



27th annual **INCOSE**
international symposium

Adelaide, Australia

July 15 - 20, 2017



Application to Water Service Project in Kassala, Sudan

Systematic Capacity-Based Risk Assessment

Engineering and Technology Management



ETM director spearheads new smart city project.
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WSU's Online Master of Engineering and Technology Management Degree Program

Washington State University's Engineering and Technology Management (ETM) program prepares engineering and business professionals to make strategic and operational decisions and become leaders in the management of technology. Courses provide practicing engineers with the knowledge, tools, and skills to manage projects, operations, organizations, and people. The ETM program is specifically tailored for professionals who want to advance their careers while still working full time. Live, online lectures are available from anywhere and at anytime.



News and
Announcements

<https://etm.wsu.edu>

Mohammed Babiker
President, Wayira

Luna Magpili, PhD
Associate Professor, WSU

Cesar Pinto, PhD
Associate Professor, ODU

Gnana Bharathy
ASG Group



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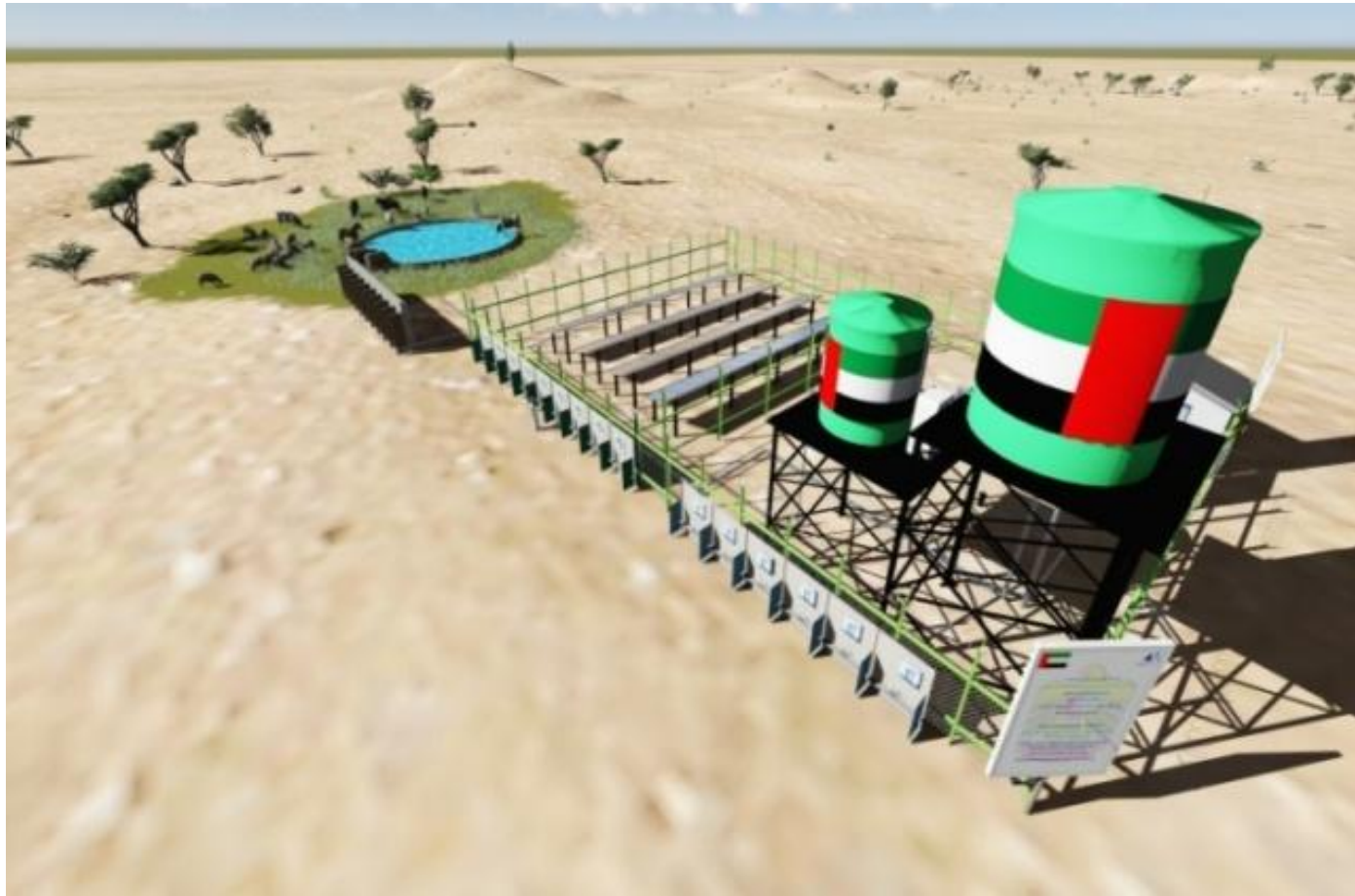
A boy collecting contaminated water, Sudan.
Courtesy of thewaterproject.org



Young woman scooping water
from a hole dug in Darfur, Sudan.
Courtesy of Dabangasudan.org



Water Shortage affecting people
in Darfur, Sudan.
Courtesy of Sudanreeves.org



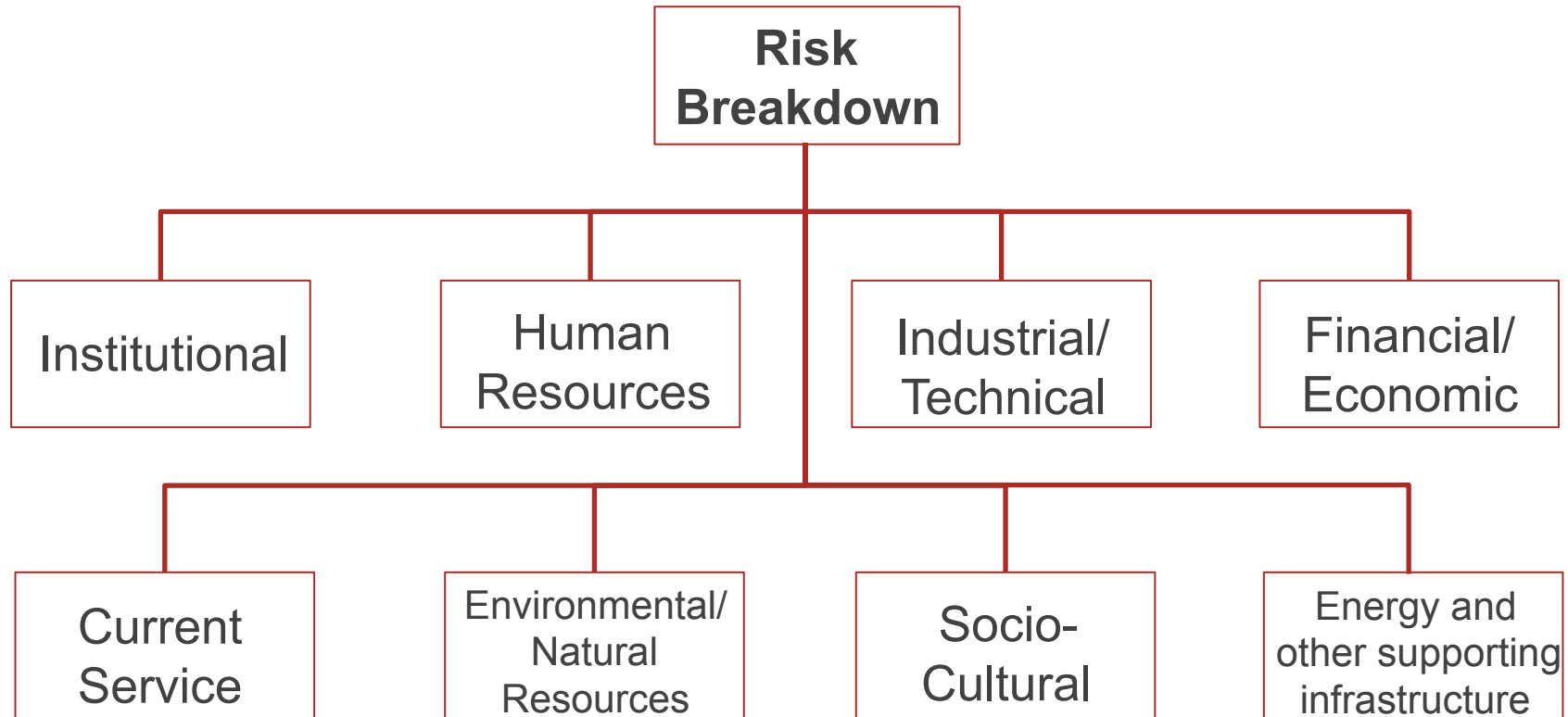
Green Wayira solar powered station 3D View
https://youtu.be/ZMZpobOH_EA



- What is the political situation of the country and how can it affect your project?
- What are the prevalent economic factors and its impact on your project?
- How much importance does culture and local ways have in the your project and its implementation?
- What technological innovations are available and how would it work in the context of your local community?
- Are there any current legislations that regulate the industry or can there be any change in the legislations for the industry?
- What are the environmental concerns for the industry?

