

THE TOC Times

Avraham Y. Goldratt Institute

Quarterly Edition - September 2001

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To all our friends in the TOC community:

The events of September 11, 2001 shocked our very consciousness as we watched or listened to reports of unspeakable acts of terrorism committed against innocent people in New York, Washington D.C., and Pennsylvania. In the wake of this devastation, over 6,000 people are missing with over 600 confirmed dead. This did not just happen to America - over 60 nations are reported to have lost citizens in this tragedy. All of us at AGI extend our deepest sympathies and prayers to those who have suffered a loss in these terrorist attacks.

In this issue of TOC Times Quarterly, read about those who are applying TOC to improve healthcare, postsecondary education, and defense. Or, as in the case of a company called Piensalo: To use TOC to better the world and our lives.

Tracey Burton-Houle shares her insights with the first of a series of articles geared toward a collective vision for TOC in healthcare. Catch up with Dr. Rex Draman in *The Little School that COULD – part 2*, as he fills you in on the progress of Saint Edwards (a JEMBA Alliance school) as it establishes an Executive MBA Program in Systems and Constraints Management – an outcome based program. Don't miss Neil

Jamieson's abstract, *Bottlenecks to Boardroom: how much use is Goldratt's 'Theory of Constraints' in a service environment?* Neil is a 2001 MBA alumni of Edinburgh University. Share the journey of TOC in Columbia, Venezuela, and Costa Rica through Team Piensalo as they apply TOC to improve the standard of living in these developing countries.

Also, in this issue Lt Col Deatherage explains how AFOTEC's Air and Space Director is applying Critical Chain Project Management in *Impacting the Battlespace*. Honeywell's Albuquerque Operation shares its enthusiasm in *Honeywell: Albuquerque Operation Adopts Critical Chain* (re-printed by permission). Hear from the ICCG Group, Czech Republic, as they share their experiences in *The SilverChain Project*.

Join us in welcoming Bob Jacob into the AGI partnership, Gerry Hoffman and Kath Austin into AGI North America, and Daniel Baker into AGI (UK).

What's that? Not so fast, you say? Where's the article on Autopoiesis and TOC? Okay. You got me. Let's just say there's more to this than "meets the pen." Have patience with me a little longer.

Steve Simpliciano
Editor-in-Chief



Partners Perspective

In her thirteen-year tenure at The Goldratt Institute, Tracey has been developing, teaching, and implementing TOC with individuals and organizations



worldwide, including Intel, ITT Defense, Ford Electronics, the Department of Veterans Affairs Health Administration. She is currently focusing her energies on spearheading TOC in “for-cause” organizations, particularly healthcare, community development, and government, and doing a lot of groundbreaking work in the development of strategy - from the boardroom to the front line - using TOC’s Thinking Processes..

“What if my organization’s goal is not to make money?”

Case Study: Healthcare –
Part 1 of a Series

By Tracey Burton-Houle, Partner - AGI

“THE GOAL was great, loved IT’S NOT LUCK, but it doesn’t apply to us. Our goal is not to make money.”

Ten minutes into my first presentation to healthcare professionals on the application of TOC to healthcare, the CFO

of one of the top teaching hospitals in the U.S stood up, stopped me in mid-sentence and made the above proclamation, his body language communicating to everyone in the auditorium that anything I had to say from that point forward would be a waste of their time. Two and a half years later during my second presentation to healthcare professionals... (just kidding!)

At that time, I was totally caught off guard - I was assured by the individuals who brought me in to speak that everyone had “read the books” and was “very supportive,” including this CFO! I could think of only one thing to do. I dredged up some ancient memories I had from reading *The Haystack Syndrome*¹ years before, and an even older article that I don’t even remember the title of that talked about “black boxes” and “money-making machines,” and I began talking about goals, necessary conditions, their role in decision-making and strategy, and the similarities and differences between organizations whose purpose is to make money and those whose purpose has little if anything to do with it. To be honest, when the discussion began, I was concerned about how I was going to bring it all together into a coherent and convincing response *for the audience*. Imagine my surprise when I realized that the discussion was completely changing *my* perspective of how TOC can be applied to any organization - or any system for that matter – and why it achieves the dramatic improvements in performance that it does!

What I didn’t realize was that while I was having my major “a-ha!” experience, another “a-ha!” was occurring in the audience. The way they described it was that the discussion broke a stalemate that had been crippling their organizations for years. They had been spending their time debating who was right - was the goal of the organization the delivery of quality healthcare like the clinical managers insisted or was it making money as the administrators claimed? The discussion brought them to realize that they can’t deliver quality healthcare now and in the future without money, that they can’t **make money** (oops!) generate revenues without delivering quality healthcare, and that

TOC can help them do both. With this realization, and the realization that both parties were essential to the team if the organization was to succeed, did they happily give up their notoriously adversarial roles and really begin to listen, not necessarily to me, but more importantly, to each other. Thank goodness for the CFO! (By the way, over time he became one of the biggest champions of TOC in his organization.)

Why did I share this story with you? Because from the very first moment I began working in healthcare to this day, over two years later, I’ve constantly run into obstacles like the one above that have forced me to challenge my understanding of TOC, how to implement it in organizations, *even how to talk about and present it!* TOC practitioners are so accustomed to people claiming that their environment is different (so much so that it’s one of TOC’s predicted “layers of resistance” for which we have this nifty process we pull out and use whenever we hear it) that when someone says something like healthcare is different from industry, TOC practitioners don’t really listen. I didn’t either. And it makes sense in a way that we have this reaction...

