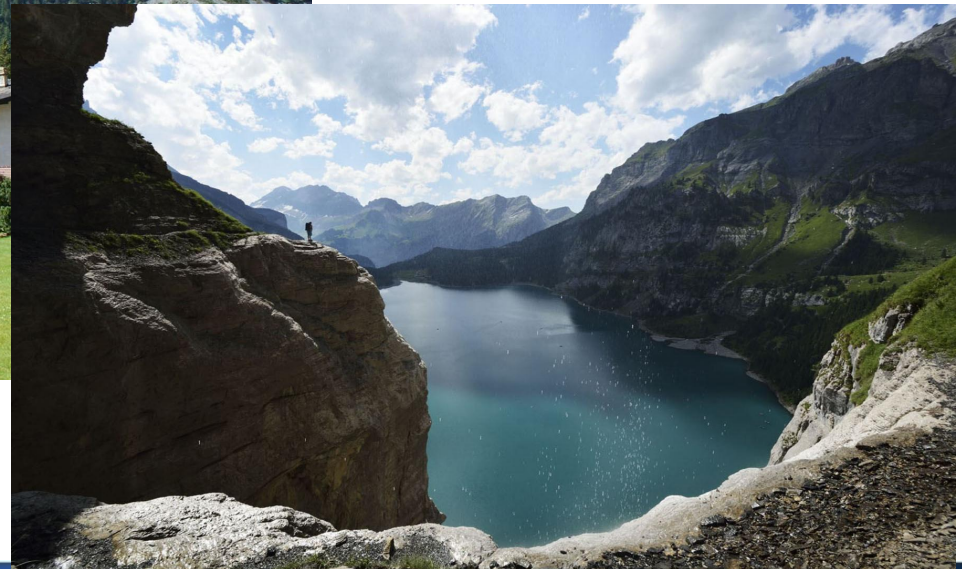


# CHIPP Roadmap Workshop 2020

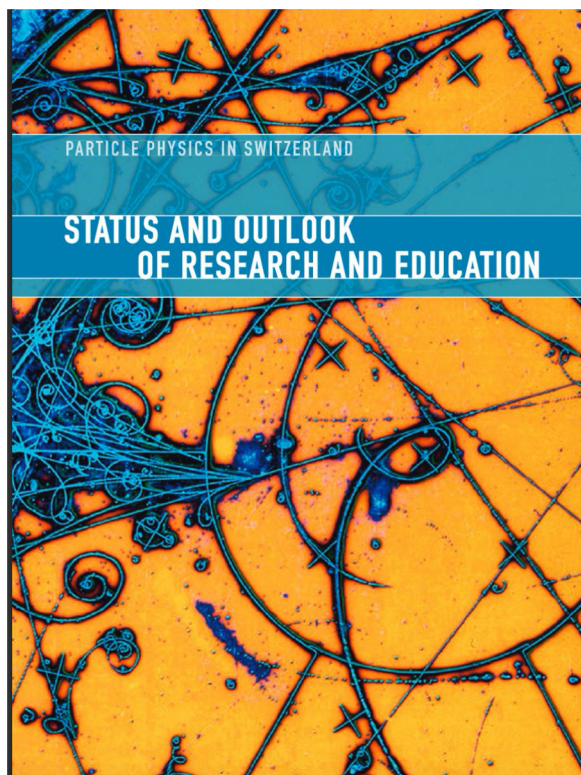
27/28 August 2020, Hotel Victoria Kandersteg



Bern, April 11, 2011

Text edited by L. Baudis, A. Ereditato and M. Pohl with contributions from the CHIPP Board.

Approved by the CHIPP Board on April 11, 2011, in a unanimous vote with one abstention.



