Planning, management and strategies for the light rail transit Case of the tramway of Constantine Algeria

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Abstract

Railway transport is an attractive choice for any heavily traveled corridor, as it is the mode of urban travel which could best move people consistent with the local requirements. When the requirements of passenger travel in a major city are served by rail transport on a regular basis, the service is referred to as rail transit. The Light Rail Transit (LRT) systems are being used increasingly in urban areas all over the world as a mode of rail based public transport. It can be developed in stages from a modern tramway that shares its right-of-way with other traffic to a rapid transit system operating on its own exclusive.

In Algeria, the decongestion of cities necessarily involves the establishment of public transport that meets the standards of quality, hygiene, comfort and safety, emphasized, particularly in Constantine. Since "the launch of a large urban project is considered as one of the tools for the implementation of metropolises planning and developing strategies, the Project for the Modernization of Constantine PMMC as the majority of large urban projects throughout the world, is constituted of several structuring ambitious projects which all have the same objective like tramway.

The Constantine tramway project is a structuring project for the city, it aims to connect the city center and the suburban Zouaghi agglomeration by a fast and ecological means of transport, the project has experienced several obstacles, due to constraints, on the deadlines of achievements were made; these modifications have an impact on all other aspects of the project (costs, quality

...). In this framework of perception we plan to shed light on the strategy, planning, and management of the tramway project at the scale of the city.

Keywords: transport**;** tramway; management; Constantine.

1. Introduction

Constantine is a historical regional metropolis which beams for several centuries on the Eastern part of Algerian. This attribute or quality is based on several elements which made it sacred with time and events.

Whether it is in history, in geography, in culture, in imagination, it is a place, a city, which got a national and international recognition.

endowed with a viable economic substrate because being a central pole of regional socioeconomic dynamics, being crossroad of different exchanges in the region, the city remains a big centre with regional radiance.

So the new dimension which the city must acquire will allow it to reinforce and to sit definitely its underground status.

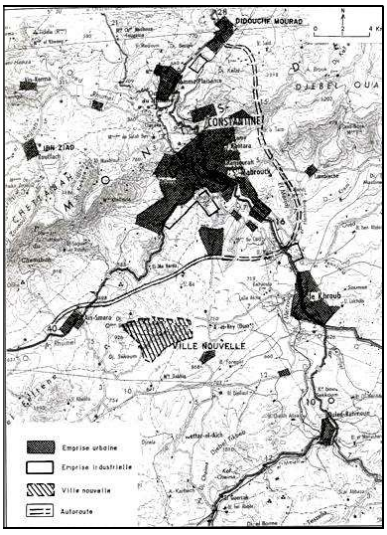


Figure 1. map of Constantine.

And this is distinctly compatible with the new political vision of the country in urbanization, in organisation and in management of cities since they raise that an interest rebound in this domain with the promulgation of several laws and texts among which some recently.

as a result , the metropolis becomes a fundamental element on which can be founded an appropriate and individual politics. This perspective once, it is the dimension of the métropolisation that will intervene to mark the beginning of a new epoch of territorial building. There is, a process there demanding at the same time continuity and breaks. It is in this vision and this logic that if registered student Constantine.

2. Strategies of planning of the Metropolis of Constantine « PMMC »

It registers in the present situation who is characterised by a preoccupation more hired by the State in comparison with the questions of the city.

Indeed if it is supposed that generalised, speeded up and widely unverified urbanization cannot be indefinitely perpetuated it is then necessary to create new frames, new instruments and mechanisms that can better promote actions undertaken for year 2000. In already approved efforts and to come (building of accommodation attenuating crisis, set up of equipment and facilities) metropolises have to benefit from a respect, from a particular treatment in reply to their waitings.

2.1 The PMMC

In reality it is from a sum of voluntarist actions among which some were already hired that will be conceived and formulated the underground Plan of modernisation. It is therefore a reflexion, a study that tries to give a legibility to different founding plans, a coherence of group on the territorial plan of the metropolis, an active and ambitious pronunciation between different domains and sectors. The culmination of this large and deep firm is New Constantine.

2.1.1 The planning of New Constantine « the objectives of PMMC »

They are numerous and they take various forms:

-- It is the revaluation of the picture and of the face of the city by its embellishment.

-- It is modernisation by the presence of contemporary equipment

-- It is urban improvement by renewal, rehabilitation,

-- It is the promotion of local potentialities by creation,

-- It is the development process by the promotion of the investment,

-- It is the reduction of internal difference in the metropolis which will lead to a better social cohesion)

-- It is an answer to waitings and to requests of the local population

These big plans which will transform the metropolis completely have to assure its regional radiance but also hang it up worldwide that is to say include it into the worldwide network of metropolises. This dimension is necessary and vital because we are on time of opening and globalisation.

2 .1.2Tthe principles of PMMC

The principles which are going to govern this plan enunciate so:

-It is a shared, participative town planning, because he takes into consideration waitings of the local population, he links foreign partners; he is subjected to intellectual and decision-making debate.

-It is a plan which aims to be managed as part of good governance because of presence and of real participation of the different actors.

-It is a plan endowed with a big largeness, wingspan: its action will procreate a deep mutation of the metropolis and he will come true gradually, progressively.

-It is a plan which has a double coherence: the first one is internal which is at the level of the metropolis and of its underground Algeria.

2.2 The Transport and communication facilities

Communications, (motorised and pedestrianized) circulation and transport in Constantine's urban aerie and especially in city of Constantine are worth being considered:

-- as revealing faithful and incontestable of any situation of crisis when she happens.

-- as elements favoured on which could take support an action on the city with a view to improving his structure, his functioning and his environment because they have important founding effects.