Risk Breakdown Structure

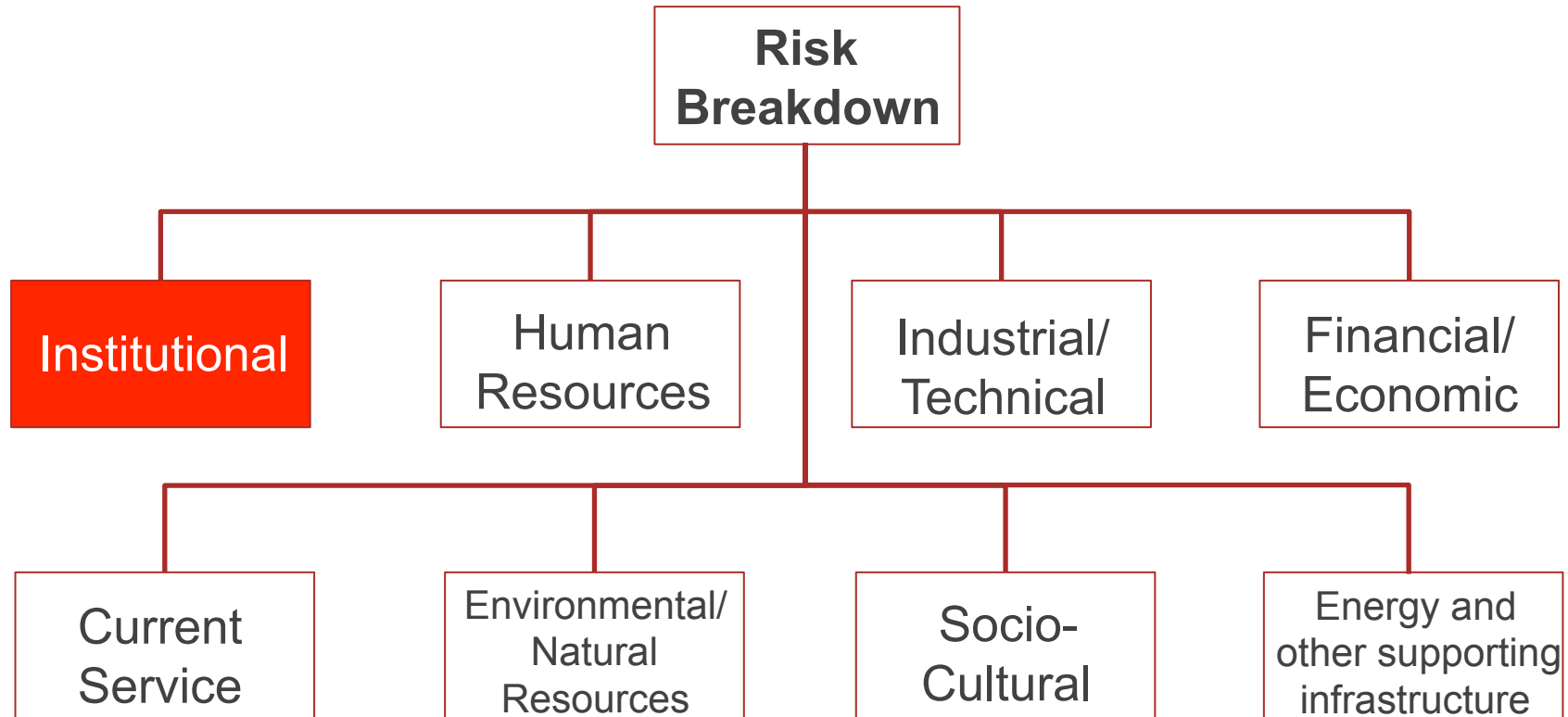
Level1





Risk Breakdown Structure

Level1



Institutional



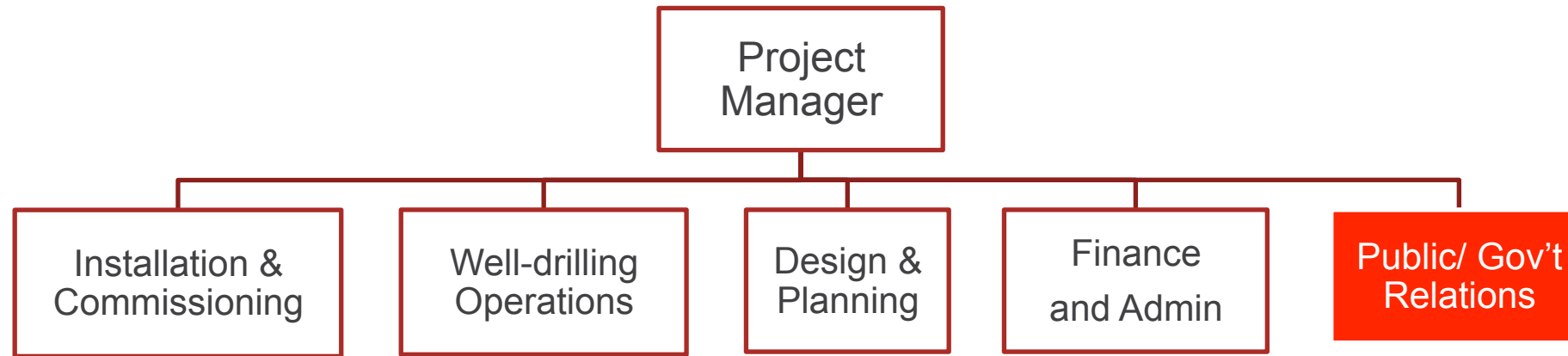
- Institutional enablers refer to the institutional context for legislation, laws, regulation, administration and management of the service.
 - Highly political decision-making
 - Lack or informal laws, regulations and steps involved in a government related processes in Sudan.

Institutional



Shaikh Mohammad Bin Zayed Al Nahyan
and Sudanese President Omar Hassan Al Bashir

Institutional

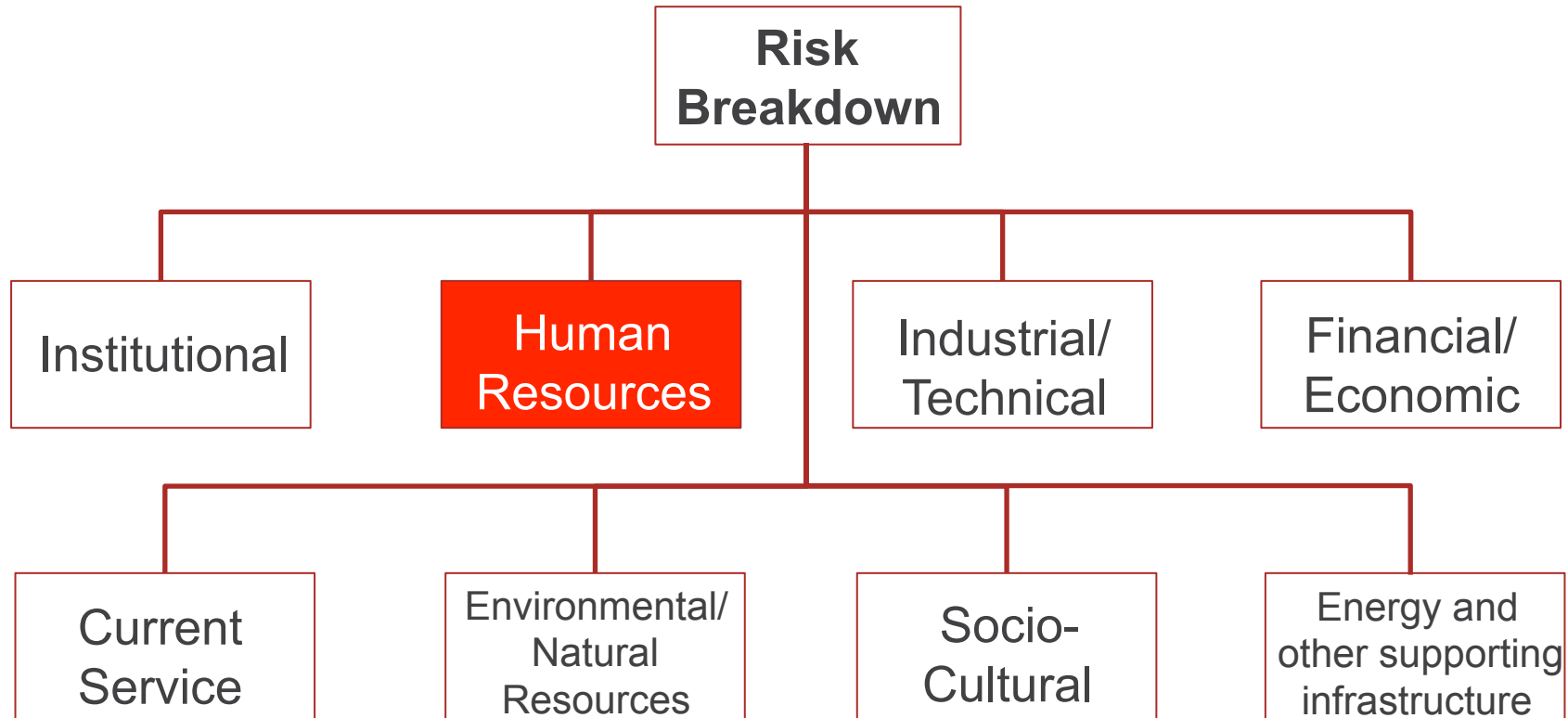


Organizational Structure



Risk Breakdown Structure

Level1



Human Resources



- Human Resources enablers refer to the available human resources, including professional, skilled, and unskilled labor.
 - It is very difficult to hire ready skilled employees.
 - It is hard to train unskilled employees;

Human Resources



- Competitive Packages
- Education and Training
- Benefits/ Profit-sharing

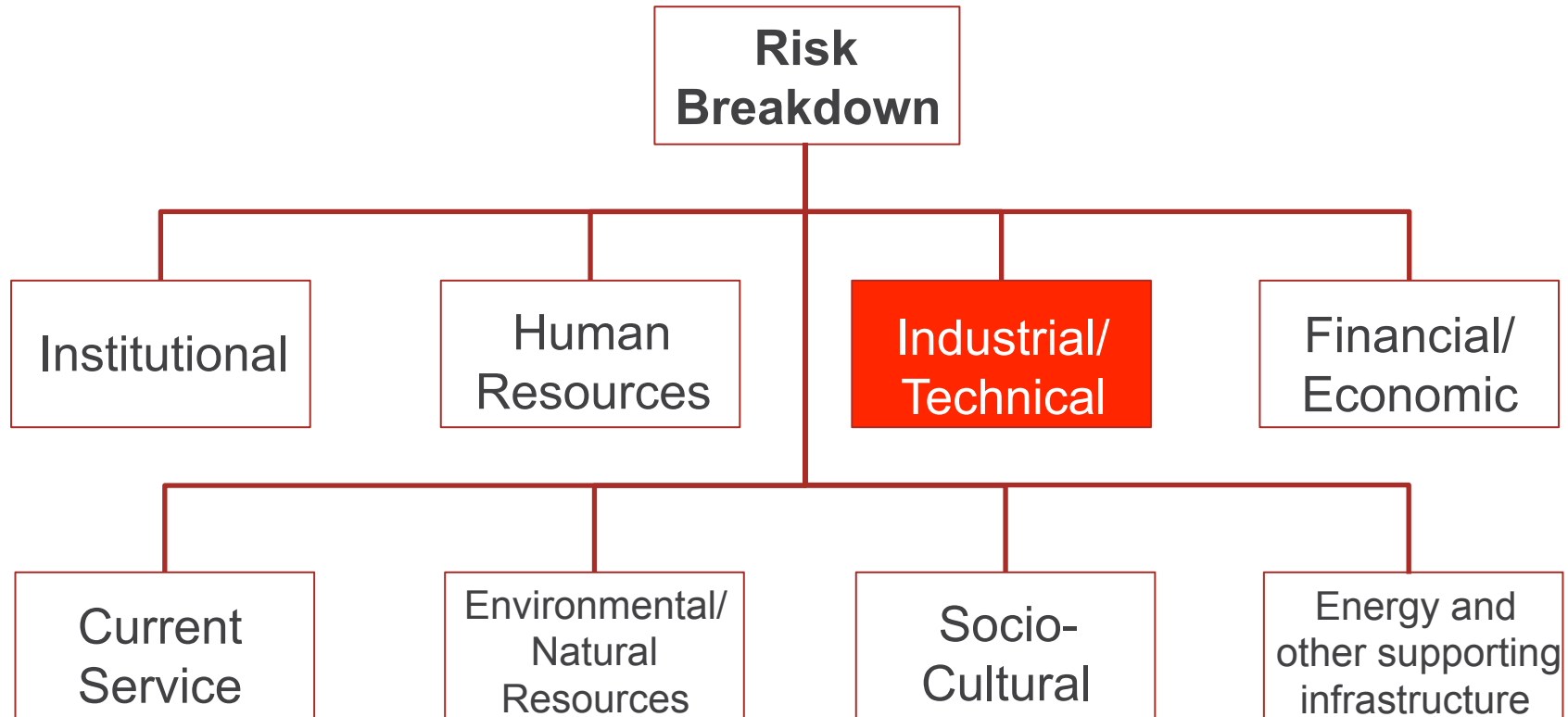


Green Wayira Staff
Courtesy of Green Wayira



Risk Breakdown Structure

Level1




Industrial/ Technical



- Technical considerations such as the availability of spare parts, the supply chain for equipment and materials, support services for maintenance and repair.
 - No/ Lack of local qualified suppliers and subcontractors
 - Lack of availability of materials
 - Poor quality and delay of materials and work
 - Reliance on imports

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 DEPARTMENT OF THE TREASURY
WASHINGTON, D.C. 20220

License No. SU-2014-314079-1

SUDANESE SANCTIONS REGULATIONS

LICENSE

(Granted under the authority of 50 U.S.C. §§ 1601-51, 1701-06, Executive Orders 13067 and 13412, and 31 C.F.R. Parts 501 and 538.)

