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The Total Economic Impact™ Of TANDBERG Video Conferencing Solutions

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The Total Economic Impact™ Of TANDBERG Video Conferencing Solutions

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Executive Summary

In July 2008, TANDBERG commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) that enterprises may realize by deploying TANDBERG video conferencing solutions. TANDBERG is a global provider of telepresence, high-definition video conferencing and mobile video products with dual headquarters in New York and Norway.

TNT N.V., through its two divisions, Express and Mail, is a global transportation and distribution company, transferring goods and documents around the world. TNT serves more than 200 countries and employs around 161,500 people. In 2007, TNT reported €11 billion in revenue and €1.192 billion in operating income.

TNT launched video conferencing as part of its Planet Me^o program. With this program, TNT aims to become the first zero-emission mail and express delivery company in the world.

In conducting in-depth interviews with TNT, Forrester found that the company was able to achieve benefits from video conferencing in terms of a reduction and avoidance in travel costs and related reduction in carbon emissions.

Forrester calculated that TNT will achieve a return on investment of 71% over a four-year analysis with a payback period of 2.3 years on its investment in TANDBERG video conferencing solutions.

Purpose

The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of TANDBERG Video conferencing Solutions on their organizations. Forrester's aim is to clearly show all calculations and assumptions used in the analysis. Readers should use this study to better understand and communicate a business case for investing in TANDBERG video conferencing.

Methodology

TANDBERG selected Forrester for this project because of its industry expertise in video conferencing and Forrester's Total Economic Impact™ (TEI) methodology. TEI not only measures costs and cost reduction (areas that are typically accounted for within IT) but also weighs the enabling value of a technology in increasing the effectiveness of overall business processes.

For this study, Forrester employed four fundamental elements of TEI in modeling TANDBERG video conferencing solutions:

1. Costs and cost reduction.
2. Benefits to the entire organization.
3. Risk.
4. Flexibility.

Given the increasing sophistication that enterprises have regarding cost analyses related to IT investments, Forrester's TEI methodology serves an extremely useful purpose by providing a

complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

Approach

Forrester used a four-step approach for this study:

1. Forrester gathered data from existing Forrester research relative to TANDBERG and the video conferencing market in general.
2. Forrester interviewed TANDBERG marketing and sales personnel to fully understand the potential (or intended) value proposition of video conferencing solutions.
3. Forrester conducted a series of in-depth interviews with an organization that is currently using TANDBERG video conferencing solutions.
4. Forrester constructed a financial model representative of the interviews. This model can be found in the TEI Framework section below.

Key Findings

Forrester's study yielded the following key findings:

- **ROI.** Based on the interviews with TNT, Forrester constructed a TEI framework for the organization and the associated ROI analysis illustrating the financial impact areas. As seen in Table 1, the ROI for TNT over a four year analysis is 71% with a breakeven point (payback period) of 2.3 years after deployment.
- **Benefits.** The main quantified benefits for TNT were: 1) business travel cost savings that resulted from using TANDBERG video conferencing solutions instead of requiring TNT participants to travel for meetings, and 2) reduction of TNT carbon emissions from the curtailing of business travel.
- **Costs.** TNT's costs for TANDBERG video conferencing solutions include: 1) equipment costs, 2) installation and training costs, 3) maintenance and ongoing support costs, 4) managed service fees, 4) external project management costs, 5) internal administration costs, and 6) network costs.

Table 1 illustrates the risk-adjusted cash flow for the organization, based on data and characteristics obtained during the interview process. Forrester risk-adjusts these values to take into account the potential uncertainty that exists in estimating the costs and benefits of a technology investment. The risk-adjusted value is meant to provide a conservative estimation, incorporating any potential risk factors that may later impact the original cost and benefit estimates. For a more in-depth explanation of risk and risk adjustments used in this study, please see the Risk section.

Table 1: Original And Risk-Adjusted ROI

Summary financial results	Original estimate (PV)	Risk-adjusted (PV)
ROI	83%	71%
Total costs (PV)	(€4,744,142)	(€4,819,473)
Total benefits (PV)	€8,678,434	€8,244,512
Total (NPV)	€3,934,292	€3,425,039
Payback period (years)	2.3	2.3

Source: Forrester Research, Inc.

