

A space scene featuring a satellite with solar panels in the upper left, a small piece of debris in the center, and a large, dark, irregularly shaped asteroid in the lower half. The background is a dark blue space filled with numerous small white stars. A bright star with a lens flare is visible on the right side.

Riskhantering i rymden

Riskhantering i rymden

- Kort om Rymdbolaget
- Riskhantering i rymden, tillbakablick
- Hur arbetar vi, exempel från vår vardag

50 år i rymden

1961 Första raketen från Sverige

1962 Uppbyggnad av Esrange börjar

1966 Första raketen från Esrange

1972 SSC grundas



Affärsområden



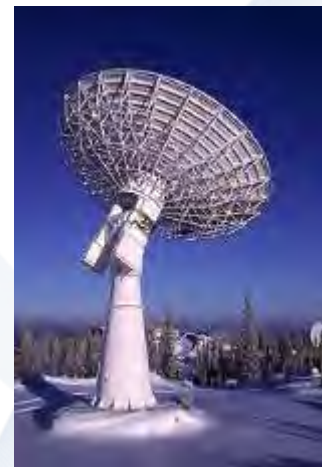
**Space
Systems**



**Science
Services**



**Aerospace
Services**

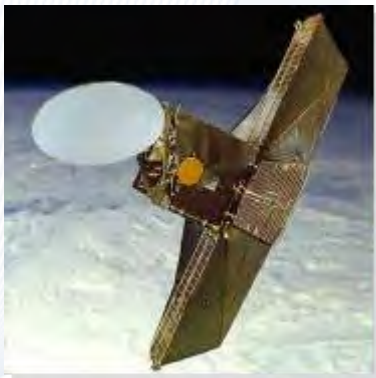


**Satellite
Operations**



**Airborne
Systems**

Sedan 1972



8 scientific satellites



60 rocket systems



60 experiment modules



500 rocket



550 balloon launches

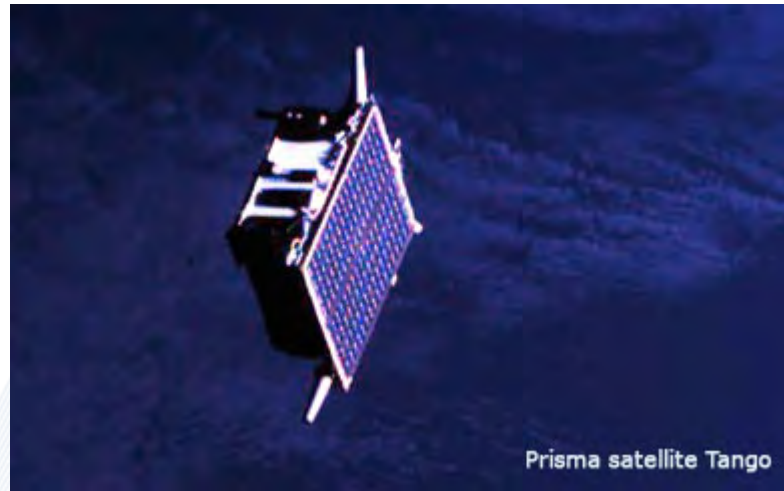
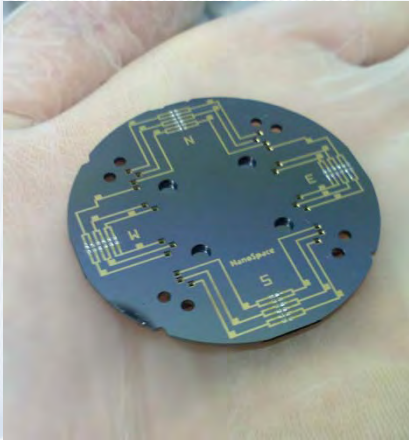


60 maritime surveillance systems

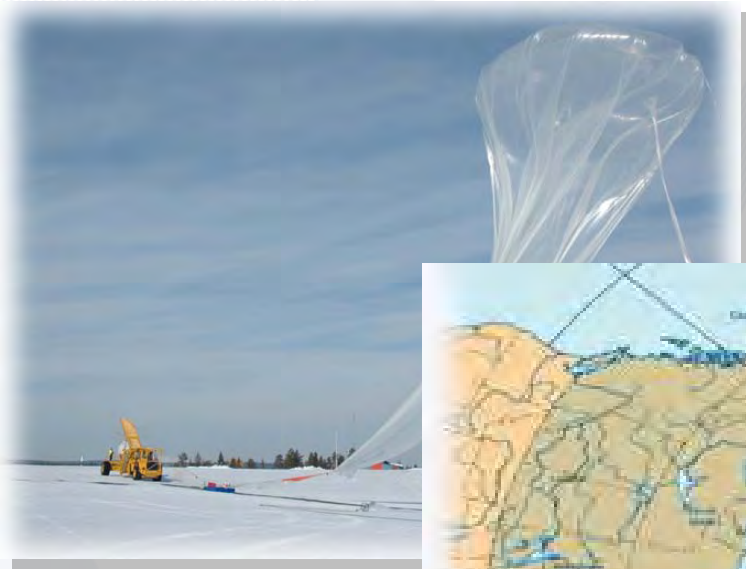


communication with more than 100 satellites

Utveckling



Utveckling



Riskhantering i rymden

The background of the slide is a dark blue space scene. In the upper left, a satellite with two long solar panel arms is visible. Below it, a small white rectangular object, likely space debris, is floating. In the lower center, a large, dark, irregularly shaped object, possibly an asteroid or a large piece of debris, is shown. The background is filled with numerous small white stars, and a single, very bright star with a prominent four-pointed diffraction pattern is located in the upper right quadrant.

