FAB6

Industrial [R]evolution

The Sixth International Fab Lab Forum and Symposium on Digital Fabrication

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Overview of tracks times and locations

Monday August 16		Amsterdam				Utrecht			Groningen		Den Haag		Amersfoort
		R1	P1	T1	O1								
Parallel Tracks	13.30-15.30	Analytical Instrumentation for Healthcare, Agriculture, Environment	Community Communications and Computing	Building Communities	Becoming a Fab Lab								

Tuesday, August 17		Amsterdam				Utrecht			Groningen		Den Haag		Amersfoort
						P2	R2		O2	T2			T3
Parallel Tracks	10.30-12.30					Fab Lab 2.0 Hardware and Software	Wide-Area Communications and Computation Infrastructure		Outreach	Fab Lab Management			Reusing Waste Materials
						R3	P3		O3	T4			T3
Parallel Tracks	13.30-15.30					Digital Fabrication Processes and Workflows	Large-Scale Rapid-Prototyping with Green(er) Composites		Business	CAD, CAM, Scanning			Reusing Waste Materials

Wednesday, August 18		Amsterdam				Utrecht			Groningen		Den Haag		Amersfoort
		O5	T5	P5		R4	T7	P4	P6		O4	T6	T8
Parallel Tracks	10.30-12.30	Open Design and IP	Computer-Controlled Cutting	Fab Lab Sharing System		Local Energy Conversion and Storage	Building Rapid Prototyping Machines	Embedded Code Development Tools	Prosthetics		Education	Molding and Casting	Open Technologies
		P8	T9	P5		R5	T7	P7	P6		O4	P9	T8
Parallel Tracks	13.30-15.30	(Un)limited Design Contest	Micro-Controller Circuits	Fab Lab Sharing System		UAVs, Remote Sensing	Building Rapid Prototyping Machines	Micropower and Big Bird	Prosthetics		Education	(Un)limited Design Contest	Open Technologies

Colour scheme				
tutorial	projects	operations	research	

Programme Overview

Sunday, August 15

19:00-22:00: *Opening Dinner at the Instructables Restaurant* — *Amsterdam Tolhuistuin*

Monday, August 16

Amsterdam Fab Lab (Waag)

08:00-09:00: *Registration*

09:00-12:00: *Morning Meeting*

12:00-13:30: *Lunch*

13:30-15:30: *Parallel Tracks (descriptions pages 7 ff.)*

Projects
- P1 *Community Communications and Computing*

Research
- R1 *Analytical Instrumentation for Healthcare, Agriculture, and the Environment*

Tutorial
- T1 *Building Communities*

Operations
- O1 *Becoming a Fab Lab*

15:30-18:00: *Fab Foo*

19:00-20:00: *Drinks*

19:00-22:00: *Dinner*

Tuesday, August 17

08:30-09:30: *Morning Meeting* — *Amsterdam Fab Lab (Waag)*

09:30-10:30: *Travel to Local Labs*

10:30-12:30: *Parallel Tracks* (*descriptions p. 7 ff.)*

Tutorials
- T2 *Fab Lab Management* — *Groningen**
- T3 *Reusing Waste Materials* — *Amersfoort*

Projects:
- P2 *Fab Lab 2.0 Hardware and Software* — *Utrecht*

Operations:
- O2 *Outreach* — *Groningen**

Research:
- R2 *Wide-Area Communications and Computation Infrastructure* — *Utrecht*

12:30-13:30: *Lunch*

13:30-15:30: *Parallel Tracks (descriptions p. 7 ff.)*

Tutorials:
- T4 *CAD, CAM, Scanning* — *Groningen**
- T3 *Reusing Waste Materials (contd.)* — *Amersfoort*

Projects:
- P3 *Large-Scale Rapid-Prototyping with Green(er) Composites* — *Utrecht*

Operations:
- O3 *Business* — *Groningen**

Research:
- R3 *Digital Fabrication Processes and Workflows* — *Utrecht*

15:30-17:00: *Fab Foo on location*

18:00-20:00: *Dinner*
20:00-21:00: *Travel time*
21:00: optional meet-up Amsterdam

* *NOTE:*

Tracks in Groningen run to a slightly different schedule due to longer travel time from Amsterdam with presentations starting on the bus out and Fab Foo after dinner on the bus back.