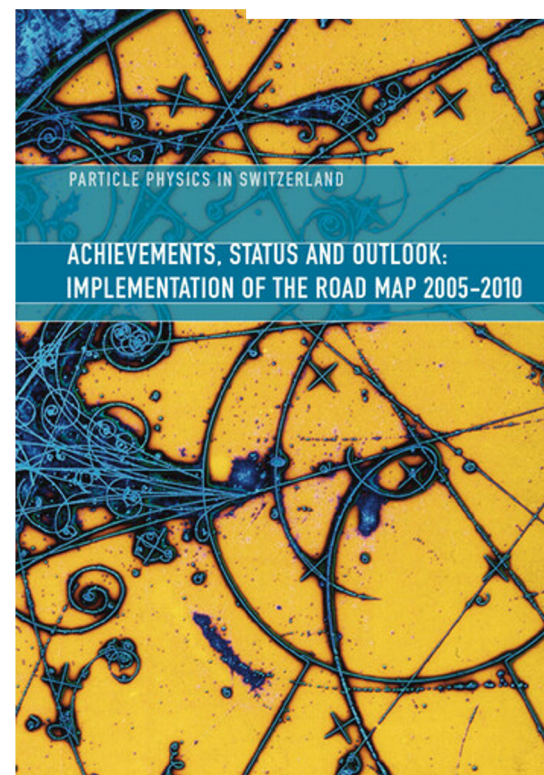
This report was requested by the Forum of Particle Physics in May 2003. The Working Group contributing to this report was: A. Bay, A. Blondel, A. Clark, Z. Kunszt, P. Minkowski, E. Pauss, A. Rubbia, M. Spira, U. Straumann, and J.-L. Vuilleumier, with additional important contributions from J.-P. Derendinger, R. Durrer and K. Gabathuler.

The report was approved by the CHIPP Board in February 2004.

**In May 2003, the Swiss Particle Physics Forum commissioned a study of the status and outlook of particle physics research and education in Switzerland. This publication is the Report of the Working Group appointed to make that study. The Forum was replaced by a Swiss Institute for Particle Physics (CHIPP) in October 2003. The CHIPP Board endorsed this report in February 2004.**

**Authors:** CHIPP  
**Pages:** 105

May 2003 – February 2004



**In its Board Meeting of August 2009, CHIPP decided to undertake a critical review of the actual implementation of the Road Map, summarized in the present document. CHIPP encourages Swiss representatives to organizations writing or updating their Road Maps in the relevant domains.**

**Authors:** CHIPP  
**Pages:** 24

August 2009 – April 2011

## Roadmaps for research infrastructures

In a mandate of the Confederation, SCNAT develops roadmaps for scientific research infrastructures. These will form the basis for the Swiss Roadmap for Research Infrastructures (RIs). This roadmap of national and international RIs of interest for Switzerland is used to decide which large research facilities deserve federal support.



MS particle physics detector on the Large Hadron Collider at CERN

We need to update the CHIPP Roadmap:

- Inform stakeholders (SERI, SNF, Parliament etc.) to secure future funding (ERI dispatch 2025-2028)
- European Strategy of Particle Physics

**This will have to be a team effort of the whole CHIPP Board!**

- SCNAT defines process and will provide support (M. Türlér, MAP Platform)

Goal is to converge by **end of 2020**

The State Secretariat for Education, Research and Innovation (SERI) prepares every four years the [Swiss Roadmap for Research Infrastructures](#). This provides a basis for decision-making on the investment of federal funds in research facilities of national interest. The Roadmap is integrated into the ERI Dispatch, which the Federal Council then submits to Parliament for approval.

On request by the SERI, SCNAT develops discipline-specific roadmaps for the natural sciences. These point out which research infrastructures will be necessary in the future and prioritise them from a scientific point of view. The SERI will evaluate the roadmaps for the various fields together with other actors and will decide which research infrastructures are to be included in the 2023 Roadmap and then, possibly, in the ERI Dispatch 2025–2028.