Of course, Drum-Buffer-Rope and Buffer Management² apply in healthcare! Where don’t they?! Just think about a pharmacy or the ongoing problem with the national blood supply for a moment and the Replenishment² solution is a no-brainer. And what organization doesn’t need Critical Chain Multi-Project Management³ to at least manage their improvement projects and IT departments, if you think about the massive changes going on in healthcare in general, and everything they’re trying to do with electronic medical records specifically. It’s obvious to TOC practitioners how each and every application of TOC can be applied in healthcare! *In fact, all preliminary reports indicate that the results we’ll see from applying these generic solutions in healthcare will make the impressive results that industry has achieved⁴ pale in comparison!*

What’s not at all obvious is how these pieces all get brought together to create a complete vision of how TOC can

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systemically and dramatically improve healthcare systems, and how we overcome the obstacles to its buy-in and implementation. Think back to that CFO. Think about the obstacle he expressed after having “read the books” (and he did read them, as his later questions revealed!) Can you imagine a more fundamental obstacle to have than that one? If he had not stood up, but had just sat there with that obstacle hounding his thoughts, he would never have stopped reading his mail to even listen to the presentation. Can you imagine how much stamina, conviction and fortitude are required for people with obstacles of this magnitude to continue exploring TOC if it doesn’t appear to appreciate the magnitude of the real obstacles and challenges they face?

Let’s face it. The vast majority of the intuition and knowledge base that exists in TOC comes from our collective experiences in applying TOC to industry or industrial-type settings, and mostly on a very localized basis. Think about the literature that exists, the presentations you’ve seen, the case studies and the educational materials that are out there, where they begin and the assumptions that they make - about what people understand, their history, the current state and culture of their organizations, what they believe and what they’re willing to accept. Starting with these same assumptions and taking these same approaches in healthcare appears to be putting more obstacles in the way of them implementing TOC than they are removing. *If we are going to make significant, lasting, system-wide improvements in healthcare, we must recognize and understand the seemingly huge differences between healthcare and industry, and prepare to step up to the unique challenges faced when implementing TOC in healthcare - whether we’re implementing DBR in a clinic or doing corporate level strategic planning for a national healthcare system.*

The objective of this series of articles is to initiate a discussion that will result in a collective vision for healthcare and a plan for going about getting the buy-in to implement it. Each article will seek to begin to document what is known about

different obstacles/challenges posed by implementing TOC in healthcare, what has been done thus far, what’s understood and what’s not, and to figure out where to go from here. More importantly, each article in the series will be used as the topic for discussion in the For-Cause Organization Dialogue Area on AGI’s website.* Important findings, questions and conclusions reached during these dialogues will be shared with the TOC community at large via future publications of TOC Times.

Wouldn’t it be wonderful if the outcome of this effort were a complete body-of-knowledge (a recognized oxymoron) on implementing TOC in healthcare that could be used to remedy the state of healthcare worldwide?

Future Planned Articles in the Series (working titles only):

- What is a “Healthcare System?” (or, Who the Heck Built this System Anyway?): *Goals, Necessary Conditions and Measurements for Healthcare*
- When Your Inventory Walks Out the Door On You (or, Car Parts Don’t Complain): *Patient Care, DBR, Replenishment and Buffer Management*
- When Your Inventory Doesn’t Walk Out the Door on You: *When Patients Are Projects*
- *Is Mafia Offers in Healthcare an Oxymoron?*
- Is there ever pleasing a payer? (or, You Expect to Get Paid for That?)

Please email your suggestions for future articles, your comments or questions to me at Tracey@goldratt.com.

** Due to forthcoming changes to AGI’s website, all dialogue areas are currently off line. Please send your questions, comments and feedback directly to Tracey at her e-mail address, Tracey@goldratt.com*

¹Goldratt, E., *The Haystack Syndrome* © 1990 North River Press

² Goldratt, E., *It’s Not Luck* © 1994 North River Press

³ Goldratt, E., *Critical Chain* © 1997 North River Press

⁴ Mabin, V. and Balderstone, S. *The World of the Theory Of Constraints: A Review of the*

In the December 2000 issue of the TOC Times, Dr. Rex Draman introduced our readers to the vision that St. Edwards University had to revitalize their MBA program. After attending TOC World™ 2000 in St. Paul and recognizing the impact that TOC was having on different organizations in the world, Dean Marsha Kelliher along with other faculty members from St. Edwards, took the initiative to become the first university in the United States to sign the Joint Executive MBA Alliance (JEMBA) agreement with AGI. Read further how St. Edwards is transitioning to a TOC-based MBA program.

The Little School that COULD – part 2

By Dr. Rexford H. Draman, contributing writer

During the last year things have been moving right along. Last fall, we were the first US university to formally sign the Joint AGI / University MBA Program Alliance agreement. Since then, I have been revising the content of the Operations track courses to formally recognize the incorporation of TOC into them. The first group of Operations track students to complete their degree under my supervision will graduate in August. Many of them chose to take the Jonah program as their final class in the Operations concentration.



In March I completed the MSW for the Vice President of the College of Professional and Graduate Studies (CPGS) and his staff (Deans and Directors). As a result of this introduction, he asked me to facilitate the development of the College’s long-range plan which must support the University’s goal for 2010 – Be ranked among the best small university’s in the US. By drawing on the intuition of the group – VP, 3 Deans and 2 Directors - we were able to develop a Pre-requisite tree with the University goal as the ‘ambitious target’. The fall semester will see us start work on the details (transition trees).

In April, I with the support of my Dean, presented our draft proposal for an Executive-MBA program in Systems and Constraints Management to the Vice President of CPGS. The design and development of the program's curriculum was completed with assistance from a nationally recognized 'systems thinking' expert and discussions with other AGI associates. To insure the program does not greatly impact the already limited schedules of our executives / students, we designed the program around meeting one weekend (Friday, Saturday, and 1/2 day Sunday) a month over a 22 month period. We also focused a majority of the student's learning efforts on the application of their new found knowledge of systems and constraints to identifying and resolving their own 'real-world' problems.

