



99.99% of smart
people don't
work here



Or how a kids' toy manufacturer who
historically 'knew best' came to rely on
customer partnerships with adult fans

For a kids' toy manufacturer, LEGO has many remarkably close – and varied - relationships with its adult fans

LEGO works with Adult Fans of LEGO (AFOLs) in a number of ways including:

- Partnering with fans who have independently developed product lines, like Adam Reed Tucker who conceived, developed, and packaged the first Architecture series set and continues to design more (Hienerth, Lettl, and Keinz, 2014; Orrell, 2009)
- Employing AFOLs as permanent staff, such as Jamie Berard, Chris McVeigh, Aaron Newman, and Boone Langston (Ong, 2022)
- Through conferences & tournaments including BrickCon; BrickFair; BrickFest; Brickfête; Brick Fiesta; Brickvention; Brickworld; FIRST LEGO League; FIRST LEGO League Jr. and Robofest
- Marketing sets designed by AFOLs (My Own Creation, or “MOCs”) submitted through channels such as LEGO Ideas, itself based on fan-generated technology, Cusoo
- Celebrity fans including Ed Sheeran, James May, and David Beckham
- The BrickIt app proposes builds based on a photo of a fan's available bricks
- Even the collaboration with Minecraft, a game inspired by LEGO bricks started via an AFOL recommendation

“What do Tupperware, Harley Davidson, LEGO and Apple have in common? They're all based on communities.” (Lindstrom, 2008)

And for a company that closely defends its principles, its continuing success also depends on companies that started outside its control

- BrickLink, the largest online community & marketplace for LEGO bricks, founded by AFOL Dan Jezek in 2000 and acquired by LEGO in 2019, lists 16,022 brick sellers globally, with 1,670 in the UK (BrickLink, 2023)
- Companies that customise genuine LEGO pieces, such as MiniFigs.me and The Original Brick Engraver
- Companies producing compatible weapons, including Brickforge & Brickarms, or compatible sensors for Mindstorm kits, including MindSensors
- Eurobricks, LUGNET, and other fan-created websites
- Amazon lists 685 LEGO results in the Books department alone
- Artists & Master Builders that construct in LEGO, independent filmmakers using LEGO, and LEGO Serious Play Master Trainers
- And of course, the many retail stores that continue to sell LEGO products alongside LEGO-owned stores and online shop

"99.99% of smart people don't work here"
(Askildsen, 2014, and quoted in Laporte, 2015)

Different fan-driven and LEGO-lead events independently arose to form an accidental path towards customer collaboration

1996 Brickshelf.com established
1998 Mindstorms brick hacked
Circa 1999-2000 "Right to hack" clause
2000 BrickLink brick trading platform was created
2002 Brickish, the UK LEGO user Group, was founded
March 2005 Core Gravity research project into Kid Fans of LEGO (KFOLs)
August 2005: LEGO execs attended Brickfest: first face-to-face meeting with AFOLs
2005 crowdsourced designs for LEGO Factory & enabled AFOLs to buy MOCs sets
2005 Ambassador Program & Kids Inner Circle
2005 LEGO City, designed with extensive customer testing, tripled revenue to DKK 350m
2005 testing Duplo Train Starter Set with kids removed reverse gear & other refinements halving production costs
2005 updated LEGO Development Process to include continuous customer validation
2007 City revenue DKK 1.5b
2008 LEGO Cuusoo pilot
2014 LEGO Ideas



Despite nearly failing in 2003/4, LEGO is now the most valuable toy maker in the world (Tighe, 2022)

Different observers have proposed different factors for this turnaround

- Returning their focus to designing toys around the brick and the building experience
- Refining the inventory down from 14,000 unique pieces to 7,000; and reducing the range of colours and finishes
- Divesting peripheral businesses, such as the LEGOLAND Theme Parks
- Consolidating their supplier network
- Narrowing their range of innovation
- Concentrating on their strongest markets: Germany & Scandinavia

(Oliver, Samakh and Heckmann 2007; Knowledge@Wharton 2012; Robertson with Breen, 2013)

"We were trying to be all things to all people, and we lost our way."
(Knudstorp quoted by Robertson with Breen, 2013)



