

Royal DSM

A global purpose-led
science-based leader in
Health, Nutrition & Bioscience



DSM

BRIGHT SCIENCE. BRIGHTER LIVING.

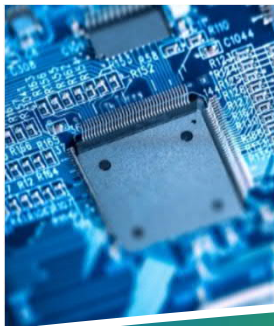
More than a century of successful transformation

Coal mining

(Petro)chemicals

Nutrition, Health
& Sustainable Living

Health, Nutrition,
& Bioscience



2022

1902



DSM



Unlimited. **DSM**



Three Business Groups with clear end-market orientation



Animal Nutrition & Health

Radically more sustainable animal farming

€3.4bn*



Health, Nutrition & Care

Keeping the world's growing population healthy

€2.5bn*



Food & Beverage

Healthy diets for all through nutritious, delicious and sustainable solutions

€1.3bn*

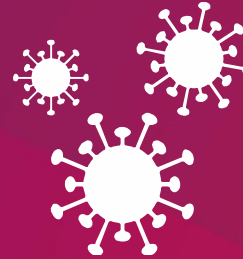
The modern world is caught in the crossfire of several converging megatrends



10bn

Population growth

The world population is expected to reach 10 billion by 2050.



40m

Non-communicable diseases

Non-communicable diseases like heart disease, stroke, and cancer are causing 40 million people to die every year.



821m

Hunger vs obesity

Over 821 million people suffer from hunger, while over 2.3 billion people are overweight.



\$940bn

Food loss & waste

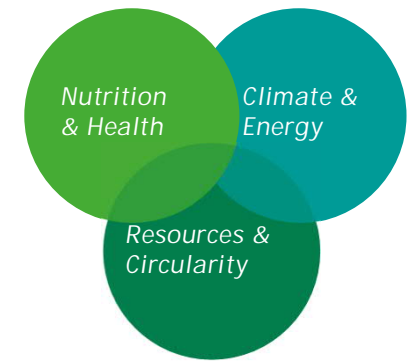
The world's annual food waste bill is US\$940 billion.

Our purpose is to create brighter lives for all

DSM solutions already reach 2.5 billion+ people worldwide



Our focus domains



Nutrition & Health

- Adequate macro-/micronutrients (proteins, vitamins, minerals, fatty acids)
- Fighting malnutrition (*i.e.* undernutrition, overweight)
- Enabling sustainable animal protein production such as dairy, poultry, eggs, fish and meat
- Reducing salt, sugar, saturated fat
- Combatting antimicrobial resistance
- Providing for biomedical and nutrition solutions to support health and longevity

Climate & Energy

- Reducing greenhouse gas emissions in own operations, enabling our customers and advocacy
- Enable greenhouse gas emissions reductions for customers
- Advocate a low carbon economy and carbon pricing
- Stepping up renewable energy

