PMI SCIENCE
PHILIP MORRIS INTERNATIONAL

# The importance of offering adult smokers a portfolio of potentially less harmful products

*International Symposium on Nicotine Technology*

June 15th 2017

*Thomas Mc Grath, PhD*

*PMI R&D, Philip Morris Products S.A., Quai Jeanrenaud 5, CH-2000 Neuchâtel, Switzerland (Part of Philip Morris International group of companies)*

Reduced-Risk Products (“RRPs”) is the term we use to refer to products that present, are likely to present, or have the potential to present less risk of harm to smokers who switch to these products versus continued smoking. We have a range of RRPs **in various stages of development, scientific assessment and commercialization**. Because our products do not burn tobacco, they produce far lower quantities of harmful and potentially harmful compounds than found in cigarette smoke.

PMI SCIENCE
PHILIP MORRIS INTERNATIONAL

# The Objective is Harm Reduction

Offering adult smokers satisfying products that reduce the risk of smoking related diseases compared to continued smoking


- Smoking is addictive and causes a number of serious diseases
- Worldwide it is estimated that more than 1 billion people will continue to smoke in the foreseeable future*
- Successful harm reduction requires that adult smokers who would otherwise continue to smoke be offered a range of satisfying, scientifically substantiated, reduced risk products smokers can switch to completely



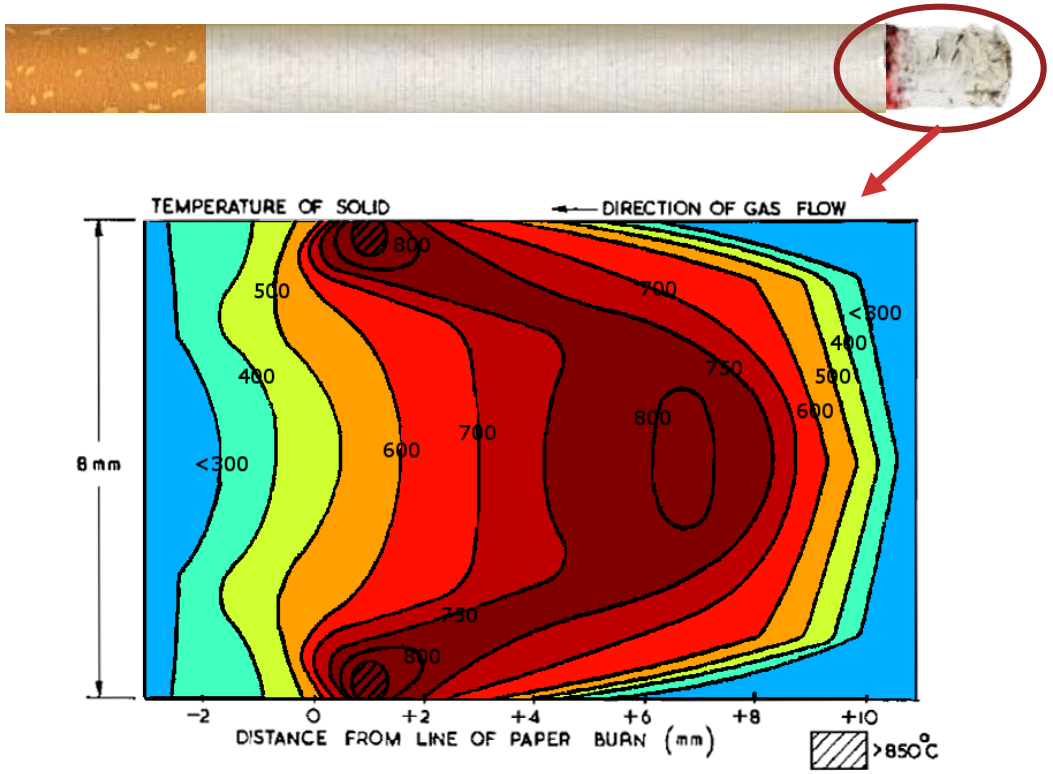
* http://www.who.int/tobacco/publications/surveillance/reportontrendstobaccosmoking/en/index4.html
Figure adapted from Clive Bates presentation to E-Cigarette Summit (19 Nov 2013)

# Our ambition

"*Our stated ambition is to convince all current adult smokers that intend to continue smoking to switch to smoke-free products as soon as possible*."

