



z/TPF V1.1

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Title: Industry Content Pack
Subtitle: Solving the long term Application Skills Issue

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Venue: Open Source Subcommittee

AIM Enterprise Platform Software
IBM z/Transaction Processing Facility Enterprise Edition 1.1.0

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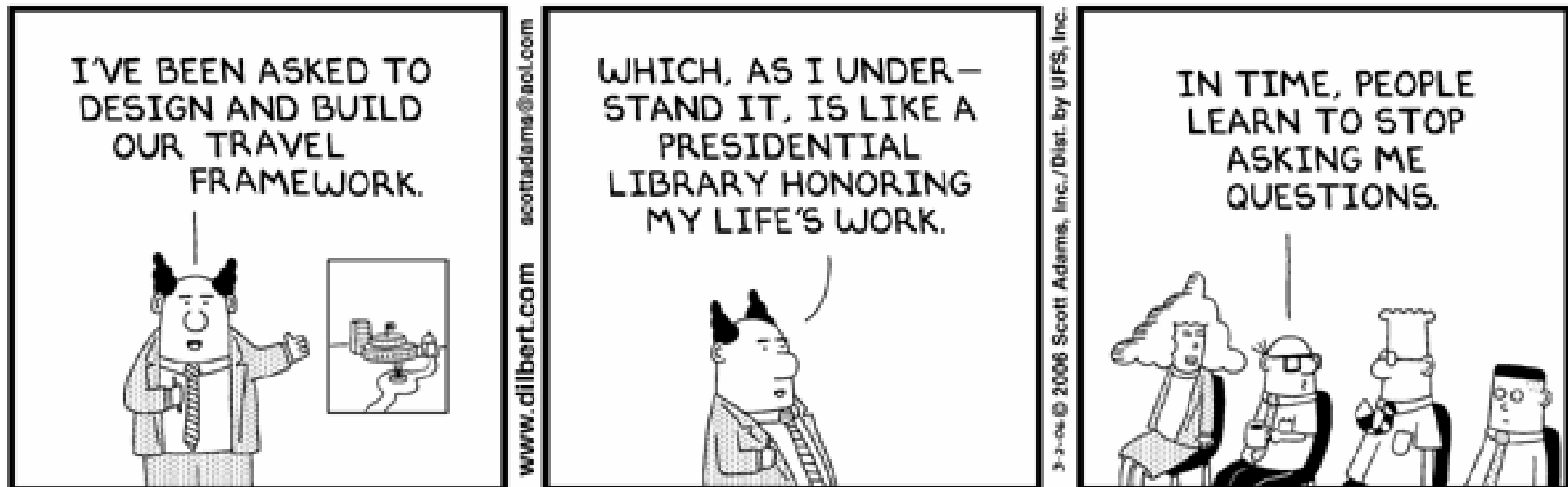
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Contents

- **Commodity Reservation Services**

Dilbert

by Scott Adams



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Problem statement

- **Most airlines run PARS or IPARS based systems, some rail and hotels are based off this as well**
 - Including those run on any of the large GDS systems
 - USAS systems similar in design
 - Interfaces and usage patterns now instituted in airline/rail business rules and IATA/UIC standards, hard to change
 - Many consider these functions to be a commodity, not strategic but necessary to run the business
- **Staff attrition**
 - Much, if not a majority, of global staffing with 10 or more years experience near retirement
 - Replacement of these staffs by remote work in low cost geographies not a long term solution
 - Not sufficient staffing at adequate skills levels to solve global problem
 - Current use of low cost geos largely a stopgap measure, used to maintain status-quo but only incremental if any new development, goes with a “surround the core” strategy
- **Current alternatives not attractive**
 - Cost to re-platform functionality exceedingly large, high risk project, and takes too long
 - Choice is to host on someone willing to deal with skill problem and/or attempt replatform project
 - Loss of control of major business component and not necessarily cheaper

