Graeme Meyer – Lead Specialist

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PO Box 13403, Wellington, 6440, New Zealand

Fernbrook Consulting

Fernbrook Consulting is developing a team of highly skilled consultants specialising in automation, strategy and standards. Graeme leads the team at Fernbrook Consulting as the founder and lead specialist.

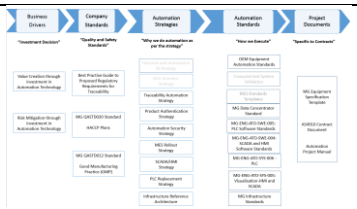
Fernbrook is engaging with corporates to:

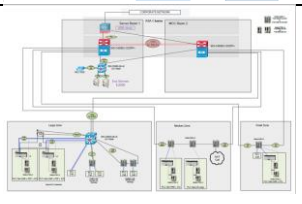
- Develop automation strategies
- Integrate Mass Serialisation solutions with Automation, MES and ERP systems
- Define Internet of Things (IoT) roadmaps
- Industrial automation system integration
- Research and development of suitable equipment, standards and architectures

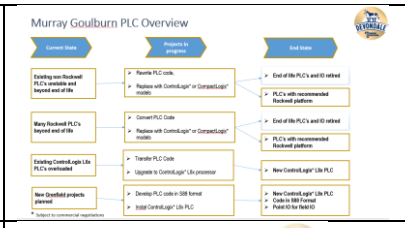
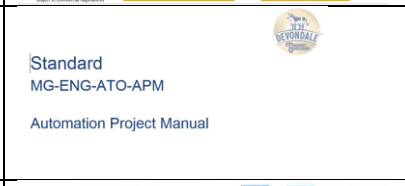
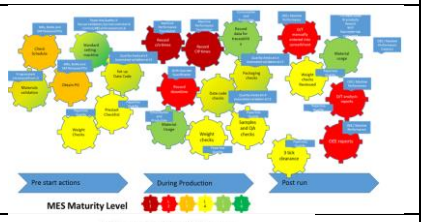
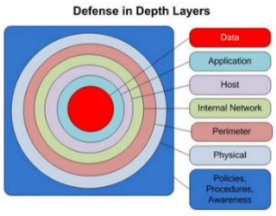
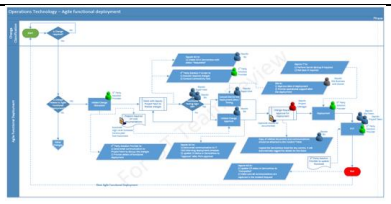
For any further information on Graeme's experience or how he and Fernbrook Consulting can help your organisation, please visit www.fernbrookconsulting.co.nz.

Full Working History

<table>
<tr><td colspan="3">2016 – 2018
Murray Goulburn / Saputo
Power and Automation Leader</td></tr>
<tr><td>Murray Goulburn Automation Masterplan

Position; Power and Automation Leader</td><td>Development of a Masterplan for investment strategy and standards for automation across the company.</td><td>  </td></tr>
<tr><td>Murray Goulburn Network Reference Architecture

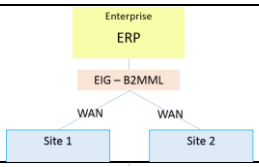
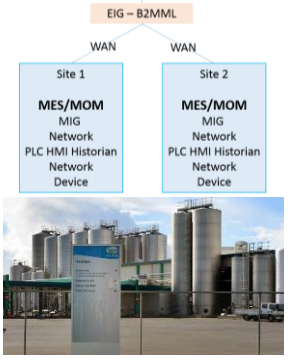
Position; Power and Automation Leader</td><td>Development of an agreed network architecture for IT and OT applications across multiple sites.</td><td>  </td></tr>
</table>

