5th ESA Micro & Nano Technologies Round Table

ESTEC, Noordwijk The Netherlands

3-5 October 2005

WELCOME & INTRODUCTION

Jack Bosma

Head of the Product Assurance and Safety Department

5th ESA MNT Round Table
Welcome to ESTEC

5th ESA MNT Round Table
Scope of ESTEC

Principal tasks

- Studies, preparation and management of most ESA space programmes: science, applications, human spaceflight and future exploration
- Technical support to ESA project teams, incl. preparation and coordination of ESA space technology R&D programme
- Product assurance and safety responsibility for ESA space programmes
- Management of ESTEC Test Centre and coordination with other test centres in Europe

Employment

- Appr. 2200 persons (of which 1074 as international ESA staff)

Area

- 40 hectares, 106.000 square metres of buildings and parking area
- Future expansion area: 4,5 ha

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Back in Local History

Today the local population celebrates the liberation of Leiden in 1574 from a siege by Spanish troops

Technology played a key role even in the 80 years war

During the winter campaigns the Spanish were taken by surprise by extremely fast moving locals

These rebels appeared to be moving on metal spurs attached to the foot by a wooden plate

Lesson learned: skates gave a definite advantage to heavy armor when fighting on ice

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Space Technology Today

ESA's Technology programmes ensure

- **effective preparation for future space programmes**
- **worldwide leadership in selected areas**
- **support to worldwide competitiveness of European industry**

ESA manages more than 250 million € in technology development contracts every year.

Technology is key to the success of such recent success stories as:

- **Mars Express**
- **Huygens**

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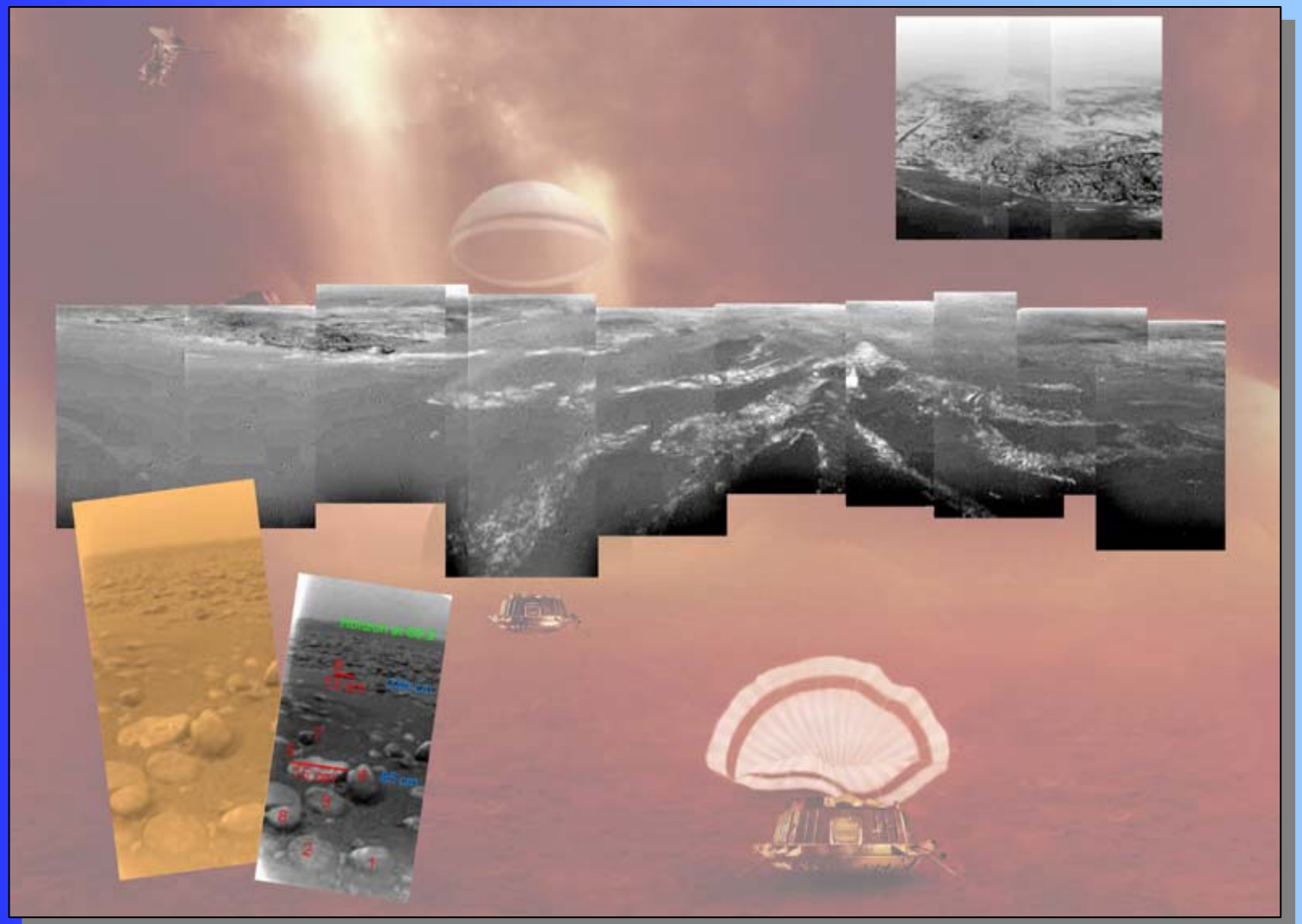
Mars Crater Olympic Mons as seen by Mars Express

