



Halal Standardisation System Integrated with Chemical Database and Blockchain for Halal Quality Assurance Integrity



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- Founding Director, The Halal Science Center Chulalongkorn University
- Vice Chairman, The Central Islamic Council of Thailand
- Chairman, The Halal Standard Institute of Thailand
- Member, Board of Fatwa, Sheikh al Islam of Thailand
- 1 of The World's 500 Most Influential Muslims for 14 consecutive years (2010-2023) (<https://themuslim500.com/>)

Congress of Halal Quality @ Sarajevo, Bosnia & Herzekovina: May 18, 2023



Making Halal STI as New Thailand's Soft Power



- Soft power is the ability to attract the desire of others 'willingly' without any perceived coercion, as it is human nature to respond more positively and openly to something when one does not feel any force nor pressure on them. Soft Power is thus a diffuse tool of power through cultural and symbolic aspects including religion.
- The Halal Science Center Chulalongkorn University (HSC) developed several tools of Halal Science, Technology & Innovation (Halal STI) for gradually improving acceptance & trust of others on Thailand's spiritually safety integrity of Halal products and services for later transforming perception of Halal STI as 'soft power' as demonstrated in this presentation.



Chulalongkorn University

The first and oldest institute of higher education in Thailand

The Cabinet meeting on August 13, 2003 approved the establishment budget of “Halal Science Laboratory” for the Faculty of Allied Health Sciences Chulalongkorn University to improve the quality of the country's Halal certification. Later, Chulalongkorn University Council Approved at the 658th meeting on December 23, 2004 raised the Halal science laboratory to “The Halal Science Center Chulalongkorn University”



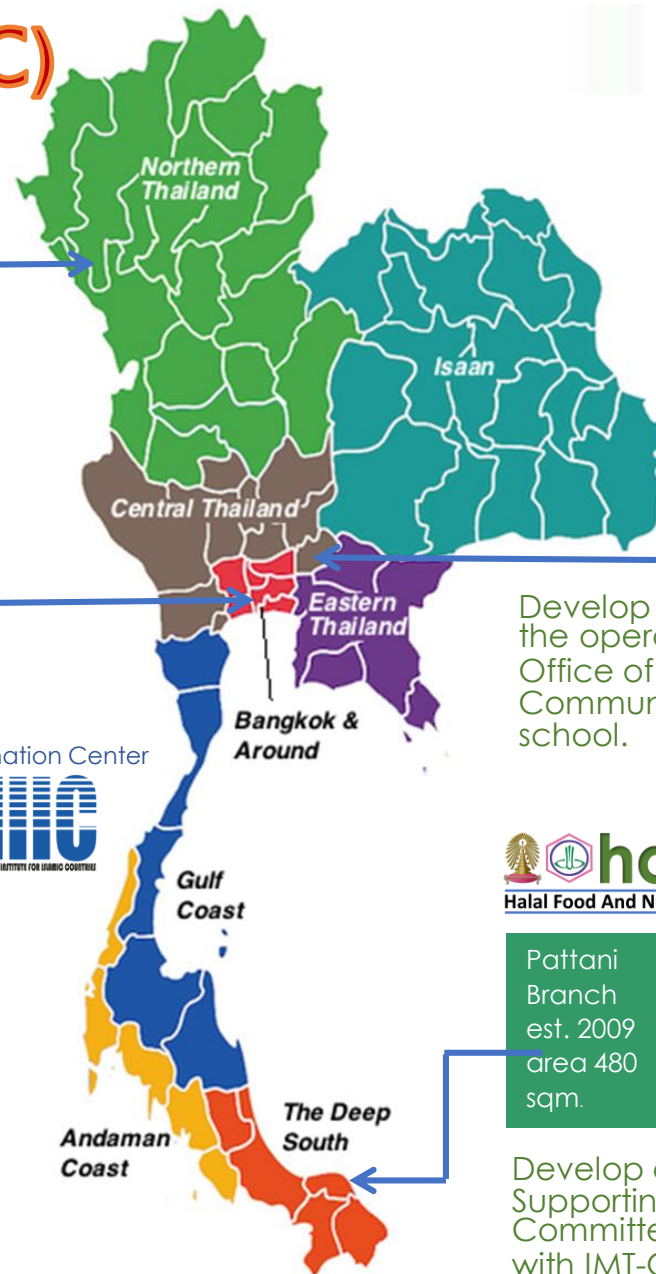
The Halal Science Center (HSC) Chulalongkorn University

Est. 2004 (Cabinet resolution on Aug 13, 2003,
CU Council resolution on Dec 23, 2004)



Chiangmai branch
est. 2012
area 576 sqm.