Disclosures

The reader should be aware of the following:

- The study was commissioned by TANDBERG and delivered by the Forrester Consulting group.
- TANDBERG reviewed and provided feedback to Forrester, but Forrester maintained editorial control over the study and its findings and did not accept changes to the study that contradicted Forrester's findings or obscured the meaning of the study.
- The customer for the interviews was provided by TANDBERG.
- Forrester makes no assumptions as to the potential return on investment that other organizations will receive. Forrester strongly advises that readers should use their own estimates within the framework provided in the report to determine the appropriateness of an investment in TANDBERG video conferencing solutions.
- This study is not meant to be used as a competitive product analysis.

TANDBERG Video Conferencing Solutions: Overview

According to TANDBERG, TANDBERG is a leading global provider of telepresence, high-definition video conferencing and mobile video products and services with dual headquarters in New York and Norway. TANDBERG designs, develops, and markets systems and software for video, voice, and data. The company provides sales, support, and value-added services in more than 90 countries worldwide. TANDBERG is publicly traded on the Oslo Stock Exchange under the ticker TAA.OL.

Analysis

As stated in the Executive Summary, Forrester took a multi-step approach to evaluate the impact that implementing video conferencing solutions can have on an organization:

- Gathering data from existing Forrester research and analyst insights relative to TANDBERG's products and the market for video conferencing solutions in general.
- Conducting interviews with TANDBERG personnel.
- Conducting in-depth interviews within an organization currently using TANDBERG video conferencing solutions.
- Constructing a financial framework for the implementation of TANDBERG video conferencing solutions.

Interview Highlights

The in-depth interviews uncovered several valuable insights, including:

- TNT launched the Planet Me^o program in 2007 with a goal to become the first zero-emission mail and express delivery company. According to TNT, the Planet Me^o program is a three-pronged approach to radically reducing the organization's CO₂ emissions. This approach is comprised of:
 - *Count Carbon.* TNT's commitment to report on and be transparent about its carbon footprint.
 - *Code Orange.* TNT's comprehensive program for reducing CO₂ emissions in its daily operations.
 - *Choose Orange.* TNT's employee incentive program to encourage its employees to take action to reduce carbon emissions in their personal lives.
- TNT has eight key initiatives under the Code Orange arm of the Planet Me^o program. One of these initiatives is to limit business travel within the organization to only those of a critical nature. Given the breadth of the organization, its location in over 200 countries worldwide, and the number of employees involved, international travel is pretty extensive within TNT. The goal to reduce business travel would lead to a reduction in TNT's carbon footprint and, as a byproduct, would also result in travel cost savings for the organization.
- To achieve its Code Orange business travel goal while still enabling communication within the organization, TNT deployed TANDBERG video conferencing solutions in a partnership with Talk & Vision.
- TNT launched video conferencing with a pilot phase of 20 systems in July 2007. By the end of the year, TNT had installed 60 systems. In Year 2, TNT intends to have a total of 120 TANDBERG video conferencing systems installed throughout its organization.

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- TNT's focus is to have video conferencing available not just to the senior executive level at the organization but to give access to the video conferencing equipment to anyone who may need to travel for a meeting.
- Before the program launch, TNT originally had a small number of video conferencing systems that were scattered and not centrally managed. These were mainly used for communicating externally and not internally within its organization. TNT noted that these systems were underutilized and "completely ineffective" as there was "no coordinated platform or strategy behind it."
- Joe Parkes, Planning and Design Manager under the telecommunications team within TNT, took the lead in moving forward with a more consolidated and coordinated approach to video conferencing strategy for TNT under the Planet Me^o program.
- In the early stages of the project, it was noted that there was a short acclimatization period for users who were unfamiliar with video conferencing as a communication tool. However, as people became more confident in the technology and awareness spread across the business, there was a marked increase in use of the video conferencing systems. Systems that initially had only one or two calls a week now see at least one or two calls a day. After the acclimatization period, users characterized their video conferencing experience as having "generally good quality" and being "easy to use."
- Originally, TNT ran the TANDBERG video conferencing systems over ISDN, but the organization's long-term aim is to transfer all video conferencing to TNT's own WAN (wide area network). Currently, TNT has managed to bring over 70% of locations with video conference equipment to run over IP.
- In 2008, TNT has introduced a facility to allow recording of video content. This further extends the range of video conference services available to users. Content has already been edited for inclusion in company publicity material and is used for training purposes.
- TNT is also evaluating a more robust network infrastructure to support expansion of video conferencing out into the field. Currently, video conferencing solutions are managed from the Data Center in the UK to support international video conference calls. As TNT grows the video conference footprint into a more regional/country basis, additional gateway equipment will be positioned to effectively spread the load on the network and maintain performance.
- As demand continues to grow for wider use of video conference facilities across TNT, there are further initiatives to develop a package for PC users and to introduce new bridging technology that is capable of high-definition video presentation.

