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38th TOCPA International Conference

28-30 March 2018, Paris, France

Applying ToC methodology to move from parts manufacturing
to

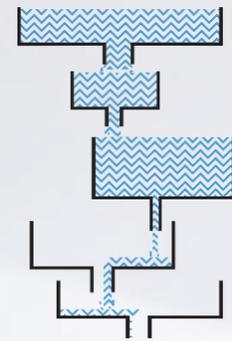
Providing Integrated Solutions

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 ?



Key Business Indicators

Commercial Aviation Manufacturing

70mUSD Turnover per annum

660 employees **400** Operators and Artisans

100 Engineers

35 average age - **30%** female

99% Export

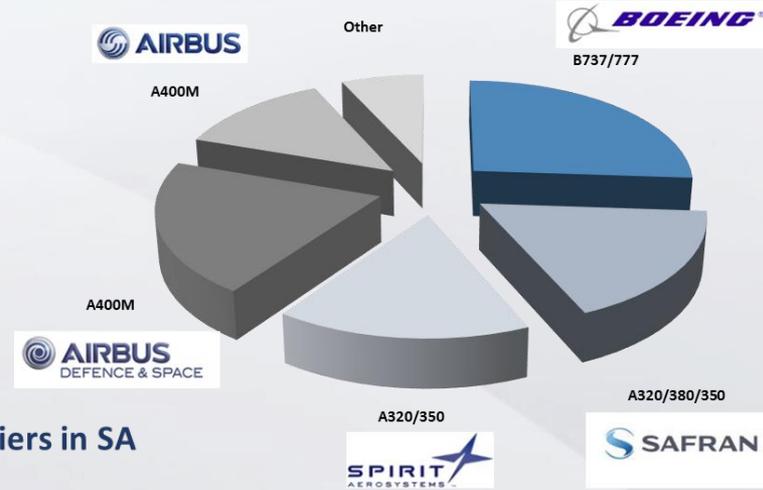
Limited Local sub-tier manufacturing suppliers in SA

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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p\AEROSUD FINA

World-class business systems and processes



Video Insert

Typical Products manufactured by Aerosud



A320 Track Can



A380 Ramps



A400M 4th
Occupant seat



A400M WingTip



A320 Galley



A350 Track Can



A350 Overhead
Ramp Assy



A320 VU 80
Avionic Rack



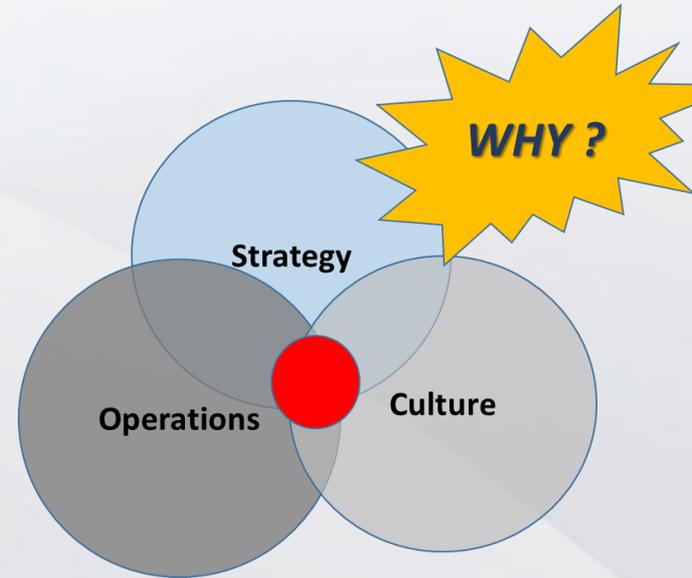
A400M Galley



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



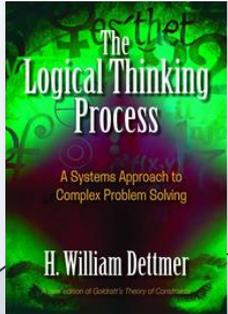
Build - Capatilize - Sustain

Moving from: Design and Manufacturing aircraft parts

To: **Providing Integrated Solutions**

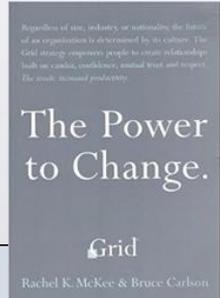
So that: Communities and Partnerships benefit from our Innovative Skills