Develop a halal science system in the area. Supporting the operation of the Provincial Islamic Committee Offices in the North/Northeast Areas. Collaborative work with BIMSTEC/GMS projects



The Halal Innovation
Community Learning
& Thinking school

Nakhon Nayok
Community Office
& Thinking school
est. 2022
area 2.8 acres.



Develop a halal science system in area. Supporting the operation of the Provincial Islamic Committee Office of Nakhon Nayok. Operate the Halal Innovation Community Learning Center (HICOLEC) & Thinking school.



Bangkok
Head Office
est. 2004
area 2,742 sqm.

Develop a halal science system in Central region. Supporting the operation of the Provincial Islamic Committee Offices in the Areas. Collaborative work with Government/Private/Foreign countries



The Halal Food
and Nutrition
Alert House

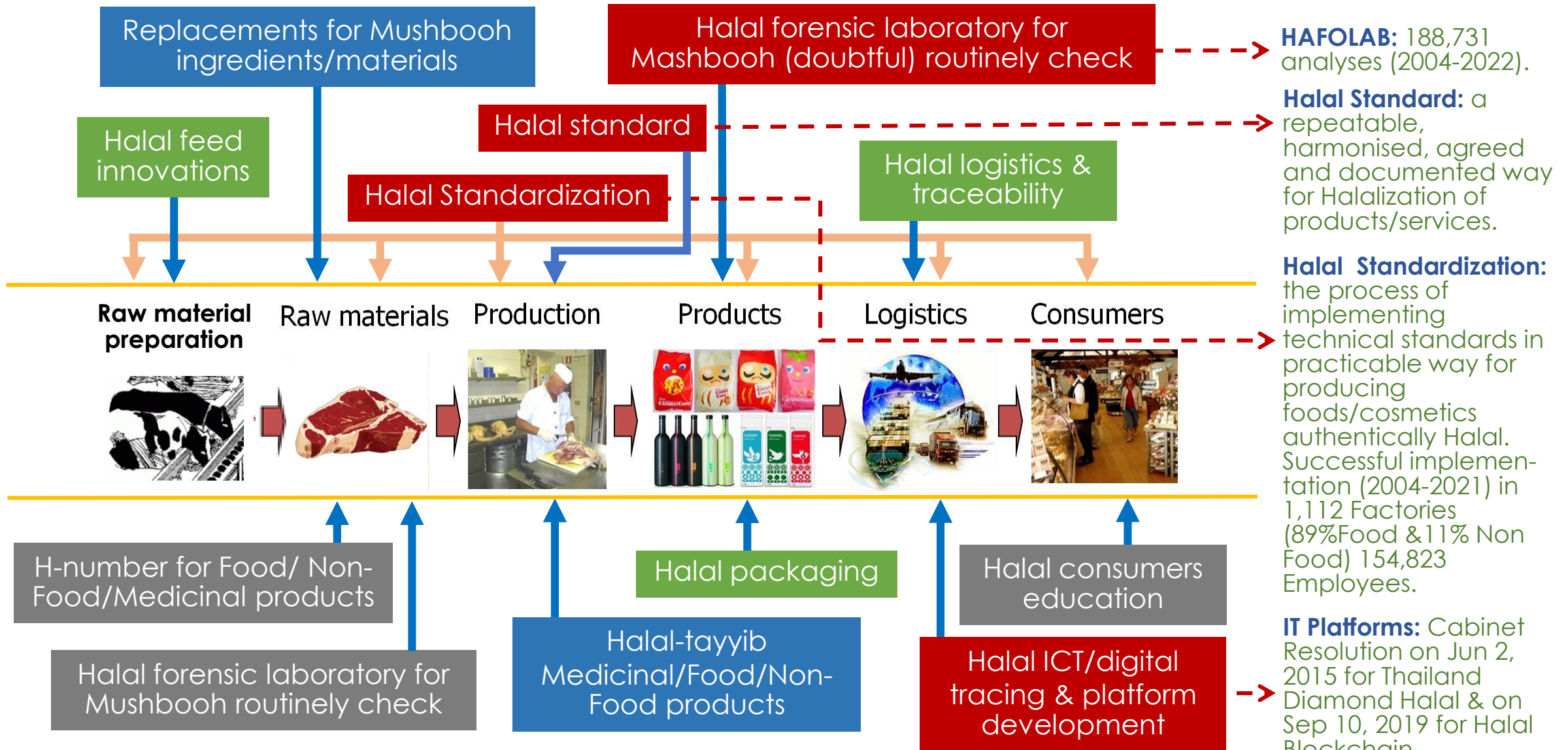


Pattani
Branch
est. 2009
area 480 sqm.