André Calantzopoulos, CEO Philip Morris International

# Eliminating combustion is key




*Baker R. R., 1975, Temperature variation within a cigarette combustion coal during the smoking cycle, High Temp. Sci., 7, 236 – 247). Coloration by PMI.*

- The temperature at the burning tip > 600 °C
- When air is drawn through the cigarette (i.e. during a puff) the temperature rises > 850 °C
- The heat released breaks down tobacco components generating smoke and ash
- The cigarette smoke aerosol is a complex mixture of more than 6000 chemicals
- Several of these chemicals are harmful and have been classified by public health authorities as likely causes of smoking related diseases.

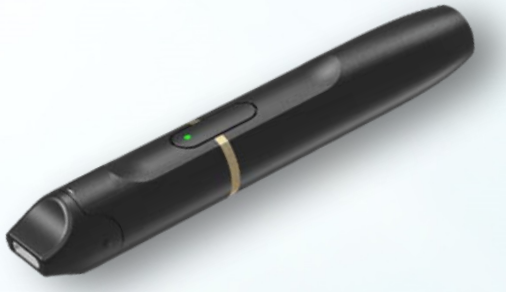
# RRPs: Our Portfolio of Alternative Products

## Heated Tobacco Products

## Products Without Tobacco

**Platform 1**


**Platform 3**



**Platform 2**

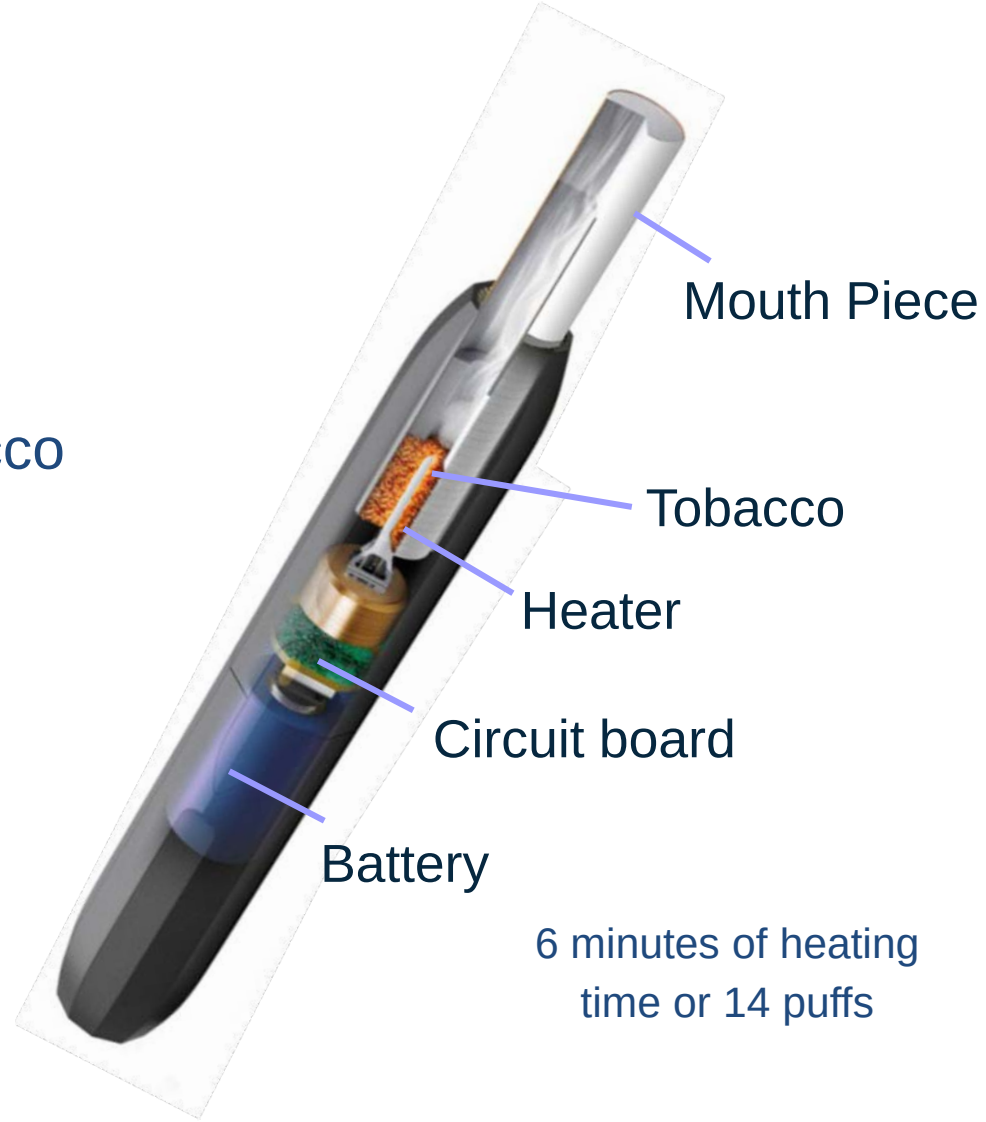

**Platform 4**


**Innovation in technology and rigorous scientific assessment**

Note: The products depicted are subject to ongoing development and therefore the visuals are illustrative and do not necessarily represent the latest stages of product development

# Platform 1: Tobacco Heating System

- Controlled heating of tobacco to produce a nicotine containing tobacco vapor (aerosol)
- No burning (self-sustaining combustion) of the tobacco
- Significantly lower levels of harmful and potentially harmful constituents in the aerosol compared to cigarette smoke