Svårt att komma dit

Svårt att vara där

Svårt att komma tillbaka

Strategisk-, Finansiell-, Operativ risk

Riskhantering i rymden tillbakablick

Pionjäranda



Strategisk-, Finansiell-, Operativ risk

Riskhantering i rymden tillbakablick



12 april 1962

Strategisk-, Finansiell-, Operativ risk

Riskhantering i rymden tillbakablick



12 september 1962

We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard, ...

Space expenditures will soon rise some more, from 40 cents per person per week to more than 50 cents a week for every man, woman and child in the United States....

made of new metal alloys, some of which have not yet been invented, capable of standing heat and stresses several times more than have ever been experienced, precision better than the finest watch,, on an untried mission, to an unknown celestial body, and then return it safely to earth, re-entering the atmosphere half that of the temperature of the sun--almost as hot as it is here today-

Strategisk-, Finansiell-, Operativ risk

Riskhantering i rymden



Hur gör vi i rymdbolaget

Verksamhetssystemet (Quality Management)

- Rymdbolaget "föddes" från en verksamhet med stora risker, => naturlig del av vardagen
- Riskhantering och övriga processer som gör oss framgångsrika samlas i Verksamhetssystemet
- Verksamhetssystemet talar om *hur* vi arbetar

Utveckling av Verksamhetssystemet

- In 1993 SSC started to systemise quality system developments within the Esrange area
- In 1994 SSC started a project to systemise quality system developments within the company.
- First version of Quality Handbook in 1997.
- ISO 9001:1994 certified April 2000.
- Major revision of the SSC-QMS released and implemented June 2003.
- ISO 9001:2000 certified since January 2004
- ISO 9001:2008 certified since May 2009



Certificate Number:
27233
Initial Certification Date
25 May 2000
Certificate Issue Date
20 July 2000
Certificate Expiry Date
24 May 2012



Certificate of Registration

Duplicate

The following organization's Quality Management System has been assessed and registered by Intertek Semko Certification AB as conforming to the requirements of

SS-EN ISO 9001:2008

The conditions and extent of this certificate are stated in the decision report

Swedish Space Corporation
Including subsidiaries ECAPS AB and Nanospace AB

Solna, Stockholm, Esrange (Kiruna), Uppsala and Vidsal (Sweden)

The Quality Management System is applicable to:

To design, launch and operate aerospace systems.

Intertek Semko Certification AB –
P.O. Box 1103, S-164 22 Kista, Sweden

Exempel från den verkliga verkligheten

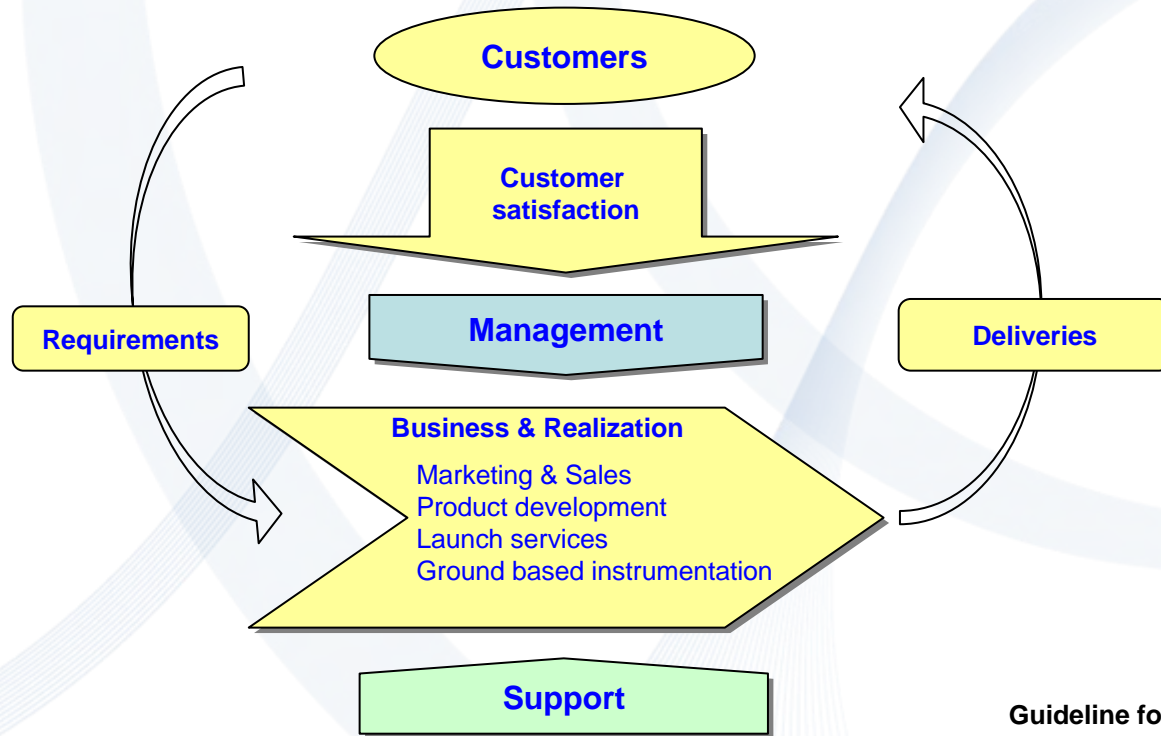


Process map Science Services Division

Division: Science Services

Date: 2010-01-26

Process owner: LEP



Guideline for process descriptions

SCI Quality Handbook

Handbook for process development

Riskhantering, vem lägger ribban?

