NanoNextNL
Netherlands micro and nanotechnology research and technology programme
Midterm Review Conclusions
International Advisory Council & Response Executive Board
Executive Summary

NanoNextNL has strengthened the high tech environment in the Netherlands considerably: Stronger cooperation Public-Private and Academia-Academia, build-up of a corresponding interdisciplinary eco- system, broadened and deepened talent education, stronger goal focus of excellent people, science and engineering up to international benchmarks, enhanced application focus and first signs of societal value creation.

In short, NanoNextNL lives up to its mission midterm down the road and is on its way to economic, social and science value creation.

Continuous improvements will further contribute to the success of NanoNextNL. In particular the IAC suggests a more business impactful positioning of RATA, introduction of business coaching and incubation to enhance the chances for business and societal impact, strengthening (focus, ambition, research lead) of the few programmes not (yet) at par with international benchmarks, EU programme participation promotion by a high level NanoNextNL ambassador in Brussels, use of remaining funding for business creation and help to foster the contribution of SMEs even further e.g. by goal oriented matchmaking amongst SMEs.

Introduction

NanoNextNL is a Dutch national research and technology programme in which academic and industrial partners collaborate with the following mission:
“
To accelerate the creation of durable economic and social value by developing and commercializing innovative nano- and micro-technology, and by forming a sustainable ecosystem of researchers, entrepreneurs and policy makers”.

The programme comprises of 28 research programmes within 10 themes. The total NanoNextNL budget is 251 Euro for the period 2011-2016 inclusive matching funds from partners. Overall, some 750 PhD students, post-docs and other research staff at 13 universities, 8 medical centres, 13 knowledge institutes and 102 industrial partners contribute to NanoNextNL. Risk Analysis and Technology Assessment, RATA, is a core special theme introduced to stimulate and coordinate overarching risk research within NanoNextNL. This was at the special request of the Dutch Parliament.

NanoNextNL is led by a 7 member Executive Board chaired by professor Dave Blank. The daily management committee consists of the chair and vice-chair of the board, the business director and the programme office director. The programme office comprises programme directorship, coordination, management, financial, legal and communication assistance (total 7.5 fte).

The EB works closely with a Supervisory Board of 18 stakeholders that oversees the general progress of the NanoNextNL programme and gives advice to the EB.

Each NanoNextNL programme is led by a Programme Director PD. Each theme is overseen by a theme coordinator. The International Advisory Council comprises internationally renowned specialists in the micro and nano technology field and gives advice to the EB. This IAC carries out a midterm review of the programme in 2013 and a final review in 2016.

This document summarizes the findings of the IAC in its midterm review held in Ede, on December 12th and 13th 2013.
Approach

EB and IAC have jointly concluded that the best input to the midterm evaluation would be the production of a Midterm Self Evaluation Report 2010-2013 by the programme office. This report contains the NanoNextNL results for each programme inclusive a SWOT analysis and an EB vision per programme, NanoNextNL general results in terms of key performance indicators, talent development, network status, business development, communication and finance as well as a self-evaluation of the EB. Next to this 101 page report, the business director has prepared 25 business cases, using the canvass model. This resulted in a single page summary per case, exemplifying the innovation status of the NanoNextNL programme.

The actual review has been done by interviewing on December 12th all 28 programme directors on the status of their programme and by interviewing 6 business “owners” on December 13th discussing 6 business cases selected by the IAC.

During most interviews Adrienne Sips, theme coordinator of RATA, was present given the special role of RATA foreseen in the programmes. The Business Director was present during the business cases discussion.

The IAC reviewers comprised of Gilbert Declerck, Pingfan Rao, Karel van der Mast and Martin Schuurmans, chair. Kenneth Dawson was absent due to illness. Jerome Bibette was absent for urgent business in France. In all interviews, the IAC acknowledges the great support and help of Floor Paauw, Léon Gielgens and their staff.

The IAC has focused very much on what goes well, and what can be done even better i.e. what improvements can be suggested. We like to acknowledge that all those interviewed have been going out of their way in accommodating questions and discussions. All in all it was seen by us and by the interviewees as a very stimulating and learning event. So …

Accomplishments!