Building an ever-flourishing Company



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

- Strategy and tactics to: Inspire and Motivate People

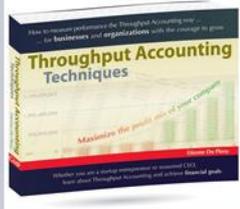


Aerosud Value Chain (Operations)

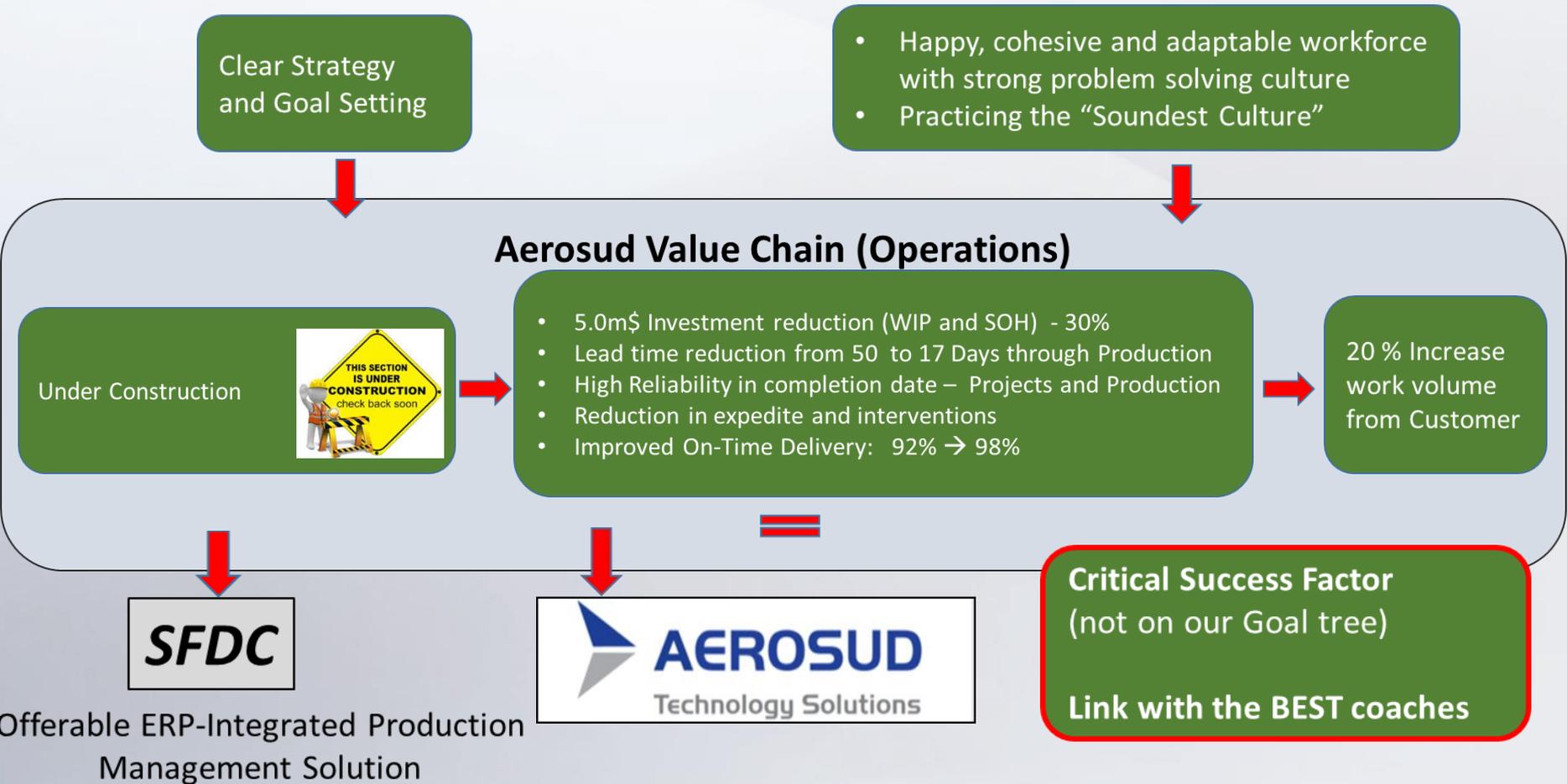
Sales and Marketing based on: "It's not luck" TOC methodology