Slide 5

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Hannah Verrall, 2023-04-11T06:01:27.940

These factors undoubtedly helped...

but you can't cost-save your way
out of a life-or-death situation...

you can only profit if you make sales



In the battle for survival, LEGO revived four previously-successful lines that had been deliberately removed, ignored or allowed to languish



- Duplo, larger building blocks for younger children
- LEGO City, featuring iconic sets mirroring real-life buildings and vehicles including a revamped fire engine
- LEGO Technic, a combination of bricks, gears and other parts for more experienced sophisticated builders
- Mindstorms, robot building kits based around a programmable brick developed with the MIT Media Lab in Cambridge, Massachusetts (Robertson with Breen, 2013)

"Children & drunks are the last honest people on the face of the earth. And children will never buy a toy that isn't fun" (Nipper quoted in Robertson with Breen 2013, p123)

Despite good sales on the initial launch of Mindstorms, LEGO closed down the development and marketing teams in 2001

Even without new kits and without marketing support, Mindstorms was still very popular in the market.

By 2004, fans were still keeping Mindstorms alive:

- 40,000 units were sold each year
- The FIRST LEGO League tournaments had grown to 50,000 competitors from 16,000
- More than 20 independent Mindstorms books had been published
- Fans had created and were active on a wide range of websites and forums



"When a company starts to deal with users, and discovers that it can get ideas from users, that's Mindstorms." (Von Hippel in 'Beyond the Brick: A LEGO® Brickumentary', 2014)

Bionicle, “the toy that saved LEGO”, had established the value of engaging with kid and adult fans to direct the design of a toy

With a new product to launch, and no cash to fund an advertising campaign, LEGO leveraged an asset they’d undervalued for years: **the power of their fan base**

The 2nd generation of Mindstorms, NXT, was co-developed with a hand-picked team of four adult fans in a secret project



(Lauwaert, 2008; Robertson with Breen, 2013)

“It was obviously relevant to engage them. They knew stuff we didn’t”
(Nipper quoted in Robertson with Breen, 2013, p186)

The journey to success with Mindstorms wasn't just left to the community, LEGO balanced fan involvement without losing control of designs or core principles

Before engaging, LEGO:

- Simplified and shortened the LEGO Development Process (LDP), first introduced in 1995, reducing the development period from three years to 18 months
- Embraced fans' love of building and demand for high quality, LEGO's key differentiators for AFOLs
- Created a clear vision of what their strengths & responsibilities lay, and what contributions fans could make
- Made fundamental decisions about the NXT development, including commissioning new software
- Selected community team members for their relevant expertise in engineering, robotics, and programming, their creativity, and their profile within the AFOL community
- Understood that they couldn't manage large volumes of contributors directly
- Learned from past experiences on other product lines, good and bad
- Established the benefits for customer collaboration, to answer any internal challenges to the initiative

"We were on such a limited budget we had to work with fans"
(Lund quoted in Robertson with Breen, 2013, 186)

The core team of four, known as the Mindstorms User Panel (MUP), and an additional seven members (known as MUPpets) collaborated on key aspects of NXT, including making the brick 32-bit and Bluetooth-enabled, and ensuring the kit included a key right-angle element

A second tier of 100 collaborators, officially known as Mindstorms Community Partners, were organised into forums to test different aspects of the kits and the kit's parts, ranging from the software to sensors and building components

A third tier of 9,600 volunteers vied for coveted positions as a Community Partner through submitting their ideas and MOCs

NXT sold kits worth over \$30m in the first year, and 2m units over the lifetime: Mindstorms became the best-selling single product in the company's history

(Robertson with Breen, 2013)

The changes weren't limited to the Mindstorms Product Development team

- LEGO have adopted a flatter organisational structure, to better foster communication & speed up innovation (Rusu and Avasilcăi, 2015)
- Pioneered by the Bionicle team, development teams bring together toy designers, marketers, digital content makers, engineers, licensing staff, packaging designers and others into a cross-functional team capable of delivering a coordinated product
- Key visionaries within each product line direct innovation & development activities tailored to the product
- Product development teams are proactive in engaging with customers online and at in-person events

