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Echelon, Inc.'s Software Product Release (A)[1]

Mike Neale hoped that his first day working for Echelon Inc. would go more smoothly than had his move to Boston. Two weeks earlier, having just returned from the four-week vacation in Europe he had taken to celebrate his MBA graduation, he had been relaxed and excited about the impending move and his new job as a product manager for Echelon, Inc., a supply-chain software start-up company. Now he was anything but relaxed. Despite "guaranteeing" a time-window in the first half of last week, the moving truck did not show up at his new apartment in Beacon Hill until late yesterday afternoon. The apartment was now full of boxes that would take days to unpack and organize. Hopefully the first few days at work won't be too hectic, Mike thought, as he parked his car in the Echelon car park on a bright and sunny Monday morning.

Candace Palmer, Echelon's Vice President of Marketing, hoped she had made the right decision in hiring Mike Neale as the new product manager for Echelon's OptFactory product. She'd certainly know a lot more about him after the week was out. She planned on throwing him in at the deep end once his morning orientation was over.

Echelon Background

Echelon was a 30-person startup company focused on the emerging supply-chain design market. Virtually all pre-existing supply-chain software companies focused on the execution and tactical management of already-designed supply chains, and offered little or no decision-support for the more strategic aspect of supply chain design. For instance, when a consumer-electronics company introduces a new digital camera it needs to decide on the best supply chain design that optimizes the tradeoffs between cost of goods sold, inventory costs, and customer service levels. Existing software offerings were inadequate because they could not model the impact of demand and supply uncertainties on overall supply-chain performance. One of the founders of Echelon had worked on this problem for his doctoral dissertation at a leading US university. Based on an academic version of the software that was already being used by one Fortune 500 hundred company, the founders of Echelon had closed a seven million dollars Series A round with a venture capital firm in November 2000.

Starting with five people working out of a living room in one of the founders' apartments, Echelon had grown to be a 30-person company, with offices in Natick, MA, in just under two years. They now had two products currently on the market. OptChain was the original product and was still the key revenue generator. OptFactory was a more tactical product focused on the operational planning within the four walls of a factory. It had grown out of an early, opportunistic

[1] Rev. January 2, 2008. This case was prepared by Brian Tomlin solely as a basis for class discussion. The specific business problem and associated numbers are illustrative only, and are not meant to represent the actual product release at a specific company. No part of this case can be reproduced without the permission of the author. Some of the descriptions of the engineering resources contained in this case have been adopted from the case "Optiant Inc." © Ruark and Willems 2002.

consulting project for a large US heavy equipment manufacturer. It was not the priority product but it did help flesh out the product portfolio, and had generated a nice stream of small software deals and larger consulting projects. Like most supply-chain software companies, consulting was a key source of revenue and sales leads.

Mike's First Day at Echelon

After spending an uneventful morning going through the usual HR discussions and brief introductions to the people he had not met during the interview process, Mike sat down in Candace's office to talk about his first assignment in his new job as the OptFactory product manager. Candace wasted little time with pleasantries and got straight down to business.

> As we talked about during the interviews, our medium-term plan is to reach a point where we have one major release a year for OptFactory. We are not there yet as we are still chasing customers. Closing deals depends on our ability to rapidly introduce requested features. We do not, however, custom build software for clients, and so we prioritize the key features and introduce "mini-releases" two-to-three times a year. Hopefully we'll have sufficient functionality built in over the next 18 months to then achieve a more stable annual release cycle. Until then, we plan to stick with our somewhat ad hoc "mini-release" policy whereby we release an improved version whenever we have developed the features requested by either potential customers or by our internal Professional Services Organization (PSO) which uses the product on consulting engagements.
>
> The R&D department has finished work on two new features that the Senior Management Team wants to get into the product as soon as possible. Therefore, your number one priority in the near-term is to manage this mini-release project. At a high level the project involves building the software, training the customer-facing organizations, and promoting the release. You're going to have to work with the Engineering, Professional Services, Sales, and Marketing departments to get this project completed.
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> Given that this is a relatively small project and the fact that you will be wearing two hats – product manager and project manager - you'll be responsible for a carrying out a number of the actual tasks as well as managing the overall project. I should probably give you a quick run down on the various tasks and staff resources that the project will require.
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> In your role as product manager, your first task will be to finalize the specifications for the two features. On the marketing side, you'll need to prepare the marketing message we will use for this release. We do have a marketing specialist, however, that will prepare all the marketing materials. Obviously we'll have a formal launch announcement when the release is ready. I'll be responsible for that.
>
> As product manager you will also be responsible for training the customer-facing organizations, namely the Professional Services Organization and the Sales Organization (both the pre-sales team and the sales force). We don't do this in one large training session because the needs of the sales force are very different from those of the PSO and pre-sales folk when it comes to understanding our products. The sales force needs a high level understanding of how the new release differs from the previous version and of how the new release is positioned against competitor products, whereas the PSO team and the pre-sales team need a detailed understanding of how to use the new features in an actual client implementation or product demonstration.
>
> On the engineering side the key tasks are engine development, component development, web/interface development, code integration and test/fix. These are carried out by various engineering staff you'll need to get to know.
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> The architect has overall responsibility for ensuring that the various modules of the software interoperate, follow company design standards, and are consistent with the technology vision of the

company. Currently he is also the only person on staff who is capable of upgrading our propriety optimization engine. Both features in this release will require engine upgrades. He will therefore be responsible for any engine development work as well as the code integration. Code integration occurs after the engine, component, and web development work for each feature has been completed.

