



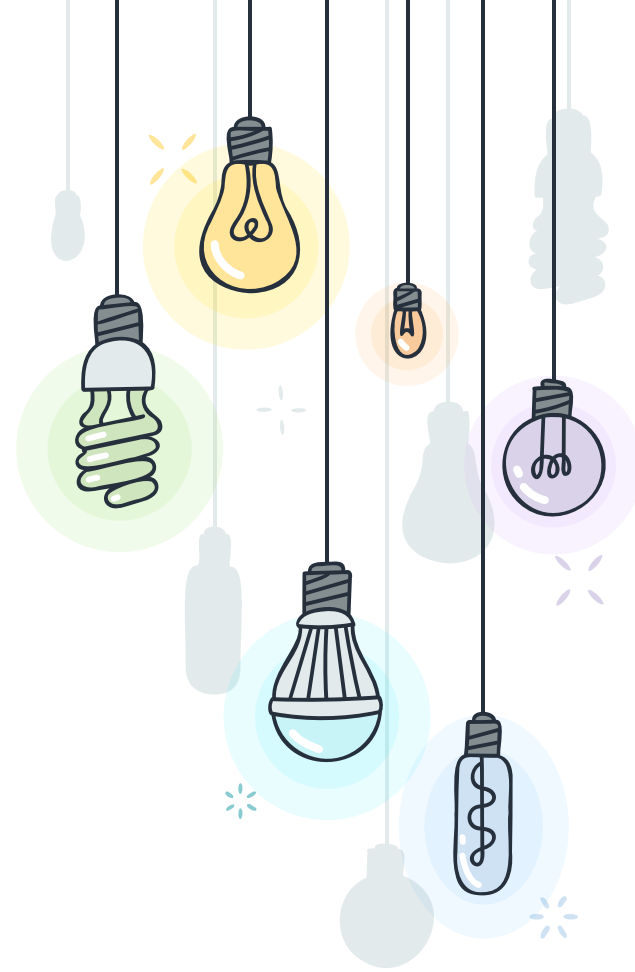
Christopher Knott - UX Case Study



Parametric (Product) Selection Tool

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HELLO!

I am Christopher Knott

This is a quick overview of the most important project at Texas Instruments (TI):

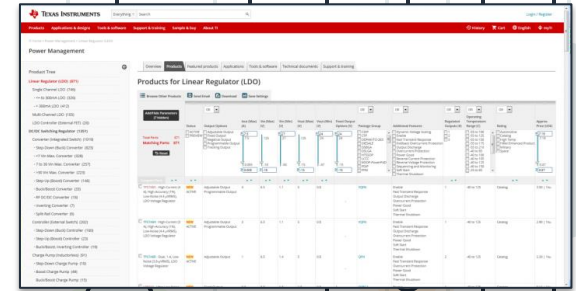
The Parametric Selection Tool



You can find me at chrisknott2000@gmail.com

* PROJECT BACKGROUND

- + The TI customer is an Electronics Design Engineer
- + Customers visit TI.com to select a product, and to find very detailed information in the product “datasheet”
- + Customers find this information by using the “Parametric Selection Tool”



Selection Tool Example

LM217, LM317
Electrical characteristics

4 **Electrical characteristics**

$V_I - V_O = 5\text{ V}$, $I_O = 500\text{ mA}$, $I_{AUX} = 1.5\text{ A}$ and $P_{DAV} = 20\text{ W}$, $T_J = -25\text{ to }150\text{ }^\circ\text{C}$, unless otherwise specified.