"To prove that we can work with individuals on the outside, it's not going to break LEGO. It's actually creating energy. It's creating this kind of hope that we can create more things" (Smith-Meyer in 'Beyond the Brick: A LEGO® Brickumentary', 2014)



Many of these practices have become embedded across LEGO procedures

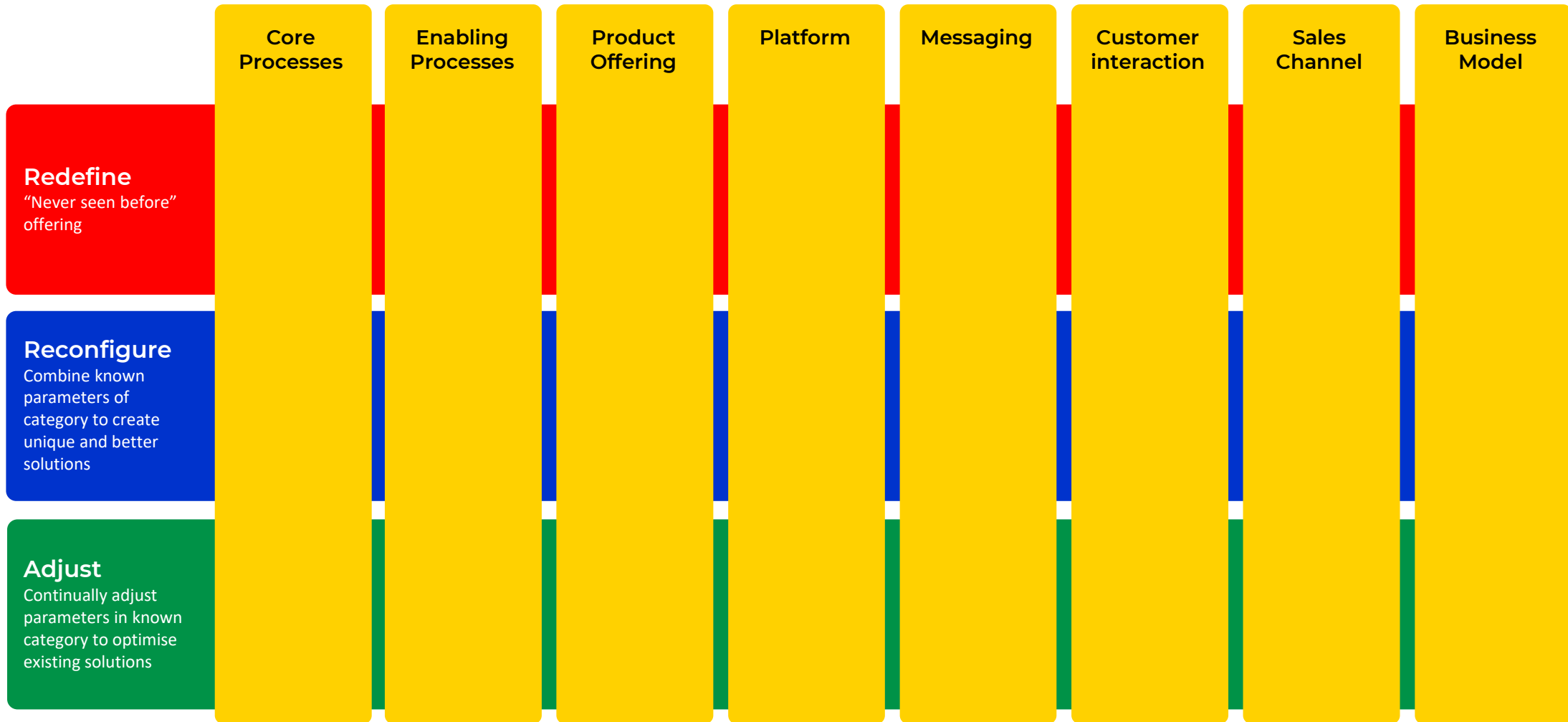


- The LEGO Development Process was not only simplified: teams have realigned to use the process more consistently following four key stages: ideation; developing concepts; testing business plans and confirming the design & strategies
- Customer engagement has become intrinsic to the LDP, from customer insight research directing strategic direction to product testing throughout the process to develop designs
- LEGO has become more realistic about the volume of core, adjacent and transformational innovation, focusing more on core innovation than it had done in the late 1990s, although it continues to leverage additional value from pre-2003 innovation with reinventions of digital and physical products
- LEGO initially developed four categories of innovation: Product, Communication, Business, and Process, to highlight that all areas of the business can be innovated, not just products. This was later expanded into a comprehensive Innovation Matrix (see next page)

