

Mastercard Card Quality Management Overview

December 2018

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Introduction

- ❑ Involved companies:
 - Personalization bureaus
 - Card manufacturers (card vendors)
 - Suppliers of the card vendors (chip, modules, inlays manufacturers)

- ❑ Involved products:
 - Mastercard EMV chips based products (historically cards)

- ❑ Requirements:
 - Quality Management
 - Product Quality (modular structure)

- ❑ Methodology:
 - Self-assessment controlled by on-site audits
 - Corrective actions plan.

CQM = Mastercard Card Quality Management

Mastercard Card Approval Overview

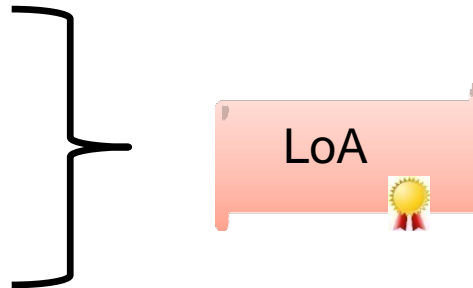
| | Company Program | Product Program |
|---|---|---|
| Global Vendor Certification Program <i>“Physical and Logical Security”</i> | GVCP GVCP-helpdesk@mastercard.com | |
| Brand and Card Design Rules | | Card Design (1) |
| Card Structure Integrity and security <i>“Innovative form factors or card bodies”</i> | | CSI CSI_Security@mastercard.com |
| Card Quality Management | CQM cqm@smart-consulting.com | |
| Compliance And Security Testing | | CAST cast@mastercard.com |
| Interface Security Testing <i>“Functional testing”</i> | | IAT chip_certification_chd@mastercard.com |

(1) The e-mail address depends on the region, it will be communicated by the Mastercard local contact

Mastercard Chip Card Based Approval Process 1/2

A Mastercard Letter of Approval (LoA) is issued to a chip card vendor for each chip card or device that has successfully completed the following items:

- IAT
- CAST
- CQM



For non-ID1 cards or innovative features please contact
CSI_security@mastercard.com

Mastercard Chip Card Based Approval Process 2/2

Integrated Model

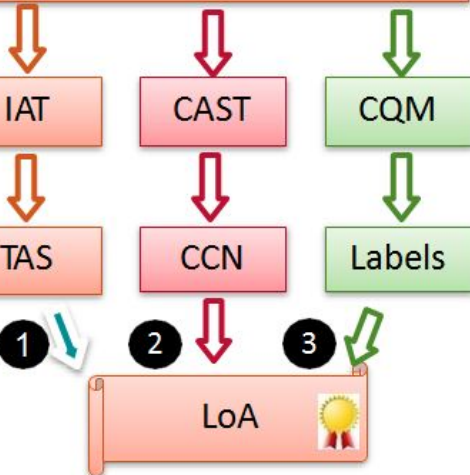
GVCP

Contactless License

M/Chip Develop. Agreement

Card Vendor

From full product conception to end-user delivery



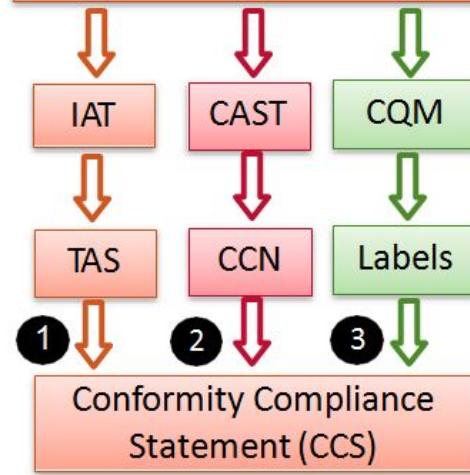
Multi-stakeholders Model

Contactless License

M/Chip Dev. Agreement

Module Supplier

Chip + Operating System + Payment App

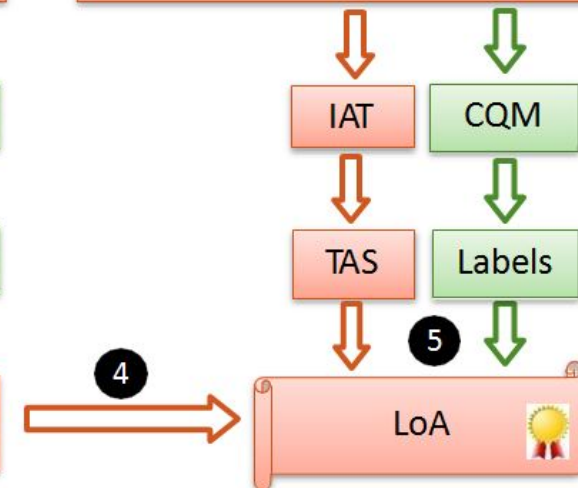


GVCP

Contactless License

Card Supplier

End-user product manufacturing and delivery based on an approved Module



Requirements (1/2)

