

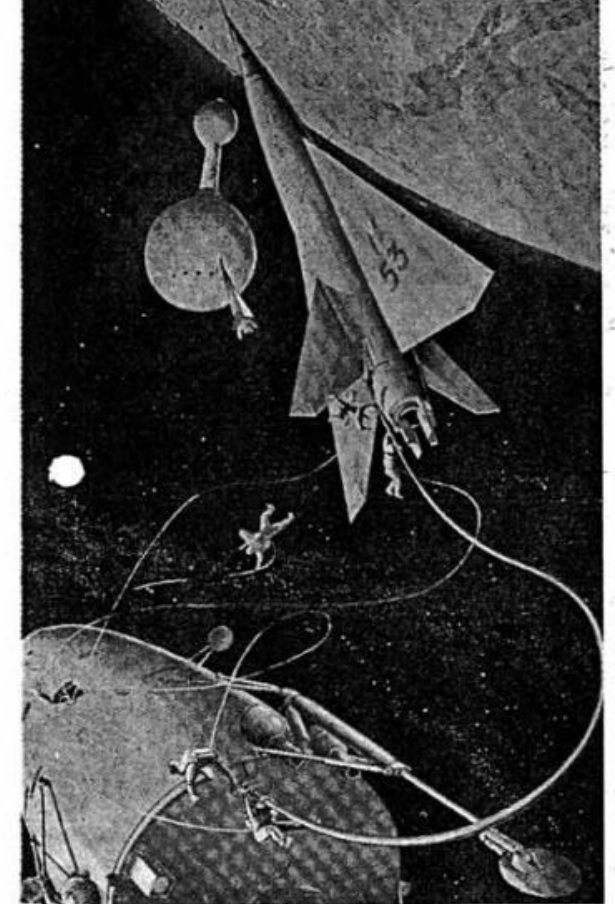
NVR Galaxy Gala: 70+ YEARS NVR

Peter Buist,
Netherlands Space Society NVR
Vice-chair and editor-in-chief

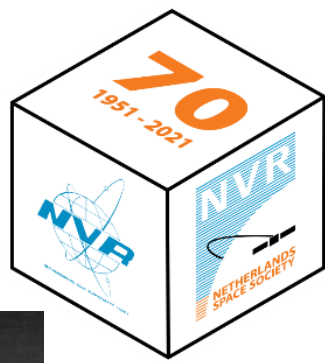


How it all started

- ▶ NVR was established on 21 december 1951 at a special meeting by prominent space experts, including Prof. ir. dr. Kooy.
 - “statuten” were drawn up on 17 December.
 - First issue of magazine on published on December 21st, 1951
- ▶ Since then (over more then 70 years), NVR has organized hundreds of lectures at large symposia and smaller colloquia during afternoons, evenings and weekends on many topics, ranging from the importance of space travel and Earth observation to the André Kuipers’ mission to the ISS.



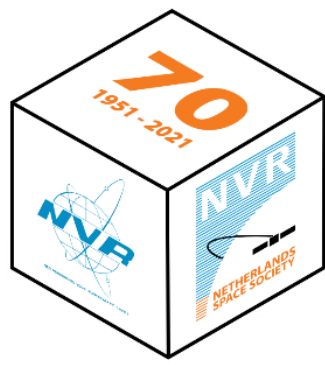
Some highlights



- 1958 IAF congress Amsterdam; NVR lectures with Dr von Braun
- 1965 Manned space symposium with NASA astronaut John Glenn
- 1974 ANS symposium Jaarbeurs Utrecht
- 1974 25ste IAF congress in Amsterdam



