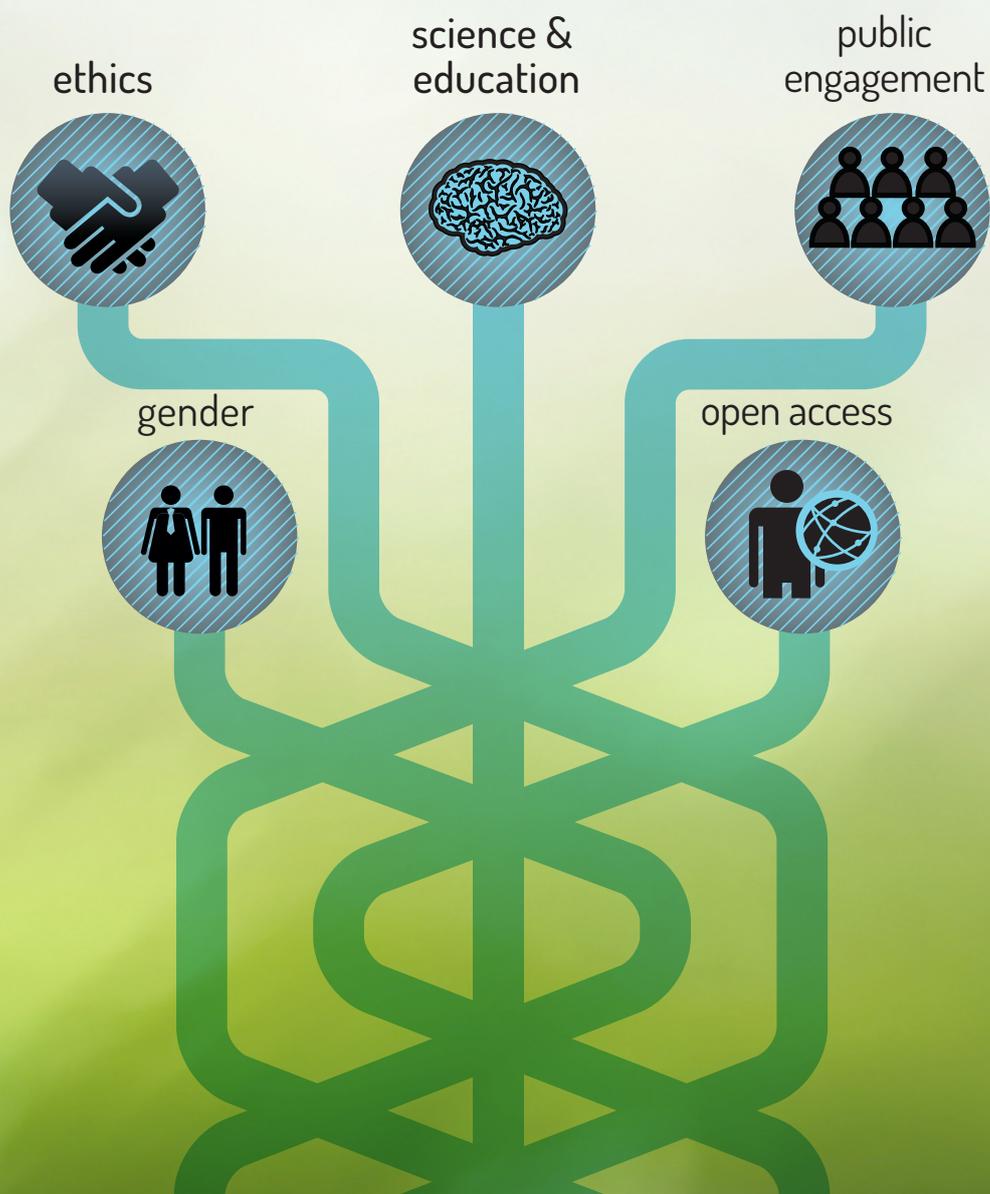


## Description of specified RRI goals at TNO

Deliverable 3.2



## JERRI – Joining Efforts for Responsible Research and Innovation

### Deliverable D3.2

#### Description of specified RRI goals at TNO

<b>Project Name</b>	Joining Efforts for Responsible Research and Innovation (JERRI)
<b>Project No.</b>	709747
<b>Project Type</b>	Coordination and Support Action
<b>Project Duration</b>	01.06.2016 – 31.05.2019 (36 months)
<b>Project Coordinator</b>	Benjamin Teufel, Fraunhofer ISI
<b>Funded under</b>	Call ISSI-5-2015
<b>Work Package</b>	WP 3 Development of RRI goals at TNO
<b>Deliverable</b>	D3.2: Description of specified RRI goals at TNO
<b>Planned Date</b>	Month 14 (July 2017)
<b>Actual Submission</b>	27/07/2017
<b>Version</b>	Final
<b>Authors</b>	Marc Steen and Joram Nauta (editors), Reijer Gaasterland, Jan Kleberg, Greet Leegwater, Suzanne Ogier (contributors) (all of TNO)
<b>Approved by</b>	Benjamin Teufel (Fraunhofer ISI)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 709747.

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## Glossary

- CEO - Chief Executive Officer
- COO - Chief Operational Officer
- CSO - Chief Scientific Officer
- JERRI - Joining Efforts on Responsible Research and Innovation
- KNAW - the Netherlands Royal Academy of Sciences
- KPI - Key Performance Indicator
- OA - Open Access
- LD - Leadership Development, a specific HR programme
- TNO - The Netherlands Organisation of Applied Scientific Research
- RM - Research Manager, head of unit of expertise centre
- RRI - Responsible Research and Innovation
- RTO - Research & Technology Organisations
- SMART - Specific, Measurable, Achievable, Relevant, Timebound
- TO2 - TO2 federatie; federation of Applied Research Institutes in the Netherlands
- WOB - Wet Openbaarheid Bestuur; Dutch Act on Openness of Public Administration

## Purpose

The purpose of this document (D3.2) is to specify the goals as well as related demands, expectations and visions articulated by the stakeholders for the RRI dimensions at TNO (Gender Equality / Diversity; Ethics / Integrity; Societal Engagement; Science Education; Open Access), as part of the JERRI project ([www.jerri-project.eu](http://www.jerri-project.eu)). This deliverable is the counterpart of D2.2, in which the Fraunhofer-Gesellschaft specifies its goals for RRI.

More information on the RRI dimensions and their institutionalization in TNO can be found in D1.1 (Synthesis of existing RRI practices; November 2016), and information on the goal-setting process is in D3.1 (Concept on organizational RRI goal development; February 2016).

These goals for RRI dimensions form an important step in the JERRI project as it aligns the TNO organisation to embrace the goals that are set in this deliverable. Not only the result is important, but also the process that has led to this deliverable; the drafting of goals, the internal and external feedback and choices that have been made in the drafting of this deliverable. By presenting this deliverable as a result of an activity, it means that, from an organisational point of view, these goals are accepted as organisational goals itself, with the approval of internal stakeholders. This document therefore empowers the JERRI project team to prepare the next steps; the drafting of action plans and implementation activities.

## Executive Summary

TNO participates in the JERRI project ([www.jerri-project.eu](http://www.jerri-project.eu)), which aims to support TNO and the Fraunhofer Gesellschaft (and other Research and Technology Organizations) in their ambitions for Responsible Research and Innovation (RRI). TNO uses the JERRI project to boost its ambitions for RRI, i.e. regarding the RRI dimensions of Gender Equality (Diversity), Ethics (Integrity); Societal Engagement; Science Education; and Open Access.

This document (D3.2) specifies TNO's goals for each of these dimensions, as well as cross-over between these dimensions. It will provide insight in how the goals were drafted, which techniques were used and how these goals were finalized, in order to achieve the approval of the organization to follow up on these goals and be able to start with the next phase.

For each dimension, some background is provided (e.g. on the current level of institutionalization within TNO) and specific goals are presented, including the activities needed to achieve these goals. In the remainder of the JERRI project (which runs from June 2016 until May 2019) TNO has planned several activities in order to achieve these goals (next page).

The planning for each of the goals seem to follow the logical implementation moments and the cycle of reporting and monitoring. The restructuring of the organisation does provide (immediate) opportunity to question the obvious and start the discussion about new ways of engaging with our internal and external stakeholders, but does also provide risks (no management time is available). The sponsors are in place and through the extensive preparations and preparatory committees, organisational sense making about these goals and activities has so far been achieved.