To: Sun Pumps, Inc.
c/o Providence Trade and Development, LLC
8 Haddon Place
Fort Washington, PA 19034

Attn: Alexander Henkels

1. Based on your request dated November 17, 2014, on behalf of Sun Pumps, Inc., to the Office of Foreign Assets Control (the "Application"), and information otherwise available to the Office of Foreign Assets Control, the transactions and activities delineated herein are hereby authorized.

2. This License is granted upon the statements and representations made in the Application, and is subject to the condition, among others, that the Licensee will comply in all respects with all regulations, rulings, orders and instructions issued by the Secretary of the Treasury under the authority of the International Emergency Economic Powers Act (50 U.S.C. 1701 et seq.), the National Emergencies Act (50 U.S.C. 1601 et seq.), and the terms of this License.

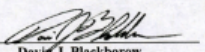
3. The Licensee shall furnish and make available for inspection any relevant information, records or reports requested by the Secretary of the Treasury, or any other duly authorized officer or agency.

4. This License expires on August 31, 2017, is not transferable, is subject to the provisions of Executive Orders 13067 and 13412, and any regulations and rulings issued pursuant thereto, including 31 C.F.R. Parts 501 and 538, and may be revoked or modified at any time in the discretion of the Secretary of the Treasury. If this License was issued as a result of willful misrepresentation on the part of the applicant or his duly authorized agent, it may, in the discretion of the Secretary of the Treasury, be declared void from the date of its issuance or from any other date.

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Issued on behalf of the Secretary of the Treasury:

OFFICE OF FOREIGN ASSETS CONTROL

By 
David J. Blackborow
Assistant Director for Licensing

August 3, 2015
Date

Attention is directed to 18 U.S.C. § 1091, 50 U.S.C. § 1705, and 31 C.F.R. § 538.701 for provisions relating to penalties.

License No. SU-2014-314079-1

Page 2 of 2

SECTION 1 - AUTHORIZATION: (a) Subject to the terms and conditions stated herein, Sun Pumps, Inc. (the "Licensee") is authorized to engage in all transactions necessary to provide U.S.-origin solar powered pump systems and solar powered electrical systems for center pivot irrigation systems to power the Valmont system and other center pivot irrigation systems to Wayira Group for resale to Sudan, as described in the Application.

(b) Payment may be made by cash in advance, open account financing, or letter of credit to be issued by a third-country financial institution that is not a U.S. person, consistent with the provisions of 31 C.F.R. section 538.525.

SECTION 2 - CONDITIONS: (a) This License does not excuse a U.S. person from the need to comply with other provisions of 31 C.F.R. Chapter V, and with other applicable provisions of law. Such requirements include the Export Administration Regulations, 15 C.F.R. Parts 730 et seq., administered by the Department of Commerce, and the International Traffic in Arms Regulations, 22 C.F.R. Parts 120-130, administered by the Department of State.

(b) Prior to any export under this license, the Licensee must obtain and attach to this License a Commerce Commodity Classification (CCATS) and/or a copy of the Department of Commerce, Bureau of Industry and Security license authorizing the export of controlled goods associated with this License.

SECTION 3 - WARNING: (a) This License does not authorize the transfer of any blocked property, the debiting of any blocked account, the entry of any judgment or order that effects a transfer of blocked property, or the execution of any judgment against property blocked pursuant to any Executive order or 31 C.F.R. Chapter V.

(b) Nothing in this License authorizes the transfer to or receipt of funds or other property, directly or indirectly, from any entity or individual whose property or interests in property are blocked pursuant to any Executive order or 31 C.F.R. Chapter V.

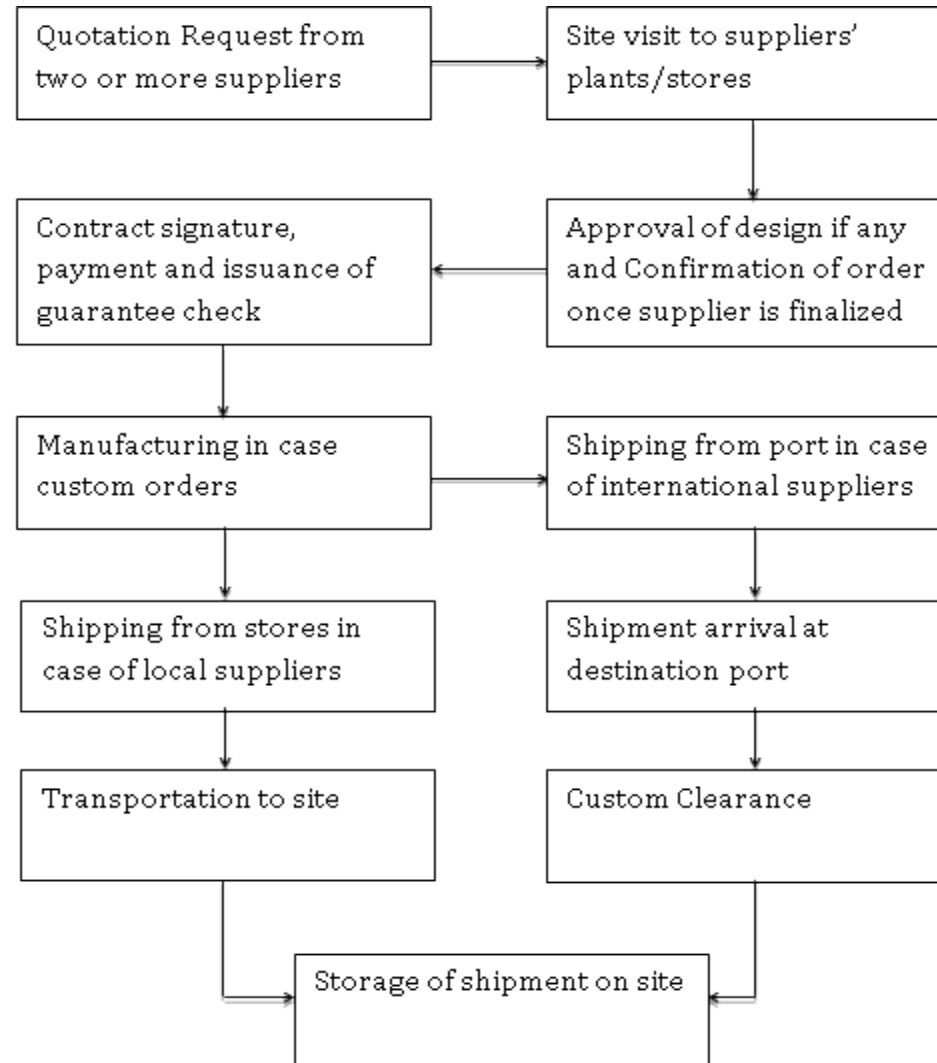
(c) Except as authorized in SECTION 1 of this License, nothing in this License authorizes transactions prohibited by any Executive order or by any other laws and regulations administered by the Office of Foreign Assets Control, including the Sudanese Sanctions Regulations, 31 C.F.R. Part 538.

(d) Any transfers of funds through the U.S. financial system pursuant to the authorization set forth above should reference the number of this License to avoid the blocking or rejection of the transfer.

SECTION 4 - RECORDKEEPING AND REPORTING REQUIREMENTS: In accordance with 31 C.F.R. Part 501, the Licensee is required to keep full and accurate records of all transactions engaged in pursuant to the authorization contained in this License. Such records shall be made available for examination upon demand for at least five years from the date of each transaction. Such records shall clearly demonstrate the applicability of the authorization set forth in SECTION 1 hereof. (Attention is drawn to the recordkeeping, retention and reporting requirements of 31 C.F.R. §§ 501.601 and 501.602.)

SECTION 5 - PRECEDENTIAL EFFECT: The authorization contained in this License is limited to the facts and circumstances specific to the Application.