- Sannolikhet att träffas av nedfallande objekt
- Avtal från tidigt 60-tal mellan Staten och Rymdbolaget
- Tillsyn via Länsstyrelsen
- Samarbete med bland annat NASA
- "Inte addera mer märkbara risker på samhället"



Launch services

Division: Science Services

Date: 2009-02-19

Process owner: LEP

Rocket launch

Balloon launch

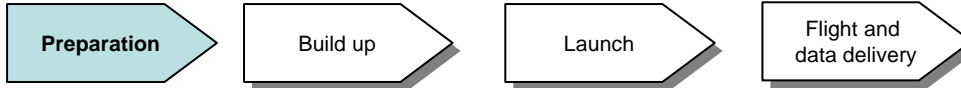
ROCKET LAUNCH

Date: 2009-09-11

Process owner: NJO

Approved by: LEP

Information in case of accident or malfunction
AQ10-S58

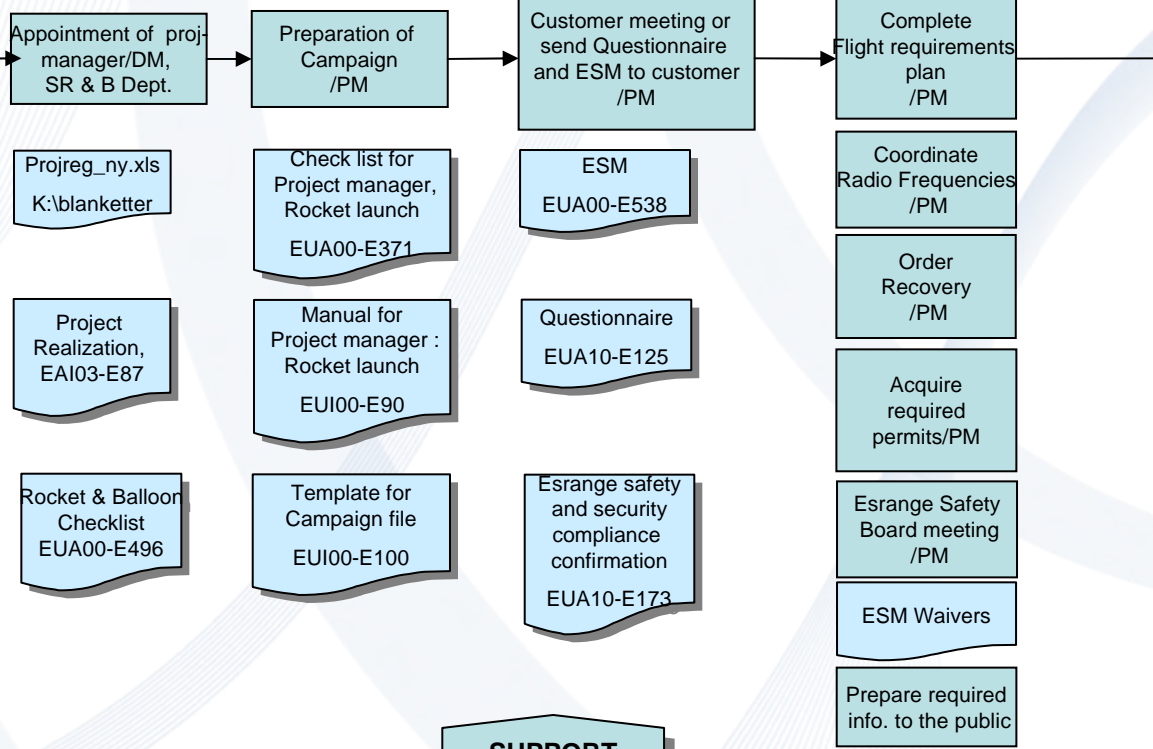


Input / Supplier	Activity / responsible - activities according to resp. activity handbook	Result / Customer
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Contract, agreements, Launching programme

Sales-process

Lessons learned internal
PM, All



SUPPORT

Abbreviations

To Process map

Krishantering & kontinuitetsplanering

Risk analys

Continuity plan

GAP analys

Test

Training

Realistic simulations

Lessons learned



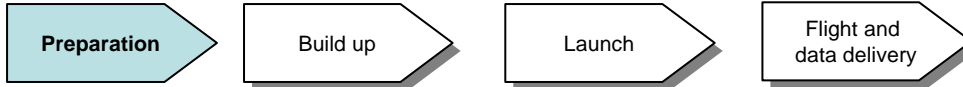
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AQI0-S58