Wednesday, August 18

08:30-09:30: *Morning Meeting* — *Amsterdam Fab Lab (Waag)*

09:30-10:30: *Travel to Local Labs*

10:30-12:30: *Parallel Tracks (descriptions p. 7 ff.)*

Tutorials:

T5	*Computer Controlled Cutting*	*Amsterdam*
T6	*Molding and Casting*	*Den Haag*
T7	*Building Rapid Prototyping Machines*	*Utrecht*
T8	*Open Technologies*	*Amersfoort*

Projects:

P4	*Embedded Code Development Tools*	*Utrecht*
P5	*Fab Lab Sharing System*	*Amsterdam*
P6	*Prosthetics*	*Groningen**

Operations:

O4	*Education*	*Den Haag*
O5	*Open Design and IP*	*Amsterdam*

Research:

R4	*Local Energy Conversion and Storage*	*Utrecht*

12:30-13:30: *Lunch*

13:30-15:30: *Parallel Tracks (descriptions see p 8 ff.)*

Tutorials:

T9	*Microcontroller Circuits*	*Amsterdam*
T7	*Building Rapid Prototyping Machines (contd.)*	*Utrecht*
T8	*Open Technologies (contd.)*	*Amersfoort*

Projects:

P7	*Micro Power and Big Bird*	*Utrecht*
P8	*(U)nlimited Design Contest (on 2 locations)*	*Amsterdam*
P9		*Den Haag*
P5	*Fab Lab Sharing System (contd.)*	*Amsterdam*
P6	*Prosthetics (contd.)*	*Groningen**

Operations:

O4	*Education (contd.)*	*Den Haag*

Research:

R5	*UAVs, Remote Sensing*	*Utrecht*

15:30-17:00: *Fab Foo on location*

18:00-20:00: *Dinner*
20:00-21:00: *Travel time*
21:00: optional meet-up Amsterdam

* *Groningen: see footnote page 2*

Thursday, August 19

Symposium on Digital Fabrication
Royal Dutch Academy of Arts and Sciences (KNAW) *Amsterdam KNAW*

08:30-09:00: *Registration*

09:00-10:30: *Principles*

Ron Weiss (video): *BioFAB*
Adam Arkin (video): *Programmed Assembly of Cellular Networks*
Josepn Jackson (video): *DIY Biology*
Mitch Zakin (video): *InfoChemisty*

10:30-11:00: *Break*

11:00-12:30: *Practices*

Hod Lipson: *Rapid Assemblers*
Jonathan Ward: *Additive Assembly of Functional Digital Materials*
Bre Pettis (video): *The Robot that Sharing Built*
Adrian Bowyer (video), Erik de Bruijn, Rhys Jones: *The Law and the Prophets/Profits*

12:30-14:00 *Lunch*

14:00-15:30: *Applications*

Larry Sass: *Instant Fab Lab*
Vicente Guallart: *FabLab House*
Matthias Kohler: *Digital Materiality*
Dale Dougherty: *Makers*

15:30-16:00: *Break*

16:00-17:30: *Implications*

Rep. Bill Foster, Doug Platz (video): *Infrastructure*
Kamau Gachigi: *Development*
Tim Lynch, Gorka Espiau, Pat Colgan: *Conflict*
Jan Morrison (video): *Education*

17:30: *Fab Academy Graduation*

19:00-21:00: *Exhibition and Open House* *Amsterdam Fab Lab (Waag)*

Friday, August 20

Amsterdam
Fab Lab (Waag)

09:00-12:00: *Fab Ecosystem*

Fab Lab 2.0
Projects
Education
Operations
Rights and Responsibilities
Business
Sustainability

12:00-14:00: *Fab Foo (Lunch)*

14:00-15:30: *Conclusion*

16:00-19:00 *Small Ships*

Fab Lab Boat Design Competition

Closing

That night, there are also various events on the “Tall Ships” programme (Sail Amsterdam 2010), for details see http://english.sail2010.nl/