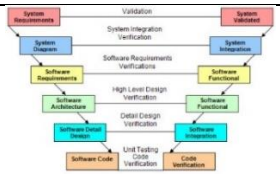
Murray Goulburn PLC Replacement Strategy Position; Power and Automation Leader	Development of a strategy to replace a high number of aged assets that are beyond end of supported life.	
Murray Goulburn Automation Project Manual Position; Power and Automation Leader	Development of a methodology for ensuring consistency of tendering and delivery of multiple PLC projects.	
Murray Goulburn MES rollout strategy Position; Power and Automation Leader	Stabilisation of Freshmilk Wonderware MES system at Erskine Park and Laverton. Closeout of Cobram Freshcut Cheese MES system.	
Murray Goulburn Automation Security Strategy Position; Power and Automation Leader	Development of a cybersecurity strategy for Engineering applications on multiple sites.	
Murray Goulburn OT CAB process Position; Power and Automation Leader	Development of a Change Management process for MES and IT systems interfacing changes	
Murray Goulburn Capital projects Position; Power and Automation Leader	Development of capital plans and budgets for investment opportunities	

July 2015 - present **Comsmart - Automation Consultant**		
Automation Consultant	Development of Automation Strategies for Corporates	COMSMART
Automation Consultant	Integration of Mass Serialisation solutions with Automation, MES and ERP systems	COMSMART

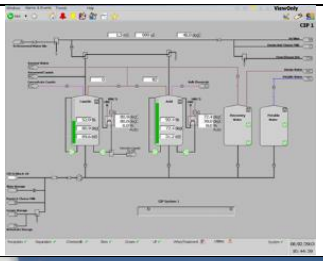
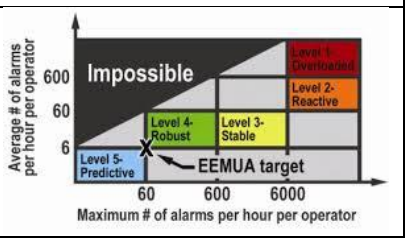
Automation Consultant	Defining the Internet of Things (IoT) Roadmap for Manufacturing Connectivity. In depth research of; • Manufacturing Industry Types • Risks • Defence in Depth • International Standards • Resources • Approach • Training	 Defining the IoT Roadmap for Manufacturing Connectivity Graeme Meyer COMSMART

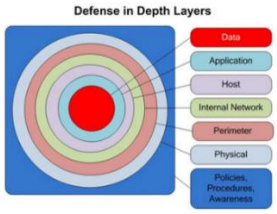
2009 – 2015
Fonterra
Automation and Process Control to IS Integration, Manager

A&PC – IS Integration Position; Automation to IS Integration Manager	Develop an agreed process for integration and change management for Information Systems and Automation systems in Fonterra New Zealand.	
Combined Unified Wireless Position; Automation to IS Integration Manager	Strategy and implementation of shared CISCO Combined Unified Wireless on manufacturing sites covering IS and Automation applications.	
Fonterra Enterprise Integration Gateway Position; Automation to IS Integration Manager	Development of an Enterprise Integration Gateway based on the use of ISA S95 and MESA standard B2MML. (Business to Manufacturing Markup Language).	
Fonterra MES/MOM strategy Position; Automation to IS Integration Manager	Development of Fonterra's Manufacturing Operations Management (MOM) strategy to Integrate the Automation layer to the ERP layer. • Pilot project at Hautapu • Rollout to packing lines on 24 sites. (FPM project) • Deployment at Takanini site integrated to 2nd ERP • Deployment as QPM project to Manufacturing plants on 24 sites	
Fonterra MOM support strategy Position; Automation to IS Integration Manager	Development of a Fonterra support team for MOM.	

Fonterra CSV Standard Position; Automation to IS Integration Manager	Development of a Fonterra CSV Computerised Systems Validation standard based on International Standards.	
Fonterra SSCC GS1 Concept Position; Automation to IS Integration Manager	Roles; • GS-1 SSCC Pallet Label concept paper - Author	
Fonterra Mass Serialisation Position; Global Brands and Nutrition, Automation to IS Integration Manager	Roles; • RFI/RFP - Manager • Pilot - Project Manager	
Fonterra Traceability Strategy Position; Global Brands and Nutrition, Automation to IS Integration Manager	• Traceability Concept Document -Author • Traceability Business Case - Manufacturing SME	

2005 – 2009
Fonterra
Automation Manager, Strategy & Standards Manager

Fonterra S88 PLC code Standard Position; Automation Manager	Development of a Fonterra owned library of ISA S88 compliant PLC software. Modules developed for all major functions used in the manufacturing of dairy products. Compliant with ISA S88 standard	
Fonterra HMI and Alarm and Event Standards Position; Automation Manager	Development of a Fonterra owned library for HMI functions for use on all vendor platforms. Incorporation of Role and Area based security. Compliant with the evolving ISA S101 Standard	
Fonterra Waitoa Drier 3 Nutritional Plant. Track and Trace & validation Position; Automation Manager	Nutritional Milk Powder plant capable of producing 12 tonnes per hour in a batch process. Full GAMP validated automation process and Electronic Batch Reporting. Role; Project Manager	
Fonterra Alarm and Event Strategy Position; Automation Strategy and Standards Manager	Development of a Strategy for managing Alarms in the Dairy Manufacturing Process based on ISA 18.2. Pilot at Hautapu Site.	