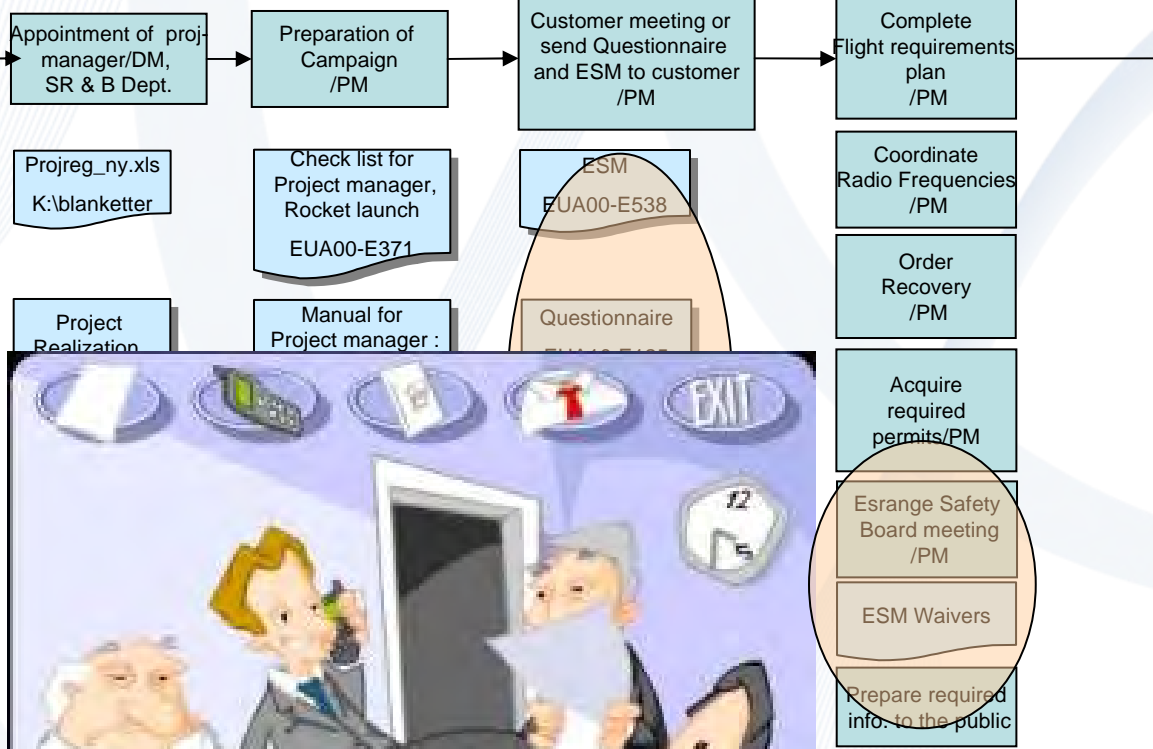


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Contract, agreements, Launching programme

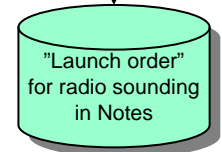
Sales-process

Lessons learned internal
PM, All



Campaign file

Flight requirements plan



/Production

Recovery plan

Abbreviations

To Process map

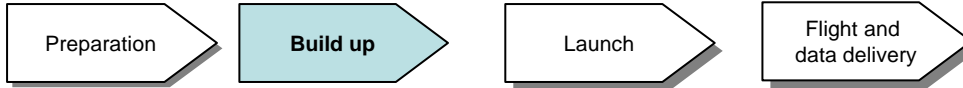
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Date: 2009-09-11

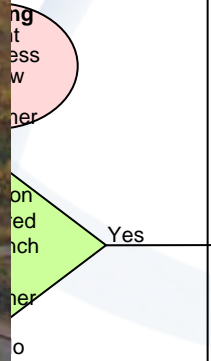
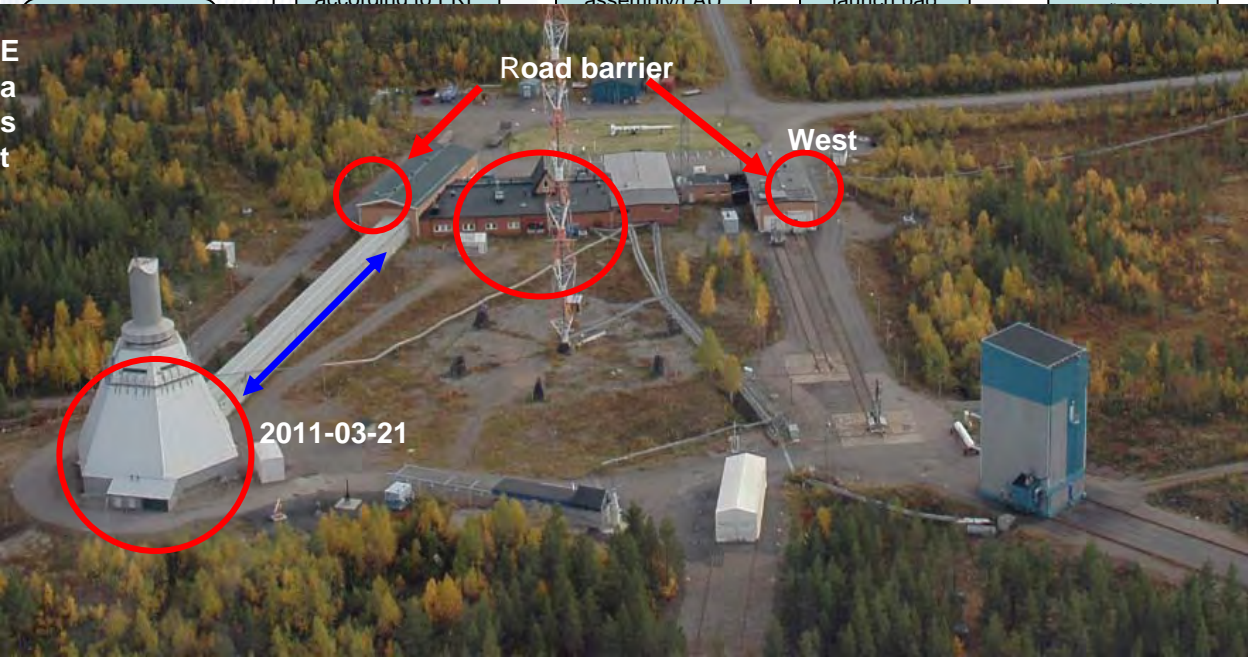
Process owner: NJO

