

Lean Six Sigma DMAIC Approach





High Level DMAIC Approach

Lean Six Sigma

Define

- When did it happen?
- Where did it happen?
- What is the success criteria?

Measure

- How often does this happen?
- What trends have we observed relative to the target?

Analyze

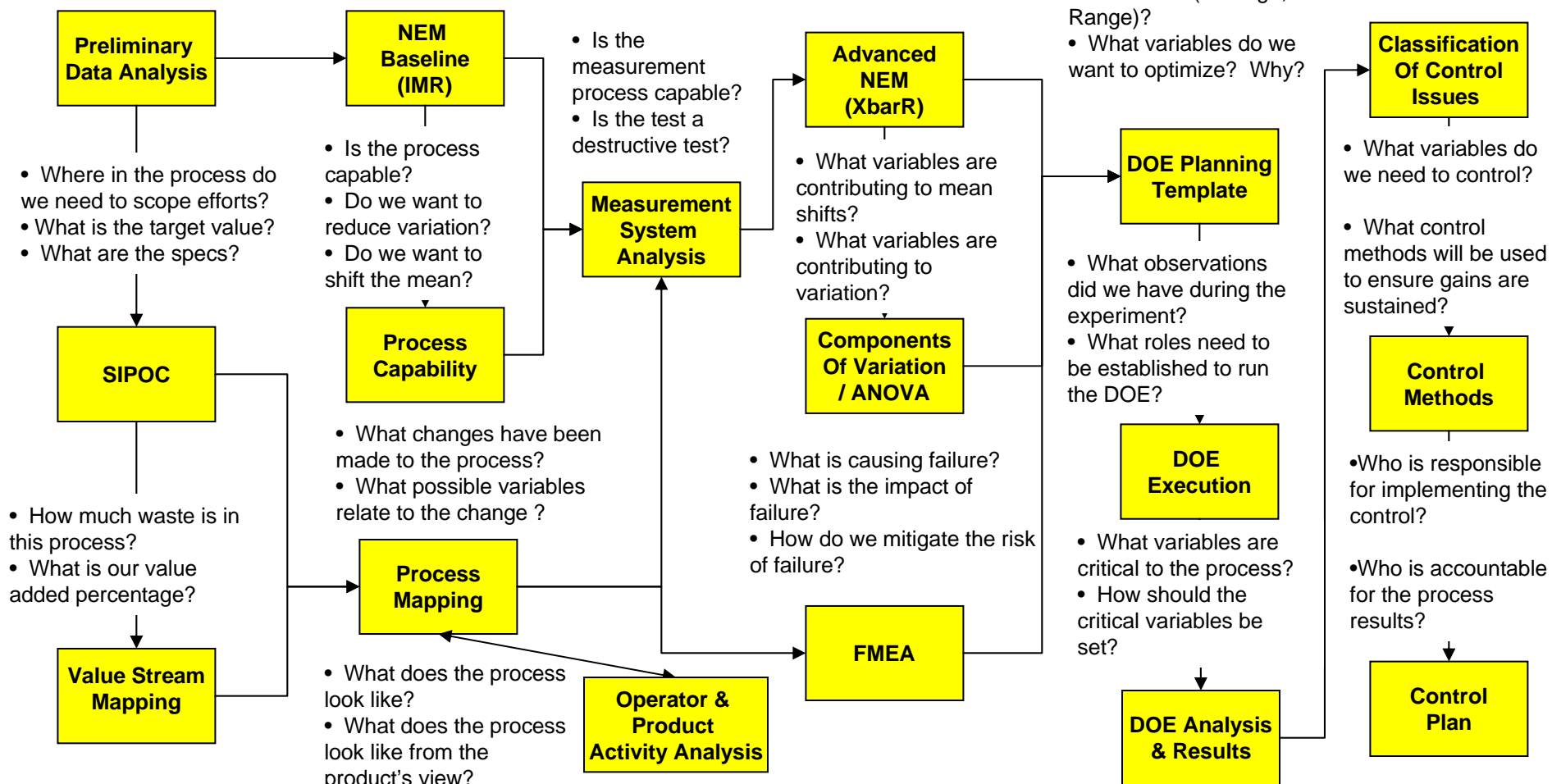
- What is the sub-grouping strategy?

