



38th TOCPA International Conference

28-30 March 2018, Paris, France

Applying ToC methodology to move from parts manufacturing
to

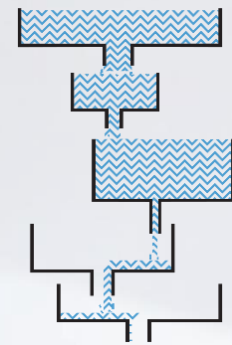
Providing Integrated Solutions

Johan Steyn – Managing Director

Aerosud Aviation, Pretoria, South Africa



Marris
Consulting



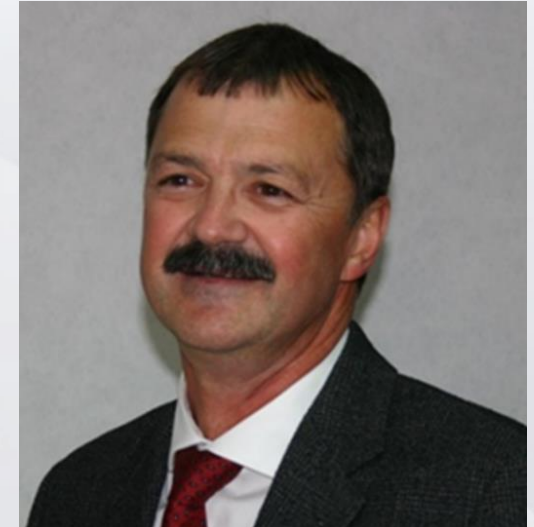
Johan Steyn

Managing Director – Aerosud Aviation (Pty) Ltd

Pretoria, South Africa

Completed his B.Eng (Hons) Mechanical in 1984 at University of Pretoria. Worked as a System integration engineer and Program Manager for 30 years. Attended various Program management courses, and Continuous Improvement strategies such as LEAN and Theory of Constraint and Logical Thinking courses.

- He is registered as a professional engineer (Aeronautical) at ECSA.
- Managing Director of Aerosud Aviation (Pty) Ltd. since 2007 and the Chairperson of the Commercial Aviation Manufacturing Association of SA.
- Aerosud Aviation employs over 600 people
- Focus exclusively on Commercial Aircraft parts Design and Manufacture for the likes of Boeing and Airbus and Tier one suppliers to these OEM's.
- The company holds AS9100 rev D, EASA and several Nadcap approvals, and have skills in advanced manufacturing, composites, 3D printing and complex assembly processes
- The company has just launched a new offering in the “Technology of the Future” space (Ind 4.0 - PLM/IOT/AR-VR-Robotics-3D printing)



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What makes you think of South Africa ?



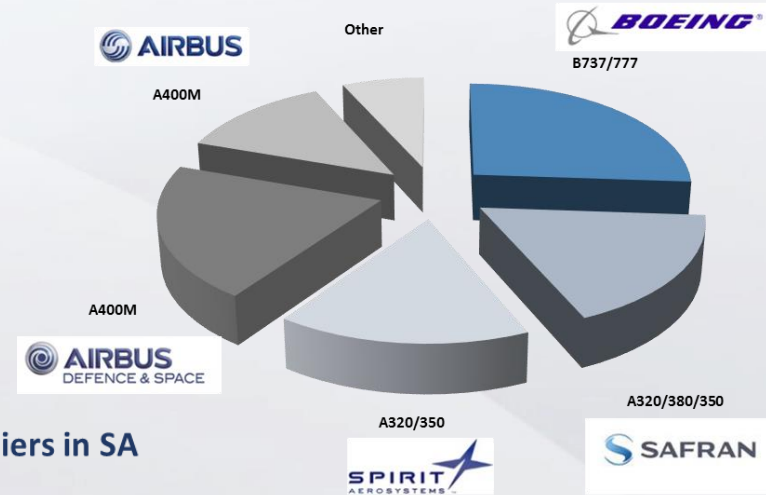
Commercial Aviation Manufacturing

70mUSD Turnover per annum

660 employees **400** Operators and Artisans
100 Engineers
35 average age - **30%** female