The goals are formulated as follows:

Goal	Budget	Planning						Cross-overs
		2017	2018	2019	2020	2021	2022	
	236	Q1	Q2	Q1	Q2	Q3	Q4	
<b>Gender Equality</b>	<b>59</b>							
1. Female leadership training	39	Exe		Exe				
2. Database for female talent	5			Dev	Dev	Dev	Dev	
3. Implicit Bias Training (25 TOP managers)	15			Exe	Exe	Exe	Exe	
Contribute case to game (Ethics Goal 1)				Dev	Dev			Ethics, Societal Engagement
<b>Ethics</b>	<b>55</b>	Q3	Q4	Q1	Q2	Q3	Q4	
1. Improve Ethical Awareness and Moral Capabilities: A game/training, for top management and for trainees	25	Dev	Dev	Trai	LD	LD	LD	Gender equality, Societal engagement
2. Ethics in Society: An 'Ethical and Societal Issues tool, for business development and project management	20	Dev	Dev	App	App	Rep		Societal Engagement Goal 2
3. Scientific Integrity: An e-learning module, for (principal) scientists, science directors, RM's	10	Dev	Exe	Exe				-
<b>Societal Engagement</b>	<b>40</b>							
1. Involve ('unusual') stakeholders in Strategy Advisory Councils	12	Dev	Dev	Exe	Exe	Exe	Exe	
2. Societal Impact' tool for project management	8	Dev	Dev	Exe	Exe	Exe	Exe	Ethics Goal 2
3. Share Best Practices in User Involvement	20			Exe	Exe	Exe	Exe	Science Education (1)
Contribute case to game (Ethics Goal 1)								
<b>Science Education</b>	<b>42</b>							
1. To show science				Exe	Exe	Exe	Exe	Societal Engagement (3)
2. To champion the value of science	10			Exe	Exe	Exe	Exe	Ethics
3. To invite Society	32	Dev	Dev	Exe	Exe	Exe	Exe	Societal Engagement
<b>Open Access</b>	<b>40</b>							
1. Open Access Platform, Action Plan, and Decision Tree Publishing	40	Dev	Dev	Exe	Exe	Exe	Exe	Ethics (Scientific Integrity)
App = Apply Dev = Develop Exe = Execute LD = Leadership development Rep = Report Trai = Training								

## 1 Introduction

### 1.1 Goal setting at the level of TNO

The JERRI project has developed since its starting point in June 2016 and gathered momentum in the TNO organisation. The task of setting goals has been tackled in a way that allowed an integral approach and organisational sense making, without predefined wishes or ambitions about goals (with the exemption of the gender dimension, where explicit goals were already part of the Description of Work, and activities already in place for the implementation phase; the female leadership training programme).

Instead of paying attention to individual RRI dimensions immediately and consider actions at the highest level of detail, the JERRI project team has focused first on the more ambient transition that the JERRI project has to achieve for the organisation as a whole.

For TNO, the JERRI project is a chance to rethink how it deals with the expectations of external stakeholders and society. JERRI therefore must help to address the relation between an RTO and society and make sure that these expectations are, to a certain degree, aligned in order to remain a long term partner and true and meaningful part of society. As such, the project team often used the phrase ‘social license to operate’ to describe the long term relation between society and RTO’s. The question that requires attention is how TNO as an organisation deals with society and how to make this interaction with society a meaningful part of our practices and processes and extract the added value of this interaction for its benefit (and vice versa).

The participation of TNO in the JERRI project has led to a review of current practices about how and where TNO will pay attention to the individual RRI-dimensions. This would mean a collective and continuous commitment of TNO to be:

**Anticipatory** – describing and analyzing those intended and potentially unintended impacts that might arise as a result of our activities, be these economic, social, environmental, or otherwise.

**Reflective** – reflecting on underlying purposes, motivations, and potential impacts (including those areas of regulation, ethical review, or other forms of governance).

**Deliberative** – inclusively *opening up* visions, purposes, questions, and dilemmas to broad, collective deliberation through processes of dialogue, engagement, and debate, inviting and listening to wider perspectives from publics and diverse stakeholders. This allows the introduction of a broad range of perspectives to reframe issues and the identification of areas of potential contestation.

**Responsive** – using this collective process of reflexivity to both set the direction and influence the subsequent trajectory and pace of activities, through effective mecha-

nisms of participatory and anticipatory governance. This should be an iterative, inclusive, and open process of adaptive learning, with dynamic capability.

(adopted from Owen, 2013: page 38)

The resulting practice of this commitment must therefore be institutionalized through amongst others our annual reports, in which we give insight in our ability to meet these commitments. The individual RRI dimensions are therefore considered as action points; points that we must deliberately act upon, develop goals (if we had not done so before) and report about these actions in ways that we deem appropriate. As such these actions point become KPI's for our internal management dashboard. In tangible results, it must become clear of what we aim to achieve; who is responsible and accountable and the path to monitoring and reporting. This is why organisational sense-making is as much important as organising the structure around RRI dimensions and TNO chooses to adopt an integral approach.

Therefore it is our ambition to link the RRI dimensions to our organisational goals and ambitions and to reflect the goal setting of our RRI dimensions in our forthcoming public reports, for instance in our materiality matrix (in which stakeholders and TNO rate the importance of material aspects of our operational performance)—see Figure 1. Material aspects have goals, Key Performance Indicators (KPIs), report on progress and activities and will fulfil our ambitions related to RRI ambitions.



Figure 1: materiality matrix from annual report 2016 (in Dutch); on the vertical axis the relevance of material topics to our stakeholders (based on several interviews), on the horizontal axis the relevance according to TNO.

## 1.2 Organization and institutionalization

It is worth mentioning that 2017-2018 are times full of change for TNO. A new strategic plan (2018-2021) is adopted (TNO, 2017) and developed, and an entire research centre is in the process of being merged into TNO (approximately 400+ FTE).

The consequence of this involves a major restructuring of TNO; a shift from a matrix-organization (expertise domains x application areas/Themes) towards the organisational form of Units (where Units deal with expertise and application integrally).

This restructuring situation offers both threats (e.g. management are busy and may give less priority to RRI) and opportunities (e.g. when things are in flux, JERRI can move them towards RRI). One example is provided in Figure 2.

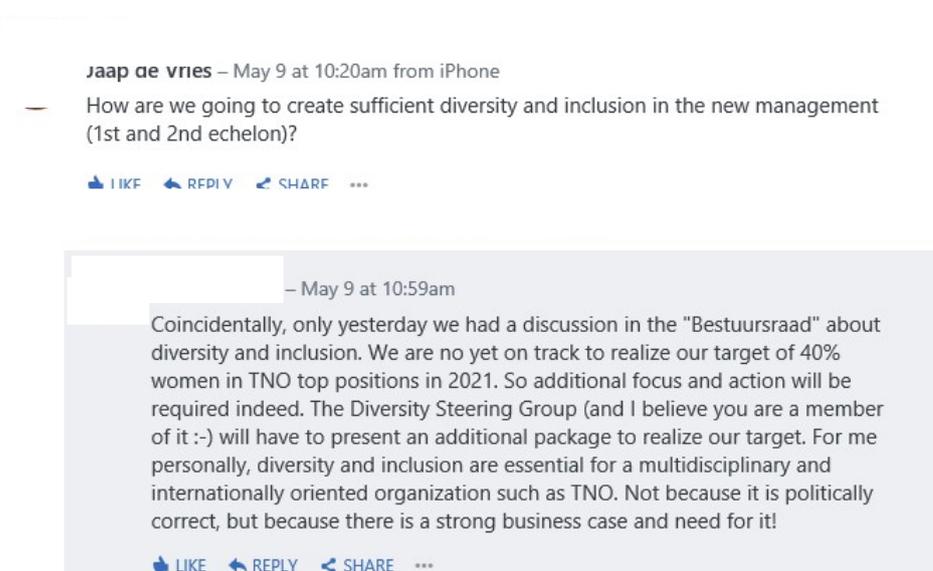


Figure 2: internal discussion on one of the RRI dimensions Gender; to illustrate the ability to use the restructuring effort to make progress towards RRI goals (source: TNO internal, Yammer 9<sup>th</sup> of May 2017).

TNO approaches RRI in an integral manner and aims to create cross-overs and synergy between the RRI dimensions: e.g. between Societal Engagement and Ethics (see below: the development and application of a tool to assess societal and ethical issues in business development and project management), and between Science Education and Societal Engagement (see below: a virtual reality throughout our facilities and technologies; with feedback possibilities).

Additionally, it is worth noting that the different RRI dimensions have different levels of institutionalization (maturity)<sup>1</sup> within TNO (as assessed by the JERRI project team):

- Gender Equality (Diversity) and Ethics (Integrity) are relatively well-institutionalized, e.g. in the form of Committees and yearly Action plans;
- Societal Engagement is partly institutionalized, e.g. in the Strategy Advisory Councils for the Themes (Units); moreover, it is (informally) in TNO’s ‘DNA’;
- Science Education and Open Access are relatively less well institutionalized in TNO—therefore these dimensions can benefit from the JERRI project.

These different levels of institutionalization can be understood as different levels of maturity and following a common 5-level scale of maturity (initial; repeatable; defined; capable; efficient), the RRI dimensions can be plotted as follows—see Figure 3.

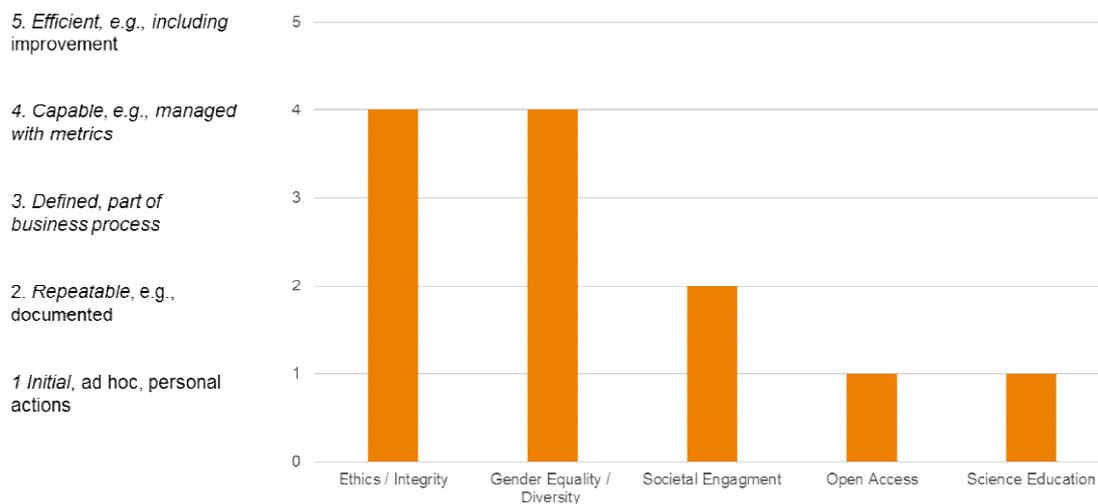


Figure 3: The RRI dimensions have different levels of maturity within TNO (source: self-assessment of the JERRI project team)

Different starting positions for each dimensions have led to different ways of organizing goal setting and external stakeholder interactions, as will be demonstrated in chapter 2.