Resources & Circularity

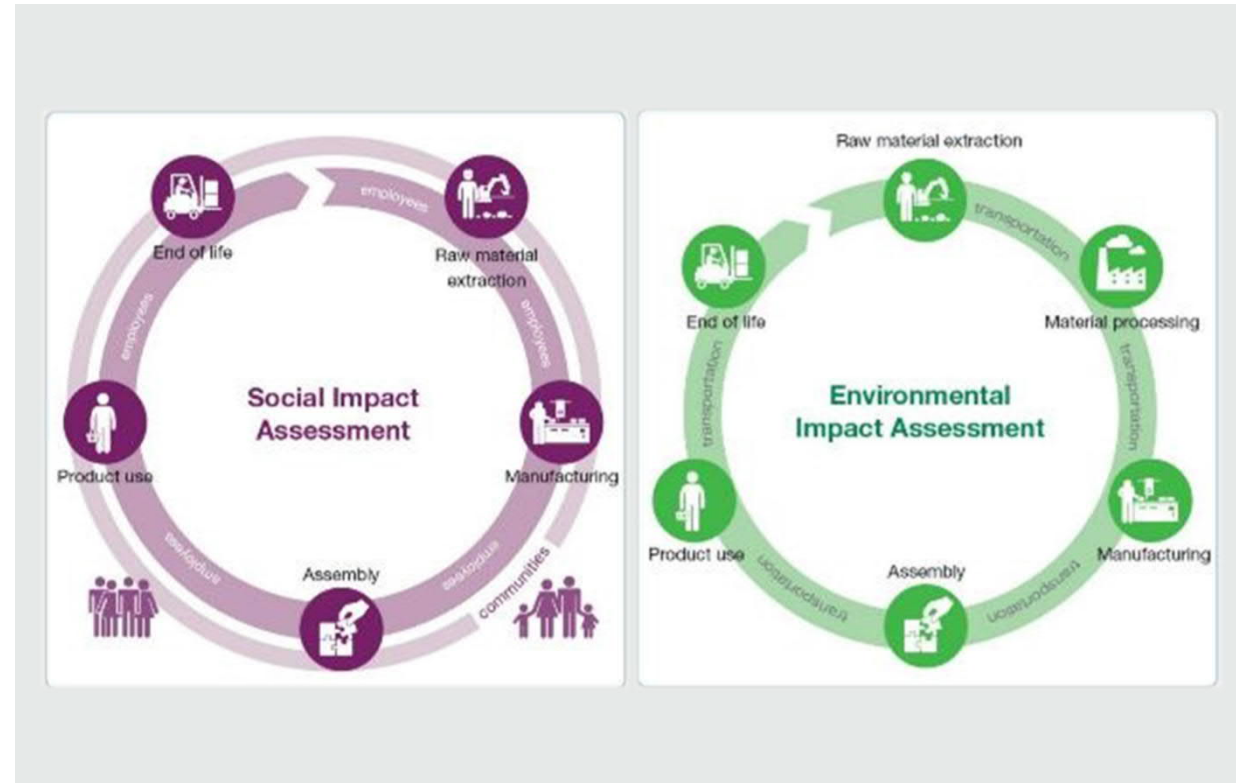
- Improving resource efficiency, including water
- Reducing and recycling waste
- Enabling circular & bio-based solutions: reduce, replace, extend, design, recover
- Increasing yields
- Reducing food loss and waste
- Preserving land, marine biodiversity

Methodology

DSM's solutions should be better for people and/or planet.

We use Environmental Life Cycle Analysis and People Life Cycle Analysis to **determine** if our products have better environmental and/or social performance than the market reference solution.

In 2020, we realized **63% sales** of Brighter Living Solutions (reported performance).



Governance @DSM

- ❑ A global governance model was key for a comprehensive, effective, and timely implementation of the Nagoya Protocol/ABS compliance set-up at DSM
- ❑ Review Team:
 - Ownership by Top Management
 - Business Group leaders for key functions (Science/Innovation, Legal, Intellectual Property, Regulatory & Quality, Purchasing, Product Management)
- ❑ Expert Team:
 - Cross-functional, with representatives primarily from R&D, Legal, Intellectual Property, and Regulatory & Quality
 - Representatives from key regions with (likely) restrictive ABS legislation: e.g. China, Brazil, India
 - Continuity, accumulating experience as a team since 2014, including M&A experiences