99% Export **Limited** Local sub-tier manufacturing suppliers in SA
300 International and local suppliers
40% Local Added Value

6% R&D Investment per annum
 Industry 4.0 - Skills in 3D printing - automation - robotics - IOT - PLM



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World-class business systems and processes



Video Insert



A320 Track Can



A380 Ramps



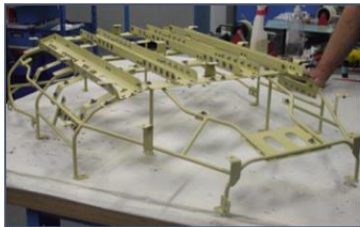
A400M 4th
Occupant seat



A400M WingTip



A350 Track Can



A350 Overhead
Ramp Assy



A320 VU 80
Avionic Rack



A400M Galley



A320 Galley



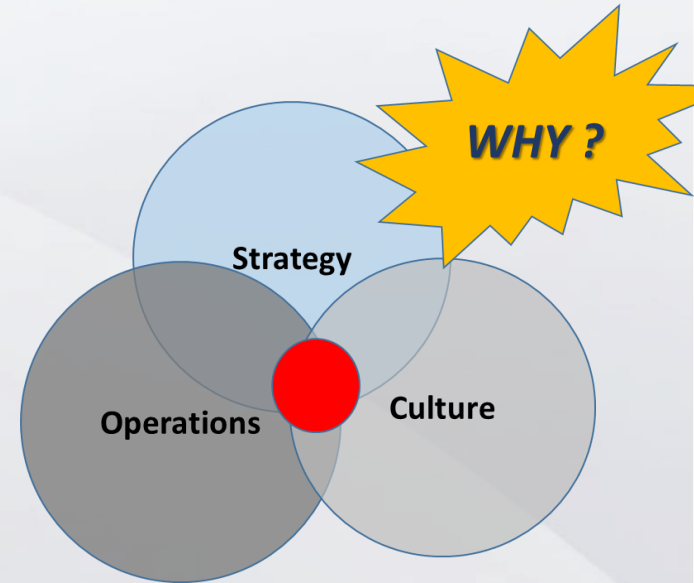
A320 VU 120
Cockpit wall

Aerosud adopted ToC as a Business Strategy in 2014

Business and Quality systems / PLM

Strong internal development capability

Past experience with Lean manufacturing / QRQC

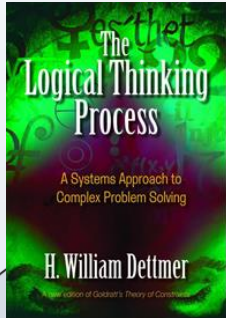


Build - Capatilize - Sustain

Moving from: Design and Manufacturing aircraft parts

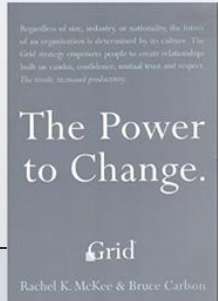
To: **Providing Integrated Solutions**

So that: Communities and Partnerships benefit from our Innovative Skills



- Strategy & Tactics Tree
- Logical Thinking Process (Company Goal Tree)

- Strategy and tactics to: Inspire and Motivate People

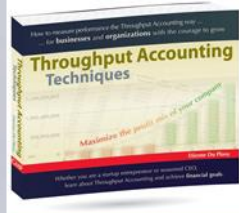


Aerosud Value Chain (Operations)

Sales and Marketing based on:
"It's not luck" TOC methodology

- Stock Buffer Management - Bought-outs, Material & Internal Productions
- WIP management & Priority System Management (D-B-R)
- 5 Focusing Steps (CCR identification and POOGI)
- Sub-tier Management based on real time Buffer Status
- Synergistic training across the whole company

Unrefusable offer
"Reliability
vs Profitability"
conflict in the
Aviation Industry



- Throughput Accounting
- GRID Team Culture

Clear Strategy
and Goal Setting

- Happy, cohesive and adaptable workforce with strong problem solving culture
- Practicing the “Soundest Culture”