Looking at the proposed RRI goals of TNO (in the sections below), we can see that TNO has set goals that are intended to *boost* (e.g. to speed up, to deepen, or to broaden) ambitions that TNO already has. With the support of the JERRI project, the expertise in the project team, the mutual learning with the Fraunhofer Gesellschaft and the other project partners, TNO will be better able to realize these ambitions.

<sup>1</sup> More information about the state of art of RRI in TNO can be found in Deliverable 1.1 (TNO, 2016)

The JERRI project team is at the same time challenged by internal stakeholders not to design new targets, projects and activities, but to use existing initiatives in a better way and to focus on the alignment between JERRI actions and planned actions from other internal stakeholders. This should increase the chance of successful institutionalization (in an organizational context that is changing as a consequence of the restructuring). See for a theoretical background also deliverable 1.2 on legitimacy and legitimacy approval process (Randles 2017).

Parallel to this goal-setting process an internal communication process is organized, as part of dissemination within TNO, e.g. via Yammer; this is done in order to create support for RRI within TNO, both bottom-up and top-down. See Figure 4 for an example of a post on Yammer, which sparked discussion, on Science Education:



**Joram Nauta** – May 11 at 3:37pm

To All Company

Yesterday we concluded our first Advisory Board meeting about Responsible Research and Innovation as part of the **JERRI** project ([www.jerri-project.eu](http://www.jerri-project.eu)). This project will affect TNO itself in becoming aware of what contribution we can make on five dimensions (Gender Equality, Open Access, Societal Engagement, Sciences & Education and Ethics).

In the past weeks workshops have been carried out and first draft goals on each of these dimensions have been formulated. Today I will post the draft ...

<http://www.jerriproject.eu/>

### 1.3 Goal Setting at the level of RRI dimensions

As stated in D3.1. a key element in goal-setting, especially in the context of RRI, is the involvement of internal (within TNO) and external (outside TNO) stakeholders in the process of goal setting. Such involvement will help to guarantee that the goals are perceived as relevant and appropriate (for TNO), and as ambitious and realistic. Moreover, the selection of relevant stakeholders and the selection of appropriate methods to organize their involvement are key elements of these recommendations.

The proposed starting point has been a preparatory briefing for the goal-setting workshops, both regarding content (based on input from internal and external stakeholders) and process (workshop format and instructions).

The plan has been to organize a series of goal-setting workshops with internal stakeholders, e.g. with 6-8 people around the table, using elements from Appreciative Inquiry (starting with 'what works well'), Stakeholder Support (align different interests) and Participatory Design (involving the people will be affected).

Bilateral discussions or workshops with specific external stakeholders to challenge and fine-tune these goals were also part of the goal setting process.

For the finalization the JERRI project team had to organize processes within TNO for internal approval and support.

Following these methods and steps for goal-setting groups of relevant people at TNO engaged in a series of goal-setting workshops, one for each RRI dimension:

- Gender Equality (Diversity): workshop on 16<sup>th</sup> of May, with the Diversity Committee (8 members);
- Ethics (Integrity), workshop on 18<sup>th</sup> of April, with 5 attendees;
- Societal Engagement, workshop on 4<sup>th</sup> of May, with 8 attendees;
- Science Education, workshop on 1<sup>st</sup> of May, with 4 attendees;
- Open Access: participation and consultation with several internal and external stakeholders.

These workshops produced draft goals<sup>2</sup>, based upon *boosting* existing initiatives, extending initiatives beyond current practice and producing new materials/tools and instruments that deal with specific organizational requirements (for training, raising awareness etc.). The goals were formulated in such a way that it became transparent which actions, timelines, internal stakeholders and impacts the proposed goals would entail and which budgets are required to be able to achieve these goals.

The outcomes were further discussed with both internal and external stakeholders (May-June 2017; details are in the sections below). The demands, expectations and visions that were voiced by the internal and external stakeholders were taken into account and helped to modify and improve the goals. The proposed goals were discussed in preparatory discussion panels such as the diversity committee, the integrity committee and the CSR steering committee.

The JERRI project team has gathered the individual goal setting ambitions for each dimension and looked at the coherence and overlap between dimensions. All in all, more goals (with requests for budgets) were proposed than TNO is able to fund from the JERRI project. The project team has presented the goals to internal stakeholders for advice to help with the selection and prioritisation.

Feedback from influencers and decisions makers within TNO, led to the following factors to keep in mind for selection and prioritisation of goals:

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<sup>2</sup> Draft goals are considered proposals for goals ready for approval by an appointed decision maker. Draft goals are concrete e.g. to improve awareness of the new, national Scientific Code and formulated in a SMART-manner (Specific, Measurable, Achievable, Realistic, Time-bound); e.g. 20 principal scientist participate in an e-learning module on the national Scientific Code and evaluate it's usefulness with a 4 (or more) on a 5 point scale in 2018.

- Each RRI dimensions should be supported fairly and to an extent that fits with its maturity level;
- Limited management attention (due to restructuring of organization);
- Limited amount of additional tasks and activities for staff (in order not to overload staff departments), make sure there is enough manpower to execute activities;
- If goals/activities need to be scaled down; be drastic, no marginal savings on each goal, but limit the number of goals itself;
- Realistic chance of institutionalization (after project ending) or survival (for training material);
- Positive external impact (in terms of reputation).

Three members of TNO staff departments (senior staff from Strategy department, from Finance/Legal, and from Marketing and Communications), have reviewed all draft goals for the RRI dimensions and advised the JERRI project team to pursue the following goals as described in chapter 2.

The draft report of each dimension has been discussed with the Sponsor (COO of TNO) and the CSR steering committee.

A copy of this report with a memorandum was sent to the Executive Board of TNO in July 2017.

## 2 RRI-related goals at TNO

In the sections below, the goals for each RRI dimension are specified (Gender Equality; Ethics; Societal Engagement Science Education; Open Access), as well as the overall ambitions of TNO for each dimension, the current state of institutionalization within TNO, the outcomes of discussions with internal and external stakeholders about these goals, and the practical activities and resources needed to achieve these goals.

### 2.1 Gender Equality (Diversity)

Gender equality is seen in TNO from a wider perspective and dealt with at the conceptual level of diversity. As described in deliverable 1.1, the current long term goal for Gender Equality at TNO is to realize 30% women in the top management of TNO (TNO, 2016). The new strategic plan has a KPI of 40% of TNO employees in 2021 being woman (TNO, 2017).

The goal of 30% women in top management has been established years ago, however, this goal is not realized and progress towards this goal is proceeding slow. TNO therefore decided to, on the one hand, create a stronger framework of underlying sub-goals, and, on the other hand, to undertake additional actions that will help to achieve these (sub)goals. The underlying goals are currently under development, and will cover these three areas:

1. Removing barriers to the recruitment, retention and career progression of female researchers;
2. Addressing gender imbalances in decision making processes;
3. Strengthening the gender dimension in research programs.

However, even without this additional goal-setting framework, there are two actions that all involved stakeholders agree on that will improve Gender Equality at TNO via the JERRI project.

One of the issues sensed strongly is the fact that when a vacancy opens up, there always seem to be far more men ready and able to fill this position. The female talent available within TNO is somehow less visible. In order to improve the visibility of women, TNO would like to better utilize the existing HR information and to be able to utilize a database of talented ambitious TNO (wo)men at the level of the LD committee. This database can be consulted in case there is a vacancy and no female or limited candidates have applied; it will have search functions to come up with specific matches for specific profiles. Activities are required in order to set up the right type of inclusion criteria to enhance the usability of this database and to be able to avoid the detection biases that are unfavourably for women.

Another issue is the limited awareness within TNO about implicit bias. Implicit bias refers to split-second associations that people have. The majority of women and men will

for example associate leadership more strongly to men. These biases are normal and human and it is difficult to change these. However, if one is more aware of one's own biases, one can put measures into place that second-guess these split-second decisions.

An example of this is the strong increase in the number of females in an professional orchestra, which were the result of auditions held behind a screen. Of course within TNO we cannot perform job interviews behind a screen. However, there are other options to address implicit bias. It is important that the management within TNO is aware of the existence of implicit bias and its effect on decision making. Therefore TNO management needs to take trainings on implicit bias.

As changing culture is tough, a three way approach will be taken. As a first step a target group of 25 TNO top managers is sent to an implicit bias training for a full day. By this action a significant part of high level TNO decision makers will be made aware of their bias and will be handed measures to address their biases in decision making. A second step is to modify a serious game set-up created by TNO (based on the "Mayor Game"), to create awareness with the part of top management that was not able to attend the training. These actions should be complemented by also placing implicit bias training on the agenda of the TNO TOP 250 events, as a third step.