Cost and risk of change prohibitive

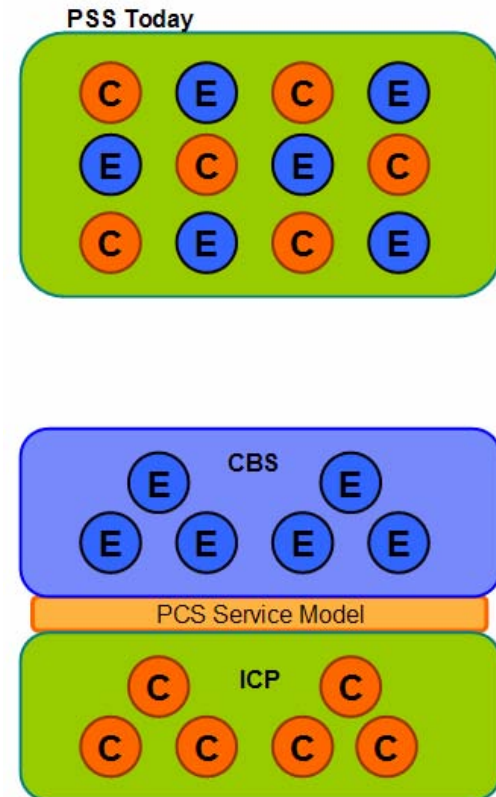
- **Re-platform costs run as much as \$100M or more**
- **Very large systems paying \$40M (for example) for mainframe HW/SW/FTEs would have to cut costs by 50% or more to see a payback in a reasonable timeframe**
 - If new system is not dramatically lower runtime costs, fees to users will have to increase to cover the difference (new runtime costs plus re-platform costs)
 - Runtime costs of new solution, HW, SW, FTEs providing comparable level of service (reliability and security)
- **Smaller systems where mainframe HW/SW/FTE costs are around \$5M cannot hope to recoup re-platform costs even if the new solution were free**
 - Move to hosted model also expensive with loss of control
 - Assume risk of large hosting provider that new system will work **and** be cost effective

Solution Approach

- **Use SOA to break problem down into more manageable components**
 - Do not attempt to re-platform everything, look at what functions work today at an adequate cost model versus what provides a large return on investment (to an new architecture)
 - Look at what is a strategic or competitive advantage versus what is commonly done across the industry
 - Create a service model that defines these relationships
- **Use Service Model to allow creation of a common code base of low level services**

Step One: Re-architect PSS Systems to a more logical model

- **Today's PSS systems, tight integration of both strategic and commodity functions**
 - Intertwined code highly complex, difficult to update and maintain, needs a skill base dwindling in number
 - Commodity functions are those that every user in this industry must have and largely driven by standards, no strategic value
 - Enterprise functions drive real business value and change often to meet the needs of the business
- **Solution approach is to separate these types of functions into appropriate environments**
 - Commoditize and drive down the cost of the commodity functions by creating an open, common code base
 - Move the enterprise functions to application servers where tooling is better and skills commonly available
- **PCS: PSS Commodity Services**
 - Use a open service model for the commodity functions so that any provider may create and sell function that leverages those functions
- **Enterprise Services (strategic functions)**
- **Commodity Services (non strategic)**



PSS Commodity Service Model



- **Define the services common to most reservation systems**
 - Air, rail and hospitality models
- **Provide delineation between what is a commodity function and what is an enterprise service**
 - There would generally be only one implementation of the PCS model in an enterprise while there may be many business services that use it
- **Most services to viewed as stateless but not practical for all**
 - Most customer state handling to be in business services
- **Agnostic to PSS implementations**
 - IBM looking at implementations for z/TPF, ALCS and an outboard model for back-ends such as USAS or hosted airlines
 - IBM will implement session and security services with wrappers
- **PCS model will have a public use license (open)**
 - Implementations of the model may not always be open

PCS Model built on existing standards where possible

Passenger Services & Sales

- PADIS**
- Passenger List msg PAXLST (IATA/WCO joint) dev. + Dept Home Security for US
 - Reservation interline message procedures - Passenger (AIRIMP)
 - e-Ticketing
 - Functional Service Element (FSE)
 - Check-in
 - Airport/Airline communication
 - Baggage
 - RP7406:RFID for baggage tag
 - RP1745: Baggage Service message
 - RP1800 Automatic baggage handling
 - Weight & Balance
 - BCBP (Bar coding on Boarding Passes)
 - JPTC (Joint Passenger Ticketing Committee)
 - interline ticket forms standard
 - Electronic Miscellaneous Documents
 - Optional Services Task Force (OSTF)
 - Standards to facilitate flight related services: film, hot dog; non-flight: travel insurance
 - Scheduling Standards
 - CUSS (Common Use Self-Service)
 - CUTE (Common Use Terminal Equipment)
 - CUPPS (Common Use Passenger Processing Systems) – An overhaul of CUTE

Business Administration

- Fuel Data standards
- BSP data interchange spec grp
 - DISH: reporting passenger sales & ticketing data
 - RET: BSPs for the agent
 - HOT: Airlines accounting sales
 - CST: Credit sales invoicing
 - TI: ticket inventory
- Aviation, Airport Invoice Standards
- Payment Card Industry Data Security Standards)

Airport Services

- AHM 804 – Performance Measurement of Service Delivery Standards (for ground handling services) Tool/system not msg
- Ground Handling Council (IGHC)
- Baggage handling
 - RP7406:RFID for baggage tag
 - RP1745: Baggage Service msg
 - RP1800 Automatic baggage handling