Table 3. Electrical characteristics for LM217

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
ΔV_O	Line regulation	$V_I - V_O = 3\text{ to }40\text{ V}$	$T_J = 25^\circ\text{C}$		0.01	0.02 %/V
		$V_O = 5\text{ V}$	$T_J = 25^\circ\text{C}$		5	15 mV
	Load regulation	$I_O = 10\text{ mA to }I_{AUX}$	$T_J = 25^\circ\text{C}$		20	50 mV
		$V_O = 5\text{ V}$	$T_J = 25^\circ\text{C}$		0.1	0.3 %
I_{ADJ}	Adjustment pin current	$V_I - V_O = 2.5\text{ to }40\text{ V}$, $I_O = 10\text{ mA to }I_{AUX}$	$T_J = 25^\circ\text{C}$		50	100 μA
ΔI_{ADJ}	Adjustment pin current	$V_I - V_O = 2.5\text{ to }40\text{ V}$, $I_O = 10\text{ mA to }I_{AUX}$	$T_J = 25^\circ\text{C}$		0.2	5 μA
V_{REF}	Reference voltage	$V_I - V_O = 2.5\text{ to }40\text{ V}$, $I_O = 10\text{ mA to }I_{AUX}$	$P_D \leq P_{DAV}$		1.2	1.3 V
$\Delta V_O/V_O$	Output voltage temperature stability		$T_J = 25^\circ\text{C}$		1	%

Datasheet Example

* CHRIS' ROLE

My role involved the following:

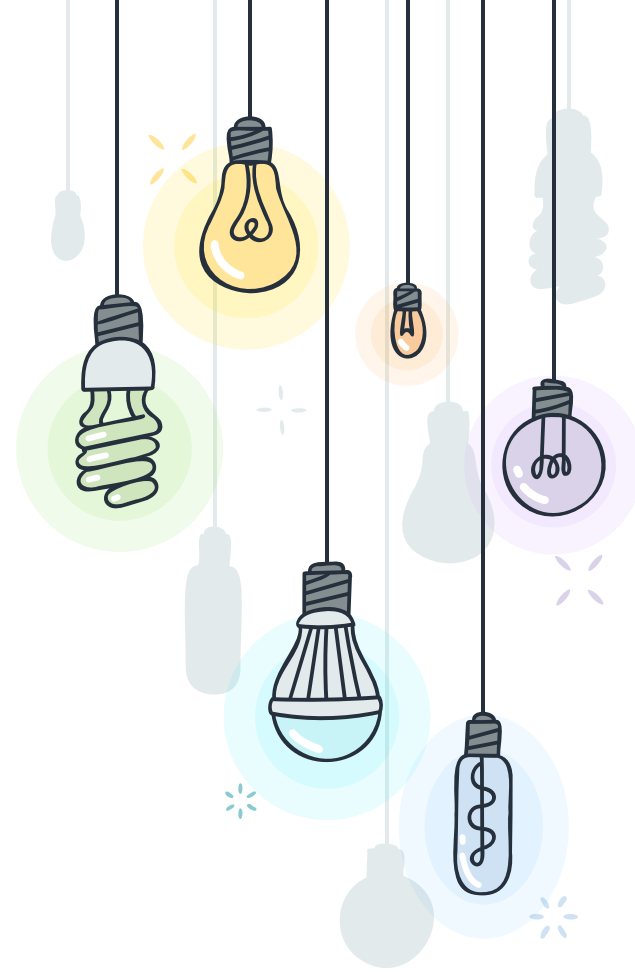
- ✕ Extensive BA work to understand requirements
- ✕ Perform a competitive analysis against key competitors
- ✕ Design and evaluate A/B Tests
- ✕ Create improvements through new designs and wireframes
- ✕ Provide guidance to designers and developers
- ✕ Design and moderate user labs for external testing
- ✕ Perform internal user testing of the design
- ✕ Create and implement a metrics plan



* THE GOALS

My role involved the following:

- ✕ Make the TI Parametric Selection tool the best in class
- ✕ Design and implement new quick searches
- ✕ Increase the scalability and speed of the tool
- ✕ Increase sales funnel conversions
- ✕ Remove the need for horizontal scroll
- ✕ Make the tool mobile friendly

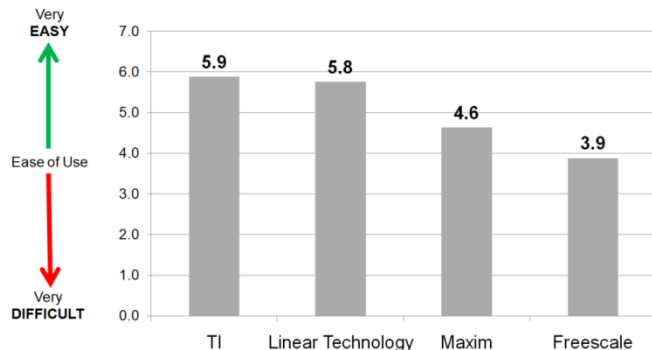


THE PROCESS – COMPETITOR A/B TESTS

Using a third party testing company, at an offsite location, we benchmarked the tool against key competitors