### **2.1.1 Increase the visibility of female talent**

As mentioned, when a vacancy opens there seem to be less female internal candidates compared to men. There is, however a broad believe that there are numerous ambitious and talented women inside TNO, but are hardly 'on the radar'. Therefore activities within this goal are aimed at putting female talent in the spotlight.

**Goal:** Make female talent more visible

#### Activities

- Female Leadership Training (in progress).  
This training program tailored to women's specific needs, provide an additional training opportunities for women. In this training women will acquire skills to put themselves in the spotlight. Additionally by taking part in the training, this group of women will instantly increase their visibility as they are introduced to high level decision makers at TNO.
- Optimizing existing database for talent and HR development; specifically focused on female talent and other specific niche groups. Practically applying the database in situations where vacancies are discussed such as the LD-committee.

**SMART goal:** <sup>3</sup>

- **Organising 2 series of Female Leadership Trainings, consequently training 40+ women, that evaluated the usefulness of the training with a 4 (or more) on a 5-point scale**
- **Using and expanding current HR/Talent databases and applying this in practice; report on use through review of database by LD-committee**

Planning:

- The Female Leadership training will be organized in Q2-2017 and Q2-2018; Report in Q1-2019
- Database development and inclusion criteria to be discussed (Q3-4 2017) with LD management; Applying database by LD committee in 2018. Report on outcomes in Q1-2019.

Budget:

- 39k EUR for Female Leadership Training (out of pocket costs)
- 5k database discussion and reporting

Needed: Participation HR

Results: More visible female talent, use of database

**2.1.2 Create awareness on implicit bias with respect to gender**

People within the steering committee diversity are very aware of gender bias. However, this is only a limited group of decision makers. The general awareness implicit bias within the management of TNO is very limited. This is an issue, as implicit bias is an important driver for gender inequality. Implicit bias refers to unconscious associations that we all make every day. These biases are in place to help us to make quick decisions, as we need to make thousands a day. However they can seriously affect neutral judgement of candidates, as research has shown that 83% of a Dutch group of managers were unconsciously biased to prefer male leadership. Before TNO leaders can act on their biases they need to be aware that biases exist. Therefore an important goal is to increase awareness about implicit bias.

**Goal:** increase awareness on implicit bias with TNO management

Activities

- Implicit Bias Training (25 TOP managers);

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<sup>3</sup> SMART goal : goals that are formulated according tot he SMART Acronym: Specific, Measurable, Achievable, Realistic, Time-bound.

To get the discussion started and increase the number of inner group champions 25 TNO top managers will be send on a one day course on gender bias.

- Contribute cases to serious game (Ethics 1 goal).

In order to reach the also the more sceptical (top) managers gender will be incorporated in the serious game that will be developed within the ethics goal.

**SMART goal:**

- **Organising a gender bias training for male TOP managers at TNO, consequently training 20+ staff, that evaluated the usefulness of the training with a 4 (or more) on a 5-point scale**
- **Contributing cases to the serious game and evaluating response**

Planning:

- The Female Leadership training will be organized in 2017Q4; Report in 2019Q1
- Serious game: see Ethics

Budget:

- 15k EUR for bias training of top management (out of pocket costs)
- Needed: Participation HR

Results: Improved awareness on gender bias in all TNO management

The Diversity committee has on the 16<sup>th</sup> of May 2017 approved these goals.

## 2.2 Ethics (Integrity)

Ethics (or Integrity, as it is referred to within TNO) is institutionalized at TNO via an Integrity Platform, an Integrity Commission, an Integrity Officer, confidential counselors, a Code of Conduct, specific policies, e.g., on auxiliary activities and whistleblowing, and (one-year and multi-year) Actions plans for Integrity.

The goals (below) were articulated in a workshop on 18<sup>th</sup> of April 2017, prepared and facilitated by the JERRI project team, 2 persons)), and with 3 senior members from the organisation After the workshop, the project team discussed the draft goals with one more senior member, who was unable to attend during the workshop. Moreover, there was consultation with external stakeholders of the Rathenau Institute (12<sup>th</sup> of June 2017).

The workshop and subsequent meetings organized by JERRI have helped to make an appealing perspective for the longer term (5 to 10 years), and to articulate three specific goals that are directly linked to specific sections of the Integrity Action plan 2017-2018:

- Goal 1 Improving Moral Capabilities
- Goal 2 Awareness of Ethics in Society in business development

- Goal 3 Enhancing the Scientific Integrity

See Figure 5 for a mapping of the JERRI goals on the Integrity Action plan 2017-2018.

Onderdeel	Onderwerpen	Doelen bij onderwerpen
1) Strategie	<ul style="list-style-type: none"> <li>a) Communiceren (deel van het) nieuwe beleid</li> <li>b) Monitoren integriteitdoelen en ontwikkelingen organisatie</li> <li>c) Integriteitcommissie: monitoren en evaluatie</li> </ul>	<ul style="list-style-type: none"> <li>a) Duidelijkheid over doelen en nieuwe beleid inclusief kpi en benchmark (basisnormen integriteit)</li> <li>b) Monitoren realisatie van het plan en zorgen dat op basis van jaarlijkse risico-inventarisatie plan zo nodig bijgesteld wordt</li> <li>c) Zorgen dat IC beter functioneert</li> </ul>
<b>3. Scientific Integrity</b>	<ul style="list-style-type: none"> <li>a) Wetenschappelijke integriteit</li> <li>b) Onafhankelijkheid</li> </ul>	<ul style="list-style-type: none"> <li>a) Aansluiting LOWI en uitvoering Actieplan</li> <li>b) Onafhankelijkheidsbeleid geïmplementeerd</li> </ul>
<b>2. Ethics in Society</b>	<ul style="list-style-type: none"> <li>c) Zakelijke integriteit</li> <li>d) Ethiek en maatschappij</li> <li>e) Organisatie en mensen</li> <li>f) Versterken integriteitorganisatie</li> </ul>	<ul style="list-style-type: none"> <li>c) Agentenbeleid en klantacceptatie implementeren, nnb</li> <li>e) Bevorderen transparante en zelfkritische samenwerkingscultuur</li> <li>a) Update TNO Code</li> </ul>
<b>1. Moral Capabilities</b>	<ul style="list-style-type: none"> <li>a) Dilemmabank</li> <li>b) Workshops</li> </ul>	<ul style="list-style-type: none"> <li>a) Meerdere dilemma's aanbieden</li> <li>b) Bewustwording versterken</li> </ul>
4) Communicatie & Dialoog	a) Integriteitplatform, Yammer, City berichten	a) Groter bereik (nader bepalen hoe te meten)

Figure 5: Mapping of the JERRI goals on the Integrity Action plan 2017-2018 (source Integrity Action Plan 2017)

Please note that the goals and activities (below) target different groups within TNO (general management, trainees; business development, project management; and principal and senior scientists). Targeting different groups will help to realize TNO's ambition to be an organization in which Ethics (Integrity) is integrated and part of 'business as usual', and where processes, structures, and culture 'in place' to handle ethics systematically and carefully—in other words: to improve institutionalization of Ethics.

The Integrity Committee has discussed the goal setting in its meeting on 31<sup>st</sup> of May and approved via consensus the goal setting via a subsequent e-mail.

**2.2.1 Improve ethical awareness and moral capabilities:**

**A training/game for top management and for trainees**

**Goal:** To enhance ethical awareness and moral capabilities in TNO, especially of people in leadership roles.

We propose to develop a Game/training and to offer this to the first, second and third management echelons (Top-250, Leadership Development) (top-down) and to trainees (approx. 20; fresh young talent) (bottom-up). This combination of top-down and bottom-up will have positive impact within TNO as a whole, so that ethical awareness and moral capabilities become institutionalized.

Sponsors<sup>4</sup>: Leadership Development manager and Trainees manager

Activities:

- Develop a training/game; i.e. modify “Ethics Game” (developed on the basis of the “Mayor Game<sup>5</sup>”, for Defence—see Figure 6), by filling it with new content:
  - Approx. 6 dilemmas; please note that we aim to not only address Ethics, but also other RRI dimensions, e.g., the training can cover 4 dilemmas for Ethics, 1 for Societal Engagement/Ethics, and 1 for Diversity/Ethics.
  - Approx. 7 perspectives (5 visible per dilemma), e.g. Board of Directors; Marketing and Communications; Project Management; Research Manager; Customer (or, e.g. Ministry of Economic Affairs); Integrity Officer; co-worker.
  - Approx. 8 virtues (or values), e.g.: Integrity; Independence; Professional conduct; Common good/Responsibility (for society); Service/Results (for client); Honesty/Quality (for science); Justice; Prudence; Courage
- First offer the training/game as part of the regular Trainee meetings, e.g. 2 sessions with approx. 10 participants in each session
- Present the game in a regular LD meeting, and then offer approx. 20 sessions, with approx. 10 participants in each session

**SMART goal: All top managers (200+) and all trainees (20+) participate in this training/game and evaluated its usefulness with a 4 (or more) on a 5-point scale**

Planning: Develop the training/game in 2017Q3-2017Q4; Offer the training/game to trainees in 2018Q1, and top managers in 2018Q2-Q4; Report in 2019Q1

Budget: Develop training/game 20k + Offer training (p.m.; budget from trainees and from Leadership Development) + Report 5k = 25k. Please note this does not include hours of participating trainees and managers; these will be covered by their budgets)

Needed: Participation of trainees (2018Q1) and of Top-250 (2018Q2-Q4)

Results: Insights that people can apply immediately in their work/projects

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<sup>4</sup> Sponsors are considered vital stakeholders who support the project and are final owners of the result; they have an interest (personal, position) in seeing the goal being met.