# The 2004 versus 2020 Roadmap

- The 2004 Roadmap was triggered by the then Swiss Particle Physics Forum (pre-cursor to CHIPP) and addressed:
  - The own community – take stock of the field, consolidate also in view of LHC
  - To inform wider stakeholder community (SERI, Parliament, public)
- The 2020 Roadmap still fulfils those goals above with the same (heterogenous) audience
  - But was triggered by SERI via SCNAT to inform the SERI Infrastructure Roadmap which is populated prior to the ERI dispatch periods
    - Infrastructure Roadmap 2019 informed the 2021-2024 ERI dispatch
- **Community Roadmaps should form the basis for the 2023 SERI Infrastructure Roadmap**
- Roadmap update is timely **to react to the European Strategy Update**

# An Opportunity – and a challenge

We are in a very privileged position:

- The funding agencies are favorable to us and our input as a community is requested
- We can deliberate and have the freedom to build our own strategy bottom-up

All we need to do is to find an agreement ...



# An Opportunity – and a challenge

We are in a very privileged position:



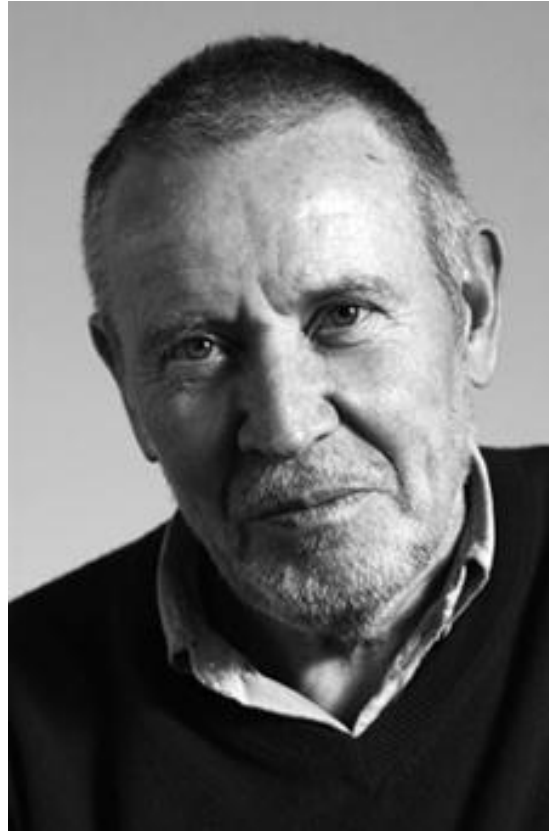
All we need to do is to  
find an agreement ... and not do this.

„Es geht nicht darum, wer zuerst auf dem Gipfel ist,  
sondern dass alle dort oben ankommen.“

*Zitat, Adolf Ogi*



# Peter Truöl



Em. Professor Univ. Zürich

29. June 1939 – 22 March 2020



# Philippe Mermod



Asst. Professor Univ. Geneva

8 August 1978 – 20 August 2020

# Organization

**Fill the trace sheet while registering before lunch .. THANK YOU !!**

**Introduction, Interplay ESPP and CHIPP Roadmap**

*Rainer Wallny*



<https://ethz.zoom.us/j/92448965115?pwd=SzVQb3k5TW1qamRINGJCaS9yaCs2Zz09>

10:30 - 11:35

**ESPP and intensity frontier of particle physics**

*Mikhail Shaposhnikov*

<https://ethz.zoom.us/j/92448965115?pwd=SzVQb3k5TW1qamRINGJCaS9yaCs2Zz09>

11:35 - 11:55

**FCC project**

*Alain Blondel*

<https://ethz.zoom.us/j/92448965115?pwd=SzVQb3k5TW1qamRINGJCaS9yaCs2Zz09>

11:55 - 12:15

# Parallel (1)

**Neutrino: writing session**

*Michele Weber*

*BELLE EPOQUE  
HOTEL VICTORIA*

13:45 - 15:15

**AstoParticle: writing session**

*Ruth Durrer  
Zimmermann*

*BELLE EPOQUE  
HOTEL VICTORIA*

13:45 - 15:15

**THEORY: writing session**

*Gino Isidori*

*BELLE EPOQUE  
HOTEL VICTORIA*

13:45 - 15:15

**High & Low Energy:  
writing session**

*Anna Sfyrla*

*[https://ethz.zoom.us  
/j/99657155234?pwd...](https://ethz.zoom.us/j/99657155234?pwd...)*