- 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
- Synergic training across the whole company

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



- Throughput Accounting
- GRID Team Culture



Develop and Support Implementation of a Strategy and Tactics

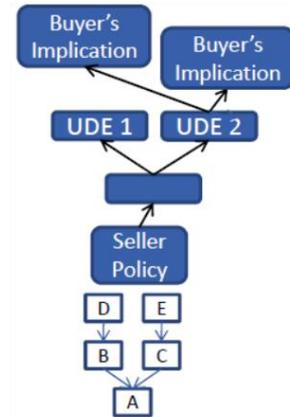
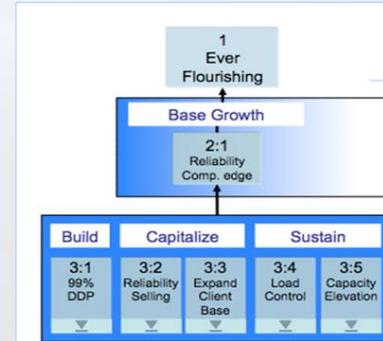
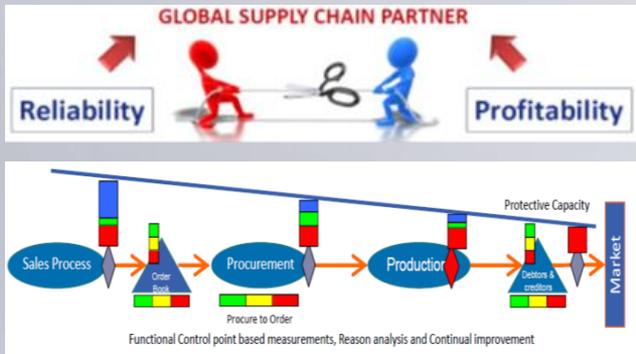
- Reliability model
- Concept of continuous flow measurement
- Protective Capacity profile

TOC Marketing & Sales – current focus

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

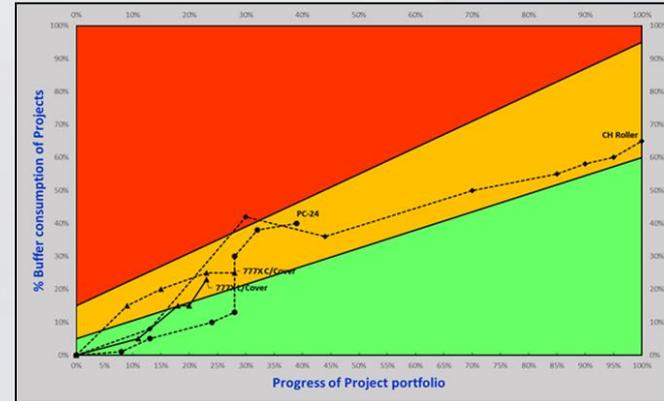
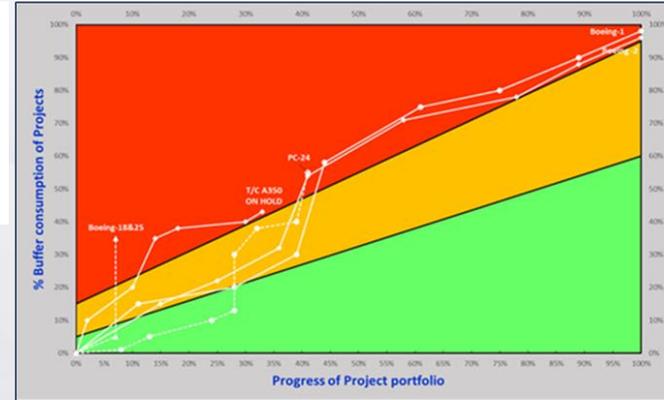
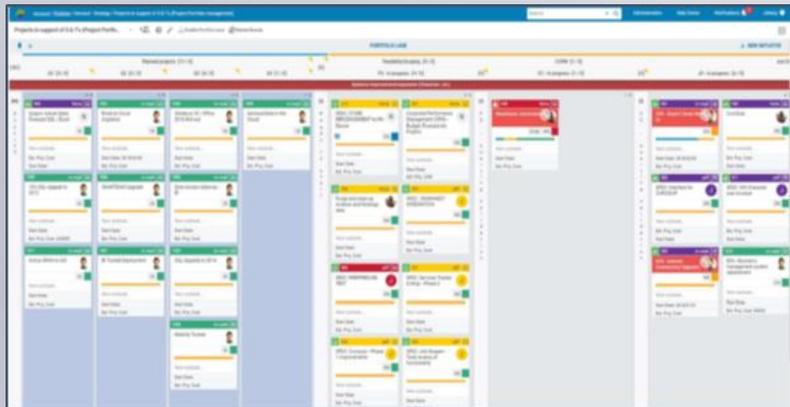