Tracks Descriptions

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Tutorials

T1 Building Communities (multi-workshop) T1

Time / Place	Mon 16, pm, Waag Amsterdam, TA
Host	**Ton Zijlstra – <ton.zijlstra@gmail.com>**
Topic	**Community Building (simultaneous workshops)**
Presentor(s)	Ton Zijlstra – <ton.zijlstra@gmail.com>
Content	The Benelux has a large density of FabLab initiatives (8 operational labs, about 11 in various stages of development, all within 2.5 hrs driving distance). This gives us unique opportunities. This workshop will address the existing building blocks of how to start a community around the fab lab, and around the local fab lab network, the challenges we face in doing so, and it will suggest and discuss possible solutions to these challenges.
Topic	**Fabfolk**
Presentor(s)	Amon Millner – <millner@media.mit.edu> Smari McCarthy– <smari@fabfolk.com>
Content	What we are doing, planning, where we are in the process, what are needs of community, what's next? To be continued during Fab Foo.
Topic	**Creative Pool**
Presentor(s)	Karsten Joost – <karsten_joost@web.de>
Content	Proposal for an exchange platform for teachers/instructors who work with/in Fab Labs and who would want to share their expertise with other labs (informal education).
Topic	**Creating the User Experience**
Presentor(s)	Markus Edgar Hormeß – <markus@workplayexperience.com>
Content	Fab labs can be seen as a whole bunch of complex services to Fab Lab users. Just like in product development any service experience, too, should be consciously designed with the needs of the users in mind. In this workshop we look at some of the practical tools from the discipline of service and experience design that allow us to better understand how a user experiences the Fab Lab, to develop a fresh look at what they need or want and to create an user experience that makes them go WOW!

T2 Fab Lab Management T2

Time / Place: Tue 17, am, Fab Lab Groningen

Presentor(s): Tomas Diez (Barcelona) – <tomasdiez@iaac.net>
Frosti Gíslason (Iceland) – <frosti@nmi.is>
Scott Zitek (Lorain County, Ohio) – <rzitek@lorainccc.edu>
Jim Janisse (Fox Valley, Wisconsin) – <janisse@fvtc.edu>
Alex Schaub (Amsterdam) – <Alex@waag.org>

Content: For organizations in process of building their fab labs, here are best practices from established labs in the network.

T3 Reusing Waste Materials T3

Time / Place: Tue 17, all day, FabTruck at Fab Lab Amersfoort

Presentor(s): Jaap Vermaas – <jaap@tuxic.nl>

Content: Fab labs are a perfect setting for the development and making use of new sustainable solutions and cradle-to-cradle technology. This session will focus on recycling of local waste materials. Topics we aim to cover:

- Plastic characteristics and identification, do's and don'ts.
- Edwin Dertien converts 2d printers into a 3d printer: 3x inkjetprinters + 1x ottantotto = 1xyz-table + 1kg plasticgranulate.
- Diana Wildschut demonstrates the ironing together of waste plastic into sheets which can be used in a laser cutter.
- Harmen Zijp shows a prototype pyrolysis gasifier made from an old satelite dish and some chips bags, converting wood waste and sawdust into fuel and biochar.
- Optional: demonstration of the delftreprap.

T4 CAD, CAM, Scanning T4

Time / Place: Tue 17, pm, FabLab Groningen

Presentor(s): tba.

Content: Using cad.py as process software/tools.

T5 Computer Controlled Cutting T5

Time / Place	Wed 18, am, Waag Amsterdam
Presentor(s)	Shawn Wallace – <shawn@as220.org>
Content	Process tutorial covering file creation to file conversion to fabrication on laser cutter, vinyl cutter, ShopBot.

T6 Molding and Casting T6

Time / Place	Wed 18, am, CabFabLab Den Haag
Presentor(s)	Kenny Cheung – <kenny.cheung@cba.mit.edu>
Content	How to make molds and cast using cad.py, modela, in wax, rubber, and high resolution casting materials.

T7 Building Rapid Prototyping Machines T7

Time / Place	Wed 18, all day, Protospace Utrecht
Presentor(s)	Siert Wijnia – <siert@protospace.nl>
Content	Hands on construction of rapid prototyping machines.