This assures an 'outcome based' program that will provide their organization with real 'bottom-line' results. Each weekend session will focus on introducing and inter-connecting one major topic or area of learning. We will bring in nationally recognized experts to lead each of the weekend sessions. They will be supported by knowledgeable (systems and TOC) group leaders (part of our program) and the students themselves. Completion of the degree program will require the student to successfully complete and present a 'proof of mastery' project. For those of you that are interested, additional details of the proposal (both structure and content) can be found at the following web site

www.stedwards.edu/mba/draman/proposal.html

This proposal has the support of our College Vice President and we are hoping to get it through the requisite internal and accreditation hoops in time to start the first cohort next fall (2002). In our effort to more accurately quantify the potential demand for this TOC based E-MBA program, we have prepared a survey and would appreciate your response. While we will be the first to use these results, we are more than willing to share them with any school that requests them. The results will be available from Steve Simpliciano, Dean of AGI Academy, or myself.

www.stedwards.edu/mba/draman/survey.html

In an effort to insure our program incorporates the latest thinking and is capable of producing graduates that have the requisite skills and abilities demanded by industry, we are in the process of establishing an industry review board. While a majority of our board members will be senior level executives from within our geographic region, we would welcome an interested member or two from outside this area. Therefore, if any of your organizations would be interested in becoming involved in sharing your insights with an MBA program that has demonstrated its willingness to challenge and change the accepted norms of business academia, we would treasure your involvement and insight.

I look forward to sharing more of the exploits from the "Little School that Could" next year. Until then, I remain

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Before earning his Ph.D. in Operations Management at the University of Georgia (1994), Dr. Draman spent 20 years in various manufacturing management positions. His dissertation and most of his academic research has focused on the use of TOC applications and thinking processes to business and strategic planning. In addition, he is also actively involved in establishing and developing new linkages between other systems based tools and techniques and the Theory of Constraints. Dr. Draman can be contacted at (512) 428-1006 or RexD@admin.stedwards.edu



Bottlenecks to Boardroom: how much use is Goldratt's "Theory of Constraints" in a service environment?

by Neil R. Jamieson MA, MBA

All theories should be repeatable and transferable. The "Theory of Constraints" (TOC), devised by E.M. Goldratt and popularised through the business novel "The Goal", reprioritises what managers should be concentrating on. The metaphor of the bottleneck is used to convey the premise that only by altering the bottleneck does a company increase Throughput, and ultimately deliver superior shareholder value.

"The Goal" is set in the fictitious U.S. manufacturing branch plant called UniWare, managed by Alex Rogo. This author applied TOC to a UK financial services company, a somewhat distant relation to Rogo's world. In reviewing relevant literature it became clear that almost without exception, companies who have applied the theory have significantly improved profits². However, one of the key concerns was that the evidence was very skewed towards manufacturing. Could the theory transfer?

Service industries are often seen as different from manufacturing. However, the more this author tried to apply TOC to services, the more it appeared that this differentiation was artificial. After all, service industries still have inputs that are covered [converted] via processes to outputs that customers want.

In testing the Theory against reality it was tempting to apply local solutions to local issues. Symptoms such as backlogs, constraints, expediting, and fire-fighting abounded, as in Rogo's UniWare. Goldratt asserts that the "Theory of Constraints" applies at the global level. Improvements in front of a bottleneck make no difference to the bottom line. In this light call centres, email, and direct-line contacts all serve to speed up the flow of incoming work without necessarily elevating the constraint.

Moving up to the global level, company policy, measures and agency issues all conspire to create bottlenecks, primarily by running the company on the assumption that the customer is predictable, and that a balanced production line is both achievable and desirable.

Identifying and elevating the key constraint is essential. Recent events within

the real company may well have done this. However, traditional management techniques continue to emphasise efficiency, performance, budgets, unit cost and backlogs. Solutions continue to address local concerns. The bottleneck vision is most easily viewed on the shop-floor, but it is most likely caused by decisions in the boardroom. As such, the challenges appear generic to business rather than unique to industry sectors.

This article is based on a dissertation submitted to the part-time MBA at Edinburgh University, 2001. The dissertation was top in year. The full dissertation is considered company confidential, and is therefore not available for public release. An executive summary is available on-line at www.users.globalnet.co.uk/~nrj2. You can also e-mail him with specific points: nrj2@globalnet.co.uk

¹ Goldratt, E. & Cox, J., (1993) *The Goal* (2nd Ed)

² Mabin, V. & Balderstone, S (2000), *The World of the Theory of Constraints: A Review of International Literature*



TOC in Colombia, Venezuela and Costa Rica: From The Goal to the Desirable Future

Submitted by the Piensalo team.

Edited by Rika Visser, Senior Editor

What you are about to read, is the journey of a company called Piensalo. Piensalo means THINK ABOUT IT. Their mission is: To use TOC to better the world and our lives. Piensalo's world currently consists of Colombia, Venezuela and will soon include Costa Rica. Their challenge is to impact and make a difference in their own countries, countries that are economically challenged. To give you an idea, these countries are considered "technologically excluded", and none are featured in the top 15 countries from a Gross Domestic Product perspective. On a scale of 1-10 the likelihood of highly educated people in these countries staying to help build the infrastructure, was rated at less than 4. Instead, most leave their country in

search of better opportunities. On a scale of -2 to 2 on the Economic Creativity Index (ECI), they scored between minus one and minus one and a quarter. The ECI attempts to gauge a country's involvement in innovation, measuring the level of technology and financing business start-ups, with faster developing countries scoring higher points.

How do you go about introducing the Theory of Constraints to a country? Where do you start? Piensalo took on this challenge. They knew it is possible to make a difference, and when they discovered "how to" with TOC, they became determined to succeed. This group of people is contributing to their communities, from helping companies to be commercially more successful to the education of children. They understand the importance of education as a means to sustain transformation and evolution of society as a whole. Their journey is an inspiration. It tells us what can be achieved when you have a dream and the stamina to make it happen. This is their story.



