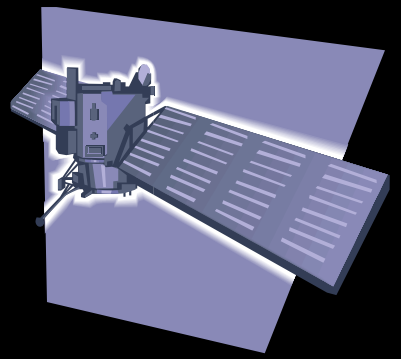

ribs Space Consultancy & Insurance

QUALITATIVE RISK MANAGEMENT IN SPACE ACTIVITIES

Qualitative Risk Management in Space Activities

Practical Risk Analysis of Project Planning

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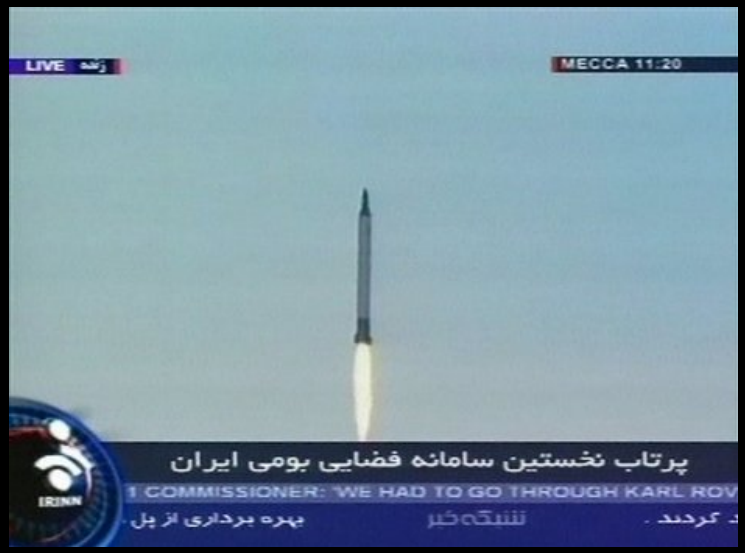
The 8th Iranian Aerospace Society Conference
Feb. 17-19/2009, Malek-e-Ashtar University of Technology

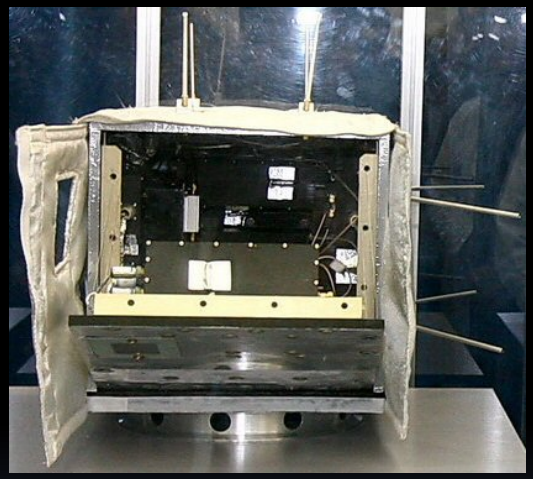
Iran inaugurates space complex on 4 February 2008 with launch of Kavoshgar-1 rocket (Shahab-3B) from launch site in Semnan Province



An August 16, 2008 photo taken at an undisclosed location in Iran, which the Fars News Agency claims, shows Iranian President Mahmoud Ahmadinejad looking at an Iranian satellite launch vehicle. On August 17, 2008, such a launch vehicle was launched.

AP Photo/Fars News Agency, Vahid Reza Alaei

On February 2, 2009, Iran launches Safir-2 rocket and brings the OMID satellite into a low-Earth orbit.