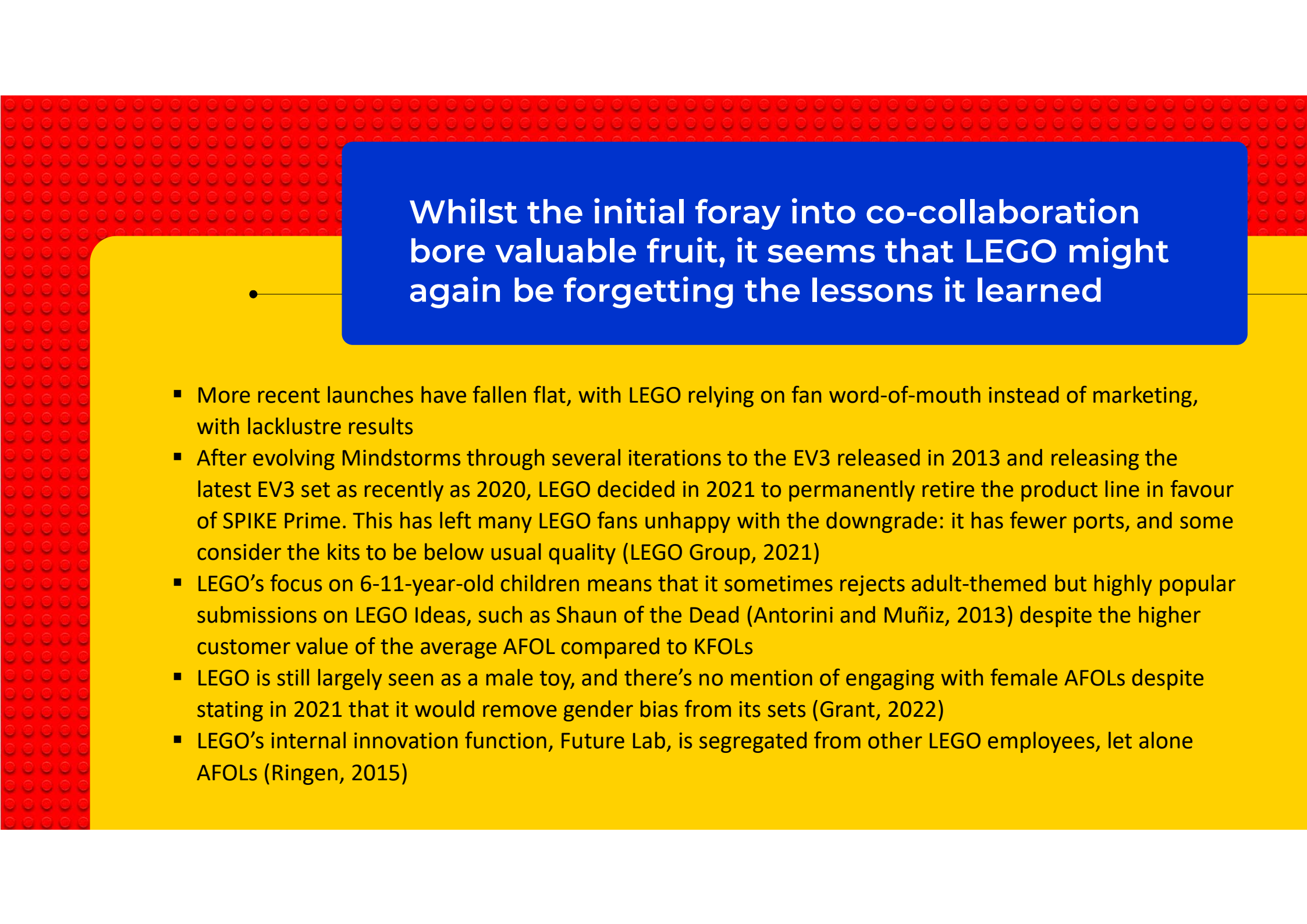
(Robertson with Breen, 2013)

