

Congreso Internacional
Gestión de Proyectos PMI – 2009
Chapter Asunción – Paraguay (en
formación)

Space Project Management

Lessons learned applicable to all projects

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Sesión #





Dr. Hans Stromeyer
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- Head German Astronaut Training Center
- Project Manager Project MIR 1997
- Project Manager Project Biosphere in Space
- Head of the Executive Office of the German Space Research Organization
- Head of Science Services of Spacehab, Inc. Houston, Texas
- Principal, Vesalius Ventures, Houston, Texas
- Foundation of Stromeyer and Partners Consulting in 2000
- Focus in Project Management Consulting and Training
- Broad Customer portfolio across German Heavy Industries, Software Companies, German Armed Forces, Semiconductors, Automotive



Space Project
Management
Dr. Hans Stromeyer

Stromeyer and Partners Consulting, LLC

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Topics of Presentation

- **Challenges of Space Project Management**
- **Training of Astronauts - and Project Managers**
- **Configuration Control**
- **Complex Project Environment**
- **Project Excellence (Award winning)**
- **PM Elements**

Space Shuttle Launch



Space Effects

What happens directly after launch?

High acceleration

Motor shut-off and pitch forward feeling

Fluid Shift and Re-Organization of the fluid balance

Swelling (Youthful look)

Space Adaptation Syndrome

What happens to Station Astronauts (Long-term Spaceflight)

Long term effects:

Muscle loss

Bone demineralization

Specific Challenges of a Space Project

- ✓ **High Risk - Risk of losing life**
- ✓ **Very limited resources (astronaut time)**
- ✓ **High cost**
- ✓ **High public visibility**
- ✓ **Long preparation, sometimes very short execution**
- ✓ **Very complex technical environment**

Experiences and Lessons from Space PM

- ✓ Extensive safety philosophy - up to triple redundancy
- ✓ Resource and planning tools with high resolution
- ✓ Well defined and executed training regimen
- ✓ Comprehensive Public Relations Strategy
- ✓ Well defined configuration and change control system
- ✓ and many more.....

Topics of Presentation

Training

Training of Astronauts

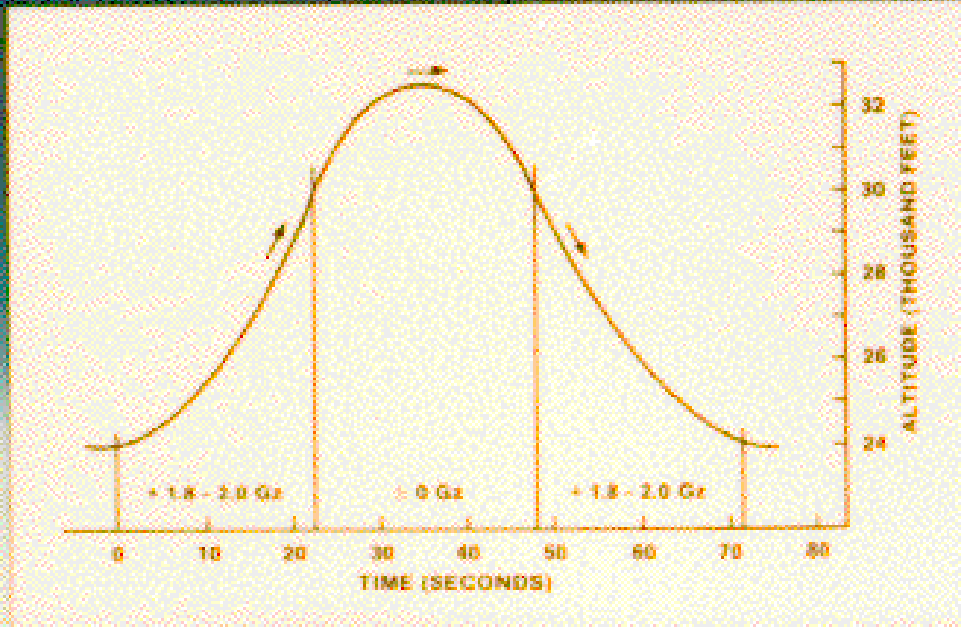
***Space cannot be simulated perfectly
Therefore: Substitute training methodology***