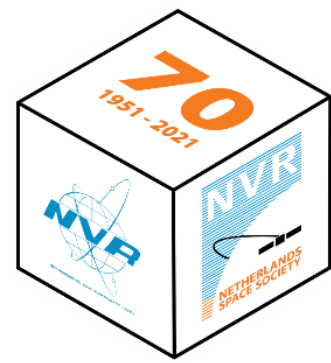
Some highlights



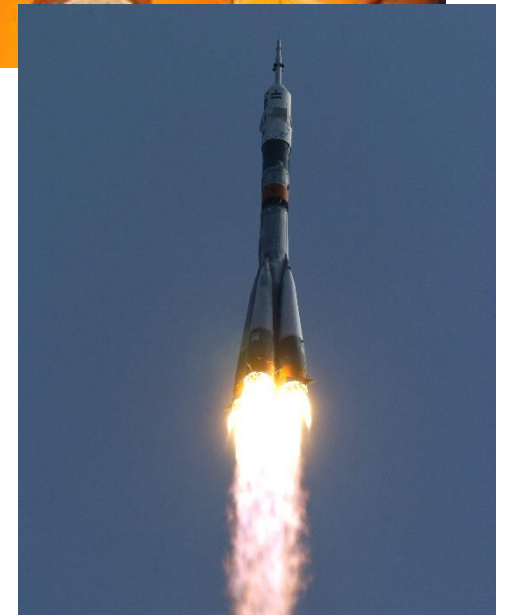
- 1977 IRAS symposium in RAI Amsterdam
- 1985 Spacelab D-1 astronauts (with Wubbo Ockels) in Aula TU Delft
- 1991 COSPAR congress in Den Haag;
NVR events for general public and
various publications



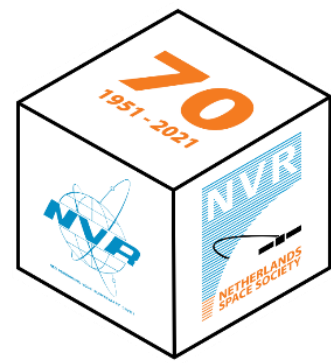
Some highlights



- ▶ 1992 International SpaceYear with many NVR activities and publications
- ▶ 1999 50st IAF Congress in Amsterdam; NVR events for general public and various publications
- ▶ 2001 NVR 50 years anniversary in Space Expo; special issue Ruimtevaart
- ▶ 2003 Many lectures on ISS en DELTA mission; special issue Space in the Netherlands



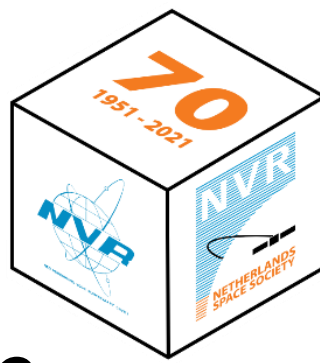
Some highlights



- ▶ 2004 DELTA missie André Kuipers; DELTA-symposium with André bij TU Delft
- ▶ 2007 Event 50 year Spoetnik in Artis Planetarium with Kees de Jager en Piet Smolders
- ▶ 2011 Chiaki Mukai at “Electronics for space” NVR 60 years anniversary in Space Expo; symposium and Canon Ruimtevaart
- ▶ 2018 ISU-SSP, NVR Ruimtevaart special issue on space in NL



Young Professionals



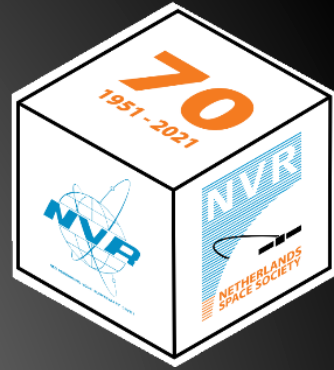
- ▶ Between 1967 and 1974 NVR had (what we would now call) a “young professional” committee
 - Article on this topic by Frank Israel planned for 2022-2 and 2022-3
- ▶ Now we have re-established such a committee



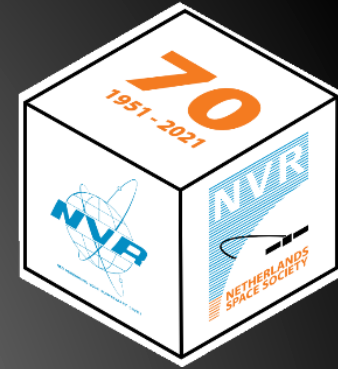
NVR board in 1969: H.L. van Noort (secretaris), H. Wittenberg (voorzitter), J.H. de Koomen, H.J.D. Piersma (penningmeester)

1951, the First Edition

- ▶ The magazine 'Ruimtevaart' has been published since 1951
- ▶ Spaceflight evolved from theory to interplanetary missions and everyday applications
- ▶ The society and magazine evolved as well



1950s and –1960s: Real Spaceflight



- ▶ Membership mostly technical academics
- ▶ “Study Group” reporting in the magazine
- ▶ Technical papers, with long mathematical derivations and complicated graphs

De nadering van het apogeum volgt daarom uit

$$(3.8) \frac{\Delta\{a(1+\epsilon)\}}{a(1+\epsilon)} = -\frac{1}{\epsilon} \left\{ \frac{1}{2}(1+\epsilon)\Delta y - (1-\epsilon)\Delta x \right\}$$

$$\approx -2\lambda e^{-\beta a(1-\epsilon)} \frac{\sqrt{2\gamma a(1+\epsilon)}}{\beta\epsilon(1-\epsilon)}$$