In 1993, Rafael Conde from Procter & Gamble and Alejandro Fernandez met at a study group founded by Rafael. The "Wednesday Night Group" read and discussed *The Goal*. The seed of TOC was planted in Colombia. Realizing the potential for TOC in Colombia, Alejandro took the initiative to visit AGI's office in Monterrey. Through them he got into contact with Dr. Donn Novotny, Partner of AGI, and invited him to visit Bogotá to come and present a *Production the TOC Way 2-day Workshop* to one of the oldest textile companies in the area.

During the same visit, Donn gave the first formal TOC talk to managers, business administration teachers and students. Alejandro, who had been working for 9

years as Research Director for the Politecnico Grancolombiano University, was more convinced than ever that TOC would bring solutions to Colombia, and the place to start was in the universities. In spite of the marvelous common sense in Dr. Eli Goldratt's theory, the people around Alejandro had serious doubts regarding the new utopia. His attempts to convince his colleagues of the power of TOC was met with such fierce resistance, that it left him feeling isolated. Alejandro decided to part company with the university.

Continuing his education Alejandro attended different TOC programs all over the world, became Colombia's first AGI Certified Associate, and the official pioneer of the new philosophy in Colombia. He persuaded Rafael Conde and Luz Marina Schootburg, a previous university colleague, to form a partnership to advance TOC in Colombia. Together they established Piensalo Colombia.

Initially, Alejandro and Luz Marina decided to go back to the universities to introduce this new revolutionary thinking and concepts that touched and challenged the deep-seeded mind-set of the business administration in Colombia. They offered *Management Skills Workshops* and *Production the TOC Way Workshops* as isolated applications, or as academic courses. The TOC concept of throughput collided head-on with the traditional cost accounting principles.

Piensalo Colombia decided to introduce TOC to business, but their attempts were met with the same resistance. Slowly they recognized that without the active and sincere collaboration of the general managers in applying TOC to the company as a whole, they would never really succeed in disseminating TOC. They got their first opportunity to apply their insight in May 1996. Azul K, a laundry soap manufacturing plant, needed help desperately.

Piensalo Columbia took this opportunity to change a bankrupt company into a successful business model. After implementing TOC in every facet of this organization, throughput for today and tomorrow is ensured. Azul K has been pointed out as the company with more

dynamism among the entire Colombian industry last year, showing a consistent growth of more than 40%.

In December of 1996, Piensalo Colombia got their second breakthrough. Dr. Eli Goldratt went to Bogotá on an educational tour, and presented the TOC concepts to captains of industry and university professors. Eli introduced Alejandro and his team as the TOC representatives in Colombia. The opportunity to listen to and meet the creator of TOC, as well as see first hand the close personal relationship between Eli Goldratt, Piensalo Columbia and TOC supporters was precisely the catalyst needed to generate the critical mass that accelerated the value and acceptance of TOC. The road was paved for expanding Piensalo...

The opportunity for expanding came when Rafael Conde was transferred from Bogotá, Colombia to Caracas, Venezuela. Here he met up with old friends from Procter and Gamble, Javier Arévalo and Giovanni Tapia. It wasn't long before Javier asked Rafael to work with him to apply TOC to transform Javier's family business, Antartida, a Sales & Representation Company. Antartida started making steady progress. In spite of the economic recession that was affecting everybody else, their business kept pushing ahead, growing at an average of 15%.

But there was more than businesses that needed transforming. Francis Mejia, Rafael's wife became the coordinator for TOC For Education (TOCFE) in Colombia and Venezuela. Ana Maria Gonzalo d'Escrivan, who co-facilitated the Goldratt Sattelite Program with her husband Javier, and Marilyn Salazar More wanted to become active in expanding the TOC knowlege and tools in Venezuela. It was only natural that this inspired group of TOC supporters founded Piénsalo Venezuela, a subsidiary of Piénsalo Colombia.

From Piensalo Venezuela, we have this report: We see education as a priority, and the starting place to prevent the deterioration of our social fabric. Our involvement started with an alliance with the Together Foundation, a charity

funded mainly by the Cisneros Group, one of the largest Latin American communications conglomerates. We worked with them in 25 homeless children's houses, enrolling more than 50 teachers and councellors. Piensalo Venezuela facilitated the TOCFE sessions to educate teachers and councellors to be able to use TOC when teaching the children.

To ensure our desire to continue planting seeds to make the future happen, we founded Piensalo Costa Rica. It is our project for the future. It is still a newborn but we have high hopes for it, and have more work ahead. We added Rocio Gomez from Procter & Gamble to the Costa Rica team. She is the manager of the Piénsalo office and we will start marketing in August 2001.

Nowadays, we have a serious commitment with our TOC community, regarding our ambitious target. We need to build bridges between us and other TOC people around us in Venezuela and Colombia and the rest of the world. **We want to continue, without any compromises, with our goal.**

Piénsalo Colombia: Alejandro Fernandez, Luz Marina Schotborgh

Piénsalo Venezuela: Rafael Conde, Francis Mejía, Giovanni Tapia, Anamaria d'Escriván, Javier Arévalo

Piénsalo Costa Rica: Rocio Gomez, Rafael Conde, Giovanni Tapia, Alejandro Fernandez, Javier Arévalo



Lt Col Mary Deatherage explains in her article how to get plans that were derailed by circumstances beyond anyone's control, back on track, with Critical Chain Project Management. Read her account of how AFOTEC turned a challenging situation into a positive experience for the AFOTEC team as well as for the links in the chain that they affect.

AFOTEC Air and Space Directorate: Impacting the Battlespace

*By Lt Col Mary Deatherage
Air & Space Mission Directorate*

In October 1998, the entire look of AFOTEC changed. The actual business of planning and conducting tests was delegated to the detachments while Headquarters (HQ) assumed the lead for "scoping and costing" the tests.

During this transition, the Air and Space Mission Directorate (AS) was formed. Its primary responsibility was to lead core teams in developing test scope and test options along with building the operational impact assessment (OIA), a process commonly referred to as "scope/cost."