13:45 - 15:15

**outreach &  
education: writing session**

*Katharina Mueller*

*BELLE EPOQUE  
HOTEL VICTORIA*

13:45 - 15:15

**PLENARY: YOUNG PEOPLE VISION**



*Admir Greljo, Alessandro Calandri, Dr Anna Soter, Armin Fehr, Federico Leo Redi, Francesco Lucrelli, Giulia Cusin, Michelle Galloway, Stefania Bordoni, Tatiana Pieloni, Dr Xuan Chen*

<https://ethz.zoom.us/j/92448965115?pwd=SzVQb3k5TW1qamRINGJCaS9yaCs2Zz09>

15:15 - 16:30

17:00	<b>BOARD meeting: <a href="https://indico.cern.ch/event/946385/">https://indico.cern.ch/event/946385/</a></b>	<i>Rainer Wallny</i>
18:00		
	<a href="https://ethz.zoom.us/j/99225147807?pwd=YVZSeWMvN3BGREE4NkFuR0lBb3lhdz09">https://ethz.zoom.us/j/99225147807?pwd=YVZSeWMvN3BGREE4NkFuR0lBb3lhdz09</a>	17:00 - 19:00
21:00	<b>BOARD meeting: After Dinner <a href="https://indico.cern.ch/event/946385/">https://indico.cern.ch/event/946385/</a></b>	
	<a href="https://ethz.zoom.us/j/99225147807?pwd=YVZSeWMvN3BGREE4NkFuR0lBb3lhdz09">https://ethz.zoom.us/j/99225147807?pwd=YVZSeWMvN3BGREE4NkFuR0lBb3lhdz09</a>	20:30 - 21:30

Only CHIPP board members and observers

**PLENARY:**



**Discussion and writing sessions:**

Pillar 1 – in the Plenary room (Anna Sfyrla)

Pillar 2 – Meeting Room 1 (Michele Weber)

(first room to the right as you pass the elevator)

Pillar 3 – Meeting Room 2 (Ruth Durrer)

Theory – Lounge or outside (Gino Isidori)

Education and outreach – Lounge or outside

(Katharina Müller)



## Plenary Etiquette:

- Wear a mask
- One Hand Desinfectant available per table
- If you pass the microphone, desinfect hands before and after use
- People in room: please keep zoom session mute AND output volume zero to avoid feedback if you connect
- People outside: Zoom moderator Mauro Donega is co-host who you could chat with if there is a minor problem (not to interrupt the main session)

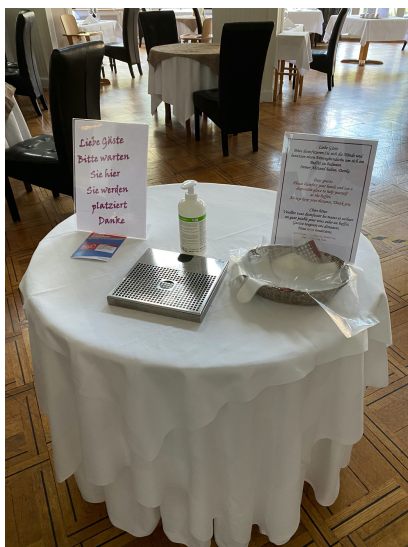




# Organizational News

## LUNCH AND BREAKFAST RULES

- ❑ Doodles Friday breakfast **07:30-08:00** and **8:30-9:00** [link](#)
- ❑ Coffee break morning: wear the mask while waiting in line
  - can go outside main entrance or patio/terrace close to swimming pool
  - Terrace close to dining room not available
- ❑ Coffee break afternoon: wear the mask while waiting in line
  - Terrace close to dining room available in addition
- ❑ Lunch slots 12:15-13:00h, 13:00h-13:45h [Thursday Friday](#)



## LUNCH AND BREAKFAST RULES

- Buffet rules ( lunch/ breakfast / BBQ dinner )
  - Wear the mask
  - Use a plastic glove to take the spoon
- BBQ Dinner: no two shifts, decorrelate accordingly but can stay outside (bring a sweater)