Conclusion 1

Iran conducts space activities;
it builds satellites and launch vehicles

Conclusion 2

Iran has to implement Risk Management in their Space Activities

Qualitative Risk Management in Space Activities

Practical Risk Analysis of Project Planning

Introduction

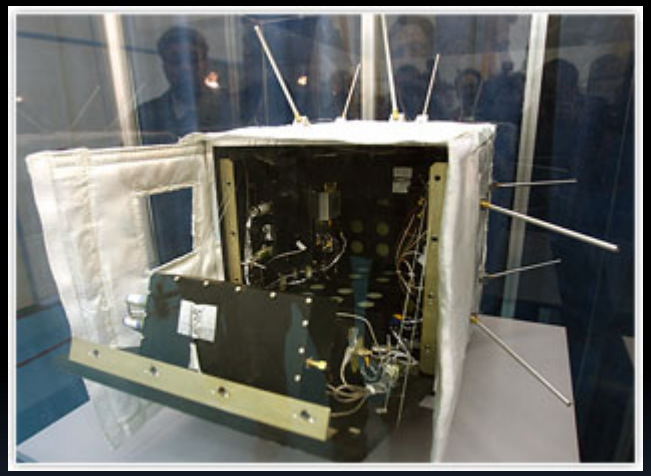
The RISMAN-method

Quick-Scan Method

Approach & Organisation
The RISMAN Quick-Scan
First Meeting
Second Meeting

Concluding remarks

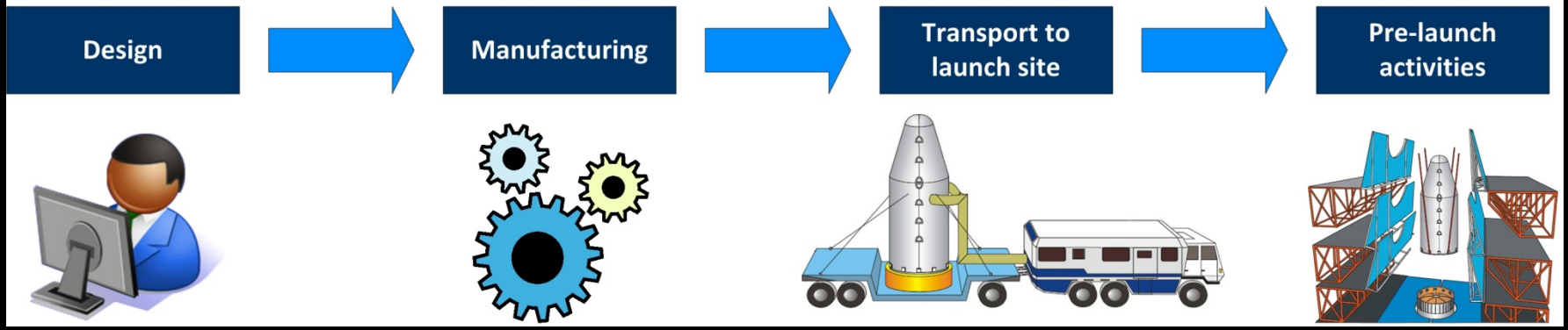
Conclusions
Questions & Answers



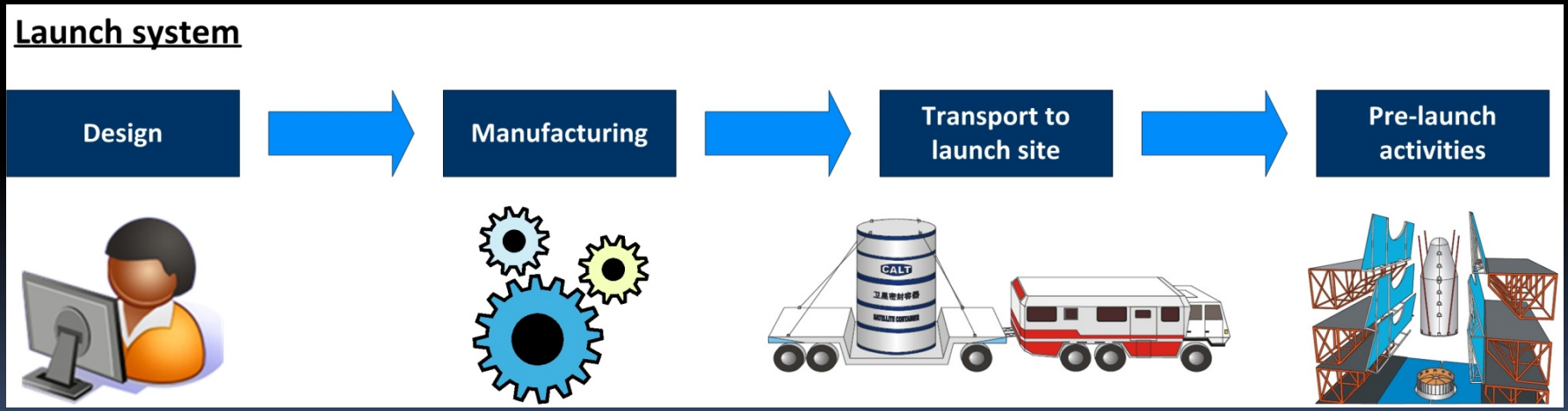
Qualitative Risk Management in Space Activities