We have two component developers on staff. Component developers create and modify the software modules that perform business logic; additionally they work on the database layer. Whereas the web developer creates the user interface, the component developer creates the code that performs the work that translates actions the user performs into actions the optimization and database modules work with. Both features in the new release will require some component development. Usually a single component developer performs all of the component work for a given feature. The component development work depends on the completion of the engine development for that feature.

We have two web developers on staff. A web developer creates the web pages that are used to generate the HTML interface presented to users. Both features in the new release will require some user interface work. Usually, a single web developer performs all of the interface work for a given feature. The web development work depends on the completion of the component development for that feature.

We have one Quality Assurance (QA) engineer on staff. He is a junior engineer who is interested in a career path in software development. The QA engineer leads and performs the test cycle. He identifies and logs bugs by using test cases. Test cases are lists of instructions that, when executed, exercise all the functionality of the application. The bugs are then fixed by the responsible party for that piece of code. The Test and Fix cycle occurs after the code integration.

The Senior Management Team is meeting this Wednesday afternoon and a key agenda item is the release date for this mini-release. We are facing a delicate balance. On one hand we want to be able to tell our customers that the new features will available soon but on the other hand we don’t want to be overly aggressive and miss an announced target. We will be looking for another round of financing in about six months time, and it is imperative we sustain our credibility with the venture capital companies by continuing to meet the targets that our under our control. We can’t always meet revenue targets because we can’t control customer decisions but we should be able to meet our cash burn rate and our product-release targets because they really are under our control.

I want to go into Wednesday’s meeting knowing how long it will take to complete this release, and so I’d like you to come up with a provisional estimate by tomorrow morning – say 11:00am. Now I know this sounds like a daunting task, but I have already done a lot of the necessary work. I’ve laid out all the tasks needed to complete the project, what tasks need to be finished before other tasks can start, and the resource (i.e. staff) needed for each task. See Table 1. I really just need you to run the numbers and get back to me with an estimate of how long the project will take.

By the way, I know that no matter what estimate I give Dan (the CEO), he’s going to ask me how much it would cost to reduce the project duration if we authorize certain staff members to work paid overtime. Can you also figure out how much it would cost to reduce the project duration by 9 days? I’ve also included a list of what tasks can be reduced by working overtime and the associated staff overtime rates. See Tables 2 and 3.

Well this day has rapidly taken a turn for the worse, thought Mike as he closed the door to Candace’s office. No hope now of unpacking tonight. I did take a project management elective, but that was nearly a year ago. Luckily I still have my notes buried in a box somewhere in my apartment. I better dig those out as soon as I get home so I can get cracking on this assignment. Right now I need a coffee.

Table 1: Project tasks, durations and resources required

Task id	Task Description	Duration (Days)	Tasks that must be completed in advance[2]	Resource Required
A	Finalize mini-release feature specifications	2	None	Product Manager
B	Feature 1 Engine Development	8	A	Product Architect
C	Feature 1 Component Development	13	B	Component Developer
D	Feature 1 Web/Interface Development	10	C	Web Developer
E	Feature 2 Engine Development	15	A	Product Architect
F	Feature 2 Component Development	7	E	Component Developer
G	Feature 2 Web/Interface Development	4	F	Web Developer
H	Integrate Code	4	D,G	Product Architect
I	Test and Fix	21	H	Q&A Engineer
J	Prepare Marketing Message	5	A	Product Manager
K	Train PSO and Pre-Sales	2	H,J	Product Manager
L	Educate Sales Force	2	J	Product Manager
M	Prepare Marketing Material	10	J	Marketing Specialist
N	Announce Release	1	I,K,L,M	Marketing VP

Table 2: Project resources, number available and overtime rates

Resource id	Task Description	Number Available	Overtime Rate ($/day)
PM	Product Manager	1	-
PA	Product Architect	1	-
CD	Component Developer	2	510
WD	Web Developer	2	450
QE	Q&A Engineer	1	360
MS	Marketing Specialist	1	240
MVP	Marketing VP	1	-

Table 3: Maximum possible reduction in task duration if overtime is authorized

Task id	Task Description	Duration (Days)	Maximum possible reduction in duration[3]
A	Finalize mini-release feature specifications	2	0
B	Feature 1 Engine Development	8	0
C	Feature 1 Component Development	13	4
D	Feature 1 Web/Interface Development	10	3
E	Feature 2 Engine Development	15	0
F	Feature 2 Component Development	7	2
G	Feature 2 Web/Interface Development	4	2
H	Integrate Code	4	0
I	Test and Fix	21	5
J	Prepare Marketing Message	5	0
K	Train PSO and Pre-Sales	2	0
L	Educate Sales Force	2	0
M	Prepare Marketing Material	10	4
N	Announce Release	1	0

[2] For example, Integrate Code (Task H) cannot start until the Web/Interface Development work for both Features 1 and 2 (i.e. Tasks D and G) is complete.

[3] For example, Feature 1 component duration can be reduced to 9 days if the component developer is authorized to work an equivalent of four workdays in overtime. However, the task cannot be shortened beyond 9 days.