- Patented HeatControl™ technology




6 minutes of heating time or 14 puffs

Aerosol collection with Health Canada Intense puffing regime (55 mL puff volume, 2 second puff duration, 30 second interval puff);Comparison on a per-stick basis to the 3R4F reference cigarette. Reduction calculations exclude Nicotine, Glycerin and Total Particulate Matter.

# Platform 2

- Heat source is a pressed carbon tip
- Controlled heating of tobacco to produce a nicotine containing tobacco vapor (aerosol)
- Comparable look and feel to a cigarette, but it is not a cigarette
- Significantly lower levels of harmful chemicals and potentially harmful constituents in the aerosol compared to cigarette smoke
- Patented design completely separates the carbon tip from the tobacco and prevents the tobacco from burning

Aerosol collection with Health Canada Intense puffing regime (55 mL puff volume, 2 second puff duration, 30 second interval puff);Comparison on a per-stick basis to the 3R4F reference cigarette. Reduction calculations exclude Nicotine, Glycerin and Total Particulate Matter.

# Platform 3

- Novel innovation in nicotine aerosolization
- Unlike an e-cigarette, this product generates a nicotine-containing vapor (aerosol) in the form of a nicotine salt
- When a consumer draws on the mouth piece, a chemical reaction between nicotine (a weak base) and a weak organic acid takes place to produce a nicotine containing aerosol

