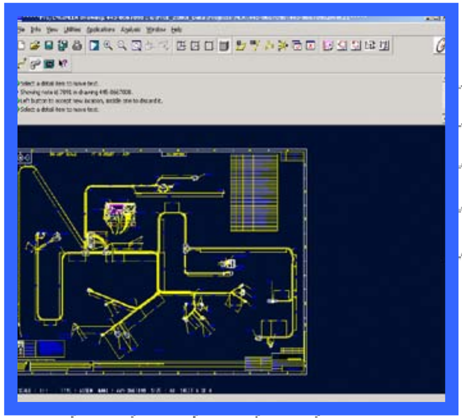
Circa 2000

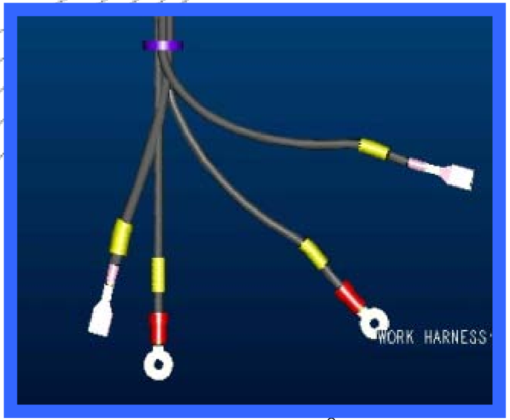
- Looked internal
  - Trawled Through personnel Records
  - Searched for a Part-Time University Course.
  - Looked for Final Year Student projects
- First Contact
  - Glasgow Caledonian University.
  - Expertise in Pro/ENGINEER.
  - Paisley University (as it was then)
- Sponsored Internal Students:
  - Don't ignore what's under your nose!
  - Sponsored 4 part students
  - Took on 2 summer students (specific areas of the process)

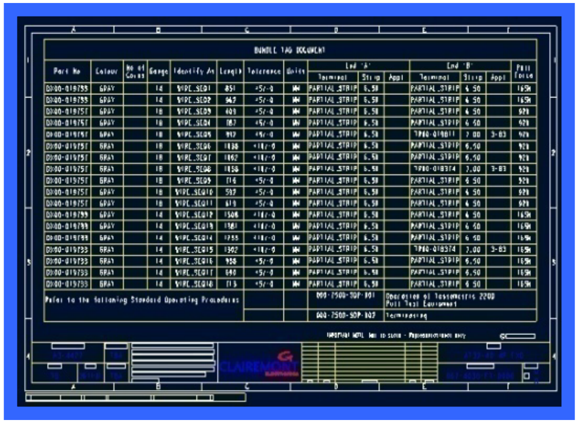
# “2D/3D Pre-Production Process”

CLAIREMONT ELECTRONICS

- New Pre-Production Process
  - Developed as Final Year Project with GCAL.
  - 3D Model based.
  - Purchased 5 seats of Pro/ENGINEER.
  - TRAINED Entire Engineering department,
  - *ECN Handling down by 72%*
  - *NPI reduced by 50%*





# "Teaching Company Scheme"

CLAIREMONT ELECTRONICS

GLASGOW CALEDONIAN UNIVERSITY

*"Business re-engineering of the current pre-production process for wire harness assembly to reduce "time to manufacture" through leveraging computerisation and automation."*

- ❑Teaching Company Scheme (KTP)
  - ➢ Good Graduate.
  - ➢ Guaranteed for 2 years.
  - ➢ Systems Issues. (MRP I/F)
  - ➢ ECN System.
  - ➢ Parts Analysis.