TEI Framework

Introduction

From the information provided in the in-depth interviews, Forrester has constructed a TEI framework for those organizations considering implementation of video conferencing solutions. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that impact the investment decision.

Framework Assumptions

Table 2 lists the discount rate used in the present value (PV) and net present value (NPV) calculations and time horizon used for the financial modeling.

Table 2: General Assumptions

Ref.	General assumptions	Value
	Discount rate	10%
	Length of analysis	Four years

Source: Forrester Research, Inc.

Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult with their finance department to determine the most appropriate discount rate to use within their own organizations.

In addition to the financial assumptions used to construct the cash flow analysis, Table 3 provides salary assumptions used within this analysis.

Table 3: Salary Assumptions

Ref.	Metric	Calculation	Value
A1	Hours per week		40
A2	Weeks per year		52
A3	Hours per year (M-F, 9-5)		2,080
A4	Hours per year (24x7)		8,736
A5	Telecommunications team project manager		€75,000
A6	Hourly	(A5/A3)	€36

Source: Forrester Research, Inc.

Costs

The main cost categories associated with TANDBERG video conferencing solutions include video conferencing equipment costs, installation and training costs, maintenance and ongoing support costs for the TANDBERG solution, external project management costs, fees for managed services, internal project management costs, and network costs.

Equipment Cost

The first phase of TNT's investment in video conferencing was an initial roll out of 20 room-based systems in the first six months of implementation. In TNT's second phase of implementation, TNT implemented an additional 80 systems worldwide by mid-2008 and estimates that the organization will have a total of 120 TANDBERG video conferencing systems installed by end-2008. From a cost perspective, the TEI analysis accounts for these expenses in Years 1 and 2. The total equipment cost that TNT will incur is €2.26M. The organization also intends to invest in additional TANDBERG units in the future.

TNT's main investment was in the TANDBERG 6000 MXP, which is TANDBERG's system for medium- to large-sized meeting rooms and boardrooms. This system includes performance features such as collaboration and embedded multisite functionality, large flat screen monitor, TANDBERG PrecisionHD camera, and stereo audio.

Table 4: TANDBERG Equipment Costs

Ref.	Metric	Initial	Year 1	Year 2	Year 3	Year 4	Total
A1	Equipment costs		960,480	1,299,040			
A2	Year		1	1			
At	Equipment costs		960,480	1,299,040			
Ato	Total (original)	€0	(€960,480)	(€1,299,040)	€0	€0	(€2,259,520)

Source: Forrester Research, Inc.

Installation And Training Costs

TNT worked with Talk & Vision, a TANDBERG partner, to implement the TANDBERG video conferencing solution. The organization estimates that the internal and external resources used to install the solution and train TNT personnel in the video conferencing solution is at 8% of the total equipment costs.

Table 5: Installation And Training Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Year 4	Total
A1	Equipment costs			1,044,000	1,412,000			
A2	Percentage		8%					
At	Installation and training costs	A1 * A2		83,520	112,960			
Ato	Total (original)		€0	(€83,520)	(€112,960)	€0	€0	(€196,480)

Source: Forrester Research, Inc.

Maintenance And Ongoing Support Costs

Monthly maintenance and ongoing support fees are dependent on the number of systems implemented at TNT. The organization estimates the average support fee at €24,000 a month. The cost of maintenance over four years equates to roughly €936,000 for TNT.

Table 6: Maintenance And Ongoing Support Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Year 4	Total
A1	Monthly fee			18,000	24,000	24,000	24,000	
A2	Months			4	12	12	12	
At	Maintenance and ongoing support costs	A1 * A2		72,000	288,000	288,000	288,000	
Ato	Total (original)		€0	(€72,000)	(€288,000)	(€288,000)	(€288,000)	(€936,000)

Source: Forrester Research, Inc.