Executive Summary

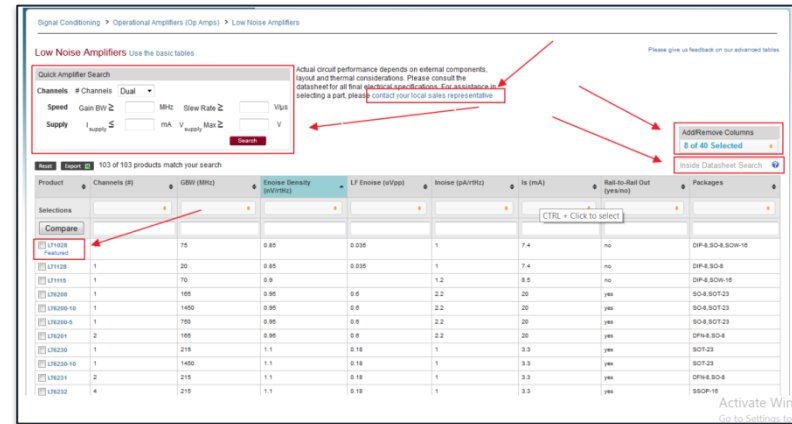
> TI tied with Linear in ANALOG competitor selection tools



THE PROCESS – COMPETITOR REVIEW

I identified key areas that competitors had which TI didn't

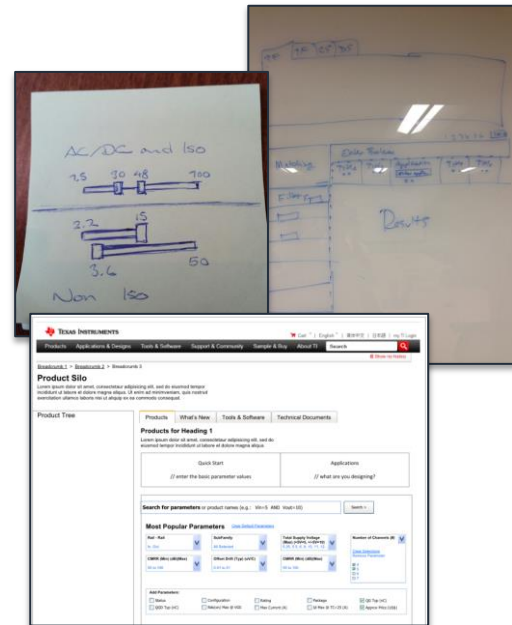
- ✗ - Quick search tools
- ✗ - Speed of use
- ✗ - Deeper funnel CTA's
- ✗ - Prominent datasheet location



THE PROCESS – SKETCHING

Everything started with
high level sketching

Some were done on pen
and paper, others on
whiteboard, and some via
simple wireframes



DESIGN – PUSHDOWNS

While doing BA work, I led JAD sessions to come up with new designs

I also created some new quick wireframes for early discussion

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	Status	Parameter	Parameter	Parameter	Parameter	Parameter
^ v	^ v	^ v	^ v	^ v	^ v	
☐ QPAXXXX – This is the part number description	Value	Value	Value	Value	Value	Value 1 Value 2

✕ QPAXXXX (ACTIVE)



[Sample and buy](#)
[Download datasheet](#)
[Online datasheet](#)

