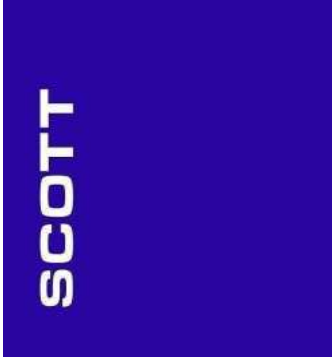
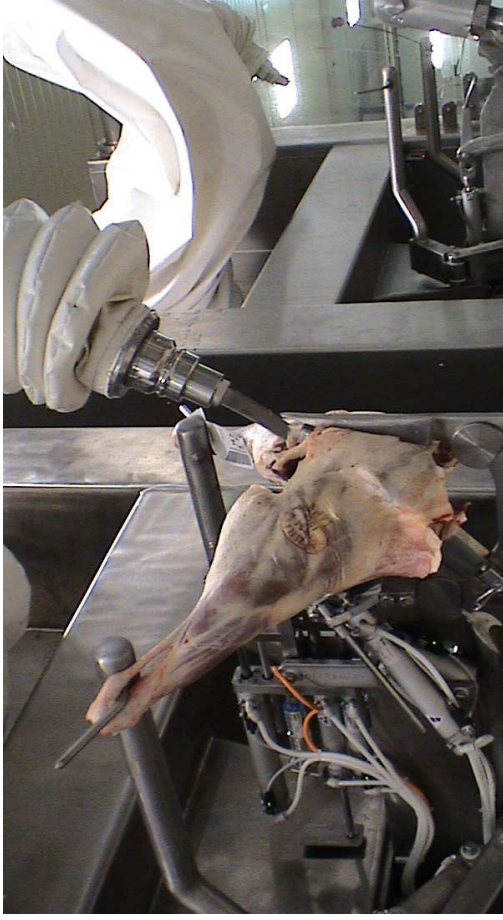
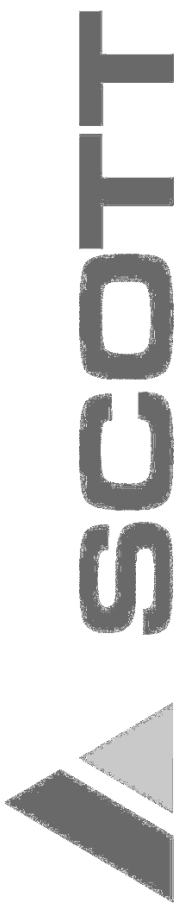




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**IMPROVED EFFICIENCY
AND YIELDS WITH ROBOTICS**

CHRIS HOPKINS

MANAGING DIRECTOR & CEO

SCOTT TECHNOLOGY LTD

SUSTAINABILITY

sustain /sə'steɪn/ *v.tr.* **1** support, bear the weight of, esp. for a long period. **2** give strength to; encourage, support. **3** (of food) give nourishment to. **4** endure, stand; bear up against. **5** undergo or suffer (defeat or injury etc.). **6** (of a court etc.) uphold or decide in favour of (an objection etc.). **7** substantiate or corroborate (a statement or charge). **8** maintain or keep (a sound, effort, etc.) going continuously. **9** continue to represent (a part, character, etc.) adequately. □ □ **sustainable** *adj.* **sustainedly** /-nɪdli/ *adv.* **sustainer** *n.* **sustainment** *n.* [ME f. AF *sustein-*, OF *so(u)stein-* stressed stem of *so(u)stenir* f. L *sustinēre* *sustain-* (as *sub-*, *tenēre* hold)]