External Project Management Costs

TNT estimates that it spent an initial amount of €125,000 in external project management costs with Talk & Vision for the video conferencing implementation.

Table 7: External Project Management Costs

Ref.	Metric	Per period	Year 1	Year 2	Year 3	Year 4	Total
At	External project management costs	125,000					
Ato	Total (original)	(€125,000)	€0	€0	€0	€0	(€125,000)

Source: Forrester Research, Inc.

Managed Services Fees

The Telecommunications Team for TNT Information Communications Services (ICS) is charged with presenting the mediums of data, security, and video across the network to all TNT Express global locations, ensuring that standards are enforced and applied correctly. This group owns the implementation of the TANDBERG video conferencing initiative. As TNT does not have the internal resources to devote to the full operations and maintenance of the solution, the organization has chosen to outsource managed services for the video conferencing solution to Talk & Vision instead. These services include 24/7 help desk, provision of online booking portal, and call setup and management. Total fees for a four-year implementation are estimated at €805,998.

Table 8: Managed Services Fees

Ref.	Metric	Initial	Year 1	Year 2	Year 3	Year 4	Total
At	Managed services fees		56,000	249,996	249,996	249,996	
Ato	Total (original)	€0	(€56,000)	(€249,996)	(€249,996)	(€249,996)	(€805,988)

Source: Forrester Research, Inc.

Internal Project Management Costs

TNT estimates that it allocated two full-time equivalent (FTE) personnel to managing the first phase of the video conferencing initiative. The organization estimated that in phase 2 and phase 3, TNT would need to allocate project management hours equivalent to 2.5 personnel to manage the increased number of systems. At an annual compensation of €75,000 per FTE, TNT will spend €712,500 over four years on internal project management costs.

Table 9: Internal Project Management Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Year 4	Total
A1	Annual FTE compensation		75,000					
A2	No. of FTEs		0	2	2.5	2.5	2.5	
At	Ongoing internal project management	A1 * A2		150,000	187,500	187,500	187,500	
Ato	Total (original)		€0	(€150,000)	(€187,500)	(€187,500)	(€187,500)	(€712,500)

Source: Forrester Research, Inc.

Network Costs

TNT also estimated the additional network costs for the video conferencing solution at €192,500 annually. In addition to any potential increase in bandwidth capacity, this also includes costs for central network architecture supporting video conference performance management. With approximately 75% of the TNT video conferencing network traffic running on its IP backbone infrastructure, deployment of supporting management systems, gatekeepers, and HD capable bridges becomes integral to successful delivery of service across its business.

TNT continues to use ISDN for video conference where IP connection is not possible and also as a back-up option, but ISDN usage is expected to continue to diminish over the next 12-18 months.

Table 10: Network Costs

Ref.	Metric	Initial	Year 1	Year 2	Year 3	Year 4	Total
A1	Network costs		192,500	192,500	192,500	192,500	
A2	No. of systems installed	60					
At	Network costs		192,500	192,500	192,500	192,500	
Ato	Total (original)	€0	(€192,500)	(€192,500)	(€192,500)	(€192,500)	(€770,000)

Source: Forrester Research, Inc.

Total Costs

Total investment is estimated at **€5,805,488** (non risk-adjusted). Table 11 illustrates the total estimated cost of TNT's investment in the TANDBERG video conferencing solution over a four-year period.

Table 11: Total Costs, TANDBERG Solution

Costs	Initial	Year 1	Year 2	Year 3	Year 4	Total
Equipment costs		(960,480)	(1,299,040)			(2,259,520)
Installation and training costs		(83,520)	(112,960)			(196,480)
Maintenance and ongoing support costs		(72,000)	(288,000)	(288,000)	(288,000)	(936,000)
External project management costs	(125,000)					(125,000)
Managed services fees		(56,000)	(249,996)	(249,996)	(249,996)	(805,988)
Ongoing internal project management		(150,000)	(187,500)	(187,500)	(187,500)	(712,500)
Network costs		(192,500)	(192,500)	(192,500)	(192,500)	(770,000)
Total	(€ 125,000)	(€1,514,500)	(€2,329,996)	(€917,996)	(€917,996)	(€5,805,488)

Source: Forrester Research, Inc.