The official report of reality by each and every one, studies made by administrations, research departments such INGEROP lead all to the same result: the city of Constantine arrived at the ultimate borders of its possibilities in circulation and transport term.

the fall of ratio, the number of inhabitants / vehicle put into circulation for whole Algeria and therefore for the Wilaya de Constantine and more still for Constantine's urban aerie or everything lets to think that, seen its economic possibilities, the increase among vehicles will be a little higher. Indeed, for the wilaya of Constantine, this ratio which was 1 vehicle / 7.82 inhabitants in 2005 is going to pass/6.49 inhabitants to 1 vehicle in 2010 then in 1 vehicle / 4.59 inhabitants in 2015.

This quick evolution of the situation marked by quick increase among vehicles indicates from a deadlock situation and situation of medium-term saturation if a strong action is not undertaken to avoid it.

But problem put down by this saturation exceeds the simple contained report / containing and returns forcing in an analysis of this situation of crisis given that it is the result of a complex combination:

-Of factors recovering from the site and from the geographical position of the city of Constantine.

-Of factors raising nature and characteristics of the building and voierie of the city.

-Of factors recovering spatio deployment - functional of the city of Constantine, of its urban aerie, different centralités and from its hyper-centres (Medina, Bab El Oued, Koudiat)

-Of factors releasing from characteristics of displacements of population (places of departure, of arrival, routes, time, sense.).

-Of factors raising quantity and quality of transport offer in a situation governed by limiting factors listed before in the city of Constantine and in its urban aerie.

-Factors raising the offer of means of transport

Besides traffic problems, any merged reasons, by considering the intimate report between the problems of circulation and the problems of transport, transport offer supposed to meet needs of displacement is worth being arrested qualitatively and quantitatively with a view to analysing what poses problem and to think about adapted solutions.

The only objective elements of analysis of the transport in the city of Constantine and in its urban aerie those are expressly produced by the society **INGEROP**, which in its report diagnosis 2004 (Mission 4) as part of the study of feasibility of the tram brought to light:

- a network of voieries very cramped in the borders of its possibilities
- a network of rail and waterways networks dominated by radial ways, orientated to the centre of the city
- a high traffic exceeding the strict frame of displacements domicile / job
- the circulation towards and in the hyper - centre generally blocked at the hours of tops and some time during all day
- Absences of traffic lights regulating the circulation in important crossings
- the vehicles which circulate in the city of Constantine and in its urban aerie are divided as follows and for year 2004

Light car: 69 %

Taxi: 18 % 87 % of VL

Public transport: 8 %

Heavyweights: 5 %

The circulation is principally dominated by the light cars

- The transported population and by type of transport divided as follows:

By light Car: 42 %

By Taxi: 17 % 57 % by public transport

By Bus: 40 %

By Heavyweights: 1 %

Both variables A (vehicles circulating in the urban aerie) and B (number of persons transported by type of vehicle) show us that the total number of light cars (individual + taxi) constitute 87 % totals of vehicles to transport only only 59 % passengers, while the public transport which represents only 8 % traffics transports 40 % passengers.

This situation of public transport is assured by 88 transport lines among which 49 lines serve Constantine's urban aerie exclusively.

-- Transport 80 % of lines converge on Constantine's centre

-- the railway participates only with 3 % passengers in senses Zighoud Youssef - El Khroub

This analysis summary but nevertheless sufficient of the situation of the circulation and of the transport in Constantine's urban aerie, suggests solutions in the dimension and in adequacy with types of put down problems. She orientates us to solutions which break radically with current situation.

- Adopt a system of transport of mass which will transport until 70 % populations without augmenting the mass of the transport vehicles and reducing appeal to the particular vehicles. - The solutions of the train, of the tram, coupled or not in the network of bus are worth being envisaged in order to transport the population better in a new space shape, while relieving the car traffic, in a situation dominated by a cramped voierie and to give him a transport with a level of allowable comfort.

- Open new ways even if these require important technical prowess and to answer challenges put down by an uneven site.

Think of a device of circulation and of transport and of voierie which would act on staggering in surface of the hyper centre and that of this fact would diminish the pressure of the car traffic on him.

- Regulate in a final way the passage of the population from a bank to other one of Rummel. Up to now only 3 bridges and footbridge allow this passage. A lot of the car traffic assures its passage of is in West of the city by the Boulevard of Soummam which is in process of saturation itself. This desserves the installation of new road Equipment (bridges) (Cherrad, S.D. et al., 2007).

The rail transport, the tram, the cable: the beginning of solutions in the problems of circulation and of transport in the city of Constantine and in its urban aerie.(Cherrad, S.D. et al., 2007).

3. The case study: « the management of the extension of the first tramline in constantine

3.1. Project presentation

Constantine, one of the most ancient cities of the world, is an important city in Mediterranean history. The third the most important city of Algeria, of its ancient name Cirta, capital of Numidie, has for the 17 centuries the name of the emperor Constantine Ier which rebuilt it in 313. Constantine is known as the «city of bridges», the «city of the eagles», but also the «city of the malouf». A city of culture and tradition in a privileged natural place.

The Transport Ministry, through the Firm Underground of Algiers, develops the plan of Constantine's tram aware of its transcendence, as founding element capable not only of transforming physically the city and its means of mobility and of transport, but also the mind of the region by causing a dynamics of future.

In a perspective of future, the public transport which would give the tram will link up the cities of the Wilaya de Constante (Constantine, Zouaghi, Ali-Mendjeli and Khroub), totaling a million persons and contributing to the transformation of the historical city of Constantine into a roofless museum and a cultural reference to international ladder.

Former study detailed plan, the monitoring and the control of jobs of realisation of the extension of the first tramline of constantine was entrusted to the grouping idom-tec4 (leader: idom). The plan is developed as a job of group there, conceived with and for the citizens of constantine. Plans are accomplished conducted by ema with many working workshops including all disciplines having taken place as well in algiers as in constantine, as well as several piloting committees supported in the wilaya de constantine and chaired by wali. The own minister de transport followed personally, in some key occasions, the development of plan.