Cargo/Freight

- Unit Load Devices
 - automatic identification application
- Advance Cargo Info (ACI)
- Air Waybill (AWB)
- Live Animal Regulations (LAR)
- Dangerous Goods Regulations (DGR)
- Perishables
- Electronic Freight Management
 - e-freight Message Improvement Programme (MIP)
 - WCO data model
 - UNCEFACT
 - OASIS/UBL

Passenger Services

- Reservation/booking (OTA_AirBook, OTA_AirBookModify RQ/RS)
- Availability (OTA_AirAvailRQ/RS)
- Check-in (OTA_AirCheckInRQ/RS)
- Ticketing (OTADemandTicket RQ/RS)
- Air fare quote (OTA_AirFareDisplay RQ/RS)
- Airline flight (OTA_AirFltInfo RQ/RS)
- Air Details (OTA_AirDetails RQ/RS)
- Low Fare Search (OTA_AirLowFareSearch RQ/RS)
- Air Pricing (OTA_AirPriceRQ/RS)
- Rules for fare type (OTA_AirRules RQ/RS)
- Air Schedules (OTA_AirSchedules RQ/RS)
- Seat map display (OTA_AirSeatMap RQ/RS)

Flight Operations

- Flight Operation Group
 - Aircraft Performance Task Force
 - Meteorological Task force (METTF)
 - IATA Training & Qualification Initiative (ITQI)
 - Standard Computerized Airline Task Force (SCAP)

Business Partners Mgmt.

- Involves virtually all aspects of airline operations
- BSP data interchange Spec
- Invoicing standards

Maintenance, Repair, Overhaul

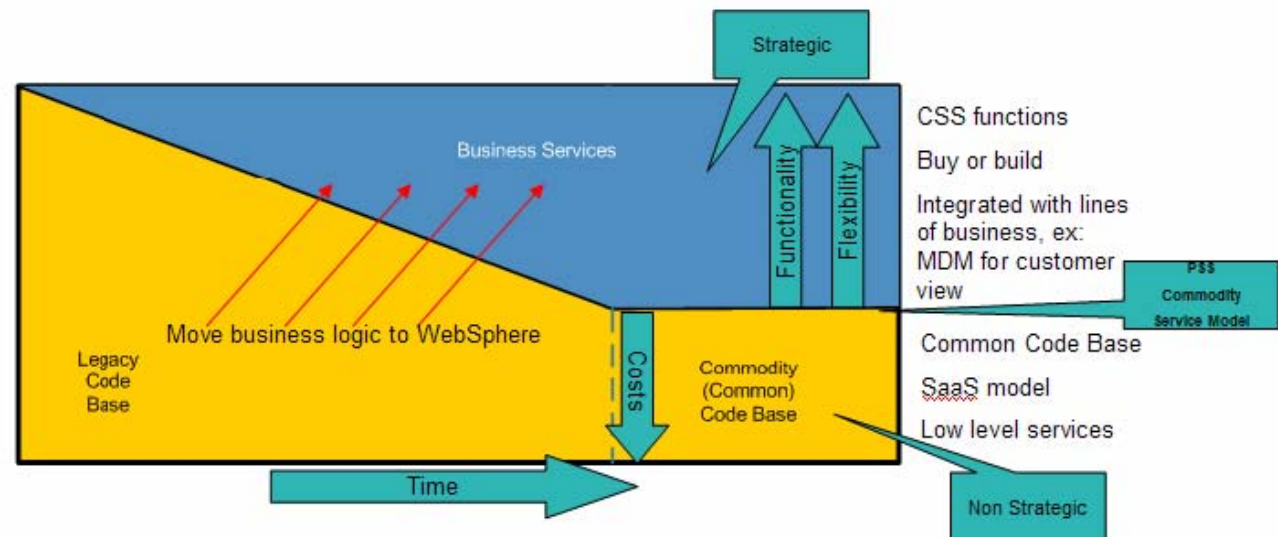
- Engineering & Maintenance Group
 - Aircraft Recovery
 - Maintenance Cost Task Force (MCTF)

Security & Safety

- IATA Operational Safety Audit (IOSA standard)
- IATA Six-Point Safety Programme
- IATA Airside Safety Group (ASG)
- IATA Safety Group (has 5 subtask Forces)
- IATA Security Group
- IATA Control Authorities Work Group
- IATA Payment Card industry Data Standards
- ICAO Aviation Safety programmes
- ICAO Aviation Security Programme
- ICAO Safety & Security Audits
- ICAO Flight Safety Information Exchange

Step Two: Relocate Business Services

- **First implementations of the PCS model will have many extensions to the service model**
 - Many unique business services in legacy code which should be abstracted behind a service interface to allow the transition of the function without impact to the user
- **New business services that either add function or replace a legacy based business service plug into the PCS interfaces**
 - Each major area a buy vs build decision, anyone can participate in the business services as the service model is published
- **In time the legacy code base is reduced to what is in the PCS model with very few local extensions**