Benefits

“In relations to TANDBERG, there was an early confidence in the equipment and the service we were getting. The executive sponsorship gave our senior management a good level of confidence that we were dealing with a trusted company. I’ve got no reason to change that view twelve months along.” — Joe Parkes, TNT Telecommunications Team, Planning and Design Manager

According to TNT, the main economic benefits of using TANDBERG video conferencing solutions have been reduction in business travel costs and carbon emissions savings. These significant, quantifiable benefits are valued in aggregate at **€11,600,424** (non risk-adjusted). At the time of the interview, the organization was in the first twelve months of implementation and expected that full implementation would occur in the next 18 months.

Savings From Business Travel

TNT is a global company with over 200 locations across the world. To coordinate projects throughout its multinational company, international air travel is required for a number of its meetings. With the implementation of video conferencing, TNT expects to maintain this close level of coordination among its offices while also reducing business travel associated with this coordination. To calculate the total savings from business travel, TNT conservatively estimated that for every three calls using TANDBERG video conferencing, two flights are saved.

As the video conferencing initiative ramps up, the organization conservatively estimates an exponential increase in video conferencing calls in the second year of implementation at a rate of 20% per month, which should taper off to more steady growth of 50% annually in the third year of the project and the remain constant in the fourth year.

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Based on survey results in the first nine months of implementation, TNT estimates the average flight cost at €1,121. TNT estimates that video conferencing will save the company a total of **€11,494,645** over a four year period. Table 12 illustrates the total estimated travel savings over a four-year period.

Table 12: Travel Savings

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Total
A1	Number of calls		339	3,760	5,639	5,639	
A2	Flights saved per call		0.67				
A3	Average flight cost		1,121	1,121	1,121	1,121	
At	Travel savings	$A1 * A2 * A3$	253,409	2,810,309	4,215,463	4,215,463	
Ato	Total (original)		€253,409	€2,810,309	€4,215,463	€4,215,463	€11,494,645

Source: Forrester Research, Inc.

Carbon Emissions Savings

Reduction of business air travel will also contribute to reduced CO₂ emissions, an important goal of TNT as part of its Planet Me^o program to reduce the organization's carbon footprint. The organization estimates that video conferencing will contribute to a 20% to 30% reduction in CO₂ emissions for TNT.

TNT considers the kg CO₂ saved due to video conferencing as its main metric for the Planet Me^o program. However, for the purposes of this study, the reduction in carbon emissions is translated to its basic financial value using the carbon offset price of €10 per metric ton of CO₂. This carbon offset price is what TNT would theoretically have to pay an organization specializing in carbon offset programs sanctioned by the CDM (Clean Development Mechanism) under the Kyoto Protocol to compensate for the greenhouse gas emissions caused by TNT's business travel.

Based on survey results in the first nine months of implementation, TNT estimates the average carbon emissions at 1,031.85 kg per flight. This brings the projected CO₂ emissions reduction to **10,577,865 kg** over four years. Overall financial savings from reduced CO₂ emissions over four years is **€105,779**.

Table 13: Carbon Emissions Savings

Ref.	Metric	Calculation	Year 1	Year 2	Year 3	Year 4	Total
A1	Number of calls		339	3,760	5,639	5,639	
A2	Flights saved per call		0.67				
A3	Average CO ₂ per flight		1,032	1,032	1,032	1,032	
A4	Total kg of CO ₂ saved	A1 * A2 * A3	233,198	2,586,167	3,879,250	3,879,250	
A5	Carbon offset price (per metric ton)		10				
At	Green benefits	(A4 * A5)/1,000	2,332	25,862	38,793	38,793	
Ato	Total (original)		€2,332	€25,862	€38,793	€38,793	€105,779

Source: Forrester Research, Inc.

Total Benefits

Total benefit is estimated at **€11,600,424** (non risk-adjusted). Table 14 illustrates the total estimated benefits of TNT's investment in the TANDBERG video conferencing solution over a four-year period.

Table 14: Travel Savings

Benefits	Year 1	Year 2	Year 3	Year 4	Total
Travel Savings	253,409	2,810,309	4,215,463	4,215,463	11,494,645
Green Benefits	2,332	25,862	38,793	38,793	105,779
Total	€255,741	€2,836,171	€4,254,256	€4,254,256	€11,600,424

Source: Forrester Research, Inc.