- We expected wonderful science; and it was! Most programmes contain science that can stand any international benchmark test.
- We anticipated more cooperation and indeed in general there was more Public-Private interaction inclusive SMEs and the build-up of an interdisciplinary ecosystem of researchers, entrepreneurs, SMEs and Industry is clearly visible.
- We expected some application focus. We found much more of that focus than anticipated.
- The quality of people, in particular the scientists and engineers, is high level, and consistent with international benchmarking! The drive towards high scientific goals is commendable.
- The training of young people now includes RATA and IP & Valorisation and will include entrepreneurship.
- We have seen in many programmes initial steps to valorisation. In some programmes we see clear examples of valorisation for example in nano-fabrication.

In summary, NanoNextNL has strengthened the high tech environment in the Netherlands meaning that cooperation Public-Private and Academia-Academia has been strengthened, interdisciplinary eco- systems have been formed, excellent and goal oriented people deliver enthusiastic contributions to the programmes, talent education has been broadened (RATA, business) and deepened (focus in programmes), science and engineering are generally up to international benchmarks and first signs of economic and social value creation are visible. In short NanoNextNL lives up to its mission midterm down the road.

Does that leave nothing to be desired? Of course not, the IAC suggests a number of improvements that can make the NanoNextNL programmes even stronger.
Suggested Improvements

**RATA**: Some 15% of the nano-related research budget of NanoNextNL is invested in the theme Risk Analysis and Technology Assessment. RATA is a cornerstone of the overall NanoNextNL programme in that it addresses potential human, environmental and societal risk of the programme. Internationally the Dutch RATA work is well positioned in Europe to the point that it influences the EU regulations concerning nanotechnology. The research on human and environmental risk as well on technology assessment is of good quality and internationally esteemed. The RATA courses are appreciated by the field of nano researchers. However, in many nano programmes RATA is still seen as an afterthought that will be taken care of when the time comes that it can no longer be avoided. Then, on the other hand, the RATA programmes themselves can play a stronger –possibly even essential- role in in the NanoNextNL programmes and business cases, i.e. eliminating what will never fly in regulation and legislation, fostering the opposite, and opening the doors to regulation that will be conducive to a business opportunity.

*The IAC strongly suggests to the EB and to RATA to jointly change the position and the activity of RATA in NanoNextNL so that RATA can contribute to new business success and business cases can benefit right from the start from RATA input in all these programmes where it is deemed essential.*

**Quality of Programmes**: In an international benchmark context, most scientific and/or engineering programmes are excellent. Not all are top though. Some have been sub-critical right from the start, some lack cooperation with adjacent activities in the same theme or beyond and some just have not enough focus. Water and Energy are very important for the Netherlands and may have some way to go to the top.

*The IAC suggests to the EB and to such programmes to jointly put in more ambitious targets, to focus and to enter proper cooperation with neighbouring activities in the Netherlands or elsewhere.*

**EU programme participation**: Most programmes aspire cooperation and participation in EU programmes. Some already participate in FP7 programmes or ERC. For the future of NanoNextNL this is very important for two reasons: pragmatically it is really not so clear that after 2016 similar Dutch government funding will continue, and perhaps even more important, success in science, economic and societal sense, as aspired in the NanoNextNL mission, asks for international scale and cooperation; the EU is then the logical place to start. EU programs today are much more than ERC and Horizon 2020. New fields are opening up too, some small like EIT but focussed on entrepreneurship essential to NanoNextNL, some big like the structure funds that now incorporate innovation as well.

*In IAC’s view it is therefore of the essence to do a high level effort opening up doors in Brussels, EC, Parliament, Council to optimize chances for success of participation in EU programs. A high level (at par in discussions with EC and EP leaders) ambassador is suggested as the right approach.*

**Business Focus**: Most programmes can be complimented for trying to look seriously at business opportunities. All in all, the 28 programmes have generated up to date 25 business cases! A few approach maturity, but most are still in their infancy. We noticed that the self-confident researcher who gives a great presentation on his/her research, is often not yet capable of presenting the proper pitch for his/her business. Ownership of the business is often unclear and with one or two exceptions we have not seen any business plans (spreadsheets with markets, investments, earnings, projections, etc.) The IAC feels that the midterm review comes at the right time to signal this and take action.