Develop a halal science system in Southern region. Supporting the operation of the Provincial Islamic Committee Offices in the Areas. Collaborative work with IMT-GT/BIMP-EAGA

HSC'S STI DEVELOPMENT FOR THAILAND'S HALAL INDUSTRIES





HAFOLAB
Halal Forensic
Laboratory

Halal Forensic Science Laboratory, Bangkok

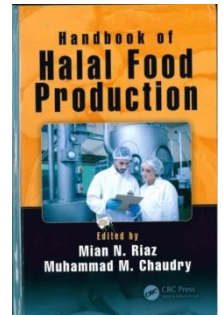
ISO/IEC 17025-2017 ISO 9001-2008

HSC Station for Lab Service, R&D & Academic

Halal Forensic Science Laboratory (HAFOLAB):

2,000 sqm lab with 198 scientific equipments, 35 Muslim scientists (7 PhDs), providing **188,731 analyses** (2004-2022):

- Porcine gelatin/collagen by spectrophotometer, LC-ESI/MS
- Porcine proteins (LC-TQ/MS, QTOF)
- Animal DNA (dd-PCR, rt-PCR, PGM)
- Fatty acids (GLC, GC-MS/MS)
- Volatile substances (E-nose)
- Hormones (FTIR, LC-ESI/MS)
- Alcohol (GLC, GC-MS/MS)
- Porcine DG, MG by FTIR
- Heavy metals by ICP

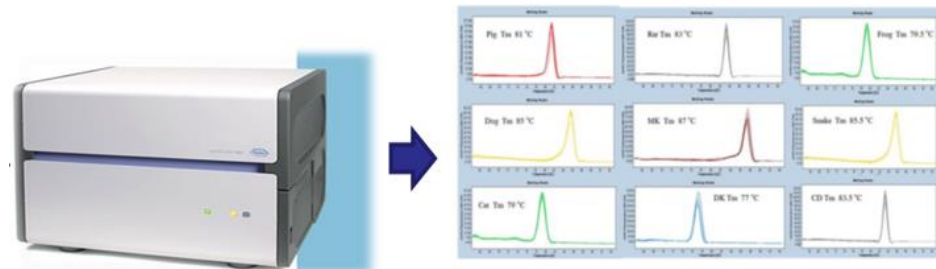


The Halal Science Center Chulalongkorn University
The First Dedicated Halal Science Institution in The World
Established since 2003 by the resolution of the Cabinet on August 13, 2003



New Technique Development by HSC (2020-2022)

Techniques for Multiplex Haram Animals Analyses



Next Generation Multiplex Analytical Techniques of Haram Animals for Authentication of Halal Food/ Pharmaceutical Products

- ❑ Multiplex HRMA (High Resolution Melting Analysis)
- ❑ Ion Torrent Personal Genome Machine (PGM):
- ❑ Strip test (Nucleic acid lateral flow) [Gold medal award in ITEX 2023, KL, Malaysia on May 12, 2023.]



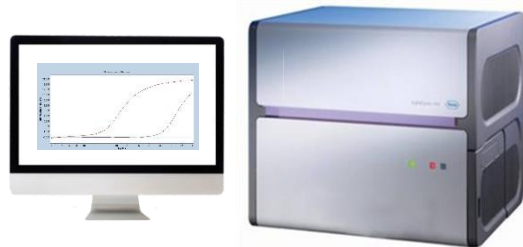
New Technique Development by HSC (2020-2022)

