



WHITEPAPER

WAN governance: tell me more

What is WAN governance?

WAN governance is a unique way of approaching the management of a wide-area network from the viewpoint of the company's business needs, rather than for mere technical convenience. The aim of WAN governance is to align the network with business goals.

What challenges do network applications raise for businesses?

Any business realizes that the key to optimizing its productivity is the ability to predict how its applications will perform anywhere and at any time. In pursuit of efficiency, it will constantly adapt its IT architecture to its business processes. At the same time it will be striving to optimize its cost structures, including IT resources and network. The aim of WAN governance is to combine these aspects in a way that is both flexible and predictable.

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SUMMARY

- 1. WHAT IS “GOVERNANCE”? 3
- STATE GOVERNANCE 3
- CORPORATE GOVERNANCE 3
- IT GOVERNANCE 4
- 2. WAN GOVERNANCE 5
- STAKEHOLDERS 5
- PRINCIPLES OF WAN GOVERNANCE 6
- NETWORK APPLICATIONS: IS IT WORTH SPLITTING HAIRS? 7
- FASTER, HIGHER, STRONGER ...(?) 8
- KPIs YES, BUT NOT TOO MUCH 9
- OPERATIONS, A SUBTLE ALGEBRA 10
- BUILDING USER SUPPORT ON SOLID GROUND 10
- SAVINGS MATTER 11
- 3. IPANEMA AND WAN GOVERNANCE 12

IN PRACTICE?

Governance is a question of common sense allied with a top-down approach: **1)** Define the business goals **2)** Understand the current situation **3)** Compare the situation with the goals **4)** Decide the appropriate actions to rectify or improve the situation **5)** Implement these actions **6)** Measure the results and shortfall. Our solution is a simple, highly automated process.

WHAT ARE THE BENEFITS?

WAN governance delivers four major benefits:

- 1) End-User experience guarantee enabling business predictability;
- 2) Business applications acceleration improving users productivity;
- 3) IT and network simplification enabling support teams to focus on users not objects; and
- 4) IT and network costs slashing through more flexible IT, lower bandwidth and better use of the Internet.

HOW DO THESE BENEFITS COME TOGETHER?

It is important not to consider these benefits separately, but as a consistent whole serving a common corporate goal: the achievement of business objectives.

This white paper sets out to discuss the different aspects of network governance. It is designed as an overview, rather than a detailed study.

We shall also be taking a broad look at how the Ipanema system (based on the principles of Autonomic Networking) meets the imperatives of WAN governance.



1. WHAT IS “GOVERNANCE”?

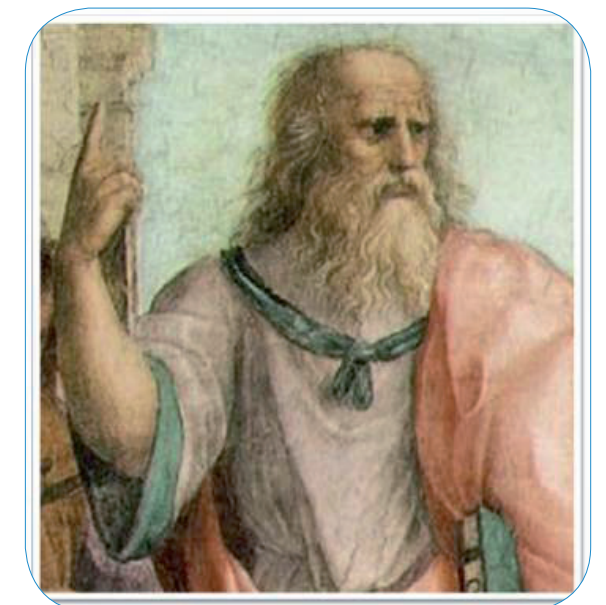
Wikipedia defines the concept in these terms: “Governance relates to decisions that define expectations, grant power, or verify performance. It consists either of a separate process or of a specific part of management or leadership processes”.

This wording may not yet be definitive, but provides a good working definition for a field that is still very new and liable to evolve.

Put more succinctly, Governance means defining goals, acting (or prompting action) to achieve them, and verifying the results.

STATE GOVERNANCE

A historical look at Governance inevitably takes us back to Ancient Greece and Plato, one of the first thinkers to come up with a theory of state governance (more strictly, in the contemporary geopolitical reality, city states). His “Republic”, written at the very end of the 4th century BC, postulated an ideal community, under the flawless leadership of philosophers, and discussed a wide range of practical aspects of governance.