- ❑Teaching Company Scheme (KTP)
  - ➢ Work is in the preparation (1year)
  - ➢ Financially almost Neutral
  - ➢ University Involvement, sporadic

KTP Project:

1. Auditing of current processes and determine remedial action to bring them to the required standard.

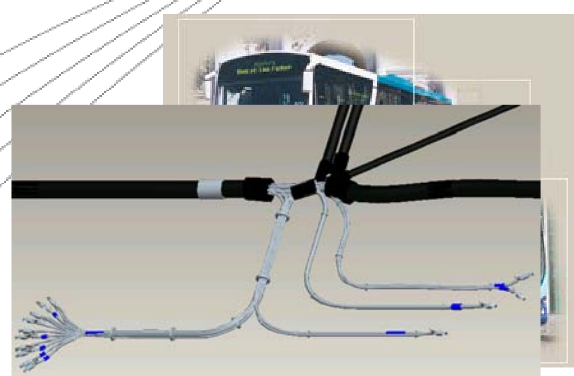
2. Defining, designing and installing a Generic Piece Part Database (GPPD) to

# "End of The Road!"

CLAIREMONT ELECTRONICS

❑KTP was going really well, making substantial savings, Bus, Truck & Train Strategy working until……………..

- Low Wage Economies bite hard.
- FA&T transferred to Hungary.
- Clairemont goes into Voluntary Administration
- Deep Frustration!

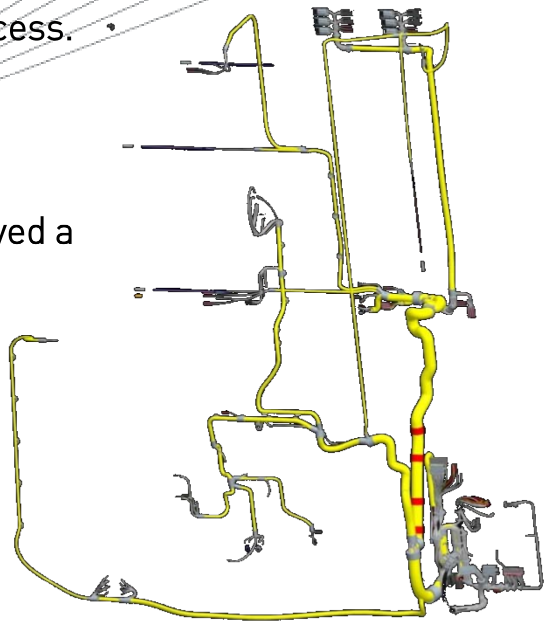


# "End of The Road!"

CLAIREMONT ELECTRONICS

❑Clairemont and University Collaboration:

- There would no computerised 2D/3D Pre-Production Process.
- No KTP and associated systems improvement.
- No Successful Bus, Truck & Train Strategy.
- The relationship provided Competitive Advantage and moved a labour intensive manufacturing process into a highly computersied, integrated and efficient process.
- And lastly.........................................................
- There would be no Virtual Interconnect!



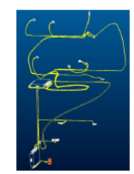
# Roll The Dice!

1st July 2004

- Choices!.
  - Buy the Harness division of Clairemont.
  - Start a new, different type of company.
- Virtual Interconnect is Born!.
  - In a classroom at GCAL, thanks to Phiroze Mehta.
  - Business Model: *We don't want to make anything!*
  - Develop a fully associative parametric 3D design process.
  - Sub-Contract Design Work. (Initially;Service)
  - Software Development (Eventually; Product)
- Customer's, What Customers?
  - Who are you?
  - How long have you been in business.?
  - Let's see the contracts? (RBS)
  - Tapping the staff!
- Roll The Dice!.
  - No Customers!
  - No Money!

Virtual InterConnect

Start-up Business Plan: May 2004 – October 2006
Version 3.2
29th May, 2004



Prepared by

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Commercial in Confidence 1

Registered in Scotland No.SC266882 Registered Office: 39 Castle Street., Edinburgh, EH2 3BH

**2.3) Vision**
The vision is to become the "Best In Class" for interconnect solutions in the areas of Virtual and Physical prototypes. Leveraging Back Office Business systems and individual competence to drive competitive advantage in relevant market sectors.