Risk

Risk is the third component within the TEI model; it is used as a filter to capture the uncertainty surrounding different cost and benefit estimates. If a risk-adjusted ROI still demonstrates a compelling business case, it raises confidence that the investment is likely to succeed because the risks that threaten the project have been taken into consideration and quantified. The risk-adjusted numbers should be taken as "realistic" expectations since they represent the expected values

considering risk. In general, risks affect costs by raising the original estimates, and they affect benefits by reducing the original estimates.

For the purpose of this analysis, Forrester risk-adjusts cost and benefit estimates to better reflect the level of uncertainty that exists for each estimate. The TEI model uses a triangular distribution method to calculate risk-adjusted values. To construct the distribution, it is necessary to first estimate the low, most likely, and high values that could occur within the current environment. The risk-adjusted value is the mean of the distribution of those points.

The following general risks were considered in this study:

- **Impact risk.** This is the risk that the estimated savings based on the projected growth of video conferencing calls over the four-year analysis may vary from actual savings, thus reducing the actual impact of the benefits from reduced business travel and carbon emissions.
- **Implementation risk.** This is the risk that the overall investment in video conferencing technology may deviate from the original projected resource requirements, resulting in higher costs. In this instance, variance in cost estimates for project management and network investments was factored into the analysis.

The following tables show the values used to adjust for uncertainty in cost and benefit estimates. Different cost and benefits estimates have different levels of risk adjustments. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

Table 15: Risk Factors — Costs

Costs	Original	Low	High	Mean
External project management costs	100%	100%	100%	100%
Equipment costs	100%	100%	100%	100%
Installation and training costs	100%	100%	100%	100%
Maintenance and ongoing support costs	100%	100%	100%	100%
Managed services fees	100%	100%	100%	100%
Ongoing internal project management	100%	100%	125%	108%
Network costs	100%	100%	115%	105%

Source: Forrester Research, Inc.

Table 16: Risk Factors — Benefits

Costs	Original	Low	High	Mean
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Travel savings	100%	85%	100%	95%
Carbon emissions savings	100%	85%	100%	95%

Source: Forrester Research, Inc.

Risk adjustments for benefits reduce the original benefits estimates. For example, Forrester applies a risk range of 85% on the low end of the estimate and 100% on the most likely and high end for cost savings from reduced business travel. This has the effect of reducing the benefit estimate by 5%, equal to 95% of the original value.

Tables 17 and 18 below show the risk-adjusted values, applying the risk adjustment method discussed earlier and the values from Tables 13 and 14 to the initial cost and benefit estimates.

Table 17: Risk-Adjusted Costs

Costs	Initial	Year 1	Year 2	Year 3	Year 4	Total
Equipment costs		(960,480)	(1,299,040)			(2,259,520)
Installation and training costs		(83,520)	(112,960)			(196,480)
Maintenance and ongoing support costs		(72,000)	(288,000)	(288,000)	(288,000)	(936,000)
External project management costs	(125,000)					(125,000)
Managed services fees		(56,000)	(249,996)	(249,996)	(249,996)	(805,988)
Ongoing internal project management		(162,000)	(202,500)	(202,500)	(202,500)	(769,500)
Network costs		(202,125)	(202,125)	(202,125)	(202,125)	(808,500)
Total	(€125,000)	(€1,536,125)	(€2,354,621)	(€942,621)	(€942,621)	(€5,900,988)

Source: Forrester Research, Inc.

Table 18 Risk-Adjusted Benefits

Benefits	Initial	Year 1	Year 2	Year 3	Year 4	Total
Travel savings		240,739	2,669,793	4,004,690	4,004,690	10,919,913
Carbon emissions savings		2,215	24,569	36,853	36,853	100,490
Total		€242,954	€2,694,362	€4,041,543	€4,041,543	€11,020,402

The Total Economic Impact™ Of TANDBERG Video Conferencing Solutions

Source: Forrester Research, Inc.

Flexibility

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for some future additional investment. Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

While the organization was not specifically able to quantify the impact of future flexibility savings at the time of the interview, TNT did discuss several areas where it could leverage TANDBERG technology in the future. These areas include:

1. Creating coherent functional groups — where global teams, such as finance and HR, could use video to coordinate and accelerate progress on their projects.
2. Building customer intimacy — TNT is investigating the possibility of choosing pilot accounts with trusted customers and offering them a video conferencing opportunity to enhance its current relationships.
3. Local initiatives — TNT's operating units have embarked on a number of local initiatives related to increasing communication over video. These local initiatives will explore video conferencing's contribution to efficiency, work/life balance, increased communication within teams, and will include a study on leadership and communication to define their annual communication strategy.