Plan has as objective the execution of the Market which fixed conditions and modalities of realisation of jobs of extension of the Constantine's first tramline which stretches over a commercial length of **10,3 km**, in accordance with the technical prescripts linked in addition to Market.

In accordance with the article 14 of the Presidential decree n°10-236 of October 07th, 2010 carrying regulation of public works contracts, changed and supplemented, the Market is :

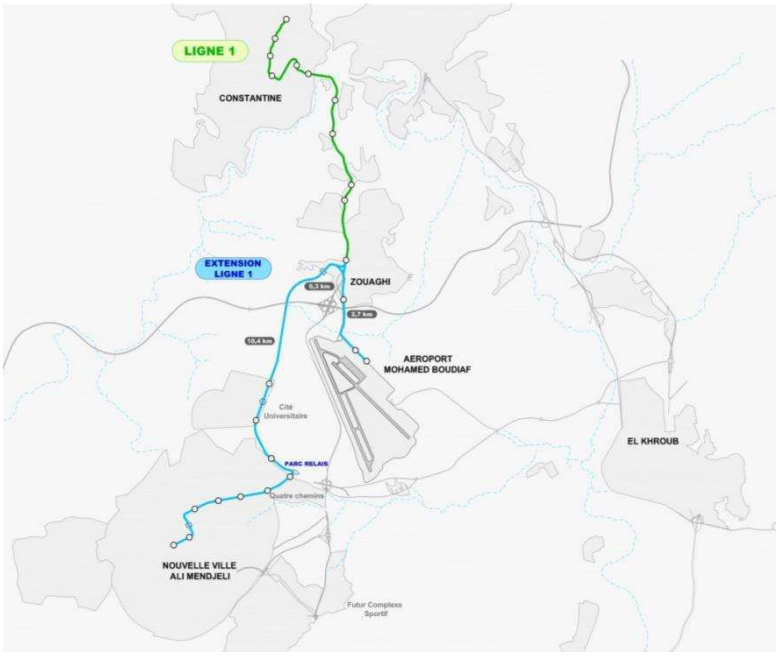


Figure2. Elements of the Extension of the line 1 of Constantine's Tram. (Alstom, 2017)

-The extension of the first line is formed by both following plans: APD EXTENSION ZOUAGHI - Airport (zone of including Remisage) ; APD EXTENSION ZOUAGHI - Ali Mendjeli

Even if both plans mentioned above constitute two very distinct APD, they both summers conceived in the same mind of a network of group, which takes into consideration possible extensions and future modes of working, as well as their signification in the economic, social and cultural transformation which they entrainent.

In this plan, they describe studies which constitute extension towards the Airport and Ali Mendjeli. Documents the component concern all the accomplished analyses, define the necessary preparatory work, list the founding elements of extension and describe their implementation, display insertion and development considered principles, offer lists of equipment and of equipments to be installed, and gift a quantitative estimate and a prediction of realisation planning.

The line of extension between the station of the city Zouaghi and Ali-Mendjeli stretches over a linear about 10,5 km, while the length of the strap leading towards the international airport Mohamed-Boudiaf is in the order of 2,7 km, according to the study of detailed draught performed by a Spanish grouping, according to the same source which added that the line Zouaghi-Ali Mendjeli envisages a stopover within the university Constantine-3.

The sum of the submission carried on the opinion of interim attribution of the market comes to more than 34,7 thousand million dinars, has still pointed out the manager of wilaya of Transport who also reminded that the first operational line of the tram since July, 2013 between the stadium Benabdelmalek-Ramdane (city centre) and the station Zouaghi-Slimane on a 8,1 km distance, will later be reinforced by a second line of extension going from Ali Mendjeli up to the city of El Khroub(Cherrad, S.D. et al., 2007).

3.2. Choice of the position of Flat Form on the way

The deck can be:

- bidirectionnelle: both senses of circulation of the tram occupy the same deck abreast and stations are common.

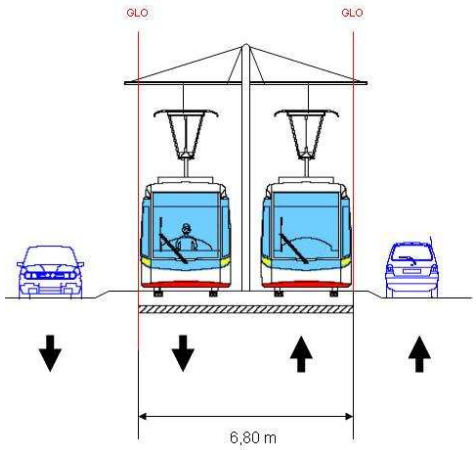
- unidirectional: a deck by circulation sense(Wilaya de Constantine, l'année).

Two modes of insertion are considered for the positioning of the bidirectionnelle deck on an existent rail and waterways network:central insertion (Figure 3) or lateral insertion (figure 4)

In central insertion, the limit size of obstacle (GLO) in right alignment with obstacle border is taken in 6,80m by considering oars of 2,65 m of open sea with central support of catenary

Central insertion reinforces visual impact and marks distinctly the urban landscape notably by a hold of important deck. That is why it will be chosen on broad avenues. She allows not to bother lateral accesses or accesses bordering the street.

Inlateral insertion,the limit size of obstacle in right alignment with lateral posts or clash in facade is taken in 6,40m. To it is added the breadth of separators according to different types of clean site chosen and establishment of the LAKE posts if necessary.