Fast forward to the 18th century and we come to a host of works dealing with concepts associated with “good governance” (Montesquieu, Rousseau, Diderot...), Britain was often perceived as a laboratory for these ideas.

CORPORATE GOVERNANCE

The concept of corporate governance emerged gradually through the 20th century with the rapid development of industry and services. The 1929 Wall Street Crash can be seen as a watershed in the growing awareness that there was a downside to a system involving a complex mesh of mechanisms and interactions: a major breakdown could have global impact.

The very recent Enron, Worldcom and Lehman Brothers debacles have now become synonymous with the difficulties linked to flawed economic governance. On another level, the disasters at Minamata in Japan and Bhopal in India have dramatically demonstrated what happens when industry neglects its environmental responsibilities.



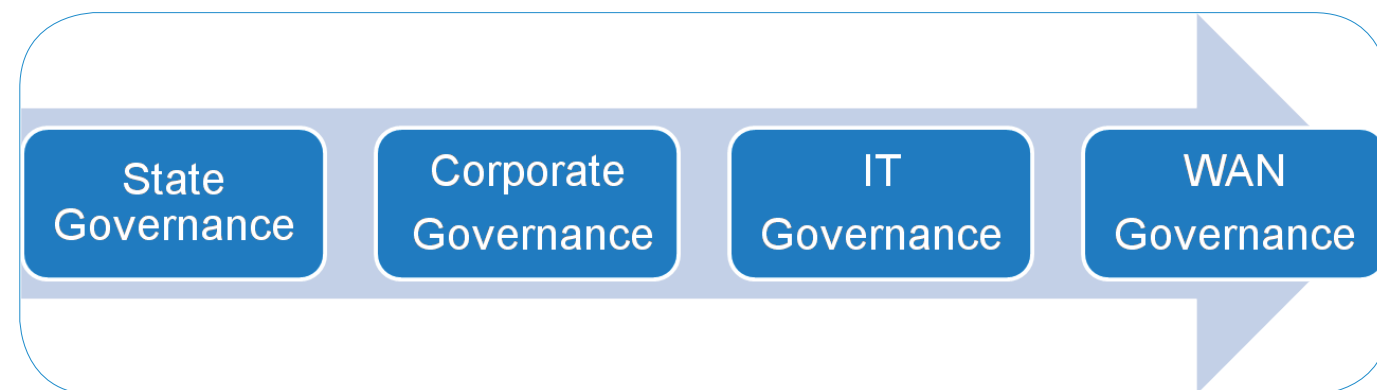
IT GOVERNANCE

The information system plays a very special role in corporate life. Though often perceived by business units as “a necessary evil”, it has become the backbone of organizations that are increasingly complex yet under pressure to respond fast. The associated costs (a few percent of turnover), the impact on the company’s business and the fallout when anything goes wrong (“when the IT goes down, it all goes down”) have made it a critical system.

The IT Governance Institute (ITGI) defines IT governance as “an integral part of enterprise governance and consists of the leadership and organizational structures and processes that ensure that the organization’s IT sustains and extends the organization’s strategies and objectives”.

Its goals are to:

- ☐ Align IT strategy with business strategy;
- ☐ Cascade strategy and goals down into the enterprise;
- ☐ Organize the means to execute the strategy
- ☐ Implement a global control framework (e.g. COBIT¹)
- ☐ Measure the performance of the Information System.



¹Control Objectives for Information and related Technology is an IT governance framework and supporting tool-set that provides a common language for understanding and communicating on the governance of Information systems while integrating other frames of reference such as ISO 9000 or ITIL.



2. WAN GOVERNANCE

Two imperatives — global production processes and the need for close contact with the public — have caused organizations (whether private sector businesses or public administrations) to be located over an increasingly wide geographical area. Physical distances between customers, users, the workforce, application servers, production sites, etc. are greater than ever, yet huge quantities of information have to be exchanged daily.

The network has become such a vital cog in a massive machine that “when the network goes down, it all goes down”. Only a network that is rock-solid yet flexible can make an optimal contribution to company success.

So it is as an integral part of this broad picture of IT governance that we put forward our definition of WAN governance, sharing similar goals at network level and making applications available throughout the “global enterprise”:

- ☐ Align the WAN strategy with the IT and business strategies;
- ☐ Cascade the strategy and goals down into the network;
- ☐ Organize resources to execute the strategy;
- ☐ Implement a global framework to control network behavior;
- ☐ Measure the performance of the network applications.