Voor het perigeum verkrijgen we op dezelfde wijze

$$(3.9) \frac{\Delta\{a(1-\epsilon)\}}{a(1-\epsilon)} = -\frac{1}{\epsilon} \left\{ (1+\epsilon)\Delta x - (1-\epsilon)\frac{1}{2}\Delta y \right\}$$

$$\approx 0,$$

zodat, althans in eerste benadering, voor banen met grote eccentriciteit, het perigeum stationnair is. Meer precieze resultaten kunnen verkregen worden door de integralen van (3.5) te ontwikkelen in een reeks gewijzigde Bessel functies. Door de nieuwe integratievariabele u te definiëren door

$$(3.10) 1 + \epsilon \cos \Theta = \frac{1 - \epsilon^2}{1 + \epsilon \cos u}$$

vinden we na enige elementaire berekeningen

$$(3.11) \begin{cases} \Delta x = \lambda a e^{-\beta a} \int_0^{\pi} -\epsilon \beta a \cos u (1 - \epsilon^2 \cos^2 u)^{\frac{1}{2}} du \\ \Delta y = 2\lambda a e^{-\beta a} \int_0^{\pi} -\epsilon \beta a \cos u \frac{(1 - \epsilon \cos u)^{3/2}}{(1 + \epsilon \cos u)^{\frac{1}{2}}} du \end{cases}$$

Opmerkend, dat

$$(3.12) I_m(z) = \frac{1}{\pi} \int_0^{\pi} e^{-z \cos u} \cos mu du,$$

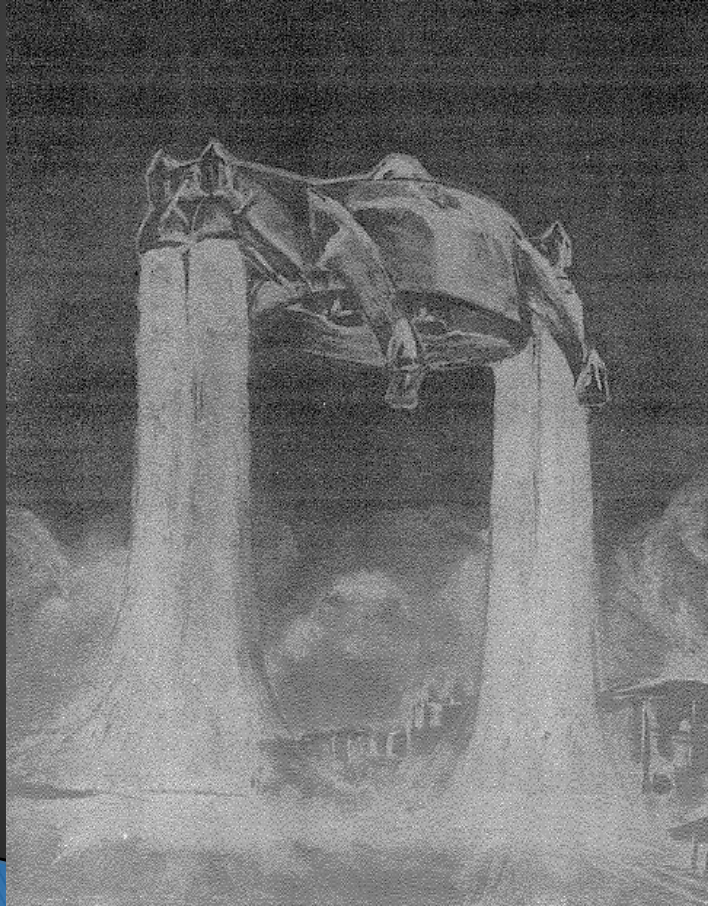
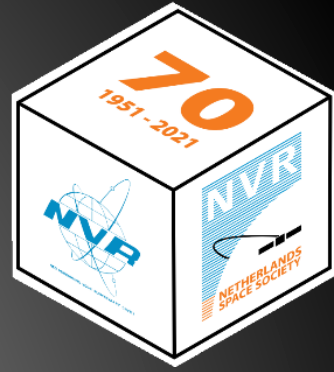
hebben we

$$(3.13) \begin{cases} \Delta x = \pi \lambda a e^{-\beta a} \left\{ I_0(-\epsilon \beta a) + O(\epsilon^2) \right\} \\ \Delta y = 2\pi \lambda a e^{-\beta a} \left\{ I_0(-\epsilon \beta a) - 2\epsilon I_1(-\epsilon \beta a) + O(\epsilon^2) \right\} \end{cases}$$