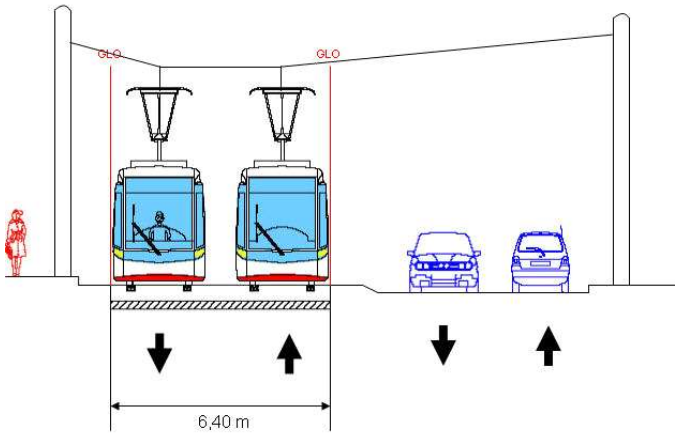


Figure 3. Central insertion of tramway. **Figure 4**. Lateral insertion of tramway.

3.3The Dealers

The actors of plan and their membership entities are identified this day and their general organisation is defined below in figure 5. The general organisation of operation is based on a structure at 3 levels: work workmanship, the workmanship of acting work, the Holder. The main interfaces between the actors of operation are described in flowchart.

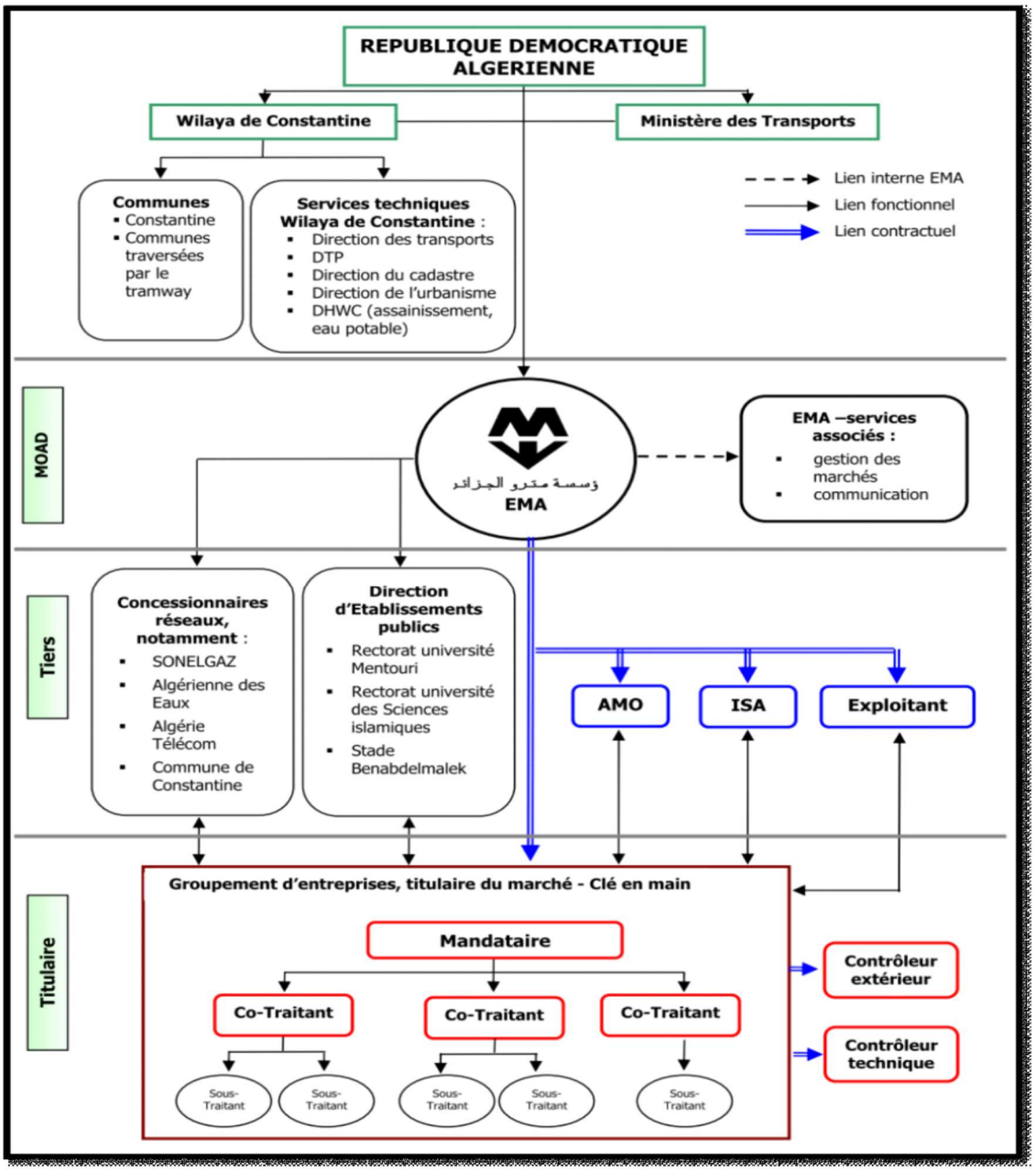


Figure 5. The stakholders of the project tramway of Constantine.

3.3.1 Other stakeholders in realisation

As part of his benefits, the Cocontracting party will have to define interfaces with the different stakeholders of operation and assure the coordination of his benefits: studies, jobs, trials, etc. with these parts.

The third parts are identified in the Diagramme manager quality of the present Market. They will notably identify:

- The different helpers of Contractant service (MOE, Certificateur Indépendant of the Security of
- the System Tram, etc.).
- The supplier of the equipment rolling CITAL.
- The concessionaires of networks notably ONA, HYDRAULIC, ADE, TELECOMMUNICATIONS ALGERIA and SONELGAZ Distribution and others.
- The control Societies.
- Future farmer:

At the very least, during the period of trials, of walk with white and of training of the future farmer, the Cocontracting party will have to assure a daily coordination with the future farmer, with periodic penalty payment during the not worked hours.