Improve

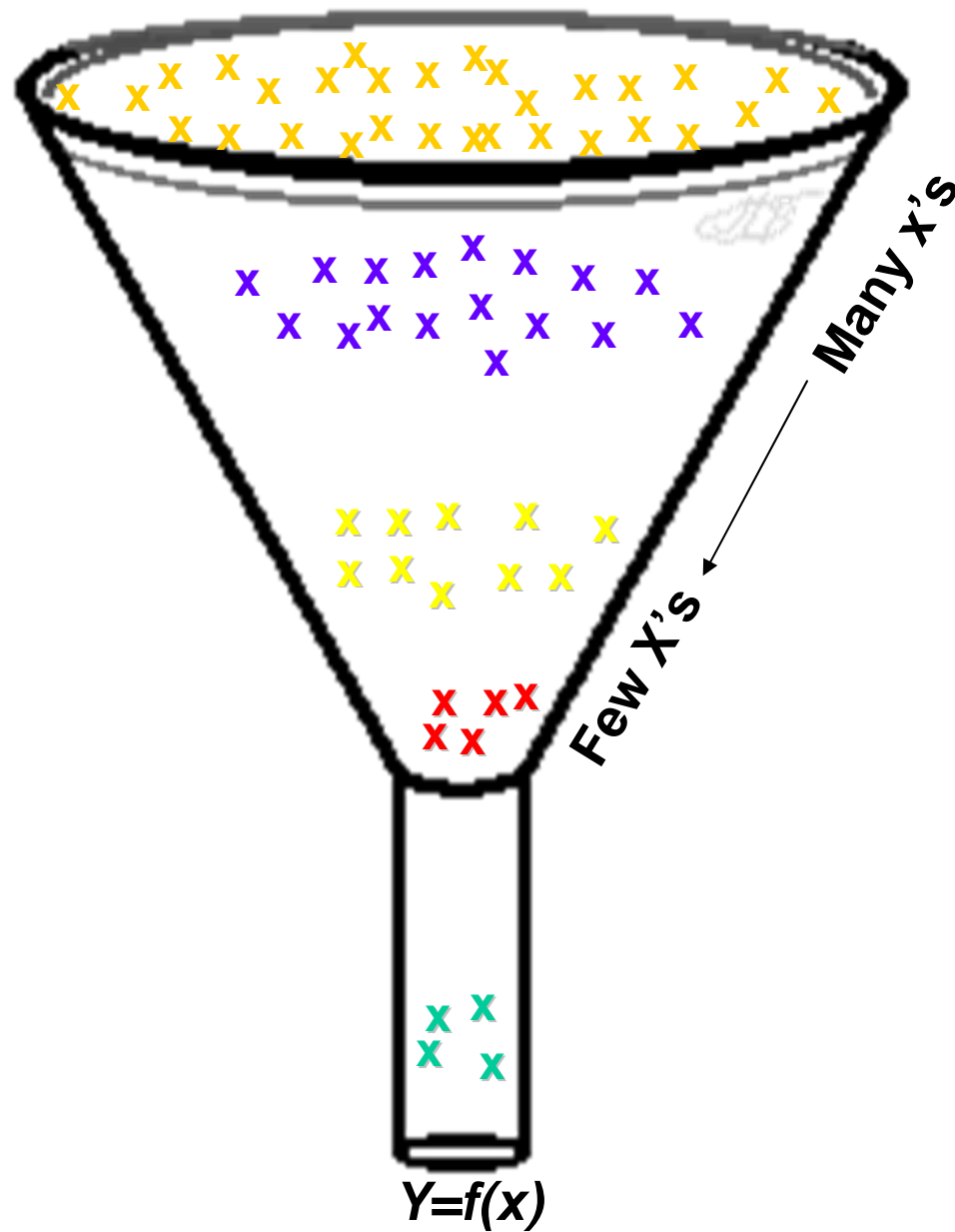
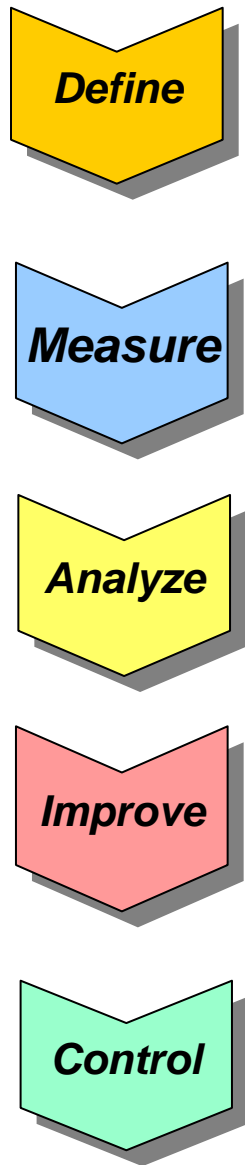
- What does the DOE process plan look like?
- What responses are we interested in (Average, Range)?
- What variables do we want to optimize? Why?