T8 Open Technologies (Open = Open) T8

Time / Place: Wed 18, all day, Fab Truck at Fab Lab Amersfoort

Presentor(s): Jaap Vermaas – <jaap@tuxic.nl>

Content: The Fablab concept holds a promise for the development of cheap and publicly available technology and design once open source principles are put to work. However, most machines depend on commercial software, and sharing design within the Fab community is not (yet) made easy. This session will address the following topics:

- Jaap Vermaas gives an overview of available Free and Open Source Software for the Fablab community.
- Edwin Dertien presents Ottantotto, a $10 arduino alternative which has become the workhorse of the no budget movement.
- Harmen Zijp calls for input on an online sharing tool for the fab community: what is needed for sharing design in a useful way?
- Open 3D-hardware: exchange of experience with various open designs of reprap and milling equipment.

T9 Microcontroller Circuits T9

Time / Place	Wed 18, pm, Amsterdam
Presentor(s)	Ed Baafi – <ed@modk.it> Dhananjay Gadre – <dhananjay.gadre@gmail.com>
Content	Process of making Fab Lab Hello World circuits. Hands-on tutorial covering circuit design tools, milling board on Modela, stuffing and programming your board.

Projects

P1 Community Communications and Computing P1

Time / Place	Mon 16, pm, Waag Amsterdam, Fab Lab
Convenor(s)	Keith Berkoben – <berkoben@fabfolk.com> David Cranor – <cranor@mit.edu> Amy Sun – <amy.sun@cba.mit.edu>
Content	FabFi, antennae and router; thin clients; state of the art, determine needs, next steps and next test sites.

P2 Fab Lab 2.0 Hardware and Software P2

Time / Place	Tue 17, am, Protospace Utrecht
Convenor(s)	David Carr – <dc@dcarr.org> Neil Gershenfeld – <neil.gershenfeld@cba.mit.edu> Ilan Moyer – <imoyer@mit.edu> Jonathan Ward – <ward.jonathan@gmail.com>
Content	Machines that make machines, Cad.py 2.0.

P3 Large-Scale Rapid-Prototyping with Green(er) Composites P3

Time / Place	Tue 17, pm, CabFabLab Den Haag
Convenor(s)	Nadya Peek – <nadya.peek@cba.mit.edu>
Content	Large scale rapid prototyping with green(er) composites looks at how using digital fabrication tools for making molds and jigs for composite lay-up allows the fabrication of strong and lightweight parts without harm to the maker and with less impact on the environment. Think laser-cut cardboard mold for a bamboo-soybean toy plane.

P4 Embedded Code Development Tools P4

Time / Place	Wed 18, am, Protospace Utrecht
Convenor(s)	Ed Baafi – <ed@modk.it> David Cranor – <cranor@mit.edu> Dhananjay Gadre – <dhananjay.gadre@gmail.com>
Content	Current state of research and projects, some active development, establish near term goals.

P5 Fab Lab Sharing System P5

Time / Place	Wed 18, all day, Waag Amsterdam
Convenor(s)	Anu Määttä – <anu@protospace.nl> René Bohne – <rene@rene-bohne.de> Alan B. Craig – <acraig@nsa.illinois.edu>
Content	Creating an online system for sharing files, project collaboration, business platforms and more – outcomes will be a research proposal and consolidation of current efforts.

P6 Prosthetics P6

Time / Place	Wed 18, all day, Groningen
Convenor(s)	Alex Schaub – <alex@waag.org> Nadya Peek – <nadya.peek@cba.mit.edu>
Content	Anyone can imagine how poor a one-size-fits-all prosthetic limb must fit. And yet how does one make a limb which is as flexible as a human limb and still does not cost an arm and a leg? Personal fabrication enabled by digital tools opens a great deal of possibility for prosthetics and orthotics. What are ways doctors, engineers and patients can work together and make low-cost but high-tech prosthetics for individuals? What does this kind of research mean and require for and from the Fab community? Includes a visit to the Human Movement Sciences at the University Medical Center Groningen.