Fonterra Equipment Safety Standards Position; Automation Strategy and Standards Manager	Research and development of suitable equipment safety standards and architectures for use in Fonterra	
Fonterra Automation Security Standard Position; Automation Strategy and Standards Manager	Development of a Defence in Depth Security Model for Fonterra Automation and Process Control.	

2005
Fernbrook Research Ltd - Director

Fonterra Automation Domain and Security Strategy

Role - Project Manager

Scope; Detail design, development and implementation of Fonterra Automation Domain Security Strategy with the establishment of an automation data centre and 24 sites in New Zealand.

Budget; $3,000,000
Timeframe; 3 months.

Key tasks;

- Engagement of an 18 person design team via Computerland Hamilton.
- Establishment of Fonterra A&PC Infrastructure team
- Establishment of a Automation Data centre at Canpac, Te Rapa, Hamilton
- Installation of racks on 24 sites with Active Directory and File and Print servers, router, automation network switches, Trend Micro Virus Walls, UPS.
- Establish Fonterra A&PC Infrastructure Support team
- Provide demarcation and integration to Fonterra IS systems.

Completion on time and under budget.

Computerland team

L-R Danny Ladwa, Paul Swainbank, Chris Will, Josh Arthur, Jon Featherstone

John Scott, Ben Nelson, Paul Swainbank, Josh Arthur

Chas Bickford, Chris Will

Fonterra A&PC (Automation and Process Control) Group offices Hamilton

1998 - 2005
Fernbrook Research Ltd – Director

TC184/SC5 Plenary meetings.
Representative for New Zealand at ISO standards meetings globally from 1998 to 2005.

ISO/TC 184/SC5 is the ISO standards group responsible for "Interoperability, integration, and architectures for enterprise systems and automation applications".

TC184/SC5 Meetings attended;

- 1998 Paris France
- 1999 London Ontario
- 2000 Kyoto Japan
- 2001 Beijing China
- 2002 Las Vegas USA
- 2003 Jeju South Korea
- 2004 Paris France

TC184 meeting NEMA Washington DC

TC184 meeting VDMA Frankfurt

TC184 meeting Tokyo

TC184/SC5/WG7
Diagnostic and Maintenance Applications Integration

New Zealand and WG5 representative on TC184/SC5/WG7 between 2001 - 2005

TC184/SC5/WG7 meeting
Ulsan Korea

Pacific Area Standards Congress (PASC) Meetings

Part of the New Zealand delegation to support Standards New Zealand at PASC meetings in Vietnam 2002 and Fiji 2003.

PASC meeting 2002
Denarau, Fiji

ISA Conferences Houston - Paper and Presentation
2003: Open System Application Integration Framework (ISO 15745)
2004: Application of ISO 15745 to develop profiles for user applications in the dairy industry

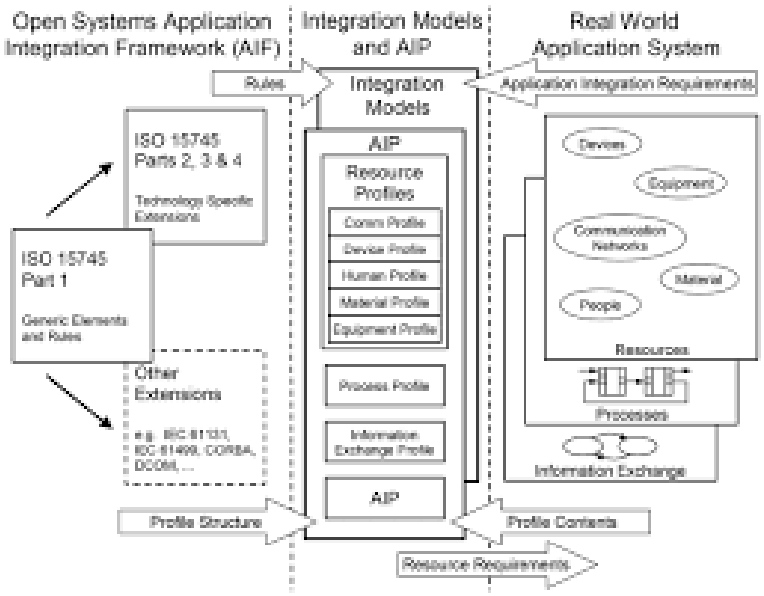
1998 - 2005
Fernbrook Research Ltd – Director