Control

- How will we address Org. issues?
- How will we address Behavioral issues?

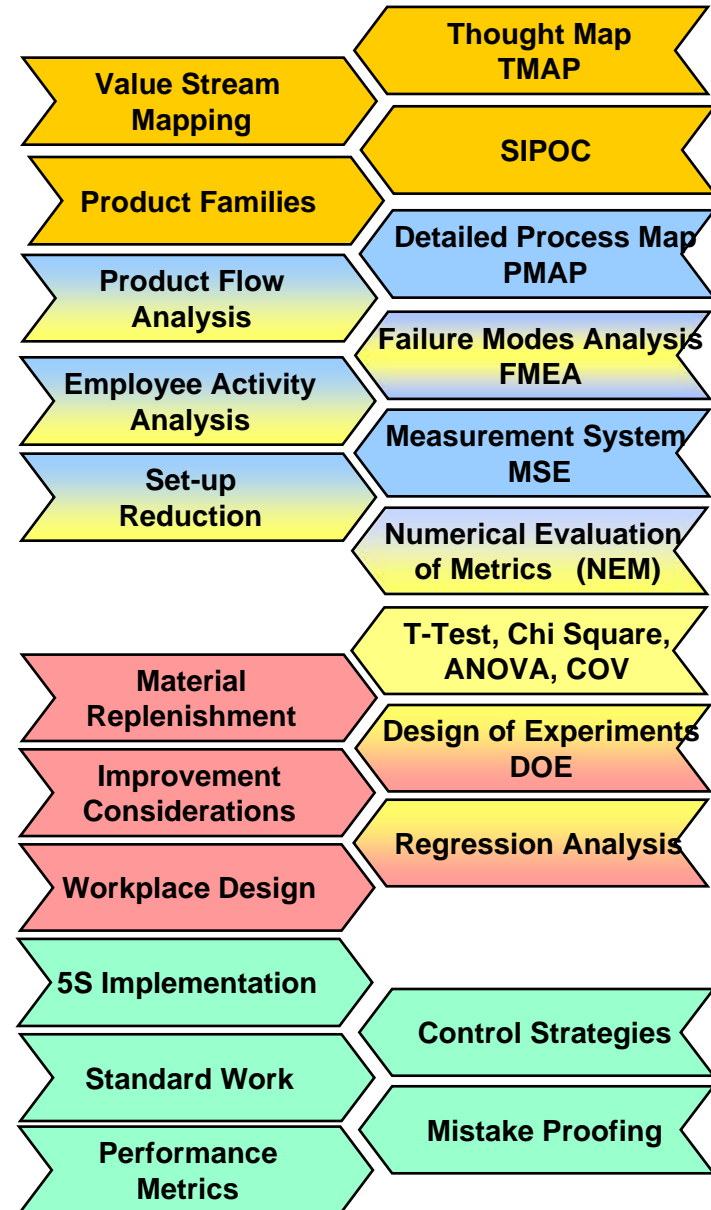


Funnel-Down Many Variables to the Critical Few!



VELOCITY OPPORTUNITY
(Reduce Waste)

VARIATION OPPORTUNITY
(Reduce Variation)





Define

Measure

Analyze

Project Charter

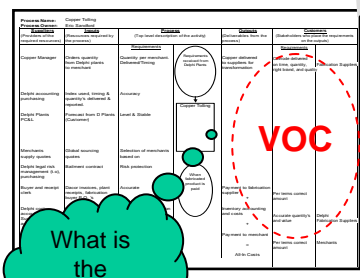
Six Sigma Project Charter

Project Name	Project Sponsor	Project Manager	Project Start	Project End
Project Description	Project Justification	Project Goals	Project Risks	Project Status

Project Justification

Product Line	Sales	Production Volume	Market Comments
Brackets	\$ 1 Million	High vol - Growing	Cyclical
Wheels	\$ 1 Million	High vol - Growing	Auton.
Closures	\$ 1 Million	Large Diameter	Old Equip.