P7 Micropower and Big Bird P7

Time / Place	Wed 18, pm, Fab Lab Groningen?
Convenor(s)	Amy Sun – <amy.sun@cba.mit.edu> Siert Wijnia – <siert@fablab.nl>
Content	Windmills and turbines and making them, a grassroots approach to global infrastructure challenges. Solar Evaporative Water Purification, Transport and Energy Harvesting.

P8 P9 (U)nlimited Design Contest P8 P9

Time / Place	Wed 18, pm, Waag Amsterdam and CabFabLab Den Haag
Convenor(s)	Bas van Abel, Matt Cottam – <bas@waag.org, matt@tellart.com> (Amsterdam) Xander Gregorowitsch – <xander@cabfablab.nl> (Den Haag)
Content	For the second time this year, the (Un)limited Design Contest invites open design submissions from Fab Labs and every designer. These two slots give participants the opportunity to work on their own submissions.

Operations

O1 Becoming a Fab Lab O1

Time / Place	Mon 16, pm, Waag Amsterdam, South Lab
Presentor(s)	Sherry Lassiter – <sherry.lassiter@cba.mit.edu> Klaas Hernamdt – <klaas@waag.org> Haakon Karlsen jr – <haakon@fablab.no>
Content	What defines a fab lab? Is it a brand? Do we protect the brand? How? Are there levels of membership: such as junior, senior? So many new labs are coming up, and they want to know what are the rights of passage. Can we come up with rights of passage?

O2 Outreach (multi-workshop) O2

Time / Place	Tue 17, am, Fab Lab Groningen
Host	**Klaas Hernamdt – <klaas@waag.org>**
Topic	**Fab Lab Outreach: Labs Sponsoring Labs**
Presentor(s)	Klaas Hernamdt – <klaas@waag.org> Haakon Karlsen jr – <haakon@fablab.no> Frosti Gislason – <frosti@nmi.is> Betty Jo Barrett – <bb1@ad.uiuc.edu>
Content	Interesting phenomenon appearing in the network, that of labs sponsoring labs in foreign locations, do we formalize the process and find a way support it in terms of capacity?
Topic	**Fab Lab Ecosystem: Operational Capacity**
Presentor(s)	Sherry Lassiter NFLN – <sherry.lassiter@cba.mit.edu> Jim Janisse and David Richardson USFLN – <janisse@fvtc.edu, drichard@lorainccc.edu> Dhananjay Gadre IFLN – <dhananjay.gadre@gmail.com> Klaas Hernamdt Netherlands – <klaas@waag.org> Peter Troxler Netherlands/Switzerland – <trox@fabfolk.com>
Content	Operational instruments (national networks, US network, regional Fab Foundations); operational infrastructure, web presence; (NFLN, Fab Foundations, etc.); building a network of Gurus for worldwide support.

Topic	**Fab Fund: Online Games for Enterpreneurial Literacy**
Presentor(s)	John Boeck – <john@elinemedia.com>
Content	We are seeking to build technical and entrepreneurial literacy in kids & students using online games. We are combining the games with real entrepreneurial activity and FabLab activities .

O3 Business (multi-workshop) O3

Time / Place	Tue 17, pm, Fab Lab Groningen
Hosts	**Peter Troxler – <trox@fabfolk.com>** **Eddie Kirby – <EddieK@manufacturinginstitute.co.uk**
Topic	**Fab Business Platform**
Presentor(s)	John Boeck (Fab Fund) – <john@elinemedia.com> Eddie Kirby (Manchester Fab Lab) – <EddieK@manufacturinginstitute.co.uk> Peter Troxler (Swiss Fab Lab) – <trox@fabfolk.com>
Content	A plan for leveraging the global expertise in the network to support local business innovation.
Topic	**Ideas for Business Models: Best Practices**
Presentor(s)	Peter Troxler – <trox@fabfolk.com>
Content	We will discuss ways of developing business models, look at a "business model canvas" as a template to develop business models. We will be reporting on two external studies into Fab Lab business models carried out in early 2010.
Topic	**Innovation Workshops, Experience Prototyping, Service Design**
Presentor(s)	Bas van Abel – <bas@waag.org>
Content	A few organizations here are interested in fab labs as platforms for new business models, and incorporating entrepreneurship and business skills and experts in the fab lab concept.
Topic	**Starting Your Own Fab Lab**
Presentor(s)	Betty Jo Barrett (Univ. of Illinois, Urbana) – <bb1@ad.uiuc.edu> David Richardson (Lorain County, Ohio) – <drichard@lorainccc.edu> Ton Zijlstra – <ton.zijlstra@gmail.com>
Content	For labs in the planning stages. Stakeholders, purchasing, site selection, installation, management, budget: best practices from the network.