Detection of porcine and bovine DNA in gelatin capsules by different techniques

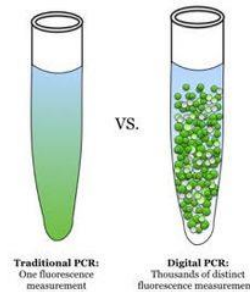


- Real-time PCR
- Digital droplet PCR (ddPCR)
- LC-QTRAP-MS/MS

Gelatin in Soft/Hard Capsules & Pellets



Real-time PCR detection



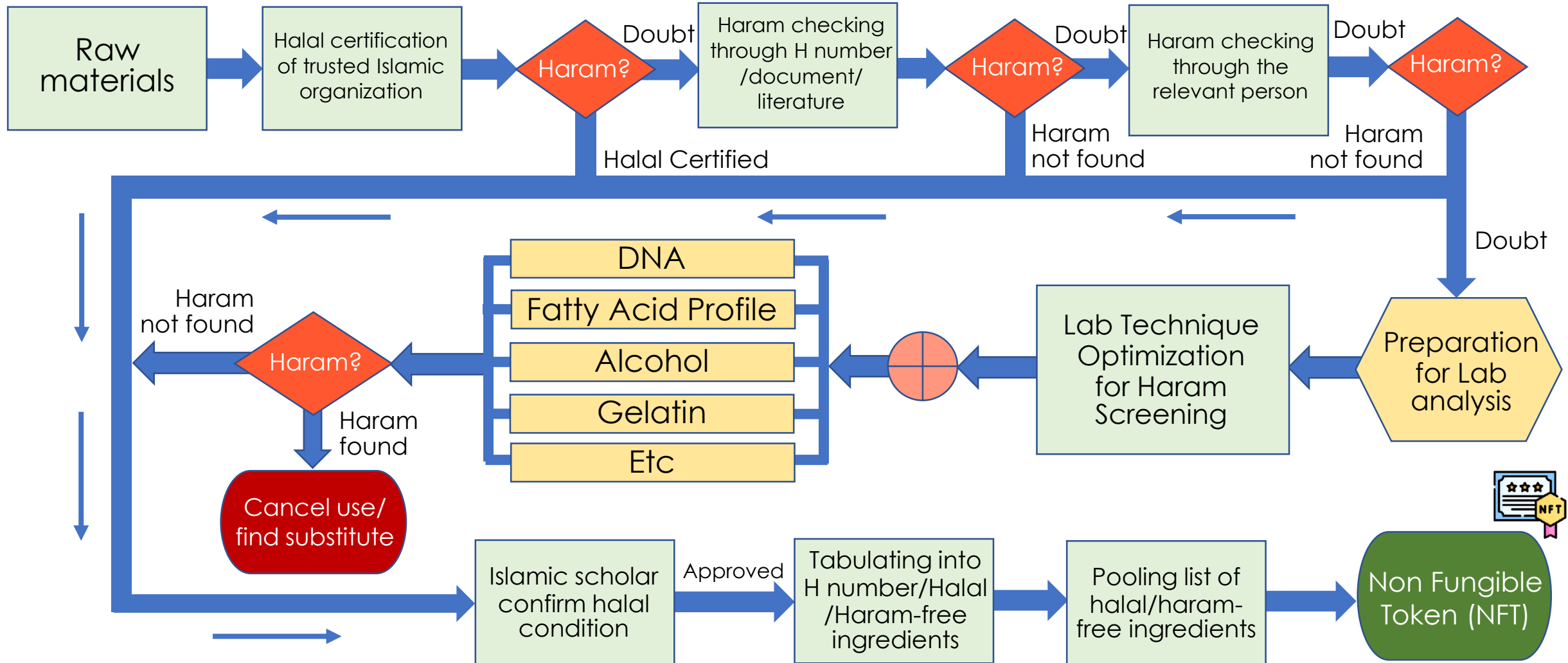
Digital droplet PCR (ddPCR)



LC-MS/MS Analysis

2 HSC scientists sent for SMIC's 2022 training course of DNA advanced analyses to 30 African scientists from 13 countries at Uganda University (Oct 2022)

Haram-Free Authentication of Raw Materials



Active Halal Ingredients List so-called H-number is Urgently Needed for Halal Conformity System