**2.4) Future Prospects**
The exit strategy is for a trade sale after 5 years of sustained growth, divisionalising the company en route into Engineering Consultancy and Software Development subsidiaries. A traditional harnessing company such as Leoni or Molex will be targeted for the Engineering Consultancy, while an MCAD house, such as PTC for the design tools.

16/06/04 Commercial in Confidence 4



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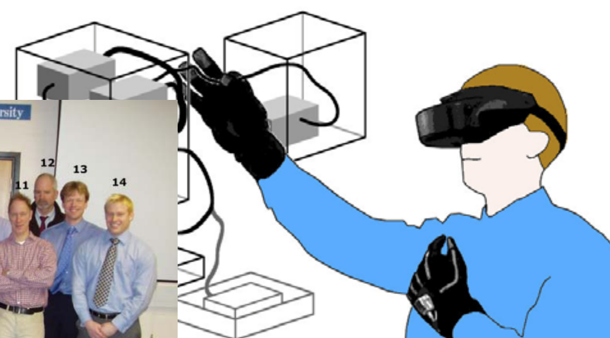
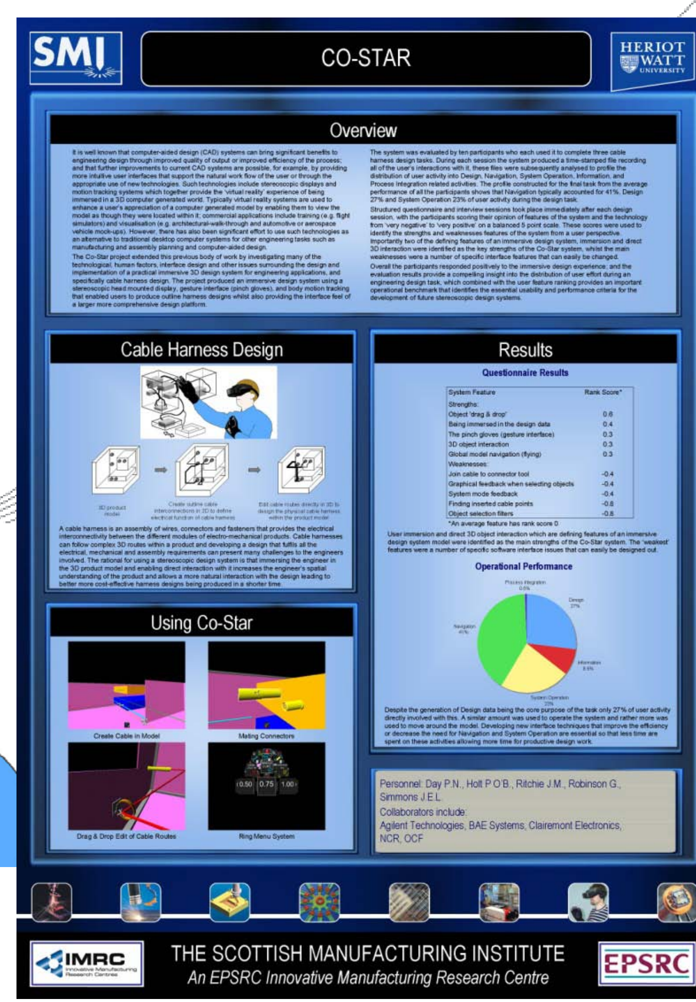
HERIOT WATT UNIVERSITY

CO-STAR Collaborating with the designer

Virtual Interconnect

- Initial Introduction
    - Heriot Watt.
    - Industrial Partner.
    - Professor Jim Ritchie & team.
    - Hosted Final Year MechEng.
    - One of few Harnessing Research Centres.
    - Industrial Contacts.