<sup>5</sup> For more information regarding the Mayor Game see <http://www.txchange.nl/portfolio-item/mayors-game/> or in Dutch: <http://www.burgemeesters.nl/seriousgame>



Figure 6: The “Ethics Game” currently in use at the Royal Naval Academy; the structure of which will be re-used

### 2.2.2 Ethics in Society: An ‘Ethical and Societal Issues’ tool, for business development and project management

TNO wants to improve its ability to assess ethical and societal issues in its research and innovation projects (both intended and unintended impact; and issues before, during and after the project), as an integral part of business development and project management (‘business as usual’).

**Goal:** To have a simple reflective tool to help business developers, quotation and project managers of ‘sensitive projects’ (projects that entail societal or ethical issues), to openly take into account diverse ethical or societal issues in the various phases of a project: in selecting opportunities; in scoping a project; in writing a quotation; in managing the project; and in communicating about the project’s impact in society (people, planet, profit) with stakeholders. The tool will also help to manage risks and reputation. Evaluation of use and learning from use (iterative development) is considered an important activity.

Please note that we are *\*not\** aiming for administrative burden and *\*not\** looking for an overly complex tool. Instead we are looking for a simple tool, that helps to identify issues, to assess pros and cons, to make informed choices, to be able to be held accountable, and to communicate transparently about these choices.

Sponsors: Marketing and Communications, two Themes (business development), e.g. Industry (for anti-corruption) and Energy (for societal impact) and The Project Management Guild a group in TNO for the development of project management skills)

Activities:

- Develop the tool, by pragmatically re-using parts of the Checklist complexity project, Customer Acceptance Policy, the Societal Impact Assessment Tool (by TNO trainees in 2014) and results of the SATORI project ([http://satoriproject.eu/media/Philip-Brey\\_EIA.pdf](http://satoriproject.eu/media/Philip-Brey_EIA.pdf))
- Apply this tool in 4 practical cases (2 in Industry; 2 in Energy), and evaluate the practical usage and benefits of this tool

**SMART goal: 50 business developers (of total 130; via ‘Selling Innovation SAMEN’ meetings) and 50 (senior) project managers (of total 200; via Projectleidersgilde meetings) hear about the tool and receive basic instructions to use it**

**SMART goal: The tool is applied in 4 actual projects, and the business developers and project managers involved evaluate its usefulness with a 4 (or more) on a 5-point scale**

Planning: Develop the tool in 2017Q3-4; Apply it in 2018Q1-2; Report in 2018Q3

Budget: Develop/test tool 8k + Apply/evaluate tool 8k + Report 4k = 20k

Needed: Participation of business developers and project managers of 4 actual projects in using the tool

Results: More clarity on Societal and Ethical Issues for these 4 projects

Please note that this goal can be combined with one of the goals in Societal Engagement: “Societal Impact’ Tool for Project Management (project level, for society)”.

### 2.2.3 Scientific Integrity: An e-learning module, for (principal) scientists

Goal: To improve awareness within TNO of the new, national Scientific Code ([http://www.vsnu.nl/files/documenten/Domeinen/Onderzoek/Code\\_wetenschapsbeoefening\\_2004\\_\(2014\).pdf](http://www.vsnu.nl/files/documenten/Domeinen/Onderzoek/Code_wetenschapsbeoefening_2004_(2014).pdf)); esp. amongst principal scientists (and also senior scientists).

Sponsor: Integrity Commission, lead for Scientific Integrity

Activities:

- Develop a compact e-learning module (e.g., containing 2-3 video clips of 2-3 minutes, with 2-3 quiz questions) to explain this new Scientific Code (support from Training and Performance Innovations, a research group of TNO)
- Offer this e-learning module to principal (and senior) scientists, science directors and research managers.

**SMART goal: 20 principal scientists (of a total of 27) plus 40 senior scientists (of a total of 400 senior scientists) participate in the e-learning module, and evaluate its usefulness with a 4 (or more) on a 5-point scale. Science Directors and Research Managers voluntarily follow this e-learning module.**

Planning: Develop the e-learning module in 2017Q3; Offer the e-learning module in 2017Q4 and 2018Q1 (proposal to do this action first, as ‘low-hanging fruit’);

Budget: Develop e-learning 8k + Communication (and evaluation) 2k = 10k. Please note that this does not include the hours spent on learning.

Needed: Participation of principal (and senior) scientists in the e-learning course

Results: Knowledge on the new standard for scientific integrity

During the discussions of the goals for Ethics, the overall ambition became more clear. TNO wants to become better in organizing the process of ethical deliberation and decision making (Van de Poel & Royakkers, 2011). This is to a large extent a normatively *neutral* activity in that it does *not* assume or prescribe any norms that TNO would or should need to comply to. Rather, TNO aims to become better in the systematic and careful identification of ethical issues, the discussion of these issues with internal and external stakeholders, and the providing of accounts (accountability) about its considerations and decision making. Having said that, there are several places where normative ethics need to be in place, e.g., in the form checklists for selecting which projects to work on (or which not to work on) (see Goal 2), or in the form of tools to help project managers to better steer their projects towards creating positive impact in society (see Goal 2), or in the form of guidelines for scientific publishing (see Goal 3).

## 2.3 Societal Engagement

During the workshop the JERRI project team developed a 2x2 framework to discuss diverse goals and activities that would fall under the (broad) heading of Societal Engagement—see Figure 7. It distinguishes between goals and activities *for* society (to align the contents and results of research and innovation to values and needs in society), and goals and activities *with* society (to involve relevant societal actors in the process of research and innovation), and between goals and activities *on the strategy* level (e.g., in the Roadmaps of TNO, which are developed for the Themes/Units) and goals and activities *on the project level* (or programme level, e.g., a cluster of projects or a larger project).

	<u>For society</u> To align the results of research and innovation to the values and needs in society	<u>With society</u> To involve relevant societal actors in the process of research and innovation
<u>Strategy level</u> , e.g., agenda-setting	<u>Strategy level</u> <u>For society</u> e.g., consult key customers in agenda-setting and making of strategic plans	<u>Strategy level</u> <u>With society</u> e.g., involve NGOs, civic organization or 'citizen initiatives' in agenda-setting
<u>Project level</u> , operational	<u>Project level</u> <u>For society</u> e.g., assess the project's impact on society and balance interests	<u>Project level</u> <u>With society</u> e.g., involve prospective users in research, development and evaluation

Figure 7: Societal Engagement, both for society and with society, and both on a strategy level and on a project level

The goals (below) were articulated in a workshop on the 4<sup>th</sup> of May, prepared and facilitated by two members of the JERRI project team. Attendance came from a diverse group of participants: senior members of the TNO organisation and trainees (junior staff, just started at TNO).

The workshop consisted of two parts: in the first part the participants identified and discussed the current practices of TNO regarding Societal Engagement (using the 2x2 matrix), and in the second part the participants generated and discussed ideas for future practices of TNO regarding Societal Engagement.

Interestingly, there are many examples of current practices with society at project level (the bottom-right quadrant of Figure 6); this is one of the bases for the ambition specified in Goal 3 (below) to share best practices in user involvement. Also interesting is the relatively high number of ideas for future activities for society, both on the strategy level and the project level (the left half of Figure 7), which resulted in the ambition specified in Goal 2, to have a tool to identify, discuss, assess and communicate the impact of TNO's programmes and projects in society.

The proposed goals were discussed, modified and then approved by the CSR Steering Committee (31st of May).

### 2.3.1 Involve ('unusual') stakeholders in Strategy Advisory Councils (strategy level, with society)

TNO currently has dialogues with stakeholders, e.g. in the Strategy Advisory Councils (SAR). These SARs, however, are dominated by industry, government and academia<sup>6</sup>. TNO wants to broaden the dialogue with society, e.g., to include other, 'unusual' stakeholders. This will boost trust in TNO as an organization that is also concerned with society (and not just with industry, government and academia).

**Goal** : To include 'unusual' stakeholders, e.g., NGOs or civil society organizations, in upcoming SAR meetings. These SARs will be organized anew, as part of the restructuring of TNO. This will boost trust in society in TNO as a 'thought leader' and help to legitimize this role (of 'thought leader'). On the other hand TNO will, by listening to societal actors (and including their views) be able to better align strategic choices.

Activities:

- Learn from Theme Urbanisation (where they have two NGOs in their SAR)
- Discuss the inclusion of 'unusual' stakeholders in the SARs with the Themes/Units; esp. with Energy and Health, which have obvious societal implications.
- Develop an approach for identifying 'unusual' stakeholders and for anticipating their roles and dynamics (see, e.g., Steen et al. 2017a; Steen et al. 2017b)
- Support the inclusion of 'unusual' stakeholders in the SAR meetings
- Budget: 20k (4k to develop approach + 2 x 8k to support organize 2 dialogues)

**SMART goal: TNO includes two 'unusual' stakeholders in each (new) Strategy Advisory Council.**

Needed: Some effort from Strategy department (new SAR 'Terms of Reference') and from 'Units', e.g., Energy and Health, to include these 'unusual' stakeholders in their SAR.

