



The
High-Temperature
Corrosion Center

Lars-Gunnar Johansson

Director of HTC



HTC has now started a new program period 2018-2021!

The Swedish Energy Agency has decided to finance a new HTC program period 2018-2021

18 (22) Companies

Swedish Energy Agency



The
High-Temperature
Corrosion Center

Chalmers

KTH

**Swerea-KIMAB
Swerea-IVF**

HTC Master
agreement

HTC
Program
description



The HTC Program description 2018-2021

Program description for the

**High Temperature
Corrosion Centre (HTC)**

2018–2021

HTC
Program
description

2 (27)

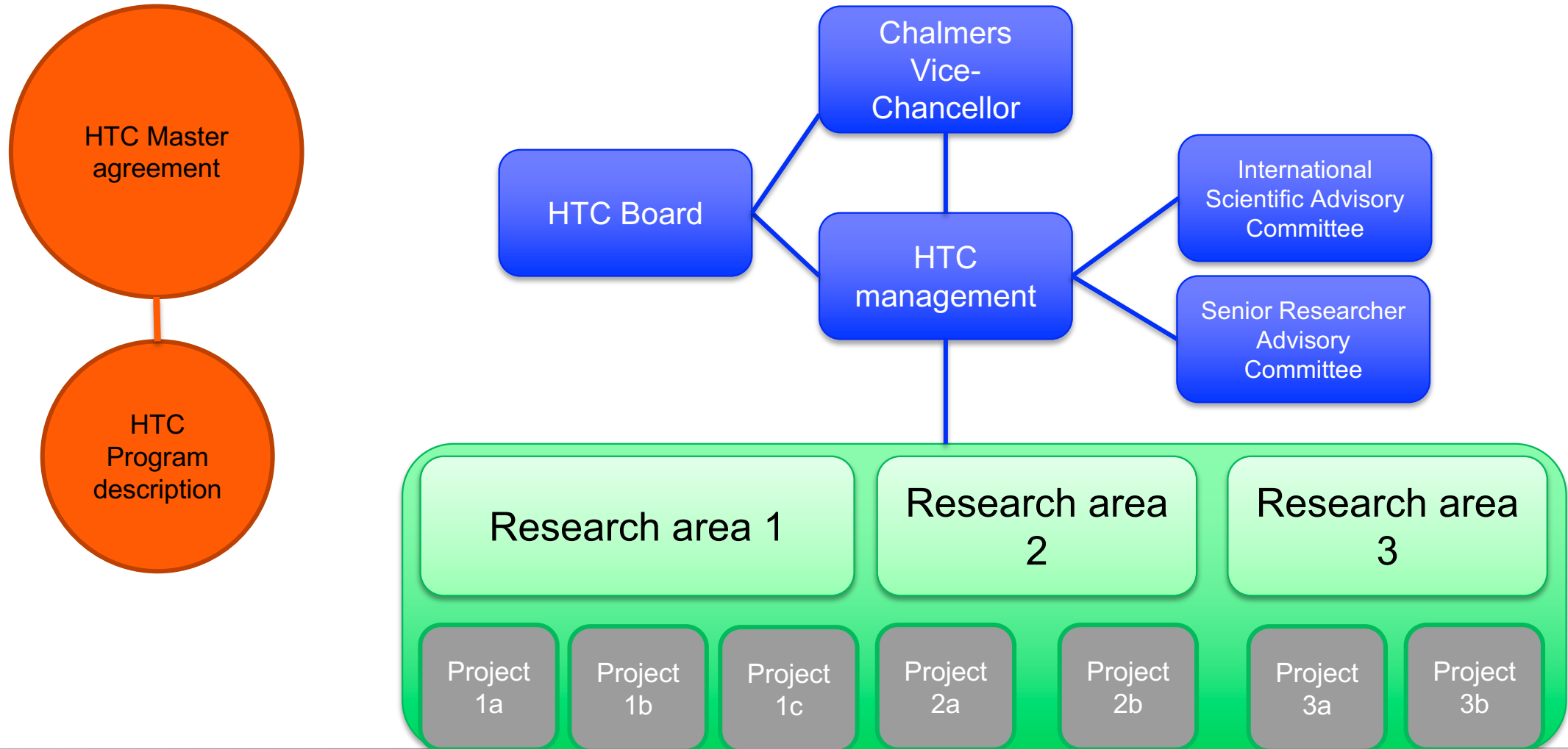
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2.2 HTC Vision

HTC's world-leading research contributes to developing a sustainable energy system and to an increased security of energy supply.