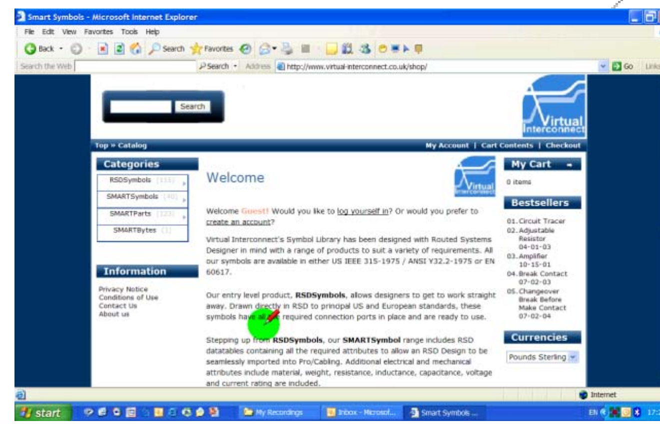
# KTP Continues

- KTP Continues, but different.
  - Phiroze Mehta & Gerry Black.
  - Refocus on software development; Web Shop.
  - Commercial software development.
  - Web shop to enable global selling of product.

- Paisley University; Here's the Deal!
  - UNPAID part-time Students.
  - We train you, then we but parts from you.
  - Populate our 3D libraries

- Punch Line.
  - Really good web shop!
  - Loads of 3D Models
  - Didn't Sell a Bean!

- Positives.
  - Led to 2 full-time members of staff!
  - Raised the profile of the Company
  - Taught us about the need for real marketing.
  - Kurian landed a £60K job in London!



# Market Research

- MCAD Market.
  - GCAL Engineering Department, Phiroze Mehta
  - 8 Groups of Part time Students.
  - 8 Market Reports.

GR7

**Project Methodology**
(ENGM380)

**Cable & Harness Design, Marketing Brief**

Due date: 2nd November 2004

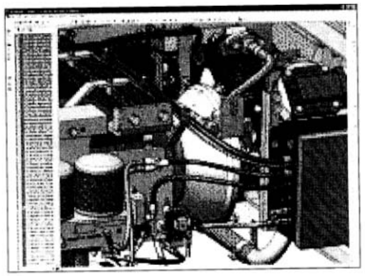
**Prepared by Group 7:**
G.Clark, J Baillie, T.Ryan, S.Armstrong.

Phiroza Mehta, Glasgow Caledonian University

Scan167, March 12, 2005.max

ENGM380 Project Methodology Assignment 1 by Group 6 (Christopher Bennett; Alan Cowan; Kenny Price; Derek Wilson)
Submitted: 02nd November 2004

**Investigation in to the Mechanical Computer Aided Design (MCAD) Market**



ENGM380 Project Methodology Assignment 1 by Group 6
Christopher Bennett
Alan Cowan
Kenny Price
Derek Wilson

Scan228, March 12, 2005.max

University of Strathclyde Business School

# Market Research II

- Strathcylde Graduate Business School
  - Oil & Gas Market, Entry Strategy for Virtual Interconnect.
  - Mature MBA students
  - 2 dissertations in subsequent years.
  - 2 Detailed Marketing Reports.

**DEVELOPING A SUGGESTED STRATEGY FOR VIRTUAL INTERCONNECT TO PENETRATE INTO THE UK OIL AND GAS INDUSTRY**

**Submitted in partial fulfillment of the requirement of the degree of Master of Business Administration of the University of Strathclyde**

**THE UNIVERSITY OF STRATHCLYDE GRADUATE SCHOOL OF BUSINESS**

**S M A Moin**

**2007 UDLAMAIN**

**Professor Valerie Belton**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**Web:** http://www.virtual-interconnect.co.uk


28th January 2005

**Marketing Brief**

**BACKGROUND:** The Mechanical Computer Aided Design (MCAD) market is currently undergoing a paradigm shift from 2D to 3D CAD tools. This is being led by the Original Equipment Manufacturers (OEMs) in an effort to gain competitive advantage by reducing time to market and overall product development costs. It is anticipated that the OEMs will pull through their 1st tier suppliers, as was the case with 2D MCAD tools e.g. AutoCAD. Market research is required to establish where in the migration process the major OEMs are (3D vs. 2D) and which of the major MCAD tools are being adopted, Unigraphics, Mentor Graphics, AutoCAD, SolidDesigner, Pro ENGINEER, CATIA etc and where on the migration path are the 1st tier suppliers. It would also be of interest to establish if there is a market correlation with the CAD tools available.

