The Internet of Toys:
Risks and Opportunities

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The Internet of Toys (IoToys) is part of the growing world of the Internet of Things (IoT).
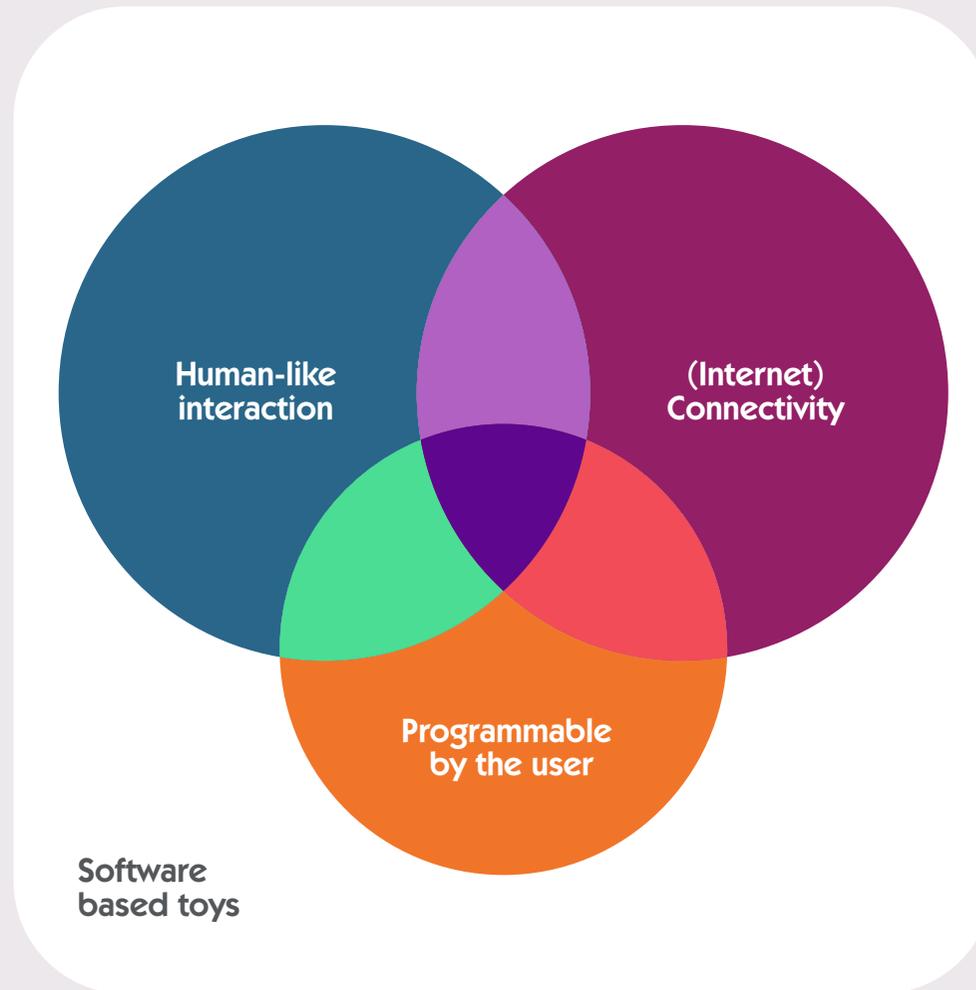
Toys in this category:

1. are connected to online platforms through WiFi and Bluetooth, but also, potentially, to other toys;
2. are equipped with sensors; and
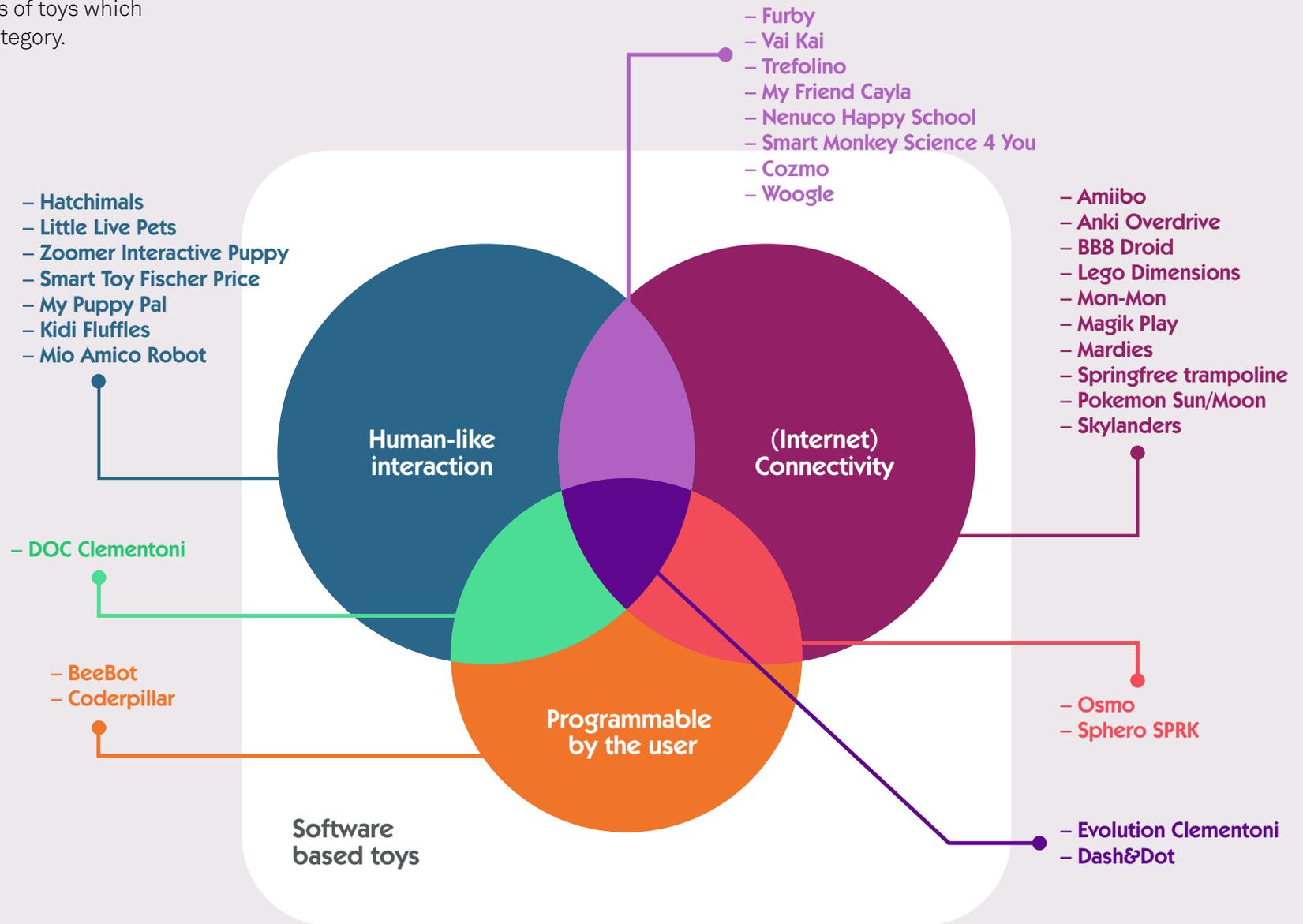3. relate one-on-one to children (Holloway & Green, 2016).

Figure 1

Figure 1[1] indicates the features of toys belonging to the IoToys world.

Human-like interaction

(Internet) Connectivity

Programmable by the user

Software based toys

Figure 2

Figure 2 outlines the kinds of toys which might be found in each category.