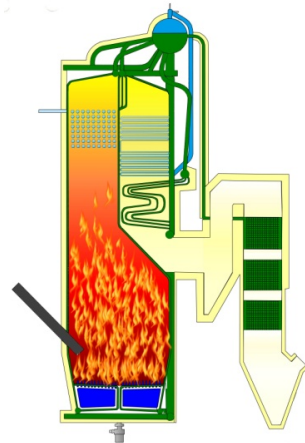
HTC enables new energy efficient and environmentally sustainable processes that contribute to fulfilling Sweden's national energy and climate goals. HTC also contributes to global climate benefits and to the development of Swedish industry.



The member companies



- Sandvik Materials Technology
- Kanthal
- *MH Engineering*
- *Smålands stålgjuteri*
- *Thermocalc*



- Valmet Technologies
- Babcox & Wilcox Völund
- Sumitomo SHI FW Energia
- Cortus
- Entech
- Janfire



- NIBE
- Siemens Ind. Turbomachinery
- *Phoenix Biopower*
- *Cleanergy*
- *Ceres Power*



- Energiforsk representing:
 - EON
 - Stockholm Xergi
 - Mälarenergi
 - Linköping Tekn. V
- *Maabjerg Energy Center Holding*

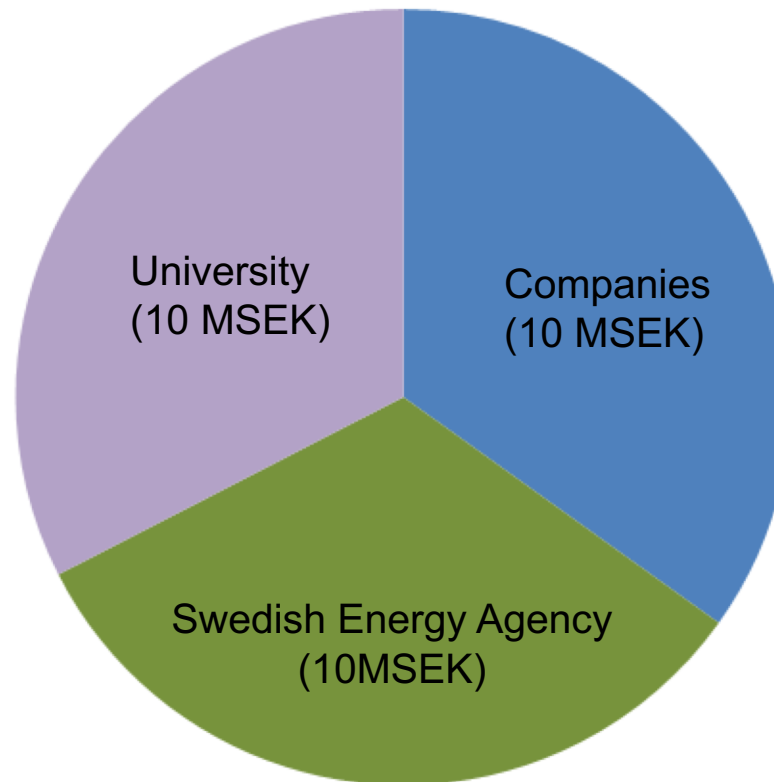
Blue = new companies



HTC Financing 2018-2021

(sum of cash and in-kind contributions per annum)

The new budget
is increased by
25%!



Total cash financing of HTC research at the University and institutes is about 13 MSEK/year

The Master Agreement

The HTC Master Agreement regulates the financial obligations, IPR issues etc. and is signed by the Swedish Energy Agency, Chalmers and the 18 company stakeholders



HTC Master
agreement

A draft HTC Master Agreement (approved by the Swedish Energy Agency and Chalmers) has been sent to the companies for comment

The definitive Master Agreement will be sent to the Swedish Energy Agency, Chalmers and the 18 company stakeholders for signing