- SONELGAZ and other concessionaires:

Interfaces with SONELGAZ DISTRIBUTION are limited to the supply of the power supply for public lighting except lighting of stations.

The concessionaires will be able to be solicited during jobs in case of discovery of networks not identified before.

- Other external dealers The Cocontracting party will also have to assure the coordination linked to the organisation of the construction site with the actors
- main of the city:

- The residents, dealers, …
- The technical services of the wilaya and of the different villages,
- The police,

- The firemen and help services,
- The direction of state-owned companies in correlation with the tram.

3.4 Basic benefits

The Tram system to be accomplished is constituted of group of subsystems described below. Except for the supply and the maintenance of the movable equipments, the Cocontracting party promises to accomplish

Jobs according to the cutting up of lots defined below:

Broken down, in **six (6) Lots**:

- **LOT HAS**: Management of plan and overheads
- **LOT B**: Prior and supplementary Studies
- **LOT C**: Facilities and Urban development
- **LOT D:** Transport system
- **LOT FR**: Extension of Remisage
- **LOT G**: Additional Equipment of the Line 1

every LOT is broken down into functional Groups and functional Subgroups.

3.5 Operational Organisation of the Grouping

For the execution of plan, the grouping is organised in operational entity

GROUPE MANAGEMENT there loads Walk with realisation of Pilot

GROUPE there charges with Piloting and with coordination,

the under Grouping system, or responsible for the lot system,

the under Grouping Engineering Civil or responsible for the lot Facilities,

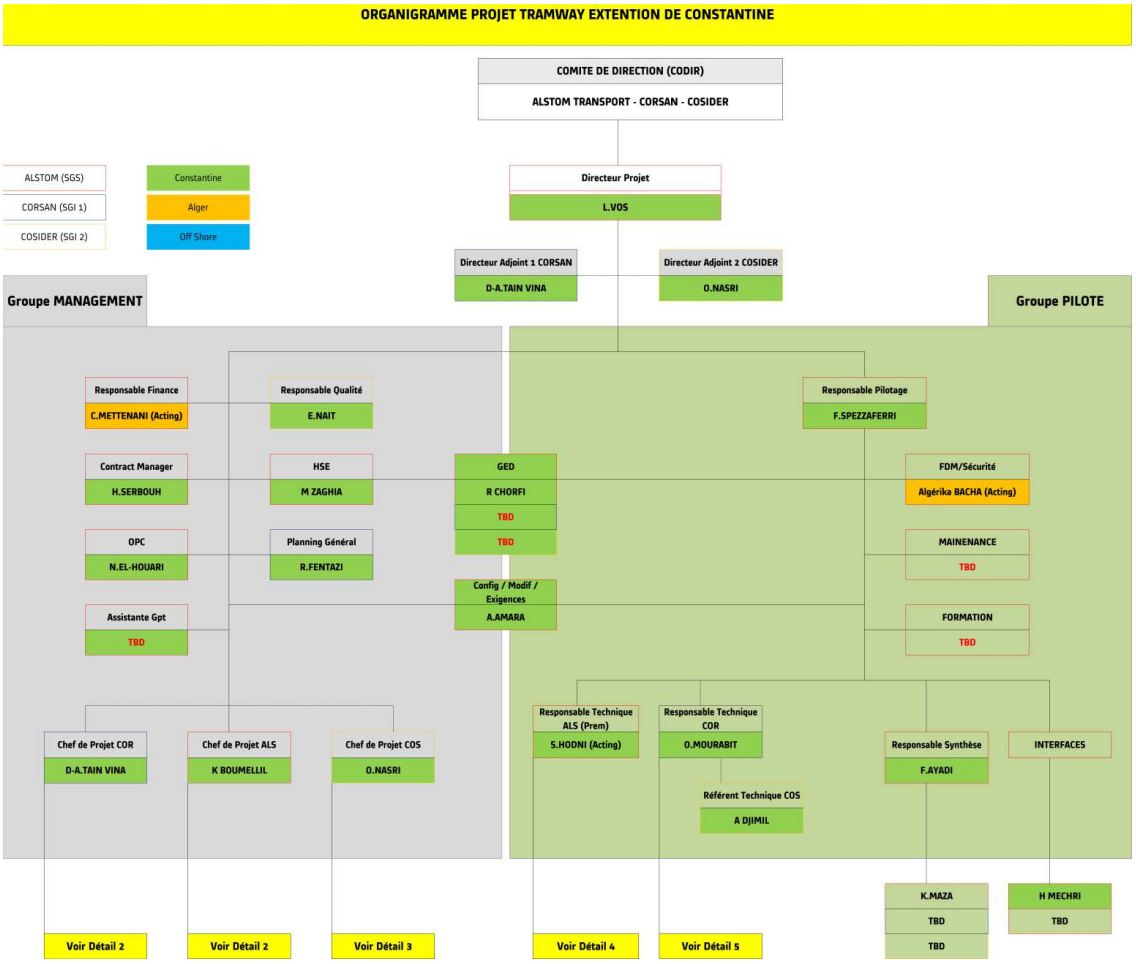


Figure 6. The organisation of the grouping.

3.6 Management process plan used in the extension of tramway Constantine

3.6.1 Management of Communication

- **Language**

The official language used for communication with the Client E.M.A, the members of the grouping or the representative of the maitre of acting work is **French**.

- **Communication with the client**

The Project manager of the Grouping and his two Assistants are the only interlocutors with Maitre of the Delegated Work EMA or with his representative.

