

Table 1. Softsys Design Moves

Design Move	Strategic Intent	Design Actions	State of Design Capital	Strategic Contingencies	Impact of Design Move
1A	Simplify product configuration, disintermediate functional consultants	Expose configuration settings, create configuration scripts, collate configuration information into a new configuration engine module Create a configuration database and add new logging functionality to the configuration engine	Option constrained High quality	Resource abundance Resource abundance	Create options
1B		Enable consultants to search configuration database to alter default configuration settings during implementation at a client site	High quality	Resource scarcity*	Increase debt
2A		Expose function calls for modification by clients, create tool set to append user-written arguments to function calls	High quality	Resource scarcity*	Increase debt
2B	Pursue dual low-cost product plus value-added services strategy	Implement customer exit points that allow clients to add their own source code to create new functionality Develop a new tool set to help customers manage their exit-point portfolios	High quality Debt constrained	Resource scarcity* Resource scarcity*	Increase debt
2C			Debt constrained	Resource scarcity*	Increase debt
3A	Achieve flexibility without losing efficiency, build business partner ecosystem	Remove all customer-written functionality and port product's source code to a component-based architecture Create an application composer module to facilitate inclusion of customer-written components in the component architecture Include ability to add third-party components via application composer	Debt constrained High quality High quality	Resource abundance Resource abundance Resource scarcity**	Abandon options Reduce debt Create options Abandon options
3B			High quality	Resource abundance	Create options
3C			High quality	Resource scarcity**	Abandon options

\* With high ability to transfer technical debt \*\* With low ability to transfer technical debt

Table 2. Testco Design Moves

Design Move	Strategic Intent	Design Actions	State of Design Capital	Strategic Contingencies	Impact of Design Move
1A	Exploit existing technology to rapidly develop a new product	Expose interfaces to signal processing module of acquired product Extract signal processing module and integrate it with a new best-of-breed system architecture	Option constrained	Resource abundance Resource scarcity	Create options
1B			Option constrained	Resource scarcity	Increase debt
2A	Manage standards uncertainty, cultivate open-source ecosystem	Replace signal processing module with a completely rewritten signal analyzer module, add a new experiment workbench module Expose interfaces to experiment workbench and signal analyzer modules, add mapping tools to allow customer-written configurations to be plugged in	Low quality High quality	Resource abundance* Resource scarcity**	Create options Reduce debt Abandon options
2B			High quality	Resource scarcity**	Abandon options
3A	Exploit learning to move to adjacent technology landscapes	Reengineer dependencies between workbench and signal analyzer modules; move maps, experiment workbench, and signal analyzer modules to a new product family architecture	Debt constrained	Resource abundance	Create options Reduce debt
3B	Support dominant standards to sustain ecosystem	Add a digital rights management module to the product family architecture	High quality	Resource scarcity**	Abandon options

\* With high technical capability \*\* With low ability to transfer technical debt

Table 3. Cellsys Design Moves

Design Move	Strategic Intent	Design Actions	State of Design Capital	Strategic Contingencies	Impact of Design Move
1A	Multi-homing and platform independence	Integrate the iPhone social media aggregator app with a new system including meta-data collection and game center framework modules	Option constrained	Resource abundance	Create options
1B		Create variants of the system for Android, Symbian, BlackBerry, Windows Mobile, and Java platforms	High quality	Resource scarcity*	Increase debt
2A	Pursue a product family strategy	Add an operator services module to the Cellsys product	Debt constrained	Resource abundance	Create options
2B		Create two distinct product designs for retail end users and telecommunication network operators	Debt constrained	Resource abundance	Reduce debt
3A	Enable user-led innovation in the retail and operator ecosystems	Expose the APIs of the system to end users, create a software development kit for end-user application development	High quality	Resource abundance	Create options
3B		Create an operator app store module for corporate customers	High quality	Resource abundance	Create options
3C		Create a marketplace module for retail end users	High quality	Resource abundance	Create options

\*As

\* With high ability to transfer technical debt

Table 4. Infocom Design Moves

Design Move	Strategic Intent	Design Actions	State of Design Capital	Strategic Contingencies	Impact of Design Move
1A	Integrate three major service lines (mobile, cable TV, broadband ISP)	Expose the billing application interfaces of the mobile, TV, and broadband ISP business units	Low quality	Resource scarcity	Create options
1B		Create and integrate a custom CRM module into the individual billing applications of the three business units	Debt constrained	Resource scarcity	Abandon options Reduce debt
1C		Create an account manager module to collocate billing details for customers' mobile, TV, and ISP accounts	Option constrained	Resource scarcity	Increase debt
2A	Enable self-service for customers	Replace legacy billing applications with new billing modules	Low quality	Resource abundance*	Create options
2B		Replace individual CRM modules with a new integrated CRM / billing system, move all customer accounts to the new system	Debt constrained	Resource abundance	Create options
2C		Replace account manager module with a new application, migrate all accounts to new CRM system using unique self-service IDs	Debt constrained	Resource scarcity	Abandon options
3A	Enable cross-selling and bundling of services	Expose integrated CRM / billing system interface to social media applications	Option constrained	Resource abundance	Create options
3B		Create and integrate a marketing, promotions, and loyalty module that can use data from social media platforms such as Facebook	High quality	Resource abundance	Increase debt

\* With low technical capability

Table 5. Proposition and Case Evidence Summary

Proposition	Specified Conditions		Predicted Impact of Design Move	Case Evidence	
	State of Design Capital	Strategic Contingencies		Supporting	Contradictory
P1a	Option constrained	Resource scarcity	Increase debt	Testco 1B Infocom 1C	None
P1b	Option constrained	Resource abundance	Create options	Softsys 1A Cellsys 1A Infocom 3A Testco 1A*	None
P2a	Debt constrained	Resource scarcity	Abandon options	Infocom 1B**, 2C**	Softsys 2C
P2b	Debt constrained	Resource abundance	Reduce debt	Cellsys 2B Softsys 3A** Testco 3A**	Cellsys 2A Infocom 2B
P3a	Low quality	Resource abundance High technical capability	Reduce debt	Testco 2A**	None
P3b	Low quality	Resource abundance Low technical capability	Create options	Infocom 2A	None
P4a	High quality	Resource scarcity High ability to transfer debt	Increase debt	Softsys 1C*, 2A*, 2B Cellsys 1B	None
P4b	High quality	Resource scarcity Low ability to transfer debt	Abandon options	Softsys 3C* Testco 2B, 3B*	None

\* Predicted impact occurred but did not change design capital state  
 \*\* Predicted impact occurred along with other impacts not predicted