Shafts	\$ 1 Million	Hydraulic	Small Production
Separated Operations	\$ 1 Million	High Labour	Old Equip.
Seats	\$ 5 Million	0.7 M / 7%	Automotive
Other Products	\$ 4 Million	0.3 M / 17%	

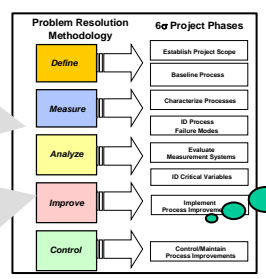
SIPOC



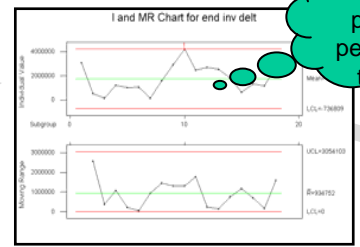
Product Families

Product Line	Material	Labour	Latex	Paint	Glue	Other	Process	Quality	Cost	Lead Time	Inventory
...

Thought Map

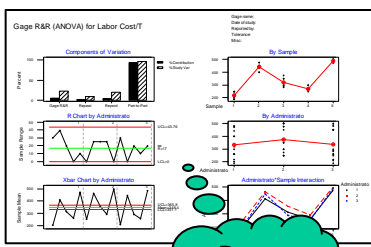


Numerical Evaluation of Metrics



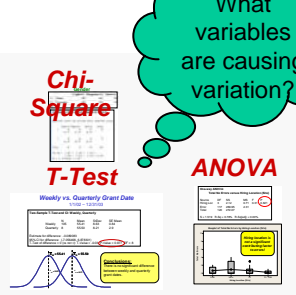
How is the process performing today?

Measurement System Evaluation



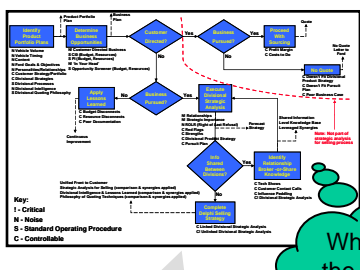
Data Integrity?

Hypothesis Testing



What variables are causing variation?