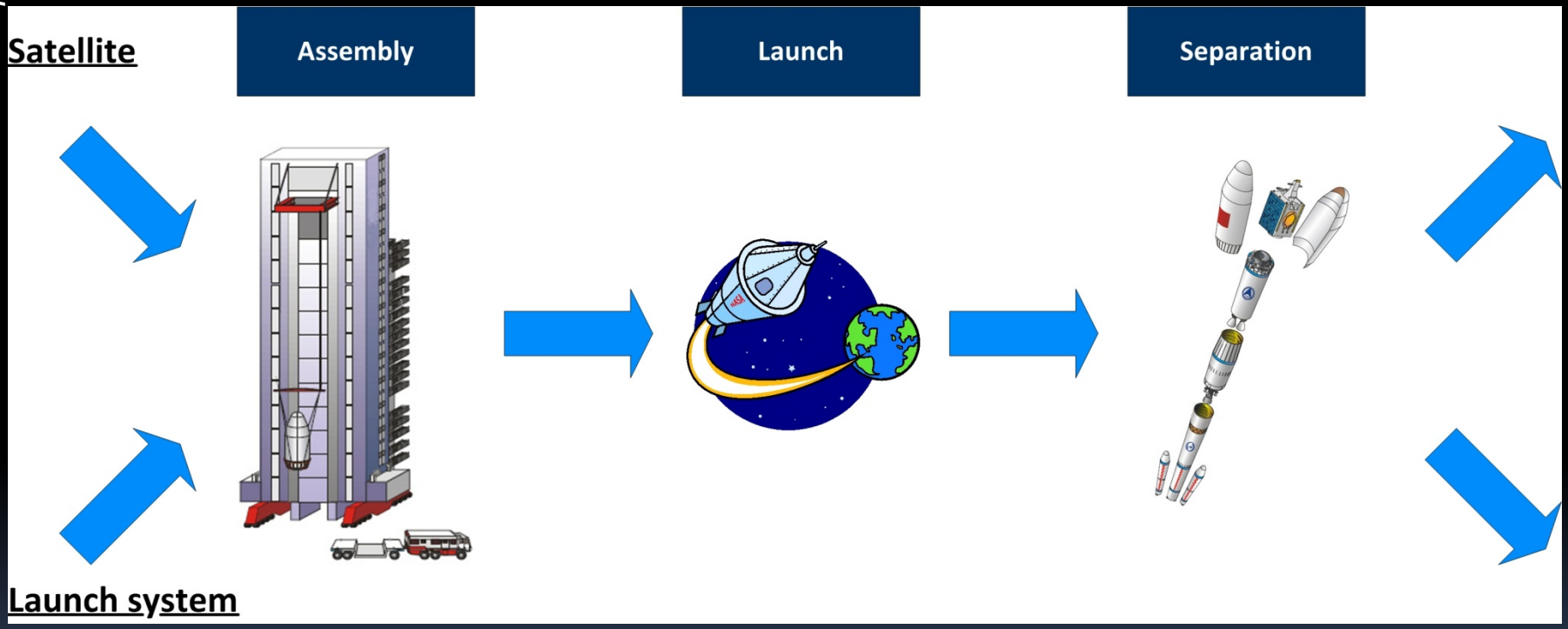
Practical Risk Analysis of Project Planning

Satellite



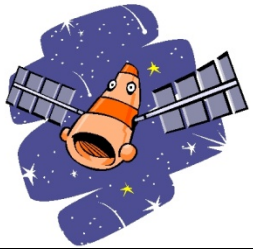
Launch system

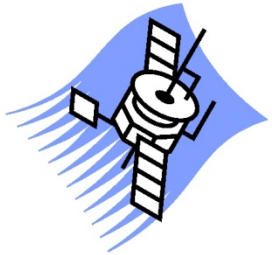



Satellite
Assembly
Launch
Separation
Launch system

Satellite

In-orbit commissioning → In-orbit life → End-of-life → Graveyard burn / Decay / re-entry





Launch system

Burn-up / Decay / re-entry

The RISMAN-method is a technique to conduct risk analysis and is very well suited to be used in long duration projects, because it could be utilized throughout the whole project.