- Parabolic flight (Short-term real Weightlessness)
- Diving training (Long-term quasi Weightlessness)
 - Military jet aircraft training
(High Acceleration, Procedures, Complex environment)
 - Team building training
 - Landing in deserted areas training

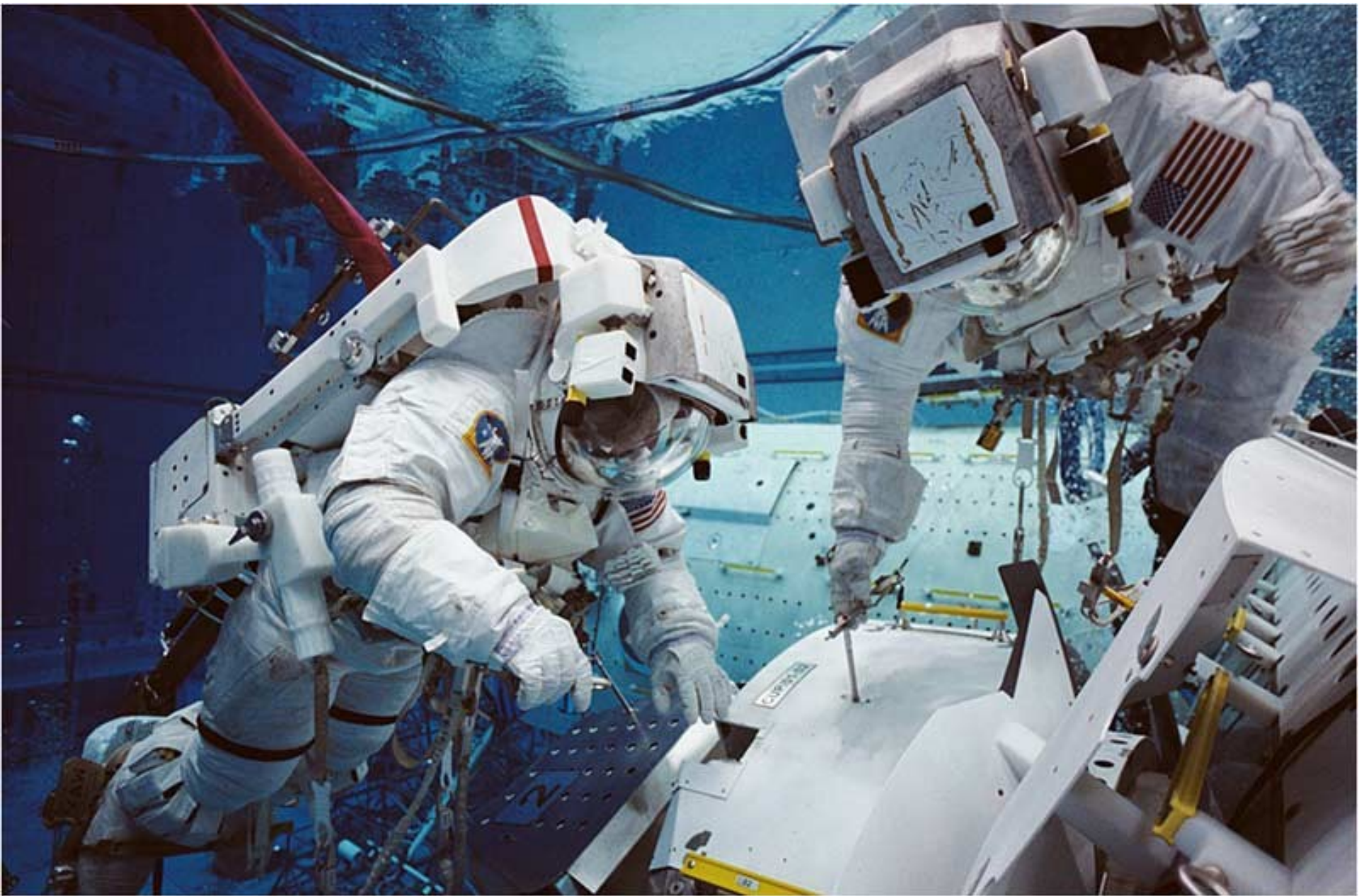
Photo session here











Project Managers or Astronauts?