Two project options are presented below. The first addresses the adoption of 3D MCAD tools within specific market sectors, the second the adoption and use of specific cable and harness EDA software generally. VI operate within the cable and harness design market as both providers of project and implementation solutions. Therefore it would be of interest to establish if the market place would outsource some of their cable and harness design work and if there was a requirement for help in implementing a Pro/ENGINEER harnessing solution. It would also be of interest to establish which cable and harness software has the best price/performance characteristic and the size of the associated userbase.

1) **Market Sector Project.**
   Choose a market sector from the following list and implement a market research project in accordance with the objectives outlined below.

   a) Gas & Oil
   b) Military
   c) Medical
   d) Rail
   e) Aerospace.

**1.1) OBJECTIVES:**

a) To establish which OEMS are using 3D MCAD tools and to what extent.
b) To establish which 1st Tier suppliers are using 3D MCAD tools
c) Which of the major MCAD tools are being used and the market share of each.
d) Which OEMs are using 3D MCAD tools and also have a Cable & Harness requirement.
e) Which of the OEMs use Pro/ENGINEER and have a cable & harness requirements.
f) Which of the Pro/ENGINEER users would outsource cable & harness work.
g) Which of the Pro/ENGINEER users would retain implementation consultants.

# EngD

❑ Staff Retention.
  - ➢ Not everyone is motivated solely by money.
  - ➢ Stepping stone to a more lucrative career.

❑ External Recognition.
  - ➢ Work that is going to be done anyway.

❑ Personal Development
  - ➢ Take Responsibility for own work

❑ Views
  - ➢ Academic & Work Commitment.
  - ➢ More support for Part-Time route.
  - ➢ Open it up to a more general audience.