All raw materials regularly used in Halal food manufacturing process

320 ingredients amongst 348* (92%) Screened for E number

**Bender's Dictionary of Nutrition and Food Technology, 1999.*

Documentary approval for Categorization of Halal status

179 Halal (56%)
(permitted)

H-Number
tabulation

116 Mashbooh (36%)
(suspicious)

Clarification for
Halal status

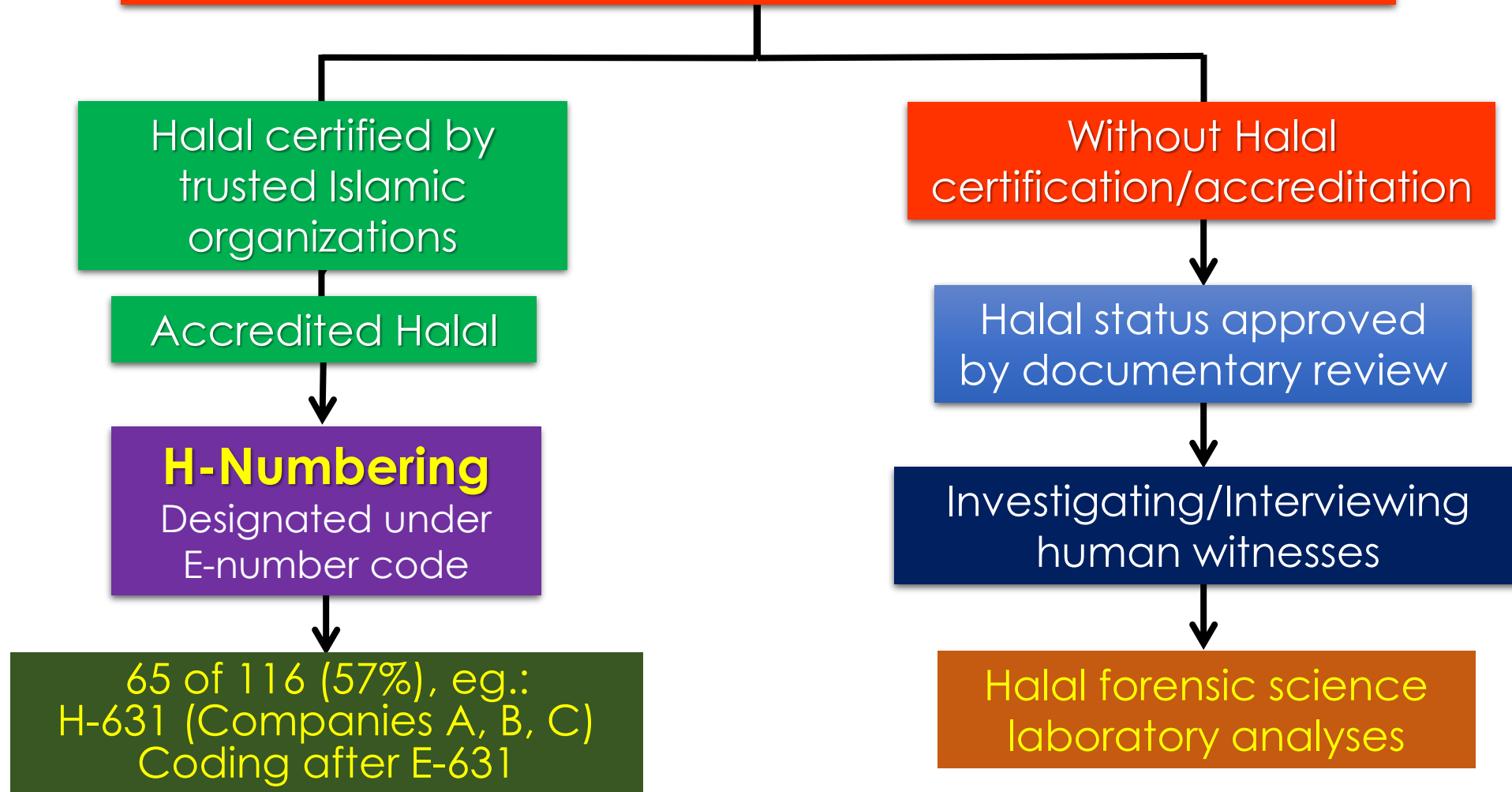
25 Haram (8%)
(prohibited)