16h **PHOTO !!** In the terrace outside the dining room

5 groups of 10 people at the time,  
then we will make an artistic collage



**BOARD meeting**



**Only Board members and observers to the Board**

**The rest .. hiking**

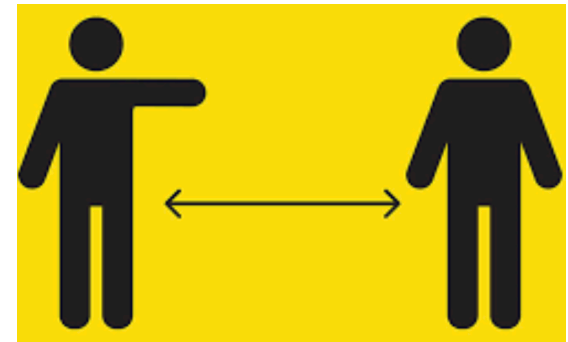
**swimming (there is a swimming pool in the Hotel)**

**bicycle (ask at the reception)**

**caffé ..**

**See you at 19h for the barbeque !**




**THE RULES ARE STILL THE SAME AS THURSDAY**



# Workshop Deliverables

# Aim of the Workshop: Charge to Parallel Sessions

**The purpose of this meeting is to significantly advance the roadmap process as part of our self-governance**

-  1. Identify all/check for the necessary pieces
-  2. Find the relative weight and balance of those pieces
-  3. Make a concise document that fulfils the requirements

Prior to writing, we need to build consensus – best done in person!

# Agenda item 7: Editorial Team Roadmap 2020

## Editorial Team:

composed of the EB members and SWICH workshop coordinators+ individuals (KM,GD,MS,LR) nominated by the CHIPP EB

- Anna Syrla (high and low energy frontier pillar 1)
- Gino Isidori (theory)
- Günther Dissertori (tech transfer)
- Katharina Müller (outreach and education)
- Michele Weber (neutrino pillar 2)
- Mike Seidel / Lenny Rivkin (accelerator)
- Ruth Durrer (astroparticle pillar 3)
- Rainer Wallny (general structure, main editor, organizational lead)
- Angela Benelli (secretary)

6 Meetings held:

19/02, 30/03, 03/06, 30/06, 16/07, 19/08

Idea is that the editorial team members have the mandate to

- act as nexus to the CHIPP board community and edit the submitted text
  - input should also come from the board members!
- Help co-ordinate and convene the Kandersteg workshop groups



# Agenda item 7: Scope and Audience of Roadmap Document

Slide from the February 2020 CHIPP Board

## 1) Parliament, SNF, SERI:

- ❑ Inform “bottom up” the **SERI Roadmap for Research Infrastructures** compiled in 2023 in preparation of the **ERI Dispatch 2025-28**
- ❑ Concentrate on **2025 to 2028**
- ❑ Wish for **continuous update** (4 year cycle)

## 2) 1) plus Swiss particle physics community, greater public

- ❑ Define the **long term priorities** of the field - focus on the next **15 years**
- ❑ Incorporate the ESPP update
- ❑ CHIPP pillar 1 Whitepaper periods
  - Near-term future **2019–2024**: current and next ERI/FLARE periods
  - Midterm future **2025–2035**: HL-LHC phase up to the end of the LHC program
  - Long-term vision beyond **2035**

Identify two (overlapping) scopes and several relevant time scales ( ~now, 2025-28, beyond 2030)

⇒ Write a document that (at least for now) encompasses (1) within the broader framework of (2)

- Possibly in stages - 1) is due end of year, at SERI by March 2021
- Update **pillar whitepapers** if more detailed discussion is needed (Roadmap is a high level document)

# Time Scales

ESPPU

ERI Dispatch

(FLARE Prioritization  
not in Roadmap)