Aerosud Value Chain (Operations)

Under Construction



- 5.0m\$ Investment reduction (WIP and SOH) - 30%
- Lead time reduction from 50 to 17 Days through Production
- High Reliability in completion date – Projects and Production
- Reduction in expedite and interventions
- Improved On-Time Delivery: 92% → 98%

20 % Increase
work volume
from Customer

SFDC



Critical Success Factor
(not on our Goal tree)

Link with the BEST coaches

Offerable ERP-Integrated Production
Management Solution

Develop and Support Implementation of a Strategy and Tactics

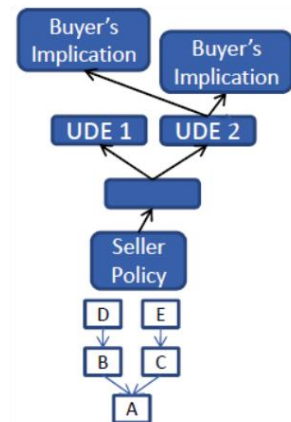
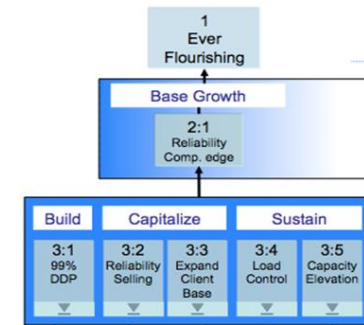
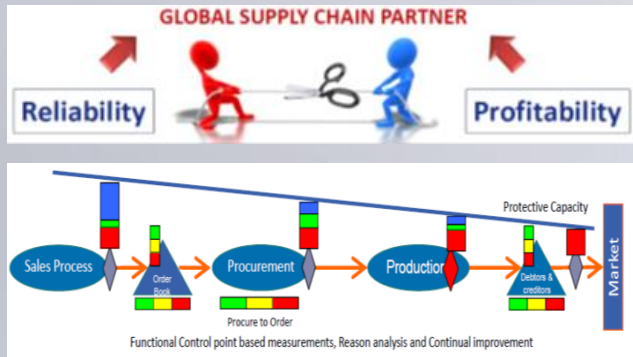
- Reliability model
- Concept of continuous flow measurement
- Protective Capacity profile

TOC Marketing & Sales – current focus

- Customer Perception of Value
- Market Segmentation
- Flow based sales process

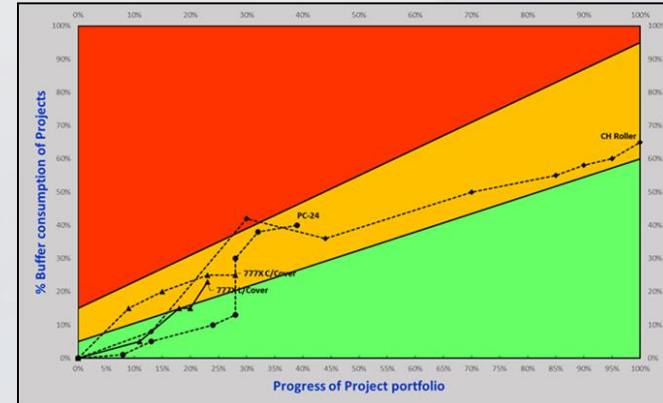
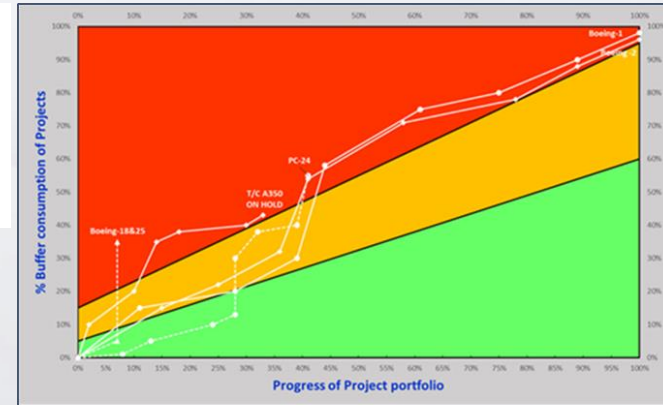
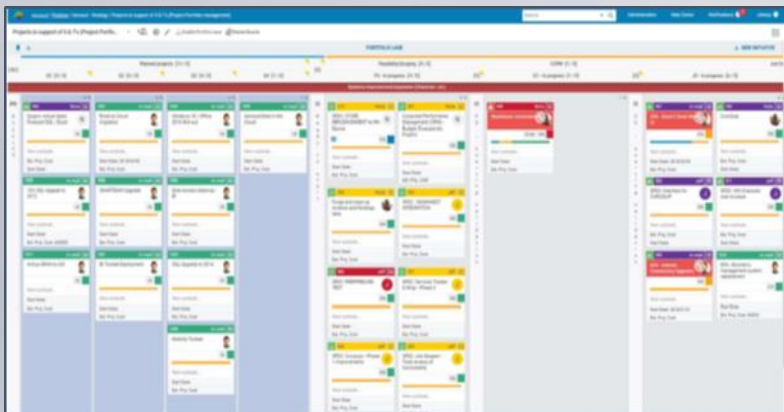