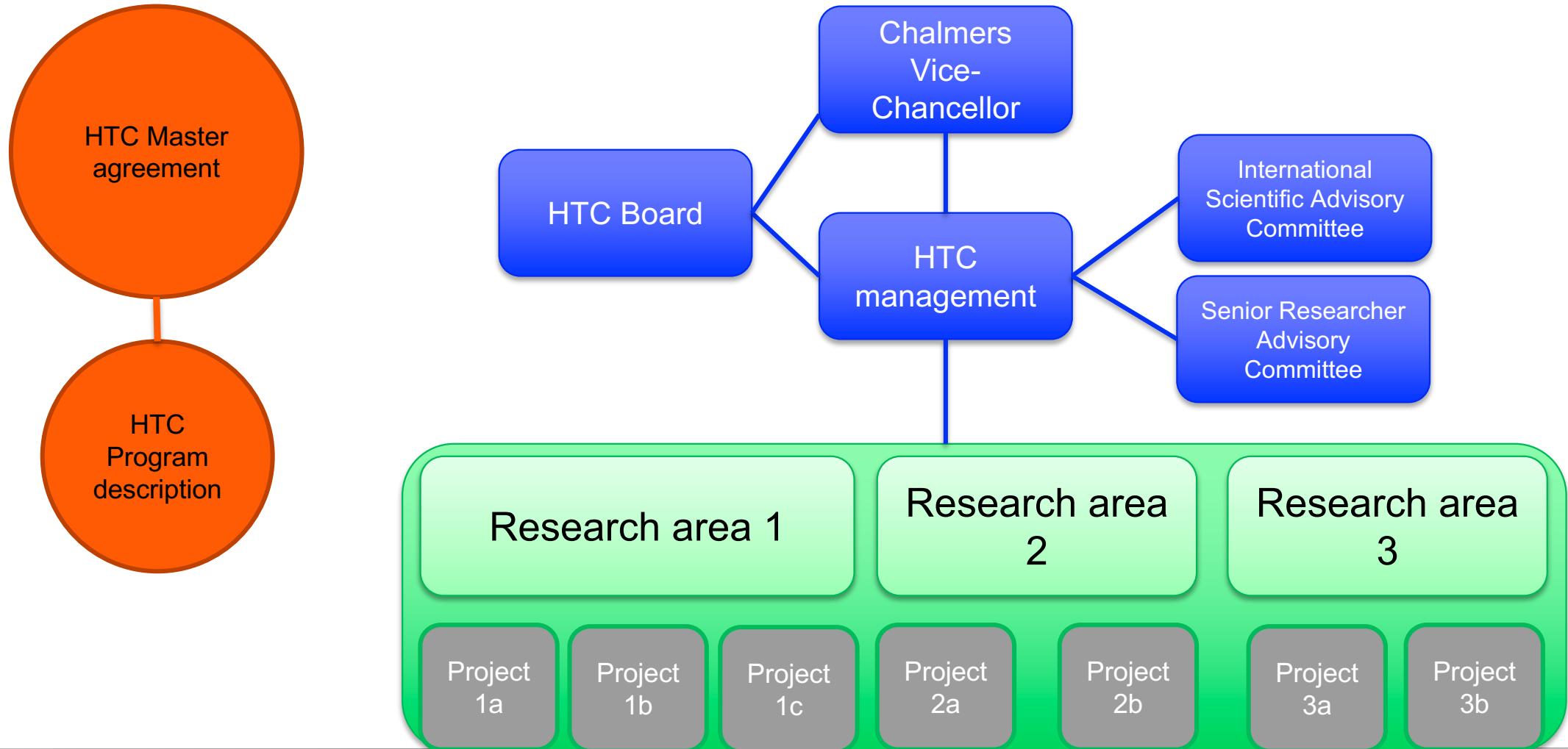


The HTC Board

The Vice-Chancellor of Chalmers appoints the new board (after conferring with the Swedish Energy Agency). When the HTC Master Agreement is signed, HTC's director summons the board to its first meeting.

Important points on the board's agenda will be the project structure, project managers and four-year budgets.