# Agenda item 7: Roadmap Outline

## Generic structure of discipline-specific roadmaps

The Swiss Academy of Sciences (SCNAT) received a mandate from the State Secretariat for Education, Research and Innovation (SERI) to support the scientific community in the elaboration of discipline-specific roadmaps to be delivered by the end of March 2021. Based on the existing roadmaps on particle physics, astronomy and space science, the following generic structure is proposed for the new roadmaps to be written. This proposal shall be considered simply as a guideline and can be adapted to the specific needs of the scientific fields. The order of the sections is also indicative and was chosen here to put in front the most important information. It is also possible to prefer a more classical structure with the authors and the table of contents given first, while the findings and the recommendations come at the end. The numbers of pages per section are a very rough estimation leading to an overall document of between 40 and 80 pages. This is about the right size to aim at in a text with final layout and including some figures and pictures to ease the reading. The actual text information shall therefore be substantially shorter to leave blank areas in the final layout and space for illustration. For inspiration about how it could look like and the level of detail in the text, please refer to the roadmaps mentioned above and available on the MAP website<sup>1</sup>.

# Agenda item 7: Roadmap Outline

## Executive Summary and Overview

### Proposed generic structure

#### 1. Executive summary (1-2 pages)

Summary of the scope, the national and international landscape, the future trends and the major challenges in the field. Identification of the major findings and recommendations.

#### 2. Findings and recommendations (2-4 pages)

More specifically identify here a series of findings and related recommendations. These can be already imbedded in the various sections of the document and listed again here for easier overview and reference. Simplistic example:

*Finding 1:* Infrastructure XYZ is essential for our community in the field ABC, but it will no more meet the international standards in 5 years.

*Recommendation 1:* There is the need for a major upgrade of this facility or the building of a new infrastructure serving the whole Swiss community.

#### 3. Foreword (1-2 pages)

Describe the process that led to this roadmap and its endorsement by the community. Explain how you tried to reach out to the whole community.

#### 4. List of authors (1 page)

Provide the list of the authors with affiliations and possibly separating the main editors from other contributors. Possibly add here thanks for support received for the layout work, etc.

#### 5. Table of contents (1-2 pages)

Include a table of contents with page numbers. Possibly with in addition a list of figures and/or of tables, but this is probably only useful for a really long document.

#### 6. Purpose & scope (1-3 pages)

Clarify what is very generically meant by the overall field (e.g. "biology"), because this is not necessarily obvious to the target audience. What are the main scientific questions and challenges in this field? What is the objective of the document and the point of view adopted (very inclusive or more focused)? Clarify the separation with nearby disciplines (i.e. what is or is not covered here). State whether or not there was an attempt to prioritize the needs of specific infrastructures and how this is reflected in the document.

## Scientific Core Mission and Embedding

### 7. The present Swiss landscape (5-15 pages)

This section will be very specific to each field. It can be subdivided into research topics and/or per methodology (theoretical versus experimental, laboratory versus field study, and so on). Alternatively, it could be per geographical location, if there are well defined topics covered by different institutions. It shall be as much as possible inclusive of all the community to leave nobody out. It shall also show what are the major topics in Switzerland, which institutes are leaders in specific research areas, and possibly also what is less developed yet (especially if a new infrastructure is foreseen to fill this gap). How strong is the Swiss network: how much do the scientists of different institutes collaborate together? What are the main infrastructures used? Are they accessible to researchers from other institutions?

### 8. Major successes (2017–2020) (1-3 pages)

If relevant, one could identify in this section major recent (within the current ERI 4-year period) Swiss scientific achievements (are there any NCCR, NRP, awards, special EU funding, etc?). It can also be the building of a new infrastructure, the Swiss participation to an international organisation, etc.

### 9. The international context (2-6 pages)

Explain the main trends and the evolution of research in the field in Europe and in the world. How does Switzerland position itself in this global landscape: are we at the forefront or a small player? Add something on international collaborations: are there many large collaborations or is the research done in smaller groups?

### 10. Synergies with other scientific fields (2-6 pages)

Are there synergies with other disciplines (e.g. biology with chemistry, or physics, or medicine, etc.)? Are you benefitting from advances in other fields (e.g. computing, imaging/analysis tools)? Are you using common infrastructures (e.g. SLS at PSI)? Is there transdisciplinary research being pursued?

### 11. Relationship to industry (2-6 pages)

Do the industries directly benefit from the scientific research done? Are there contracts with the industry? Are there many start-up opportunities? Is there technological transfer from research to industry or does the research rely on technological developments (e.g. by providing better and better instruments and tools to be used by researchers)?