O4 Education (multi-workshop) O4

Time / Place	Wed 18, all day, CabFabLab Den Haag
Host	**Sherry Lassiter – <lass@cba.mit.edu>**
Topic	**Fabacademy**
Presentor(s)	Tomas Diez – <tomasdiez@iaac.net> Sherry Lassiter – <lass@cba.mit.edu>
Content	The road from prototype to operational. To be continued in Fab Foo.
Topic	**Professional Development for teachers and fab managers**
Presentor(s)	David Richardson (Lorain County, Ohio) – <drichard@lorainccc.edu> Nick Digiorgio (MC2STEM High School, Cleveland Ohio) – <Nicholas.Digiorgio@cmsdnet.net> Tomas Diez – <tomasdiez@iaac.net> Sherry Lassiter – <sherry.lassiter@cba.mit.edu>
Content	Can we leverage the fab academy or other means to bring professional development to teachers, new fab lab managers, and a new cadre of installers/trainers for new labs worldwide.
Topic	**Informal Educational Environment**
Presentor(s)	Makeda Stephenson & Shawn Wallace (Providence AS220) – <makeda@fabfolk.com, shawn@as220.org> Steven Willis (MSI Chicago) – <Steven.willis@msichicago.org> Tomas Diez – <tomasdiez@iaac.net> (assign a fab kids person) Ralik John & Ed Baafi – <ralik@fabfolk.com, ed@modk.it>, Scott Zitek (Lorrain County, Ohio) – <rzitek@lorainccc.edu>
Content	Informal settings and programs, the challenges and successes. How do we evaluate sucess and share results?

Topic	**FabSchool – Formal Education and Curriculum Development**
Presentor(s)	Keimpe de Heer (Creative Learning Lab, Waag) – <keimpe@waag.org> Nick Digiorgio (MC2STEM High School, Cleveland Ohio) Nicholas.Digiorgio@cmsdnet.net Scott Zitek (Lorrain County, Ohio) – < rzitek@lorainccc.edu> Jim Janisse (Fox Valley, Wisconsin) – <janisse@fvtc.edu> Scott Simenson (Century College) – <Scott.Simenson@century.edu> Lindi Mophuti, Tshepiso Monaheng, Bongani Mdluli (South Africa) – <LMophuti@csir.co.za, tshepiso@fabfolk.com, bongani@fabfolk.com>
Content	Current projects at college level and STEM; FabLabs and Creative Education for STEM or STEAM: What do we need? What do we want? How do we get there? International in scope: TIES, Dale Dougherty, etc.
Topic	**Mobile Fab Labs for Education**
Presentor(s)	Nick Digiorgio (MC2STEM High School, Cleveland Ohio) – <Nicholas.Digiorgio@cmsdnet.net Emmanuel Azasoo (Ghana) – azagbey@yahoo.com Lindi Mophuti (South Africa) – <LMophuti@csir.co.za> David Richardson / Scott Zitek (Lorrain County, Ohio) – <drichard@lorainccc.edu, rzitek@Lorainccc.edu> Jaap Vermaas (FabTruck) – <jaap@tuxic.nl>
Content	How to reach a larger student community using a mobile fab lab (Cleveland, Lorrain County, Fox Valley, Century College, South Africa, Netherlands).
Topic	**Education and taking fab labs to non-technical people**
Presentor(s)	Paulo Blikstein – <paulob@stanford.edu>
Content	The Stanford Fab Lab is a special “branch” of the Fab Labs that is particularly keen in education and taking Fab Labs to non-technical people. They have many initiatives in that regard, do a lot of studies on the cognition of “fabing”, and just got funding for a ground-breaking project in Europe.