Convener of ISO 15745

Industrial automation systems and integration — Open systems application integration frameworks.

The standard consists of four parts:
Part 1: Generic reference description
Part 2: Reference description for ISO 11898-based control systems
Part 3: Reference description for IEC 61158-based control systems
Part 4: Reference description for Ethernet-based control systems

This standard defines an Application Integration Framework (AIF) - a set of elements and rules for describing application interoperability profiles, which will enable a common environment for integrating applications and sharing life cycle information in a given application domain.
The generic elements and rules are providing for developing templates for Application Interoperability Profiles (AIPs), and their component profiles - process profiles, resource profiles, and information exchange profiles. Such profiles may describe profiles based upon particular technologies and therefore makes this standard applicable to application integration frameworks developed for industrial automation environments. Environments such as discrete manufacturing, process automation, electronics assembly, semiconductor fabrication, wide-area material handling, and other automation and control sectors such as utility automation, agriculture, off-road vehicles, medical and laboratory automation, and public transport systems.



Contd…

TC184/SC5/WG5 meeting 1999
Queenstown, New Zealand

TC184/SC5/WG5 meeting 2001
Florida, USA

TC185/SC5/WG5 meeting 2002
Las Vegas, USA

TC184/SC5/WG5 meeting 2004
Nice, France

TC184/SC5/WG5 meeting 2005
Nuremburg, Germany

1998 - 2005
Fernbrook Research Ltd – Director. Convener ISO 15745 (continued)

ISO 15745 -Industrial automation systems and integration — Open systems application integration frameworks.

The standard contributors were;

Graeme Meyer – Fernbrook Research – TC184/SC5/WG5 Convener
Emmanuel dela Hostria – Rockwell Automation TC184/SC5 Chair
Greg Winchester – NEMA secretariat

Andreas Macher – Siemens
Bernard Jouga – Supelec France
Carsten Nokelby – P Net
Christian Verney – Schneider Electric
Dan Carnahan - Rockwell Automation WG7 Convener
Eckehardt Klemm – Phoenix Contact
Guido Beckman – Lenze
Hans Dieter Ferling - Schneider Electric
Holger Zeltwanger - CAN in Automation
Jan Thieme – Lenze
Iain Lindsay – Rockwell Automation
Ludwig Winkel – Siemens
Martin Rostan – Beckhoff
Mitsuaki Tanaka – CLPA (CC Link Partner Association)
Nobumasa Nakano – Mitsubishi Electric
Ron Collis – Rockwell Automation
Takao Yamada – Fuji Electric
Thilo Schumann - CAN in Automation
Valerie DeMassieux - Rockwell Automation
Wolfgang Schnurbush – Lenze Yoshio Adachi - Hitachi

The project team met globally 3 - 4 times a year between 1998 and 2005.

On completion if the standard Graeme was awarded a plaque as an appreciation by ISO.

1999 Queenstown, NZ

2001 Beijing, China

Ron Collis Em DelaHostria, Dan Carnahan and N Nakano, Great Wall, China

2002 Florida, USA

2004 Nagoya, Japan

2004 Nagoya, Japan

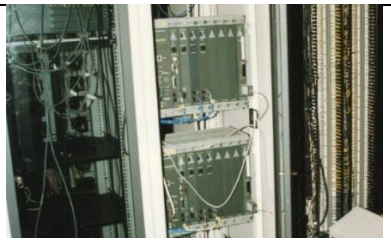
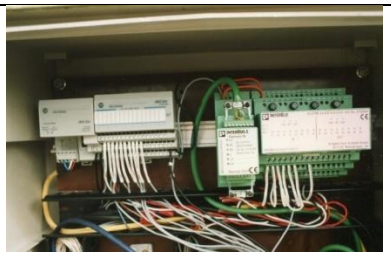
2004 Nice, France