**Animal Nutrition
& Health**



**Health, Nutrition &
Care**



Food & Beverage

Compliance with the Nagoya Protocol/ABS

DSM Internal Guidance

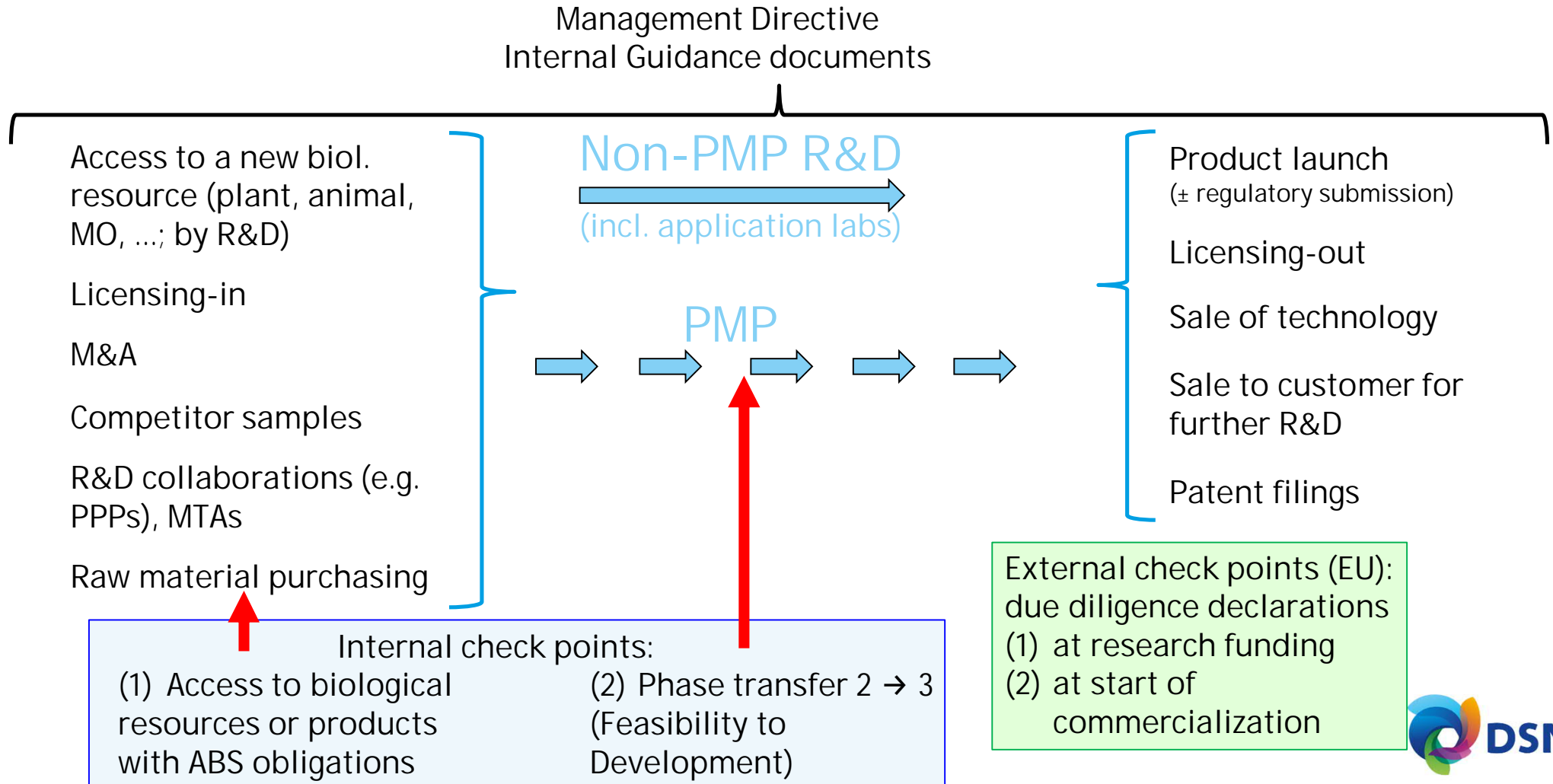
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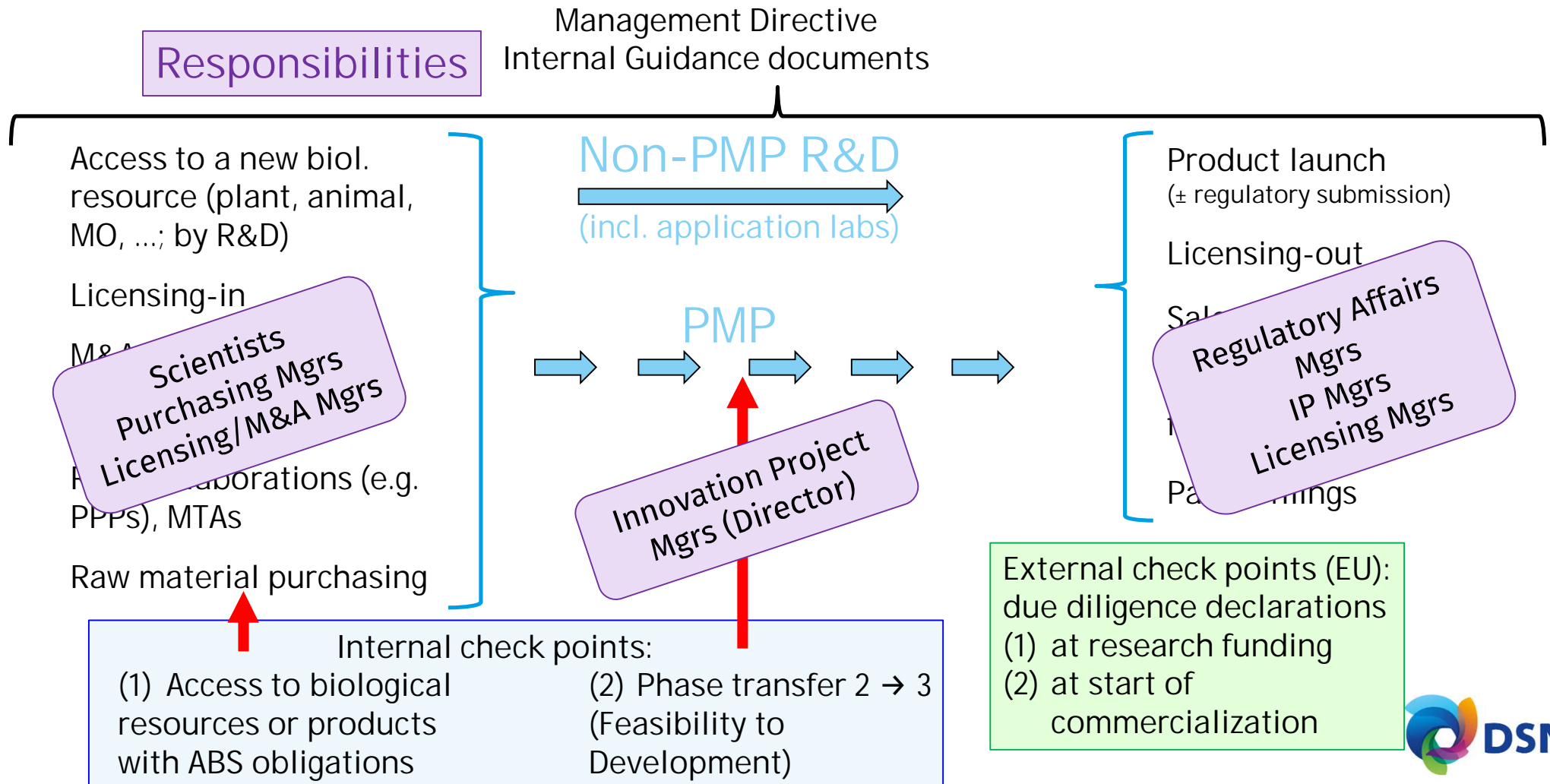
1. Management Directive → binding for all employees
2. DSM Intranet site
3. Internal, topic-specific guidance documents prepared and updated by the Nagoya Expert Team.
Current topics include:
 - Benchmarking
 - Spoilage microorganisms
 - Cultures
 - Formulation ingredients, and formulation development
 - R&D definition (research tools, screening, ...)
 - Gene/protein sequences/genetic information/public databases
 - Fishing (MEGs)
 - Contract manufacturing and R&D
4. Support and advice: the Nagoya Expert Team (nagoya.team@dsm.com)