Gebruik makend van deze laatste uitdrukkingen voor de nadering van het perigeum, vinden we

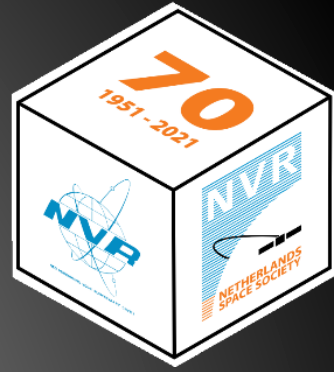
$$(3.14) \frac{\Delta\{a(1-\epsilon)\}}{a(1-\epsilon)} = -2\pi \lambda a e^{-\beta a} \left\{ I_0(-\epsilon \beta a) - (1-\epsilon)I_1(-\epsilon \beta a) \dots \right\}$$

1950s and –1960s: Real Spaceflight

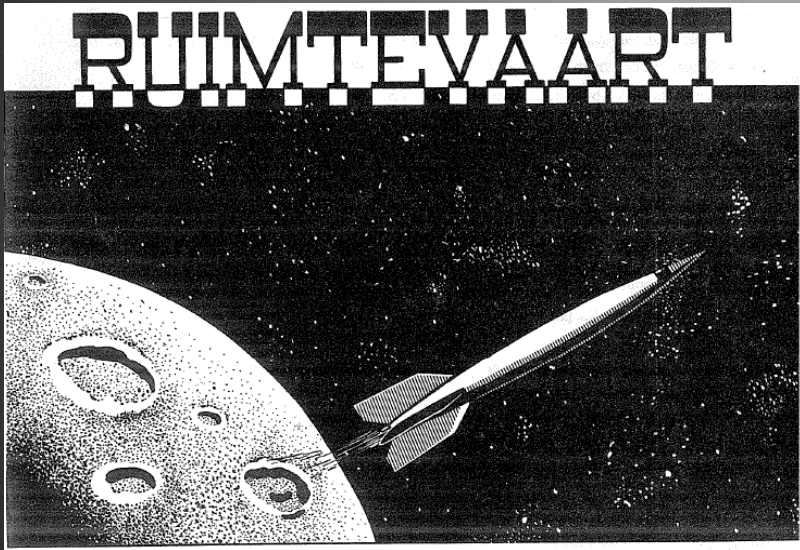


- ▶ Overviews of spaceflight news, as more satellites are launched
- ▶ ‘Study Group’ reports on Soviet missions, otherwise little known
- ▶ Some articles deal with visionary concepts and technology
- ▶ May 1961 campaign against manned spaceflight of Prof. van den Bergh – with reader feedback