The board makes *recommendations* for decisions on HTC. The *final decisions* are taken by the Vice Chancellor of Chalmers





Research areas

- 1: Renewable fuels – more efficient generation of power and heat –gasification
- 2: New technologies and new energy efficient processes
- 3: Energy conversion and energy storage



Research areas

- **Renewable fuels – more efficient generation of heat and power-gasification**
 - *Critical corrosion phenomena in combustion of biomass and waste in combined heat and power boilers*
 - *Acting manager* J. Liske, Chalmers
 - *Companies:* Valmet Technologies, Babcox & Wilcox Völund, Sumitomo SHI FW Energia Energiforsk (Representing Stockholm Xergi, E.ON, Mälarenergi, Tekn. V. Linköping) [Thermocalc](#), [MH Engineering](#), [Maabjerg Energy](#), Sandvik Materials Technology, Kanthal
 - *Corrosion of high temperature materials in small scale wood-pellet fired boilers*
 - *Acting manager* C. Pettersson, Swerea-IVF
 - *Companies:* Janfire, NIBE, [Smålands Stålgjuteri](#) Kanthal
 - *High temperature corrosion during gasification of biomass and waste*
 - *Acting manager* R. Norling, Swerea-KIMAB
 - *Companies:* Cortus, [Phoenix Biopower](#), Sandvik Materials Technology, Kanthal



Research areas

- 1: Renewable fuels – more efficient generation of power and heat –gasification
- 2: New technologies and new energy efficient processes
- 3: Energy conversion and energy storage



Research areas

- **New technologies and new energy efficient processes**
 - *New corrosion resistant materials for challenging process environments – low oxygen activities and very high temperatures*
 - *Acting Manager* JE Svensson, Chalmers
 - *Companies:* Sandvik Materials Technology, Kanthal, Entech
- *High temperature corrosion of materials and components produced by additive manufacturing (AM)*
 - *Acting Manager* M. Halvarsson, Chalmers
 - *Companies:* Siemens Industrial Turbomachinery, Kanthal, Sandvik Materials Technology



Research areas

- 1: Renewable fuels – more efficient generation of power and heat –gasification
- 2: New technologies and new energy efficient processes
- 3: Energy conversion and energy storage