Selective intervention in the supply chain



Project Management principals

- Pipeline of new projects - linked to the CCR
- Formal proposal & approval stage
- Change Board Process
 - T - Throughput I - Investment OE - Operating expense
- Business systems/IT project
- Capital equipment
- New Product Introduction
- Efficient & Visual Task tracker
- POOGI loop – Reason codes and corrective actions

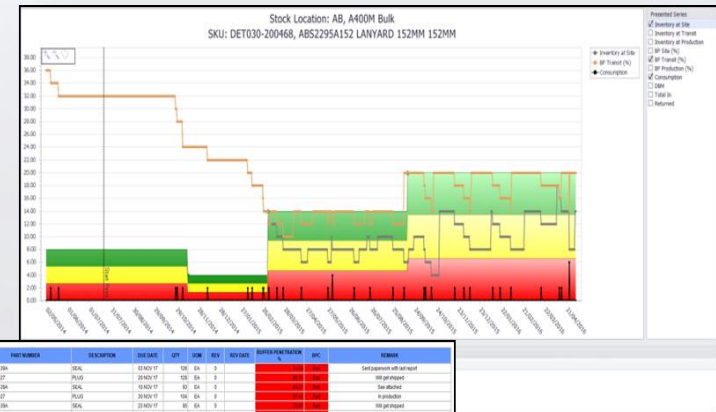


Managing – 3 000 SKU's

- 86% on Symphony → Integrated in ERP system
- 12% on VMI
- 2% on MRP

Inbound – Supply Chain - 30 m\$ spend

- 65% - USA : 25% - Europe : 10% - UK
- 300 Suppliers
- Lead times 30 days to 220 days



LINE	DATE IN	TIME	FROM NUMBER	DESCRIPTION	DATE DUE	QTY	UNIT	PRICE	REMARKS	PERCENTAGE	QTY	REMARKS
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Device	Model	OS	Version	Manufacturer	Country	Region	Language	Timezone	Network	Signal	Power	Temperature	Humidity	Pressure	Altitude	Speed	Direction	Location	Notes
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier	5G	100%	22.0	45%	1013.25	100m	0.0	0	San Francisco, CA	
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iPhone11,2	iPhone11,2	15.0	2023-10-10	Apple	USA	CA	en-US	PST-0800	Carrier										

Purchase to stock

Buffer penetration on site (QTY)



W

50

1

214

485

79

7

Buffer penetration on site (%)