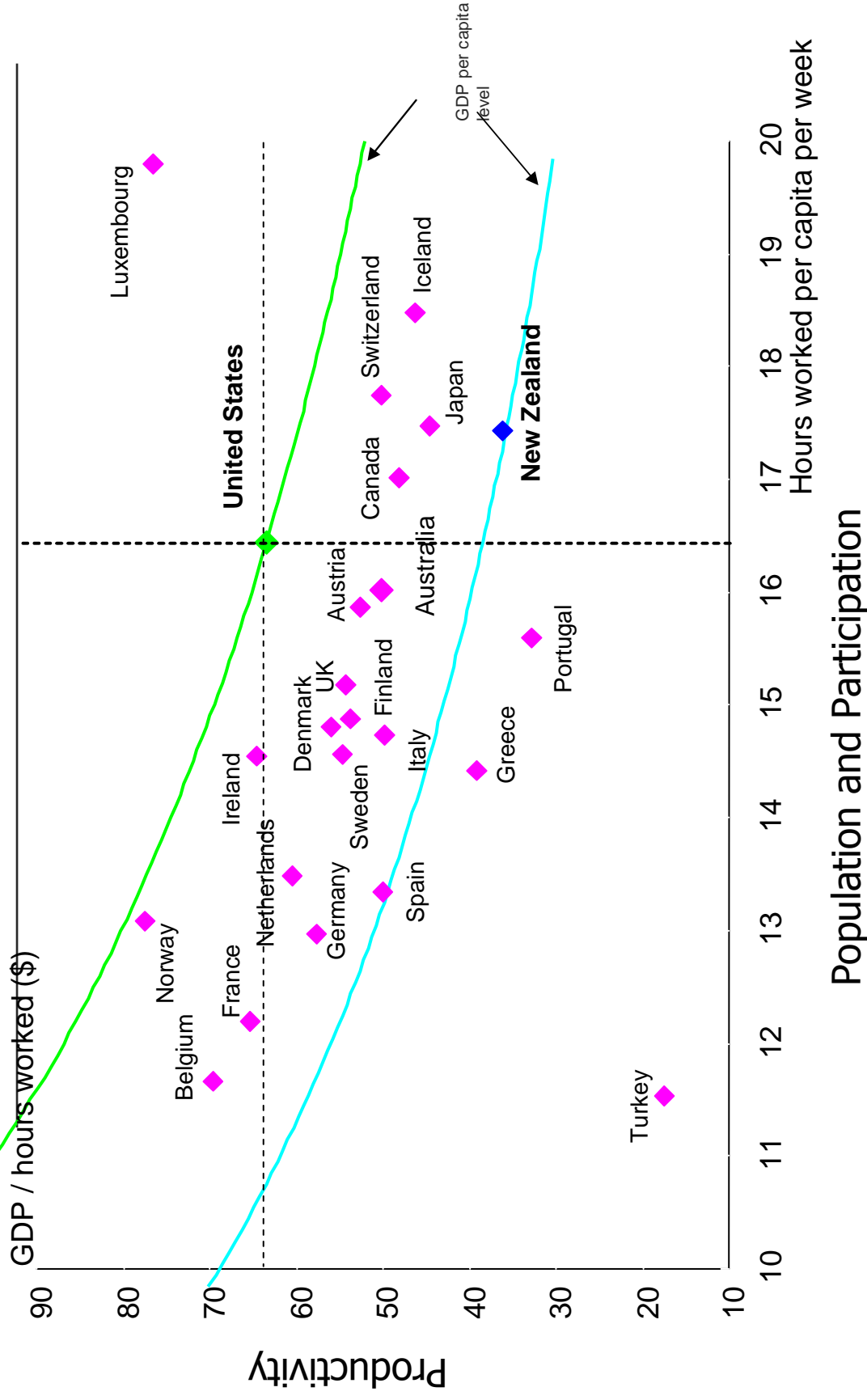


A Few Thoughts:

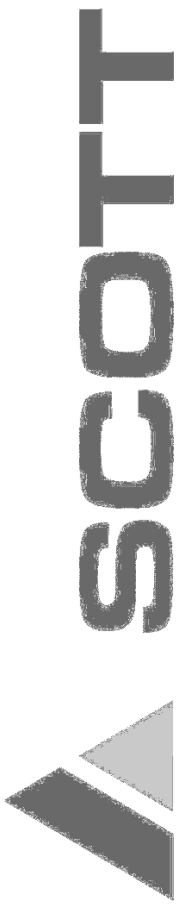
- New Zealand's productivity is low.



Work harder or work smarter

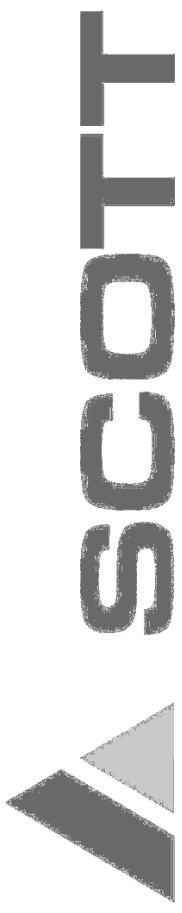


Source: OECD



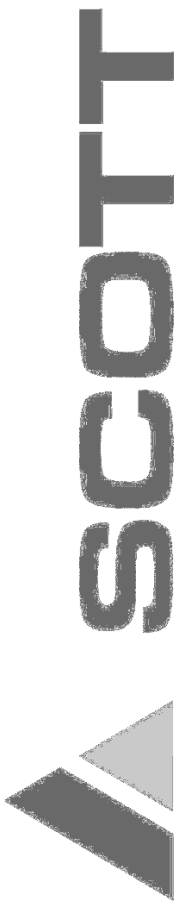
A Few Thoughts:

- New Zealand's productivity is low.
- If we could improve our productivity by 50% we would still only be in the middle of the OECD ranking.
- Productivity is about doing more with less people and automation and robotics is the single fastest way of increasing productivity.
- ↑ Productivity = ↑ Chance of Sustainability



Outline:

- **Background**
- **Robotics & Automation**
- **Boning Room Automation - Efficiency & Yield Improvement**
 - Explained
 - Examples
 - Early Learnings
 - The future
- **Questions**



Background

- **Our People & Passion:**
 - Engineers (some 160) – Passionate About:
 - Automation & Robotics
 - Technology

- **Our Vision:**
 - To build our own sustainable business providing innovative solutions to our customers.

- **Our Meat Industry Goal:**
 - To develop and build a fully automated boning room.



Robotics & Automation:

- Sustainability and success go hand in hand.
- Success is about being smart, effective and efficient.
 - Effective = doing the right thing.
 - Efficient = doing the thing right.
- Automation & Robotics is about combining both of these to increase productivity.
- Yield improvements along with quality can be driven and achieved through automation & robotics.

A focus of Scott over the last 7 years has been to bring Automation & Robotics to the Meat Processing Industry in New Zealand and Australia.



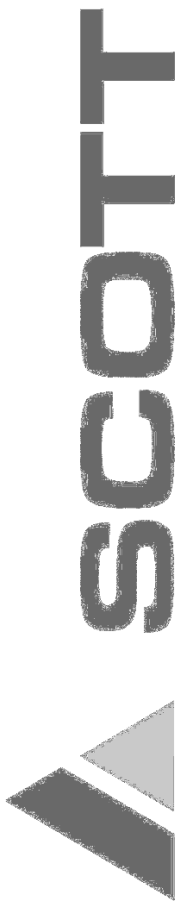
Meat Processing Automation

How it Started:

- Discussion with PPCS
- 'Blood' on the Boardroom table
- Boning room was targeted – 'Leap' Projects
- Interesting reaction when the first knife welding robot was unloaded and installed in a processing facility:

Workers: "So this is what is going to put us out of a job!"

Union: "It is about time - we are way behind the times"