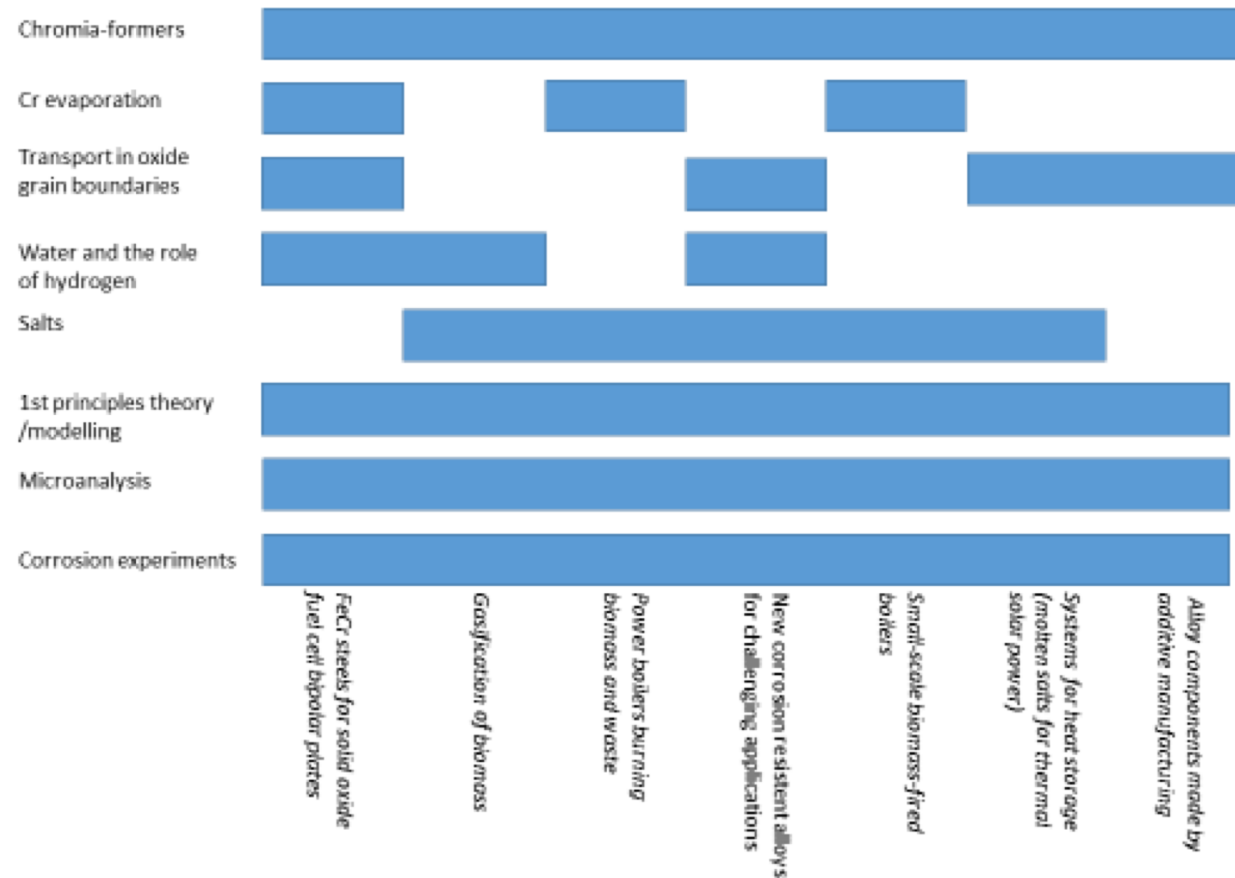


Research areas

- **Energy conversion and energy storage**
 - *Corrosion and oxidation of FeCr alloys for solid oxide fuel cells (SOFC) and solid oxide electrolysis cells (SOEC)*
 - Acting Manager J. Froitzheim, Chalmers
 - Companies: [Ceres Power](#), Sandvik Materials Technology
 - *High temperature corrosion in systems for heat storage (corrosion in melts for concentrated thermal solar power)*
 - Acting Manager JE Svensson, Chalmers
 - Companies [Cleanergy](#), Sandvik Materials Technology, Kanthal