The RISMAN-method has been developed as a risk analysis tool to assess the risks in planning large infrastructural projects.

With the RISMAN-method, risks are made clear in a systematic way and from a variety of perspectives, and the measures to control these risks are identified.

Storm surge barrier in the New Waterway (Rotterdam/The Netherlands)

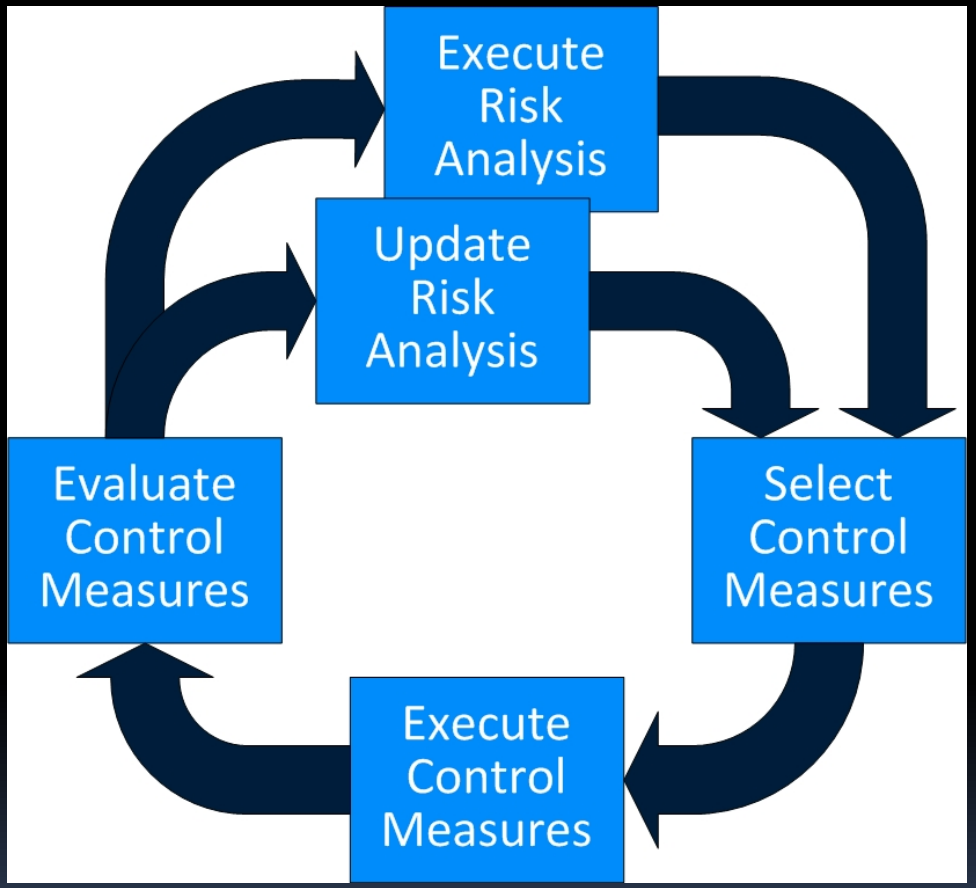
Flooding control in the Oosterschelde (The Netherlands)

In every phase of a (space) project, risk analysis is the core element of risk management.

Risk management begins with a risk analysis to systematically identify the risks within the project.

Risk management must be a cyclical process that has to be carried out continuously.

Risk Analysis ← Risk Management



Use Proper Tools

Qualitative Risk Management in Space Activities

Practical Risk Analysis of Project Planning

Quick-Scan Method

A Quick-Scan can be used to assess the feasibility of the planning or to actualise a performed RISMAN-analysis in the process of risk management during a project phase.