Astronaut	Project Manager
Rocket Launch!!	Called to Boss!!
Starts floating	Develops floating feeling
Sickness: Space	Sickness: Project
Adaptation*	Adaptation
Strong stakeholder pressure	Strong stakeholder pressure
Limited resources	Limited resources
Object and goal oriented	Object and goal oriented
Extensively trained	Not or poorly trained
Parade through New York	Slap on shoulder - or fired

• *Space Adaptation Syndrome (SAS) affects most astronauts in the first few days after launch*

Astronauts are the critical element in the value chain of manned space exploration

This holds true for *project managers* as well: They are the critical element in the value chain of project success

Perfect conditions in PM training also cannot be

An aerial photograph of an industrial or agricultural facility, featuring several large, rectangular buildings with dark roofs and rows of solar panels. The scene is captured from a high angle, showing the layout of the structures and the surrounding landscape.

P M Training

The 4 Cornerstones of Project Management Training

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Project Management Training System

**PM
O**



Project Management Training Syllabus

- Basic Training, Advanced Trainings
- Tools, Methods and Processes
- Softskills

Certifications and accreditation

- Various organizations such as PMI, IPMA
- Solid curriculum and proven qualification

Career planning within the organization

- Rewards for successful project work
- Promotions

Personal Coaching

- Career planning
- Availability of Mentors and Coaches
- On-the-job training

Objectives of Training:

Producing a framework of systems and practices in project management

Understanding controlling cost, schedule, resource quality

Understanding the critical processes and their management

Managing risk

Configuration management and change management

Understanding the role of the PM (Communication, leadership, conflict solving, group dynamics)

Training Process*



Adaptation of the Deming/Shewhart Cycle

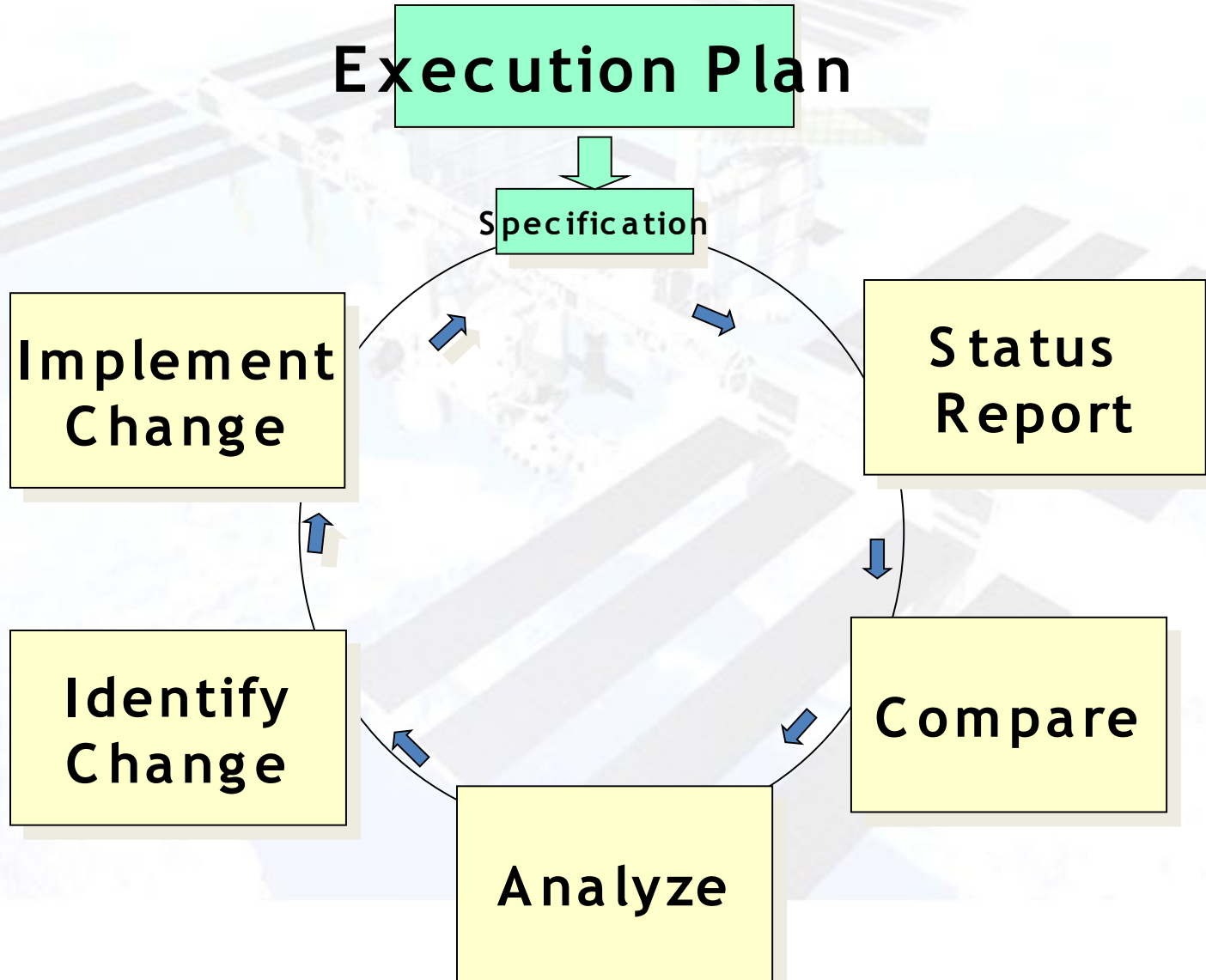
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Topics of Presentation