5th ESA MNT Round Table
First images from Titan

January 2005



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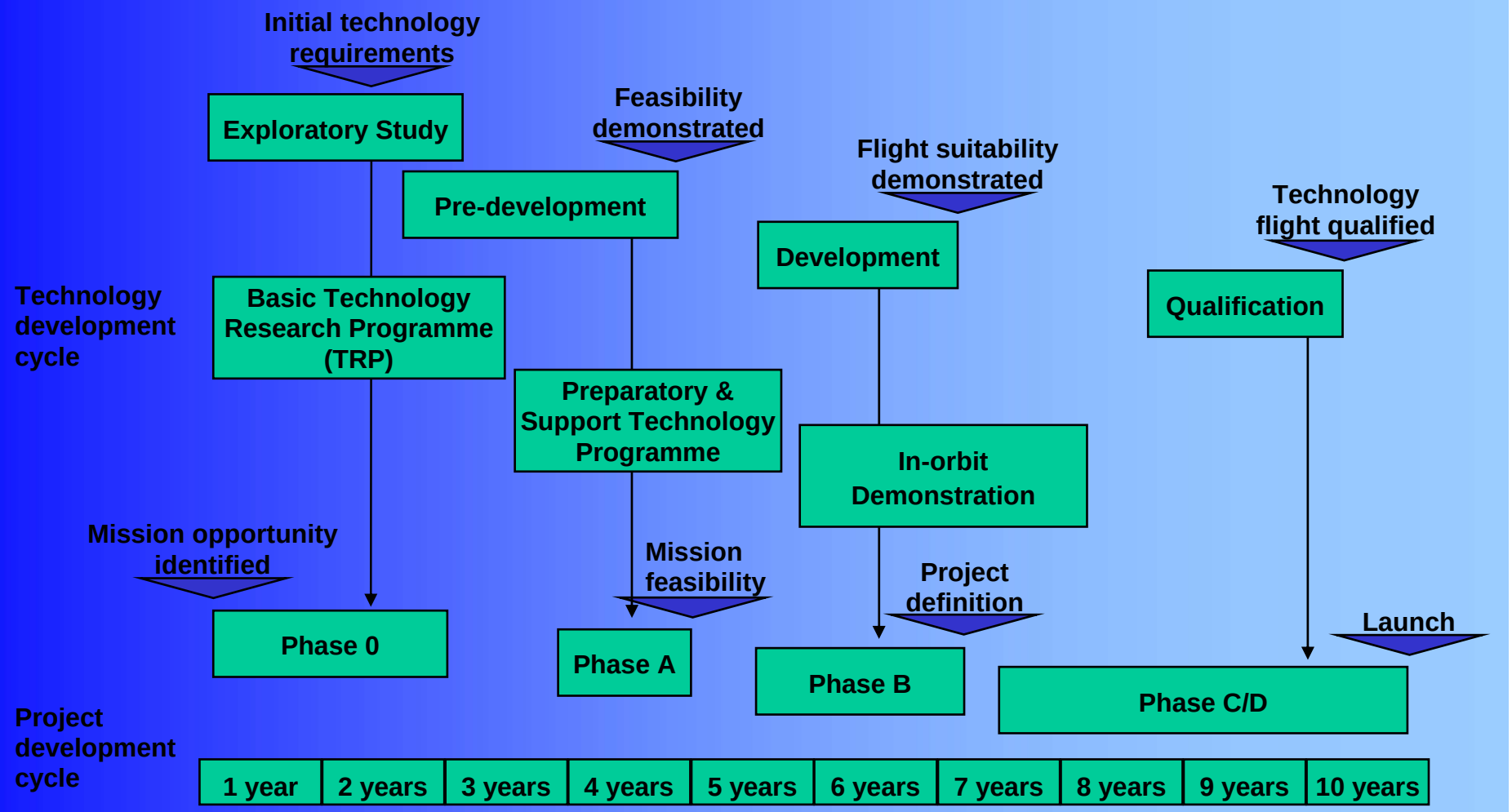
Technology Development
Project phasing relationship