The trouble was, no one could define exactly WHAT—and certainly not HOW—the core teams were to accomplish this new thing called scope/cost. We came to work on a Monday morning to new cubicles, new phone numbers, and a new "directorate", but without a basic understanding of what we were supposed to do.

And so commenced nearly two years of mounting frustration at both the HQ and the detachments. Not only was AFOTEC floundering, but we were not making real strides toward our goal of providing more and better information to the warfighter!

As the tension and frustration continued to build, AFOTEC's leadership was busy exploring the beginning of a new way of doing business—Theory of Constraints (TOC)—across all AFOTEC.

In March 2000, Bob Jacob of the Goldratt Institute taught a TOC Critical Thinking class here at Kirtland. A key outcome of that class was the decision to apply TOC to the "broken" scope/cost process.

A team of four people from AS and operations (XOO) was formed with the express goal of "fixing" the scope/cost process.

As the team struggled to create a network that defined the process, they started to realize the current organizational structure of AS was not the ideal architecture to support the process. It was too difficult to train every core team to do the difficult part of scope/cost—the OIA.

It soon became clear that we needed a dedicated group of people whose primary job would be to construct the OIA structures for the systems-under-test (SUT).

AS Reorganization

The team proposed that AS reorganize into two divisions. The first, a Program Management division, would be responsible for programmatic duties. In other words, they would be responsible for document coordination within the HQ, leading the core team, monitoring schedules, preparing involvement & tasking orders, and preparing initial test resource requirements.

The second, a Battlespace Employment division, would maintain an overarching picture of the battlespace and be responsible for developing the Evaluation Framework (OIAs) needed by every core team and used to fashion the various options for testing the system.

Once the idea of restructuring AS was approved by AFOTEC's Commander Maj. Gen. Ken Peck, an AS reorganization team was formed. The team diligently, and successfully, applied many aspects of TOC throughout the reorganization process, from desired positive outcomes to negative branches to a detailed implementation network.

Additionally, AS personnel were briefed weekly in order to keep them in the loop and encourage buy-in to the plan, something that was overlooked in 1998.

As the reorganization plan evolved, the sense was that people in AS were getting excited. They started to believe that this new way of doing business could really work!

After many months of work by the reorganization team and the entire directorate, AS formally stood up its new structure in September 2000.

We settled on three divisions: ASA, responsible for aircraft, weapons, and logistics systems; ASC, responsible for C4ISR, space, missiles, and logistics systems; and ASE, responsible for addressing Battlespace Employment through OIAs.

In the months since, we have evolved a way of doing business that has vastly reduced the frustration felt by everyone in AS, the detachments, and the rest of the HQ!

We are still working to play "catch up" after two years of "floundering," but there is definitely daylight at the end of the tunnel!

Operational Impact Assessment

The heart of developing an OIA lies in its efforts to understand the battlespace in which the system will be employed. Understanding the battlespace is an

ongoing and never-ending process due to its dynamic, complex nature.

from the point of impact. We consider the system-under-test as the rock and the battlespace as the pond in this analogy. The purpose of IOA is to determine the impact if we "throw" the system into the battlespace. How far will the ripples reach? In other words, what is the impact of the system on the battlespace and the impact of the battlespace on the system?

The challenge is to determine the extent to which the farthest "ripple" is felt without losing "sight" of the system in the evaluation framework.



ongoing and never-ending process due to its dynamic, complex nature.

This process includes visiting warfighters at all levels—from the CINC all the way to the maintenance crews on the flightline, with the goal of understanding the warfighter's issues.

It also entails review and discussion of concept of operations (CONOPs) and operations plans (OPLANs) to build a strategic and tactical theater knowledge base. Only by doing all of this, and more, can we even begin to determine what impact new or improved systems might have on the battlespace-information of vital importance to the warfighter.

To better explain this concept, we use the following analogy: Consider a pond. If a person throws a rock in the pond, ripples are formed. If it is a very small rock, the ripples don't go very far before they die out. If it is a boulder, the ripples are large and travel across the pond's surface far

An evaluation framework, constructed by ASE and the System experts from the core team, is the tool that forms the basis for the OIA. It contains the evaluation areas and the objectives to be addressed during OT&E and is used by the test teams as a basis for their test planning.

Every evaluation framework is approved by the Director of Operations (XO) and the Technical Advisor (CA) before it is sent back to the core team for inclusion into the final tasking order by the assigned program management division.

In the end, the OIA is designed to complement suitability and effectiveness assessments and provides the warfighter with a comprehensive picture of a system's operational impact as it functions in the battlespace.

Summary

The reorganization effort of the Air and Space Mission Directorate was a big step toward making the goals of the 1998

“morph” into a reality. AS, and all AFOTEC, continues to strive to provide useful and relevant information to the warfighter at all levels.

At the same time, we are working to improve the relationships between the headquarters and the detachments, and to reduce the amount of frustration felt by all. The Air and Space reorganization has created, and will continue to create, tremendous benefits for how AFOTEC conducts the business of operational testing and evaluation.

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Honeywell: Albuquerque Operation Adopts Critical Chain

Critical Chain Gang: Bo Kowlaski, Steve Peterson, Dale Robertson, Randal Shumway, Glen Warner, Guy Wagner, Bobby White

The Albuquerque Operation Project Management unit is about to embark on an exciting upgrade to their project management process. A unit-wide training program is being drafted, using the new process, to deploy critical chain project management throughout the unit.

What is critical chain and why adopt it? Critical chain is a systemic approach to project management derived from the application of the Theory of Constraints (TOC), developed by Dr. Eli Goldratt in order to apply scientifically based analysis to the “soft sciences.” Critical chain, often referred to as multi-project management, is a methodology both for managing individual projects and for synchronizing multiple projects in large organizations. While traditional project management methods focus on task management, critical chain focuses on resource management and behavior management.