Process Map

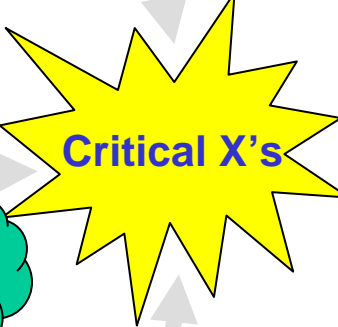


What does the process look like?

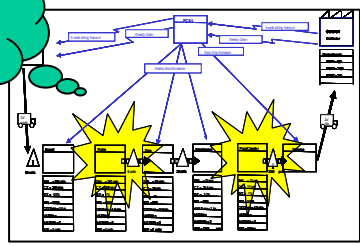
Failure Modes & Effects Analysis

Preprocess	Failure Mode	Failure Effects	Causes	Controls	Controls	Actions
...

How do we mitigate process risk?

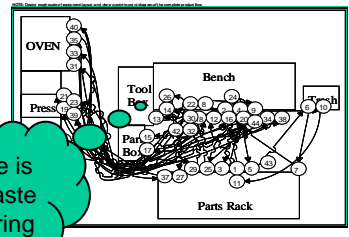


Value Stream Map



Where should we focus?

Process Flow & Employee Activity Analysis



Where is the waste occurring?

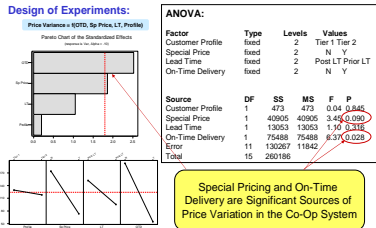
The Seven Wastes

- D - Defective Production
- O - Over Production
- T - Transportation
- W - Waiting
- I - Inventory
- M - Motion
- P - Processing

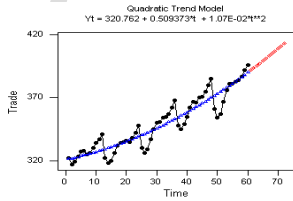
Improve

Control

Design of Experiments



Regression

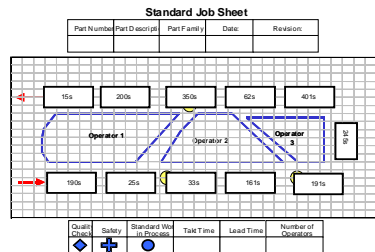


Control Strategies

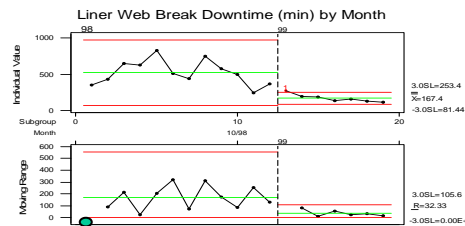
Item	Material	Standard Operation of Control	Quality Control	Process Control	Price & Contract	Stock & Inventory	Lead Time	Customer Satisfaction	Supplier Performance	Operational Efficiency	Environmental Compliance	Health & Safety	Regulatory
...

How do we sustain the gains?

Standard Work



Measure & Monitor



Have we met our goals?



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Steven Bonacorsi is a Senior Master Black Belt instructor and coach. He has trained hundreds of Master Black Belts, Black Belts, Green Belts, and Project Sponsors and Executive Leaders in Lean Six Sigma DMAIC and Design for Lean Six Sigma process improvement methodologies. Steven is a board member for the Boston Chapter of the Industry of Industrial Engineers.

Full Bio: <http://www.linkedin.com/in/stevenbonacorsi>

Lean Six Sigma White Belt Certification:

- Add Lean Six Sigma White Belt (Basic Awareness) Training and Certification to your Resume or Job Skills.
- Learn topics from one of the original Master Black Belts and world experts on Value Stream Mapping, 5s, Process Capability, Deployment Planning, Roles and Responsibilities, FMEA Risk Analysis, Control Plans and more.
- Certificates will be signed for all who complete the 2 hour training session.