O5 Open Design and IP O5

Time / Place	Wed 18, am, Waag Amsterdam
Hosts	**Bas van Abel – <bas@waag.org>** **Peter Troxler – <trox@fabfolk.com>**
Presentor(s)	Bas van Abel – <bas@waag.org> Matt Cottam (Tellart) – <matt@tellart.com> Peter Troxler – <trox@fabfolk.com>
Content	The way everything around us is designed, made and distributed will change. This process has both social and technological origins. On the one hand, you have the rapidly growing do-it-yourself (DIY) culture that bases itself on transparency and the sharing of knowledge, and on the other, you have the democratisation of affordable and flexible production technologies that make personal fabrication possible. Together these developments ensure the creation of a global network of producers who can determine a large part of the physical world by making optimal use of knowledge-sharing over the Internet. To make open design possible, not only online community platforms and open access to technology are necessary, but also open licenses that allow guaranteed sharing of knowledge and ideas. In the open design session we will give an overview of all aspects of open design, but most importantly we will put open design into practice by creating new products derived from existing designs. All the new designs will enter the (Un)limited Design Contest.

Research

R1 Analytical Instrumentation for Healthcare, Agriculture, and the Environment R1

Time / Place	Mon 16, pm, Waag Amsterdam, Metselaarsgildekamer
Convenor(s)	Dhananjay Gadre – <dhananjay.gadre@gmail.com> Nadya Peek – <nadya.peek@cba.mit.edu>
Content	Spectroscopies that can be produced and used in the field for applications in healthcare, agriculture, and the environment, including UV-VIS, FTIR, NMR, NQR, ESR, and dielectric relaxation.

R2 Wide-Area Communications and Computation Infrastructure R2

Time / Place	Wed 18, pm, Protospace Utrecht
Convenor(s)	Keith Berkoben – <berkoben@fabfolk.com> David Cranor – <cranor@mit.edu>
Content	Regional scaling of networks, clients, servers, and services.

R3 Digital Fabrication Processes and Workflows R3

Time / Place	Tue 17, pm, Protospace Utrecht
Convenor(s)	David Carr – <dc@dcarr.org> Neil Gershenfeld – <neil.gershenfeld@cba.mit.edu> Ilan Moyer – <imoyer@mit.edu> Jonathan Ward – <ward.jonathan@gmail.com>
Content	Machines, materials, and methods for digital fabrication.