Configuration Control

Configuration Control

Execution Plan



Project Reviews and Configuration Control

✓ MAJOR MILESTONES DEFINED BY EXTENSIVE REVIEWS

✓ EXAMPLE PAYLOAD INTEGRATION REVIEW (PIR)

PROJECT STATUS REPORT

CRITICAL WORK PACKAGES OR TASKS PRESENTED

✓ SELECTED AUDIENCE IDENTIFIES DISCREPANCIES

✓ DISCREPANCIES COLLECTED AND REVIEWED BY REVIEW BOARD

DISCREPANCY NOTICES (DN)

✓ REVIEW BOARD COMPOSED OF KEY STAKEHOLDERS

CUSTOMER OR CLIENT

EXECUTIVE BOARD OF PERFORMING COMPANY

KEY CONTRACTORS

REPRESENTATIVES OF GOVERNMENT AGENCIES

Project Review – Discrepancy Notice (DN)

REVIEW #	
Author	Affiliation
Discrepancy description	
Discrepancy impact when not remedied	
Proposed solution for discrepancy <ul style="list-style-type: none">• Potential impact to project (Scope, Time, Budget, Quallity)• Potential technical impact• Other...	
Review register log	
DN Accepted	
DN Denied	

Configuration Change Process

Discrepancy Notice

Identify Change Request

Evaluate

Registry

Approve?

Y

Implementation

n

Verify Result

PASS?