R&D for Halal
Alternatives
/Replacements

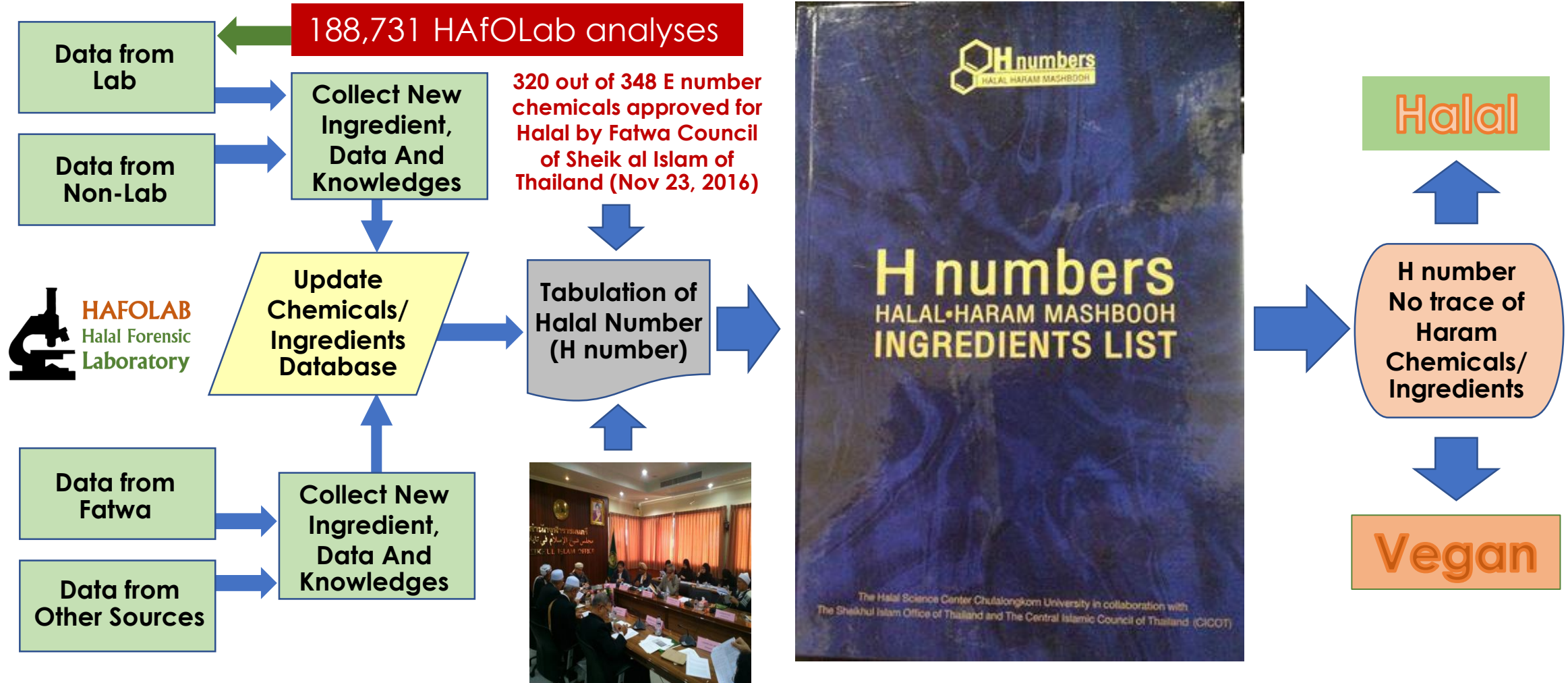


Halal Clarification of Mashbooh

116 Mashbooh (doubtful/suspicious) ingredients
Other 186 enzyme derived substances also found Mashbooh