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SUPPORT

Abbreviations

To Process map

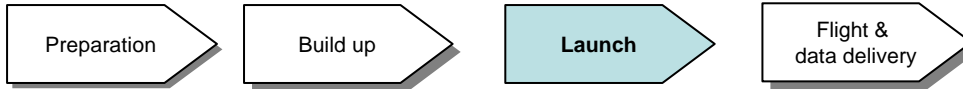
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Process owner: NJO

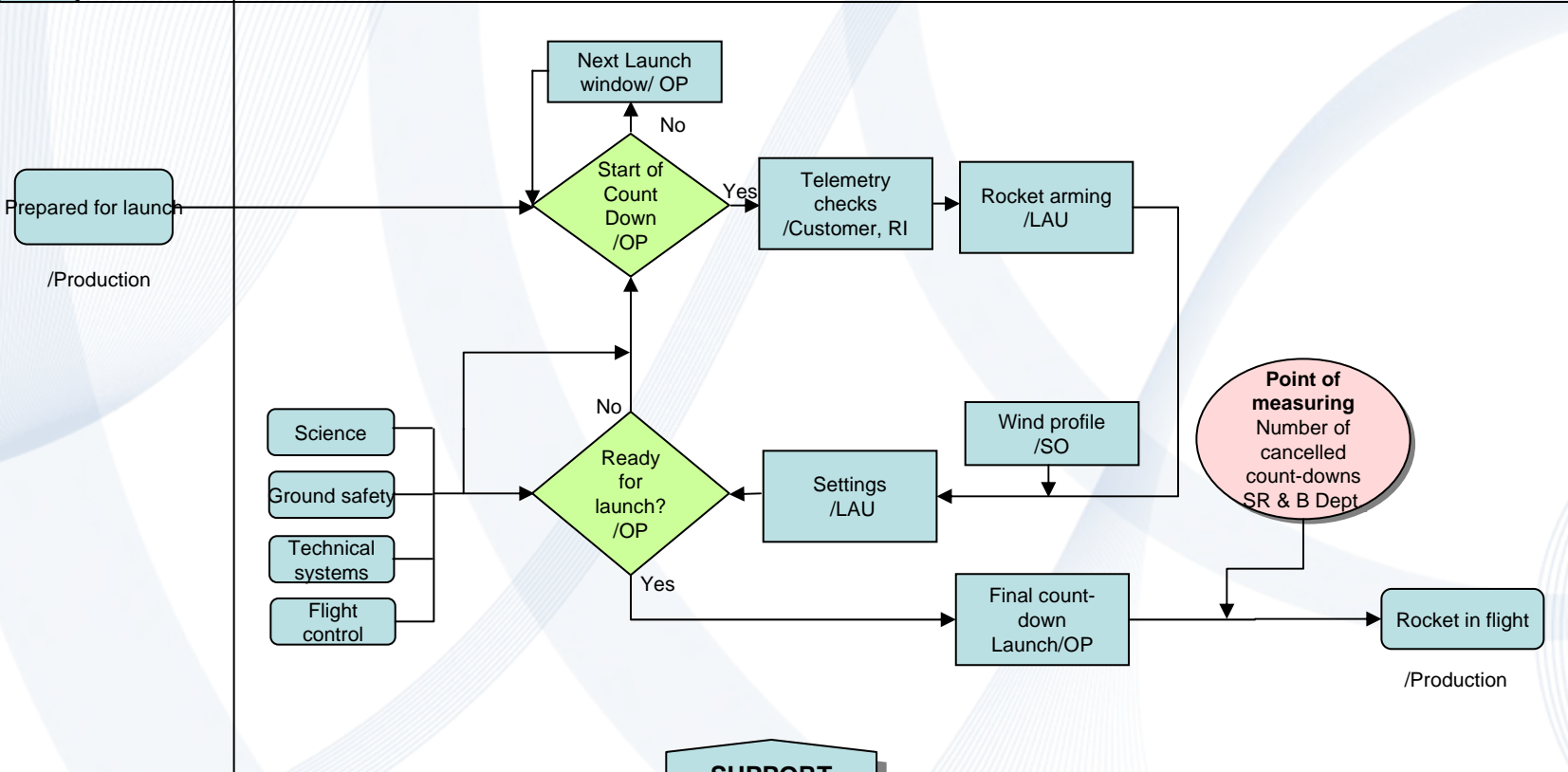
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Input / Supplier