### 12. Impact on education and society (2-6 pages)

How is your research positively impacting on education and society? What are the benefits of the pursued research? Is your field offering a service to society (e.g. health, meteorology, agriculture, environment, energy, hazard warning, etc.)? Is there a link with the politics, do you provide advice for political decisions? Do you have links with museums and scientific collections? Do you support the promotion of young talents in your field? Do you have outreach activities? Is there something to say in relation with the sustainable developments goals (SDGs) or with possible citizen science?

Slide from the February 2020 CHIPP Board

+ explain CHIPP and its functions

# Agenda item 7: Roadmap Outline

## Vision for the Future 2025-28 and 2030+

## Outlook

### 13. Vision for the future (6-12 pages)

Explain how the landscape is foreseen to evolve until 2025-2028. What are the future trends and the development opportunities. What fields of research are getting more momentum and what is rather to stay constant or get less interest in the future? Are there game-changing new technological possibilities to be expected (e.g. Big Data, artificial intelligence, new imaging/analysis capabilities, etc.)? Are there new infrastructures already being built in the years to come? Are there new international collaborations foreseen? Where shall Switzerland reinforce its position, follow-up new international trends, etc.?

### 14. Development of national infrastructures (2025-2028) (2-8 pages)

On the basis of the previous sections, what are possible developments (in some cases even essential needs) in terms of infrastructures to maintain or strengthen the Swiss scientific expertise in the field. Are there infrastructures at national level, i.e. beyond what can be afforded by single institutes, that would be essential? Focus on the scientific benefits and the breadth of the community of users, whilst keep it very general on the size, the costs, possible geographical location, management structure, etc. These points will be defined in a second step involving the ETH-Board, swissuniversities and the institutions. They will be described in any specific proposal for a given infrastructure to be submitted by end 2021 (or early 2022) in view of an international evaluation conducted by the SNSF.

### 15. Swiss participation to international organisations (2025-2028) (1-5 pages)

Is there a need for Switzerland to join an international organization to get access to one or several international facilities? Explain the benefits of this. Which specific community would benefit from this? Is it of strategic importance for Switzerland? Are there also positive implications to be expected for the industry or society?

### 16. Conclusion (1-2 pages)

In this section or imbedded in various recommendations in the text and listed in Sect. 2, there should be some consideration about the prioritization of investments in the field. It is a difficult topic to agree upon by the community, but leaving this completely open to decision-makers is not always the best alternative. As the funds are not infinite it would be good that the community gives basic recommendations on how to serve them optimally in case the list of possible investments clearly exceeds the available means. Some simplistic examples could be: focus on research infrastructures serving the widest community of users; avoid prestige infrastructures in areas not yet having a strong scientific community in Switzerland; rather consider joining a European facility than building something smaller in Switzerland, etc.

### 17. Appendix (1-6 pages)

An appendix could be a list of people involved in the sub-groups formed in the preparation of this document. Another annex can give a list of acronyms used in the text. Concerning acronyms, try to refrain using them too widely to ease the reading by somebody not directly in the field. The same applies to references to scientific publications. Some key references can be given in appendix, if useful, but the roadmap shall not be a scientific paper with many references. Finally, the credit for figures and images shall also be included somewhere, either in the figure caption, or in an appendix, or an inside cover page.

+ reference to ESPP

Slide from the February 2020 CHIPP Board

- The aim is NOT to have an “encyclopedic” document focusing on the past
  - Avoid “laundry lists” of accomplishments – the emphasis is on the **future vision**
  - SERI part of the roadmap charge: “prioritize [the research infrastructures] from a scientific point of view”
    - He/She who does not wish to prioritize, will get prioritized by someone else
  - Equilibrium and balance between institutions should eventually be done in balance of examples from different institutes, not in complete listings
  
- The level of the roadmap should be on a higher level than accomplishments of individuals but institutes
  - Mention individuals only for highest level prizes and/or functions

# Roadmap Writing Time Table

Zürich, 25 June 2020

**Subject: deadline to establish the Roadmap of your communities**

Dear colleagues,

I attended a meeting last week at SERI to discuss the status of the community roadmaps and the future steps. Despite the difficulties due to the pandemic, there is unfortunately no possibility to delay the process significantly. Indeed, the ETH-Board and swissuniversities need to be informed early enough about the content of the community roadmaps for consideration in their own strategic planning and for then being able to coordinate the writing of proposals for new or major upgrades of national infrastructures, which are due by the end of 2021.