Selective intervention in the supply chain



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**

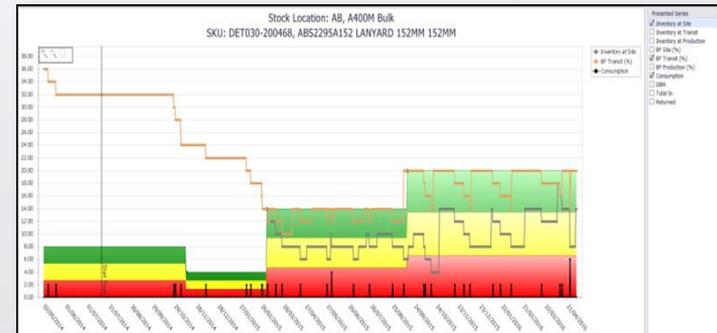


Managing – 3 000 SKU's

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

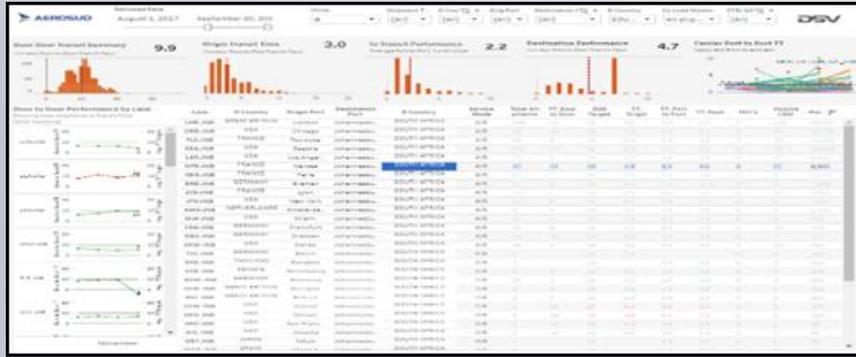
Inbound – Supply Chain - 30 m\$ spend

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



ORDER#	LINE	PERFORMER	DESCRIPTION	REQ DATE	QTY	UNIT	REV	STATUS	REFERENCE/REASON	SPC	REMARK
APA-1919	1	4714219-06A	SKL	02NOV17	100	EA	3				Get approval with support
APA-12002	1	3044890-27	PUSL	28NOV17	100	EA	2				MRP based
APA-19102	1	4714219-06A	SKL	16NOV17	100	EA	2				See attached
APA-12041	8	3044890-27	PUSL	28NOV17	100	EA	2				MRP based
APA-12000	1	4714219-06A	SKL	28NOV17	100	EA	2				MRP based
APA-12019	1	3044890-27	PUSL	01DEC17	100	EA	3				MRP based
APA-12101	1	2171102	PUSL	08DEC17	100	EA	3				See attached for CR
APA-19103	1	4714219-06A	SKL	16NOV17	100	EA	2				See attached
APA-12089	1	3044890-27	PUSL	15DEC17	100	EA	2				MRP based
APA-12041	1	4714219-06A	SKL	28NOV17	100	EA	2				MRP based
APA-12103	1	3044890-27	PUSL	01DEC17	100	EA	3				MRP based
APA-19148	1	4714219-06A	SKL	16NOV17	100	EA	2				MRP based
APA-12143	1	3044890-27	PUSL	28DEC17	100	EA	2				MRP based
APA-12103	1	4714219-06A	SKL	16NOV17	100	EA	2				MRP based
APA-12094	8	4714219-06A	SKL	28NOV17	100	EA	2				See attached
APA-12117	1	2171102	PUSL	01DEC17	100	EA	2				MRP based
APA-12103	1	4714219-06A	SKL	16NOV17	100	EA	2				MRP based
APA-12081	2	4714219-06A	SKL	04DEC17	100	EA	2				MRP based
APA-12117	1	3044890-27	PUSL	16JAN18	100	EA	2				MRP based
APA-12117	2	3044890-27	PUSL	16JAN18	100	EA	2				MRP based
APA-12103	1	4714219-06A	SKL	16NOV17	100	EA	2				MRP based
APA-19148	8	4714219-06A	SKL	01DEC17	100	EA	2				MRP based
APA-12103	1	4714219-06A	SKL	16NOV17	100	EA	2				MRP based
APA-12103	1	2171102	PUSL	16JAN18	100	EA	2				MRP based
APA-12103	1	3044890-27	PUSL	01DEC17	100	EA	2				MRP based