Product Quality

Categories

- Interoperability with ATMs and POS terminals:
Electrical, contactless, magnetic, physical characteristics
- Durability and Reliability:
Mechanical, Electro-Static Discharges, magnetic, ageing, resistance to chemicals...
- Mastercard Brand
Design, colors, layout.
- Visual Security Features
UV print, hologram, signature panel...
- Miscellaneous
No toxicity for health and environment
- ...

Examples

- ❑ Reading distance between the contactless card and a POS
- ❑ Resistance to:
 - ESD
 - Card bending or torsion
 - Abrasion
 - Chemicals: sweat, fuel...
 - Temperature and humidity
 - Mechanical stress
 - Chip module extraction

Requirements (2/2)

Quality Management

- Objectives definition and measurement
- Training program
- Written procedures
- Specifications
- Qualification and Change Control
- Customer satisfaction
- Statistical Process Control
- Internal audits
- Continuous improvement

Benefits

For the Bank (Card Issuer)

- ✓ Cardholder satisfaction

For the Supplier or Vendor

- ✓ Bank tenders compliance
- ✓ Mastercard rules compliance
- ✓ Corporate quality tool to both support and control the remote sites
- ✓ External independent view
- ✓ Modular activities

**CQM labels are required for every suppliers.
The Letter of Approval (LoA) requires the CQM certification.**

Labels (1/2)

Manufacturing Activities

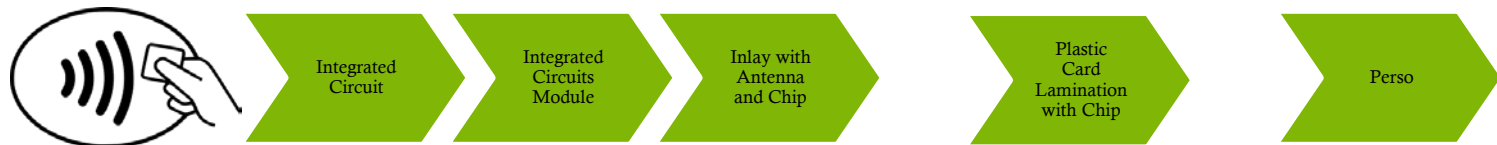
Contact only



Dual



Contactless only



Smart Card manufacturing is splitted in modular activities.
The CQM label identifies the activity for the card interface technology
(Contact, Dual, Contactless)

Labels 2/2

CQM Certificate Example



**Card Quality Management
Statement of Quality**
Easy Cards Ltd
 Having its principal place of business at
 Tokyo bd, 155
 9871 Taipei, TAIWAN

has submitted for approval by Mastercard a number of Smart Cards Products and Services in conformity with the Mastercard Card Quality Management (CQM) Requirements. The following CQM labels have been granted.

| Location | | Chip | | | Integrated Circuits Modules | | | Inlay | | Plastic Card Body | | Chip Embedding | | Card + Inlay Lamination | Personalization | | |
|----------|----------|---------|------|--------|-----------------------------|------|--------|-------|--------|-------------------|------------|----------------|------------|-------------------------|-----------------|------------|------------|
| | | Contact | Dual | C-less | Contact | Dual | C-less | Dual | C-less | Contact | Dual | Contact | Dual | C-less | Contact | Dual | C-less |
| TW | Taipei | | | | | | | | | 37903000CA | 37903000DA | 47903000CA | 47903000DA | | F7903000CA | F7903000DA | F7903000PA |
| US | New York | | | | | | | | | | | | | | F7902000CA | F7902000DA | F7902000PA |
| DE | Berlin | | | | | | | | | 3A501000CA | 3A501000DA | 4A501000CA | 4A501000DA | 77904000PA | PA501000CA | PA501000DA | F7904000PA |

Mastercard
Enterprise Security Solutions
EMV & Digital Devices

Bruno Parfum
Product Approvals Director

This letter is valid until May 28, 2019

Page 1 of 2

template 2017-02

The labels for CQM recognition are no longer listed in the CQM certificate.
 Only Labels for CQM approval are listed.