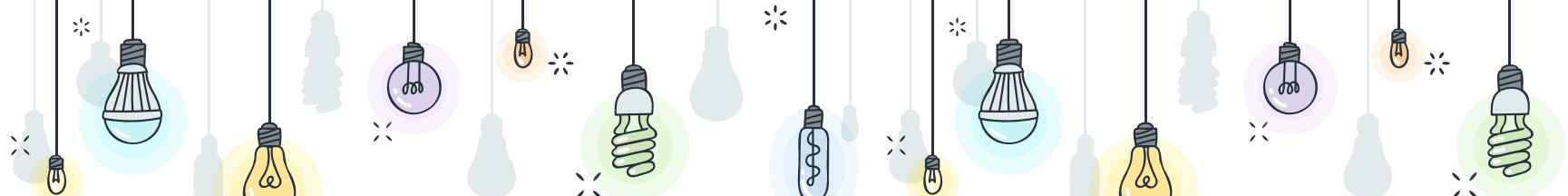
Product Details

- > Description & parametrics
- > Technical documents
- > Tools & software
- > Quality & packaging
- > Support & community

Functional Diagram



☐ QPAXXXX – This is the part number description	Value	Value	Value	Value	Value	Value
☐ QPAXXXX – This is the part number description	Value	Value	Value	Value	Value	Value
☐ QPAXXXX – This is the part number description	Value	Value	Value	Value	Value	Value
☐ QPAXXXX – This is the part number description	Value	Value	Value	Value	Value	Value
☐ QPAXXXX – This is the part number description	Value	Value	Value	Value	Value	Value

A decorative header featuring several hanging light bulbs of different shapes and sizes, some glowing with yellow light and others with blue or purple light. The bulbs are connected by thin black lines.

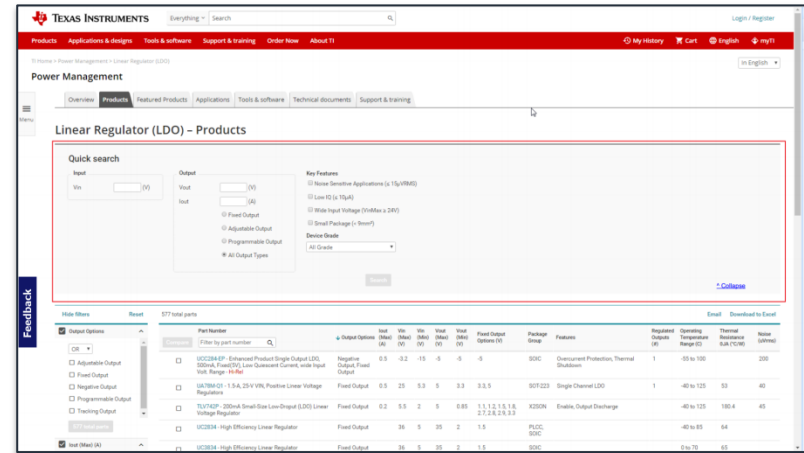
DESIGN – MOBILE FRIENDLY

Using the same code base as the desktop site, we made the site mobile friendly

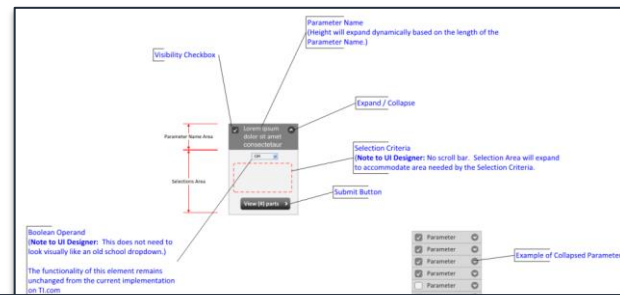
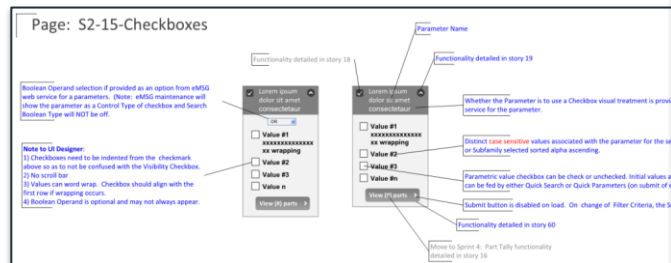


DESIGN – QUICK SEARCH TOOLS

- New quick search tools were created
- Every major line of business was consulted for customized ones
- Smaller LOB's received an automated quick search tool