Cultural Revolution

The six-phase implementation approach developed by Deirdre B. Jacob, partner of the Goldratt Institute, is designed to put in place the culture necessary for an organization to operate according to the concepts of the Theory of Constraints. It goes far beyond being simply a logistical solution. It is a whole new way of understanding project work that focuses on developing project plans, scheduling, human behaviors, addressing the constant variability in the project environment, and the metrics and measurements necessary to support this logistical and cultural change.

This approach, when combined with the necessary customization, works in an endless variety of environments from high-tech research and development to construction. In most companies, critical chain project management is first applied to projects which have some type of delivery to the customer involved (the actual work of the company), but very rapidly it spreads to support departments and their projects in order to more effectively support the primary project work. Frequently it also spreads within and between business units.

Critical chain has been called the most revolutionary advance in project management since the development of Critical Path Methodology (CPM); it is experiencing rapid growth in acceptance in a wide range of industries.

A Quantum leap

Dale Robertson, director of project management in Albuquerque, may not put it so dramatically, but his experiences with some early testing of potential applications of critical chain project management in Albuquerque sub-projects have convinced him of its potential value.

Adopting the chain management methodology will “make a quantum leap in our ability to meet schedules within the budget,” says [Robertson]. “We have made steady improvements in the past several years in the area of project management for development programs...we have fi-

nally reached a basic level of competence in the art of project management and we are ready to jump to the next level of performance.”

Robertson leads the “Critical Chain Gang,” a cross-functional team of seven process experts who are using critical chain techniques to plan the deployment of this new methodology across the unit. The Gang has been through an intensive technical train-the-trainer program. These new internal experts will, in turn, train each of the project teams as they convert to critical chain project management.

Networking and Discussion

Accurate and thorough task definition is a key step in critical chain. Tasks are linked through a network. “One of the biggest benefits of building the network is the discussion that takes place around the meaning of each task,” says Bo Kowalski, one of the Gang. The critical chain process looks at the project due date and takes into consideration the impact of variation and of human behavior to protect the project due date. The focus is moved from individual task deadlines to the project deadline.

“...in order to get successful behavioral changes, we have to adopt the whole process. If we pick and choose pieces of the process, we will not succeed...”

Steve Peterson, project leader for the C-130J, C-27J and C-5 programs and a member of the Gang, had this comment during a review of the Gang’s network: “We don’t

normally plan in this direction; we usually work the other way. This process reveals the complexity of tasks. It can be painful to work through the minutiae, but I never want to plan the old way again.”

First Program to be converted in April

A first pilot program will convert to critical chain project management in early April. The templates developed in the pilot conversion will be validated on four more programs, and the five programs synchronized. Thereafter, all remaining programs will be converted, certified and synchronized at the rate of one every 10 days. When conversion is complete, all the programs will be managed in one central database.

TOC WORLD™ 2002

TOC WORLD™ 2002 will be held November 4-7, 2002 at The Mohegan Sun Resort & Casino in Uncasville, Connecticut.

LOCATION & ACCOMMODATIONS

Already one of the world's most amazing destinations, after the completion of Project Sunburst, Mohegan Sun will provide the ultimate in accommodations, gaming, entertainment, dining and meeting convention services. From the 300,000 square feet of gaming excitement to twenty-nine different dining options to over thirty fine shops and boutiques to major sporting events and performances by today's top stars.

Owned by the Mohegan Tribal Nation, Mohegan Sun is one of the largest, most distinctive and spectacular destinations in the United States. It is situated in scenic southeastern Connecticut on 240 acres, along the Thames River, in the town of Uncasville. Within easy access of New York, Boston, Hartford and Providence, as well as a wealth of popular activities and attractions in Mystic Places, Mohegan Sun is already renowned as a legendary gaming and entertainment center.

It is now evolving into a multidimensional destination featuring 1,200 hotel rooms, premier meeting and convention space, a 10,000-seat arena and a world-class spa – making it ideally suited for discerning business and leisure travelers.

For more information, visit www.mohegansun.com



Over the past several years, critical chain was tried on three sub-projects in the CH-47 program. Each attempt produced better results than the prior efforts, and the Gang used the lessons learned from these mini-pilots to plan the unit-wide deployment.

The primary lesson learned is that beyond learning a new terminology and the use of new tools, successful critical chain implementation depends on changing behaviors. "The mini-pilots taught us that in order to get successful behavioral changes, we have to adopt the whole process. If we pick and choose pieces of the process, we will not succeed," says Robertson.

Six Sigma Plus integration

The implementation has been designed to supplement and complement the six sigma and lean process improvements planned for 2001, and it "will be tailored to fully support the GE product development processes," says Robertson.

From a senior management perspective, critical chain will provide a macro view of the organization and account for the tasks and resource dependencies across all programs. Critical chain management gives senior management and program management up-to-date schedule and cost performance across the entire enterprise, and program to program. Any potential problems are quickly identified.

A not insignificant side benefit of critical chain project management is that its implementation is often credited with promoting a world-class team culture. "When we are all operating using the upgraded project management process," says Robertson, "we, the employees, will enjoy our work more – with less stress."

This article was published in the Honeywell Defense Avionics Systems newsletter titled Horizons, March 2001. AGI's TOC Times re-printed this article in full with Honeywell's permission.

The SilverChain Project was published first in the TOC Times, August 2001. The authors share their journey and search for the ultimate project management

process, a methodology that will consistently deliver on its promises. They realized from the time that they found their organization that the key to continued success would have to involve the development of a unique set of project management tools that are robust, results orientated and with easily transferable concepts. Their ongoing search was rewarded when they came across TOC's Critical Chain project management methodology.

They elaborate how implementing Critical Chain project management in their own organization first, brought with it the realization of what it would take to support a Critical Chain implementation, and how this in turn lead them to developing the software and functionality they needed to support this methodology.

"What we have learned is that the project spirit is a part of corporate culture and that influencing corporate

culture is the single most important thing to change."