Documents

- ❑ Documents available on line: smart-consulting.com
 - Overview (this presentation)
 - Process
 - Registration Form
 - Assessment Plan (Quality questionnaire)
 - Requirements specification
 - Non-Disclosure Agreement (NDA) template.

- ❑ Documents available on demand: cqm@smart-consulting.com
 - Annual services offer and quote.

Always check online for the last release of the documents.
Your documentation system shall point smart-consulting.com

Audits 1/3

Accredited Auditors

| Name | First Name | | Company | Tel office | Email | Country |
|-------------|------------|-------|-------------------|-----------------|----------------------------|-------------|
| Chen | Luke | 陳明乾 | TÜV SÜD | +886 228986818 | luke.chen@tuv-sud.tw | Taiwan |
| Ferreira | Luis | | Agora Consult | +32 470822142 | agoraconsultsprl@skynet.be | Belgium |
| Gase | Axel | | Kiwa Telefication | 31 316 583 114 | agase@telefication.com | Netherlands |
| Janczek | Thies | | Cocaso | +49 170 9127252 | janczek@cocaso.com | Germany |
| Shinmoto | Tamon | 真本 多聞 | TÜV SÜD | +81 449801675 | tamon.shinmoto@tuv-sud.jp | Japan |
| Trüggelmann | Uwe | | TruCert | +1 2504349456 | uwe@trucert.com | Canada |
| Van Voorst | Ries | | Dekra | +31 263563419 | ries.vanvoorst@dekra.com | Netherlands |

The auditors are acting worldwide.

Audit 2/3 Ranking

| Grade | Description | Action plan Completion Check | Certificate Validity | Next audit |
|-------|---|------------------------------|-----------------------------|--|
| A | Pass without major NC with limited number of minor NC | | 12 months | < 3 years |
| B | Pass with limited number of major NC | < 6 months | 12 months | < 2 years |
| C | Interim Pass | < 6 months | 12 months | < 1 year |
| D | Fail | ASAP | No certificate is delivered | As soon as corrective action are completed |

Smart Consulting will notify the rank decision to the auditee after the audit report reception.

Smart Consulting is the sole entity to approve an audit shift request.