TEI Framework: Summary

Considering the financial framework constructed above, the results of the costs, benefits, risk, and flexibility sections using the representative numbers can be used to determine a return on investment, net present value, and payback period. Table 19 shows the consolidated numbers for the organization.

Table 19: Total Costs And Benefits, Non-Risk-Adjusted

Project cash flow	Initial cost	Year 1	Year 2	Year 3	Year 4	Total	PV/NPV
Costs	(€125,000)	(€1,514,500)	(€2,329,996)	(€917,996)	(€917,996)	(€5,805,488)	(€4,744,142)
Benefits	€0	€255,741	€2,836,171	€4,254,256	€4,254,256	€11,600,424	€8,678,434
Net savings	(€125,000)	(€1,258,759)	€506,175	€3,336,260	€3,336,260	€5,794,936	€3,934,292
ROI							83%

Source: Forrester Research, Inc.

Table 20 below show the risk-adjusted values, applying the risk adjustment method indicated in the Risk section.

Table 20: Total Costs And Benefits, Risk-Adjusted

Project	Initial	Year 1	Year 2	Year 3	Year 4	Total	PV/NPV
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The Total Economic Impact™ Of TANDBERG Video Conferencing Solutions

cash flow	cost						
Costs	(€125,000)	(€1,536,125)	(€2,354,621)	(€942,621)	(€942,621)	(€5,900,988)	(€4,819,473)
Benefits	€0	€242,954	€2,694,362	€4,041,543	€4,041,543	€11,020,402	€8,244,512
Net savings	(€125,000)	(€1,293,171)	€339,741	€3,098,922	€3,098,922	€5,119,414	€3,425,039
ROI							71%

Source: Forrester Research, Inc.

It is important to note that values used throughout the TEI Framework are based on in-depth interviews with TNT by Forrester. Forrester makes no assumptions as to the potential return that other organizations will receive within their own environment. Forrester strongly advises that readers use their own estimates within the framework provided in this study to determine the expected financial impact of implementing TANDBERG video conferencing solutions.

Study Conclusions

Based on information collected in in-depth interviews with TNT, Forrester found that organizations can realize benefits in the form of reduced travel costs and a corresponding reduction in carbon emissions.

The financial analysis provided in this study illustrates the potential way an organization can evaluate the value proposition of TANDBERG video conferencing solutions. Based on information collected in in-depth customer interviews, Forrester calculated a four-year risk-adjusted ROI of 71% for TNT with a payback period of 2.3 years. This payback period reflects the size of the infrastructure investment required to launch a global video conferencing initiative for an organization of TNT's size. All final estimates are risk-adjusted to incorporate potential uncertainty in the calculation of costs and benefits.

Table 21: ROI, Original And Risk-Adjusted

Summary financial results	Original estimate	Risk-adjusted
ROI	83%	71%
Payback period (years)	2.3	2.3
Total costs (PV)	(€4,744,142)	(€4,819,473)
Total benefits (PV)	€8,678,434	€8,244,512
Total (NPV)	€3,934,292	€3,425,039

Source: Forrester Research, Inc.

This study illustrates the potential way an organization can evaluate the value proposition of TANDBERG video conferencing solutions. Based on these findings, companies looking to implement TANDBERG video conferencing can see cost savings in travel and reduced carbon emissions. Using the TEI framework, many companies may find the potential for a compelling business case to make such an investment.

Appendix A: Total Economic Impact™ Overview

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

The TEI methodology consists of four components to evaluate investment value: benefits, costs, risks, and flexibility. For the purpose of this analysis, the impact of flexibility was not quantified.

Benefits

Benefits represent the value delivered to the user organization — IT and/or business units — by the proposed product or project. Often product or project justification exercises focus just on IT cost and cost reduction, leaving little room to analyze the effect of the technology on the entire organization. The TEI methodology and the resulting financial model place equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization. Calculation of benefit estimates involves a clear dialogue with the user organization to understand the specific value that is created. In addition, Forrester also requires that there be a clear line of accountability established between the measurement and justification of benefit estimates after the project has been completed. This ensures that benefit estimates tie back directly to the bottom line.