The SilverChain Project

By Vladimir Sedivy and Michal Novak

Anatomy of a Search for the Project Spirit

It was more than ten years ago when in the centre of Europe, in Prague, the Czech Republic, several former academics founded the I.C.C.C. company, which from the very beginning made it its main goal to become a brain trust in the field of information technologies. As the time passed, the original company has grown into a group of companies centred around I.C.C.C. Group, (<http://www.iccc-group.com>) attempting to find its position in the global market.

The main activities of our group are based on the horizontal grounds of Business, Marketing and Project Development with three constitutive vertical pillars of offered

solutions:

- 1) change management
- 2) system integration
- 3) software integration

A great majority of customer-related activities of the company are run as projects, and naturally, new solution and product development of the group takes place within a project management framework. Clearly, the interest of the firm in project management is almost as old as the company itself.

In the course of time it has become ever more apparent that without truly systematic project management we are unable to achieve good quality results in the long term, results for which our customers would be willing to pay well. And this is how our passage of searching for the organizational project spirit began, although when it started, project spirit was something nobody from the people involved had any clue about.

The main effort was focused on project management methodologies of various renowned companies from our industry as well as other business areas. How exactly is software solution development managed by large and successful companies? How is information system implementation controlled?

Studying the methodologies themselves, numerous trainings in selected methodologies for key employees and analyses of the best and most successful case studies of international companies with specific customers have taken a lot of time and we still continue in this endeavour. The lessons we have learnt have been creatively transformed into an entirely authentic I.C.C.C. project management system but still we have not fully achieved the expected results.

Naturally, we asked ourselves: "Why?" The answer was not quite simple and unambiguous. If there is a specified and defined goal, the matter in question is the OTIFOB [On Time, In Full, On Budget] techniques of proper goal achievement management. However, there is also the question of goal specification itself, or, in

other words, what is the right thing to do. Everything is influenced by a number of variables, which include, in the most prominent place, human resource competencies as well as competencies and corporate culture as a whole.

Without a consistent change of corporate culture towards the project spirit of the entire company the project management techniques alone are used with only a little effect, compared to what could actually be achieved with the same human resources.

More searching and examining followed.

Anatomy of Event Synchronicity

It is strange that sometimes things happen as though on their own with one event being in full harmony with the other. Our intuition of the right way of development was fully confirmed some two years ago when we came across the book "Critical Chain" by Dr Goldratt. Reading it we experienced true concord between our own perception of project management issues, our problems from practice and anticipated solution which had already been comprehensibly described in the book. For us this meant the start of studying project management based on the "Critical Chain" method as well as the start of going into the TOC itself and its possible use both for management of our company and our products.

At that time we received a Czech translation of the "Critical Chain" book mentioning a contact address to the just established Goldratt CZ branch office. After having exchanged several phone calls a meeting in person was held which was interesting for the mere fact that Mr Martin Powell and Oden Cohen from the Avraham Y Goldratt Institute UK paid a visit to us. Directly at the meeting they explained the principles of TOC and Thinking Process using several specific examples.

Anatomy of Strategic Choice

We faced a decision what to do next. We started negotiations with Goldratt CZ about possible cooperation and about the ways of implementing the Critical Chain in I.C.C.C. activities. The decision was to use the Critical Chain method primarily for

managing all I.C.C.C. projects.

The result was formation of the SilverChain development project which was started on December 20, 2000 and will be completed in September of this year. The goal of the Silverchain project is to establish a situation where all I.C.C.C. projects are managed according to the Critical Chain method in multi-project environment.

[To read the complete article, click here...](#)



AGI welcomes a new Partner

Congratulations to Bob Jacob on joining the AGI Partnership.

Robert. A. Jacob

Bob has been involved with the Avraham Y. Goldratt Institute for the past five years. He is an experienced Project Manager fully immersed in the understanding of TOC, the Thinking Processes, and their applications. He has been directly involved in the ongoing development of the application of Project Management and has experience working with both single- and multi-project implementations. He is responsible for educating and developing the expertise of those who are becoming experts in TOC-based Project Management.



Bob's clients include organizations involved in research and development, medical technology, service providers, high-tech industries, software developers, and the military. This past year has been primarily dedicated to the implementation of Project Management, problem solving, and Strategic Planning in a major center within the United States Air Force.

Bob has also focused on developing the methodology of the Theory of Constraints and the Thinking Processes for the individual and for organizations, with an emphasis on conflict resolution.

Prior to his association with AGI, Bob owned and operated an electrical contracting business. He has worked with contractors, vendors and suppliers, and customers giving him a wide range of experience in business management. Bob is also an ordained minister with 30 years experience working with people and groups in conflict.

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AGI North America Group expands their team

Gerald M. Hoffman

Gerry Hoffman began his association with the Avraham Y. Goldratt Institute in January 1992, following 21 years in finance and operations with AMF Incorporated and Carlisle Companies Incorporated.



Gerry's experience in metal fabrication, electronics and injection molding include 10 years as Vice President, Finance with responsibility for finance, information systems, human resources, materials scheduling and distribution.

He has implemented the Theory of Constraints with organizations as diverse as the semiconductor industry, United States Navy and Independent Day Schools. He has helped client organizations attain improvements which include lead time reductions of 60%, capacity increases of 55%, inventory reductions up to 78% and increasing sales as much as 49%.

Gerry performed his undergraduate studies at the University of Pittsburgh and Central Connecticut State University.

Gerry and his wife Sandi reside in Edmond, OK and have one son, Joshua, a freshman at Duquesne University in Pittsburgh, PA.

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Kathleen M. Austin

Development and Technical Support Director

Making the most effective use of resources: manpower, money, materiel, information, equipment, and time is of utmost importance to Ms. Austin. The search for the means to do this led to her commitment to TOC. For over 10 years as a Certified Associate of the Institute, she was involved in development, training and implementations in North America, Australia, New Zealand, and England, including providing expert training in Project Management and Management Skills. She is an internationally recognized expert in the broad range of TOC solutions.



