THE USE OF THE PRIMAVERA SOFTWARE FOR THE MANAGEMENT OF INFRASTRUCTURE PROJECTS IN ROMANIA

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- Enforcement of a DAB decision through an ICC partial award;  
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Other articles written by the same author:

- Quantum damages analysis services cost based claims;
- Schedule and forensic delay analysis services;
- Dispute Boards – a Contractor’s perspective;
- Using Dispute Boards – Why? Best use/wrong use of Dispute Boards;
- What do Contractors think of DABs 10 years after FIDIC 1999 contracts;
- Using Dispute Boards. The Romanian experience of Dispute Boards.
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PREFACE

This brief paper is based upon the personal experience of the author with Project Planning, Scheduling, Delay Analysis and Monitoring of Progress in Romania and Internationally.

The aim of the paper is to share the author’s experience which has been acquired exclusively from practice internationally over a period of 20 years and in Romania since the year 2002 to date.

The various aspirations, doubts, experiences and views on the use of the Primavera Software have been collected, personalized and expressed herein in an effort to communicate the message of the author, to those in the construction sector that the use of the Primavera Software is not restricted to a means to an end but is an invaluable developing project management tool which revisits and continues to improve the manner in which projects in any industry and particularly in the construction industry are managed and controlled.

While it is essential that Contractors obtain good contracts with a minimum of risk provisions, it is equally important that project management be effective in order to achieve optimum results. Under current competitive and demanding conditions, it is recommended that all modern techniques of project management be initiated and applied.

Most significantly, the more recent use of the Primavera Software from the outset of projects has proved to be one of the most efficient and innovative project management tools available to the parties in a contract.
Five topics have been chosen for discussion in this regard:

1. Where PRIMAVERA Software has been successfully used in Romania

2. Contribution of organizations to the use of the PRIMAVERA Software in Romania

3. Adequate Planning and Critical Path Analysis

4. The analysis of delays and changes

5. Where we go from here

1. WHERE PRIMAVERA SOFTWARE HAS BEEN SUCCESSFULLY USED IN ROMANIA

As a matter of background, European Contractors operating in Romania during the years 2002 to date have made use of the Primavera Software (either P3 or P5 versions), at one stage or another of their projects, as their favored planning software during the development of the following projects:

i. Bucharest – Constanta Motorway – Sub-Section 3 Lehliu – Drajna

ii. Bucharest – Constanta Motorway – Sub-Section 1 Bucharest – Fundulea

iii. Contract 4R12, Rehabilitation of the DN 6 road section Craiova – Drobeta Turnu Severin km 268+390 – km 298+000

iv. Road Rehabilitation IV Project EIB FI 20.781 Contract 4R2 km 154+000 – km 179+917, Baru – Hateg

v. Rehabilitation of the DN 17 County Limit Cluj/Bistita Nasaud – Bistrita, km 6+500 – km 58+900 Contract 4R6

vi. Road Improvement Project for National Road No. 6 Contract No. 93/9502:J02 – Improvement of Existing Road between Timisoara and Lugoj

vii. Road Improvement Project for National Road No. 6 Contract No. 93/9501:J01 – Construction of Timisoara Bypass

viii. Rehabilitation of DN1C Livada – Dej km 38+000 – 61+528, Rehabilitation of...
| xi. | Sibiu Urban Transport Pre-accession Project Rehabilitation of Station Square and Selected Roads |
| x. | Contract 4R13, Rehabilitation of DN6 Road Section Craiova – Drobeta Turnu Severin, km 298+000 – km 332+150 |
| xi. | Bucharest Wastewater Treatment Plant Rehabilitation – Stage 1 |
| xiii. | Contract 5R8 Rehabilitation of DN 1 (E68) Sercaia – County Limit Brasov – Sibiu km 220+000 – km 261+130 |
| xiv. | Contract 5R9 Rehabilitation of DN 1 (E68) County Limit Brasov/Sibiu – Vestem km 261+130 – km 296+293 |
| xv. | Rehabilitation of the Railway Line Bucharest – Brasov, Section Campina – Predeal – Lot 1: Railway embankments and superstructure works |
| xvi. | Road sector restructuring and Pitesti Bypass – EBRD Loan 13.119 construction of Pitesti Bypass |
| xvii. | Contract A02/04 Construction of Section 4 of the Motorway Bucharest – Constant from Drajna to Fetesti km 97+300 – 133+900 |
| xviii. | Contract A02/05 Rehabilitation of Section 5 of the Motorway Bucharest – Constant from Fetesti to Cernavoda km 133+900 – 151+480 |
| xix. | Contract B.P. 02 Construction of Sibiu Motorway Bypass |
| xx. | Lot 2 “Rehabilitation of DN6 road section Drobeta Turnu Severin – Bahna, km 332+150 – km 358+000, including Drobeta Turnu Severin Bypass” |
| xxi. | Lot 3 “Rehabilitation of DN6 road section Bahna - Mehadia, km 358+000 – km 388+000 including Mehadia Bypass” |
| xxii. | Traffic Fluidization on DN1 – Widening of DN1 section from Baneasa Airport (km 7+535) to Otopeni Overpass (km 11+938) |
| xxiii. | Completion and Rehabilitation of Bacau Wastewater Treatment Plant 2002/RO/16//P/PE/018 |
| xxiv. | Timisoara Waste Treatment Plant Rehabilitation 2000RO/16//P/PE/004-02 |
2. CONTRIBUTION OF ORGANIZATIONS TO THE USE OF THE PRIMAVERA SOFTWARE IN ROMANIA