"It's created an excitement in the world. That we can, together, shape the future of LEGO products" (Smith-Meyer in 'Beyond the Brick: A LEGO® Brickumentary', 2014)

LEGO have created its own model of innovation, the Innovation Matrix



(Robertson with Breen, 2013)



Whilst the initial foray into co-collaboration bore valuable fruit, it seems that LEGO might again be forgetting the lessons it learned

- More recent launches have fallen flat, with LEGO relying on fan word-of-mouth instead of marketing, with lacklustre results
- After evolving Mindstorms through several iterations to the EV3 released in 2013 and releasing the latest EV3 set as recently as 2020, LEGO decided in 2021 to permanently retire the product line in favour of SPIKE Prime. This has left many LEGO fans unhappy with the downgrade: it has fewer ports, and some consider the kits to be below usual quality (LEGO Group, 2021)
- LEGO's focus on 6-11-year-old children means that it sometimes rejects adult-themed but highly popular submissions on LEGO Ideas, such as Shaun of the Dead (Antorini and Muñiz, 2013) despite the higher customer value of the average AFOL compared to KFOLs
- LEGO is still largely seen as a male toy, and there's no mention of engaging with female AFOLs despite stating in 2021 that it would remove gender bias from its sets (Grant, 2022)
- LEGO's internal innovation function, Future Lab, is segregated from other LEGO employees, let alone AFOLs (Ringen, 2015)

The technical enablers of innovation at LEGO

Driven by fans



Driven by LEGO

Independent

Communication

- Cuusoo/LEGO Ideas

- Internet
- Websites & online forums

Digitisation

- Scanning of bricks
- Build tools, such as LeoCAD

- LEGO Digital Designer

- Augmented reality
- Computer generated models

Manufacturing

- Injection-moulded ABS
- New sustainable materials

- Automation on the production lines
- 3D printing

Programming

- Hacking of RCX Brick
- Upgrade Mindstorms to include 32-bit & Bluetooth

- LEGO Boost (latest version of Mindstorm) Programmable brick

- Logo Brick (aka Grey Brick, 1st generation brick)

The people and mindset enablers of innovation at LEGO

- Family-owned, with leading staff either being family members or coming up through the ranks
- The attitude of “We know what kids want, and that’s less building & more digital”
- Selling to kids only



- Bringing in outside help, from Jørgen Vig Knudstorp to AFOLs co-collaborators and ultimately AFOLs as employees
- Returning to the brick and *building* as the core experience, even when innovating into new areas
- Engaging imagination with stories and a sense of achievement by completing a build
- Leveraging the symbiosis of the parent > kid fan > adult fan relationship to increase sales both within a demographic and also access new demographics and markets

(Robertson with Breen, 2013)

The constraint enablers of innovation at LEGO

It may seem contrary to consider constraints as enablers, but for LEGO working inside the box comes more naturally than working outside it

- Losing their patents forced LEGO to consider other ideas and other markets
- Nearly going out of business helped LEGO re-focus on its essence: building with bricks
- Having to cut costs and narrow their range of elements has encouraged LEGO designers to be more ingenious, using an element designed for one set in a new and innovative way for another set
- Having the RCX brick hacked made LEGO reconsider its relationship with their fans
- Working with limited budgets pushed LEGO to use the power of their fanbase to market their products

Without this perfect storm of events, LEGO would have maintained their “we know best’ attitude

“Innovation flourishes when the space is limited. Less is more”
(Knudstorp quoted in Robertson with Breen, 2013, p116)

LEGO's brand strength isn't limited to the toy market: it is the 378th most valuable brand globally across all sectors

LEGO's CEO Niels Christiansen ranks 68th in the world ranking of Brand Guardians, below Elon Musk (30th) but above Mark Zuckerberg of Meta (85th)

BRAND STRENGTH INDEX (BSI)



Brand strength expressed as a BSI score out of 100.



BRAND ROYALTY RATE



BSI score applied to an appropriate sector royalty rate range



BRAND REVENUES



Royalty rate applied to forecast revenues to derive brand values.