Activity / responsible - activities according to resp. activity handbook



SUPPORT

Abbreviations

To Process map

Count down schedule

- 4h30 Radar balloon.
- 3h30 Weather briefing. Countdown or not?
- 3h20 Launch area clear of non-authorized personnel
Warning lights on
Warnings issued
Announcement of rescue team
- 3h15 Start of countdown
- 3h10 **Check raven ignition unit**
Arm spin up system
Check fins visually
Check Ledex systems on firing lines
- 2h15 **Confirm pad cleared of personnel**
- 1h30 Payload checks are completed.
Radio silence in the launch area
Permission to take experiments to tower
- 40m **Connect firing line and clear pad**
- 23m **Vehicle and payload ready**
Pads cleared of personnel
- 22m End of radio silence
- 20m Switch on payload transmitters
- 16m Helicopter standing at Rappsåive
- 10m Safety card control, visitors
No persons allowed outside from now on
- 5m **Final launcher settings**
- 3m30s **Confirmation of settings**
- 3m **Arm raven ignition unit and firing line**
Balloon releaser in blockhouse
- 2m15s Tape and Video recorders on
- 2m **Open skylark tower doors**
- 1m30s Experiments on internal power
- 1m **Answer light to Operation Officer**
- 35s **Tower doors open**
- 25s **Authorisation for launch**
Turn firing key
- 10s Voice count every second
- 5s **Press firing button**
*******FIRE*******

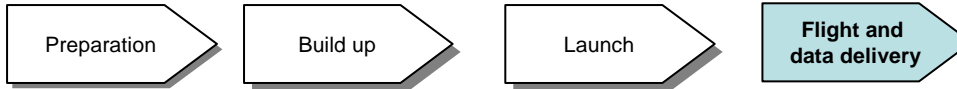
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Process owner: NJO