1998 - 2005
Fernbrook Research Ltd – Director

ODVA New Zealand DeviceNet User Group 1998 – 2002 Runner up Best ODVA affiliate award	Establishment of a User Group for the product development of new technology using fieldbus suitable for New Zealand industry. Liaison with Technology NZ and Export NZ. **Board Members** Ian Steele – Fonterra (chair) Keith Gleadall- Rockwell Automation Peter Tait – Tait Control Systems Ltd Murray Kerr – Electrical Import Company Neil Swanney - Omron	 Institute of Measurement and Control exhibition 2001.
ODVA Australia DeviceNet User Group 1999 - 2002	Establishment of a User Group to support Industry in Australia adopt fieldbus technology. **Board Members** Noel Platt – Rockwell Automation (chair) Geoff Rimmington Omron Daryl Pearce – Micromax Pankaj Yadav - Cutler Hammer	 Exhibit award at ICEX 2002
ODVA Korea DeviceNet User Group 2000 - 2004	Assist ODVA Global Board establish ODVA Group in South Korea. Korea had many academic institutions that wanted to participate in the development of fieldbus technology and products that connected with fieldbus technology for the semi-conductor and manufacturing industries.	 ODVA Korea Board meeting 2002
ODVA China DeviceNet User Group	Assist ODVA Global Board establish ODVA organisation and conformance test lab in SEARI (Shanghai Electric Apparatus Research Institute) in Shanghai, China.	 ODVA Global representative at the official opening of ODVA China
ODVA Global Organisation **ControlNet International**	Represent New Zealand and Australian ODVA affiliates at global meetings. Acted as Interim ODVA Convenor to chair Meetings between Rockwell and CISCO when EtherNet/IP was being developed.	 Frank Wood with ODVA China team

	Assist ODVA Executive Directors during transition from Bill Moss to Frank Wood to Katherine Voss	ODVA Annual meeting 2002

1989 - 1997
Anchor Products Tirau. - Electrical Engineer.

PLC Analogue Control Roles; • Concept Development • Project Manager	Anchor Products Tirau Automation replacement project. This was the first use of PLC Analogue control modules for Instrumentation control loops in New Zealand. Prior to this time PLC's were not considered suitable for Closed Loop Control.	Allen Bradley PLC 5 60 Analogue modules at Tirau
Ethernet PLC – HMI communications Role; • Project Manager	As part of the $2.5 million upgrade the first use of Ethernet for PLC to HMI communications globally was developed. This resulted in sub 1 second screen update times when 15 – 30 seconds was normal.	 Allen Bradley PLC 5-250 with Ethernet Communication modules at Tirau
Fieldbus Research Roles; • Concept Development • Project Manager	Trial implementation of fieldbus technology for suitability for the New Zealand Dairy Industry. Technologies evaluated. • DeviceNet • ASI • Profibus • Interbus S • ValveNet	 Comparison of DeviceNet with Interbus S modules at Tirau
Wastewater Solid Strategy Roles; • Concept Development • Project Manager • Co supervisor of Graduate	Prior to this time Dairy waste solids were land spread at less than 1%solids resulting in large cartage costs. Research in thickening solids using mechanical and chemical methods resulted in major cost savings.	Graduate Mike Conlon trialling Sludge thickening at Tirau

NZCP-7 Pasteurisation Standard Role; • Project Manager • Test Manager • NZCP-7 Standard major contributor	The need to develop a pasteurisation Standard that would meet the US FDA Standard and emerging EU standard required intensive research. The result was a full scale pilot at Anchor Tirau site and drafting of the NZCP-7 pasteurisation standard funded by the New Zealand Dairy Board.	 Instrumentation test rig on Tirau Pasteuriser

1980 - 1989

L Crowley Ltd, Electrical Contractor, Tauranga New Zealand. – General Manager

General Manager of an Electrical contracting company specialising in Installation and maintenance of Industrial Electrical systems.