BRAND VALUE



Post-tax brand revenues discounted to a net present value...brand value!

The Royalty Relief Method for calculating Brand Value, defined under ISO:10668 (Brand Finance, 2022)

Financial value isn't everything: LEGO's reputation is probably more significant to a firm that believes that "even the best is not good enough"

LEGO ranked World's Most Reputable Company in 2020, 2021 and again in 2023 Reptrak (2023). Reptrak (2022) states that they are one of only two companies to consistently rank in the Top 10 over the past decade

This positive impression feeds into the support LEGO gets from fans



LEGO retains its popularity both with die-hard AFOLs & KFOLS, but also with casual toy purchasers

LEGO sales increased by 21% during the pandemic, supported by the "Let's Build Together" campaign (MarketLine, 2022)

LEGO was Time's #1 most influential toy of all time in 2014, and three LEGO products feature in Time's 20 best toys of 2020 (Waxman, 2014; Time for Kids, 2020)

LEGO produces a hundred billion bricks a year to tight material and physical tolerances to ensure the bricks are long-lasting, safe, and backwards-compatible (Shapiro, 2020)



LEGO has not reached the pinnacle of customer-driven innovation, rather it is on a never-ending journey

- Even though LEGO recognises the value in the strong 'evangelism' movement it inadvertently created, it doesn't always nurture it sufficiently. LEGO could extract more value from the 4E model (Parkhomenko and Iarmosh, 2022)
- Collaborations with AFOLs and AFOL-founded businesses will continue to evolve as they create new ideas and establish new demands of both LEGO and non-LEGO businesses
- New methods of co-collaboration will emerge and develop, such as physical prototypes (Isa and Liem, 2021)
- With the trend towards customisation and the improvements in 3D printing & related technologies, customers are likely to demand the revival of LEGO Factory or other 'on-demand' services, whether to design & buy their own MOCs or to buy sets that LEGO have officially retired
- LEGO fans and the wider market will continue to challenge LEGO's key differentiators including design, quality, accessibility, and Environmental, Social and Corporate Governance (ESG) stances so that the company maintains its "only the best is good enough" position
- LEGO digital teams are adopting the Agile methodology, with its inherent focus on working closely with customers, to react more quickly to market demands (Sommer, 2019)
- Even less-engaged customers influence LEGO: LEGO abandoned its partnership with Shell in 2014 due to pressure after the "Everything is NOT awesome" Greenpeace video (Ayech, 2014) went viral