DSM's Approach to the Nagoya Protocol compliance



DSM's Approach to the Nagoya Protocol compliance



Compliance with the Nagoya Protocol/ABS

Tools to Secure Compliance (1)

1. When receiving or using a biological resource from a (R&D) partner
 - ❑ Either the biological resource is accompanied by an [Internationally Recognized Certificate of Compliance \(IRCC\)](#), specifying our rights and obligations when using the biological resource
 - ❑ Or the partner is asked to fill in the "[Genetic Resource & Traditional Knowledge Form](#)"
 - ❑ In addition, standard [legal clauses](#) on Nagoya/ABS compliance are available for: Material Transfer Agreements, R&D Collaboration Agreements, Public Private Partnerships, etc.

2. To document relevant information for a 'historical' biological resource, such as an 'old' DSM production strain
 - ❑ The relevant information is collected in the "[Genetic Resource & Traditional Knowledge Form](#)"

Compliance with the Nagoya Protocol/ABS

Tools to Secure Compliance (2)

3. To monitor and secure Nagoya/ABS compliance across an entire project
 - ❑ The Project Director/Manager to maintain and update our [Nagoya Intake Form](#) along the entire duration of a project
 - ❑ Updates as needed (*i.e.* when new biological resources are accessed/used) and at minimum once per year
 - ❑ For PMP Phase Transfer from Phase 2 (Feasibility) to Phase 3 (Development), the Nagoya Intake Form needs to be pre-approved by the Nagoya Expert Team, and then serves as a formal decision criterion in the Project/Industry Review Team

4. To secure Nagoya/ABS compliance of our suppliers, and to identify potential Nagoya/ABS obligations for DSM linked to the raw materials/products we source
 - ❑ All suppliers are asked to fill in a [Supplier Questionnaire](#)

Compliance with the Nagoya Protocol/ABS

Tools to Secure Compliance (3)

5. To confirm compliance with the Nagoya Protocol to our customers
 - ❑ Currently, a generic [Nagoya compliance declaration](#) is provided to our customers
6. To collect and secure long-term storage of all relevant Nagoya/ABS information/data DSM-
internally, all relevant information is stored in one [central database](#)
 - ❑ Data submission process: Initial receiver of information → nagoya.team@dsm.com → Database
 - ❑ Supporting information needs to prove Nagoya/ABS compliance
 - ❑ If Nagoya/ABS compliance cannot be documented, use of the biological resource in question shall be discontinued!

Challenges

1. Attempts by provider countries to continuously expand the scope of obligations
 - ❑ Retroactive obligations under some provider country ABS laws
 - ❑ Uncertainties about original source(s) of genetic resources
 - ❑ Digital (sequence) information
 - ❑ Derivatives
2. How best to deal with cases of legal uncertainty
 - ❑ Example: France – microorganisms from the intestines of domesticated animals
Ministry of Agriculture is committed to get microorganisms exempted from the French ABS laws; special rules for domesticated animals – but what about the microflora of domesticated animals?
3. Legal complexities
 - ❑ Up to 200 different ABS laws
 - ❑ Human microbiome: which country can claim sovereign rights? What is the country of origin/provider country?
 - ❑ Knowledge and awareness along the commercial supply chains is still very low
 - ❑ Harmonization/standardization for ABS and NP compliance obligations

Summary

- ❑ DSM's ambitions: Our "*Bright Science, Brighter Living*" mission irrevocably implies full support of the Convention on Biological Diversity, including its protocols
- ❑ Governance: Is arranged through a top management Review Team monitoring the efforts of an Expert Team representing all relevant disciplines and locations
- ❑ Compliance and guidance: We have defined internal responsibilities and made available guidance documents
- ❑ Tools: We have designed forms to monitor and document compliance in projects and products, both our own and those of suppliers
- ❑ Engagement: We are engaged in policy work for a pragmatic, proportionate and effective implementation of the Nagoya Protocol
- ❑ Training: We have/are training all relevant personnel in both class-room setting as well as e-learning

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