STAKEHOLDERS

The role of teams responsible for the network is increasingly complex, with multiple interactions in the company:

- ☐ **End Users** expect applications to be up and running 24/7 and comfortable to work with;
- ☐ **Application managers** all want to be sure that the application under their personal responsibility (ERP, tele-presence, collaborative tools...) will be allocated the necessary resources in all circumstances;
- ☐ The **CIO** demands objective data to facilitate understanding of how the network contributes to company productivity;
- ☐ The **CFO** is constantly pressing to use the most cost-efficient options available.





Increases in network throughput are costly and time-consuming. Moreover, they are often relatively inefficient. It is hard to know in advance which applications will benefit from additional resources; some applications are more sensitive to distance than bandwidth, etc.

WAN optimization and acceleration technologies are often efficient, but remain expensive and hard to understand and use.

Such complex environments create a number of challenges for the network team : knowing what to do, where, and when; proving simply that the right and timely decisions have been made; choosing architecture that will stand the test of time while remaining flexible enough to adapt to the many changes about which only one thing is sure, namely that they are sure to occur sooner or later.

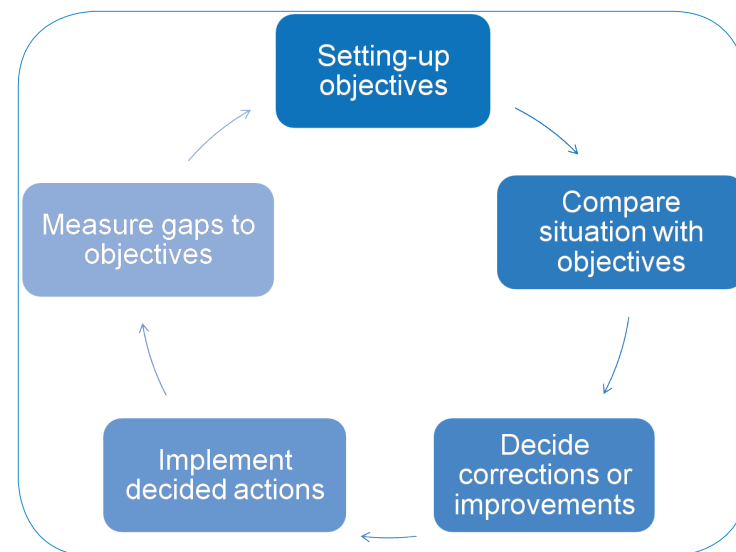
PRINCIPLES OF WAN GOVERNANCE

We suggest that WAN governance should fulfil the following missions:

- Understand the nature of application traffic on the network;
- Optimize and accelerate this traffic;
- Manage application performance;
- Simplify network operations;
- ... and finally control network costs and leverage savings.

Given that the aim is to fine-tune the WAN in a dynamic environment, WAN governance is built like a closed-loop system including the following stages:

- Definition of goals (SLAs, budgets, etc.);
- Assessment of the current situation and comparison with goals;
- Decision, then implementation of enhancements and corrective measures;
- Measurement of results obtained and shortfall compared with goals;
- etc.



The cycle time must not be too short, for obvious practical reasons. Experience shows that a period of 3 months is appropriate for most situations, and should in no event be less than 1 month.



NETWORK APPLICATIONS: IS IT WORTH SPLITTING HAIRS?

69: This is the number of applications that businesses are seeking to differentiate. A recent survey¹ analyzing the way in which businesses use the Ipanema system (based on the concepts of Autonomic Networking and Objective-based Management) identified an average of 69 differentiated applications per network.

The identification and classification mechanism being practically unlimited, we can take this figure as corresponding to the level of granularity needed by businesses today.



15: This is the number of families of application. Applications are graded according to four levels of business criticality: TOP, HIGH, MEDIUM and LOW. A few typical examples are:

- TOP criticality:** SAP, ORACLE, CITRIX, ToIP, video conferencing...
- HIGH criticality:** LDAP, Video streaming, SIEBEL, Salesforce, Intranet...
- MEDIUM criticality:** Lotus Notes, MS Exchange, Sharepoint, Internet, File sharing...
- LOW criticality:** businesses often classify file transfers, antivirus updates, and semi-professional or purely recreational applications such as YouTube, FaceBook and on-line games (Quake, etc.) with a low criticality rating.