Research challenges and application areas

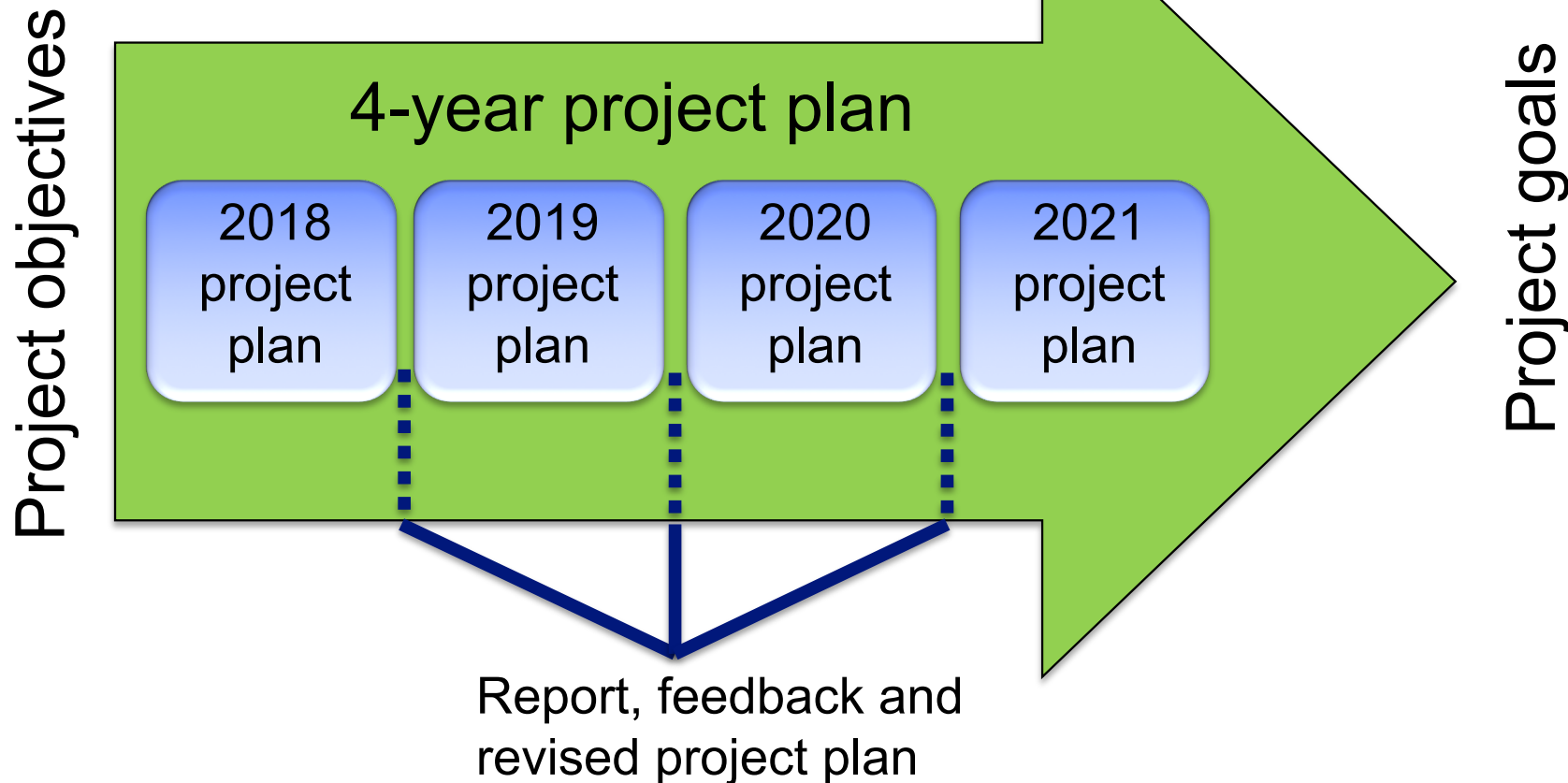






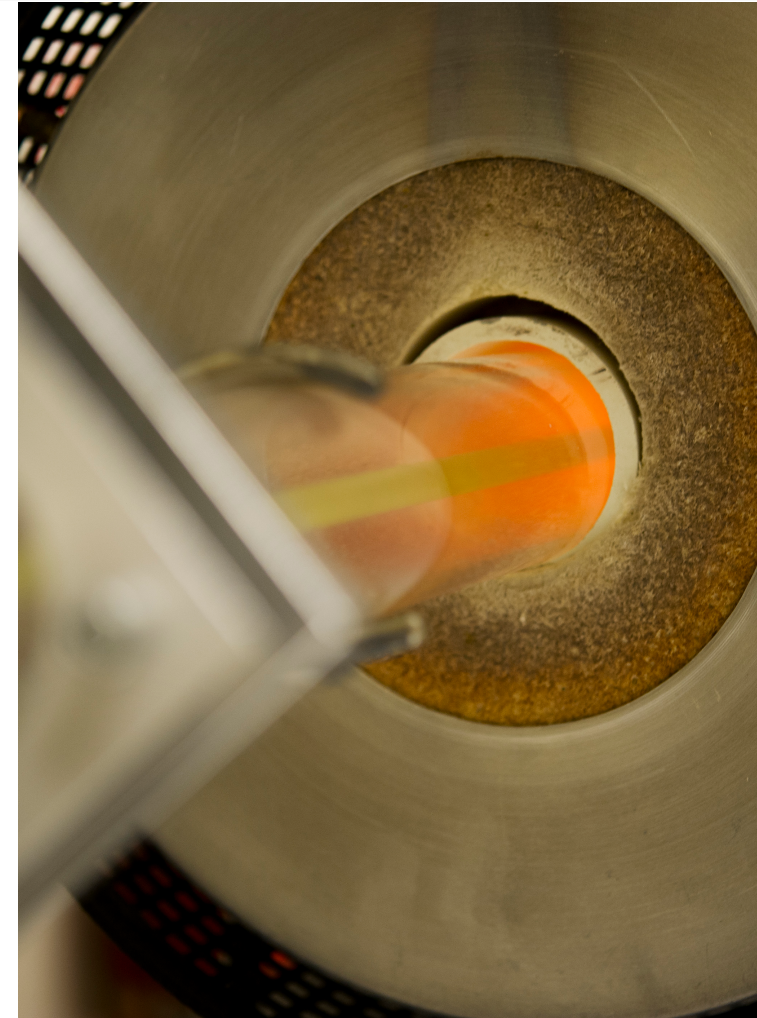


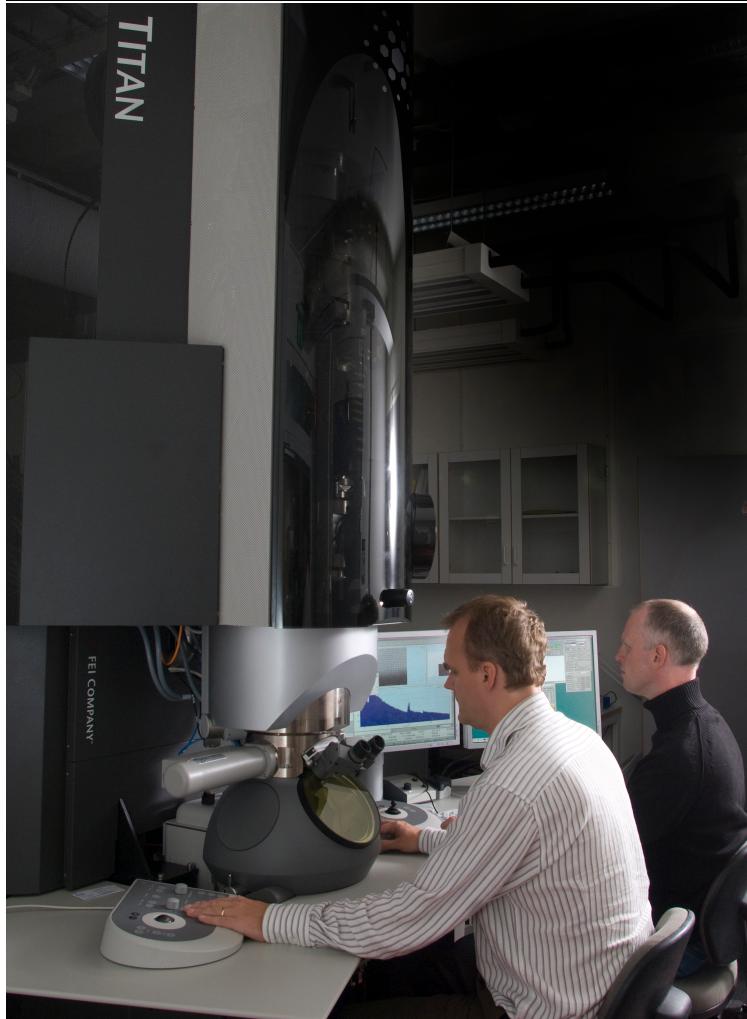
How do the research projects work?



The 4-year project plan

- Outlines the research direction
- Specifies the background, aim, goals, etc.
- Lists the project participants (i.e. industrial and academic partners)
- Contains an 4-year project budget