LEGO's experience of the value of open innovation is mirrored by other companies

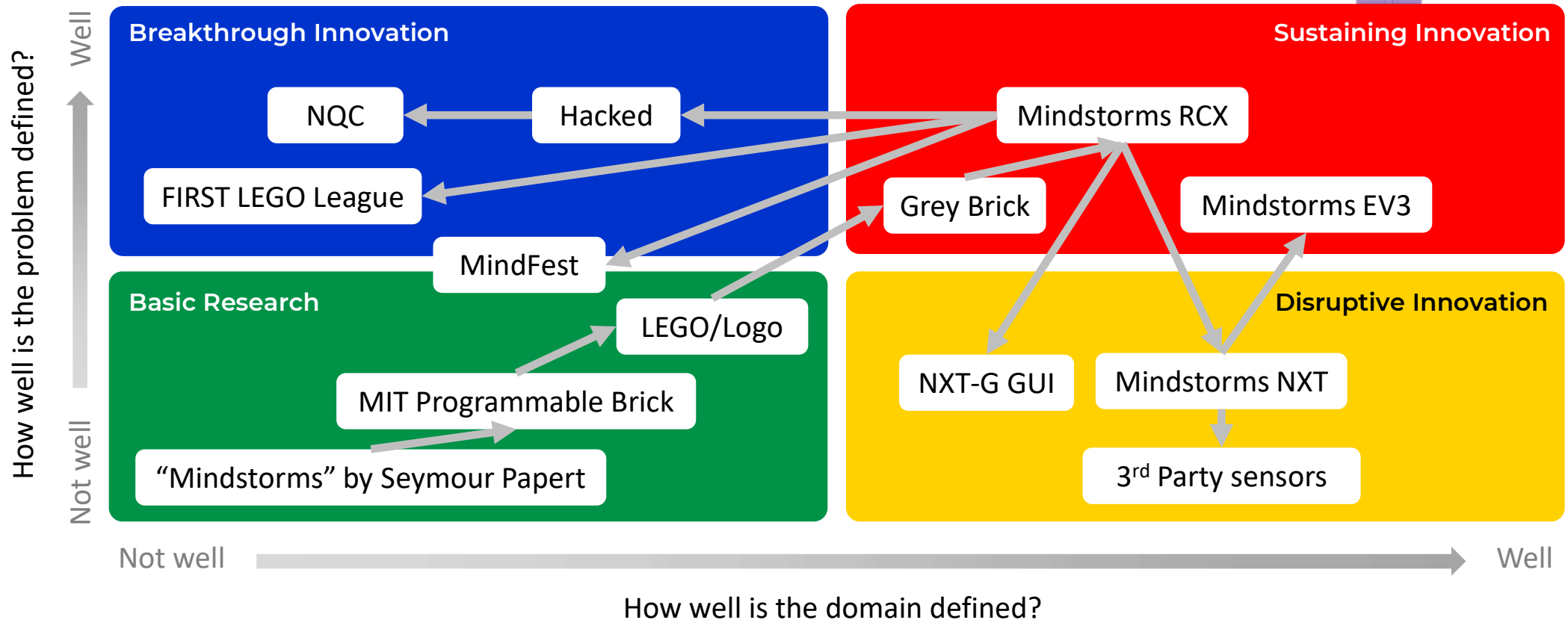
- Procter & Gamble's has created the "Connect + Develop" platform gathers around 4000 ideas per year for new products and services (Agafitei and Avasilcai, 2015)
- 3M runs a wide variety of innovation strategies, including Innovation Centers and Technical Forums to create an environment for open innovation (Trivedi, 2021)
- GE and its Venture Capital partners offered awards totalling up to \$200 million under its "GE ecomagination Challenge: Powering the Grid" initiative (Chesbrough, 2012)
- LSI Logic manufactures chips designed by their customers (Foroohar, 2005)
- Whole Foods is innovating the whole customer experience to build customer loyalty and evangelism (Bloomberg, 2013)

And the pandemic created the need and the opportunity for more. Harvard Business Review (2020) reported a number of initiatives:

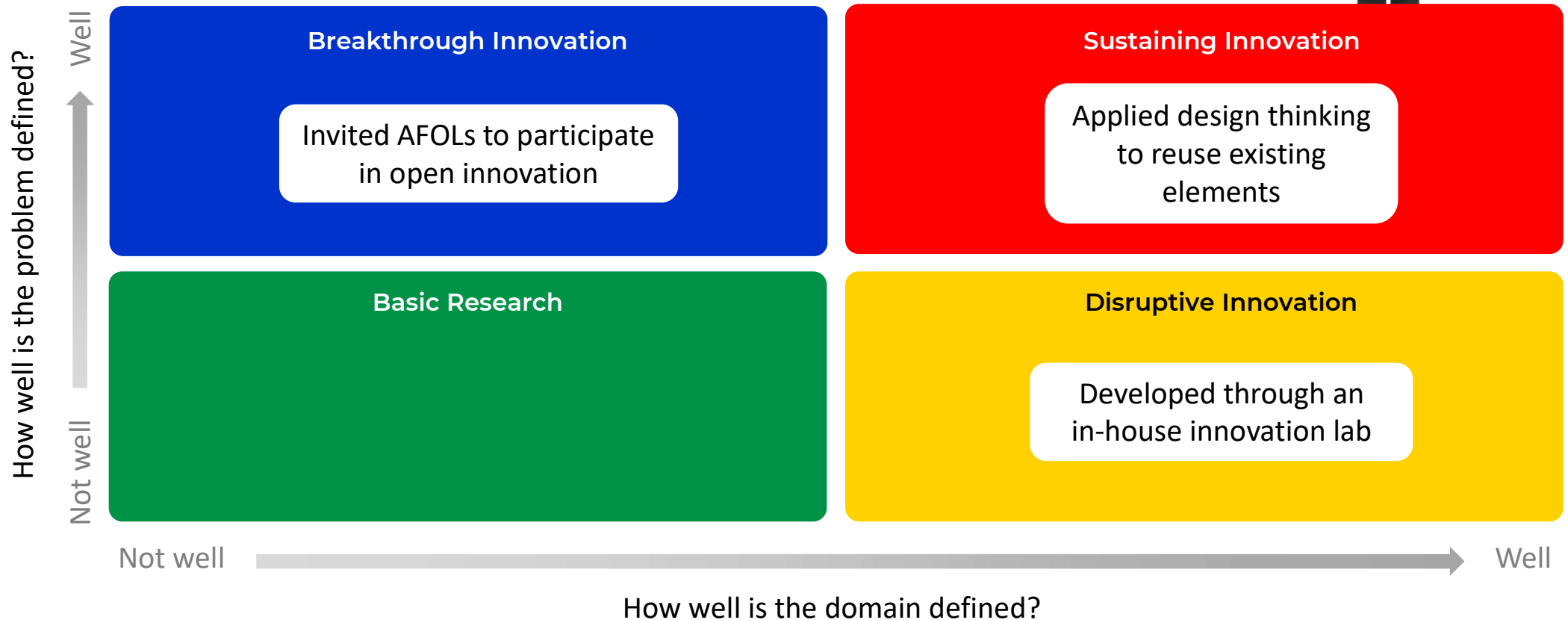
- Scania the truck manufacturer, offered logistic experts to source PPE for Karolinska University Hospital as well as collaborating with the hospital to build mobile testing stations in truck trailers
- Siemens allowed access to its Additive Manufacturing Network to help accelerate medical device design
- GE Healthcare, 3M, Ford & United Auto Workers collaborated to build ventilators