Results: More diverse stakeholders in the (new) SARs and input and feedback from society into the strategies/roadmaps of the (new) 'Units'

### 2.3.2 'Societal Impact' Tool for Project Management (project level, for society)

TNO wants to contribute to solving problems in society. However, its projects sometimes tend to focus on technology, which is 'only' a means to achieve some ultimate end, e.g., to increase safety or promote health. TNO would like to focus on ends, i.e. on creating positive impact in society (rather than focus on means, e.g., on technology), and to clarify its role and added value regarding the solving of societal problems. On

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<sup>6</sup> Out of the 58 people in the five SARs (TNO Annual Report 2015), 29 were from industry, 13 from government, 7 from academia, and (only) 4 from not-for profit organizations or NGOs; moreover, gender diversity was rather poor, with only 7 female out of the 58 people.

Roadmap level the Themes have mapped their impact with the use of sustainable development goals (SDG's). The SDG's could therefore be an opportunity to be tested on project level.

**Goal:** To develop a practical 'Societal Impact' tool, for managing (larger) projects or programmes. The is meant to facilitate dialogues (first within TNO, later also outside TNO) (not be an overly-simple checklist, not an overly-complicated spreadsheet). The tool will be used in different stages: 1) to articulate the project's intended impact (before) in terms of SDG's; 2) to steer the project towards positive impact on society; and 3) to evaluate ('prove') its actual impact (afterwards).

Sponsors: Unit directors (operational, scientific, business), CSR Steering Committee.

Activities:

- Identify/select 2 Themes that are interested in using this tool; then identify/select 2 projects in each Theme; this will deliver 4 projects as first users of the tool (they will help to evaluate and improve it). This is also meant to create support for this goal and associated activities within TNO.
- Apply the tool in 4 projects (ideally in different stages: articulate aims; steer project; evaluate impact).

Budget: 8k (4k develop tool + 4k apply tool)

**SMART goal: The tool was applied in 4 actual projects, and the people involved (business development; project management) evaluated its usefulness with a 4 (or more) on a 5-point scale**

Needed: Some effort from approx. 8 people in these 4 projects

Results: More clarity on Societal Impact for these 4 projects, which can be used, e.g., in Marketing and Communications

Please note that this goal can be combined with one of the goals in Ethics: "Ethics in Society: A 'Societal and Ethical Issues' tool/checklist, for business development and project management".

### **2.3.3 Share Best Practices in User Involvement/Citizen Science (project level, with society)**

TNO is well-known for its expertise in technology. Its expertise in 'user involvement' is, however, less well-known; e.g., involving police officers, hospital nurses, truck drivers, etc. in research and innovation projects as 'citizen scientists'<sup>7</sup>. It would benefit TNO if

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<sup>7</sup> Citizen science ... is scientific research conducted, in whole or in part, by amateur (or nonprofessional) scientists. Citizen science is sometimes described as "public participation in scientific research," participatory monitoring and participatory action research (source: Wikipedia).

this was more widely known, both within TNO and outside TNO. It would boost TNO's abilities for user involvement, and boost trust in society in TNO as an organization that works 'for society' and makes use of societal participants (using Citizens Science).

**Goal:** To share examples of 'best practices' of 'user involvement' and project where 'citizens scientist' are used in projects, so that our stakeholders, and the general public, know about it. This can improve TNO's reputation of being able to make use of citizens/society to help society, and work on its reputation as being able to stand 'outside the ivory tower' and be connected with society.

Sponsors: Units, Marketing and Communications

Activities:

- Identify/select approx. 4 'best practices' of 'user involvement' in projects
- Communicate these within TNO, and outside TNO

Budget: 20k

**SMART goal: TNO communicates 4 'best practices' in 'user involvement', both within TNO and outside TNO.**

Needed: Some effort by team members of 4 projects, to gather information, and from Marketing & Communications for dissemination

Results: Positive effect on TNO's reputation as working 'with and for society'.

## 2.4 Science Education

Based on the recent internal workshop (four participants) and external stakeholder consultation, TNO has developed the ambition to use its resources and knowledge position to foster the dimension of Science Education. Goal setting has been performed in a way that would link previous activities and generates a new impetus to these activities in such a way that these additional activities can be distinguished. Secondly, (limited) additional activities are proposed to specify the position of TNO in society and to assist the wider public in getting to know applied sciences through multi-faceted interaction; experiencing and learning through interaction on- and off line.

Important aspect for TNO is that by engaging in this RRI dimension, the so called 'license to operate' is continuously renewed through and with society; by engaging with society and position the role of applied science and innovation in the societal discourse as a distinct added value; goodwill towards the role of RTO's and TNO in specific (and its associated funding requirement) is granted. It was noticed both by internal and external stakeholders that nowadays it becomes more apparent to highlight why TNO should exist at all. The transfer of knowledge towards society is essential; as TNO is an applied research organisation; if inventions are not applied in practice; innovation is

halted and the impact on society is missed. Therefore the relation between society and TNO is reciprocal.

For the past 85 years the position and quality of the work of TNO has been deserved by high quality work, staff and knowledge. Therefore the integrity of how we do the work we do, the transparency in how we do it and the quality one might expect from TNO has been assumed to be excellent and does receive a lot of internal attention. It is implicitly considered as important assets, but could be made more explicit. World class knowledge in isolation and research without real application in practice is considered a missed opportunity. This is considered as an actionable activity.

By formulating the following goal setting ambitions, TNO will increase the awareness of specific target groups and the general public in ways that will help to lower the threshold between science and application of science. This will be done by inviting stakeholders to experience and/or witness science 'in action' and to be (publicly) open and accountable about how science is performed in TNO. The aim is to increase the trust in and attractiveness and openness of conducting applied research and to show insight in career opportunities for specific stakeholders, but also to allow people to learn, experience and share the joys of applied science through interaction with staff and project results.

The development and actions related to this goal will be developed with our project partners, specifically The Fraunhofer-Gesellschaft.

TNO formulated three action points (to show science, to champion the value of science and to invite society) that relate to individual goals. These goals were discussed in the Advisory Board, and subsequently improved and then approved by the CSR Steering Committee (31<sup>st</sup> of May 2017).

#### **2.4.1 To show science**

**Goal:** To increase the visibility of applied science in society in a more stratified way

TNO does communicate to society at large through various online and off line channels and reaches out to many different audiences. The online magazine TNO TIME<sup>8</sup> has a large audience in terms of readers (100.000+ views) and serves as a first popular introduction to a topic. A call to action, or more in depth material can be found for those who seek out more information regarding a specific topic. The way in which TNO uses various online channels is mostly 'one way communication'. A proposed action is to boost the content of TNO TIME. This can be achieved using the projects stemming from paragraph 2.3.3.

During the workshop more interactive forms of communication were mentioned to foster the interaction between society and TNO. Ideas to boost curiosity of science were

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<sup>8</sup> <https://time.tno.nl/en/>

proposed; Film interviews between senior experts and 'fresh' starters and ask them about inspirational(work related) events and aspirations for future research.

The contrast between creating a larger audience and creating specific audiences seems counterintuitive; A larger audience does not necessarily mean more impact. Clever choices in which messages to communicate to whom should be elaborated. From a recruitment perspective 2nd career women and STEM-students seem a natural target group.

There are also natural (offline) events, such as the 85 years existence of TNO in 2017, or events that are aimed at 'getting to know TNO', that present opportunities for offline interaction with society or parts of society. Proposed is to organize more 'open days' on location i.e. 1 or 2 locations per year in a structured way; making use of natural moments that coincide with external agenda's such as the Weekend of Science.

Activities: Online; more diversity in projects (specifically projects with Citizens Scientist participation).

Expected impact: Larger audience (more interaction) and specific audiences (secondary /higher education)

**SMART goal: Increase the type, diversity and number of contributions in TNO TIME; this would comprise a shift in written articles to more diversified content (current status 95% articles - 5% interactive) to 75% articles – 25% interactive in 2018.**

Internal alignment: Marketing & Communications, HR

Budget: no budget requirement; goal to be achieved in conjunction with 2.3.3.

#### **2.4.2 To champion the value of science**

**Goal:** To promote specific projects or topics with a motivation to 'demonstrate' and 'communicate'. Trustbuilding seems to be a key aspect here.

The RRI dimension of Science Education ties into a societal discussion about sciences as a trustworthy source. The idea of 'alternative facts' as a popular method to destabilize debates based on facts, towards debates based on meaning or alternative facts. This is seen by stakeholders as an argument to promote the idea of Sciences Education; by helping society to understand science, scientific processes and methods, it could be argued that the 'license to operate' for science-based institutions such as TNO is validated and promoted if done effectively.

TNO has formulated a goal where it would (publicly) share how science is done at TNO (Scientific Integrity), which has been formulated in the TNO Code of Conduct and by introducing exemplary case studies of how science and fact based reasoning helps to formulate positions in sensitive dossiers. The ambition is to allow one or two cases per year to be detailed out with additional information/graphics and illustrations in such way

that a wider societal audience is able to understand how science, scientific methods and scientific reasoning leads to certain outcomes and positions in a public debate. This exemplary case study could be made available with for instance educational organizations.