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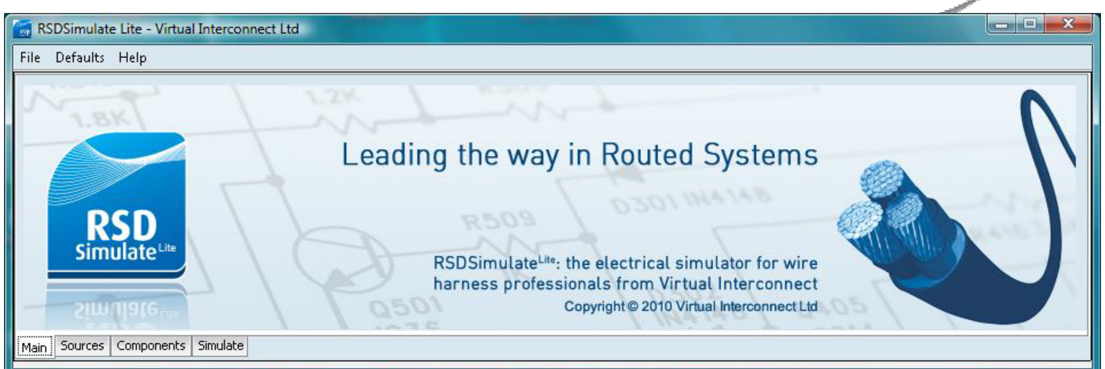
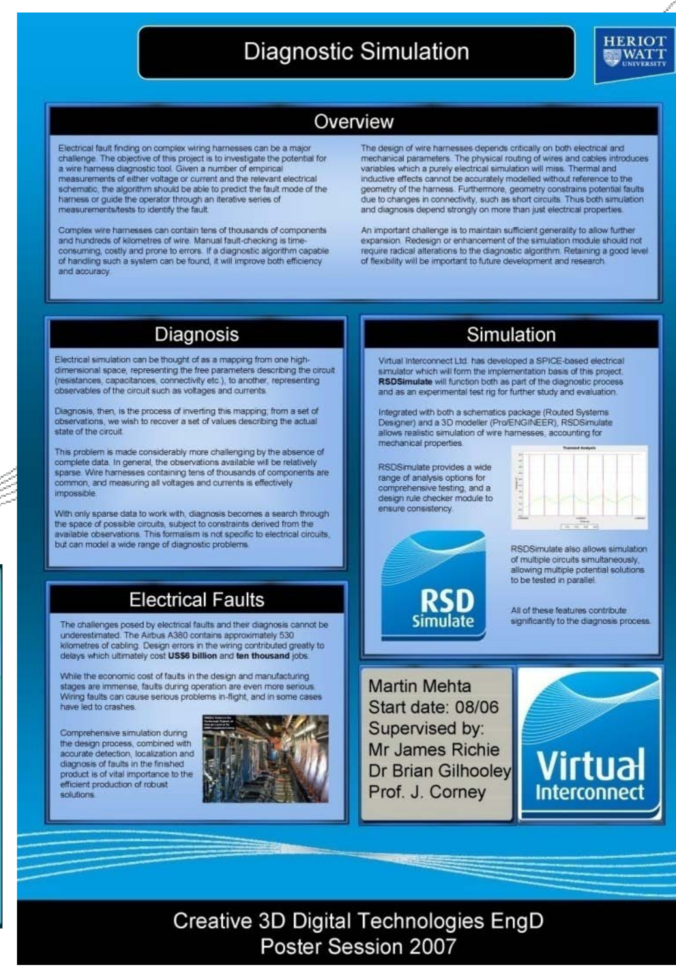
# EngD

- ❑Helps Drive Competitive Advantage.
  - ➢Skills Acquisition.
  - ➢Helps develop Distinctive Competencies.
  - ➢Professional Software development.
  - ➢Latest academic thinking.
  - ➢ANT Theory for process analysis.

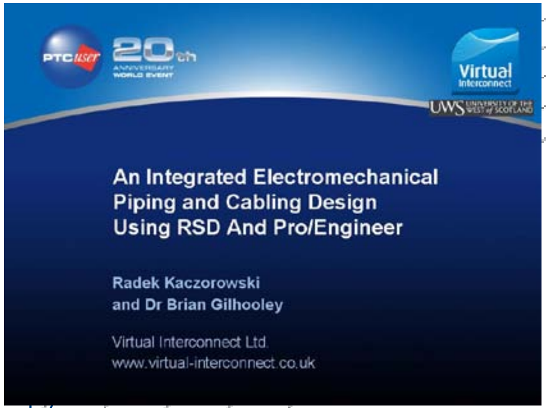


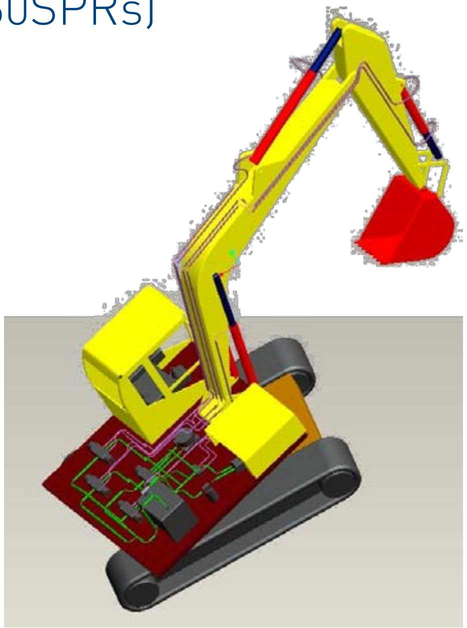
# SCORE Project

***"To deliver a fully documented, associative and parametric routed systems piping and hydraulics design process"***

- Collaborative Research with UWS.
- 18 month program, now complete.
- Includes RSD & Pro/PIPING Functionality Review. (60SPRs)
- Process Mapping of Industrial Piping Processes.
- Future software products.