W

29

1

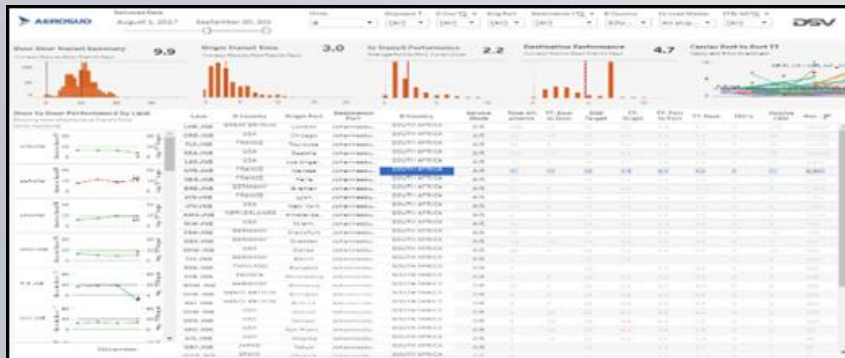
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22%

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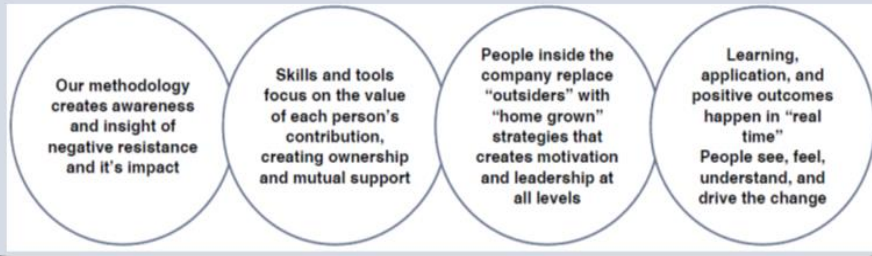
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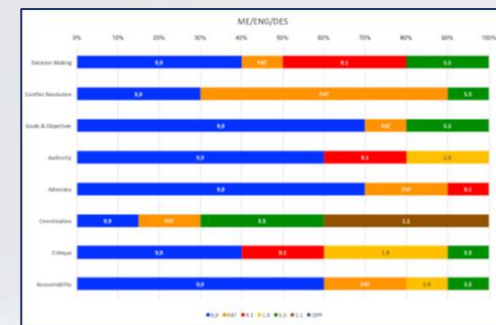
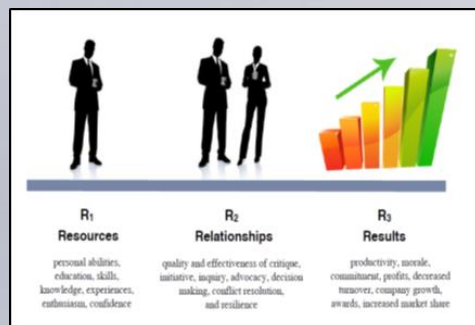
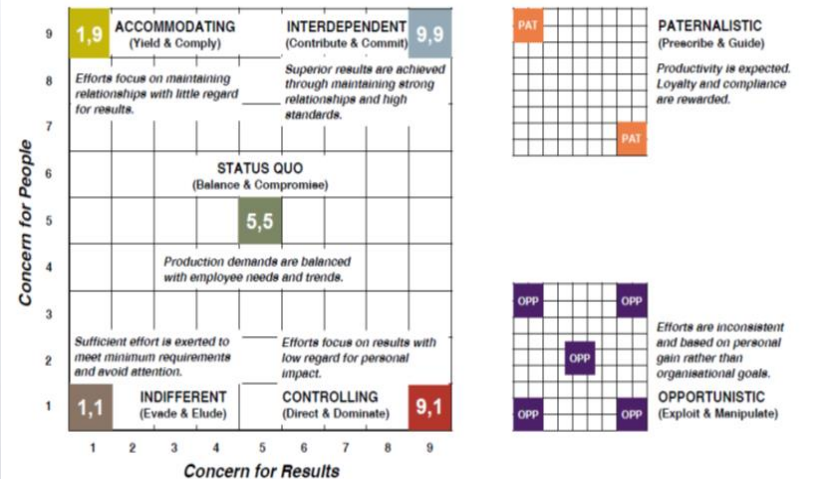