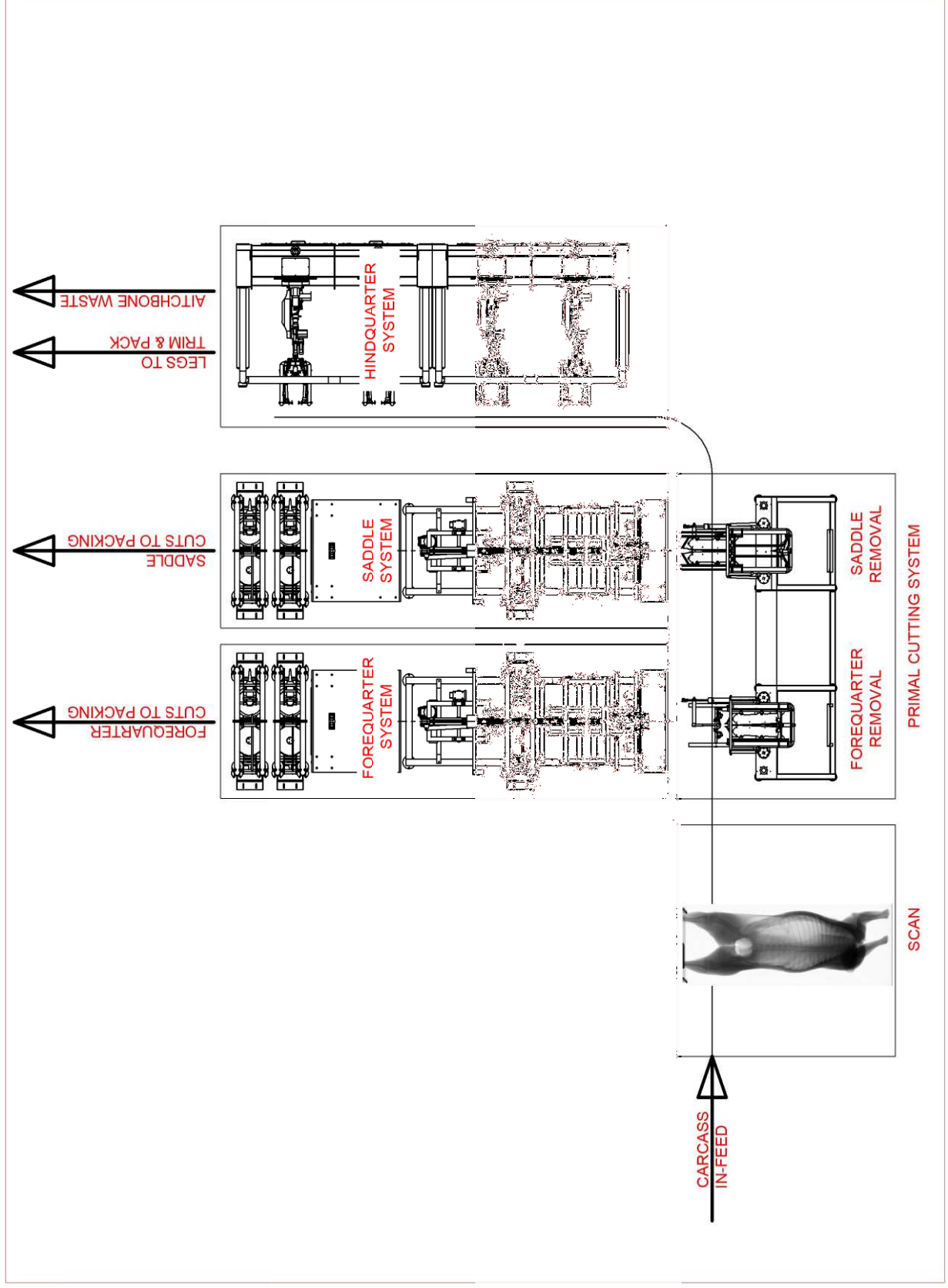


Fully Automated Boning Room:

- A sustainable business model:
 - Throughput maximised
 - Yield far greater than manual processing
 - Much reduced labour:
 - Different skill sets – technical

 - Product tracking and traced from carcass to consumer pack
- = Major increase in productivity**

RTL Automated "Lamb Boning Room Vision"





Primal Cutter with X-Ray for Cut Accuracy:

- Yield improvement of 100grams / carcass \$1.20 / carcass ¹

Footnote ¹

Saw Dust / Paste	16 grams
Scallop Cut	30 grams
Cut Accuracy Gain / Differential Forequarter	30 grams
Cut Accuracy Gain / Differential Hindquarter	<u>24</u> grams
Total	100 grams / carcass

- Labour savings of 2 – 3 persons / shift
- For meat processor with throughput of 1 million pa.
Yield Improvement = 100,000kgs or \$1,200,000pa
Labour Savings = \$160,000pa
Total Benefit \$1,360,000pa



Early Learnings!

- An early adopter partner prepared to share the R&D experience is key.
- Seeking funding for R&D is time consuming and a major distraction and slows progress.
- Machine vision is essential, especially where you are dealing with naturally varying product.
- Take your budget and double it!
- Take your timeframe and treble it!
- On site support and training is required to help upskilling of processors staff
- The industry is terribly terribly conservative when it comes to new technology and will not invest unless proven and available “off the shelf”.
- **Will Drive Business Model Changes:**
 - The companies who adapt to this technology will be the ones who survive and grow.



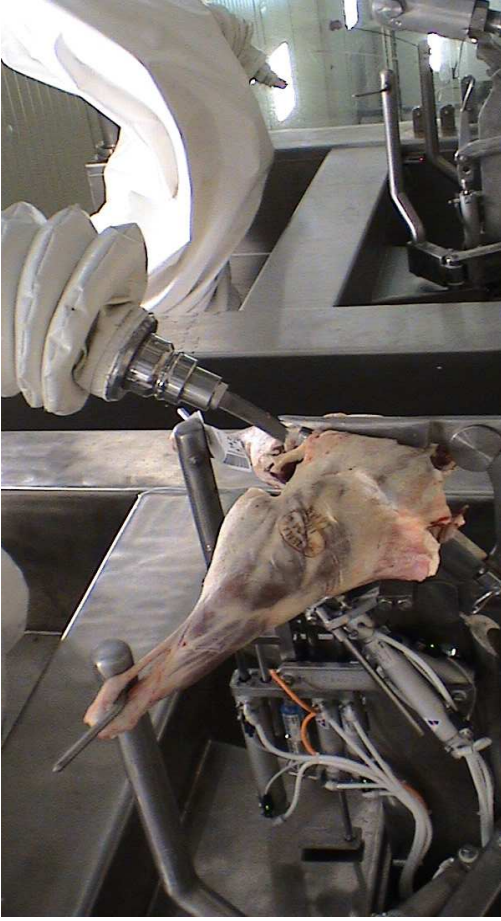
The Future:

- Bone in Processing to follow on from Primal Cutting and Hindquarter.
- Frenching / Fresh cutting of chops and completion of the further processing.
- Packing cartoning and palletising solutions.



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