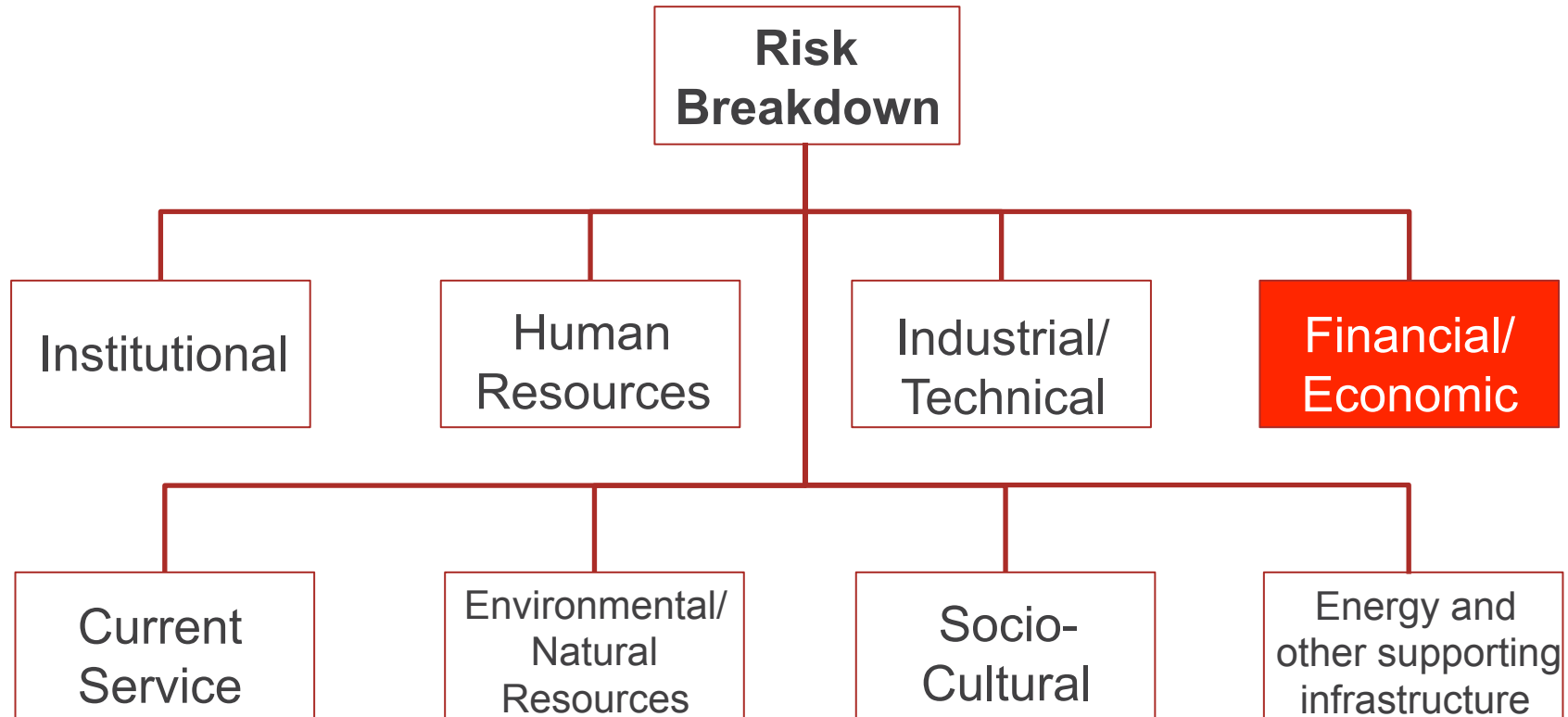
Supply Chain Plan





Risk Breakdown Structure

Level1



Financial / Economic



- Economic/financial mechanisms for securing private service provision, financing capital improvements and operating expenses, and options for collecting fees for service.
 - Delay in Availability of funds
 - Problem with User fees

Environmental



- Environmental/natural resources set constraints on the geography and manner of resource procurement, the rate of resource consumption, and the lifecycle impacts of supplying the service
 - Dry well?
 - Recharge rate
 - Natural disaster

Energy and other support infrastructure



- Energy availability, cost, and reliability determine the types of technology that can be employed
 - Lack of electricity grid

Socio-cultural



- Socio-cultural capacity enablers include such items as cultural trends, demographics, population analytics
 - Tribes

Current Service



- Risk from existing service
 - Informal sector

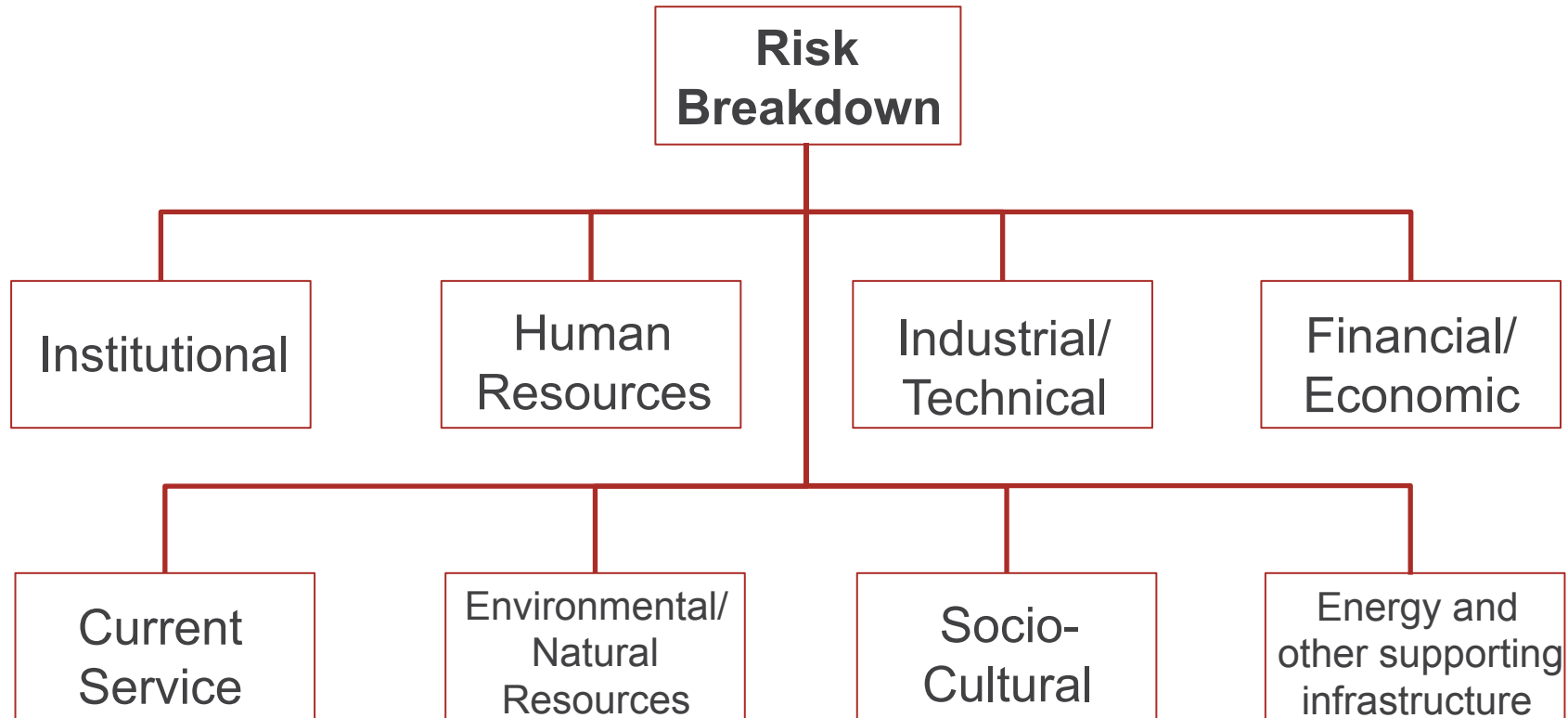
Informal water service
Courtesy of Dabangasudan.org



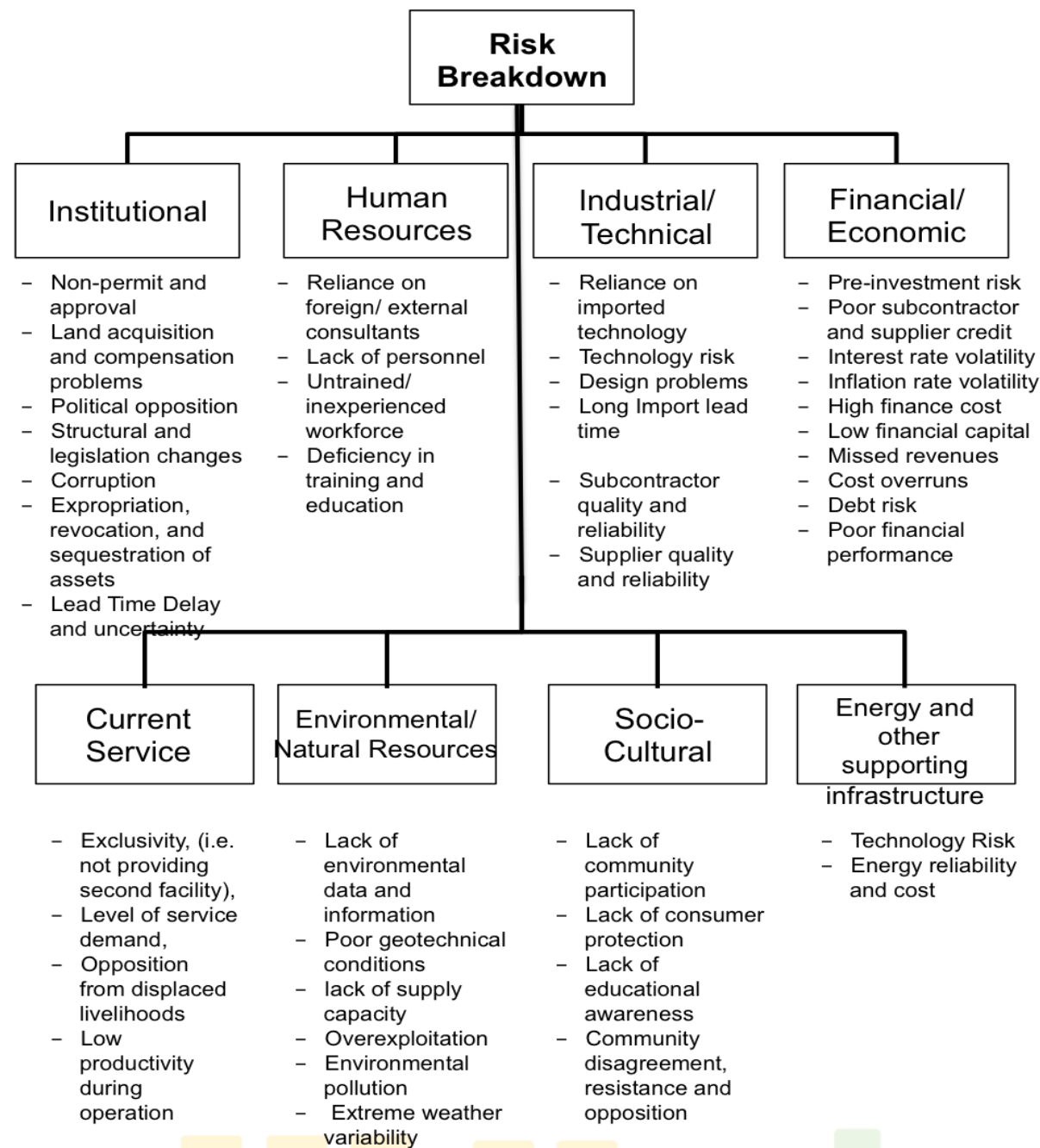


Risk Breakdown Structure

Level1



RBS Level2



Risk Register



Risk #	Risk Statement (Ranked according to the Score)			Category	Probability	Impact	Score P x I	Owner	Response Plan
	Risk	Cause	Effect						
1	Damage in Equipment and Material	Improper packing and handling.	Lead to bad quality of final product and may lead to schedule delays.	Procurement	4	8	32	Project Manager	Follow with supplier to ensure proper packing is done as per the contract
2	Delays from supplier to deliver equipment and materials on time	Delay in manufacturing	Delay on the project schedule	Procurement	3	8	24	Project Manager	Close follow up with the Suppliers.
3	Required fund will not be available on time	Payment delayed from the Client	Lead to delay in project schedule	Financial	3	8	24	Project Sponsor	Availing funds through Wayira resources.
4	Delay in commissioning	Delay from the Subcontractor Side	Lead to delay in the project schedule	Project Management	3	5	15	Project Manager	Early communication with the subcontractors to be ready according to project schedule.
5	Poor quality of equipment and materials	Supplier not Committed to the agreed materials and equipment specs	Lead to low quality of the final product and may lead to schedule delay	Quality	3	5	15	Project Manager	1/A contract to be signed with the supplier to ensure his commitment to the delivery dates required by Wayira 2/Close follow up with supplier to ensure deliverables are done according to the schedule baseline.
Total Project Risk Score (Sum of Risks Scores/Number of Risks)							22		

Status Update



<http://wayira.com/en/index.html>



Community Outreach



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www.incose.org/symp2017



Thank you

Supply Chain Plan



The following selection criteria were used to rank suppliers. Supplier with higher total weight is chosen to supply the item.