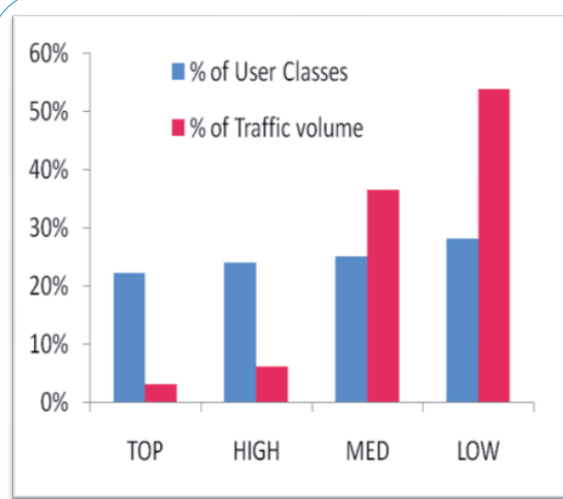
In combination with different levels of application performance, businesses have opted to group applications into 15 families (each containing from 7 to 33 applications).

¹ A worldwide survey of 48 businesses across-the-board, totalling over 10,000 controlled, optimized sites.



3%: This is the proportion of critical traffic on the network. Though applications are more or less evenly spread over different levels of business criticality, the survey reveals that this does not apply to the volumes transferred across the network: the higher the criticality, the lower the volumes.

TOP criticality applications only account for a small share of network usage, whereas LOW criticality applications eat up more than half of the resource.



In other words, the same granularity is needed whether the analysis concerns the 3% of critical traffic or the 54% of uncritical traffic: when analyzing the usage and performance levels of network applications, it is important to consider their criticality, rather than the volumes of data exchanged – **quality is more important than quantity.**

Should the same survey be conducted a few years from now, the findings will probably be significantly different: there is a strong likelihood that multimedia traffic such as videoconferencing and streaming will have a large impact on usage; likewise applications in SaaS² mode.

These figures illustrate the diversity and complexity of application traffic in corporate life today, and demonstrate the need to understand it.

FASTER, HIGHER, STRONGER ...(?)

The aim of controlling, optimizing and accelerating applications is to make business processes stable and predictable (examples are activities involving customer relations – reception -, ERP transactions, financial consolidation, etc.) with guaranteed performance levels in all situations through the company's global network.

Network traffic changes constantly. On a small scale, it depends on what each user is doing at a given time (e-mail, transactions, telephone calls); working days have peak hours; traffic profile is often different on Mondays and Fridays from other days; ends of months are sometimes critical (for example when quoted companies consolidate their finances).

Depending on the business sector, seasonal fluctuations can be dramatic (for example, year ends in retailing).

² Software as a Service: software applications provided in the form of a service (often accessible via the Internet) rather than in the form of executable code.



The network is used for a host of activities concerning a large number of employees and departments. Most events are hard to schedule for reasons that may be intrinsic to the application (anti-virus database updates, videoconference), or organizational.

Because precise prediction is practically impossible, this is a challenge that has to be considered when selecting the processes and tools required to improve the performance levels of network applications.

Above all, we believe that it is fundamental, to guarantee performance levels: it is primordial for businesses to ensure the stability and predictability of applications before even attempting to improve them.

KPIs YES, BUT NOT TOO MUCH

To compare results with goals you need metrics, aka Key Performance Indicators (KPI). IT users may need long lists of technical data, tables, graphs and the like to identify and rectify a particular issue, but these are not necessarily good KPIs.

Streamlined metrics are vital for effective WAN governance. They must be:

- Easy for casual users to understand (typically a value from 0 to 10, or a color code such as RAG) ;
- Relevant to performance goals;
- Kept to a as small number as possible;
- Easy to collect and consolidate.

The MOS score for voice (and video), AQS (and in some circumstances Apdex) for data are examples of KPIs that are well suited to network governance. It should also be remembered that KPIs are not inoffensive:

- They reflect the implemented strategy;
- They (more or less deliberately) impact the behavior of the people concerned;
- They modify the processes that they measure.





OPERATIONS, A SUBTLE ALGEBRA

There are a number of modes for managing application performance on the network: from the classic “Do It Yourself” to complete managed services provided by third parties (for example, the network supplier), via co-management where businesses and service suppliers share data and responsibilities:

- Clearly there are no intrinsically good or bad solutions: it all depends on the company’s situation, culture, resources and strategy. It is however relatively probable that in the years to come, when the underlying technologies have reached maturity, this will generate a significant increase in managed services;
- The technologies implemented may be highly specialized in a given sub-domain (‘siloes’ approach), or be integrated into systems offering a wide range of functions needed for network governance;
- Deployments may be asymmetrical (in central sites only), or symmetrical (central sites and branch offices). Approaches may be local (point to point) or global (end-to-end network management);
- Management may be “bottom-up”, the approach traditionally adopted by conventional policy-based management systems, or “top-down”, the objective-based management method enabled by autonomic systems.