Undisputedly, TotalSoft is the major promoter of the use of Primavera Software in Romania. However, and to a great extent Techno Engineering & Associates and the Romanian National Company of Motorways and National Roads have also given a substantial contribution toward the use of Primavera Software since the year 2002 to date.

Of note is the initiative of the Romanian National Company of Motorways and National Roads in standardizing the adoption of the Primavera Software and its use since April 2006 in respect of the preparation of programmes of the works and the monitoring of progress and delays.

Techno Engineering & Associates is an International Consulting Firm specializing in Project Management and Delay Analysis. We perform all our activities using Primavera software version 5.0/6.0 and we promote its use with all our clients, which are predominantly international contractors.

3. ADEQUATE PLANNING AND CRITICAL PATH ANALYSIS

Planning

Good planning must centre on communication of the plan to those who have to implement it.

It is essential that planning tools like the Primavera Software and their use don't deviate from the basic premise that the plan must be comprehensive, unambiguous, and understandable by all involved.

There is therefore more to developing a good plan than a detailed network using Critical Path Analysis, with elaborate coding structures, or work breakdown structures.

And most importantly the resultant schedules and supporting sequence plans must be recognized by the project team as the team’s plan, and not just the preserve of the planner or scheduler.

This is the essence of good planning. What it boils down to is essentially the skillful adoption of Critical Path Analysis.
Critical path Analysis

Some definitions are required at this point.

Definitions

Critical path – The sequence of activities through a project network from start to finish, the sum of which durations determines the overall project duration. There may be more than one critical path depending on workflow logic. A delay to progress of any activity on the critical path will, without acceleration or re-sequencing, cause the overall project duration to be extended, and is therefore referred to as a ‘critical delay’.

Critical path analysis (CPA) and critical path method (CPM) – The critical path analysis or method is the process of deducing the critical activities in a programme by tracing the logical sequence of tasks that directly affect the date of project completion...

Some believe a critical path can only be calculated by a computer model which determines the path with the least amount of float. Computers and Software like Primavera provide only great assistance in Critical Path Analysis when planning and executing projects, especially on very large projects with thousands of tasks.

“Critical Path Analysis” is clearly a process of deduction. It does not require one to “push a button” and does not rely on computer software of any kind to determine where the path flows through the works. The path is dependent on the facts and finding it requires a developed understanding of resource deployment, structural or build-ability dependencies, changed intentions, unforeseen events, etc. This is fine for as-planned schedules. The problem arises when dealing with as-built schedule, which is always the case.

Over the years programming software was less useful in calculating the critical path in as-built programmes, when unforeseen changes or events were experienced, when work was conducted out-of-sequence, under acceleration or using different methods, resource levels, shifts or plant.

CPA was possible before the advent of the PC and of Primavera and the same process of logical deduction is possible today, without dependence on programming software if one is prepared
to spend months in the determining of the critical path within as-planned and as-built schedules. Retrospectively deducing which activities "directly affect the date of project completion" is required with any form of delay analysis and establishing an as-built programme should be possible as a factual matter of record. The real difficulty is in determining where the as-built critical path flows on any given day and progressively to completion.

The good news is that Primavera P5 and P6 can help to do that nowadays and in a very short time.

As a matter of fact with Software such as Primavera P5 and P6, schedule and delay analysts alike can now determine with absolute accuracy any delay event and activities lying on the Longest Path to completion, which will likely cause or have caused delay and have been delayed (the affected activities) respectively thereof.