All designs received “developer ready” levels of annotation



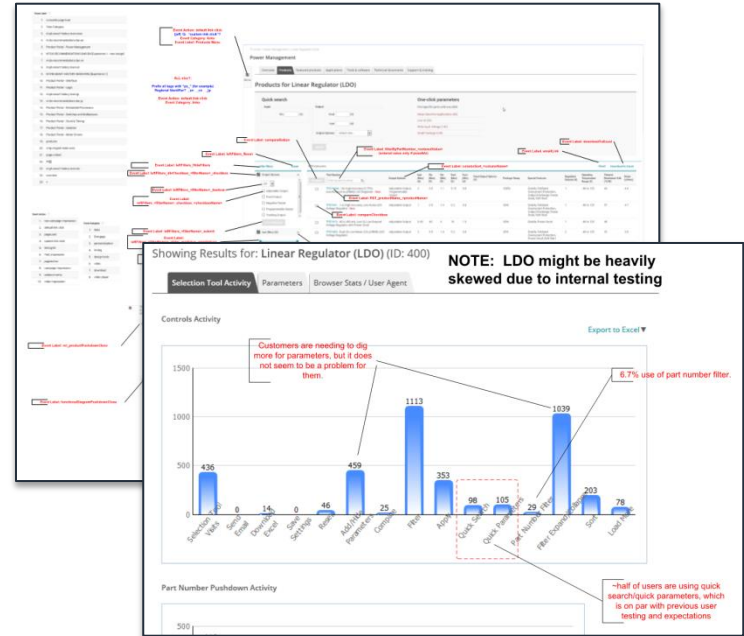
PROCESS – METRICS TAGGING

Every action worth evaluating was tagged

The existing site was measured as well as the new one

Custom dashboards were created

Before and after metrics were evaluated

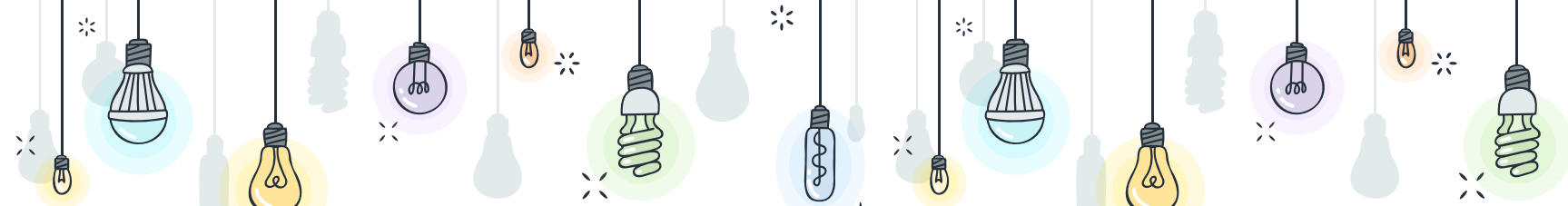


DESIGN – READY FOR BETA TESTING

The “final” design was first launched as a Beta test so that we could gather metrics

The screenshot shows the Texas Instruments website's product page for Data converters. The page features a navigation bar with the Texas Instruments logo and a search bar. Below the navigation bar, there are tabs for Overview, Products, and Learning center. The main content area displays a table of Data converters products. The table has columns for Part Number, Subfamily, Package Group, Package size, Operating temperature range, Rating, TI functional safety category, Approx. price, and Status. The table lists several ADCs, including ADC09LJ1300-Q1, ADC09LJ1300-Q1, and ADC09LJ1300-Q1. The page also includes a sidebar with filters for Package Group, Package size, and Operating temperature range.