The delivery of the *final* roadmaps is therefore still scheduled for 31<sup>st</sup> March 2021. Furthermore, a *preliminary but close to final* draft should be provided for information to the ETH-Board and to swissuniversities by the end of the year (31.12.2020).

I regret that there is no room for a less tight schedule and hope you will be able to cope with these constraints. Once the main text is more or less in place, please contact Marc Türlér for getting support with the layout, which should ideally follow the corporate design of SCNAT.

I thank you for your cooperation and wish you a smooth progress in the writing of your roadmaps.

With my best regards,

H.R. Ott

Milestones	Date
Rough page size, boxes, images known if to be printed by SCNAT	30.09.2020
Close to final text to SCNAT	30.11.2020
Close to final version for ETH Board and Swissuniversities	31.12.2020
Final Version	31.03.2021

# Roadmap Writing Time Table



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Originally published on 1992-05-21.

We have our work cut out for ourselves ... please continue to collaborate with the editorial board



## Desired Outcome of the Workshop

**The purpose of this meeting is to significantly advance the roadmap process as part of our self-governance**

1. Identify all/check for the necessary pieces 

 2. Find the relative weight and balance of those pieces

 3. Make a concise document that fulfils the requirements

**Draft ready for the October CHIPP Board !**

**Prior to writing, we need to build consensus – best done in person!**

14:00

Plenary -: wrap up 

15:00

16:00

<https://ethz.zoom.us/j/92448965115?pwd=SzVQb3k5TW1qamRINGJCaS9yaCs2Zz09> 14:00 - 17:00

17:00

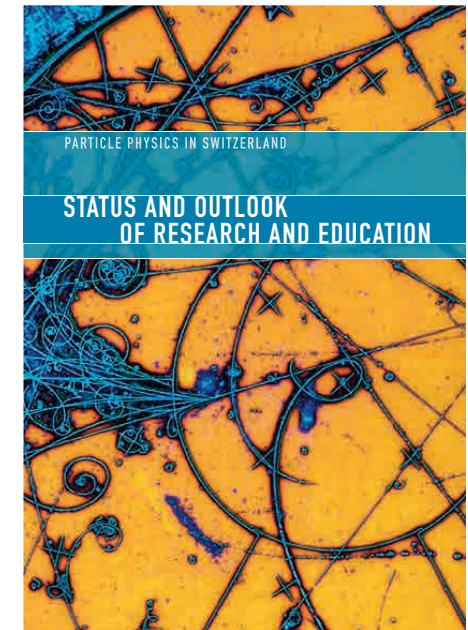
Session convenors will give rapporteur report

Discuss feedback from sessions and the general way forward

# Echos on the ESPP

# BACKUP

- The three pillars of CHIPP
  - Particle physics (PP) at the High Energy and Intensity Frontier
  - Neutrino physics
  - Astroparticle physics (ApP) & frontier with cosmology
- Dynamic fields: key strategic decisions constantly ahead – continuous challenge
  - PP @ High Energy: main physics focus at HL-LHC post-LHC future (ILC, FCC ...)  
Interplay with High Intensity Experiments
  - PP Neutrinos: Next long baseline facilities
  - ApP :Next generation facilities
- Consensus expressed in series of roadmaps & whitepapers and « pillar » workshops
  - Also taking into account international strategies (European Strategy, US P5 Strategy, ApPEC)



**2004: initial roadmap**  
**2011: roadmap update**  
**2013: white paper on ground-based ApP strategy**  
**2015: white paper on neutrino strategy**  
**2018: Pillar 1 whitepaper**