For practical modalities (for working meeting behaviour or transmission of documents for information), other communications can be adopted provided that the Project manager of the grouping and the project manager of Maitre of Œuvre are informed and addressees of copies relating to treated subjects.

✓ Adresse provisoire du maître de l'ouvrage délégué,

EMA	Sis 170 B, rue Hassiba Ben Bouali Alger,

✓ Adresse provisoire du maître d'œuvre,

Groupement IDOM/TEC4	Base de vie Zouaghi, Route de l'aéroport 25021 Constantine

✓ Adresse du groupement,

Groupement Alstom/Corsan/Cosider	B.P 64, Cité des frères FERRAD, Zouaghi Constantine

Communication with others :

The official communication with the externals defines itself through the direction of the plan of the grouping, mainly for the tax and lawful aspects.For practical modalities, other communications can be adopted provided that the project manager du Maitre de l' Ouvrage are informed and addressees of copies relating to treated subjects.

Planning of meetings

The objectives of any meetings are to favour communication and decision-making with the intention of making develop plan. A meeting planning is worked out according to waitings and approved by the different parts

-External meetings:

Table 1. Identification of External Meetings

	Intitulé	Fréquence	Participants	Objectifs	Résultats
1	Réunion de coordination « Pilotage »	Hebdomadaire	SGP SGS SGI	Suivi d'avancement des études	Procès-verbal minute de réunion
2	Réunions techniques et spécifiques	A la demande d'une des parties	SGP SGS SGI	Pour appliquer des techniques spécifiques et urgentes ou des décisions de coordination	Procès-verbal minute de réunion
3	Réunion d'interface	Hebdomadaire	SGP SGS SGI	Suivi d'avancement des résolutions des interfaces entre groupement	Procès-verbal minute de réunion
4	Réunion de synthèse	Hebdomadaire	SGP SGS SGI	Suivi d'avancement des études de synthèse et résolution des conflits entre groupement	Procès-verbal minute de réunion
5	Réunion de configuration + FMO	Hebdomadaire	SGP SGS SGI	Suivi d'avancement des FMO et la gestion de configuration projet ainsi que les exigences contractuelles et normatives	Procès-verbal minute de réunion

- Internal meetings

Table 2. Identification of Internal Meetings

	Intitulé	**Fréquence**	**Participants**	**Objectifs**	**Résultats**
1	Réunion hebdomadaire	hebdomadaire	MOE et MOA CDF ALS COR COS	suivi d'avancement des études et clarifications des performances selon le contrat	Procès-verbal minute de réunion
2	Réunions techniques et spécifiques	A la demande d'une des parties	MOE et MOA CDF ALS COR COS	Pour appliquer des techniques spécifiques et urgentes ou des décisions de coordination	Procès-verbal minute de réunion
3	Réunions d'interfaces externes	A la demande d'une des parties	MOE et MOA CDF ALS COR COS	Pour appliquer des techniques spécifiques et urgentes ou des décisions de coordination	Procès-verbal minute de réunion
4	Réunion d'avancement système générale	Mensuelle	MOE et MOA CDF ALS COR COS	suivi d'avancement des études système et performances selon le contrat suivi d'avancement des études FDMS et performances selon le contrat	Procès-verbal minute de réunion
5	Réunion d'avancement spécifique FDMS	À en convenir avec la MOE et MOA de sa périodicité	MOE et MOA CDF ALS COR COS	suivi d'avancement des études FDMS et performances selon le contrat	Procès-verbal minute de réunion

3.6.2Quality managment

The quality managment is more in detail described in plan insurance quality under ref: ETC1-00-A-PAQ.CDF-PR-0001 and software plan quality under ref: ETC1-00-A-PQL.CDF-PR-0001.

Politics Quality: The system quality is the whole organizational structure, responsibilities, procedures, of go about things and of resources to implement the management of quality. The system quality of plan is based on requirements of model «norm ISO 9001 for the insurance of quality in design, development, production, installations and benefits associates», he will have to meet requirements of the Market and its annex 1 «general management specifications» and additional 2 «Diagramme of quality manager».

The grouping is responsible for conception, for realisation and for service of the line. A system quality will be set up under the supervision of the representative quality. He will identify needs in term of material quality (organizational structure, common procedures) to assure a maitrise of requirements of the Contract. The material of the system quality of the Plan of Constantine's Tram contains the following documents:

□□The guiding diagramme quality,

□□Material additional quality of the partners, suppliers and of the subcontractors,

□□The organisation management of plan,

□□The specific procedures of plan (conception and execution): ALS, HORN, COS

□□The plans of examination and of controls,

□□The procedures of reception of installations,

□□recording quality.

The system quality takes care of all contractual aspects of the Market of Constantine's tram and to show that the grouping has a whole responsibility in:

□□Approval of plans, of procedures and of methods with EMA, if necessary,

□□Conception, of manufacture, execution and reception of jobs,

□□Control of the quality of jobs in accordance with norms, with specifications and with building plans,

□□Of detection of corrective not compliances and of action launching,

□□to prove by recording of all that was above-mentioned plan and in procedures complies in,

□□to lead audits to determine pertinence and effectiveness of the system and that the system is set up well

3.6.3 Process of risk management

The risk management linked to a plan defines itself by an iterative cycle composed of 4 activities, linked to the plan management:

Identification of risks

The Representative for the Management of Risks makes sure of the identification of risks of plan. This list is got or further to different identification meetings at the level of the Group of Piloting and Coordination including the representatives for Sub-groupings or further to annual appraisals or exchanges with the different members of Plan, until all the activities of plan are covered.

Besides, this first task is supplemented by risks identified at the level of every Subgroup. The leaders of Subgroups communicate to the representative for the Management of Risks list of risks identified with their level impact of which has a range on plan. These risks are validated during the magazines of risks at the level of the Grouping and included into the total list of risks Grouping.