*The IAC suggests the following: 1. introduce business coaching for NanoNextNL people by hammering out a true programme for this carried by experienced entrepreneurs/business persons, 2. Find a council of experienced entrepreneurs for this coaching and for support to the board, 3. Try and hook up NanoNextNL to an incubator with funding, 4. Make sure entrepreneurial training is internationally at par (the current envisioned programme could benefit from speakers that generate excitement by having gone through success and failure of entrepreneurship themselves and in an international context).*
Programme Lead: Some programmes have suffered quite a bit from changes in the directions of the industrial partners. Indeed some programmes complain that the scope of the industry in technology development can easily change. Some programmes have been very good in coping with this by an outspoken adherence to a programme lead coming from a good research programme; NanoMaterials is a good example. Other programmes do suffer like for example in the Beyond Moore theme. The IAC firmly believes that although economic and social value is the ultimate aim, the best way to proceed is to always depart from a high quality stable Research programme. The result may be possibly slightly less cooperation with the (big) industry, but at least a stable innovation programme emerges.

SMEs and Matchmaking: It is really great that SMEs play such an important role in the programmes of NanoNextNL. In many themes SMEs form the key towards business or societal success. But the very nature of SMEs makes it difficult for them to see the big picture. Some SMEs present in the presentations to the IAC perceive to miss opportunities because of this. SME involvement in NanoNextNL is simply great, so let us make an extra investment in them for future success. Very few programmes in the Netherlands can claim such an involvement. The IAC suggests goal-driven (in a theme for example) brief matchmaking meetings involving a broad landscape of SMEs that are potentially interested in the goal.

Funding1: Some programmes are behind schedule (for a variety of reasons) in spending their budget. Additionally, about 1.5 M Euro is still discretionary money to be used by the EB for specific target setting. The IAC suggest to make an inventory of funding that is still available and use it first and foremost to foster new business creation; example cleavable linker/Robillard and business coaching. Possibly also to strengthen an exceptionally good research programme like for example Bio-Nano.

Funding2: In the current NanoNextNL programme performance and funding is not coupled as a result of the NanoNextNL covenant with Government and Parliament. As a consequence strong programmes cannot receive an extra boost at this midterm review point. Weaker programmes can be not be forced to focus by limiting their funding. The IAC feels strongly that this is a missed opportunity. To some extent Funding and Performance should in the future be coupled.

December 20, 2013, Martin Schuurmans, On behalf of the IAC

[Signature]

chair IAC, NanoNextNL

Martin Schuurmans and Dave Blank
Response of the Executive Board to the midterm review by the International Advisory Council
February 2014

The Executive Board (EB) is very grateful for the detailed and in-depth analysis the International Advisory Council (IAC) has made of the progress of NanoNextNL since it started in 2011. We are glad the IAC is “happy with the great progress that NanoNextNL has made and the truly excellent science and application focus that we witnessed.” The IAC provides several suggestions for improvements. Below, we provide an action plan that the EB will carry out based on the IACs findings and suggestions.

1) Positioning and business impact of RATA

Risk Analysis and Technology Assessment (RATA) is an essential part of NanoNextNL and the EB agrees that these activities must be much more strongly linked to the research activities of the programmes. The EB has discussed an action plan with the RATA Coordinator that will focus on how RATA can be more interwoven with the individual programmes, how RATA advice can strengthen new business plans and how new business can be created from the knowledge that is developed within RATA itself. A dedicated RATA-networking professional may be appointed to reach these goals. An in-depth RATA analysis will be made for all business cases developed within NanoNextNL. Integration of RATA will be a major topic on the Programme Directors and Theme Coordinators’ meeting on March 13.