Audit 3/3 Timeline

Owner

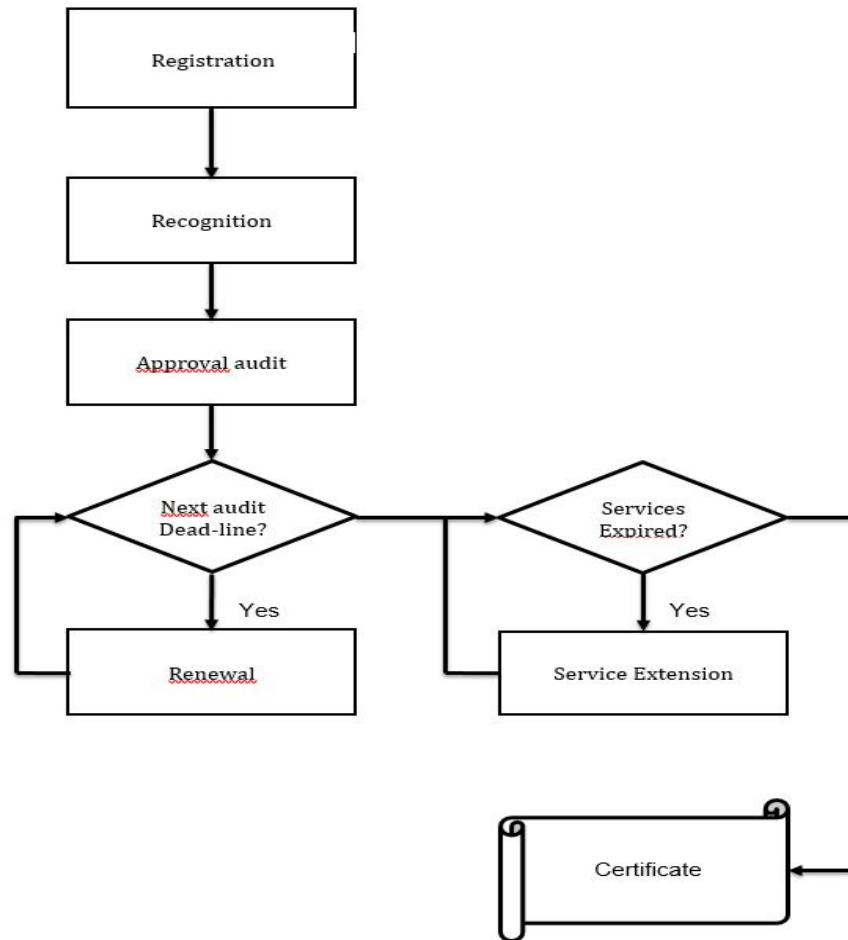
Recipients

Deadline

| | | |
|-------------------|---|---|
| | Registration | |
| Auditee | to Smart Consulting | |
| ↓ | | |
| | Audit Agreement | |
| Auditee + Auditor | Auditee + Auditor | |
| ↓ | | |
| | Audit Preparation | |
| Auditee | to Auditor | 2 weeks before the Audit (*) |
| ↓ | | |
| | Audit | |
| Auditor | | |
| ↓ | | |
| | Action Plan | |
| Auditee | to Auditor | 2 weeks after the Audit (*) |
| ↓ | | |
| | Final Audit Report | |
| Auditor | to Smart Consulting and Auditee | 4 weeks after Audit End |
| ↓ | | |
| | Audit Report Assessment | |
| Smart Consulting | to Auditee and Auditor | 5 weeks after Final Audit Report |
| ↓ | | |
| | Action Plan Completion | |
| Auditee | to Auditor | 17 weeks after Audit End (*) |
| ↓ | | |
| | Action Plan Completion Report | |
| Auditor | to Smart Consulting and Auditee | 19 weeks after Audit End |
| ↓ | | |
| | Action Plan Completion Report Assessment | |
| Smart Consulting | to Auditee and Auditor | 2 weeks after Action Plan Completion Report |

(*) Typical values. They shall be defined inside the bilateral Audit Agreement binding on the Auditor and the Auditee

Process 1/3 Overview



See Process document

Process 2/3

New Comer Vs. Already Certified

New Comer

- To [register](#) immediately for CQM recognition together with Mastercard GVCP registration in order to gain time.
- CQM labels require the related GVCP certification.

Already Certified

- ✓ The audit date shall be initiated by the auditee directly with the auditor taken into account
 - The last audit acknowledgement issued by Smart Consulting
 - The certificate birthday (max 60 days before)
 - The auditor availability in the region
- ✓ Pay the CQM yearly extension fees 30 days before the certificate expiration date.
- ✓ Notify changes in real time:
 - new primary contact
 - new location
 - new workshops

Sooner is better. Contact cqm@smart-consulting.com

Process 3/3

Certificate delivery prerequisites

- ✓ Confirmation by smart-consulting of audit report recommendation A, B or C.
- ✓ Next audit(s) plan is agreed with the auditor committed by the auditee and agreed by Smart-Consulting.
- ✓ 30 days after annual fees payment.

All the sites of the Group that are GVCP certified shall also be CQM certified

Pricing

| | Auditor | Smart Consulting |
|-------------------------------------|--------------------------|---|
| Price | ~ 1500€ per day + T&E | 960€ annual fees + 540€ per activity |
| Payment term (new candidates) | to be defined | 60 days after CQM offer date |
| Payment term (already certified) | to be defined | 60 days before certificate birthday |
| Negotiable? | Yes | No |

Mastercard Outsourcing Letter

The CQM scheme
is owned by
Mastercard

The CQM operations
are performed by
Smart Consulting



MasterCard Europe SPRL
Chaussée de Terwuren, 198A
B-1410 Waterloo
Belgium
tel 32 2 352 51 11
fax 32 2 352 58 07
www.mastercard.com

Waterloo, August, 17 2009

**Note to the attention of : Card Vendors, Subcontractors to Card Vendors and
Personalization Bureaus**

Dear Vendor,

MasterCard Worldwide has decided to outsource Card Quality Management (CQM) operations to the company Smart Consulting SARL. Starting at the date of this letter Smart Consulting becomes the primary contact for CQM.

Fees will be invoiced directly by Smart Consulting.

Should you have any question, please contact:

Smart Consulting

E-mail: cqm@smart-consulting.com
direct tel. intl + 33 607 955 441
2 rue Vignol
13600 La Ciotat
France