#	Criteria	Weight (1 – 100)
Quality aspects:	Vendor's technical specifications, techniques and solutions are meeting the technical requirements of WEC.	40%
Price:	Offered prices by the vendor are meeting the expected price of WEC.	30%
Delivery time:	Proposed delivery time by the vendor is meeting the milestone required by WEC.	10%
Scope:	Vendor's offered product specifications are meeting the customer's requirements.	10%
Previous Experience:	Vendor previous similar experience with the contractual requirements. Or known experience to the company management.	10%
Total		100

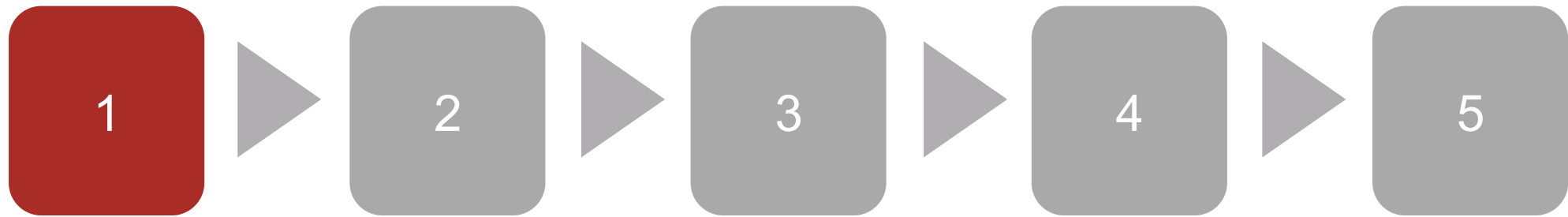
Quality Assurance Plan



- Every operational component of the project is checked, inspected and tested through:
 - Inspections (visual/mechanical/electrical)
 - Functional tests
 - Sample inspection
- Clear metrics that are applicable to all phases of the project are set.







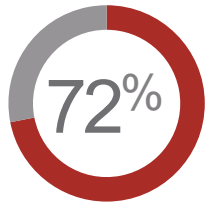
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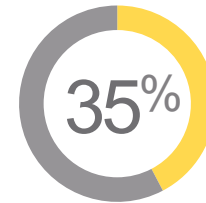
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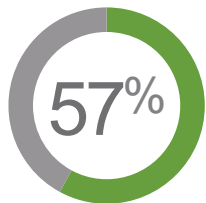
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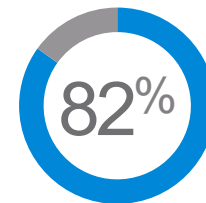
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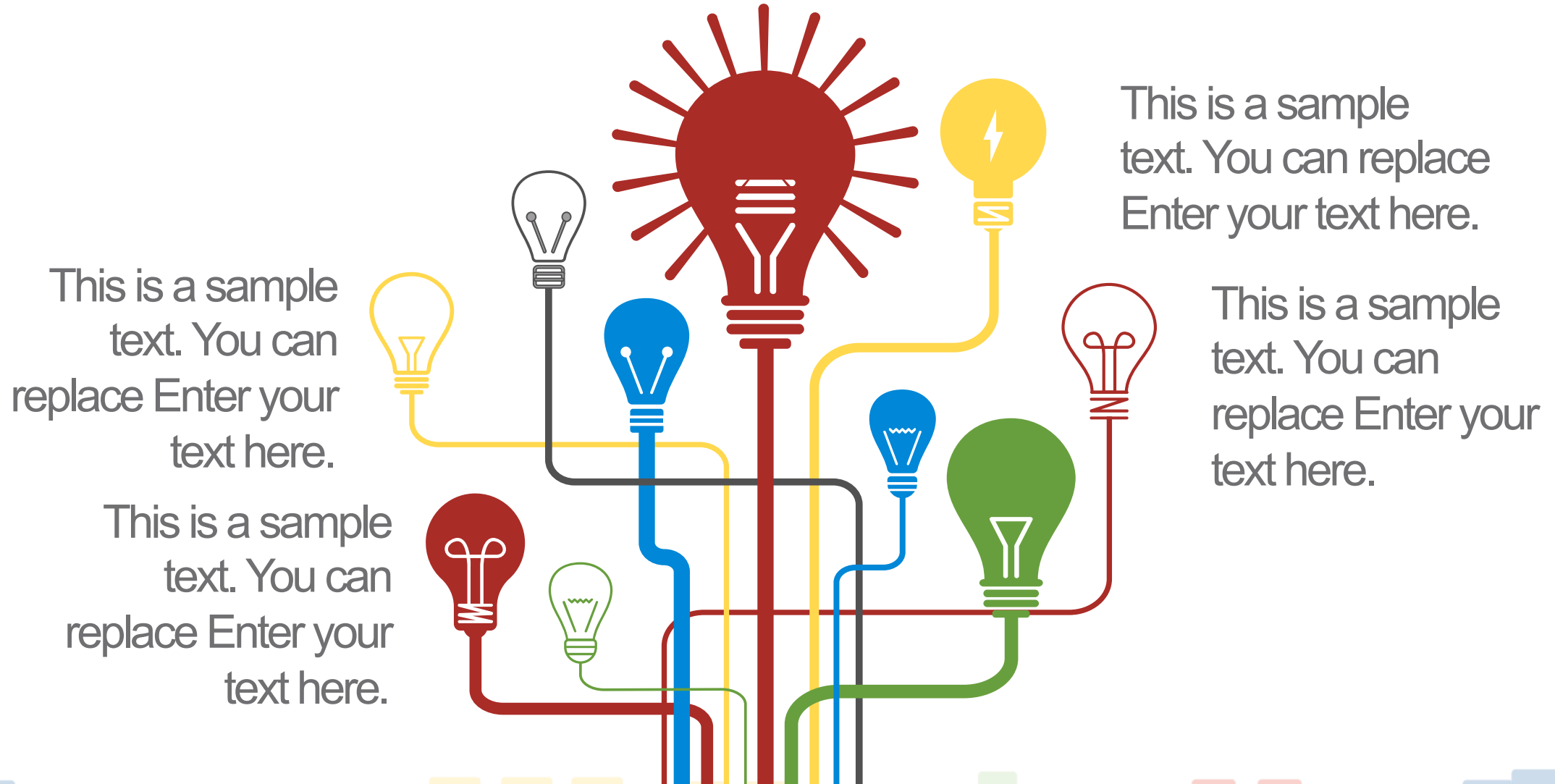
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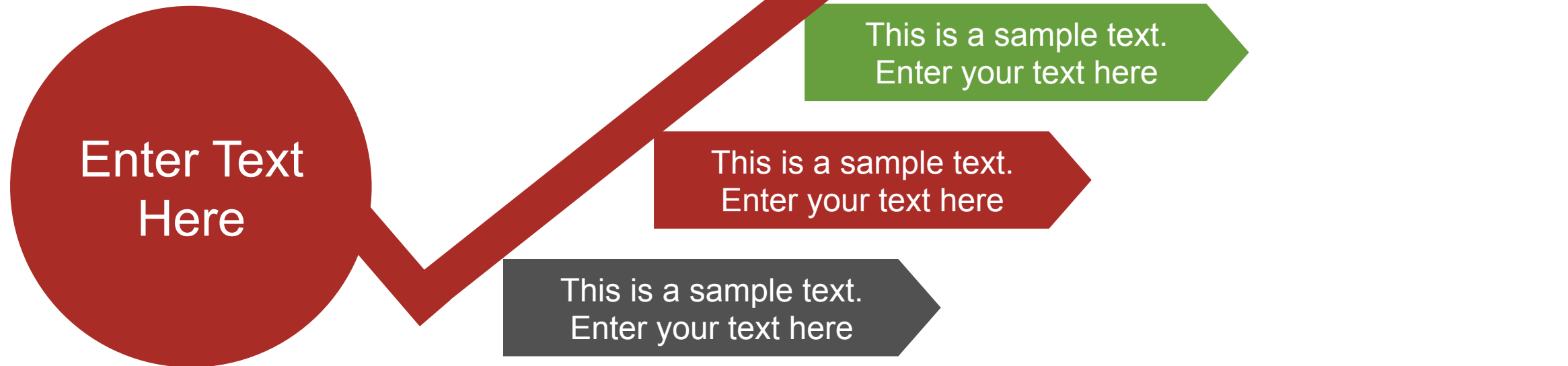