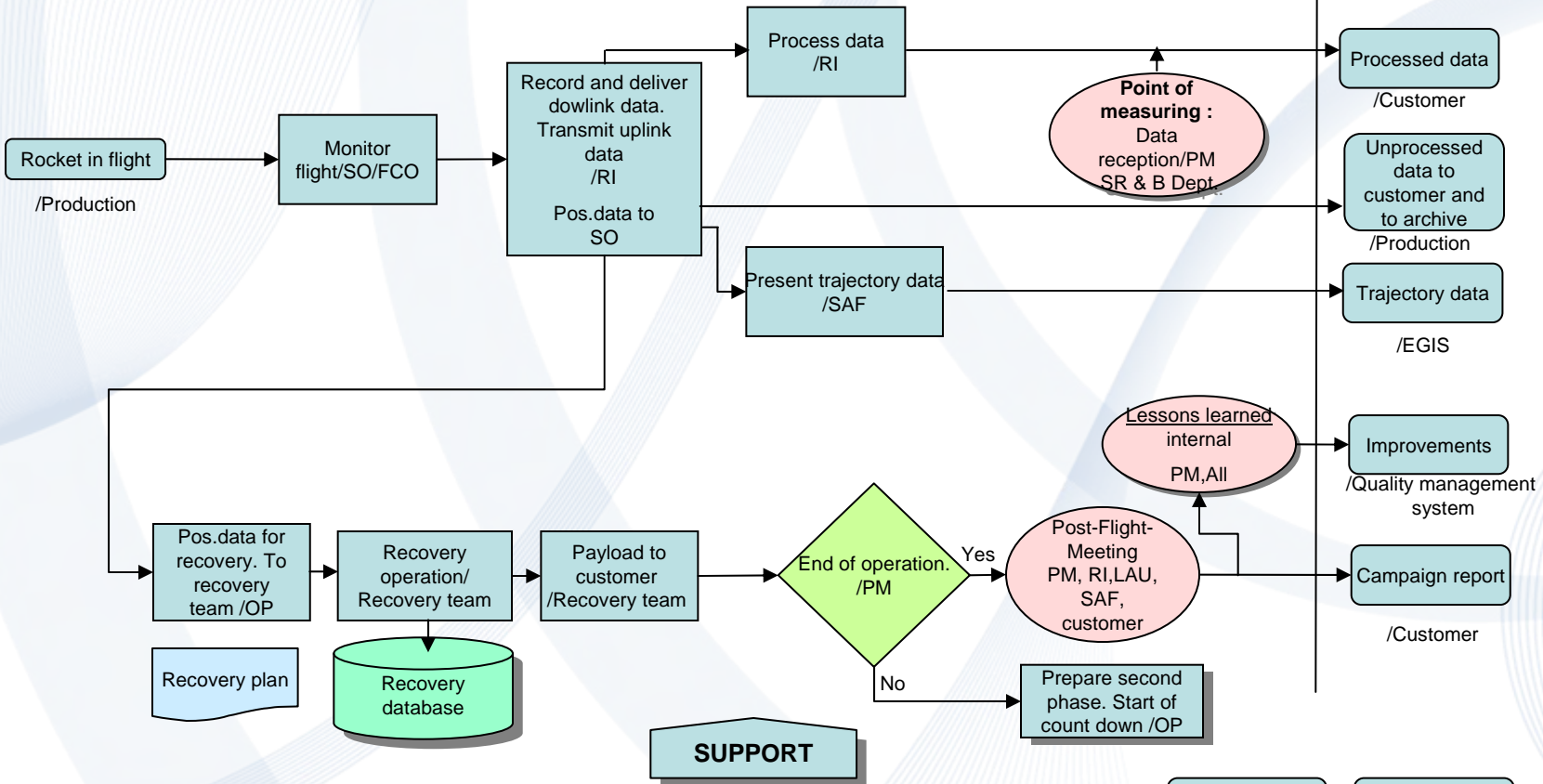
Approved by: LEP

Information in case of accident or malfunction
AQIO-S58



Activity / responsible - activities according to resp. activity handbook

Result / Customer



SUPPORT

Abbreviations

To Process map



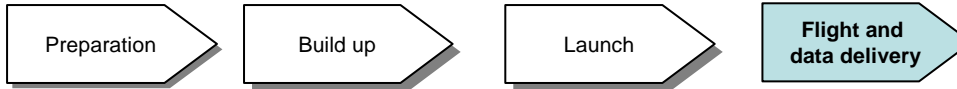
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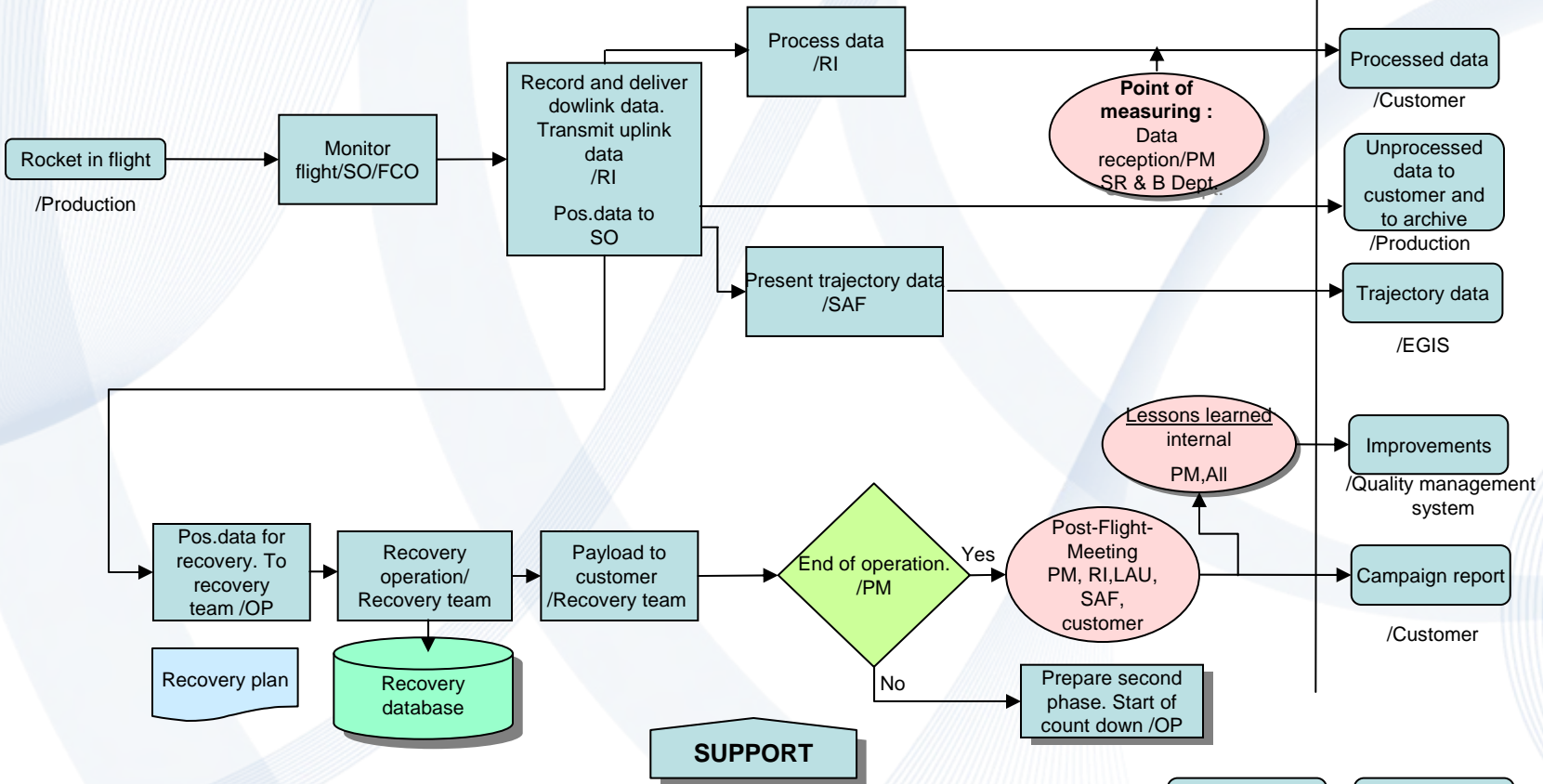
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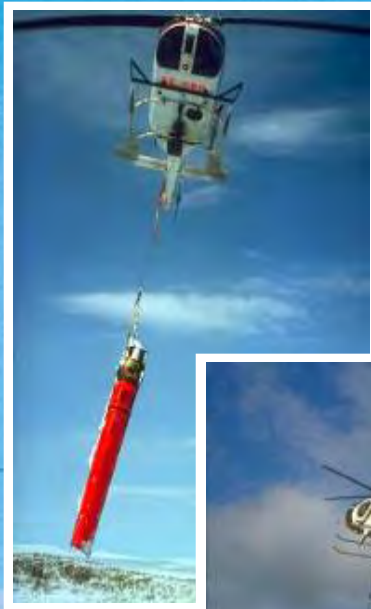