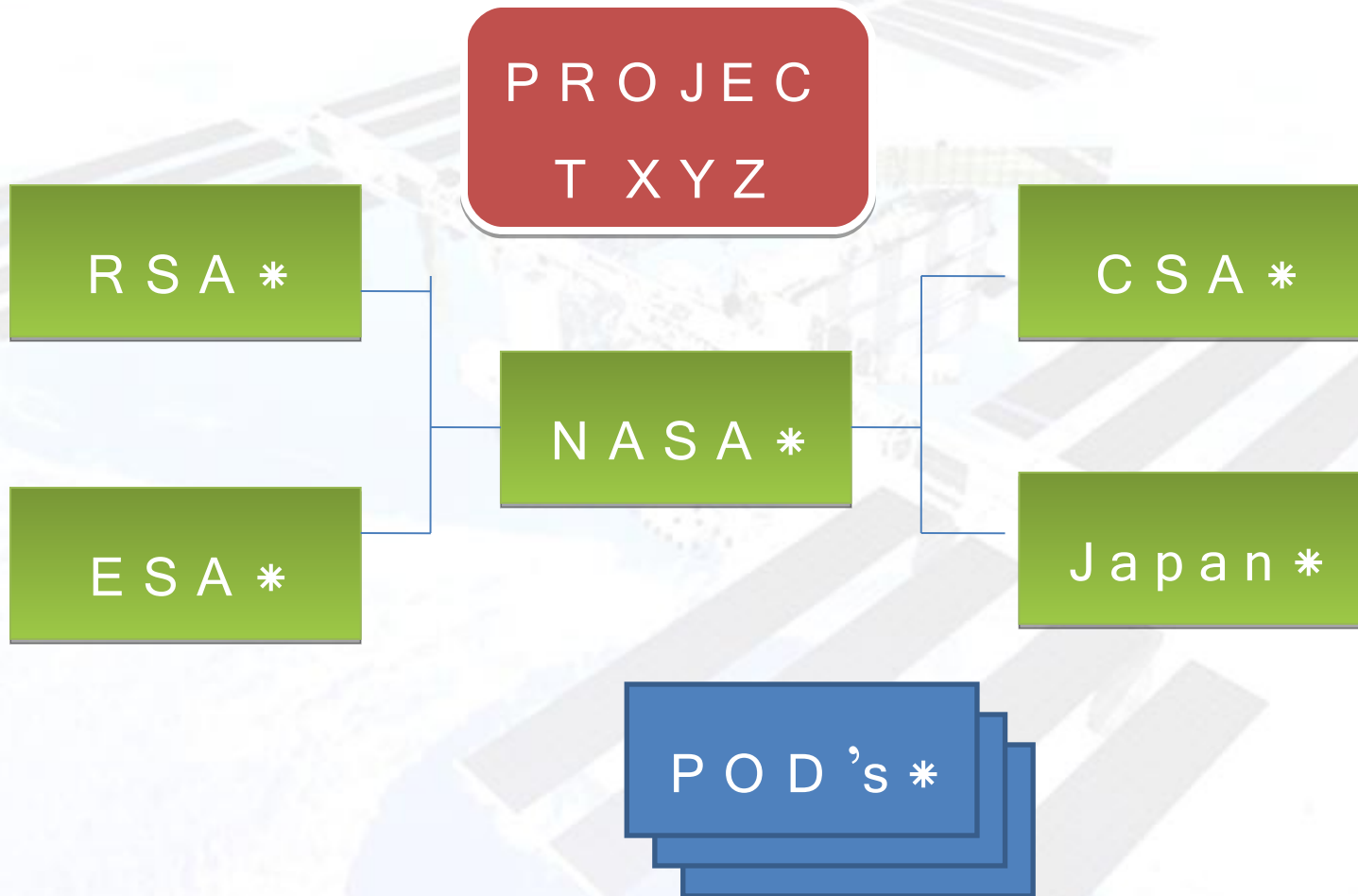
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Close DN

