



Round TABLE Discussion

Fourth INDUSTRIAL REVOLUTION CONFERENCE by MINISTRY OF HIGHER EDUCATION-MALAYSIA

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Intel Information Technology

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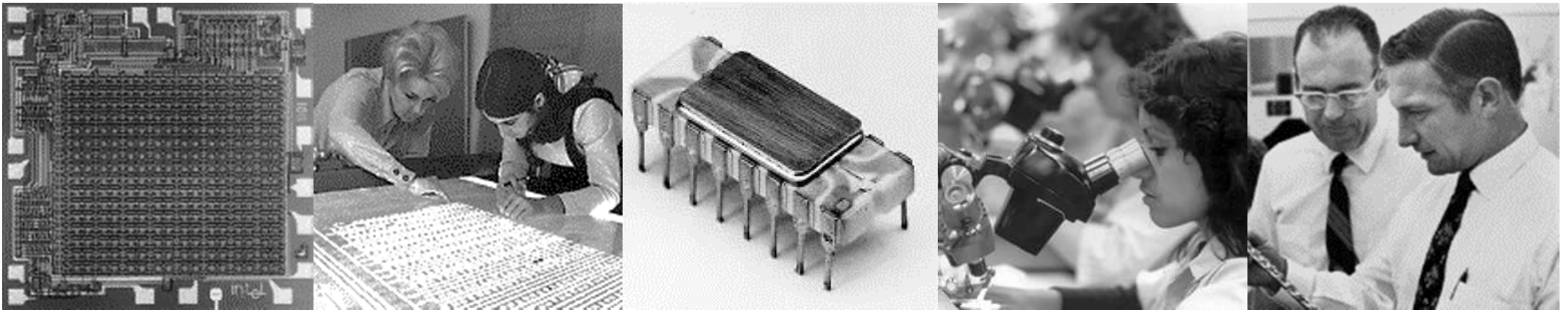
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History of Intel

Back in 1968, two scientists, Robert Noyce and Gordon Moore, founded Intel with a vision for semiconductor memory products.

By 1971, they had introduced the world's first microprocessor. Since then, Intel has established a heritage of innovation that continues to expand the reach and promise of computing while advancing the ways people work and live worldwide.



Intel's Vision

If it is smart and connected, it is best with Intel.



Intel's Mission



Utilize the power of Moore's Law to bring smart, connected devices to every person on Earth



INTEL MALAYSIA OVERVIEW

Then...

Assembly Operations



Now...

One Site - Two Campuses



PENANG

- 1972 - Assembly Plant
- 1978 - Test Plant
- 1990 - Product Design & Development Center

2010 - Global Shared Services

KULIM

- 1996 - System Manufacturing
- 1999 - Board Design Center
- 1999 - Assembly/Test Plant

THE EVOLUTION OF INTEL MALAYSIA

1970s

1980s

1990s

2000s

2010 - Now

Manufacturing



Design & Development



Shared Services



With over 47 years of history in Malaysia, Intel has evolved from a mere assembly and test facility to become the **most complex offshore site** among Intel's global operations, with investment of **over US\$5 billion** in both infrastructure and high-tech/volume manufacturing, and contributing to **~1% of Malaysian GDP**.

INTEL CORP - FINANCIALS

Key Business Unit Revenue and Trends

Quarterly Year-Over-Year

	Q2 2017	vs. Q2 2016
Client Computing Group	\$8.2 billion	up 12%
Data Center Group	\$4.4 billion	up 9%
Internet of Things Group	\$720 million	up 26%
Non-Volatile Memory Solutions Group	\$874 million	up 58%
Programmable Solutions Group	\$440 million	down 5%

*Data-centric businesses include DCG, IOTG, NSG, PSG, and all other

IoT and The Intel Factory Story



80's Factory

- No robotic material transport
- Run cards on wafer boxes
- Basic equipment standards
- Initial equipment control
- Initial manufacturing execution solution