Then during the holding of plan and notably during the changes of stages of plan, the list of risks is updated by proving the pertinence of risks beforehand identified and by the recording of new risks. The identification of risks also includes for every risk:

□□the identification of probable reasons and consequences,

□□the determination of information characterising this risk (the domain concerned by risk, type of risk, the stage in which the actions of treatment of risk must be accomplished).

This information allows to classify risks and make easier their recognition and the subsequent analyses. This information is defined of a way planed between the Representative for the Management of Risks, the Direction of Plan and other dealers. They are recorded in the register of risks of the Plan, kept up to date by the owner of risk, through chips of risk.

The identification of risks can make risks with the aid of families following:

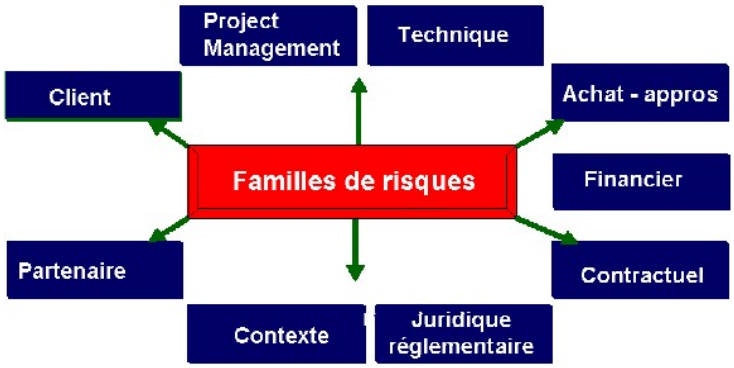


Figure 7. Flowchart of the families of risks.

➢ Analysis and valuation of risks:

It is necessary to estimate the repercussions which risks can cause to plan to be able to act prioritairement on the highest risks. Repercussions are assessed at the same time in terms of impacts and of likelihood of appearance of risk.

Impact is the measure of consequences of risk. The impact of a risk shows itself to best by the following aspects:

□□Quality / performances: deterioration of the level of a performance envisaged of the product.

□□Cost: additional cost for plan in comparison with the envisaged budget.

□ □Delay: sliding of delay in comparison with fixed dates.

Appearance likelihood expresses the degree of possibility of demonstration of a risk.

A detailed analysis of risks is accomplished under the supervision of the Owner of risk to teach as precisely as possible each of risks, their reasons, their consequences and their case likelihood.

The valuation of risks perhaps accomplished in a qualitative or quantitative way:

3.6.4Management of delays

The management of Planning makes sure of the monitoring of methods and the procedures defined by the Grouping which allow the monitoring of progress of Plan with a view to making sure of the accomplishment of all stages of Plan.

The management of planning will set out to accomplish planning and monitoring of all the stains allowing the execution of the present contract within the limits of Milestones imposed by this one and recalled below.

Table 3. Summary Picture of contractual milestones

Milestones	Date	Description
J1	To + 2 m	Delivery of the following documents: procedures of magazine of the System Tram, Plan of Management of Quality and PAQ, Procedure of management of nonconformities and of modifications, Plan of Management of Material (GED), projected List of the documents of Security, Plan portrays monthly reports of progress and planning, projected list of all technical documents, the projected list of the documents of security (LPDS).
J1b	To + 1 m	Mobilisation on site of the personnel necessary for the starting of the activities of the Pilot and of the research department
J2	To + 5 m	Delivery of the following documents: Specifications of interfaces, planning railway, preliminary Plan FDM by subsystem, Plan of preliminary Service, general Directives for groups and functional subgroups in tools and spare parts, procedure of management of supplies, procedure of management of transport and of shops, plan of management of shape.
J3	To + 10 m	At the end of general studies of execution (basic principles); delivery of the following documents: Plan of Training, list of spare parts and of tools for the Firm Edge.
J4	To + 12 m	At the end of the validation of general studies of execution (basic principles)
J5	To + 22 m	Fine earthwork VRD

J6	To + 14 m	Delivery of the Justificatory File of Security (DSJ)
J7	To + 27 m	At the end of jobs civil engineering structures
J8	To + 29 m	Delivery of the following documents: Plan of interim reception, Trial plan of the System Tram and trial procedures, File of security system (DSS) according to regulation, service Files
J9	To + 30 m	At the end of jobs of the Lot C and of SGF D1
J10	To + 32 m	At the end jobs of the Lot D
J11	To + 33 m	Bet LAKE under high pressure
J12	To + 32 m	Delivery of the following documents: File of demonstration of the respect for objectives FMD, procedure of lifting of reservations, procedure of management of guarantees, File of Security System (DSS)
French television = J13	To +35 m	Interim and delayed reception of following documents: Final File of Security, final Plan FDM and Synthesis FDM File, Material of Works carried out, Technical Material Farmer

□□A partial delay, DP1, relating to the interim reception of the Extension of Remisage is defined to T0 + 12 Months.

□□A partial delay, DP2, relating to the reception of the additional equipment of the line 1, is defined to T0 + 12 Months.

Planning of studies and of execution

The planning of studies and of execution is the result of the strengthening of all the working programmes of every dealer: ALS, HORN, COS and CDF. He is subjected to the Maitre d' Œuvre for approval.

representative OPC (scheduling, piloting and coordination) is charging up of production and monitoring of all plannings, as well as of production of the reports of progress. He is permanent member of the team of Piloting and Coordination which assures the planning of internal benefits the Market and its interfaces, and the interlocutor of the EMA for what is that concern aspects planning.

Guiding planning is got by regrouping or filtration of the activities of detailed plannings.