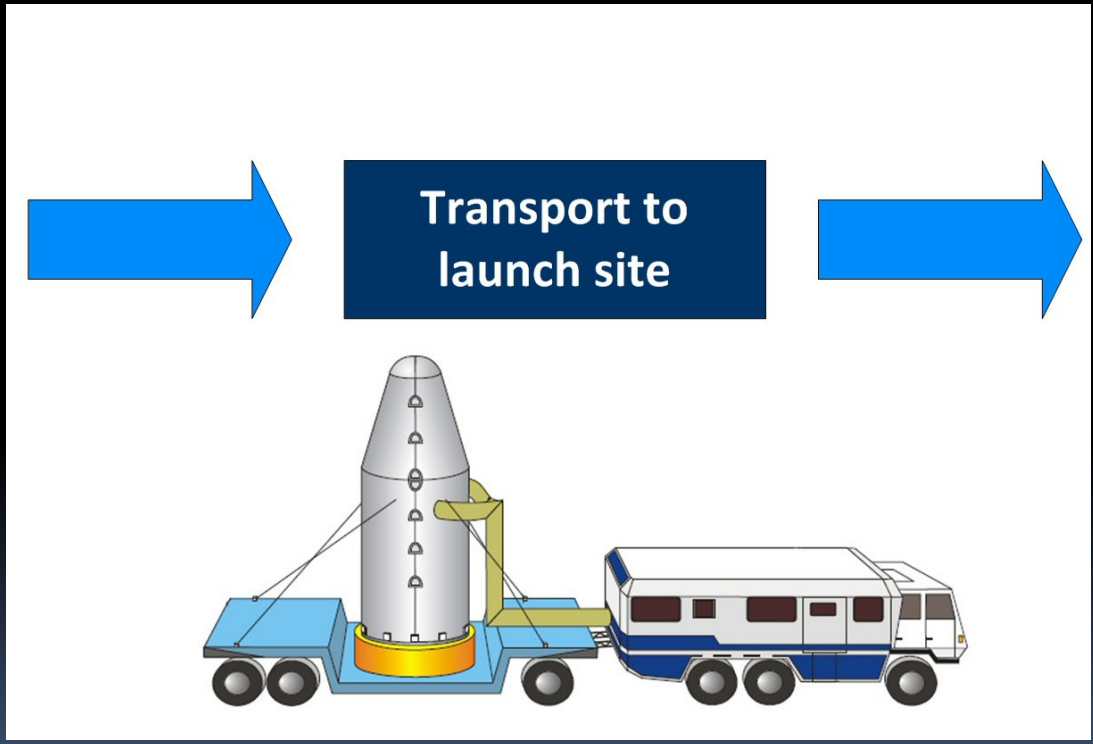
A Quick-Scan is applicable for very complex, as well as for less complex projects and can be executed during every phase of (the planning) of a project.

With a Quick-Scan, in a short period of time (two half days) and relatively little effort, a first and quick insight in the risks of planning a project can be obtained.

Quick-Scan Method

Assignment:

Analyse the risks of transporting the satellite to the launch site using Quick-Scan



Quick-Scan Method

A Quick-Scan principally consists of two meetings, half a day each on different days not more than a week apart

The first meeting is problem oriented; focus upon and chart the risks for the planning

The second meeting is solution oriented; analyse the risks and formulate control measures

Quick-Scan Method

Prepare Meeting 1
- Determine target
- Go through planning
- List stakeholders
- Invite participants
- Provide resources

Execute Meeting 1
- Map risks
- Consider risks
- Prioritize risks
- Determine most important risks
- Process results meeting 1

Survey: Determine feasibility planning
- Identify critical path planning
- Draw up survey
- Execute and process survey

Prepare Meeting 2
- Invite participants
- Provide resources

Execute Meeting 2
- Examine feasibility planning
- Analyse most important risks
- Map control measures
- Discuss control measures
- Evaluate Quick-Scan