Prior to becoming a Certified Associate, Ms. Austin served on active duty in the U. S. Air Force for twelve years in Acquisition Program Management and Manufacturing Management interfacing with the defense research and industrial base in the U.S. and internationally from the factory floor to the boardroom. She also has five years of customer service and distribution experience with Allied Chemical Corp., as well as shop floor experience in the micro-electronics industry.

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AGI (UK) New Member

Daniel Baker

Daniel Baker has joined the AGI (UK) team as a TOC facilitator. Daniel comes from a Production Engineering and Technical sales background, having a BEng Honours Degree in Manufacturing Systems. His recent experience, within the last 4 years, has been in an aerospace engineering company serving Boeing, Bombardier Aerospace and BAE Systems, in a project and production management capacity.



He has expertise and experience in the use of a range of continuous improvement tools, such as Lean Manufacturing, TQM (Total Quality Management), SPC (Statistical Process Control) and SMED (Set-up reduction methodology). He is involved in a group Lean manufacturing initiative using TOC to direct and focus the team.

Daniel trained as a Jonah in 1998. Following this training he implemented Drum Buffer Rope and Buffer Management within his company's production facility. This system, he called Visual Buffer Management (VBM) a process whereby the status of the shipping and constraint buffers are clearly visible and understood by everybody in the company.

Daniel will be based at the UK office in Maidenhead with Oded, Martin, Katie, Andy, Clive, Ros and Nina who all wish him well in his new role.

Contact information:
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AGI New Haven's community projects

After winding down from a successful TOC WORLD 2001 conference in June, the AGI New Haven office has been busy helping out some needy organizations and causes. The staff has collected bras, yes...bras, for a radio station fundraiser that donated \$1

for each bra collected to a local breast cancer foundation – kudos to George Douglas, one of our few male staff members, for volunteering to run the campaign!

Special thanks to young Meggin Jacob, daughter of AGI Partners Dee and Bob Jacob, for generously donating a large portion of her stuffed animal collection, as AGI participated in a National Guard drive to collect stuffed animals to be sent overseas to children in Bosnian refugee camps.

Donations of food and towels were sent to a local animal shelter, after over 80 cats and kittens were taken from a home where the homeowner became a bit overwhelmed in taking care of so many cats.

Boys Village, an organization that helps provide shelter and direction to troubled youth, was in need of duffel bags for their residents and AGI answered the call by donating some of our AGI gym bags from the TOC WORLD 2000 conference.

And the giving is not yet done....for the fifth year in a row, AGI will have a team in the Diabetes Walkathon being held on September 30th. Team members include Madelyn Robinson from the shipping department, Evelyn Vega, our receptionist, Sonia Vega, administrative assistant to the Partners, and Robbin Inorio from Client Services. **Donations are being accepted for this great cause – call any of the above at (203) 624-9026 or 1-800-394-4625.** As many of you know, one of AGI's Partners, Charlie Fried, has been afflicted by diabetes most of his life and is currently recovering from surgery related to this illness.



This announcement was released to the media on August 9, 2001. Dee Jacob and Bill McClelland, Partners of AGI will lead the project. Implementation activities started with technical training on August 27th. Kathy Austin and Jacob Munson from AGI will assist Dee and Bill.

AGI Awarded Air Force Contract to Deploy Critical Chain Multi-Project Management for Air Force Flight Test Center

NEW HAVEN, CONNECTICUT. The Avraham Y. Goldratt Institute (AGI) announces the award of a \$2.884 million contract to deploy Critical Chain Multi-Project Management for the Air Force Flight Test Center, Edwards Air Force Base, California. The implementation will be designed for a multiple-multi project environment, providing a common methodology for project and resource management for over 200 weapon systems test projects and acquisitions projects that develop test infrastructure. AGI's award winning bid included Speed To Market's *Concerto* as the software to meet the demanding requirements for this implementation, one of which is to easily integrate with an Enterprise Business System. The contract was awarded following competitive bid.

Each of the bids were evaluated by the Air Force based on past performance (relevance and currency), technical capability, (integrated approach and methodology to satisfy the statement of work) and lastly price.

The contract is multi-tiered, consisting of four tiers: Prototype, Pilot, Deployment, and Follow-on. The first tier will validate the Critical Chain multi-project methodology and supporting software as it applies to the 412th Test Wing environment, and conclude with defining performance measures for the Pilot and Deployment tiers.

The methodology adheres to *The AGI Way*, a Six-Phased Approach in which a Critical Chain implementation is both logistical and cultural in order for improvement to significantly impact bottom line. It focuses on bringing an organization to self-sufficiency by creating TOC Experts in the field of Multi-Project Management. In satisfying performance within cost and schedule parameters, AGI's approach has proven its merits with the Air Force Operational Test and Evaluation Center at Kirkland Air Force Base, New Mexico, and within the F-22 program to include, Lockheed Martin, and Boeing, as well as many others.

About AGI ~ Dr. Eli Goldratt was the founder of AGI as an educational institute in 1986, the birthplace of TOC. AGI is home to the foremost TOC experts and practitioners, with 14 offices across 6 continents. It is a global firm specializing in the education and application of TOC to organizations as diverse as industry, services, government, education, defense, and healthcare.

Under Dr. Goldratt, AGI developed the Critical Chain methodology in 1988, and offered its first courses in 1991. The first multi-project model was developed by AGI in 1993. Though not a software provider, AGI has worked with software developers in creating packages that support Critical Chain and other Theory of Constraint methodologies.

About Speed To Market ~ Speed to Market provides Concerto New Product Development software. Concerto's core technology is constraints-based resource optimization in uncertain product development requirements. It was developed in partnership with Dr. Eli Goldratt of AGI and Elbit Systems. Concerto is built off of three design principles that are critical for successful multi-project implementations:

1. The sum of individual project optima DOES NOT EQUAL multi-project optimum.
2. The simplicity of software is crucial for success in large multi-project environments
3. Open architecture is a must for enterprise software