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Abbreviations To Process map



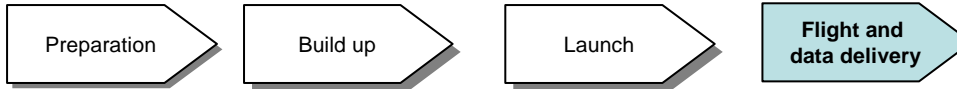
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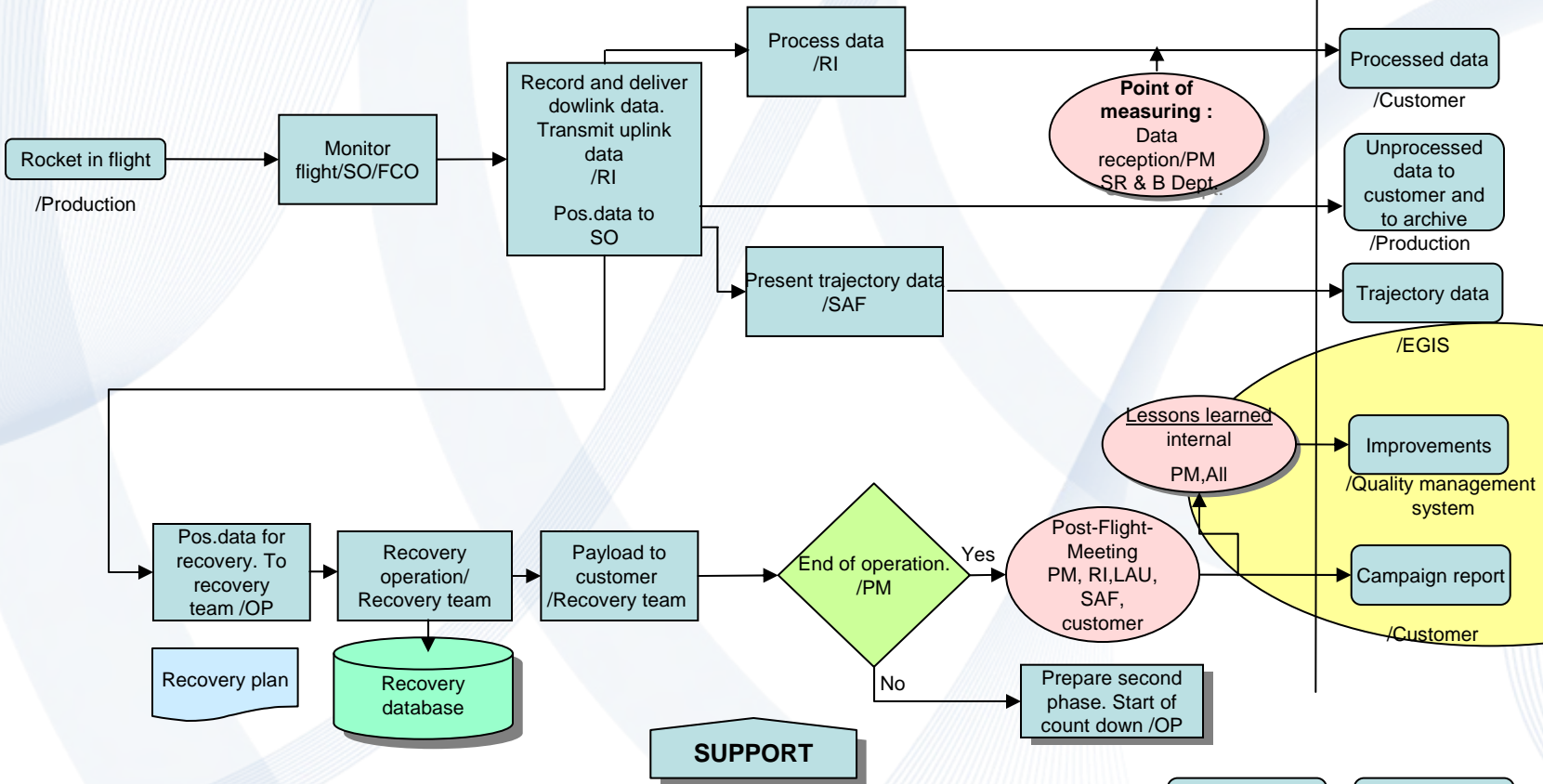
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SUPPORT

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To Process map

Riskhantering i rymden

- Raketuppskjutning ett exempel på tillämpad riskhantering
- På bolagsnivå integrerar vi ett ramverk för riskhantering
 - ISO 31000
- Utmaningar
 - Dotterbolag
 - Styrelse



Q & A ?



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