BUILDING USER SUPPORT ON SOLID GROUND

Technologies and processes cannot be separated from the teams that implement them; their motivation, culture and future are part of the equation. WAN governance, approaching all the aspects of network applications, is a powerful means of improving the working conditions of the IT and network teams:

- Generally, when users complain about poor performance, the technical support teams lack the visibility to fully understand the problem: is the origin of the failing in the application, the server, the customer workstation or the network? Is the complaint justified, or is the user just having a bad day because the morning traffic was worse than usual?
- As a result, the answers are often vague, adding to user frustration, and customer support teams have an irritating tendency to compound the problem by passing the buck.



- Networks can easily be considered as an instrument that constantly costs more and lacks power. Without high-level information, it is hard for IT and network teams to convince their environment that their choices are well founded. They have trouble securing the trust of their management.
- The need to react fast means that technical support is provided in emergency conditions, with stressed, impatient users at the other end of the line. Purely technical tasks eat up by far most of the working hours. Operators are confined to routine, low-level, demoralizing tasks.

Teams who have implemented WAN governance are only too happy to be largely rid of their “quick and dirty” work, and can devote their efforts, talent and energy to more added-value tasks, such as long-term planning, cost optimization, internal invoicing and managing SLAs .

Understanding why they do what they do, working in the future and no longer in the here and now, teams improve their contribution to the overall operation of the business and are more motivated.

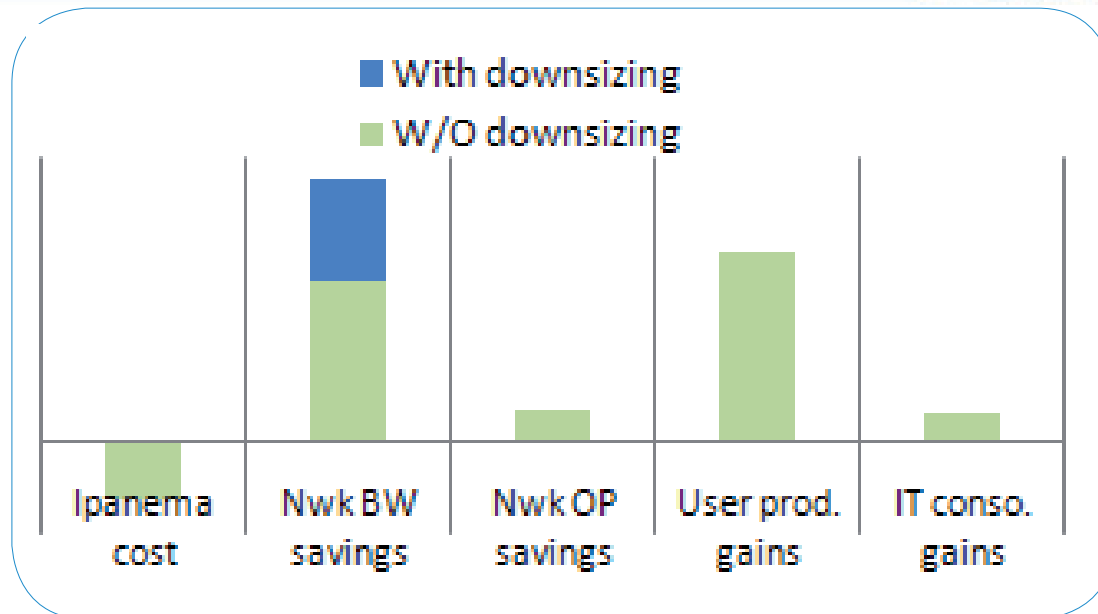
SAVINGS MATTER

Regular cost control and showing the savings that have been made and are there to be made are another facet of WAN governance.

The first angle under which economic impact can be viewed is the **increase in user productivity**. This can be estimated from time savings generated by stabilization and the faster response times of transactional applications, transfer times for voluminous data, etc. Time is money, and average salaries per hour can be used as a metric to calculate labor savings. Moreover, the IT team becomes more efficient through the automation and impact of the governance processes (less time is spent on inefficient tasks).