Costs

Costs represent the investment necessary to capture the value, or benefits, of the proposed project. IT or the business units may incur costs in the forms of fully burdened labor, subcontractors, or materials. Costs consider all the investments and expenses necessary to deliver the proposed value. In addition, the cost category within TEI captures any incremental costs over the existing environment for ongoing costs associated with the solution. All costs must be tied to the benefits that are created.

Risk

Risk measures the uncertainty of benefit and cost estimates contained within the investment. Uncertainty is measured in two ways: the likelihood that the cost and benefit estimates will meet the original projections and the likelihood that the estimates will be measured and tracked over time. TEI applies a probability density function known as "triangular distribution" to the values entered. At a minimum, three values are calculated to estimate the underlying range around each cost and benefit.

Flexibility

Within the TEI methodology, direct benefits represent one part of the investment value. While direct benefits can typically be the primary way to justify a project, Forrester believes that organizations should be able to measure the strategic value of an investment. Flexibility represents the value that can be obtained for some future additional investment building on top of the initial investment already made. For instance, an investment in an enterprisewide upgrade of an office productivity suite can potentially increase standardization (to increase efficiency) and reduce licensing costs. However, an embedded collaboration feature may translate to greater worker productivity if activated. The collaboration can only be used with additional investment in training at some future point in time. However, having the ability to capture that benefit has a present value that can be estimated. The flexibility component of TEI captures that value.

Appendix B: Glossary

Discount rate: The interest rate used in cash flow analysis to take into account the time value of money. Although the Federal Reserve Bank sets a discount rate, companies often set a discount rate based on their business and investment environment. Forrester assumes a yearly discount rate of 10% for this analysis. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult their organization to determine the most appropriate discount rate to use in their own environment.

Net present value (NPV): The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.

Present value (PV): The present or current value of (discounted) cost and benefit estimates given an interest rate (the discount rate). The PV of costs and benefits feed into the total net present value of cash flows.

Payback period: The breakeven point for an investment, or the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

Return on investment (ROI): A measure of a project’s expected return in percentage terms. ROI is calculated by dividing net benefits (benefits minus costs) by costs.

A Note On Cash Flow Tables

The following is a note on the cash flow tables used in this study (see the Example Table below). The initial investment column contains costs incurred at “time 0” or at the beginning of Year 1. Those costs are not discounted. All other cash flows in Years 1 through 4 are discounted using the discount rate shown in Table 2 at the end of the year. Present value (PV) calculations are calculated for each total cost and benefit estimate. Net present value (NPV) calculations are not calculated until the summary tables and are the sum of the initial investment and the discounted cash flows in each year.

Example Table

Ref.	Category	Calculation	Initial cost	Year 1	Year 2	Year 3	Year 4	Total

Source: Forrester Research, Inc.

Appendix C: About The Project Manager

Michelle Salazar **Consultant**

Michelle Salazar is a consultant with Forrester's Total Economic Impact™ (TEI) consulting practice. The TEI methodology focuses on measuring and communicating the value of IT and business decisions and solutions as well as providing an ROI business case based on the costs, benefits, flexibility, and risk of investments.

Prior to joining Forrester, Michelle held leadership roles in operations, technology and marketing at large organizations such as Shell Corporation and Avaya, Inc. At Shell, she was a product manager for LPG retail distribution initiatives as well as project lead for quality and information security at Shell Philippines. While working at Avaya, she led the inventory reduction program and consulted on various aftermarket operations projects. Michelle also came to Forrester with process improvement and account management experience in high growth start-ups in media and digital services.

Michelle holds a B.S. in Industrial Engineering from the University of the Philippines and an M.B.A. from the MIT Sloan School of Management.

Lauren Hughes **Director**

Lauren Hughes is the director for Forrester's Total Economic Impact™ (TEI) practice. The TEI methodology helps companies demonstrate, justify, and communicate the tangible value of IT initiatives.

Lauren came to Forrester from Ford Motor Company, where she was the brand manager for Ford Division in New England. Prior to joining Ford, she worked as a management consultant for Booz-Allen Hamilton and an economic consultant for Charles River Associates and Arthur Andersen.

Lauren holds a B.A. in economics from Tufts University and an M.B.A. from Duke University.