Part Number	Subfamily	Package Group	Package size: mm2W x L (Pkg)	Operating temperature range (°C)	Rating	TI functional safety category	Approx. price (USD)	Status	
ADC09LJ1300-Q1	NEW Automotive dual-channel, 9-bit, 1.3-GSPS analog-to-digital converter (ADC) with JESD204C interface	High-speed ADCs (>10MSPS)	FCBGA 144	100 mm2: 10 x 10 (FCBGA 144)	-40 to 125	Automotive	—	\$142,250 1ku	ACTIVE
ADC09LJ1300-Q1	NEW Automotive quad-channel, 9-bit, 1.3-GSPS analog-to-digital converter (ADC) with JESD204C interface	High-speed ADCs (>10MSPS)	FCBGA 144	100 mm2: 10 x 10 (FCBGA 144)	-40 to 125	Automotive, Catalog	—	\$150,700 1ku	ACTIVE
ADC09LJ1300-Q1	NEW Automotive single-channel, 9-bit, 1.3-GSPS analog-to-digital converter (ADC) with JESD204C interface	High-speed ADCs (>10MSPS)	FCBGA 144	100 mm2: 10 x 10 (FCBGA 144)	-40 to 125	Automotive	—	\$96,250 1ku	ACTIVE
ADC09S1300-Q1	ACTIVE								
DAC130L0200	NEW 12-bit, low latency, dual 3.2-GSPS or single 6.4-GSPS, 80-sampling DAC (LVDS interface)	High-speed DACs (>10MSPS)	FCBGA 256	289 mm2: 17 x 17 (FCBGA 256)	-40 to 85	Catalog	—	\$2,291,960 1ku	PREVIEW
T47916	NEW 16-channel five-level transmitter	Ultrasonic AFEs	FCBGA 144	100 mm2: 10 x 10 (FCBGA 144)	0 to 70	Catalog	—	\$45,000 1ku	PREVIEW
DAC12404	NEW Quad-channel, 12-bit, high-voltage output DAC with precision internal reference	Precision DACs (>10MSPS)	VQFN 32	25 mm2: 5 x 5 (VQFN 32)	-40 to 125	Catalog	—	\$7,689 1ku	ACTIVE
DAC1402	NEW Dual-channel 16-bit high-voltage output DAC with precision internal reference	Precision DACs (>10MSPS)	VQFN 32	25 mm2: 5 x 5 (VQFN 32)	-40 to 125	Catalog	—	\$13,199 1ku	ACTIVE