The second angle is that of **resource optimization**: typically the biggest source of savings is reduced network bandwidth. Dynamic allocation of network resources (fine, real-time tuning of traffic demand and transport capability) enables network usage rates to approach 100% (compared with a laborious 30% to 60% with static networks). The rate of elimination of redundant data (by compression) can reach values of 2 to 10, depending on traffic and usage type. Additional techniques such as network **rightsizing** based on the application SLAs can also deliver gains without compromising performance.





The company finds itself facing two options: 1) reducing network bandwidth as far as possible, or 2) maintaining throughput and deferring increases in network capacity in response to higher traffic demand.

As a general rule, businesses that have introduced WAN optimization techniques prefer to maintain throughput at most of their network access points, even supporting at least a twofold increase in traffic (deferring their upgrades by an average of two to four years). They only reduce throughput in cases where access is particularly costly or clearly oversized

Moreover, techniques for **accelerating applications** enable policies for consolidating servers on a small number of central sites, thereby reducing the Capex and Opex associated with remote servers.

3. IPANEMA AND WAN GOVERNANCE

In less than 10 years, Ipanema has become the technology supplier that enables optimization and performance control applications to be deployed on an industrial scale. The list of Telecom Operators who have selected Ipanema is lengthening all the time. Ipanema controls, optimizes and accelerates the global network of leading business applications across-the-board, whether in integrated or managed service mode.

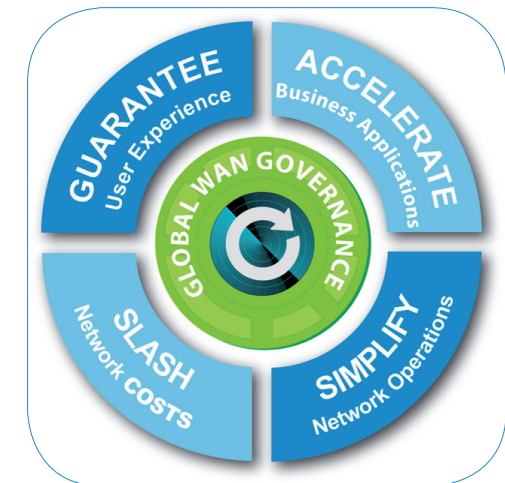
This success is based on a technology pioneered by Ipanema: **Autonomic Networking**.



Over and above the solution of local problems, companies that have selected Ipanema have built a global control layer into their networks and the data traffic they are carrying. The unique, patented technology, guarantees the performance levels of the business applications for each user at all times and anywhere. Network operation is simpler. Costs are slashed. In a word, **Ipanema makes a 1,000 site network feel like one.**

Autonomic Networking enables a complete set of functions to be integrated and coupled in a single system. They work symbiotically to manage traffic automatically, globally and dynamically:

- Visibility, to understand the traffic and control performance;
- Optimization, to guarantee end-user experience in all circumstances;
- Acceleration, to minimize application response times irrespective of geographical location.



The resulting level of automation and integration enables new traffic management concepts to be implemented, in direct relation with WAN governance processes. For example: objective-based management, application SLAs, allocation of responsibilities, network sizing and budget allocation based on corporate application SLAs, etc.

In addition to its technology, Ipanema accompanies businesses in their approach to WAN governance with a wide range of tools including:

- SWAN** (Strategic Wan Acceleration Navigator) which clarifies the company's needs. It is an interactive web-based questionnaire that instantly produces a customized analysis report for each WAN optimization and acceleration project; SWAN is available on line at: www.swan-report.com
- TSI** (Total Savings Impact Estimator) which delivers a detailed assessment of the different economic aspects of WAN governance at company-level; TSI supports both "Ipanema as a Product" and "Ipanema as a Service" modes..
- The **WAN GOV** professional services that can be delivered to companies either by Ipanema's teams of consultants or by our certified partners. These services consist in a quarterly analysis of the situation of the network and application traffic, and recommendations based on the concepts of network governance, outlined in this document. The "Wan Governance Permanent Audit" book illustrating the resulting Wan Governance reporting is available on request.
- A blog with up-to-date coverage of different aspects of network governance is accessible at www.wan-governance.com



ABOUT IPANEMA TECHNOLOGIES

Ipanema develops solutions enabling any large enterprise to have **complete control of their global network**.

Our unique patented technology guarantees business application performance for each user, no matter where or when. It simplifies network operations. It reduces costs.

In a nutshell, we guarantee critical application performance and **make a 1,000 site network feel like one**.

For more information, www.ipanematech.fr | [Wan governance \(blog\)](#) | [Users Group \(Linkedin\)](#) | [Follow Ipanema \(Twitter\)](#)

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