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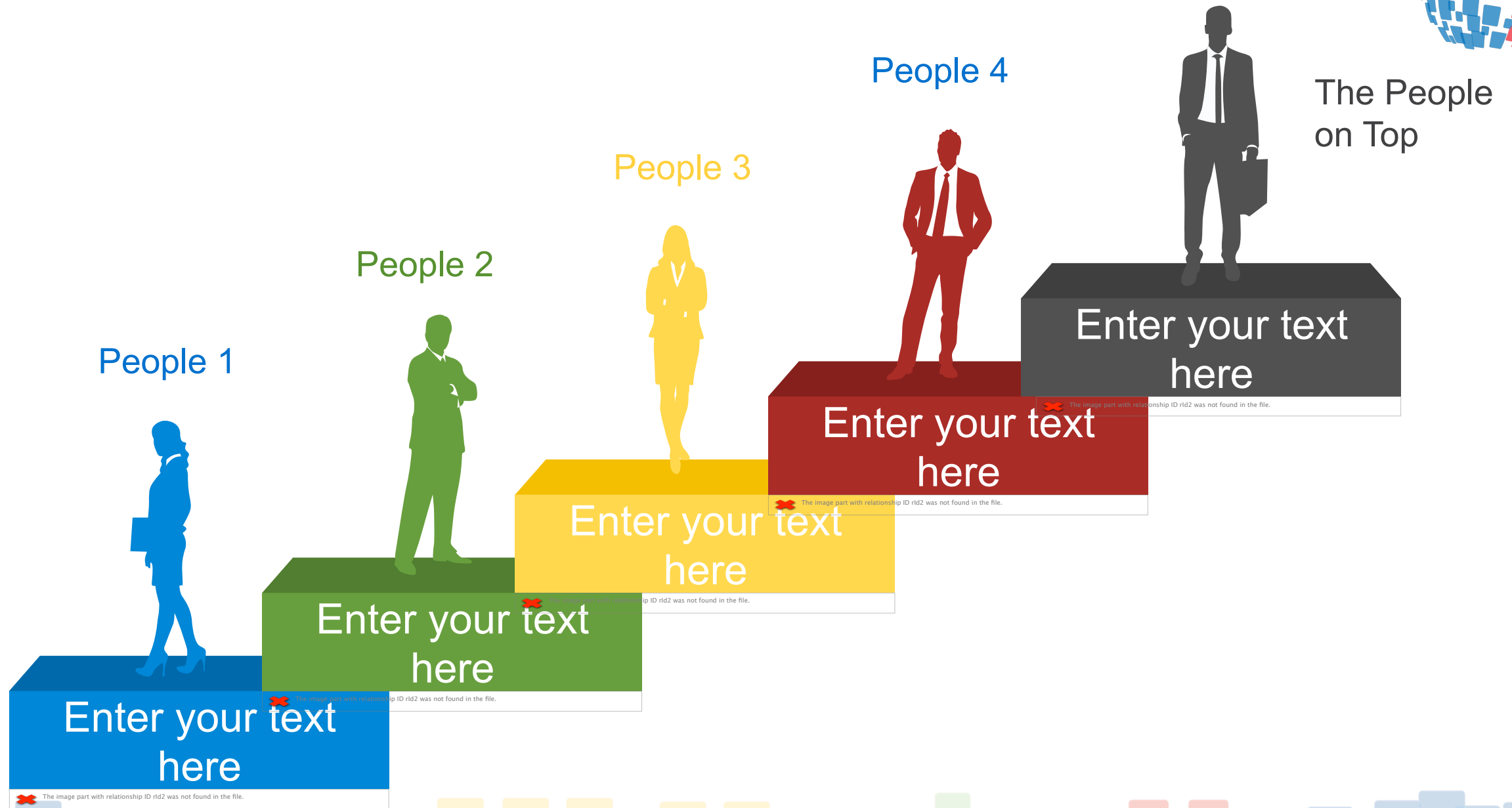
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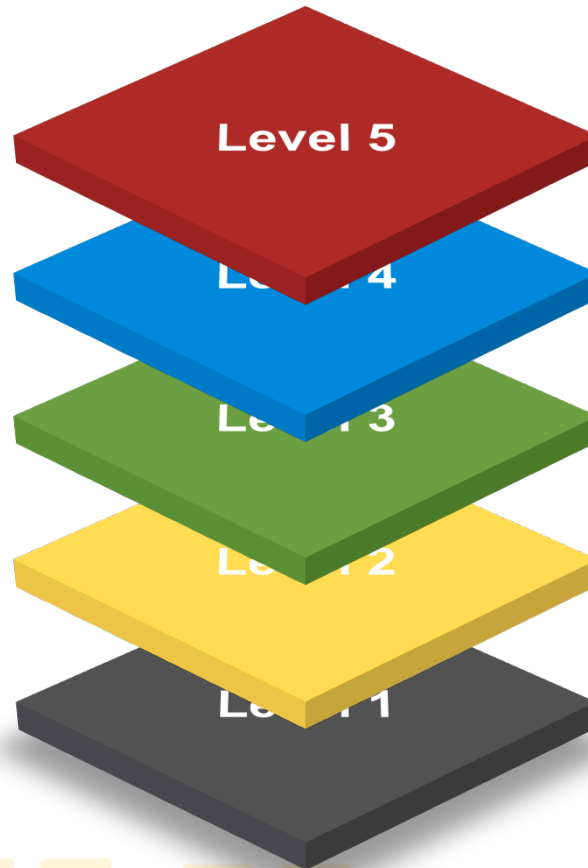
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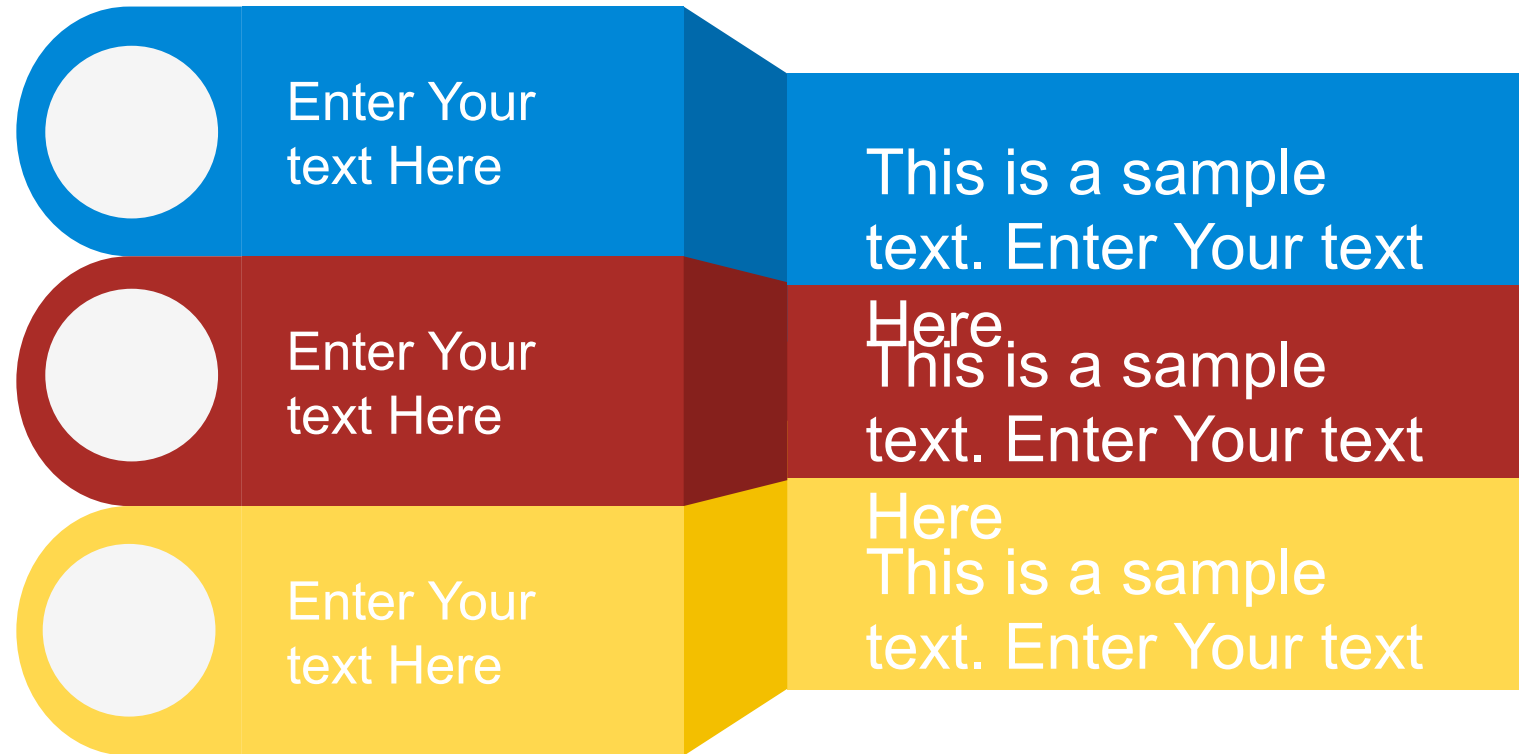