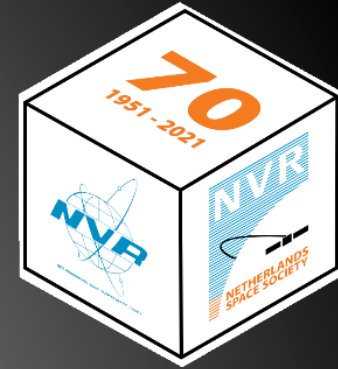
1950s and –1960s: Real Spaceflight



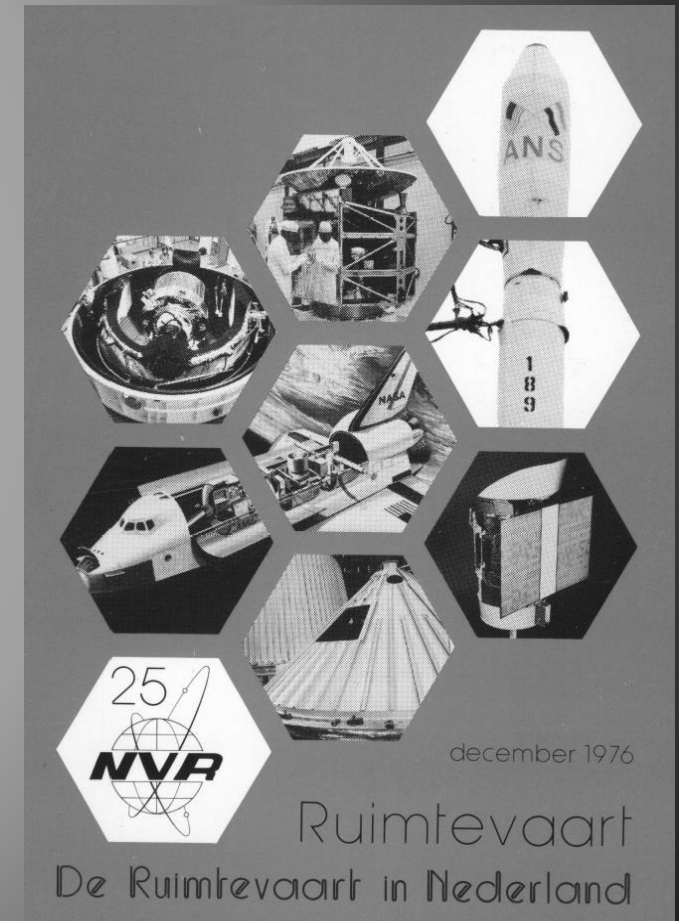
- ▶ July 1961 co-publication with the amateur rocket society NERO,
- ▶ June 1958 article about the possibilities for life on other planets
- ▶ February 1959 and May 1961 include long articles “Space Law”.
- ▶ Regularly reports on the IAC and other conferences
- ▶ Article in Dutch, English and occasionally German
- ▶ Lay-out is straight-forward, typed pages with handwritten formulas and black and white illustrations



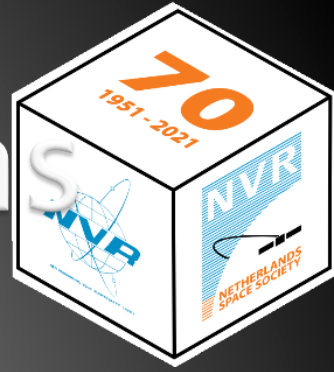
1970s: Established Industry



- ▶ Special issue in December 1976: NVR's 25th anniversary
- ▶ Overview of space activities in The Netherlands
- ▶ Spaceflight has moved beyond academic study groups
- ▶ The futuristic concepts and highly optimistic expectations expressed are missing
- ▶ The lay-out of the 1976 edition has not changed, but the number of illustrations is much higher



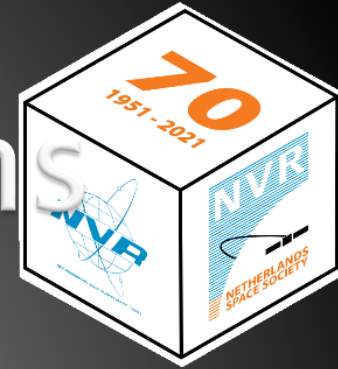
1996–2010: Spaceflight Broadens



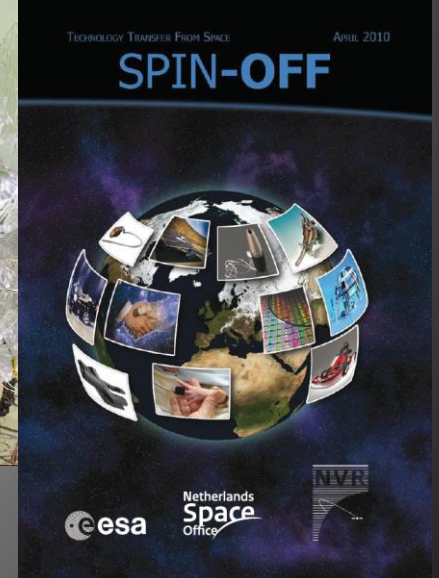
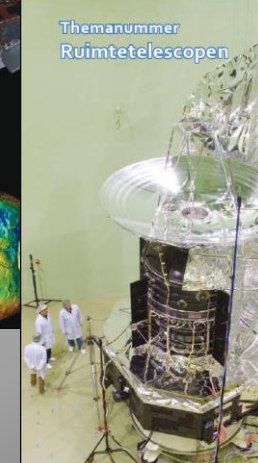
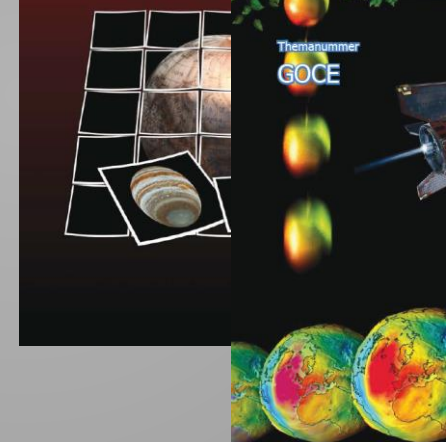
- ▶ Broadening of spaceflight developments including other disciplines
- ▶ Articles from more and more Dutch persons working in other countries, or in ESTEC
- ▶ Industries and institutes in The Netherlands are more involved,
- ▶ Students are encouraged to write