Activities: Public statement on scientific integrity; Sensitive Dossiers sharing

Expected impact: Trust in fact based science, openness

**SMART goal: Make a public statement on TNO website how we do projects and are accountable for our scientific integrity in 2018**

**SMART goal: Share at last two sensitive dossiers per year**

Internal alignment: Public Affairs & Integrity Officer & Marketing & Communications;

Budget: 10k

### 2.4.3 To invite society

The third goal set has an ambition to open up TNO. The CEO of TNO has declared that he wants to 'open' doors and windows to the outside world and show the world what a beautiful organisation TNO is. The actions resulting should lower the threshold/barrier to interact with TNO, TNO staff and TNO locations (whilst preserving safety and security at those places where this is required).

Proposed activities entail the organization of open days; locations could be opened up for neighbours, local councils and interested societal stakeholders and presentations and demonstrations could be given. The ambition is to align these open days with natural moments in the national calendar such as the Weekend of Science<sup>9</sup>.

For Citizen Empowerment; opportunities could be created to interact more thoroughly through specific channels. One way of dealing with this is to structure the process to find information about events through a calendar and have a type of CRM system in place for request from interested stakeholders/schools/students. This would enable TNO to move from ad-hoc responses to requests, to structuring responses and managing the influx of questions. The development of an information portal on the TNO website aimed at managing interaction with TNO from society.

One step further: even societal research questions could be posed to TNO and solved, based on for instance crowdsourcing. (Crowdsourcing is a specific sourcing model in which individuals or organizations use contributions from users to obtain needed services or ideas. Crowdsourcing can come from an undefined public (instead of being

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<sup>9</sup> [www.weekendvandewetenschap.nl](http://www.weekendvandewetenschap.nl); weekend of science is an annual event in which 200+ organisations (universities, museums, research organisations and companies) open their doors for the general public and host a serie of onsite activities.

commissioned from a specific, named group) and in that crowdsourcing includes a mix of bottom-up and top-down processes. Sciences Education ties in with this crowdsourcing as a way to interact with society in order to define and execute specific types of research and links with the dimension of Societal engagement.

Proposed activities: Open Days; Managed interactions through information portal, reconnaissance of crowdsourcing platform

Expected impact: Goodwill & Social License to operate increase (locally & nationally)

**SMART goal: Open Day on location**

**SMART goal: Managed information portal for society**

**SMART goal: Develop relations with crowdsourcing platforms**

Internal alignment: CSR Officer, Expertise , Marketing & Communications

Budget: 32k

#### **2.4.4 Synergy across RRI Dimensions**

The activities in goal 1 'to show science' is directly linked to societal engagement. Through varying in form, we can elaborate to what extent different forms of expression work best for specific target groups. This would enable TNO to better align the content of the message to the target audience and be able to share these lessons.

The activities on goal 2 (To champion the value of science) are aligned with the RRI Dimension of Ethics. Scientific Integrity is one of the important internal ambitions of TNO; as such it has yet not made it to an explicit external commitment. The Integrity Commission of TNO and CSR Steering Committee has recently committed to pursuing similar goals in terms of sensitive dossiers.

New activities are being proposed on goal 3 (To invite society); there is a clear link between these proposed goals and the dimension of Societal Engagement.

TNO has the ambition to use and exchange lessons learned with the Fraunhofer team during the project on this RRI dimension and come up with mutual learnings to be shared with other RTO's (through WP10).

## 2.5 Open Access

From various angles from the TNO organisation, questions are asked about the Open Access policy, Publication policy and IP Policy. To develop an Open Access policy, which is related to IP policy, coordination and a proper project approach is needed.

The current two main goals articulated with regard to Open Access (OA) at TNO are:

- establishing a permanent OA platform that is able to deal with Open Access questions and queries, and advise on policy level what is required for TNO as an organization.
- drawing up an annual Open Access plan for 2018

As the dimension of Open Access has not reached the level of institutionalization (see figure 3), the goalsetting process therefore consisted of consulting internal strategic keypersons related to the topic of OA and discussions with external stakeholders.

During this wide consultation round, it was suggested that the first OA ambition should be to attain a focus of interest on OA at the highest decision making level and set up guidelines that establish how TNO wants to operate successfully in an environment that continuously requires more and more open science (open data and open access).

In order to create this OA platform it became clear that the topic itself deserves proper attention and an 'owner'. Different internal stakeholders should need to devote time to this topic in order to devise a way forward and to propose company policies and guidelines. It is likely that representatives from the TNO departments that deal with publishing, IP, legislation and OA need to step forward in order to do this.

### 2.5.1 Political, managerial and societal trends

In recent years, a growing interest in national and EU policies for Open Science, Open Access (OA) and Open Data has been noticed at TNO. This trend is based on the assumption that all scientific results from public funded research should be made available for free to the scientific community as a whole, and to the public in general. This trend has led to national initiatives of Dutch universities, the signing of the Berlin Declaration, the Dutch WOB legislation and the Dutch Archiefwet.

In society, this WOB legislation had made it possible for citizens and journalists alike to retrieve the documents and information of publicly funded organization in the Netherlands. The interest of the organisation are, to a certain degree, not aligned to be able to provide this information as this might threaten a legitimate business model, sponsor-IP, development of patents and licenses or new business models. The current organisational point of view is therefore "Open where possible, closed when needed<sup>10</sup>".

This point of view is in line with the Council of the European Union that stated:

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<sup>10</sup> Internal memo on Open Access, TNO 2017,

*(The Council of the European Union) “UNDERLINES that research data originating from publicly funded research projects could be considered as a public good, and ENCOURAGES the Member States, the Commission and stakeholders to set optimal reuse of research data as the point of departure, whilst recognising the needs for different access regimes because of Intellectual Property Rights, personal data protection and confidentiality, security concerns, as well as global economic competitiveness and other legitimate interests. Therefore, the underlying principle for the optimal reuse of research data should be: “as open as possible, as closed as necessary”.*

(Council Proceedings RECH 208 TELECOM 100, May 2016, point 14)

### **2.5.2 JERRI initiative & Fraunhofer partnership**

The JERRI initiative is an opportunity for TNO to discover how others deal with the dilemmas of Open Access and Open Data, and to address the subject in the right way. Through JERRI participation, OA issues have been discussed at length between Fraunhofer and TNO experts on data distribution. Also, on-site visits have been made to the Karlsruhe, Stuttgart and München offices of Fraunhofer, to gain insight in the way Fraunhofer has handled OA issues up till now, and what their experiences are. In this process, the differences and similarities between the two organizations have become more clear than before.

For TNO the exchange with Fraunhofer is a catalyst and it teaches TNO to some extent what works and does not work for large RTO's; which policies have been set and how open access and open data has been institutionalized.

### **2.5.3 Problem statement**

Research at TNO varies strongly between focus points like healthcare, energy, homeland security, automotive industry and nanotechnology. Each with its own public or private client base, and client- or industry specific contract clauses. Based on these clauses, different sets of rules and procedures have been put in place. They deal with the 'openness' of the research results, or simply put: which info can be made publicly available, outside TNO, and which cannot.

Due to the great variety of sponsors, sectors, clauses and funding formulas, the rules and procedures vary as well. As a consequence, policies in place are not always unambiguously or clear, and scientists can be hesitant about publishing their TNO efforts at all. At the same time, outside pressure on TNO has grown considerably. It is visible in trends in politics, and society and can be visualised as follows:

## Open Science issues within TNO :

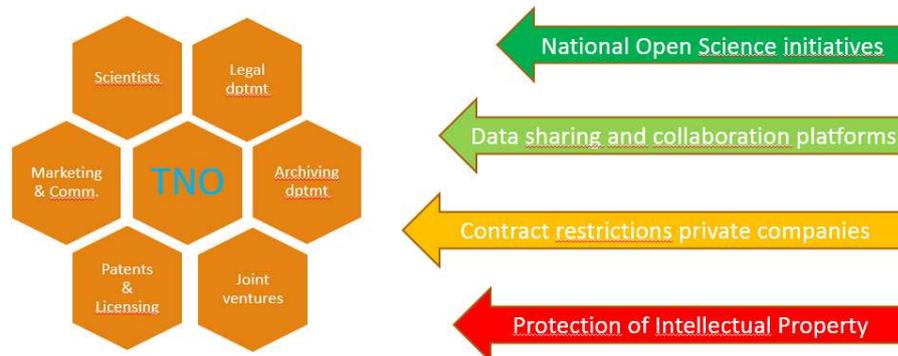


Figure 8: Assessment made by JERRI team of position in relation to Open Science

### 2.5.4 Sense of urgency streamlining publication procedures

TNO has four reasons to streamline publication procedures (and assorted questions). Two of them fuelled from within the organization, and the other two from outside. The latter form the basis for a business case for TNO:

1. Compliancy with national (Dutch) legislation is necessary. The “Archiefwet” and the “Wet Openbaar Bestuur” stipulate the need for a clear policy in publication policies, with an emphasis on openness towards society. TNO must be able to give a sound explanation why some public funded studies have not been published in the public domain.
2. The societal trend for openness cannot be denied, and this creates the need for clear rules and procedures. If Open Access in some cases cannot be supported, this refusal must be based on solid arguments.
3. The internal confusion on publishing rules leads to inefficiency, since TNO scientists and librarians lose valuable time sorting out the publishing conditions on a project-by-project basis. Streamlining the publication procedures is necessary to avoid the loss of potential scientific impact.
4. The unclear rules and procedures can in some cases lead to ineffective processes. For example, when wrong publication choices are made, this could ultimately damage the TNO market position. This is particularly the case when Intellectual Property is involved. Therefore, IP should be the basis for OA policies

### 2.5.5 Open Access/Open Science Goalsetting

Goal: A first goal would be to establish an (internal) Open Access Platform, with proper time and staff allocated to propose and execute the planning of guidelines and policies on Open Access and related topics. The first concrete steps would be to:

1. Naming a business process owner (proposed is the Chief Scientific Officer as member of the executive board who would assign this topic to a business process owner)
2. Institution of OA platform or- committee e.g. residing in/with the Science Office with a clear brief and agenda. The committee will incorporate various disciplines: Strategy, Legal, scientists, etc. It will be operational at the end of August 2017.