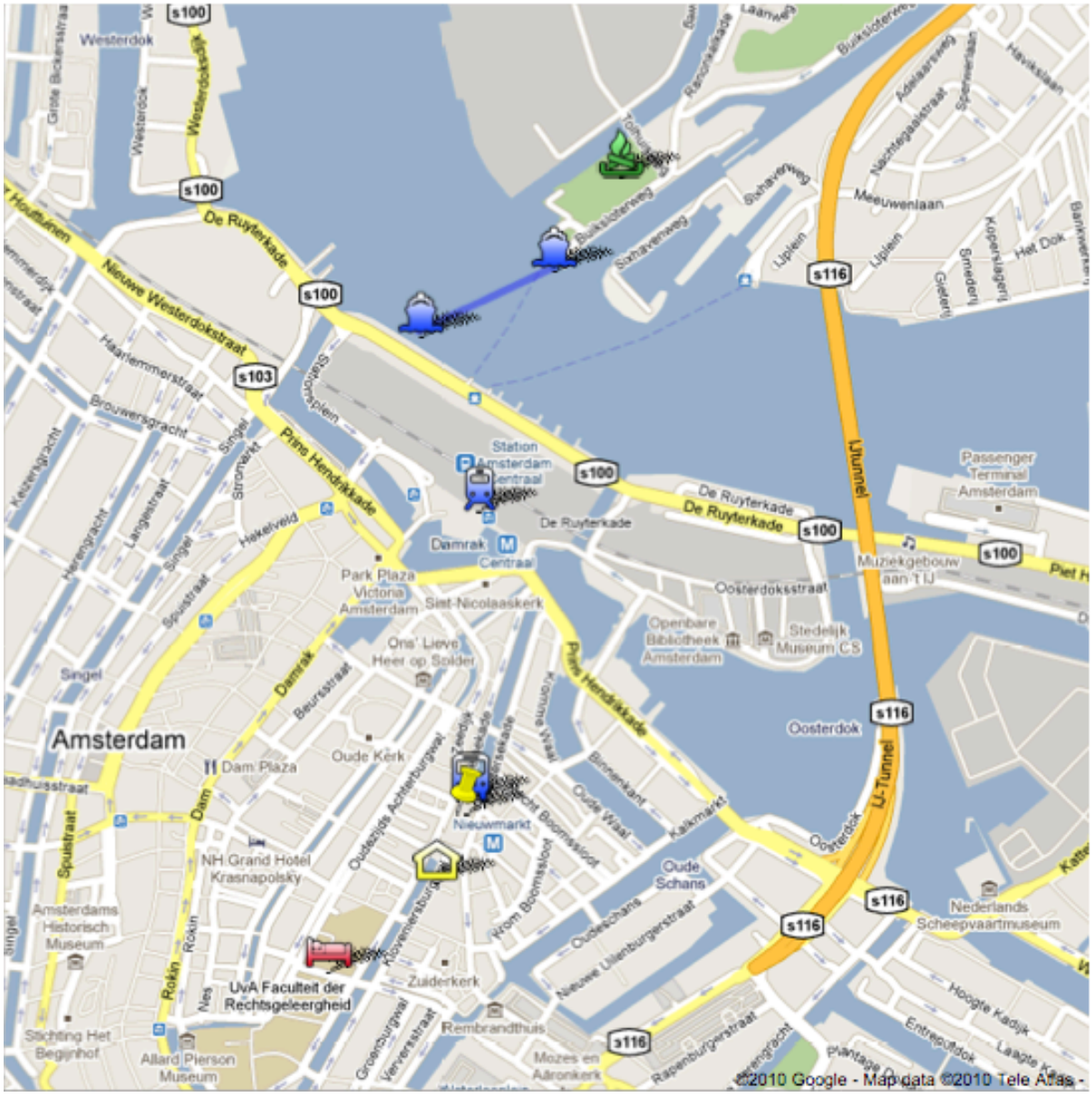
R4 Local Energy Conversion and Storage R4

Time / Place	Wed 18, am, Protospace Utrecht
Convenor(s)	Amy Sun – <amy.sun@cba.mit.edu> Siert Wijnia – <siert@fablab.nl>
Content	Devices for locally producing and storing renewable energy.

R5 UAVs, Remote Sensing R5

Time / Place	Tue 17, am, Protospace Utrecht
Convenor(s)	Dhananjay Gadre – <dhananjay.gadre@gmail.com> Nadya Peek – <nadya.peek@cba.mit.edu> Amy Sun – <amy.sun@cba.mit.edu> Philip Withers – <Philip.Withers@manchester.ac.uk>
Content	Remotely-operated flying and floating platfforms for regional remote sensing and communications.

Map of Amsterdam Locations



Fab Lab Amsterdam (Waag) and bus transfer to other labs

Royal Netherlands Academy of Arts and Sciences (KNAW)

Ferry Connection to Tolhuistuin

Tolhuistuin

Tram 26 from/to Lloyd Hotel

Radisson Blu

Important Telephone Numbers

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Emergency Services: 112

Locations

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Utrecht	+31 30 223 08 75 Nijverheidsweg 16B, 3534 AM Utrecht
Groningen	+31 50 230 45 89 Boterdiep 111, 9712 LM Groningen
Den Haag	+31 70 383 31 88 Caballero Fabriek, unit 74, Saturnusstraat 60, 2516 AH Den Haag
Amersfoort	+31 33 448 16 22 Kleine Koppel 40, 3812 PH Amersfoort

Sponsors:

The Dutch Fab Foundation; The Amsterdam Innovation Motor;
Square One Dr Peter Troxler; SURFnet; 23video

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