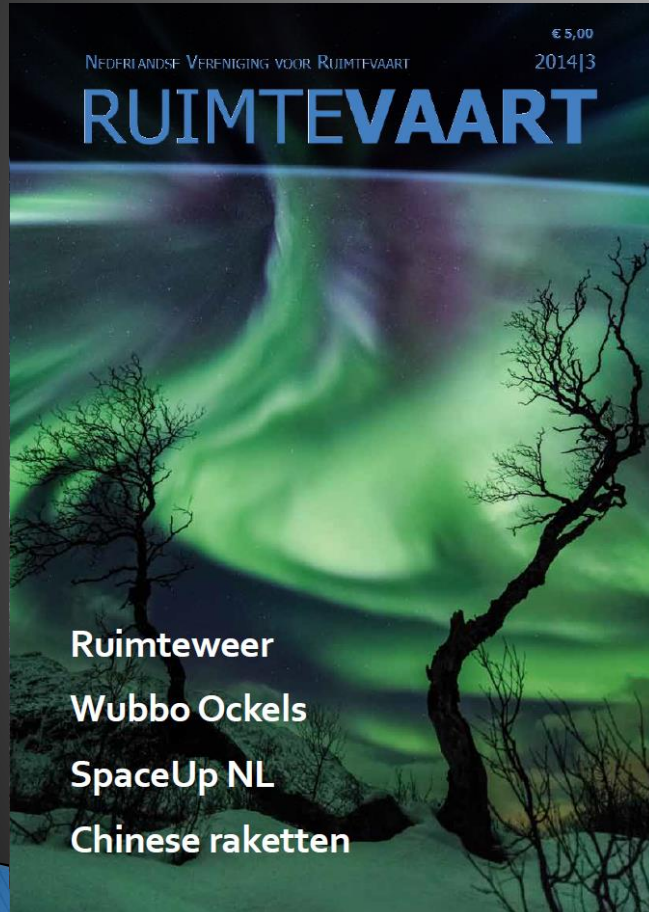
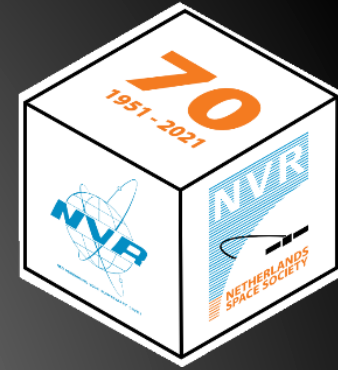
1996–2010: Spaceflight Broadens



- ▶ All articles are in Dutch, occasionally English versions
- ▶ Fixed team of editors, who author most of the articles
- ▶ For special editions about specific topics, “guest” Editor-in-Chiefs
- ▶ Advertisement is introduced to help finance the magazine (“bedrijfslidmaatschap”)
- ▶ Lay-out more complex with few pages in colour
- ▶ In 2008 ‘Ruimtevaart’ goes full-colour

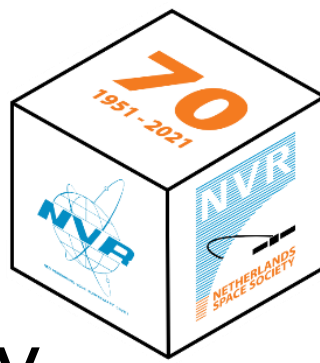


the Magazine Today



- ▶ End 2011 Ruimtevaart was restarted
- ▶ Reflecting changes in membership (increasing number of students and foreign professionals)
- ▶ Focus on analysis, overviews, background information and in-depth articles
- ▶ Variety of articles is increased to reflect diversity of today's space domain
- ▶ Attention to National and European space policy

Conclusions



- ▶ NVR society and 'Ruimtevaart' has successfully kept up with the times over more than 70 years
 - evolution of spaceflight
 - changes in the society's membership
 - Member and reader demands and tastes
- ▶ Interesting history of the development of spaceflight enthusiasm, knowledge and the space industry in The Netherlands