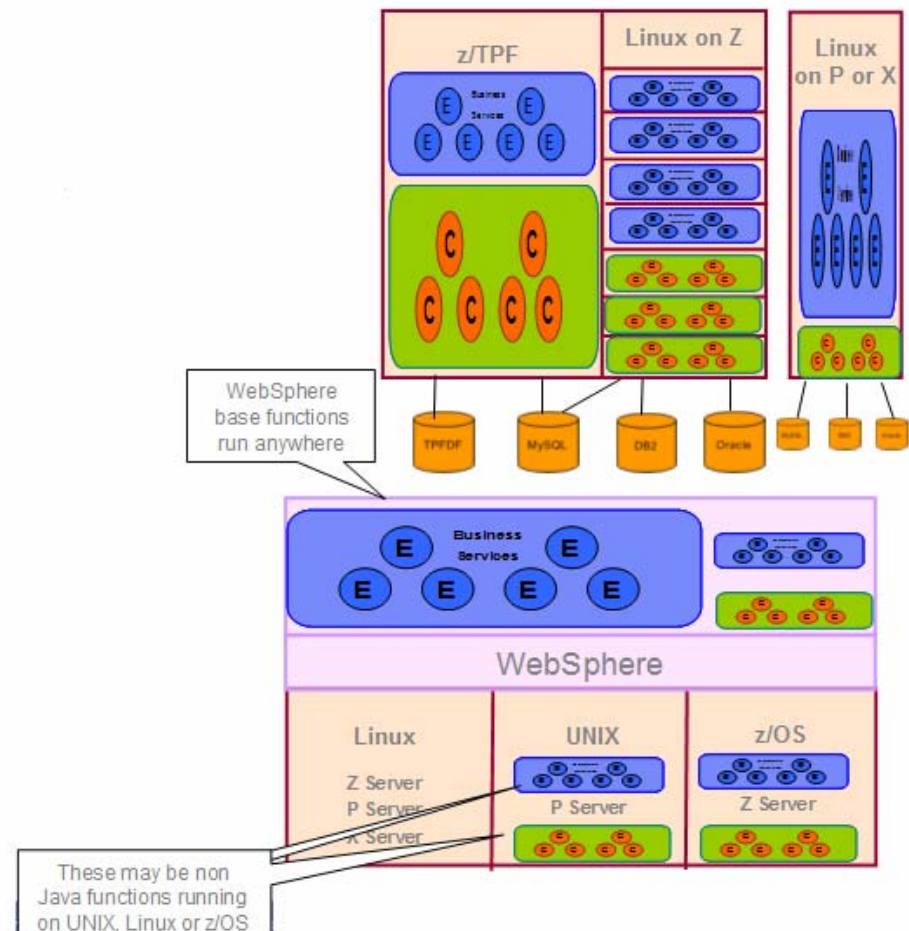


Step Three: Common Code Base

- **Once functions in the base systems are deprecated to the common model, there is an opportunity to change the physical implementation**
- **Suggestion is to move to a code base that may or may not have a public use license on it, but in some way is shared among users**
- **Support of that code base moved to a core team in a low cost geography**
 - Subscription model, for a service fee a provider does maintenance and enhancements, IBM PUT tapes, testing, packaging and level 1, 2 and 3 service (SaaS)
 - Targeting a 20 cents per PAX total runtime cost structure
- **May still be local coverage type skills but local airline, hotel or rail teams now focused on business services that just consider PCS services as a utility**
- **Code base could be run locally**
 - Run by airline/rail/hotel or managed operations by a service provider
- **Code base could be run in a regional hosting center**
 - Pay someone to run the core services for you and run most business services locally
- **Code base run in one of the traditional hosting centers**
 - May be limits on where business services can run due to latency issues

Potential Deployment

- **Commodity Services (ICP):** Mostly on z/TPF (on mainframe) for reasons of scalability, reliability and reuse of existing code assets
 - Some functions may use Linux on mainframe to lower costs with no loss in response time
 - Some commodity functions may be written in Java and can run anywhere
 - Some commodity functions may be written to run on UNIX using a relational DB
- **Business Services:** Mostly on application servers (WebSphere in diagram) but some services may be written in C/C++ for reasons of performance or reuse of existing code
 - Will use z/TPF or application servers on mainframe if low latency (performance) is a critical factor
- **Business services and commodity services communicate with each other using standard web services** so their physical location does not matter
 - In the same box (fastest)
 - In the same data center (faster)
 - In a remote data center (slowest)
 - We can relocate as needed without change to application



Q&A

- **Questions?**

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