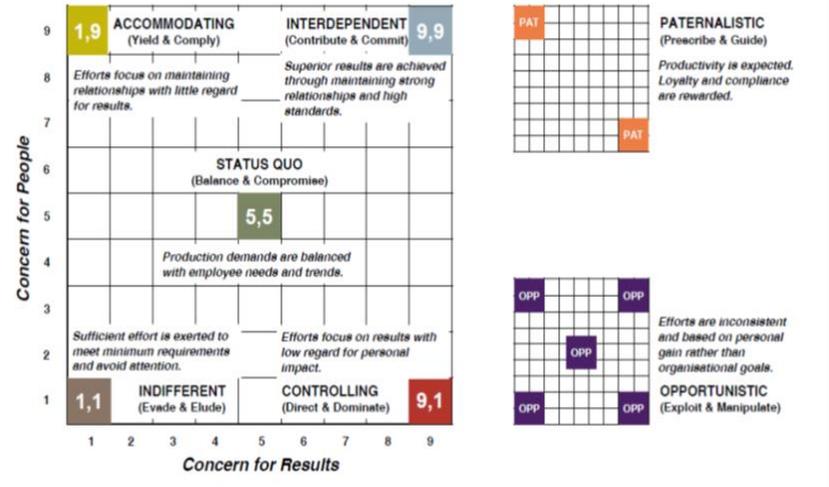
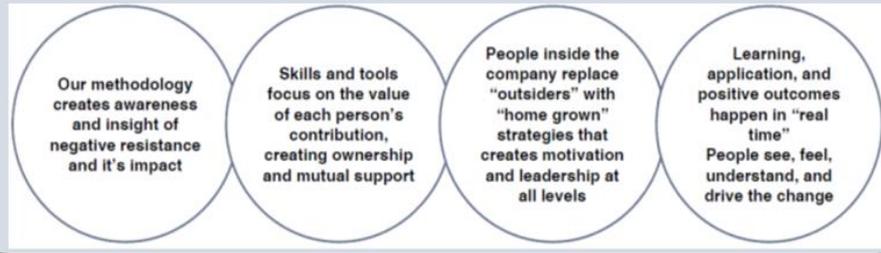
Purchase to stock	Buffer penetration on site (QTY)	W	50	214	485	879	627
	Buffer penetration on site (%)	W	2%	9%	22%	39%	28%



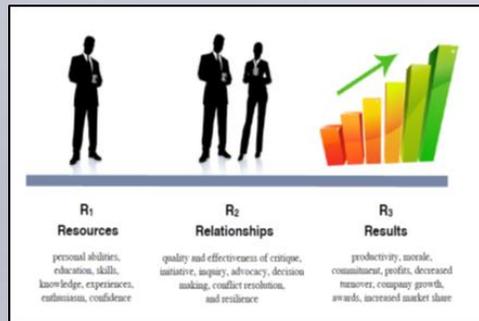
SKU	DESCRIPTION	UNIT	QTY	STATUS	REASON	DATE	LOCATION	REMARKS
...