90's Factory

- Beginning robotic material transport
- Automated statistical process control
- Improved equipment control
- Improved inventory control and tracking
- Improved equipment automation standards
- Integrated manufacturing execution solutions
- Planning and supply chain integration
- Improved decision making systems



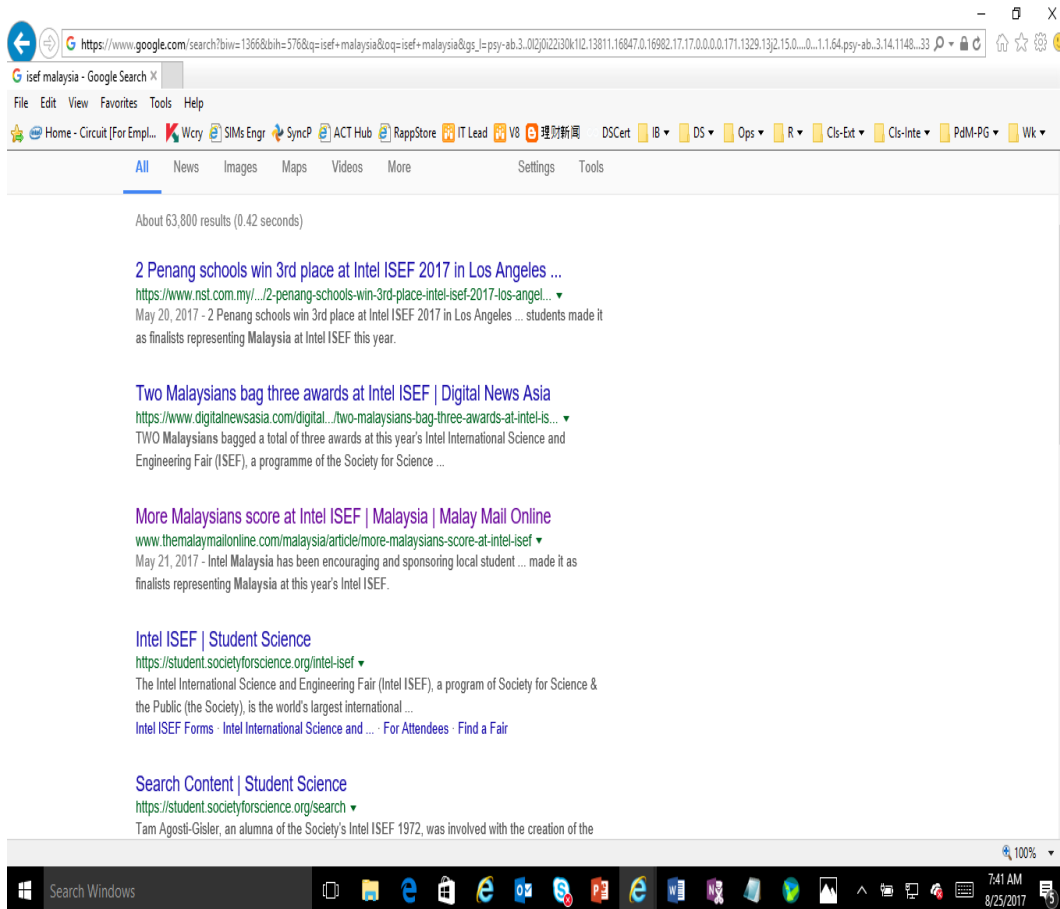
Today's Factory

- Pervasive robotic material transport
- Pervasive equipment standardization
- Advanced manufacturing execution solutions
- Real-time excursion control
- Advanced process control & adjustment
- Predictive and Adaptive maintenance
- Advanced inventory control and tracking
- Advanced rapid decision making
- World class supply chain capabilities
- Big data repositories
- Gateway integration with industrial equipment

INDUSTRIAL 4.0 - PERSPECTIVE



STEM – ISEF (Intel INTERNATIONAL SCIENCE AND ENGINEERING FAIR)



A name written in the stars

July 15, 2015, Wednesday



High achieving student Faye Jong-Sow Fei.