First Book Ever of Halal H-Number



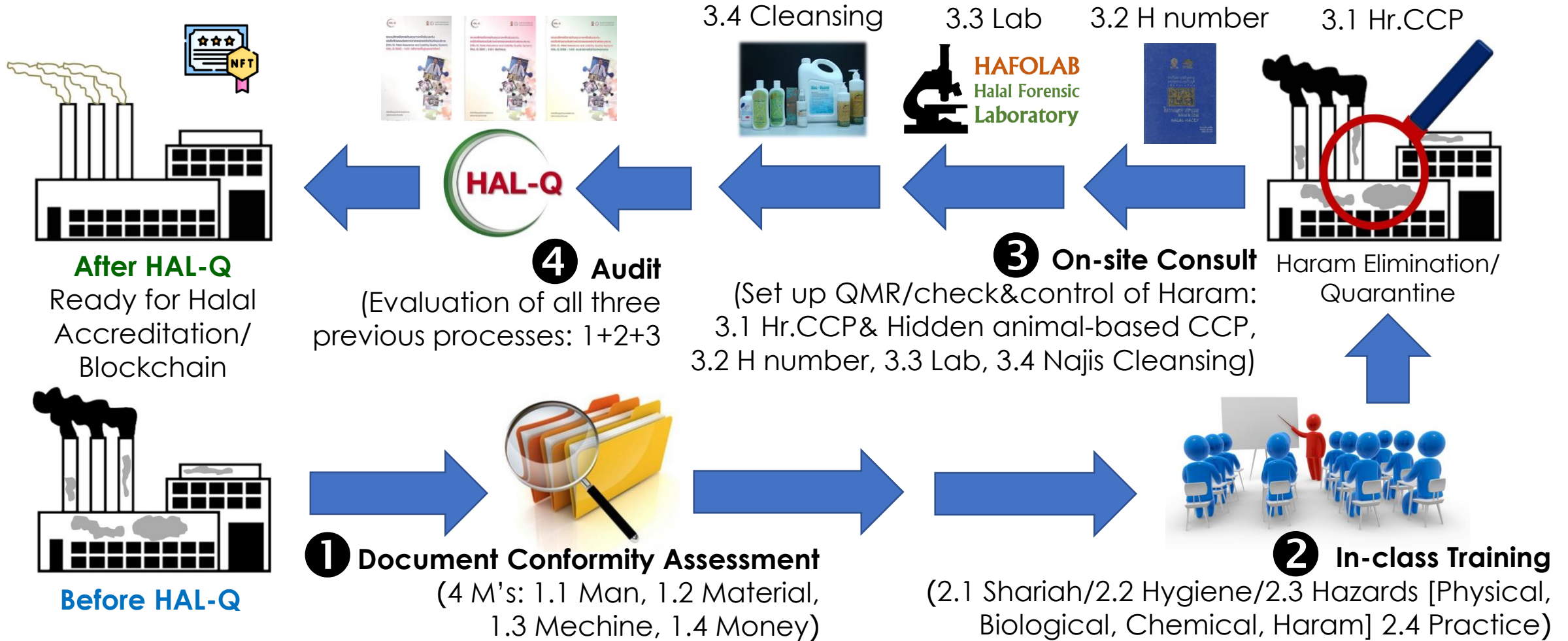


HAL-Q Halal Standardization

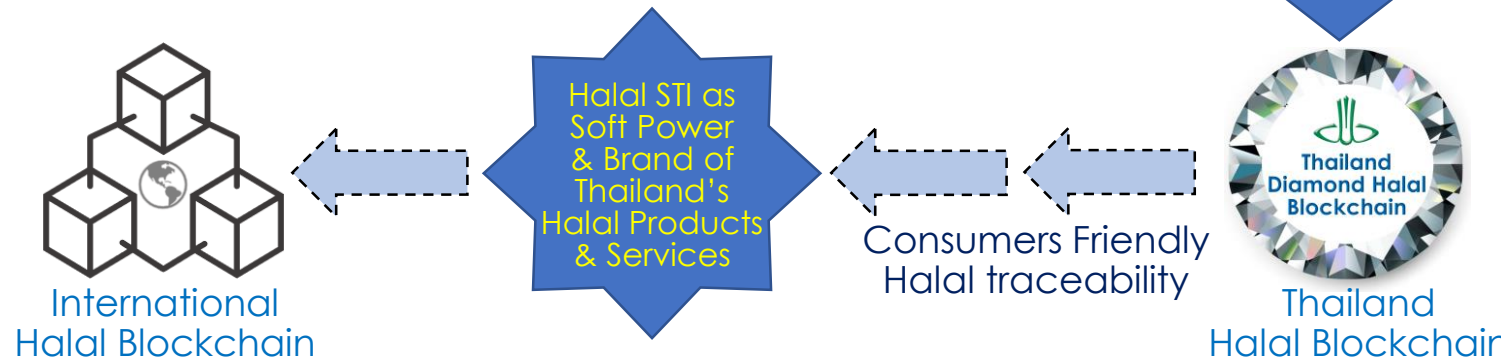
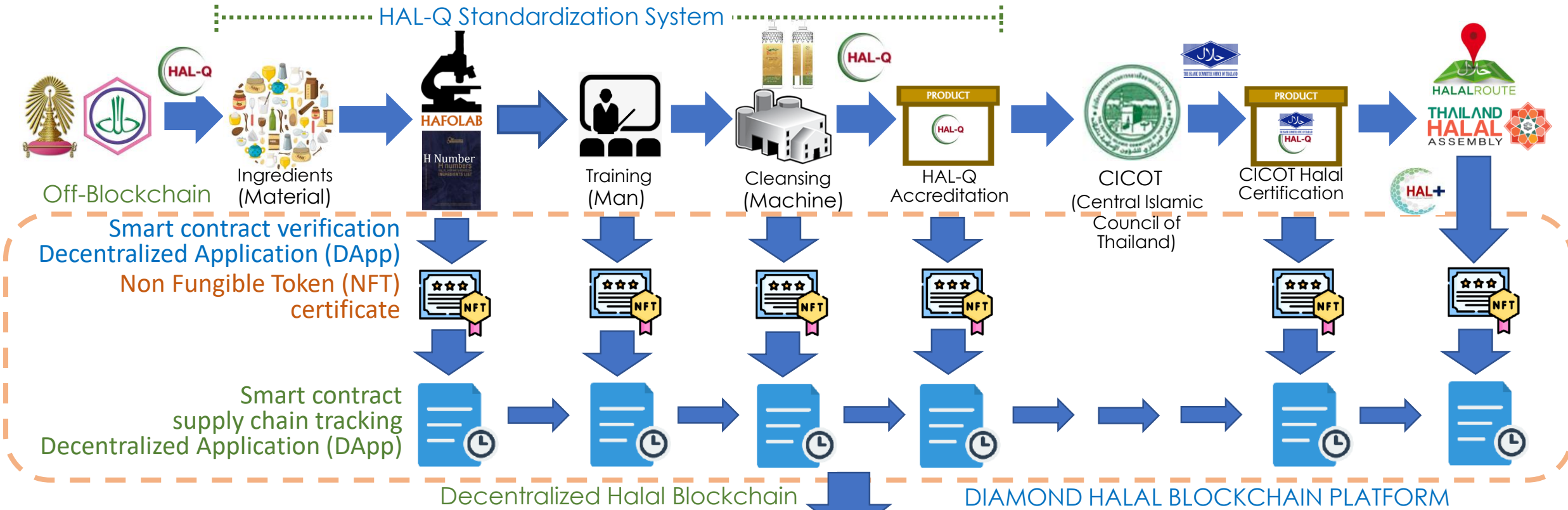
Halal Assurance & Liability-Quality System (4x4 for 4-6 Man-Days)