MasterCard

E-mail: cqm@mastercard.com

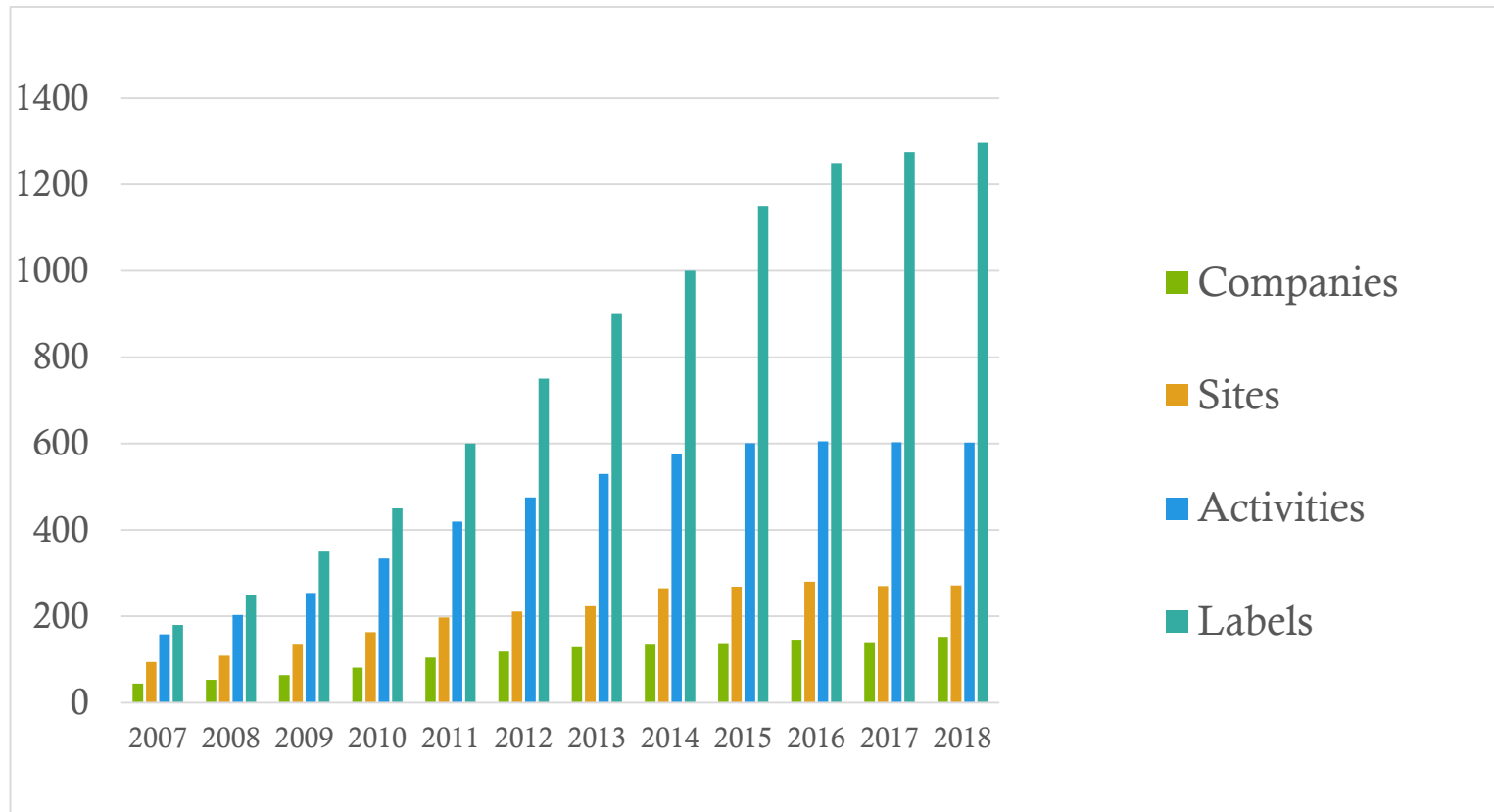
Best Regards,

**Christian Delporte,
Head of Chip Engineering**

**MasterCard Worldwide
Innovative Platforms
198a Chaussée de Terwuren
1410 Waterloo BELGIUM**

MasterCard Europe SPRL is a subsidiary of MasterCard Incorporated
RPM - Nivelles
N.E. 0-448 038 446
Deutsche Bank AG, Brussels 025-2804300-68

CQM Certification Trend



Conclusion

1. Mastercard mandates CQM:

- ✓ for all Mastercard EMV chip based products
- ✓ for all activities (formerly called “workshops”)
- ✓ for all countries worldwide
- ✓ for every GVCP certified site belonging to the same group of companies.

2. CQM certified companies list is public

CQM certified companies are available inside the Mastercard Vendors list
Managed by Mastercard GVCP

3. Increasing number of bank tenders are mandating CQM

Mastercard Sources:

Card Vendor Product Approval Process Guide
CQM certified companies public list (GVCP)



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cqm@smart-consulting.com

Eric Berlin