LEGO Mindstorms has moved through different areas of Satell's Types of Innovation as it has evolved



Some activities could be classified in more than one way.
For example, the development of Mindstorms NXT



The key lessons from LEGO's experience of innovation

- Keep an eye on the bottom line & manage the risks: there's no point rearranging the deckchairs on the Titanic
- Small gambles are better than big ones: some will fail, so don't put all your eggs in one basket
- Get as close to your (paying) customers as possible: innovation is great, but somebody needs to buy products
- Innovate incrementally, all the time: too little, & you lag behind. Too fast, and you run out of steam and cash too quickly
- Open innovation has great potential, but also great potential for going off track: establish a framework to ensure that you're investing in useful innovation
- It's never just one innovation with clear boundaries: it's more complex & intertwined than that





In summary

- LEGO had occasionally dabbled with open innovation, but the company's underlying belief was that they knew their market better than their customers
- LEGO fans evolved parallel channels to meet and showcase their passion, with many fans demonstrating skills equal to LEGO staff
- Nearly failing was the catalyst that pushed LEGO to embrace fan collaboration
- LEGO's success with collaborating on Mindstorms NXT both established a repeatable framework to guide future collaborations and proved that collaboration offered significant opportunities
- LEGO was a reluctant adopter of open innovation initiatives but has become a renowned exemplar for other companies
- LEGO continue to evolve its relationship with fans, sometimes succeeding and sometimes failing

Our contributions

■ Concept ■ Research ■ Outline ■ Slides

Hannah



Paul



Although we have contributed differently according to our strengths, we feel like we have contributed equally overall

Our learnings about innovation at LEGO

Paul Whiffen

- Innovation needs structure to be successful. Without it there is no control and even the best ideas can run out of money.
- No single innovation is enough for success
- Even the best innovation needs to be revisited and re-evolved
- Innovation is most effective with people from different backgrounds and different experiences
- Everything is awesome when you're part of a team*
- I have also learnt that Hannah is awesome and thanks for your patience working with me



Hannah Verrall

- Companies need to balance too little & too much innovation
- Even 'creative' companies can lose their innovation mojo
- Different approaches to innovation might be more or less useful depending on the phase the company is going through
- Like so-called 'overnight success', leaps forward in innovation usually have much deeper roots
- Innovation can cause a chain reaction, leading to a series of fresh new ideas
- Constraints are opportunities: they give focus & direction

** gratuitous reference to The LEGO Movie (2014)*

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