Rationally, if the critical path is the sequence of activities which "determines the overall project duration", then this must hold true not only in the as-planned state, but also in the as-built state. However, on large projects with multiple discrete 'sections' there should arguably be an As Built Critical Path to each and every section that was completed later than the original contract completion date. The number of as-built critical paths will therefore increase with the size, complexity or geographical spread of a project. Yet, there can only be one Longest Path. And this is why Primavera P5/P6 comes handy during Critical Path Analysis thanks to its capability to filter the Longest Path.

More so in multi-calendar projects, which are the norm these days rather than the exception, whereby viewing activities on the longest path is important because some activities may have large float values due to their assigned calendar, but still be critical to the completion of the Project.

The Primavera P5/P6 software calculates the longest path by identifying the activities that have an early finish equal to the latest calculated early finish for the Project. To select activities on the longest path, one should use the software default filter "Longest path", after that selection is done it is needed to identify all driving relationships for these activities and trace them back to the project start date in order to identify which delay was responsible for the schedule to slip beyond its completion date.
4. THE ANALYSIS OF DELAYS AND CHANGES

One of the most important areas of application of the Primavera Software is within the domain of computerized delay analysis.

What is a ‘delay analysis’?

Delay analysis is a forensic investigation into the events or issues that caused a project to run late. Delay analysts refer to ‘critical’ and ‘non-critical’ delays; the first are events causing delay to the project’s completion date and the second type affect progress on the project but do not directly impact the project completion date.

During the past decade developments in computer technology and the availability of more advanced planning software packages LIKE Primavera P3, P5 and now P6 have, in my view, changed the way in which the results of a delay analysis are presented.

Delay Analysis Methodology

In this brief paper I do not want to dwell on the types of delay analysis (e.g. ‘as-planned impacted’, ‘as-built but for’, ‘time-impact’, etc) but to look briefly at the two types of delay analysis methodology.

The first type of delay analysis methodology is prospective; which demonstrates the theoretical or likely impact of the consequences of delaying events – rather than showing what in fact occurred. The basis of this methodology is to establish a programming model of the project, usually the contractor’s as planned programme, then impact the model by the application of delaying events. This type of methodology is commonly used to demonstrate what extension of time a contractor is due, as a result of the application of employer responsible delaying events. This is said to be the contractor’s entitlement. Entitlement in this context is derived from the results of a delay analysis and is not to be confused with contractual entitlement. In summary the prospective type of methodology is a theoretical calculation of the likely delay a delaying event(s) would cause to project completion.

In other words, it focuses firstly on the delaying event and then demonstrates the likely delay to progress and ultimately project completion that is likely to flow from the event.
The second type of delay analysis methodology is retrospective. The retrospective analysis tries to show what actually occurred on a project; where the delays were; and what caused the delay to project completion. The analysis shows how actual progress differed from what was planned. By focusing on how the works actually progressed, the analysis will show when work activities were delayed, and from the results of the analysis, investigation of what caused the actual delays can be carried out. In summation, this type of methodology looks at what actually happened, what activities were actually delayed and only thereafter what caused the delay.

Based upon my experience in delay analysis I can confidently state that in my professional opinion the best available software on the market for this type of analysis is the Primavera Software versions P5 and P6.

I say this because Primavera P5 and now P6 provide extensive enhancement over previous versions of Primavera such as P3 and have undergone substantial development over the past 10 years.

For more information in this regard, TotalSoft are well qualified to expand on this last issue and I am certain that they will be happy to be of assistance to you.

5. WHERE WE GO FROM HERE

For Contractors it is a sacrosanct “must” to plan better their projects and to monitor progress and the effect of delay in a professional manner. This however applies to Employers and supervising Engineers too.

Buying the Primavera software would be a good start but it would no be a means to an end.

More training is required in all industries and at Government level in respect of adequate planning methods, the use of the most appropriate method of delay and progress analysis and choice of most suitable software to achieve these objectives.

Achieving awareness that this is the only way forward would be the ultimate goal for those who manage projects of any kind.
A few words about the author:

Giovanni Di Folco is the Senior Partner of the International consulting firm Techno Engineering & Associates. He is a Forensic Delay & Quantum Analysis Expert with over 25 years-experience in civil engineering, claims and dispute resolution at DAB and Arbitration level, 15 years of which specializing in contentious construction projects worldwide by acting as Counsel for several international contractors. During his career he has held positions of high responsibility such as “Counsel”, “Engineer” in the sense of “FIDIC”, Project Manager, Country Manager, Claim Expert and Adjudicator on major construction projects. He is a FIDIC expert in his own right. He possesses a vast experience in adjudication using the DAB procedure and ICC arbitration either as Expert of opinion, Attorney or Counsel for Claimant or Respondent.
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