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
			0%	11%	27%	61%



SFDC



"Desk Top"
Shop floor Data Collection

CCR Performance

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

WIP in a Cell

Throughput

Scan History

BUFFER PENETRATION
- MTA or MTA
- Value Stream or Project

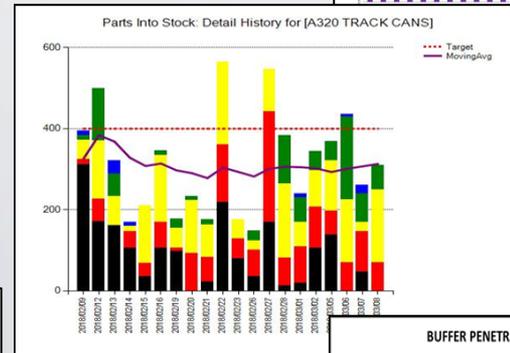
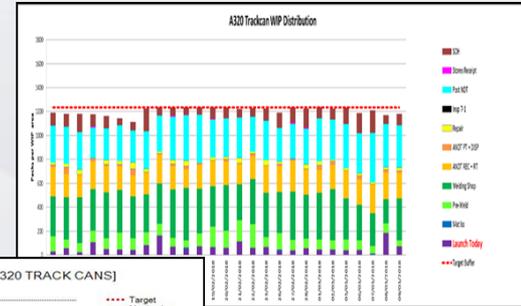
TIME-IN-SYSTEM and TIME-IN-CELL
- Value stream or project

"Touch"
Shop floor Data Collection

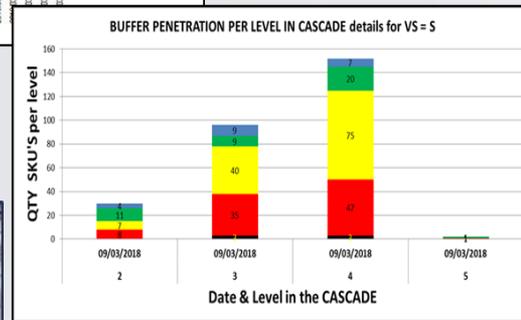
Managing – 6 800 SKU's

- 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



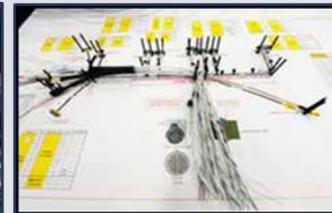
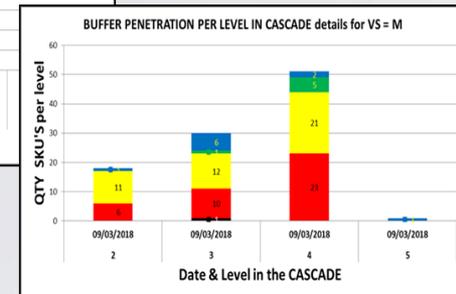
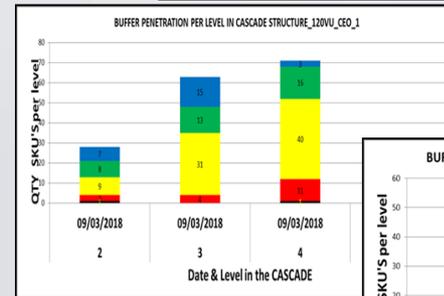
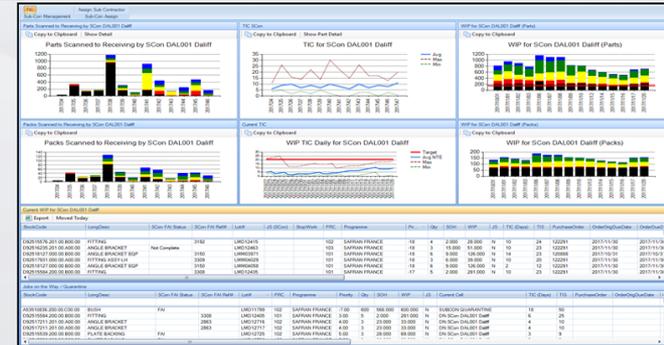
Buffer penetration - MTA	QTY	D	308	327	619	745	1851
	%		8%	8%	16%	19%	48%



Managing - 800 SKU's

- 100% on **SFDC**
- DBM - Dynamic Buffer Management
- Real-time priority/status visibility to Aerosud
- Real-time priority/status visibility to Supplier
- 21 Suppliers in 3 different countries
- 600 SKU's are Machined parts at 12 suppliers
- Machining, sheet metal pressing and forming, pipe bending, NDT, surface treatment, spot welding, electrical wiring, tooling, jigs and fixtures

SFDC





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South African**