

## Christopher Tomczak

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Highly motivated senior level manger/director and enterprise solutions expert specializing in design, architecture, and product development team management with experienced focus on TEE/JavaCard/NFC-enabled security applied to mobile/IoT technology. Over twenty years of hands-on experience as a consultant/SME in smart mobile/IT technologies across all market segments of the industry; culminating in an executive level technical visionary/business development position. Highly skilled in smart device-based APIs & Technical Standards. Hands-on involvement in design/development at all platform levels; including secure token, mobile handset application, and server-based application services provided via web services. Ability to manage cooperative on/off-shore teams on concurrent development projects focused on delivery/deployment of enterprise-wide applications with dedicated development, integration, and business development teams.

### Success Factors

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| • Technology Development/Delivery Team Manager/Director 10+ Years | • TEE Application Design/Development 5+yrs              |
| • Vendor/Client Relationship Management 10+ years                 | • Global Platform, JavaCard, GSM/USIM                   |
| • Mobile Application Development 10+yrs                           | • Smart Card/UICC, Embedded Software Development 20+yrs |
| • NFC/HCE/TSM/HSM Solution Design 8+yrs                           | • JavaCard Applet Design/Develop 10+yrs                 |
|   | • JEE Enterprise App Development 8+yrs                  |

## PROFESSIONAL EXPERIENCE

Discover Financial Services, Riverwoods, IL

July 2017-Present

### ***Principle, Payment Project Management (R&D)***

Senior manager of chip payment and innovation development focused on secure payment technology; including chip card, secure element, HCE, and wearable formats. Responsible for the management a several projects focused on secure payment and IoT on-board a host of execution platforms; including JavaCard, TEE, Android HCE, and Apple iOS. Additional responsibilities included:

- Responsible for the ongoing management of new innovative technology products from conception, design, PoC, delivery, to final deployment; including third-party vendor relationship management.
- Serves as primary SME (Subject Matter Expert), providing technical guidance on SE, HCE, TEE, and IoT application development and life-cycle management; including manufacturing/initialization, application provisioning and post-deployment management.
- Hands-on involvement in design/development on several proof-of-concepts at all platform levels; including secure element (token), mobile handset application, and server-based application services provided via web services.
- Design/Development/Review of JavaCard payment/security applets for deployment utilizing several different cryptographic features; including RSA, ECC/ECDH, AES/3DES, and HOTP.
- Serve as lead TEE/TA technology SME across the entire organization.
- Responsible for the design and management of third-party vendor development of both internal and consumer-facing SDKs.
- Serves as Discover representative/contributor within GlobalPlatform in the Card, TEE, IoT related working groups.

Tyfone, Portland, OR

September 2015-April 2017

### ***Senior Member, Technical Staff***

Senior technical staff member responsible for the management a remote team (US/India) focusing on secure token based solution design/development; including JavaCard applet development on

secure element/tag technology platforms. Served as Solutions Architect and Team Lead responsible for the development, deployment, and management of a JavaCard based Secure Element solution using a security token in multiple form-factors; providing identify authentication assurance levels (up to LoA4) to ensure access/transaction security. Hands-on involvement in design/development at all platform levels; including secure element (token), mobile handset application, and server-based application services provided via web service. Served as primary SME (Subject Matter Expert); providing technical guidance on token personalization and lifecycle management; including manufacturing/initialization, application provisioning and post-deployment management. Serves as a liaison with the server platform application team to ensure proper data transport content/security between the token, mobile device, and back-end server.

- Managed a remote development/integration team, while providing hands-on involvement in design/development at all platform levels
- Provided professional guidance on smart token/device development/management during all phases of the token/application lifecycle (design, development, & deployment)
- Responsible for the design/development of the secure token personalization/management platform.
- Design/developed JavaCard security applets for deployment utilizing several different cryptographic features; including RSA, ECC/ECDH, AES/3DES, and HOTP.

**Citi, Irving, TX**

**September 2014-September 2015**

***Vice President, Information Security, Technical Information Security Officer -Mobile***

Technical Security Officer focusing on internal/external mobile applications providing advisor/consultant on mobile security topics; including mobile broadband, application, web service/server interfaces, NFC, BLE, SE, & HCE technologies.

- Provide guidance on information security aspects of mobile applications during all phases of the application lifecycle (design, development, & deployment); including development of threat models, and overall application security analysis.
- Responsible for the creation of and adherence to Citi policies governing information security concepts imposed in the development of mobile facing applications; including security controls.