Create Report
- Submit report

Quick-Scan Results

Perception of the most important risks in the planning of the project

Insight into cause and effect of these risks

Insight into possible control measures

Insight into the feasibility/practicability of the planning

Quick-Scan Executors

Organisation Team
- Project Leader
- Project Secretary

External Process Manager

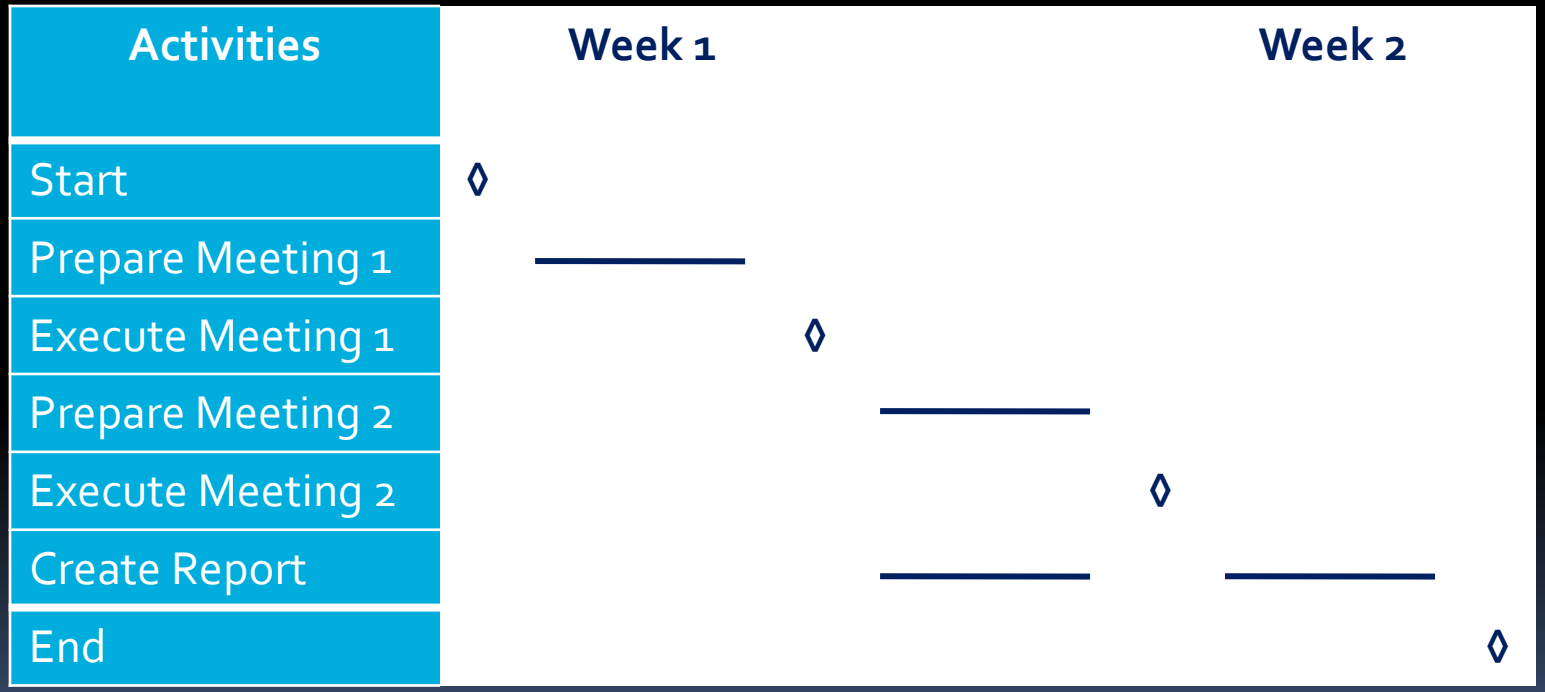
Participants

External Expert

Quick-Scan Time Estimation

Activities	Project Leader	Secretary	Process Manager	Participants	
				(# 1)	(# 9)
Prepare Meeting 1	4	4	2	1	9
Execute Meeting 1	4	4	4	4	36
Prepare Meeting 2	2	2	2	1	9
Execute Meeting 2	4	4	4	4	36
Create Report	4	6			
Total (in hours)	**18**	**20**	**12**	**10**	**90**