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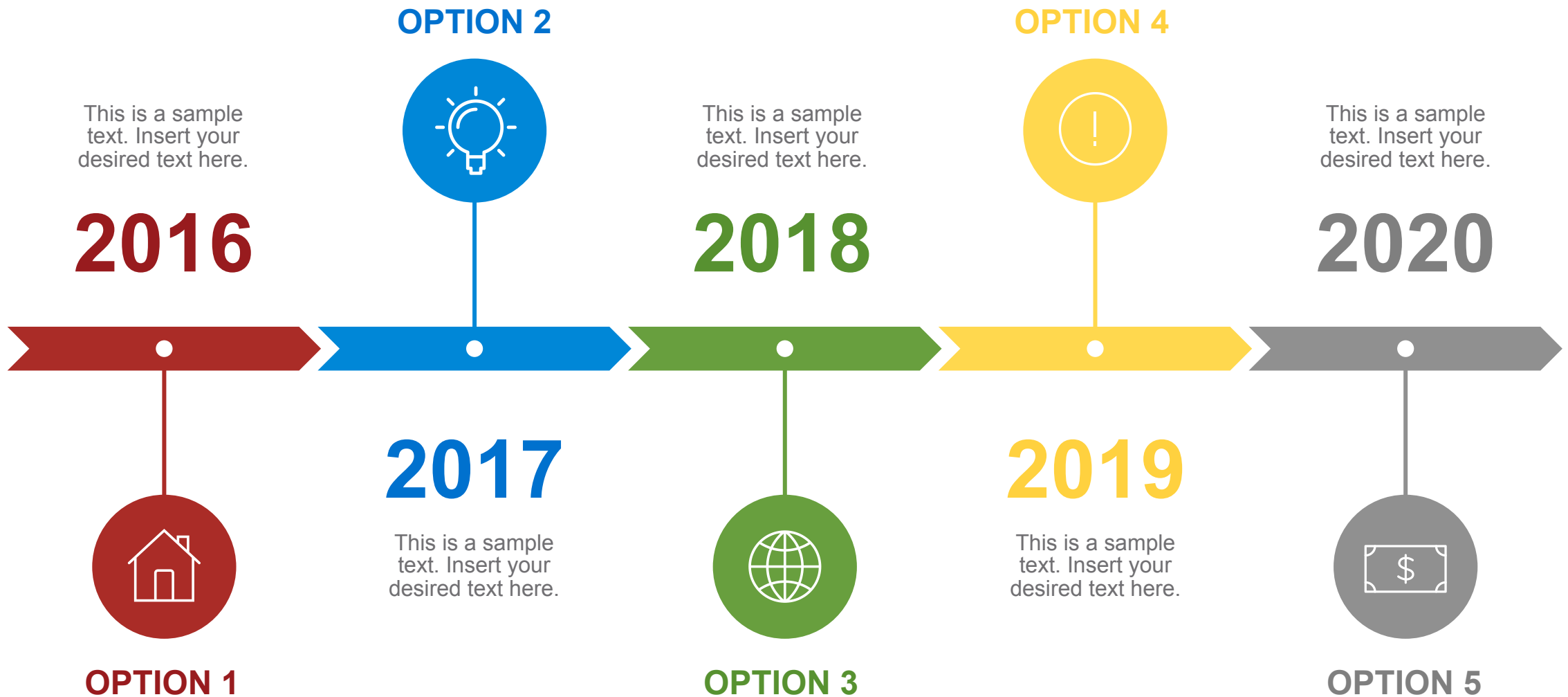
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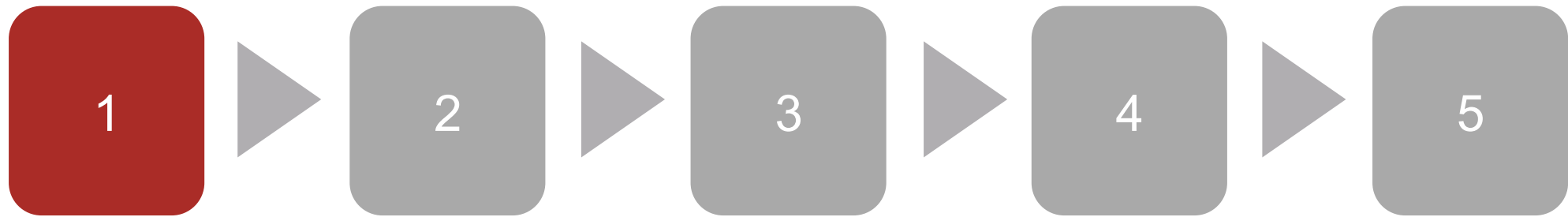
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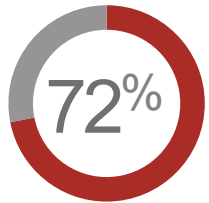
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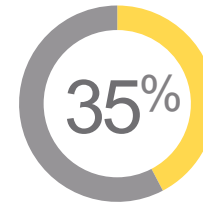
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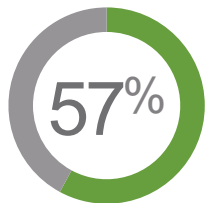
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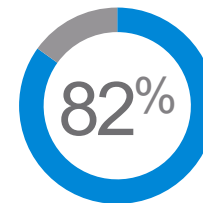
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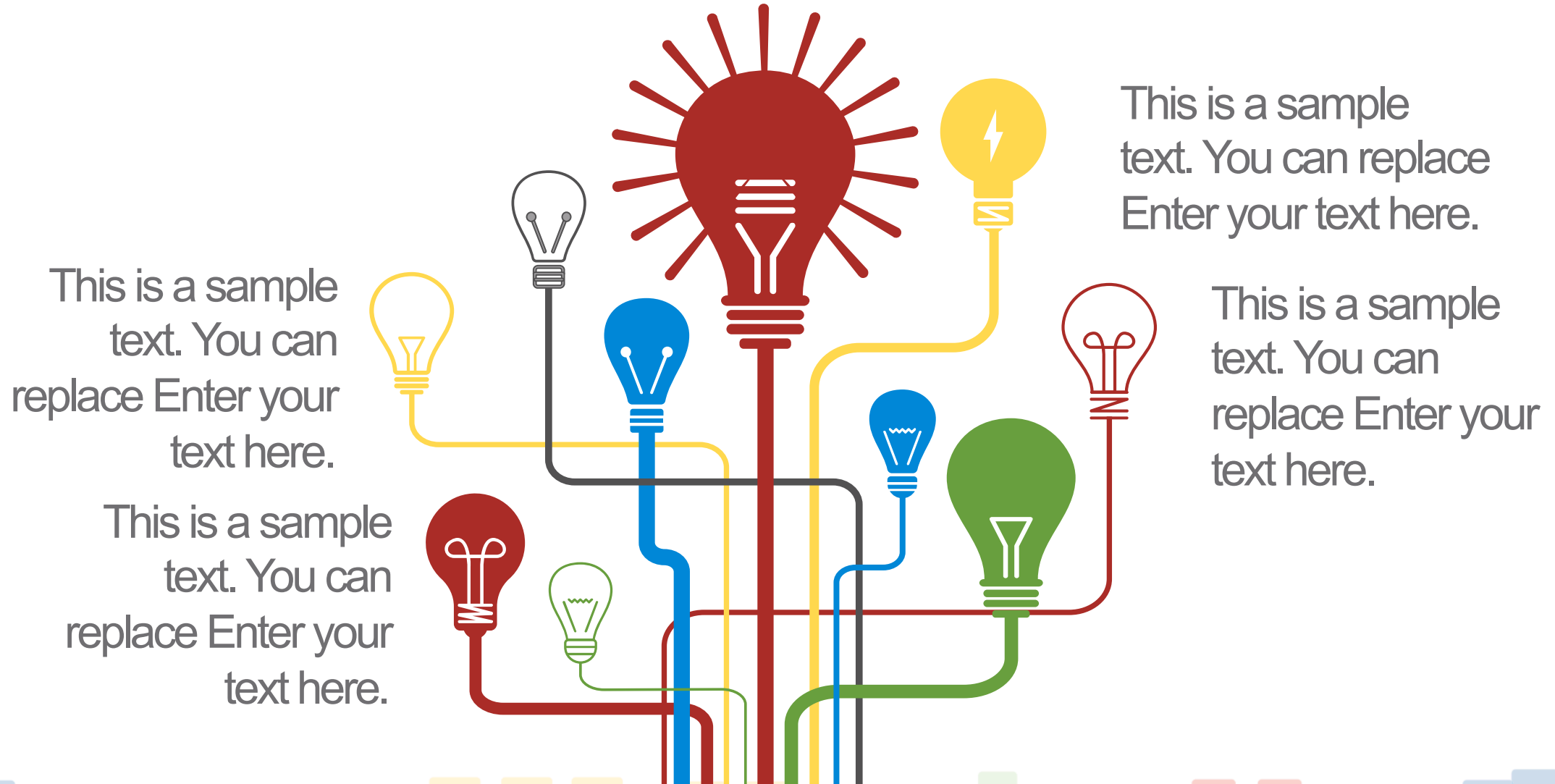
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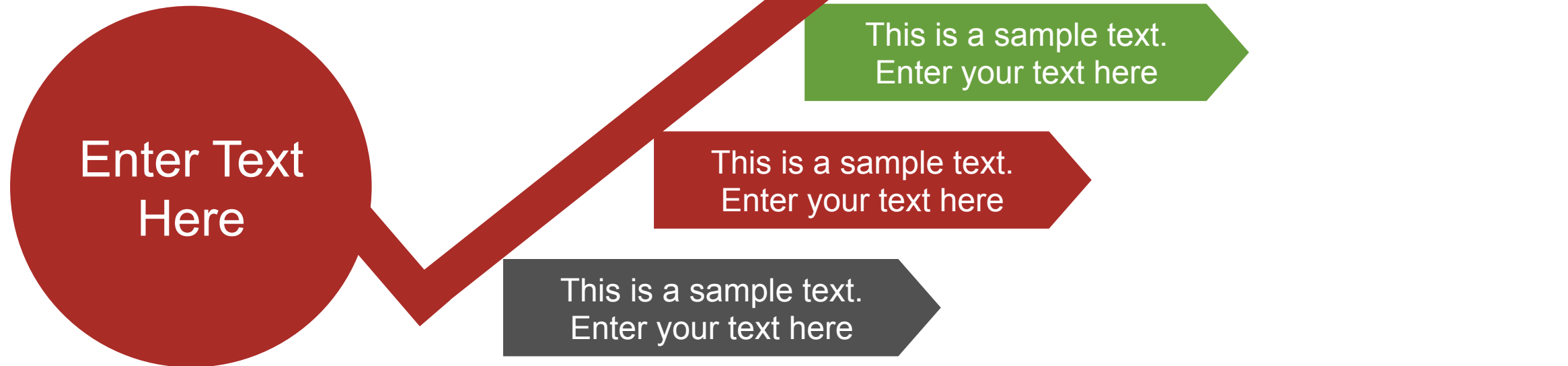