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Space Technology Today

New technology takes ~ 10 years turn around time from initial concept to space qualified status for an operational mission

Science missions often are path finders to demonstrate new technology

Smart-1 mission to the moon proved e.g. the benefits of electric propulsion

Nevertheless commercial operators of telecommunication satellites consider that electric propulsion has a long way to go to prove its merits

5th ESA MNT Round Table Objectives

- Summarize on the achievements of the first 4 ESA MNT Round Tables, present the new activities started by ESA since 2003 in this domain

- Encourage and trigger effective cooperation between industry (final user) and universities / research centers (prototyping & development) and facilitate technology transfer

- Present initial data gathered by ESA and NSAs on MST failure mechanisms, reliability and lifetime, start collaborative work on space qualification

- Discuss on ESA possible Role and involvement in the Nano Technology domain

- Inform the space community on ESA initiatives in support of MNTs ('-TEC Nanotechnology WG, CTB MNT WGWG, ESA Website, Nexus, Caneus…)

5th ESA MNT Round Table
Expected outcome

- Consolidated **Roadmaps** for supplier and final users
- Updated **TRL Data** on existing MNT systems
- Suggestion on required **future investments**
- **Inputs for the coming TEC-NET and NEW-PRO programmes** and MNT developments
- Identification of new ESA GSTP opportunities

5th ESA MNT Round Table Participation

- 1st Round Table in March 1995
- 2nd Round Table in October 1997
- 3rd Round Table in May 2000
- 4th Round Table in May 2003

5h ESA MNT, 3-5 October 2005:

- 75 Abstracts submitted
- 16 countries participating (Netherlands, Switzerland, France, Denmark, Italy, Spain, Germany, UK, China, USA, Belgium, Sweden, Greece, Norway, Finland, Austria)
- 3 complete days, 11 sessions including one complete session for Nano-Technologies
- ~ 170 registrations

5th ESA MNT Round Table
SUM-UP

- Micro-Nano Technology holds great promise

- This forum is key on the road to achieve qualified micro-nano technology solutions for space

- The next three days also provide a unique opportunity for you - the participants - to exchange ideas, data, services, products, start collaborations

- On behalf ESA welcome to all participants and a very fruitful exchange at the round table

5th ESA MNT Round Table

ESA has the pleasure to invite you to a cocktail party

at the ESTEC Foyer

Tuesday 4 October @ 18:15