KUCHING: Next time you look up at the skies, you will be proud to know that one asteroid is named after Sarawakian student Faye Jong Sow Fei.

The asteroid was discovered on February 10, 1999 by the Lincoln Laboratory Near-Earth Asteroid Research (Linear) Team at Socorro, New Mexico and was named 31460Jongsowfei (1999 CV19) in recognition of the 17-year-old's wins at the 2014 Intel International Science and Engineering Fair (ISEF).

<http://www.theborneopost.com/2015/07/15/a-name-written-in-the-stars/>

MAKER FAIRE



Teenage coder shocks local developers

Mikha Chan | August 12, 2016

Seventeen-year-old Manoj has become somewhat of a sensation in the local coding community.



PETALING JAYA: Within the short span of four to five months, teenager Manojkumar Subramaniam has managed to become a familiar face in the local coding community.

ANEDOCTAL -> EVIDENTIAL : SMALL -> LARGER

MAKER INSIDE INTEL



TAKEWAYS

- **Many companies, high tech ones, embraces Industrial 4.0**
- **Start with the fundamentals – Digitize and Computerize to solve problems.** Pilot use cases with advances in Industrial 4.0 – IOT, Predictive and Prescriptive maintenance etc.
- **Preparations towards Industrial 4.0 is a multifaceted advancing long term continuum**
- **Data is the new oil and together with analytics fuels Industry 4.0**
– Ability to use and analyze data (statistics, SPC , PCS, image analysis, machine learning and deep learning etc.)

IT@Intel

Sharing Intel IT Best Practices With the World

Sharing IT Best Practices

IT@INTEL: TODAY'S HOT TOPICS FROM INDUSTRY EXPERTS

Get innovative ideas, best practices, and groundbreaking IT strategies from the experts inside Intel's own IT department, including CIO Paula Tolson.

ACCELERATING THE PACE OF BUSINESS THROUGH IT INNOVATION

2016-2017 Intel IT Annual Performance Report

INTEL IT: ACCELERATING THE PACE OF BUSINESS

TRANSFORMING HOW INTEL'S BUSINESSES RUN AND GROW

INTEL IT: ACCELERATING THE PACE OF BUSINESS THROUGH IT INNOVATION

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Horizontal IoT Platform Paves the Way to Enterprise IoT Success

Enterprise IoT is poised to generate USD 2 trillion in economic benefit by 2020.

Executive Overview
Internet of Things (IoT) solution providers are offering IoT solutions in the enterprise market. These solutions are not just about connecting devices, but about enabling new business models and processes. These opportunities for IoT solution providers are in our offices and factories, associated with our operational business processes.

Key Benefits:

- End-to-end integration. A single and complete.
- More solutions. Suppliers design products to meet more quickly.
- Improved security. Clearly defined, isolated, secure, important, isolated.
- Better quality. Open standards in higher-quality solutions.
- Lower cost. With all IoT solutions, technology application is more and decreasing Intel cost of device IT departments are in a unique position to leverage their expertise in security, and align expectations with the customer.

Robert Colby
Wireless Senior Architect, Intel IT

Paul Donohue
Systems Manager, Intel IT

Steven J. Meyer
Sr. Principal Engineer, Intel IT

Rameshwar Patel
Network Engineer, Intel IT

Sankha P. Sharma
Director of IoT Products, Smart Building Solutions, Intel IT Group

Steve Witzelberg
Sr. Information Security Specialist, Intel IT

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Advancing the User Experience with Intel Architecture-based Laptops and Microsoft Windows 10

The latest generation of Intel architecture-based laptops running Microsoft Windows 10 bring new advancements in multitasking performance and battery life to Intel employees.