Overcoming resistance to change

Preparing a culture to understand, accept, and embrace new strategies (How to change) is as important as creating the plan (What to change)



Company Culture (G2G Scores)	Quantity Percentage	M	0	72	173	389
		X	0%	11%	27%	61%



Providing Integrated Solutions

Developing and in-house solution for Production Management

SFDC



CCR Performance

BUFFER PENETRATION
- MTA or MTA
- Value Stream or Project



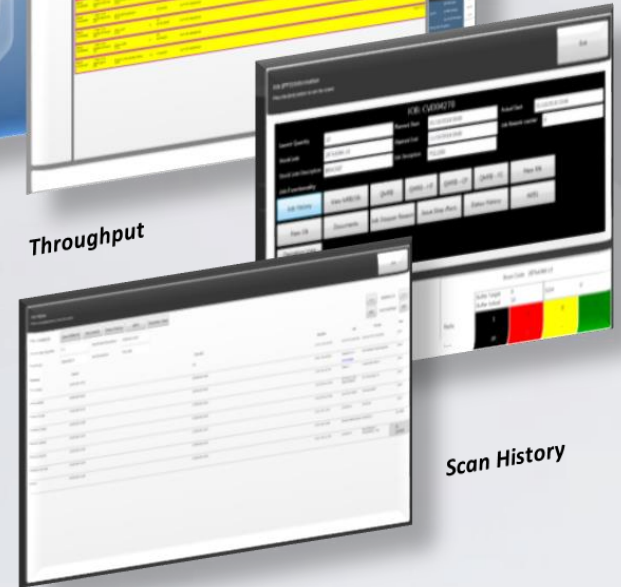
SKU Specific data
- Buffer trace
- Time-in-System
- WIP status

TIME-IN-SYSTEM and TIME-IN-CELL
- Value stream or project



WIP in a Cell

Throughput

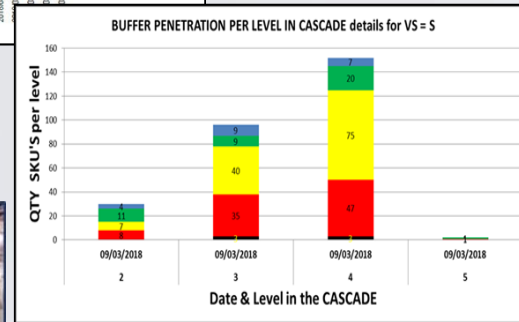
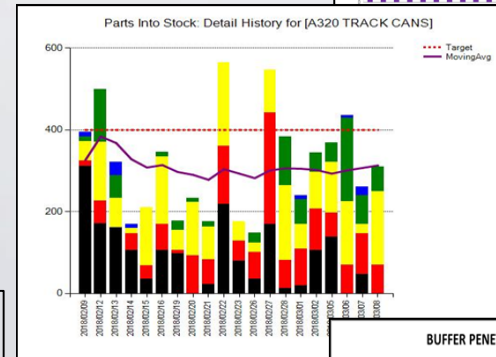
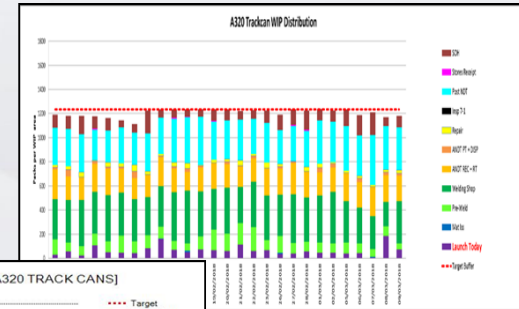


Scan History

Managing – 6 800 SKU's

- 100% on **SFDC**
DBM - Dynamic Buffer Management
- ToC principals of Buffer management
 - MTA – Make to availability - 4 500
 - MTO – Make to Order - 2 300
- 15 Flow streams each with at least one CCR
- CCR Exploitation = Five focussing steps

SFDC



Buffer penetration - MTA	QTY	D	308	327	619	745	1851
	%		8%	8%	16%	19%	48%





**Proudly
South African**