Learn More about The AIT Group

<http://www.theaitgroup.com>

Lean Six Sigma



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WORKING HAND IN HAND...
TO CREATE YOUR FUTURE



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IMPROVEMENT APPROACH

OUR
EXPERIENCE

LEADERSHIP
& PARTNERSHIPS

GLOBAL
CAPABILITY

EVENTS

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BUSINESS IMPROVEMENT APPROACH

Working hand-in-hand with our clients, we accelerate business benefits through the tailored integration of knowledge transfer and professional support delivery methods to achieve breakthrough financial and cultural business impact.



COMPETITIVE
STRATEGY
& INNOVATION

The **AIT Group** aligns delivery methods with the goals of our clients:

Knowledge Transfer

If your organization is looking to create a sustainable problem solving culture which drives significant business improvement, our delivery approach is aimed at developing internal skill sets and supporting infrastructure.

Professional Support Services

If your organization has critical complex business issues that need rapid and sustainable resolution, our delivery approach leverages highly skilled **AIT Group** professionals who bring industry best practices to quickly and permanently achieve results.

Both business improvement methods have been very successfully integrated to achieve maximum business benefits. No matter what your business needs -- from Strategy Development, to Value Chain Transformation to Lean Six Sigma Execution -- the **AIT Group's** business improvement approach ensures results.



VALUE &
OPPORTUNITY
IDENTIFICATION



VALUE CHAIN
TRANSFORMATION



LEAN SIX SIGMA
& DFSS DEPLOYMENT



DELIVERY APPROACH

KNOWLEDGE TRANSFER

PROFESSIONAL SUPPORT SERVICES



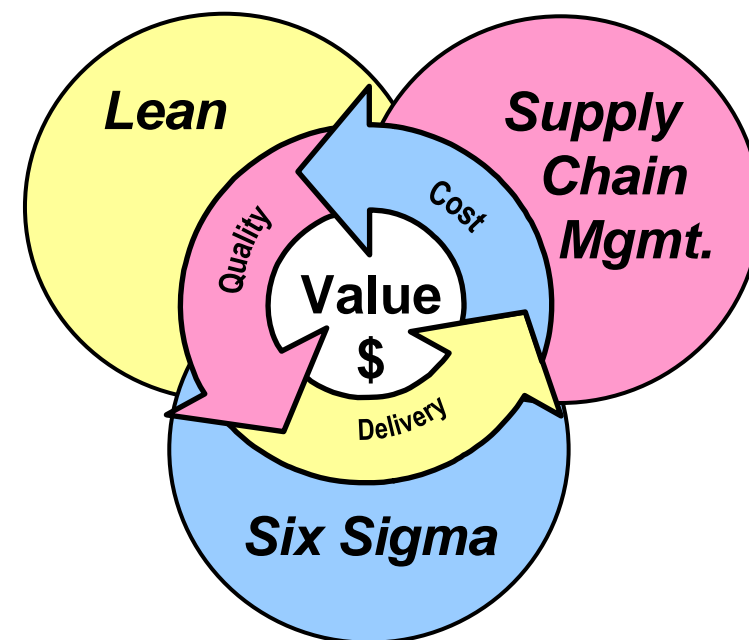


Who is AIT?

Lean Six Sigma

- AIT is a premier provider of Lean, Six Sigma and Supply Chain solutions.
- Solutions are customized to the customer – not one size fits all.
- The company was started in 1998 by three individuals that recognized extremely early in the industry how well Lean, Six Sigma and Supply Chain disciplines integrate.
- Our goal is the complete transfer of knowledge via client specific solutions – not training.
- Your instructors from AIT are Certified Master Black Belts and Lean Experts.
- We have worked with many different clients and some of the largest companies in the world.
- We have Offices in the US, Europe, Mexico and China.

The AIT Group is an international consulting firm that has been specifically designed to help companies increase profitability by improving overall business performance and customer satisfaction through the integrated application of:



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The AIT Group excels in implementation ... not recommendation!