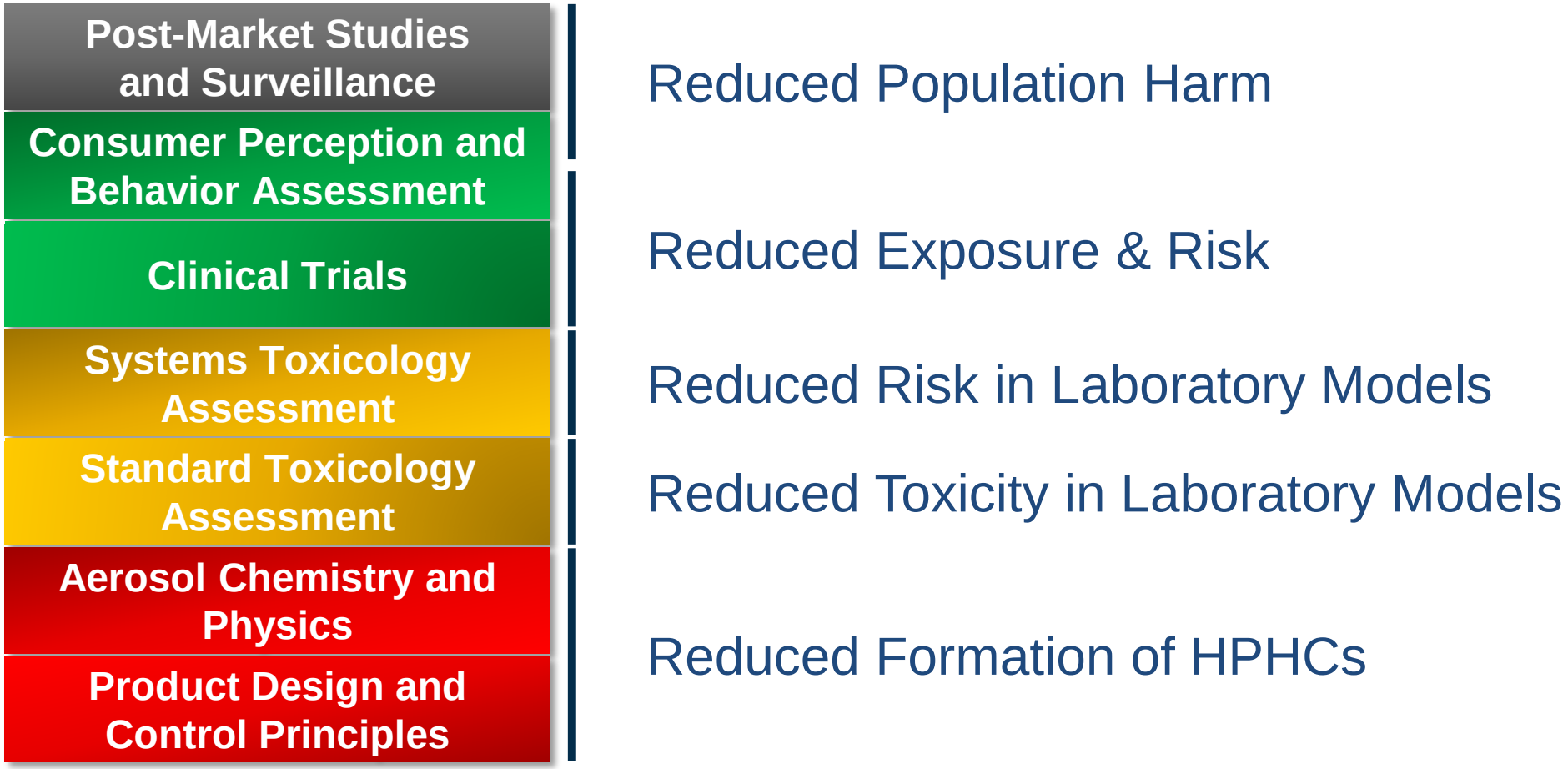
Nicotine + weak organic acid → Nicotine salt

The products depicted are subject to ongoing development and therefore the visuals are illustrative and do not necessarily represent the latest stages of product development.