2004-2021: **1,112 Factories** (89% Food & 11% Non Food), **154,823 Employees**

Awards: PM Malaysia 2006 (Halal/HACCP), Thai Gov 2013 (HAL-Q), Thai Gov 2020 (H number)



Developmental Processes of 'Thailand Diamond Halal Blockchain'



Cabinet Resolutions
 Apr 2, 2015 for Thailand Diamond Halal
 Nov 10, 2019 for Halal Blockchain

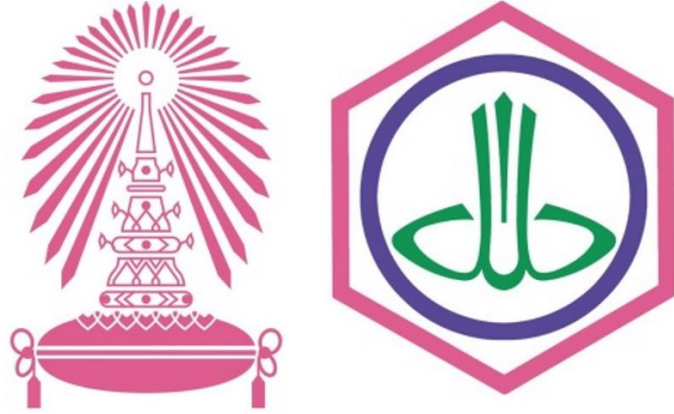
National & International Awards
 HAL-Q: Malaysian PM Best Innovation Award 2006
 HAL-Q: Royal Thai Gov's Best Innovation Award 2013
 H-number: Royal Thai Gov Best Innovation Award 2020

HAL-Q based Blockchain for Halal Assurance Integrity

HSC's Diamond Halal Blockchain is for upliftment of trust on Halal integrity of products and services for benefit of Halal industries and businesses in the era of Thailand BCG economy (Biological-Circular-Green):

- ISO/IEC 17025:2017, ISO9001:2015 certified Halal forensic laboratories of 2,760 sqm, 35 Muslim scientists with 7 PhD's, 198 State-of-The-Art scientific equipments providing databases of totally 188,731 lab analyses for the development of H-Number
- HAL-Q Standardization System fully implemented in 1,112 factories covering 158,823 workers together with HAL-Q partly implemented in 4,500 Halal restaurants.
- 150 pieces of IP, researches & innovation
- IT work, platforms, apps, etc., such as Halal Route for Halal Tourism with Thailand Diamond Halal Blockchain.





ขอขอบคุณทุกท่าน

شكرا لكم جميعا

با تشكر از همه شما

hvala vam svima

hepinize teşekkür ederim

Thank you

Merci à tous

Terima kasih

Спасибо вам всем