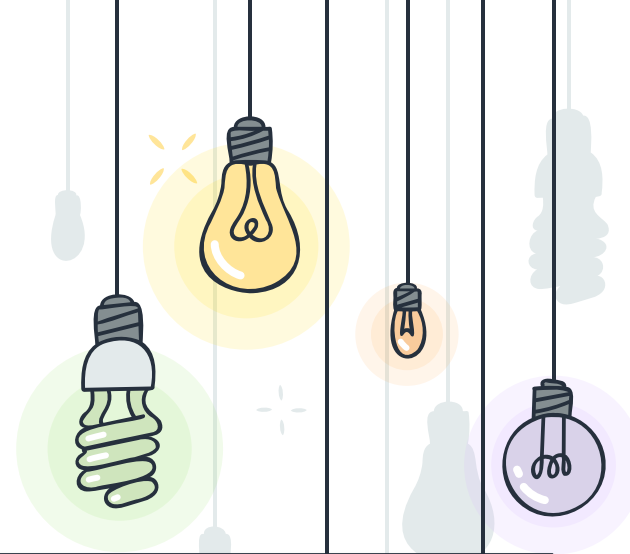
THE PROCESS – CUSTOMER FEEDBACK

We gathered customer feedback in China, USA, and Japan via an online user survey

2	EN	CN
3	Please provide feedback for our new BETA parametric selection tool. Your feedback will help us improve the selection tool in future releases.	敬请您提供有关全新 Beta 参数选择工具的反饋建議。
4		您的反饋將有助於我們在今後發布的版本中對這款選擇工具進行改進。
5	1. How often do you use the TI.com parametric selection tool?	1. 您在 TI.com.cn 上使用參數選擇工具的頻率是多久？
6	Once per week	每週一次
7	Once per month	每月一次
8	Every few months	每隔几个月才使用
9	Once per year	每年一次
10	Never	从不使用
11	2. How satisfied are you with the new BETA TI.com parametric selection tool?	2. 您對 TI.com.cn 上全新的 Beta 參數選擇工具的滿意程度如何？
12	Very unsatisfied	非常不滿意
13	Moderately unsatisfied	比較不滿意
14	Neutral	保持中立
15	Moderately satisfied	比較滿意
16	Very satisfied	非常滿意
17	3. How successful were you at finding a suitable part by using the new BETA TI.com parametric selection tool?	3. 通過 TI.com.cn 上全新的 Beta 參數選擇工具您是否能成功找到合適的產品/器件？
18	Very unsuccessful	非常失敗
19	Moderately unsuccessful	比較失敗
20	Neutral	保持中立
21	Moderately successful	比較成功
22	Very successful	非常成功
23	4. Do you feel the new BETA TI.com parametric selection tool is an improvement?	4. 您覺得 TI.com.cn 上全新的 Beta 參數選擇工具相較以往是改進了嗎？
24	Yes, the new BETA tool is an improvement	是，全新 Beta 參數選擇工具確實有所改進
25	No, I prefer the existing tool	不是，我喜歡現有的參數選擇工具
26	I'm neutral	我對此保持中立
27		
28	5. Is there anything you'd like to change about the new BETA TI.com parametric selection tool?	5. 對於 Beta 參數選擇工具您是否有任何的更改建議想要反饋給我們？
29		

* RESULTS - PERFORMANCE

- + The new tool was significantly faster in part due to UI changes, and in part to code changes
- + This allowed us to scale the tool better for future growth

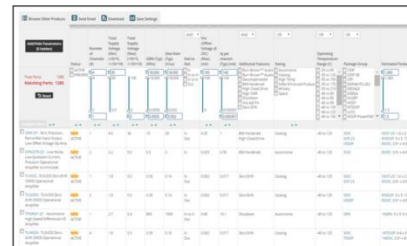


Loading and rendering speeds

Dramatic speed improvements:

Old tool: 3 to 5 seconds

New tool: 0.8 seconds

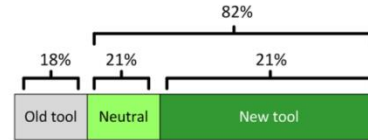


* RESULTS - SATISFACTION

- + Customers vastly preferred the new tool
- + (NOTE: chart has a typo that made it's way into the internal presentation)
Nobody noticed 😊

Customer survey results

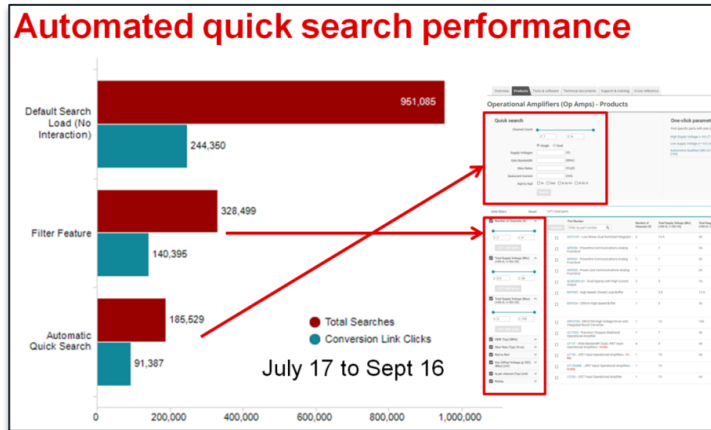
Which tool do you prefer?



- 123 respondents from around the world (WW, China and Japan)
- Now at a combined 82% (61% "New tool" + 21% "Neutral") the new selection tool is performing very well
- Acceptance of the BETA is increasing steadily
- New customer responses are no longer reporting bugs or complaints, but instead suggesting additional features

* RESULTS – QUICK SEARCH

- + Quick search tools performed very well and converted highly



The need for quick searches



Speed of entry with quick searches

- Many values can be simplified on entry
- This improves the user experience of the site and lets our customers get to their parts quicker
- This one simple form captures most of the user need for Linear Regulators

Quick search

Input: []

Submit



CONCLUSION

The success of this project led to more and more improvements to the tool, and led to greater integration with the rest of the site

- Stakeholders were happy
- Customers were very happy