KOCKUMS





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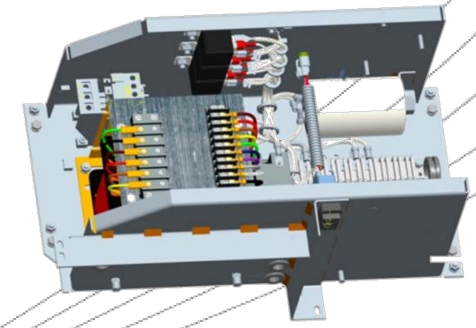
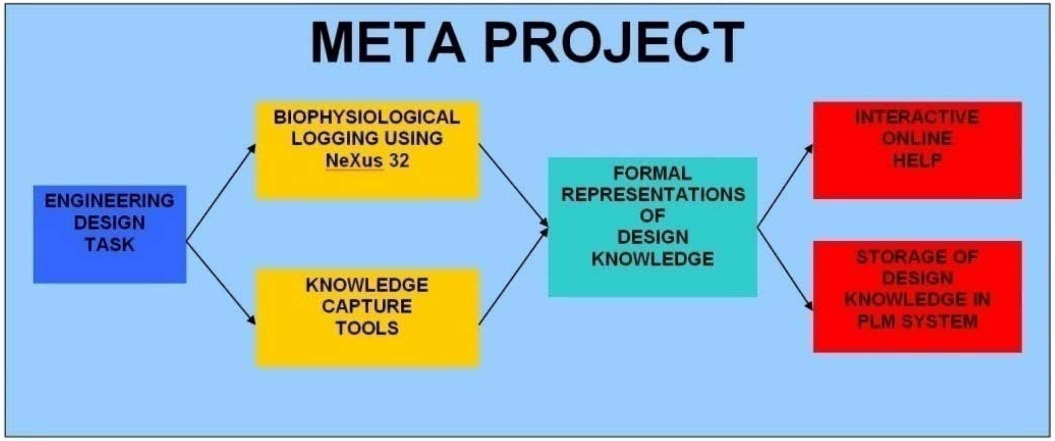
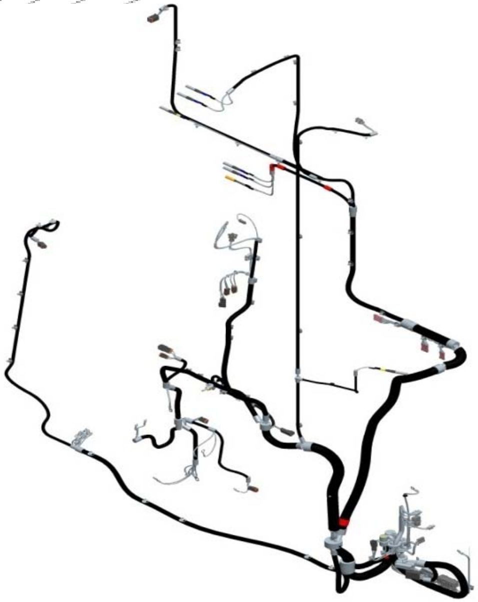
# META Project

❑Industrial Partner.

- Supplied 3D Geometry.
- Supplied Engineers for experiments /Trials.
- Matchmaker with PTC Inc.
- Future Trials in Sept. '10





# SME's, University Collaboration and Competitive Advantage.

- ❑No Collaboration, No Virtual Interconnect.
  - ➢ Provided a vehicle to develop competencies, 3D Modeling.
  - ➢ Negated Entry Barriers.
- ❑Provided Access to good minds, when we couldn't afford to recruit!
  - ➢ Mature MBA students.
- ❑Provided access to new competencies, we couldn't access.
  - ➢ Hydraulics.
  - ➢ Actor Network Theory (ANT)
- ❑Provided a method for staff retention.
  - ➢ Academic Qualifications.
- ❑Networking Opportunities.
  - ➢ Co-STAR & META Industrial Partners.
- ❑Saved us From Venture Capitalists.
  - ➢ Helped us develop competencies at out own rate.