# Platform 4

- New and innovative e-vapor product
- *MESH* vaporization technology generates a nicotine containing vapor (aerosol) by the controlled heating of a nicotine containing e-liquid
- Not based on “coil and wick” design
- Technology allows for:
  - Consistent vapor delivery
  - Low liquid detection
  - Puff activation
  - "Closed" system
  - Manufacturing automation

# Substantiating Reduced Risk: Totality of Scientific Evidence




Source: Smith, M.R., *et al*., Evaluation of the Tobacco Heating System 2.2. Part 1: Description of the system and the scientific assessment program. *Regulatory Toxicology and Pharmacology* (2016). http://dx.doi.org/10.1016/j.yrtph.2016.07.006. HPHCs = Harmful or potentially harmful constituents

# Independent Verification of PMI's Science

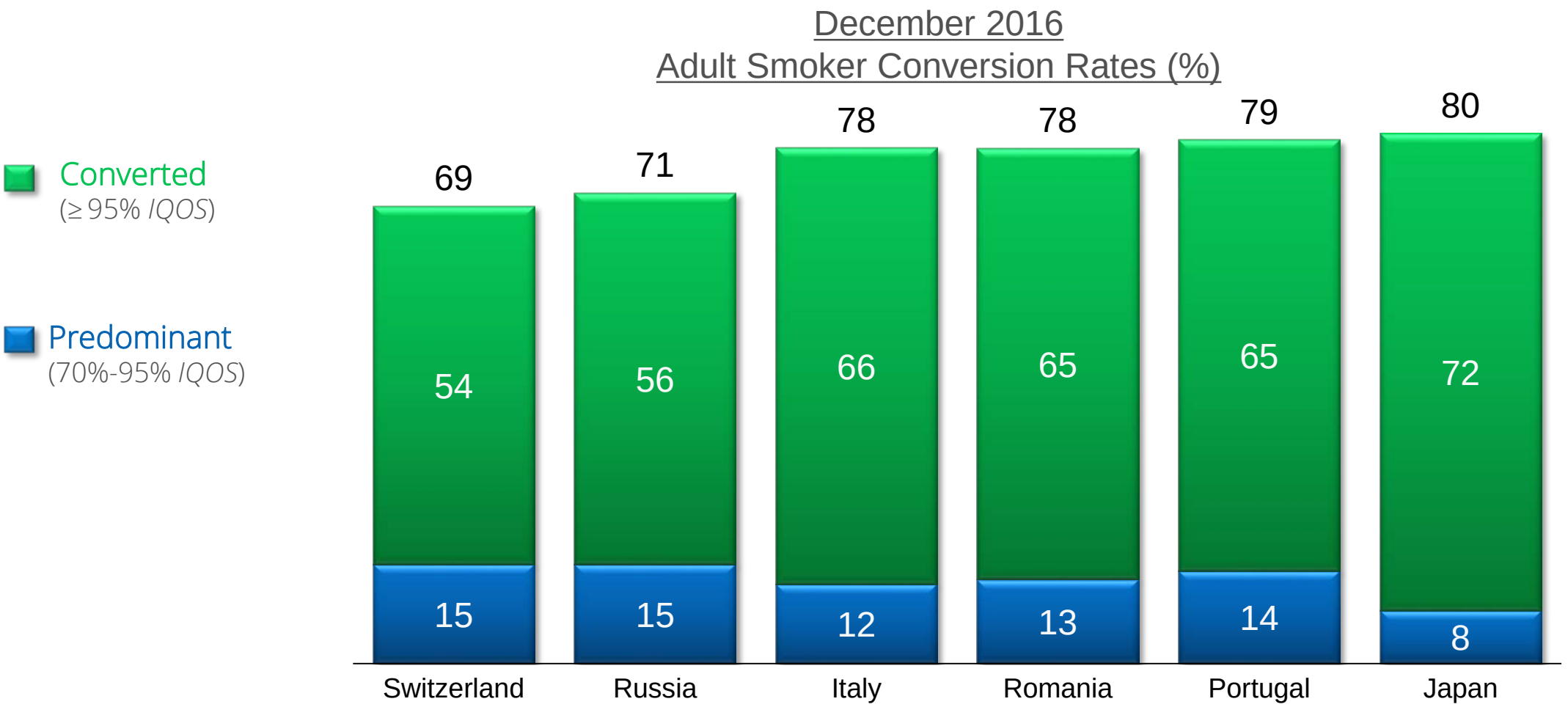
| | |
|---|---|
| **Independent Studies** | Studies conducted by independent scientists |
| **Crowd-Sourced Verification** | Verification of methods and results using crowd-sourcing (sbvIMPROVER.com) |
| **Expert Reports** | Verification of specific datasets |
| **Publish Study Results** | Peer-reviewed articles in scientific literature |