2) Quality of programmes

The IAC has provided a list with specific observations on all Programmes and Themes. The list will be shared with the Programme Directors and Theme Coordinators and they will be requested to deliver a short action plan for their programme that addresses these observations. Enhancing collaboration between Programmes and Themes will be part of the action plans. The plans will be drafted at the Programme Directors and Theme Coordinators’ Meeting on March 13, and the final plans will be due on April 1. Subsequent meetings of the EB with Programme Directors will be planned as needed.

3) EU programme participation

The EB aims to appoint a high-level “ambassador” of NanoNextNL in Brussels, to help connect to EU research programmes (Horizon2020, ERC, EIT, and others), the European Committee and the European Parliament. Meanwhile, NanoNextNL has taken the initiative to take the lead in the submission of a proposal for a “Coordination and Support Action” to identify the best available possibilities of existing EU instruments (e.g. JTI, ETP, PPP, FET-flagship etc.) in Horizon2020 for establishment of a Europe-wide “NanoNextEU” nanotechnology network initiative. NanoNextNL is an active partner in the “High Level Group Nanotechnology” of the EU to further support these actions.
4) Business focus

On March 5-7, NanoNextNL will start its first Entrepreneurship Course. The programme includes presentations by experienced entrepreneurs from the existing NanoNextNL network that have gone through success and failure of entrepreneurship themselves. The international experts suggested by the IAC will be taken into account for following courses. In addition, NanoNextNL will start to offer dedicated business support for selected business cases that have emerged from NanoNextNL so far. The business director will assemble a group of experienced entrepreneurs who can act as dedicated business coaches. Furthermore, a Business Council will be assembled to provide advice to the EB on the funding of specific business propositions and towards broader issues related to business creation. The link with an incubator/investor that can provide funding in a business start-up phase will be made on a case-to-case basis, based on advice by the Business Council. In the meantime, the EB will continue its efforts to generate and improve additional new business cases through interviews carried out by NanoNextNL’s Business Director and by drafting Lean Business Canvasses with key information. We will also explore the use of the on-line “Golden Egg Check” environment to evaluate selected business cases.

5) Programme lead and changes in directions

Programme Directors of programmes that have suffered from unexpected changes in strategic directions of industrial partners will be supported in their efforts to focus on maintaining coherence and quality in their scientific programme.

6) SMEs and matchmaking

The new NanoNextNL conference that will be held in the Fall of 2014 will be used as a platform for matchmaking between SMEs and NanoNextNL programmes. Special matchmaking sessions will be held as well as a business exhibition where SMEs can present themselves.

7) Funding

The EB will use the majority of remaining unspent funds to expand NanoNextNL’s Valorisation Grant programme. The new Business Council will be asked to judge and rank proposals for these grants (1st phase: 25 k€; 2nd phase: maximum 200 k€). The first deadline for submission of proposals is planned on July 1.

NanoNextNL has built up a strong ecosystem of small, medium and large companies, universities and knowledge institutes that collaborate on nano/micro-science and technology (IAC: “NanoNextNL has strengthened the high tech environment in The Netherlands considerably”). The EB agrees with the IAC that it is of great importance that this ecosystem is maintained and further strengthened after the NanoNextNL funding comes to an end in 2016. Obviously, NanoNextNL’s most successful programmes will be involved in drafting the plans for a possible continuation of NanoNextNL.

Overall

On March 13, a full-day workshop will be held with all NanoNextNL Programme Directors and Theme Coordinators. This workshop is fully devoted to address the midterm evaluation by the IAC and to work out an action plan that is supported by everyone involved.
February 14, 2014 Dave Blank
On behalf of the EB,

Chair EB, NanoNextNL

Upper left: Fred van Keulen, Frans Kampers, Albert Polman, Dave Blank, Martin Schuurmans, Gilbert Declerck, Karel van der Mast, Reinder Coehoorn, Dick Koster. Lower left: Frank de Jong, Floor Paauw, Léon Gielgens and Pingfan Rao
innovating with micro and nanotechnology