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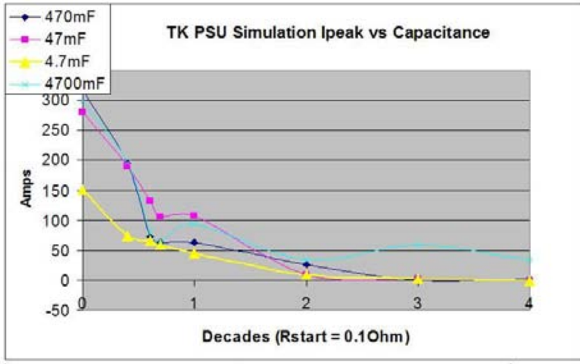
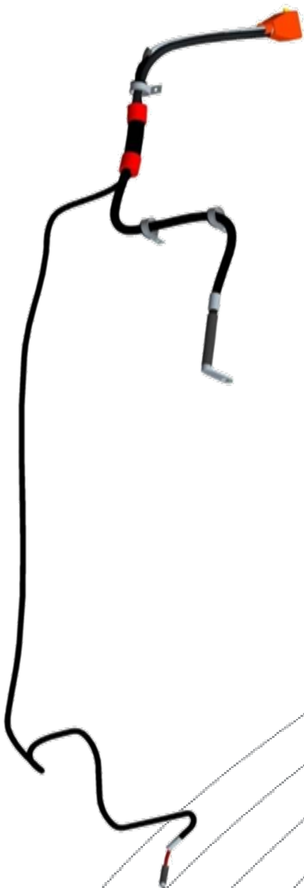
# University Collaboration and Virtual Interconnect.

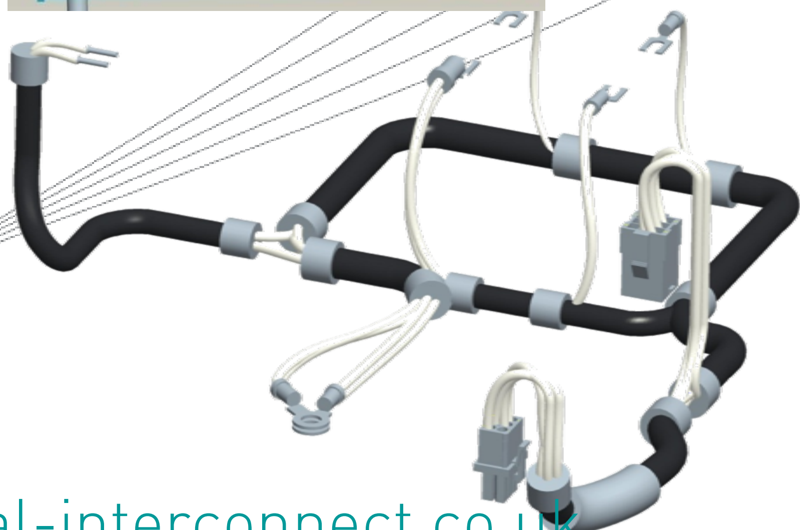
- ❑ Enabled Repositioning of Company.
  - ➢ From a Service to a Software Product Company..
- ❑ Enabled Diversification.
  - ➢ Piping/hydrualics
  - ➢ Oil & Gas Sector


- ❑ The Future with Heriot Watt.
  - ➢ Relationship going back10 years.
  - ➢ Valued.
  - ➢ Meta Project.
  - ➢ New Project: Hydraulic Simulator.
  - ➢ New Project: Estimation of Surface temperature of wires & cable bundles.

# Questions?





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