Quick-Scan Pass-through-time



Qualitative Risk Management in Space Activities

Practical Risk Analysis of Project Planning

Quick-Scan Preparatory Activities

Determine and describe the target

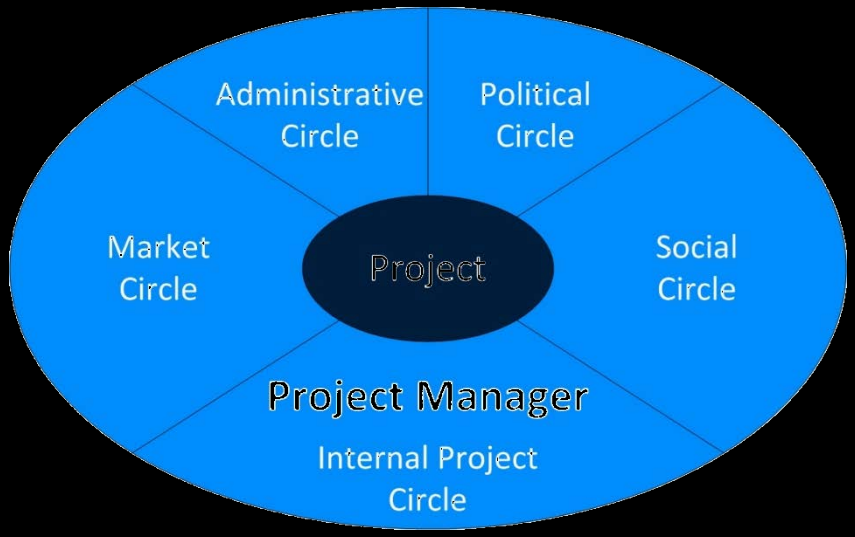
Go through the planning

List the stakeholders; Who are they?

Find an external process manager

Invite the participants

Provide the necessary resources



Qualitative Risk Management in Space Activities

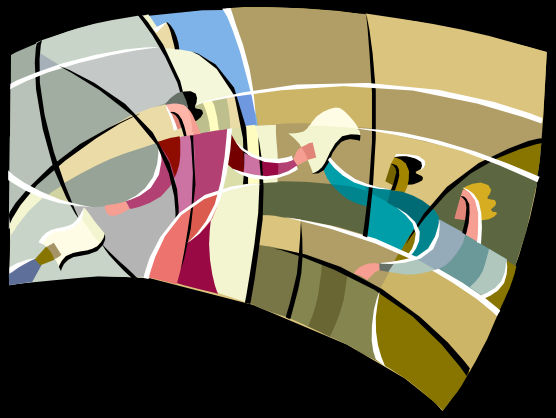
Practical Risk Analysis of Project Planning

Quick-Scan First Meeting

Map the risks

Consider and prioritize the risks

Determine the most important risks



Quick-Scan First Meeting

Map the risks

10 Most Important Risks	
Risk 1	The lack of …
Risk 2	The change of …
Risk 3	The occurrence of …
Risk 4	etc.
Risk 5	etc.
Risk 6	
Risk 7	
Risk 8	
Risk 9	
Risk 10	

Quick-Scan First Meeting

Consider and prioritize the risks

Risks →	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	→		Points
↓ Participants													
A	20	5	0	10	0	0	0	15	30	20			100
B	5	10	30	0	0	20	10	0	25	0			100
C	10	25	15	20	0	0	5	0	5	20			100
D	5	20	17	15	33	10	0	0	0	0			100
E	5	18	20	7	20	30	0	0	0	0			100
↓													
↓													
Total Score	45	78	82	52	53	60	15	15	60	40			500
Ranking	7	2	1	6	5	3	9	10	4	8			

Quick-Scan First Meeting

Determine the most important risks

Top 20 Risk List	
Risk 1	The occurrence of …
Risk 2	The change of …
Risk 3	The lack of …
Risk 4	etc.
Risk 5	etc.
Risk 6	
Risk 7	
Risk 8	
Risk 9	
Risk 10	
Risk 11	
Risk 12	
Risk 13	
etc.	
etc.	

Qualitative Risk Management in Space Activities

Practical Risk Analysis of Project Planning

Quick-Scan Second Meeting

Analyse the cause and effects of every named risk
Create a Risk Analysis Table

Map, discuss and choose the control measures
Complete the Risk Analysis Table

Close and evaluate the Quick-Scan
Make report

Quick-Scan Second Meeting

Analyse the cause and effects of every named risk

Risk 1: The occurrence of …

Causes	Consequences
A	1
B	2
C	3
D	4
E	5

Risk 2: The change of …

Causes	Consequences
F	6
G	7
H	8
I	9
J	10

Quick-Scan Second Meeting

Map, discuss and choose the control measures
Complete the Risk Analysis Table

Risk 1: The occurrence of …

Causes	Consequences	Possible Measures	Selected Measures	Responsible Person(s)
A	1	a	Н	Э
B	2	b	Θ	Ю
C	3	c	Λ	Я
D	4	d	Ξ	Щ
E	5	e	Ψ	Ф

Quick-Scan Second Meeting

Close and evaluate the Quick-Scan
Make report

Qualitative Risk Management in Space Activities

Practical Risk Analysis of Project Planning

Quick-Scan Conclusions

Quick-Scan is a tool for global assessment of risks

Used predominantly in planning small,
not too complex projects but can be used in long duration projects as well

Using Quick-Scan, one only has performed a risk analysis;
Risk management still has to begin.


Q&A