Topics of Presentation

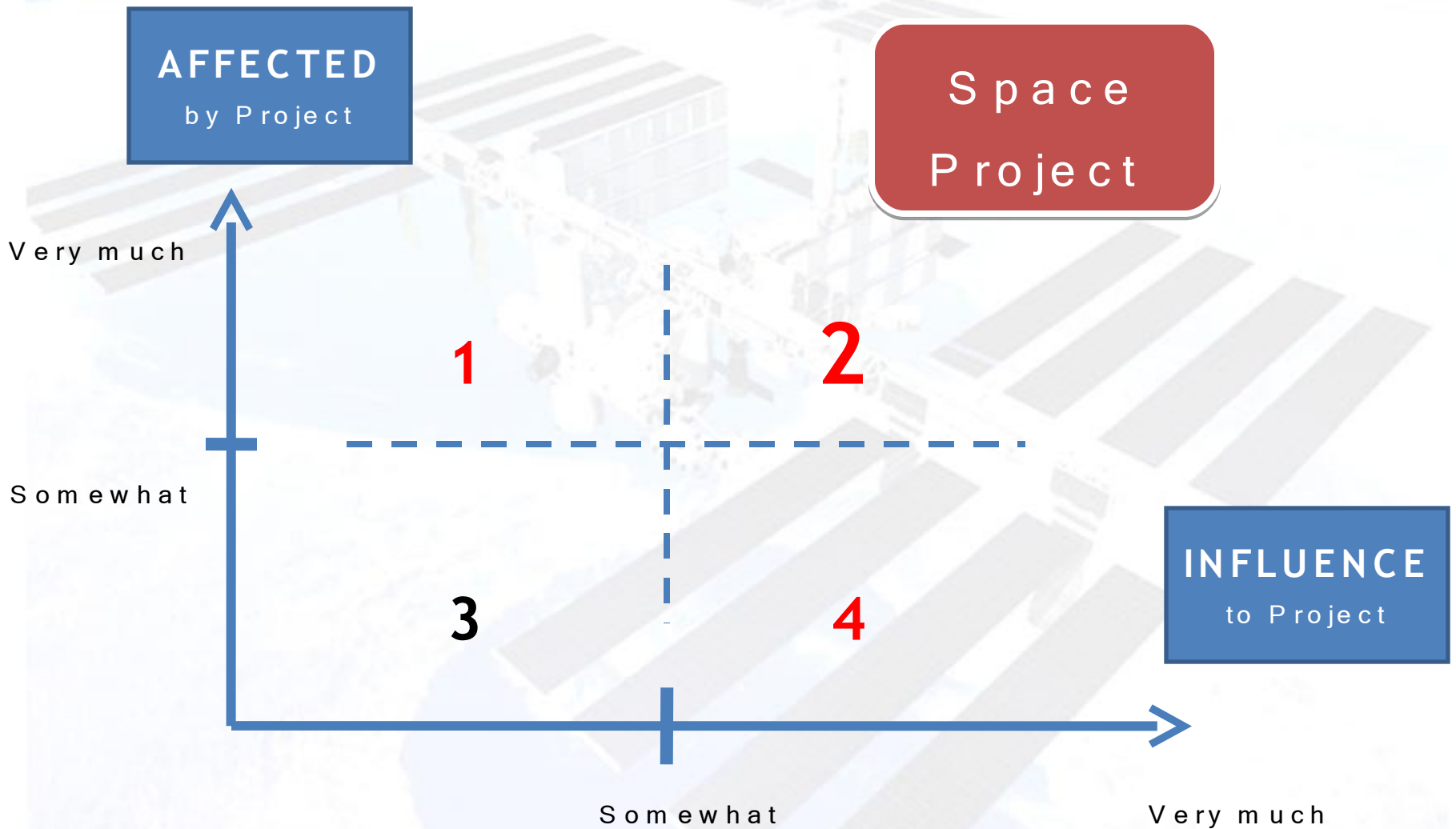
Dealing with a complex
Project Environment

International Space Station Stakeholders



RSA = Russian Space Agency, ESA = European S.A., CSA = Canadian S.A., POD = Payload Operators (Research Institutes)

Stakeholder Analysis Method



German Space Project Stakeholder Strategy

Quadrant 2:

Influence and affection
high

Ministry of Research
Astronauts
Project Team
Science Community

Position in Project
or
Executive Board

Quadrant 4

Influence high,
affection low

Ministry of Finance
European Space Agency
NASA and RKA

Involvement in Decisions
Communications
Executive Board

Quadrant 1

Influence low, affection
high

German Public
Taxpayers
Press

PR Strategy
Newsletter
Website

Your project: Template stakeholder network

Customer
s

Government

Public
relations

Your
project
t

Interest
groups

Suppliers

Your team

Top
management



Topics of Presentation

Project Excellence

Project Excellence Model

PROJECT EXCELLENCE (1,000)



PROJECT MANAGEMENT (500)

PROJECT RESULTS (500)



INNOVATION AND LEARNING



Project Excellence Model

- **Project Management**
- **Project Results**
- **Customer Satisfaction**
- **Employees development and participation**
- **Partnership with suppliers**
- **Leadership**
- **Social responsibility**
- **Processes**
- **Results**

Topics of Presentation

Project Management
Elements

Project Management System

STAFF TRAINING

CONFIGURATION

HUMAN RESOURCE

Project-
Management
Elements

SCHEDULE

PROCESSES

COST & BUDGET

QUALITY MANAGEMENT

RISK MANAGEMENT