– Furby
– Vai Kai
– Trefolino
– My Friend Cayla
– Nenuco Happy School
– Smart Monkey Science 4 You
– Cozmo
– Woogle

– Hatchimals
– Little Live Pets
– Zoomer Interactive Puppy
– Smart Toy Fischer Price
– My Puppy Pal
– Kidi Fluffles
– Mio Amico Robot

– Amiibo
– Anki Overdrive
– BB8 Droid
– Lego Dimensions
– Mon-Mon
– Magik Play
– Mardies
– Springfree trampoline
– Pokemon Sun/Moon
– Skylanders

Human-like interaction

(Internet) Connectivity

– DOC Clementoni

Programmable by the user

– BeeBot
– Coderpillar

– Osmo
– Sphero SPRK

Software based toys

– Evolution Clementoni
– Dash&Dot

[1] From: Mascheroni. G. & Holloway, D. (eds) (2017). The Internet of Toys: A Report on Media and Social Discourses around Young Children and IoToys. DigiLitEY: http://digilitey.eu/wp-content/uploads/2017/01/IoToys-June-2017-reduced.pdf

Risks that have been identified in the use of some of these toys include:

— Lack of personal safety: some IoToys allow unauthorised Bluetooth access from any smartphone or tablet within 50 metres, thus potentially allowing strangers in the immediate surroundings to talk to children.

— Non-transparent and illegal terms and conditions: some toys require consent to terms and conditions being changed without further notice, and to personal data being shared with third parties and used for targeted marketing.

— Lack of control over access to personal data: some toys encourage children to disclose their personal information (the name of their parents, home address and school, etc.) which is potentially later shared with other third parties without parental consent.

— Hidden advertising: pre-installed phrases sponsor specific products and media content.

Some media outlets also have raised questions about socialisation, suggesting children who use the toys may interact with others less, and others have suggested that play may be more limited if it is directed by the toy.

Opportunities that arise in the use of such toys include: creativity, digital skills, motivation to learn and knowledge gains. The literature has also reported that smart toys may enhance sociability and collaborative play, and even physical activity (see Chaudron et al., 92016) and Mascheroni and Holloway (2017), for further discussions on the risks and opportunities related to the use of IoToys).

At present, we would suggest that there is insufficient research to indicate if there are significant benefits or harms in the use of these toys, and that further research needs to be undertaken before summative judgements can be made. In the meantime, we advocate the following as sensible steps to be taken by policy-makers, the toy industry, and parents:

Policy Makers

— Policy makers need to ensure that regulatory frameworks are in place that ensure data from the toys cannot be used in ways that are detrimental to individual children.

— Governments should dedicate some of the science budget to research on children's use of IoToys, given their rising popularity.

Toy Industry

— The toy industry should make the terms and conditions that users need to agree to as simple and clear to understand as possible.

— There should be greater collaboration between the industry and academic researchers in order to ensure toys are subject to rigorous testing before launch, and that toys' designs are based on an understanding of up-to-date research on child development.

Parents

— Parents should take the time to look carefully at ant IoToys they buy, ensuring that they understand the privacy issues and that they are clear about if and how their children's data will be used.

— Parents should be wary of sharing their child's personal details in registration forms. They should only complete the 'required' fields of such forms.

References

Chaudron, S., Di Gioia, R., Gemo, M., Holloway, D., Marsh, J., Mascheroni, G., . . . Yamada-Rice, D. (2017). Kaleidoscope on the Internet of Toys — safety, security, privacy and societal insights. Luxembourg: Publications Office of the European Union. Accessed at: http://publications.jrc.ec.europa.eu/repository/bitstream/JRC105061/jrc105061_ final_online.pdf

Mascheroni. G. & Holloway, D. (eds) (2017). The Internet of Toys: A Report on Media and Social Discourses around Young Children and IoToys. DigiLitEY: http://digilitey.eu/wp-content/uploads/2017/01/IoToys-June-2017-reduced.pdf

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