**SymphonyTeleca, Plano, TX**

**April 2010-May 2014**

***Senior Technical Consultant/SME, Mobile Enterprise Solutions (NFC/HCE/JavaCard)***

On contract to SoftCard/JVL (joint venture between AT&T, Verizon, & T-Mobile) serving as a senior technical advisor/consultant on smart NFC/Secure Element technology and design/development manager of the SmartTap application.

- Principle Architect on the ISIS SmartTap solution deployed on JavaCard applet onboard the Secure Element and support Android applications used to debug/test SmartTap functionality
- NFC-enabled mobile handsets included e-payment, e-loyalty, and e-coupon.
- Collaborated on design/development of all touch-points of the SmartTap application; including Mobile, Secure Element, and Platform (Cloud) Server applications.

**Mozido (formerly Affinity Mobile/Global Services), Plano, TX**

**Oct 2008- April 2010**

***Manager, GSM Applications & Solutions***

Member of a 5-person team, serving as software design/development manager responsible for the implementation and product/market strategy of a multi-channel financial services platform.

- Originally developed as an M-Commerce application focused on financial services; designed to provide m-payment services utilizing the SMS capabilities of the GSM mobile network.
- Personally designed, developed, and deployed the (U)SIM STK client application, NFC enabled handset/tags based applications, mobile messaging broker, related web services, and provided support for the development/testing of the back-end server used for security management, transaction processing, & settlement.
- Provided strategic and logistical guidance in the area of design, development, integration, and deployment.

**VeriSign, Mountain View, CA**  
**Software Engineer- Contract**

**July 2008- Oct 2008**

Provided remote consulting services focusing on the design, development, and deployment of a JavaCard/SIM applet providing OTP (One-Time Password) services through the GSM U/SIM card's STK (SIM ToolKit) functionality.

- Design included the writing of functional and data flow documents highlighting the OTA messaging and data flow specifications as they pertained to U/SIM card personalization as well as data provisioning during manufacturing and via OTA data management.
- Responsible for the development, beta testing, and packaging of the JavaCard/SIM applet code. Provided guidance in the marketing, integration, and deployment of the solution to their respective MNO (Mobile Network Operator) clients.

**Venyon, Irving, TX**  
**Solutions Engineer**

**Aug 2007- April 2008**

Served as the Solutions Engineer for the North American region. Provided technical guidance and application solutions focusing on OTA (Over The Air) management of NFC technology based applications; including payment (PayPass & PayWave), transportation (MBTA), and several other NFC enabled applications (loyalty, coupons, e-posters, etc.).

- Developed several proof-of-concepts; including a NFC/SE Application Manager, NFC/SE enabled Payment Manager, and NFC/SE transit/parking applications focusing on system architecture: front-end, back-end, and OTA provisioning.
- Provided product/design requirements as they pertained to the domestic market via a direct interface to the development teams located in Munich and Helsinki.

**Gemalto (formally Gemplus), Addison, TX**  
**Senior Technical Consultant**

**April 1991-Aug 2007**

Held several positions over the course of 17 years in four separate office locations of Gemplus/Gemalto. Over that period of time, served as a Senior Technical Consultant, managing multiple card profiles; including GSM SIM/USIM/GAIT technologies on both native & JavaCard operating platforms. Extensive development of JavaCard SIM applets for internal demonstration, proof of concept, and external deployment; including mobile, network, and OTA management. Served as company representative at 3GPP2; participating in the TSG-C workgroup. Prior to joining the Telecom Business Unit in 2002, served as a Senior Technical Consultant for the Professional Services Organization (PSO) fulfilling several professional service contracts. The role within PSO required the execution of good project management skills; including design responsibility for card functionality, data mapping, client/server application development, card personalization, security requirements (including key management specifications), documentation, & internal/external support services.

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**EDUCATION**

**BA - Management Information Systems**  
**Auburn University of Montgomery**  
**School of Business**

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**TECHNICAL SKILLS**

Smart Technology Operating System	Secure Element (SE), Trusted Execution Environment (TEE), GSM SIM/USIM, TSM (Trusted Service Platform), Android SDK, Bluetooth Low-Energy (BLE), Windows/Linux, GSM SIM/USIM Handset
API/Standards	ISO 7816, Global Platform, JavaCard, GSM/3GPP/3GPP2, SIM/USIM, ISO 7816
IDE Environments & Languages	Eclipse , Android Studi, Netbeans, Visual Studio, Java/JEE, JavaCard, C/C++, RESTful Web Services, SOAP, JSON, Hibernate, MySQL
Cryptography	PKI (RSA/DSA/ECC), AES/3DES, H/OTP (One-Time Password)