This TNO OA Committee will:

Gather all necessary information and viewpoints for a general TNO policy on OA. The relationship between IP strategy and OA policy will be paramount. This involves the steps knowledge creation, knowledge exploration and knowledge valorisation.

3. Clarify the TNO procedures on publishing, by stipulating a clear and uniform policy.
4. Apply the policy in sets of responsibilities, processes, IT-tooling and support, and communication to target groups.
5. Support the creation of a TNO Publication Decision Making Tool, that can be shared with the wider RTO community. (as a deliverable for JERRI, and as IT-tooling within TNO).

By adopting this goal, TNO institutionalizes the formation of an Open Access Platform and to set the policy ambitions to be hold accountable for this topic (as one of the material topics in our annual report).

The JERRI project team estimates that steps 1-2 will take 2 months. At the start of 2018. The Platform would have a clear plan for activities for this platform (approved by the business process owner).

Activities:

- 2017
  - Setting up the Open Access Platform
  - Installation of Open Access Platform
  - Drafting Annual Plan 2018
- 2018
  - Executing Annual Plan 2018
  - Decision Tree Open Access Publishing

This goal has been proposed to internal stakeholders and has received the principal approval of the Chief Scientific Officer (24<sup>th</sup> of June 2017). Parts of this plan have been approved by the Management Board (on the 10<sup>th</sup> of July 2017) as part of the IP&C strategy.

### 3 Discussion

Reflecting on the goal-setting processes, we can see several commonalities and several differences.

The goal-setting processes for Ethics, Societal Engagement and Science Education were rather similar and followed the path as set out in deliverable 3.1 (Goal setting at TNO): first a goal-setting workshop with invited people, then a discussion of draft goals in a standing committee (e.g., Integrity Committee for Ethics; CSR Committee for Societal Engagement and Science Education). The goal-setting processes for Gender Equality was done somewhat differently, because it was embedded in the usual Diversity Committee's work.

The goal-setting for Open Access was done differently, because the level of institutionalisation for this RRI dimension. Abandoning the path of workshop proved to be a wise decision in order to achieve a higher chance of successful institutionalization and raising the expectations of successful implementation. The workshop can still be held in the near future, now with a proper mandate from the organisation.

A recurring pattern was the relatively high involvement of *internal* stakeholders, and the relatively low involvement of external stakeholders. This is probably due to the difficulty (and relatively low expected benefit) of involving external stakeholders in the *content* of goal setting. We will, however, in the remainder of the project aim to involve external stakeholders, possibly more for the process of realizing these goals, e.g. to discuss barriers and enablers, and institutionalization.

#### 3.1 Feedback (input) from the Advisory Board

The feedback from those members of the Advisory Board that have taken the opportunity to respond have been received and used to finalize the goal setting for the RRI dimensions.

Verbal feedback was received during the Advisory Board meeting (with the exception of the dimension of Societal Engagement) on the presentations given about the plans for each dimension.

Through bilateral exchanges Advisory Board members had contact with the lead persons for the different dimensions. This feedback has been instrumental in aligning internal plans with external agendas and expectations (just like other feedback provided by external stakeholders has done so). It proved that views from outside the Netherlands are of high value; as most other external stakeholders were working from a Dutch perspective.

Most important feedback received was that the opportunity that arises as a consequence of the restructuring, could really demonstrate to what extent the organisation is

willing and able to commit to RRI goals; the proposed pathways for the goal setting seemed to follow the maturity levels of the dimensions (specifically Open Access).

The feedback for Gender Equality about the proposed goals and activities seem that the activities are not only required but are essential to be able to achieve the ambition level. The ambition itself should already be considered as an important signal, that will require the necessary additional activities. Tips were given to make use of existing tooling and resources in order to make these activities as powerful as possible.

Framework conditions are in place for Ethics; it is now about deeply embedding ethical responsibility in the organisation and the proposed actions seem well planned to achieve this. The proposed plans seem to be in place for this.

Feedback from Societal Engagement focused on particular goals; such as making sure that criteria exist for the selection of 'unusual' members of the Strategic Advisory Councils and making sure that these new voices are welcomed, and not seen as an intrusion. When making the societal impact tool pay attention to the iterative design steps (see what works and what does not). Approval was given not only to the content (highlight citizen scientists /co-design) but also to the form through which this deliverable is made; interactive/dynamic instead of static texts.

The triple goal setting from Science Education is considered as three significant and progressive steps towards a positive transition; starting from a deficit model to taking stand in the societal debate and being proactive "towards an Open Laboratory"- philosophy.

Feedback received related to Open Access argue that the topic is as much a cultural change process for TNO as a mission oriented change, that needs to be supported; the plans for Open Access seem to follow both strands and the organisation is in a learning curve to deal with the multitude of dimension that need to be considered when following the proposed actions as set out in this deliverable.

### **3.2 Next steps**

TNO aims for a 'soft start' for many of these activities in September 2017, e.g., putting these activities on the agendas of relevant committees and executives within TNO.

This 'soft start' will also help to explore possible barriers and enablers, as early as possible and as input for D5.1 (Analysis of barriers; due in December 2017), and to facilitate implementation of the activities, and the development of Action Plans (D5.2; due in April 2018), including early lessons learnt and modifications of the plans.

We plan to organize the monitoring and evaluation of the effects of these activities within TNO in a separate task. We will explore the possibility that IHS (project partner in JERRI) can play a role in this monitoring and evaluation.

The budget as requested from the initial plans totals at just over 236k euros, which will leave place for coordination and reporting activities. The total available budget in WP7 is approximately 260k euro. The goal for TNO in this task was to set goals, and to indicate plans and activities.

## 4 Summary and conclusions

The goals for the different RRI dimensions are summarized in the table below, with their associated budgets and planning, as well as cross-overs between dimensions:

Goal	Budget	Planning						Cross-overs
		2017		2018				
		Q1	Q2	Q1	Q2	Q3	Q4	
<b>Gender Equality</b>	<b>59</b>							
1. Female leadership training	39	Exe		Exe				
2. Database for female talent	5			Dev	Dev	Dev	Dev	
3. Implicit Bias Training (25 TOP managers)	15			Exe	Exe	Exe	Exe	
Contribute case to game (Ethics Goal 1)				Dev	Dev			Ethics, Societal Engagement
<b>Ethics</b>	<b>55</b>	Q3	Q4	Q1	Q2	Q3	Q4	
1. Improve Ethical Awareness and Moral Capabilities: A game/training, for top management and for trainees	25	Dev	Dev	Trai	LD	LD	LD	Gender equality, Societal engagement
2. Ethics in Society: An 'Ethical and Societal Issues tool, for business development and project management	20	Dev	Dev	App	App	Rep		Societal Engagement Goal 2
3. Scientific Integrity: An e-learning module, for (principal) scientists, science directors, RM's	10	Dev	Exe	Exe				-
<b>Societal Engagement</b>	<b>40</b>							
1. Involve ('unusual') stakeholders in Strategy Advisory Councils	12	Dev	Dev	Exe	Exe	Exe	Exe	
2. Societal Impact' tool for project management	8	Dev	Dev	Exe	Exe	Exe	Exe	Ethics Goal 2
3. Share Best Practices in User Involvement	20			Exe	Exe	Exe	Exe	Science Education (1)
Contribute case to game (Ethics Goal 1)								
<b>Science Education</b>	<b>42</b>							
1. To show science				Exe	Exe	Exe	Exe	Societal Engagement (3)
2. To champion the value of science	10			Exe	Exe	Exe	Exe	Ethics
3. To invite Society	32	Dev	Dev	Exe	Exe	Exe	Exe	Societal Engagement
<b>Open Access</b>	<b>40</b>							
1. Open Access Platform, Action Plan, and Decision Tree Publishing	40	Dev	Dev	Exe	Exe	Exe	Exe	Ethics (Scientific Integrity)
App = Apply Dev = Develop Exe = Execute LD = Leadership development Rep = Report Trai = Training								

We can conclude that the goals that were set are well aligned with current structures (institutionalization) in TNO, and are well supported by internal stakeholders. Furthermore, the goals are relatively specific and practical, which will help to realize them. Moreover, there are interesting overlaps between the different dimensions—see Table above, “Cross-overs”.

The planning for each of the goals seem to follow the logical implementation moments and the cycle of reporting and monitoring. The restructuring of the organisation does provide (immediate) opportunity to question the obvious and start the discussion about new ways of engaging with our internal and external stakeholders. The sponsors are in place and position and through the extensive preparations organisational sensemaking about these goals and activities has been achieved.

The JERRI Project team is looking forward to take the next steps!

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