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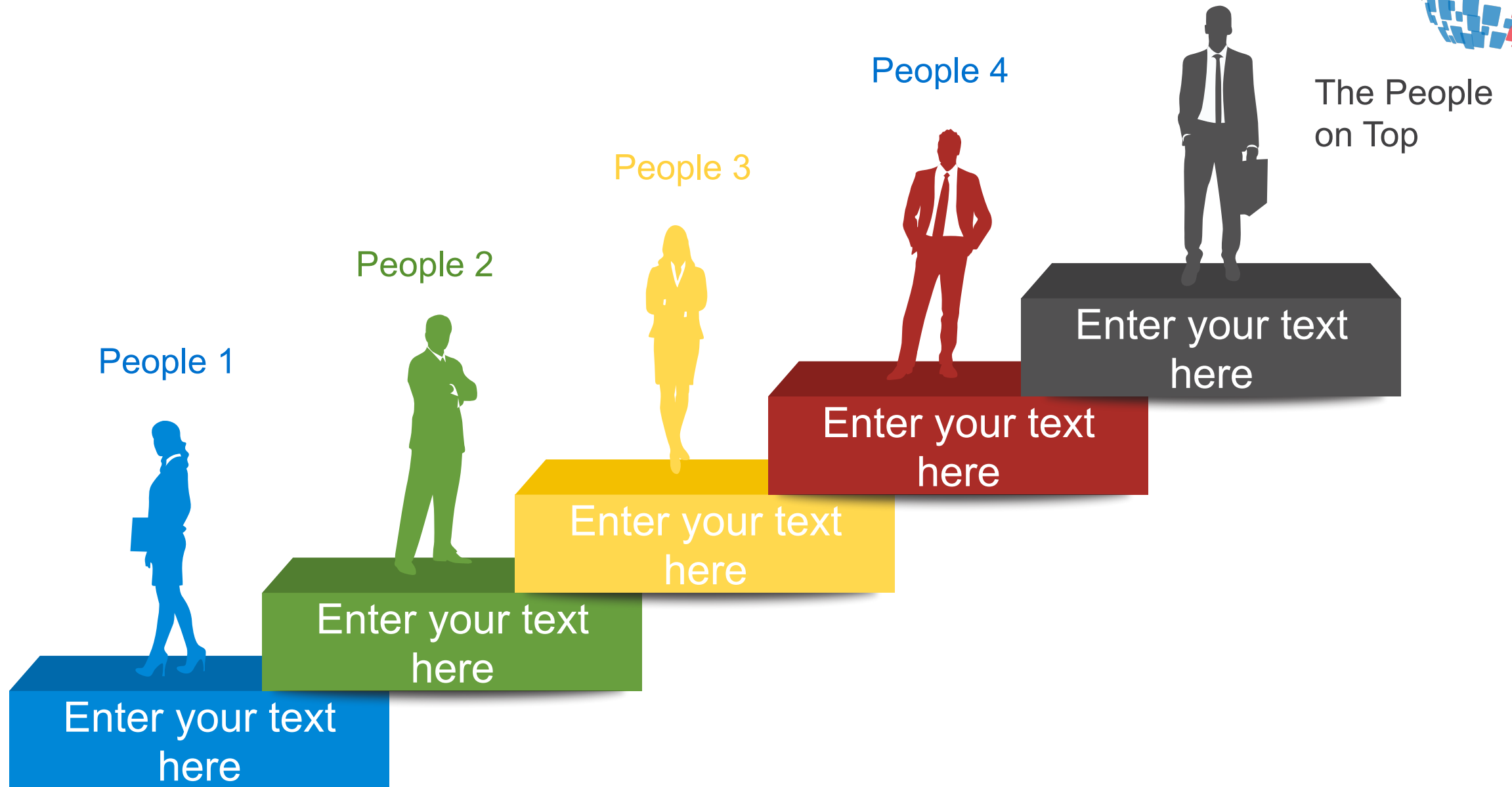
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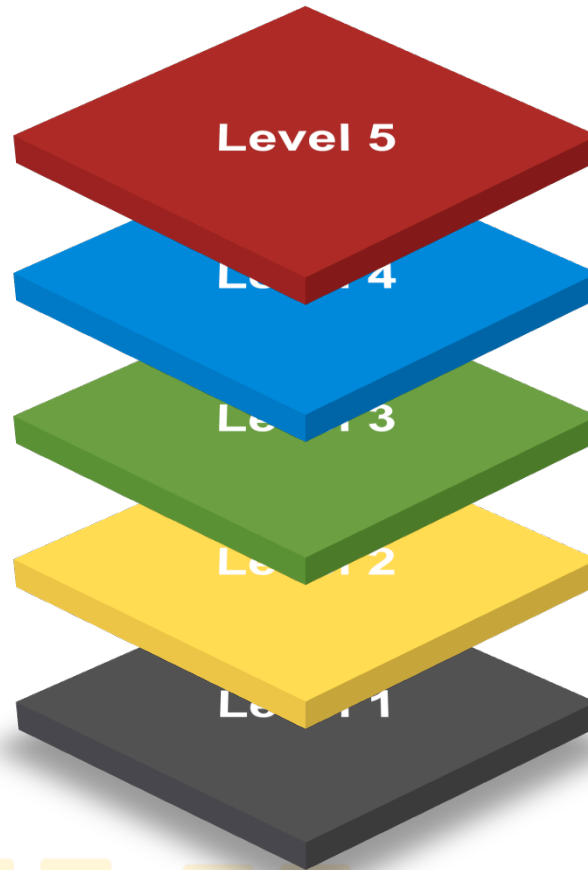
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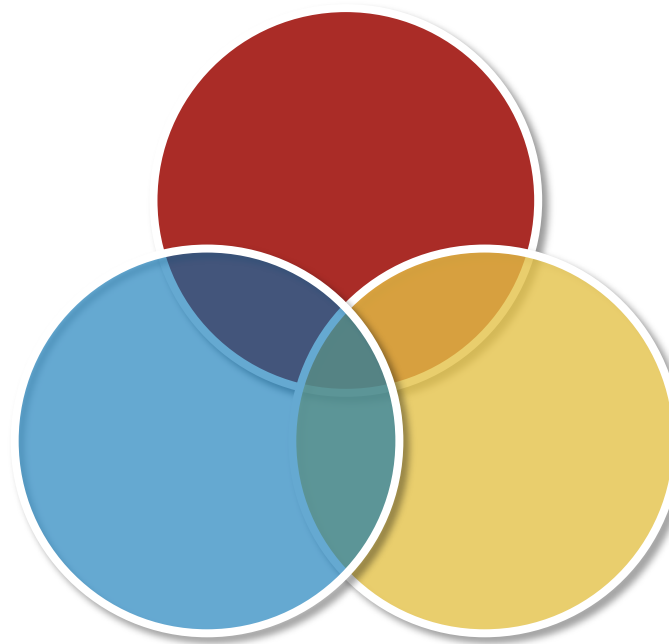
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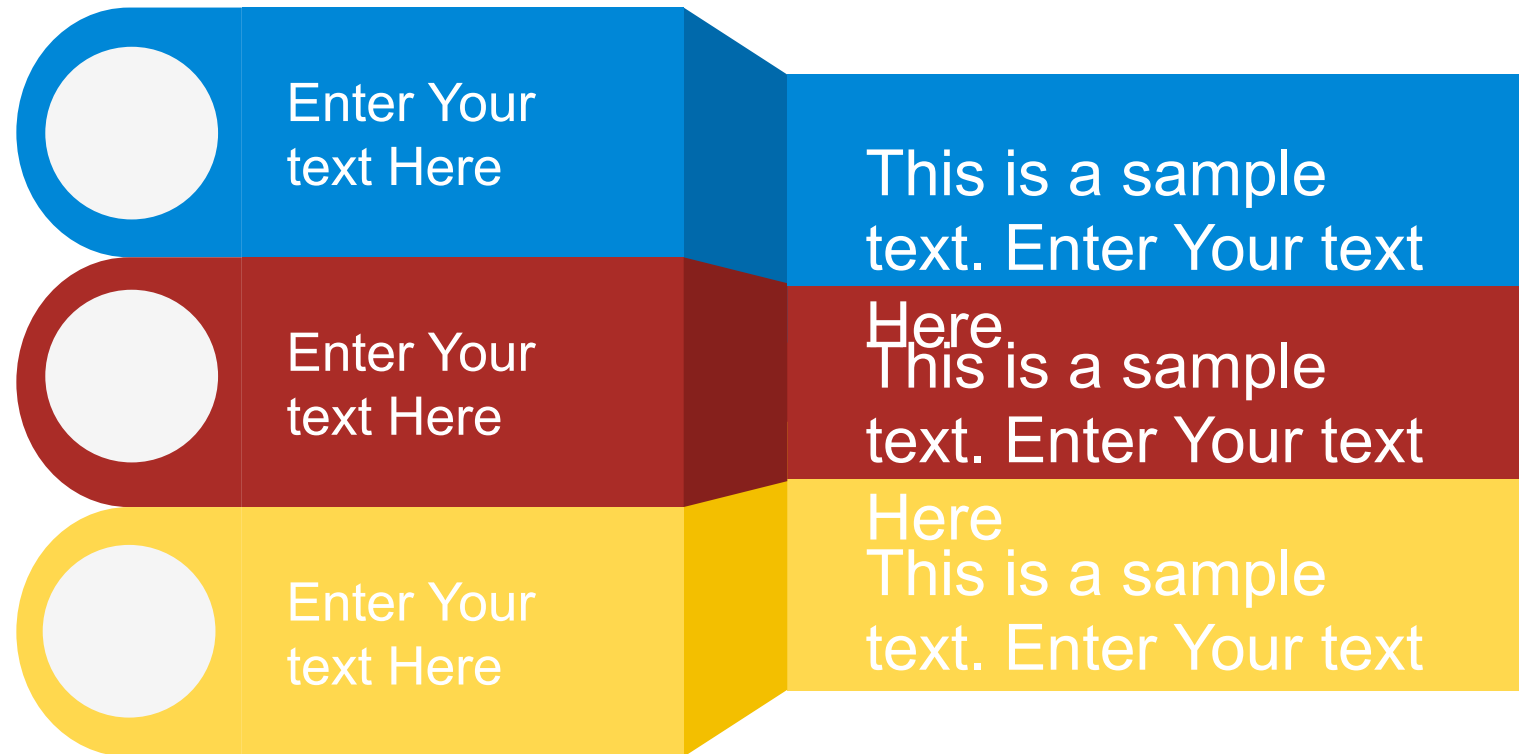
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01



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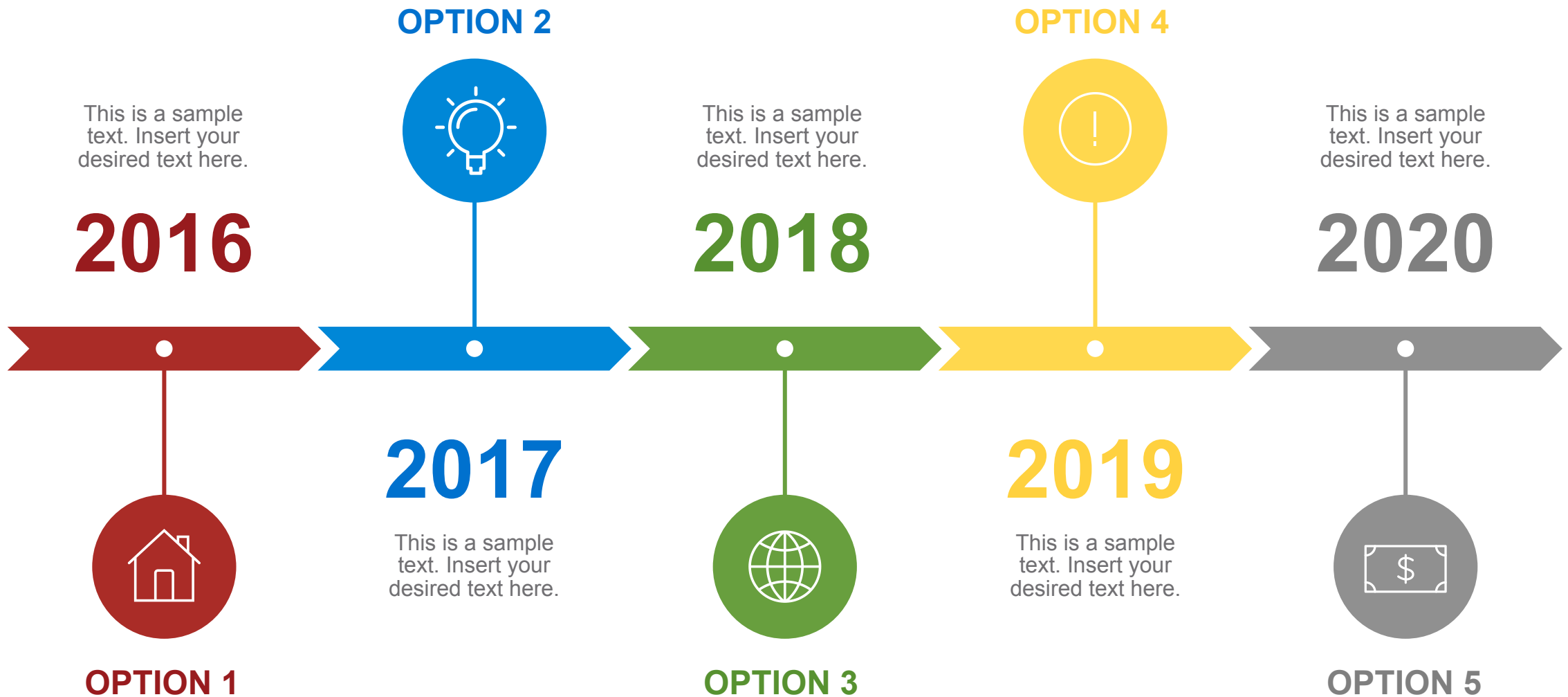
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