Executive Overview
Microsoft Windows 10 works synergistically with laptops based on 7th Generation Intel Core vPro processors, resulting in up to ten hours of battery life and a new user experience. Intel IT's accelerated adoption of Windows 10 is helping us achieve the following business objectives:

- Single Windows-client environment
- Transition to a continually updated OS model, avoiding the disruption and downtime associated with major OS upgrades
- Smooth deployment of new OS features through our new in-place, self-service upgrade process
- Foundation for a new modern cloud-friendly IT services platform

To provide the highest value, we refresh a user's PC with the latest Intel architecture-based platform at the same time as we upgrade to Windows 10. To date, we have over 50,000 devices on Windows 10. The majority of these are new systems based on 6th Generation Intel Core vPro processors. We are now qualifying 7th Generation Intel Core vPro processor-based systems with Windows 10 and we will begin deployment in Q2 '17. We have also made available a self-service upgrade process from Windows 8.1 to Windows 10, and are preparing for full-scale deployment. We expect to have over 70,000 PCs on Windows 10 by end of 2017.

Derek Markin
Chief IT

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Data Center Strategy Leading Intel's Business Transformation

Our refined data center strategy has created new business value in excess of USD 2.7 billion from 2015 to date.

Charles Krueger
Intel Fellow and Intel IT CTO

Dhruv Adarsh
Senior Staff Engineer, Intel IT

Prakash Jha
Senior Principal Analyst, Intel IT

Ujjal Lal
Senior Principal Engineer, Intel IT

Rajy Reddy
Principal Engineer, Intel IT

Sergio Rangel
Senior Principal Engineer, Intel IT

Ty Tang
Senior Principal Engineer, Intel IT

IT@INTEL

Using Big Data in Manufacturing at Intel's Smart Factories

Intel has seen year-over-year gains in uptime and output by using big data to automate manufacturing processes.

Executive Overview
In the rapidly changing business and technology environment, manufacturers are striving to stay competitive, now and into the future, by increasing productivity and lowering costs. Like many companies, Intel has looked over the decades to provide competitive advantages through sophisticated automation—smart manufacturing—which has helped its factories increase product yields and quality, reduced costs, and improve safety. Intel's smart factories are among those that use edge computing and the Internet of Things (IoT) to enable automated control systems with real-time data. This data is categorized and prioritized in off-line systems as big data for ongoing analysis and decision making. Today, Intel manufacturing consistently reaps the benefits of year-over-year improvement in the following areas:

- Reduced costs. Accurate and timely information in the hands of process engineers improves product cycle time, process equipment uptime, maintenance, and other factors that save money.
- Accelerated velocity. Automated product flow enables dynamic routing of products to available tools for processing, reducing bottlenecks and wait times.
- Improved quality. Statistical process control, advanced feed forward/back process control, and decision-support systems produce consistent results, allowing engineers to focus on opportunities for improvement.

Through real-time capabilities, automation based on Intel architecture provides a competitive advantage by using IoT and edge computing in manufacturing. Intel's investment in real-time data and automation provides significant value to the products we create.

Chadwick Bates
Smart Building Solutions Intel Internet of Things Gr

Steven J. Meyer
Manufacturing IT Principal Engineer, Intel IT

Mike Phillips
Product Development Chief of Staff, Intel IT

Steve Chadwick
Manufacturing IT Principal Engineer, Intel IT

Duncan Lee
Manufacturing IT Principal Engineer, Intel IT

Steven J. Meyer
Manufacturing IT Principal Engineer, Intel IT

Jan Savelle
Industry Engagement Manager, Intel IT

Inside IT: Developing a Hybrid Cloud

Intel IT's approach, challenges, and the future

Inside IT: Self-Service Business Intelligence

Intel IT's improved user decision making capabilities

JOHN MARVI
Senior Product Manager, Intel IT

Learn more about Intel IT's Initiatives at www.intel.com/IT