Graeme returned to the company where he had served his apprenticeship to manage a project to automate the Tauranga City Council Waste water treatment plant.

With the kiwifruit industry starting to expand rapidly the business grew to the stage of wiring and commissioning up to six new coolstores a year.

PLC's were becoming common and industry was requiring automation systems to be designed and installed creating more business growth.

Tauranga City was expanding rapidly and Crowley Electrical was involved in wiring and maintaining many commercial and industrial buildings in the Tauranga and Bay of Plenty region.

The Ruahihi and Wheao hydroelectric power schemes were also major projects that were undertaken.

The maintenance side of the business serviced all petrol pumps in the Tauranga area as well as several petrochemical and industrial installations at Mt Maunganui.

The growth at the Port of Tauranga brought many new projects including the expansion and rewire of a flour mill and NZ Wood Export woodchips ship loading facility. Wilsons Cement ship unloading and storage facility.

Water and Wastewater treatment Electrical Engineering, switchboard and control systems supply for local authorities.

- Tauranga
- Mount Maunganui
- Te Puke
- Whakatane

Flood Control Pumping System for Rangitaikei Plains Catchment Commission

Tauranga Sewage Treatment Plant

Mt Maunganui Sewage Pump Station

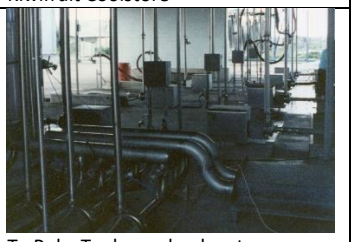
Electrical Engineering, Coolstore Control and packhouse systems for kiwifruit industry.

- BOP Fruitpackers
- BOP Coldstorage
- Katipak
- Te Awanui Huka Pak
- Te Puna Pack and Cool

Kiwifruit grading and packhouse

Kiwifruit Coolstore

Te Puke Dairy Company
Tanker unload and reception system automation.
Bay Milk Energy Centre Electrical Services

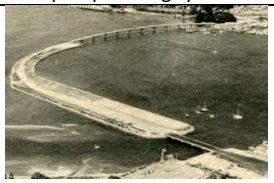


Te Puke Tanker unload system

NZ Wood Export Ltd
Electrical installation for a Woodchip storage and ship loading facility Mt Maunganui.

Woodchip ship loading system

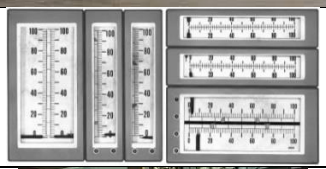
Tauranga Harbour Bridge Toll System Design Lead and Project Manager. One of the first uses of Computers as a control system in New Zealand.



Tauranga Harbour Bridge Toll System

Waikato and Districts Electrical Contractors Assn President 1997-1998.
Wage negotiator for employers for Electrical Contractors National pay rates.

Press Conference at conclusion of Wage negotiation.

<table>
<tr><td colspan="3">1975 - 1980
Kiwi Fertiliser, Morrinsville. - Electrician and Instrument Technician</td></tr>
<tr><td rowspan="3">Assistant Maintenance Electrician</td><td>Maintenance of Sulphuric acid and fertiliser manufacture plant.</td><td> </td></tr>
<tr><td>Instrument technician for plant instrumentation</td><td>  </td></tr>
<tr><td>Commissioning of 1 Megawatt Turbo Alternator power generation plant
Fault relay testing
11KV switchgear testing</td><td> </td></tr>
<tr><td colspan="3">1974 - 1975
L Crowley Ltd, Electrical Contractor, Tauranga. - Electrician</td></tr>
<tr><td>Electrician</td><td>Bay Savings Bank Mechanical Services and Fire Alarms. Installation and commissioning.</td><td> </td></tr>
<tr><td colspan="3">1971 - 1974
L Crowley Ltd, Electrical Contractor, Tauranga. - Apprentice Electrician</td></tr>
<tr><td>Apprentice Electrician
8,000 hour Electrical Apprenticeship.</td><td>Industrial Installations for regional industry around Tauranga.
Dominion Salt
BOP Fertiliser Works
Tauranga Hospital
Otis Elevators
Melrose Home and hospital
Caxton Paper Mill
Ruahihi Power Scheme
Te Puke Dairy Company
Bay Savings Bank Fire Alarms</td><td>
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