The plannings of details are organised by nature of activities: studies dress rehearsal, study of details, purchases and manufacture, deliveries, installation, brought into service, material,

training, spare parts and specific tools. At level Grouping, will be established and transmitted to the representative of the MOE the following elements:

□□The general Planning of Plan,

□□planning Railway,

□□The detailed planning of Plan

The effort of planning of the management of costs takes place early in the planning of plan, and sets up the frame in which will be carried out the processes of management of costs, so that these processes are efficient and co-ordinated.

3.6.5Management of human resources

The management of human resources is made at the level of every member of the Grouping and in accordance with rules in force within their firms.

It is to note that considering the internal rules of every firm at level security of the persons, specific pressures will be able to be imposed: caretaking, call to police force, ban to work at night …

Human resources, administrative procedures and instructions specific for Plan are worked out and implemented by the manager du Projet in collaboration with structure RH of every under grouping (COS, HORN and ALS) according to recruitment plan.

The management of human resources of plan is within the province of the Project manager in term of:

□□Definition of necessary profiles for the good of resource,

□□Selection of the members of the staff and control of their skills if they were allowable,

□□Identification of supplementary refinement,

□□Management of the personnel during the extension of Plan

On the basis of the expression of the needs of the Project manager, a recruitment plan is drawn up to meet needs in personnel local and deported.

Following posts are currently defined:

Table 4. Names of attribution of posts

Post	Name	Place
Manager of Plan (Leader)	Laurent Vos	Constantine
Project manager Corsan and assistant leader	Jose Enrique da Silva Figuereido	Constantine
Project manager Cosider and assistant leader	Othmane Nasri	Constantine
Pilot	Nabil Souilah	Constantine
Representative OPC	Mohamed Nabil El Houari	Constantine
Project manager Alstom	Cedric Ben - Ali	Constantine
Representative Risk	Laurent Vos	Constantine
Representative Quality	Esma Nait Abd Errahmane	Constantine
Representative Hygiene, Security and Environment	Massinissa Zaghia	Constantine
Manager of Studies system	Jalil Yahia	Constantine
Manager of Studies civil engineering CORSAN	Oscar Mourabit	Constantine
Manager of Studies civil engineering COSIDER	Hamza Bouttout	Constantine
Administrator of interfaces	Samir Chelgoum	Constantine
Representative Shape	Amira Amara	Constantine
Representative management material	Rofia Chorfi	Constantine
Representative management contract	Hamid Serbouh	Constantine
Representative administration and finances	Chakib Metennani (Acting)	Algiers

3.6.6Management of Interfaces

From answer stage on the appeal of offer the grouping sets up a process of management of interfaces which will be applied throughout the life of Plan.

Process of management of interfaces

The management of interfaces leans on following processes:

- Identification of interfaces: results on one hand from the analysis of the existent and on the other hand of the need specifications coming from studies system.

- Resolution of interfaces: system of the Transport System applies to the detailed conception of any new interface decided generally during the stages of studies.
- Implementation of interfaces: the installation of interfaces during the stages of building of subsystems and of those of external entities in the Transport System applies to manufacture and.
- Evolutions of interfaces: applies to evolutions of already defined interfaces.
- Validation of interfaces: applies to the validation of interfaces during the stages of test and of validation of interfaces between subsystems / external entities and systems.

The diagramme below present process according to the stages of realisation of plan:

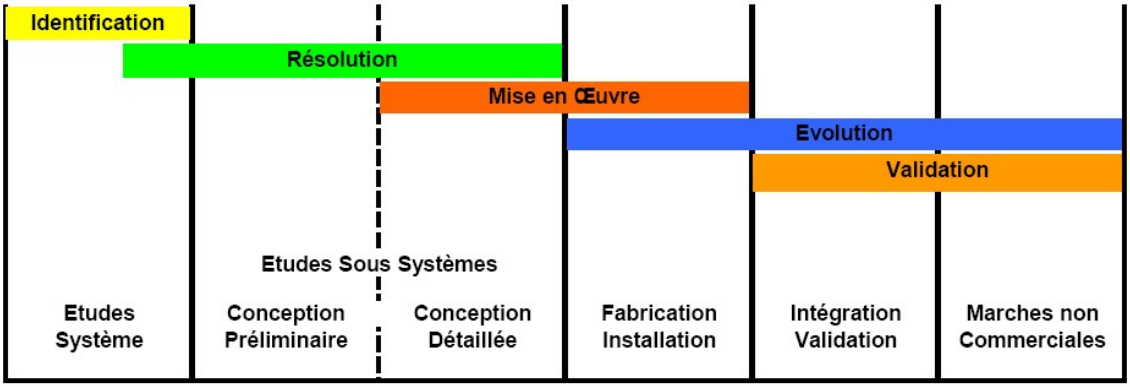


Figure 8. Process of Management of Interfaces.

3.6.7Process of management of modification

The main aim of this procedure is to assure identification, monitoring and the fence of requests of modifications as part of the plan of the extension of the Constantine's first tramline.

-The objectives of this process are:

- To make sure of the formalisation of the decision-making process of evolutions of plan in stage of conception and a clear management of evolutions of the market in realisation stage.

 To be sure that any modifications of conception are correctly justified, assessed in cost terms and delays, and in keeping with planning and process established.

 To be sure that all necessary actors participate in evolution, approval and adaptation of modification;

-Use:

This document is applicable for any entities implicated in the plan of the Extension of the Constantine's first tramline (groupement de la réalisation de l'extension du tramway de Constantine, ….)

4.Conclusion

However that the grouping applies the appproche manageriale for the realisation of the plan of the extension of constantine's tram but he suffers from a delay, swelling of the coc and which re-collides on quality. Of this fact it is necessary to think serieusement has the amelioration of plan process with methodes who admits it.

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