# Product Standard Principles

- Best health choice for smokers is to quit tobacco use altogether, and cessation should remain a key regulatory objective
- Successful harm reduction requires that adult smokers who intend to continue smoking be offered a range of satisfying, scientifically substantiated, reduced risk products smokers can switch to completely
- Regulation needs to let people hear and understand scientifically substantiated information about smoke-free alternatives
- Regulations should set the right standards on how innovative scientifically substantiated alternatives to cigarettes should be developed, assessed and manufactured

# Product Acceptance and Usage – high conversion rates to *IQOS*




Source: Switzerland / Russia / Italy / Romania / Japan *IQOS* User Panels

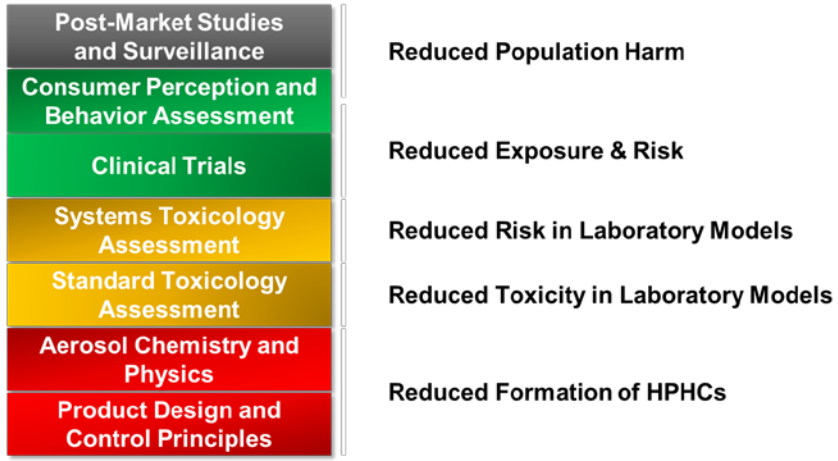
# Summary

1


2

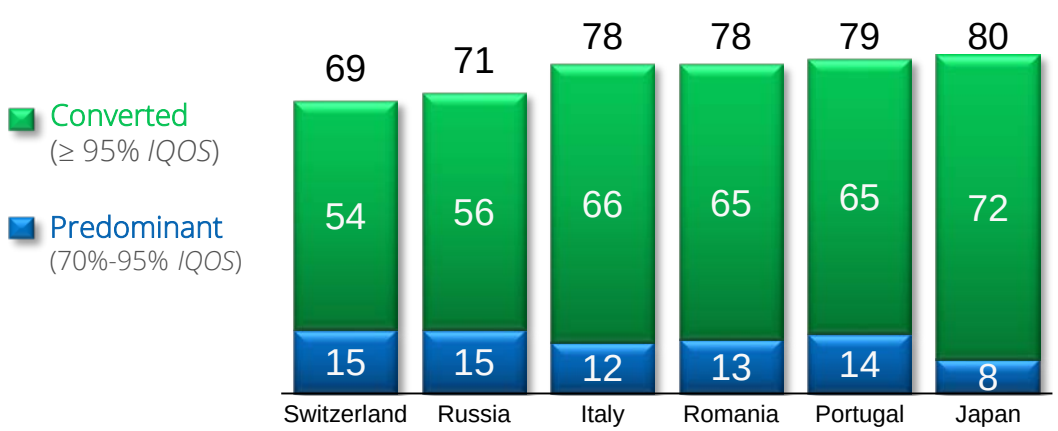
## Portfolio of alternative products

4

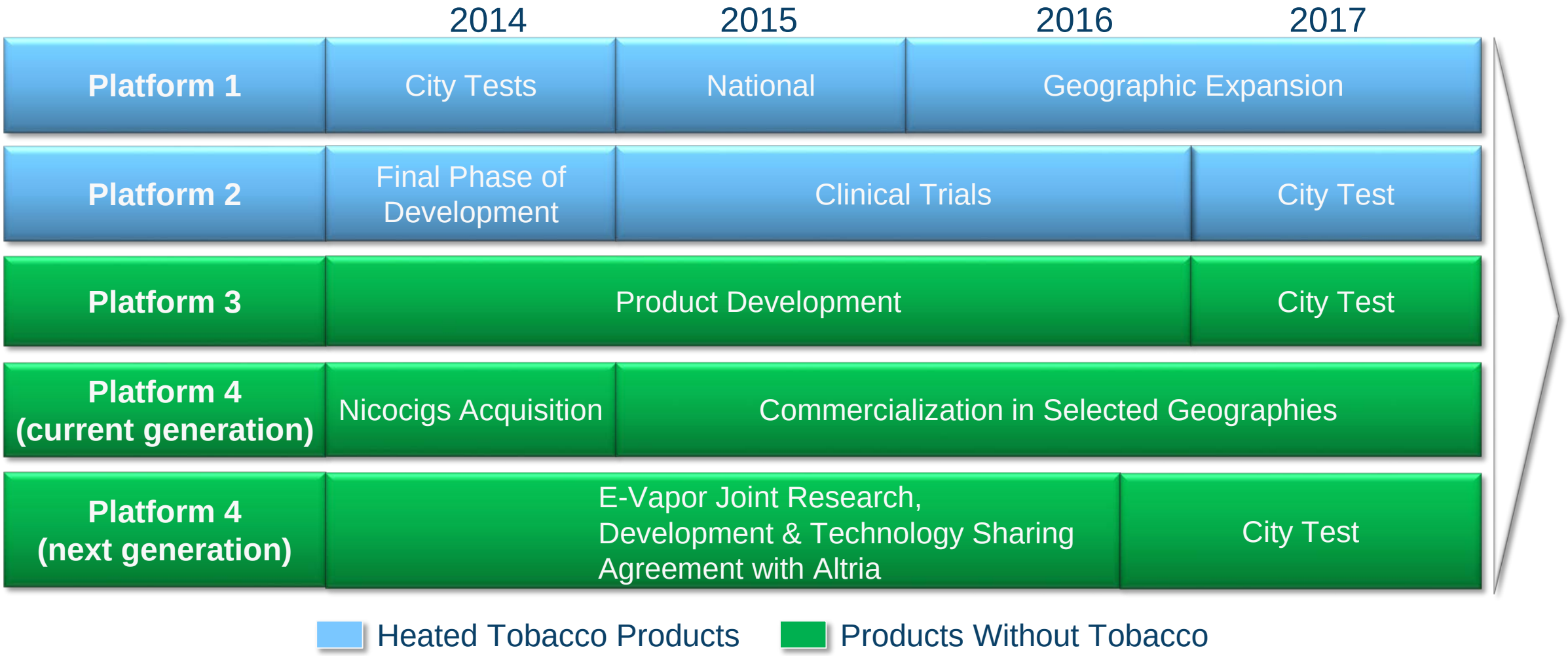



We are committed to **transparency** and encourage **independent verification** of our results.

3



# Our Portfolio Approach



**Over**
**2 million**
**adult consumers**

have already
stopped smoking and
switched to *IQOS*

# Designing a Smoke-Free Future