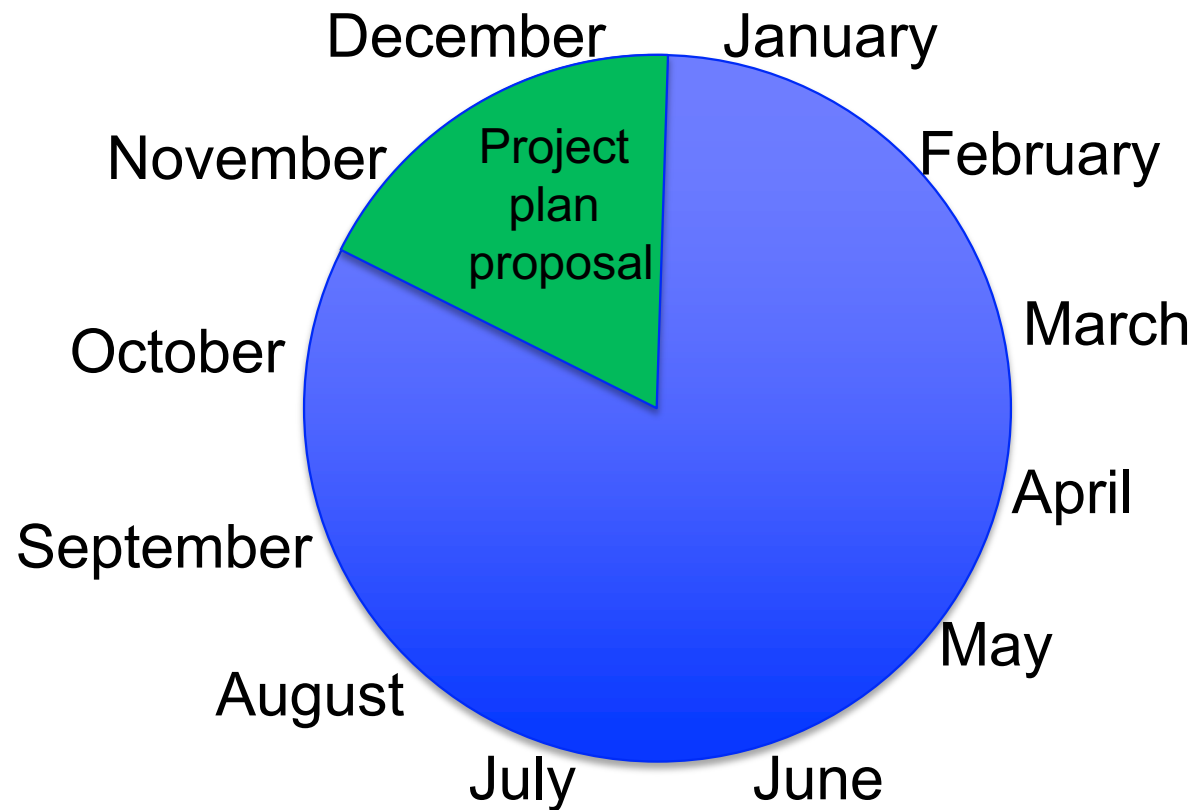


The yearly plans

- Works toward achieving the goals specified in the overall 4-year plan
- Contain a detailed research plan for the upcoming year
- Is discussed and subsequently decided upon by all project partners
- The industrial relevance is matched with scientific excellence towards a sustainable society

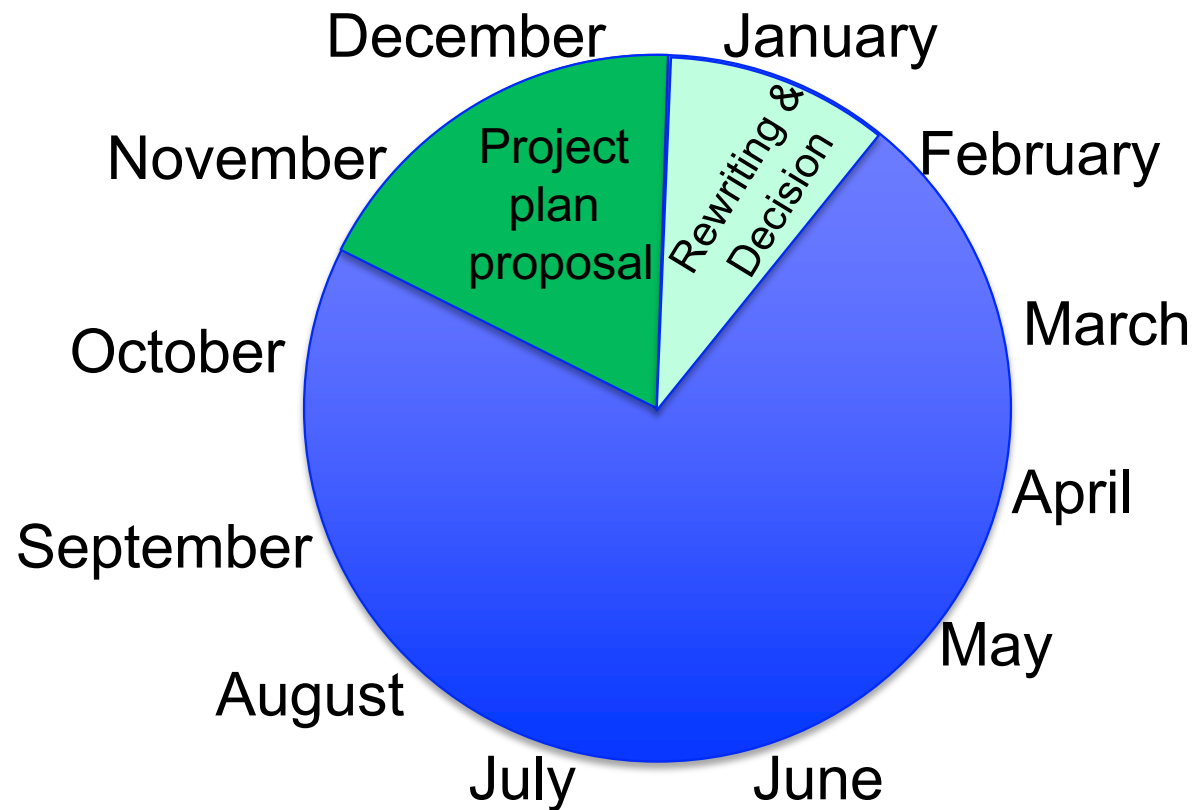


A year within a HTC project





A year within a HTC project





A year within a HTC project

